TABLAS DE CORRECCIÓN DE ALTURAS DE 10º - 90º PARA EL SOL, ESTRELLAS Y PLANETAS (A_2)

SOL

OCT. - MAR.

Aap.	Limbo Inf.	Limbo Sup.
° ′	′	′
9 33	+10·8	−21·5
9 45	+10·9	−21·4
9 56	+11·0	−21·3
10 08	+11·1	−21·2
10 20	+11·2	−21·1
10 33	+11·3	−21·0
10 46	+11·4	−20·9
11 00	+11·5	−20·8
11 15	+11·6	−20·7
11 30	+11·7	−20·6
11 45	+11·8	−20·5
12 01	+11·9	−20·4
12 18	+12·0	−20·3
12 36	+12·1	−20·2
12 54	+12·2	−20·1
13 14	+12·3	−20·0
13 34	+12·4	−19·9
13 55	+12·5	−19·8
14 17	+12·6	−19·7
14 41	+12·7	−19·6
15 05	+12·8	−19·5
15 31	+12·9	−19·4
15 59	+13·0	−19·3
16 27	+13·1	−19·2
16 58	+13·2	−19·1
17 30	+13·3	−19·0
18 05	+13·4	−18·9
18 41	+13·5	−18·8
19 20	+13·6	−18·7
20 02	+13·7	−18·6
20 46	+13·8	−18·5
21 34	+13·9	−18·4
22 25	+14·0	−18·3
23 20	+14·1	−18·2
24 20	+14·2	−18·1
25 24	+14·3	−18·0
26 34	+14·4	−17·9
27 50	+14·5	−17·8
29 13	+14·6	−17·7
30 44	+14·7	−17·6
32 24	+14·8	−17·5
34 15	+14·9	−17·4
36 17	+15·0	−17·3
38 34	+15·1	−17·2
41 06	+15·2	−17·1
43 56	+15·3	−17·0
47 07	+15·4	−16·9
50 43	+15·5	−16·8
54 46	+15·6	−16·7
59 21	+15·7	−16·6
64 28	+15·8	−16·5
70 10	+15·9	−16·4
76 24	+16·0	−16·3
83 05	+16·1	−16·2
90 00		

ABR. - SEP.

Aap.	Limbo Inf.	Limbo Sup.
° ′	′	′
9 39	+10·6	−21·2
9 50	+10·7	−21·1
10 02	+10·8	−21·0
10 14	+10·9	−20·9
10 27	+11·0	−20·8
10 40	+11·1	−20·7
10 53	+11·2	−20·6
11 07	+11·3	−20·5
11 22	+11·4	−20·4
11 37	+11·5	−20·3
11 53	+11·6	−20·2
12 10	+11·7	−20·1
12 27	+11·8	−20·0
12 45	+11·9	−19·9
13 04	+12·0	−19·8
13 24	+12·1	−19·7
13 44	+12·2	−19·6
14 06	+12·3	−19·5
14 29	+12·4	−19·4
14 53	+12·5	−19·3
15 18	+12·6	−19·2
15 45	+12·7	−19·1
16 13	+12·8	−19·0
16 43	+12·9	−18·9
17 14	+13·0	−18·8
17 47	+13·1	−18·7
18 23	+13·2	−18·6
19 00	+13·3	−18·5
19 41	+13·4	−18·4
20 24	+13·5	−18·3
21 10	+13·6	−18·2
21 59	+13·7	−18·1
22 52	+13·8	−18·0
23 49	+13·9	−17·9
24 51	+14·0	−17·8
25 58	+14·1	−17·7
27 11	+14·2	−17·6
28 31	+14·3	−17·5
29 58	+14·4	−17·4
31 33	+14·5	−17·3
33 18	+14·6	−17·2
35 15	+14·7	−17·1
37 24	+14·8	−17·0
39 48	+14·9	−16·9
42 28	+15·0	−16·8
45 29	+15·1	−16·7
48 52	+15·2	−16·6
52 41	+15·3	−16·5
56 59	+15·4	−16·4
61 50	+15·5	−16·3
67 15	+15·6	−16·2
73 14	+15·7	−16·1
79 42	+15·8	−16·0
86 31	+15·9	−15·9
90 00		

ESTRELLAS Y PLANETAS

Aap.	Corr.
° ′	′
9 55	−5·3
10 07	−5·2
10 20	−5·1
10 32	−5·0
10 46	−4·9
10 59	−4·8
11 14	−4·7
11 29	−4·6
11 44	−4·5
12 00	−4·4
12 17	−4·3
12 35	−4·2
12 53	−4·1
13 12	−4·0
13 32	−3·9
13 53	−3·8
14 16	−3·7
14 39	−3·6
15 03	−3·5
15 29	−3·4
15 56	−3·3
16 25	−3·2
16 55	−3·1
17 27	−3·0
18 01	−2·9
18 37	−2·8
19 16	−2·7
19 56	−2·6
20 40	−2·5
21 27	−2·4
22 17	−2·3
23 11	−2·2
24 09	−2·1
25 12	−2·0
26 20	−1·9
27 34	−1·8
28 54	−1·7
30 22	−1·6
31 58	−1·5
33 43	−1·4
35 38	−1·3
37 45	−1·2
40 06	−1·1
42 42	−1·0
45 34	−0·9
48 45	−0·8
52 16	−0·7
56 09	−0·6
60 26	−0·5
65 06	−0·4
70 09	−0·3
75 32	−0·2
81 12	−0·1
87 03	0·0
90 00	

Aap.	Correcc. Adicional
	2022
	VENUS
1 Ene. – 6 Ene.	
11 Ene. – 29 Ene.	
°	′
0	+0·5
26	+0·4
46	+0·3
60	+0·2
73	+0·1
84	
7 Ene. – 10 Ene.	
°	′
0	+0·6
24	+0·5
41	+0·4
54	+0·3
65	+0·2
76	+0·1
85	
30 Ene. – 13 Feb.	
°	′
0	+0·4
29	+0·3
51	+0·2
68	+0·1
83	
14 Feb. – 8 Mar.	
°	′
0	+0·3
34	+0·2
60	+0·1
80	
9 Mar. – 28 Abr.	
°	′
0	+0·2
41	+0·1
76	
29 Abr. – 31 Dic.	
°	′
0	+0·1
60	
	MARTE
1 Ene. – 28 Ago.	
°	′
0	+0·1
60	
29 Ago. – 9 Nov.	
22 Dic. – 31 Dic.	
°	′
0	+0·2
41	+0·1
76	
10 Nov. – 21 Dic.	
°	′
0	+0·3
34	+0·2
60	+0·1
80	

DEPRESIÓN (DIP)

Eo	Corr.	Eo
m	′	pies
2·4	−2·8	8·0
2·6	−2·9	8·6
2·8	−3·0	9·2
3·0	−3·1	9·8
3·2	−3·2	10·5
3·4	−3·3	11·2
3·6	−3·4	11·9
3·8	−3·5	12·6
4·0	−3·6	13·3
4·3	−3·7	14·1
4·5	−3·8	14·9
4·7	−3·9	15·7
5·0	−4·0	16·5
5·2	−4·1	17·4
5·5	−4·2	18·3
5·8	−4·3	19·1
6·1	−4·4	20·1
6·3	−4·5	21·0
6·6	−4·6	22·0
6·9	−4·7	22·9
7·2	−4·8	23·9
7·5	−4·9	24·9
7·9	−5·0	26·0
8·2	−5·1	27·1
8·5	−5·2	28·1
8·8	−5·3	29·2
9·2	−5·4	30·4
9·5	−5·5	31·5
9·9	−5·6	32·7
10·3	−5·7	33·9
10·6	−5·8	35·1
11·0	−5·9	36·3
11·4	−6·0	37·6
11·8	−6·1	38·9
12·2	−6·2	40·1
12·6	−6·3	41·5
13·0	−6·4	42·8
13·4	−6·5	44·2
13·8	−6·6	45·5
14·2	−6·7	46·9
14·7	−6·8	48·4
15·1	−6·9	49·8
15·5	−7·0	51·3
16·0	−7·1	52·8
16·5	−7·2	54·3
16·9	−7·3	55·8
17·4	−7·4	57·4
17·9	−7·5	58·9
18·4	−7·6	60·5
18·8	−7·7	62·1
19·3	−7·8	63·8
19·8	−7·9	65·4
20·4	−8·0	67·1
20·9	−8·1	68·8
21·4		70·5

Eo	Corr.
m	′
1·0	− 1·8
1·5	− 2·2
2·0	− 2·5
2·5	− 2·8
3·0	− 3·0
Ver tabla ←	
m	′
20	− 7·9
22	− 8·3
24	− 8·6
26	− 9·0
28	− 9·3
30	− 9·6
32	−10·0
34	−10·3
36	−10·6
38	−10·8
40	−11·1
42	−11·4
44	−11·7
46	−11·9
48	−12·2
pies	′
2	− 1·4
4	− 1·9
6	− 2·4
8	− 2·7
10	− 3·1
Ver tabla ←	
pies	′
70	− 8·1
75	− 8·4
80	− 8·7
85	− 8·9
90	− 9·2
95	− 9·5
100	− 9·7
105	− 9·9
110	−10·2
115	−10·4
120	−10·6
125	−10·8
130	−11·1
135	−11·3
140	−11·5
145	−11·7
150	−11·9
155	−12·1

Aap. = Altura Aparente = Altura de sextante corregida por error de índice y depresión.
Eo = Elevación del ojo sobre el nivel del mar.

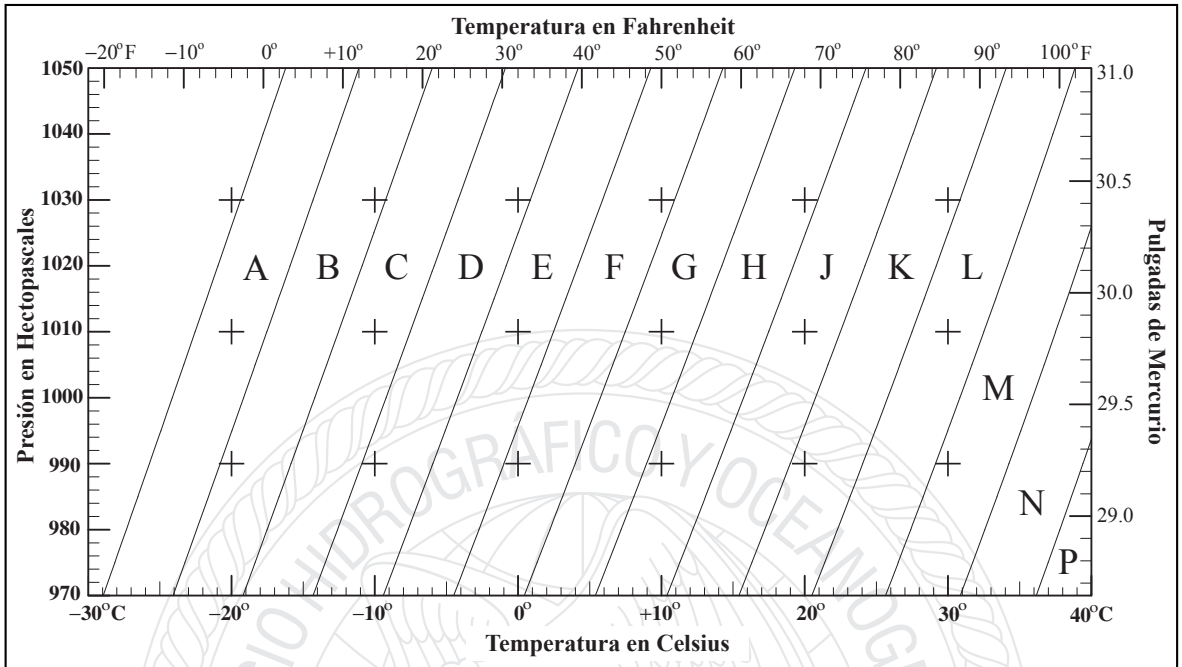
(A_3) TABLAS DE CORRECCIÓN DE ALTURAS DE 0º - 10º PARA EL SOL, ESTRELLAS Y PLANETAS

Aap.	OCT. - MAR. **SOL** ABR. - SEP.				ESTRELLAS PLANETAS
	Limbo Inf.	Limbo Sup.	Limbo Inf.	Limbo Sup.	
° ′	′	′	′	′	′
0 00	−17·5	−49·8	−17·8	−49·6	−33·8
0 03	16·9	49·2	17·2	49·0	33·2
0 06	16·3	48·6	16·6	48·4	32·6
0 09	15·7	48·0	16·0	47·8	32·0
0 12	15·2	47·5	15·4	47·2	31·5
0 15	14·6	46·9	14·8	46·6	30·9
0 18	−14·1	−46·4	−14·3	−46·1	−30·4
0 21	13·5	45·8	13·8	45·6	29·8
0 24	13·0	45·3	13·3	45·1	29·3
0 27	12·5	44·8	12·8	44·6	28·8
0 30	12·0	44·3	12·3	44·1	28·3
0 33	11·6	43·9	11·8	43·6	27·9
0 36	−11·1	−43·4	−11·3	−43·1	−27·4
0 39	10·6	42·9	10·9	42·7	26·9
0 42	10·2	42·5	10·5	42·3	26·5
0 45	9·8	42·1	10·0	41·8	26·1
0 48	9·4	41·7	9·6	41·4	25·7
0 51	9·0	41·3	9·2	41·0	25·3
0 54	− 8·6	−40·9	− 8·8	−40·6	−24·9
0 57	8·2	40·5	8·4	40·2	24·5
1 00	7·8	40·1	8·0	39·8	24·1
1 03	7·4	39·7	7·7	39·5	23·7
1 06	7·1	39·4	7·3	39·1	23·4
1 09	6·7	39·0	7·0	38·8	23·0
1 12	− 6·4	−38·7	− 6·6	−38·4	−22·7
1 15	6·0	38·3	6·3	38·1	22·3
1 18	5·7	38·0	6·0	37·8	22·0
1 21	5·4	37·7	5·7	37·5	21·7
1 24	5·1	37·4	5·3	37·1	21·4
1 27	4·8	37·1	5·0	36·8	21·1
1 30	− 4·5	−36·8	− 4·7	−36·5	−20·8
1 35	4·0	36·3	4·3	36·1	20·3
1 40	3·6	35·9	3·8	35·6	19·9
1 45	3·1	35·4	3·4	35·2	19·4
1 50	2·7	35·0	2·9	34·7	19·0
1 55	2·3	34·6	2·5	34·3	18·6
2 00	− 1·9	−34·2	− 2·1	−33·9	−18·2
2 05	1·5	33·8	1·7	33·5	17·8
2 10	1·1	33·4	1·4	33·2	17·4
2 15	0·8	33·1	1·0	32·8	17·1
2 20	0·4	32·7	0·7	32·5	16·7
2 25	− 0·1	32·4	− 0·3	32·1	16·4
2 30	+ 0·2	−32·1	0·0	−31·8	−16·1
2 35	0·5	31·8	+ 0·3	31·5	15·8
2 40	0·8	31·5	0·6	31·2	15·4
2 45	1·1	31·2	0·9	30·9	15·2
2 50	1·4	30·9	1·2	30·6	14·9
2 55	1·7	30·6	1·4	30·4	14·6
3 00	+ 2·0	−30·3	+ 1·7	−30·1	−14·3
3 05	2·2	30·1	2·0	29·8	14·1
3 10	2·5	29·8	2·2	29·6	13·8
3 15	2·7	29·6	2·5	29·3	13·6
3 20	2·9	29·4	2·7	29·1	13·4
3 25	3·2	29·1	2·9	28·9	13·1
3 30	+ 3·4	−28·9	+ 3·1	−28·7	−12·9

Aap.	OCT. - MAR. **SOL** ABR. - SEP.				ESTRELLAS PLANETAS
	Limbo Inf.	Limbo Sup.	Limbo Inf.	Limbo Sup.	
° ′	′	′	′	′	′
3 30	+ 3·4	−28·9	+ 3·1	−28·7	−12·9
3 35	3·6	28·7	3·3	28·5	12·7
3 40	3·8	28·5	3·6	28·2	12·5
3 45	4·0	28·3	3·8	28·0	12·3
3 50	4·2	28·1	4·0	27·8	12·1
3 55	4·4	27·9	4·1	27·7	11·9
4 00	+ 4·6	−27·7	+ 4·3	−27·5	−11·7
4 05	4·8	27·5	4·5	27·3	11·5
4 10	4·9	27·4	4·7	27·1	11·4
4 15	5·1	27·2	4·9	26·9	11·2
4 20	5·3	27·0	5·0	26·8	11·0
4 25	5·4	26·9	5·2	26·6	10·9
4 30	+ 5·6	−26·7	+ 5·3	−26·5	−10·7
4 35	5·7	26·6	5·5	26·3	10·6
4 40	5·9	26·4	5·6	26·2	10·4
4 45	6·0	26·3	5·8	26·0	10·3
4 50	6·2	26·1	5·9	25·9	10·1
4 55	6·3	26·0	6·1	25·7	10·0
5 00	+ 6·4	−25·9	+ 6·2	−25·6	− 9·8
5 05	6·6	25·7	6·3	25·5	9·7
5 10	6·7	25·6	6·5	25·3	9·6
5 15	6·8	25·5	6·6	25·2	9·5
5 20	7·0	25·3	6·7	25·1	9·3
5 25	7·1	25·2	6·8	25·0	9·2
5 30	+ 7·2	−25·1	+ 6·9	−24·9	− 9·1
5 35	7·3	25·0	7·1	24·7	9·0
5 40	7·4	24·9	7·2	24·6	8·9
5 45	7·5	24·8	7·3	24·5	8·8
5 50	7·6	24·7	7·4	24·4	8·7
5 55	7·7	24·6	7·5	24·3	8·6
6 00	+ 7·8	−24·5	+ 7·6	−24·2	− 8·5
6 10	8·0	24·3	7·8	24·0	8·3
6 20	8·2	24·1	8·0	23·8	8·1
6 30	8·4	23·9	8·2	23·6	7·9
6 40	8·6	23·7	8·3	23·5	7·7
6 50	8·7	23·6	8·5	23·3	7·6
7 00	+ 8·9	−23·4	+ 8·7	−23·1	− 7·4
7 10	9·1	23·2	8·8	23·0	7·2
7 20	9·2	23·1	9·0	22·8	7·1
7 30	9·3	23·0	9·1	22·7	6·9
7 40	9·5	22·8	9·2	22·6	6·8
7 50	9·6	22·7	9·4	22·4	6·7
8 00	+ 9·7	−22·6	+ 9·5	−22·3	− 6·6
8 10	9·9	22·4	9·6	22·2	6·4
8 20	10·0	22·3	9·7	22·1	6·3
8 30	10·1	22·2	9·9	21·9	6·2
8 40	10·2	22·1	10·0	21·8	6·1
8 50	10·3	22·0	10·1	21·7	6·0
9 00	+10·4	−21·9	+10·2	−21·6	− 5·9
9 10	10·5	21·8	10·3	21·5	5·8
9 20	10·6	21·7	10·4	21·4	5·7
9 30	10·7	21·6	10·5	21·3	5·6
9 40	10·8	21·5	10·6	21·2	5·5
9 50	10·9	21·4	10·6	21·2	5·4
10 00	+11·0	−21·3	+10·7	−21·1	− 5·3

En la página siguiente se dan correcciones adicionales por temperatura y presión.
Para observaciones con sextantes de burbuja, ignorar la depresión y usar la corrección de estrellas para Sol, planetas y estrellas.

TABLAS DE CORRECCIONES ADICIONALES POR REFRACCIÓN PARA CONDICIONES ANORMALES (A_4)



Aap.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Aap.
° ′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	° ′
00 00	−7·3	−5·9	−4·6	−3·4	−2·2	−1·1	0·0	+1·0	+2·0	+3·0	+4·0	+4·9	+5·9	+6·9	00 00
00 30	5·5	4·5	3·5	2·6	1·7	0·8	0·0	0·8	1·6	2·3	3·1	3·8	4·5	5·3	00 30
01 00	4·4	3·5	2·8	2·0	1·3	0·7	0·0	0·6	1·2	1·8	2·4	3·0	3·6	4·2	01 00
01 30	3·5	2·9	2·2	1·7	1·1	0·5	0·0	0·5	1·0	1·5	2·0	2·5	2·9	3·4	01 30
02 00	2·9	2·4	1·9	1·4	0·9	0·4	0·0	0·4	0·8	1·3	1·7	2·0	2·4	2·8	02 00
02 30	−2·5	−2·0	−1·6	−1·2	−0·8	−0·4	0·0	+0·4	+0·7	+1·1	+1·4	+1·7	+2·1	+2·4	02 30
03 00	2·1	1·7	1·4	1·0	0·7	0·3	0·0	0·3	0·6	0·9	1·2	1·5	1·8	2·1	03 00
03 30	1·9	1·5	1·2	0·9	0·6	0·3	0·0	0·3	0·5	0·8	1·1	1·3	1·6	1·8	03 30
04 00	1·6	1·3	1·1	0·8	0·5	0·3	0·0	0·2	0·5	0·7	0·9	1·2	1·4	1·6	04 00
04 30	1·5	1·2	0·9	0·7	0·5	0·2	0·0	0·2	0·4	0·6	0·8	1·0	1·3	1·5	04 30
05 00	−1·3	−1·1	−0·9	−0·6	−0·4	−0·2	0·0	+0·2	+0·4	+0·6	+0·8	+0·9	+1·1	+1·3	05 00
06	1·1	0·9	0·7	0·5	0·3	0·2	0·0	0·2	0·3	0·5	0·6	0·8	0·9	1·1	06
07	1·0	0·8	0·6	0·5	0·3	0·1	0·0	0·1	0·3	0·4	0·5	0·7	0·8	0·9	07
08	0·8	0·7	0·5	0·4	0·3	0·1	0·0	0·1	0·2	0·4	0·5	0·6	0·7	0·8	08
09	0·7	0·6	0·5	0·4	0·2	0·1	0·0	0·1	0·2	0·3	0·4	0·5	0·6	0·7	09
10 00	−0·7	−0·5	−0·4	−0·3	−0·2	−0·1	0·0	+0·1	+0·2	+0·3	+0·4	+0·5	+0·6	+0·7	10 00
12	0·6	0·5	0·4	0·3	0·2	0·1	0·0	0·1	0·2	0·2	0·3	0·4	0·5	0·5	12
14	0·5	0·4	0·3	0·2	0·1	0·1	0·0	0·1	0·1	0·2	0·3	0·3	0·4	0·5	14
16	0·4	0·3	0·3	0·2	0·1	0·1	0·0	0·1	0·1	0·2	0·2	0·3	0·3	0·4	16
18	0·4	0·3	0·2	0·2	0·1	−0·1	0·0	+0·1	0·1	0·2	0·2	0·3	0·3	0·4	18
20 00	−0·3	−0·3	−0·2	−0·2	−0·1	0·0	0·0	0·0	+0·1	+0·1	+0·2	+0·2	+0·3	+0·3	20 00
25	0·3	0·2	0·2	0·1	0·1	0·0	0·0	0·0	0·1	0·1	0·1	0·2	0·2	0·2	25
30	0·2	0·2	0·1	0·1	0·1	0·0	0·0	0·0	+0·1	0·1	0·1	0·1	0·2	0·2	30
35	0·2	0·1	0·1	0·1	−0·1	0·0	0·0	0·0	0·0	0·1	0·1	0·1	0·1	0·2	35
40	0·1	0·1	0·1	−0·1	0·0	0·0	0·0	0·0	0·0	+0·1	0·1	0·1	0·1	0·1	40
50 00	−0·1	−0·1	−0·1	0·0	0·0	0·0	0·0	0·0	0·0	0·0	+0·1	+0·1	+0·1	+0·1	50 00

Se ingresa al gráfico con los datos de temperatura y presión para encontrar la letra correspondiente a la zona; usando como antecedente esta letra de zona y la altura aparente (altura del sextante corregida por error de índice y depresión), se obtiene la corrección de la tabla. Esta corrección se aplica a la altura del sextante además de las correcciones para condiciones normales (para el Sol, estrellas y planetas de las páginas A_2 - A_3 y para la Luna de las páginas xxxiv y xxxv).

SERVICIO HIDROGRÁFICO Y OCEANOGRÁFICO
ARMADA DE CHILE

SHOA
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2022

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P R E F A C I O

El Almanaque Náutico es una publicación oficial del Servicio Hidrográfico y Oceanográfico de la Armada de Chile (SHOA), que emplea la información astronómica de la Oficina Hidrográfica del Reino Unido (UKHO) para el año 2022.

El objetivo de esta publicación es proporcionar los datos necesarios para la práctica de la navegación astronómica en el mar. Ella contiene los datos a partir de los cuales se pueden obtener los valores del Ángulo Horario de Greenwich y la Declinación de todos los astros usados en la navegación, para cualquier instante del Tiempo Universal o de la Hora Media de Greenwich. Además, entre otras informaciones, incluye planeamientos misceláneos, tablas auxiliares y una lista de horas oficiales y correcciones que deben aplicarse a las alturas observadas. Asimismo, proporciona informaciones concernientes a las horas del orto y ocaso del Sol, comienzo y fin de la aurora y crepúsculo civil y náutico; orto y ocaso de la Luna, para las latitudes comprendidas entre 60º S y 72º S.

Valparaíso, octubre de 2021.

PATRICIO CARRASCO HELLWIG
Contraalmirante
Director

FASES DE LA LUNA – 2022

LOS VALORES DE LA HORA ESTÁN EXPRESADOS EN TIEMPO UNIVERSAL (UT) U HORA MEDIA DE GREENWICH (HmGr)

LUNA NUEVA				CUARTO CRECIENTE			
	d	h	m		d	h	m
Ene.	2	18	33	Ene.	9	18	11
Feb.	1	05	46	Feb.	8	13	50
Mar.	2	17	35	Mar.	10	10	45
Abr.	1	06	24	Abr.	9	06	48
Abr.	30	20	28	May.	9	00	21
May.	30	11	30	Jun.	7	14	49
Jun.	29	02	52	Jul.	7	02	14
Jul.	28	17	55	Ago.	5	11	07
Ago.	27	08	17	Sep.	3	18	08
Sep.	25	21	55	Oct.	3	00	14
Oct.	25	10	49	Nov.	1	06	37
Nov.	23	22	57	Nov.	30	14	37
Dic.	23	10	17	Dic.	30	01	21

LUNA LLENA				CUARTO MENGUANTE			
	d	h	m		d	h	m
Ene.	17	23	48	Ene.	25	13	41
Feb.	16	16	57	Feb.	23	22	32
Mar.	18	07	18	Mar.	25	05	37
Abr.	16	18	55	Abr.	23	11	56
May.	16	04	14	May.	22	18	43
Jun.	14	11	52	Jun.	21	03	11
Jul.	13	18	38	Jul.	20	14	19
Ago.	12	01	36	Ago.	19	04	36
Sep.	10	09	59	Sep.	17	21	52
Oct.	9	20	55	Oct.	17	17	15
Nov.	8	11	02	Nov.	16	13	27
Dic.	8	04	08	Dic.	16	08	56

SIMBOLOGÍA DE LAS FASES DE LA LUNA UTILIZADAS EN LAS PÁGINAS DIARIAS



Nota: La representación gráfica de las fases de la Luna corresponde a su visualización desde el hemisferio sur.

Día del Mes	ENE.		FEB.		MAR.		ABR.		MAY.		JUN.		JUL.		AGO.		SEP.		OCT.		NOV.		DIC.	
	Día Sem.	Fecha Juliana	Día Sem.	Fecha Juliana	Día Sem.	Fecha Juliana	Día Sem.	Fecha Juliana	Día Sem.	Fecha Juliana	Día Sem.	Fecha Juliana	Día Sem.	Fecha Juliana	Día Sem.	Fecha Juliana	Día Sem.	Fecha Juliana	Día Sem.	Fecha Juliana	Día Sem.	Fecha Juliana	Día Sem.	Fecha Juliana
1	S.	1	M.	32	M.	60	V.	91	D.	121	Mi.	152	V.	182	L.	213	J.	244	S.	274	M.	305	J.	335
2	D.	2	Mi.	33	Mi.	61	S.	92	L.	122	J.	153	S.	183	M.	214	V.	245	D.	275	Mi.	306	V.	336
3	L.	3	J.	34	J.	62	D.	93	M.	123	V.	154	D.	184	Mi.	215	S.	246	L.	276	J.	307	S.	337
4	M.	4	V.	35	V.	63	L.	94	Mi.	124	S.	155	L.	185	J.	216	D.	247	M.	277	V.	308	D.	338
5	Mi.	5	S.	36	S.	64	M.	95	J.	125	D.	156	M.	186	V.	217	L.	248	Mi.	278	S.	309	L.	339
6	J.	6	D.	37	D.	65	Mi.	96	V.	126	L.	157	Mi.	187	S.	218	M.	249	J.	279	D.	310	M.	340
7	V.	7	L.	38	L.	66	J.	97	S.	127	M.	158	J.	188	D.	219	Mi.	250	V.	280	L.	311	Mi.	341
8	S.	8	M.	39	M.	67	V.	98	D.	128	Mi.	159	V.	189	L.	220	J.	251	S.	281	M.	312	J.	342
9	D.	9	Mi.	40	Mi.	68	S.	99	L.	129	J.	160	S.	190	M.	221	V.	252	D.	282	Mi.	313	V.	343
10	L.	10	J.	41	J.	69	D.	100	M.	130	V.	161	D.	191	Mi.	222	S.	253	L.	283	J.	314	S.	344
11	M.	11	V.	42	V.	70	L.	101	Mi.	131	S.	162	L.	192	J.	223	D.	254	M.	284	V.	315	D.	345
12	Mi.	12	S.	43	S.	71	M.	102	J.	132	D.	163	M.	193	V.	224	L.	255	Mi.	285	S.	316	L.	346
13	J.	13	D.	44	D.	72	Mi.	103	V.	133	L.	164	Mi.	194	S.	225	M.	256	J.	286	D.	317	M.	347
14	V.	14	L.	45	L.	73	J.	104	S.	134	M.	165	J.	195	D.	226	Mi.	257	V.	287	L.	318	Mi.	348
15	S.	15	M.	46	M.	74	V.	105	D.	135	Mi.	166	V.	196	L.	227	J.	258	S.	288	M.	319	J.	349
16	D.	16	Mi.	47	Mi.	75	S.	106	L.	136	J.	167	S.	197	M.	228	V.	259	D.	289	Mi.	320	V.	350
17	L.	17	J.	48	J.	76	D.	107	M.	137	V.	168	D.	198	Mi.	229	S.	260	L.	290	J.	321	S.	351
18	M.	18	V.	49	V.	77	L.	108	Mi.	138	S.	169	L.	199	J.	230	D.	261	M.	291	V.	322	D.	352
19	Mi.	19	S.	50	S.	78	M.	109	J.	139	D.	170	M.	200	V.	231	L.	262	Mi.	292	S.	323	L.	353
20	J.	20	D.	51	D.	79	Mi.	110	V.	140	L.	171	Mi.	201	S.	232	M.	263	J.	293	D.	324	M.	354
21	V.	21	L.	52	L.	80	J.	111	S.	141	M.	172	J.	202	D.	233	Mi.	264	V.	294	L.	325	Mi.	355
22	S.	22	M.	53	M.	81	V.	112	D.	142	Mi.	173	V.	203	L.	234	J.	265	S.	295	M.	326	J.	356
23	D.	23	Mi.	54	Mi.	82	S.	113	L.	143	J.	174	S.	204	M.	235	V.	266	D.	296	Mi.	327	V.	357
24	L.	24	J.	55	J.	83	D.	114	M.	144	V.	175	D.	205	Mi.	236	S.	267	L.	297	J.	328	S.	358
25	M.	25	V.	56	V.	84	L.	115	Mi.	145	S.	176	L.	206	J.	237	D.	268	M.	298	V.	329	D.	359
26	Mi.	26	S.	57	S.	85	M.	116	J.	146	D.	177	M.	207	V.	238	L.	269	Mi.	299	S.	330	L.	360
27	J.	27	D.	58	D.	86	Mi.	117	V.	147	L.	178	Mi.	208	S.	239	M.	270	J.	300	D.	331	M.	361
28	V.	28	L.	59	L.	87	J.	118	S.	148	M.	179	J.	209	D.	240	Mi.	271	V.	301	L.	332	Mi.	362
29	S.	29			M.	88	V.	119	D.	149	Mi.	180	V.	210	L.	241	J.	272	S.	302	M.	333	J.	363
30	D.	30			Mi.	89	S.	120	L.	150	J.	181	S.	211	M.	242	V.	273	D.	303	Mi.	334	V.	364
31	L.	31			J.	90			M.	151			D.	212	Mi.	243			L.	304			S.	365

ECLIPSES

Se producirán dos eclipses de Sol y dos de Luna:

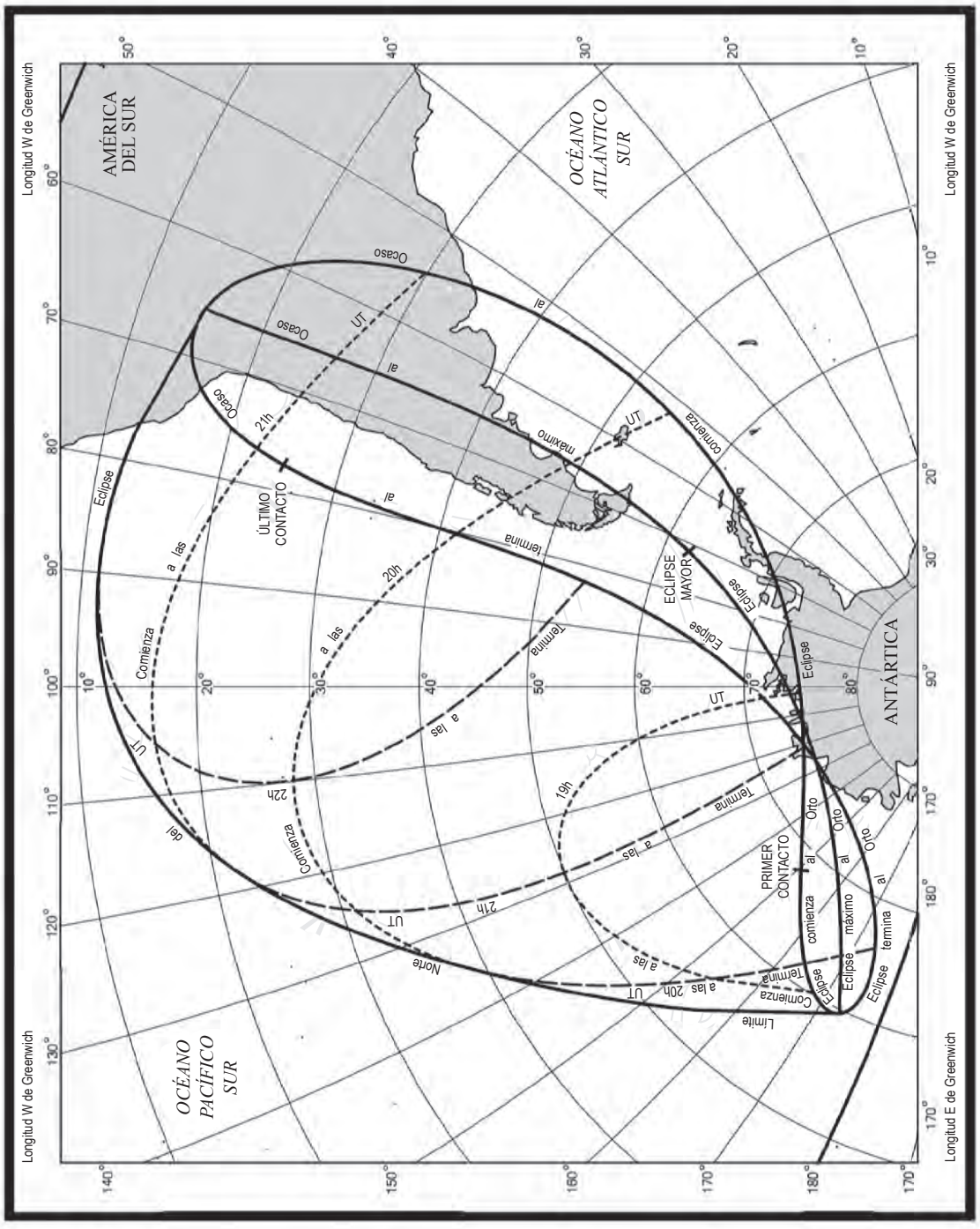
1. *Eclipse parcial de Sol,* el 30 de abril. Véase mapa en página 6. El eclipse comenzará a las $18^h\ 45^m$ y terminará a las $22^h\ 38^m$. El momento del máximo eclipse será a las $20^h\ 41^m$, cuando el 64 por ciento del diámetro del Sol se oscurezca.

2. *Eclipse total de Luna,* el 16 de mayo. El umbral del eclipse comenzará a las $02^h\ 28^m$ y terminará a las $05^h\ 55^m$. El eclipse total será entre las $03^h\ 29^m$ y las $04^h\ 54^m$. Será visible desde la mayor parte de África, excepto la parte noreste, Europa occidental, Islandia, el extremo sur de Groenlandia, las Américas, exceptuando el noroeste de Canadá y Alaska y la mayor parte de la Polinesia, excluyendo las zonas más occidentales.

3. *Eclipse parcial de Sol*, el 25 de octubre. Véase mapa en página 7. El eclipse empezará a las $08^h\ 58^m$ y terminará a las $13^h\ 02^m$. El momento del máximo eclipse será a las $11^h\ 00^m$, cuando el 86 por ciento del diámetro del Sol se oscurezca.

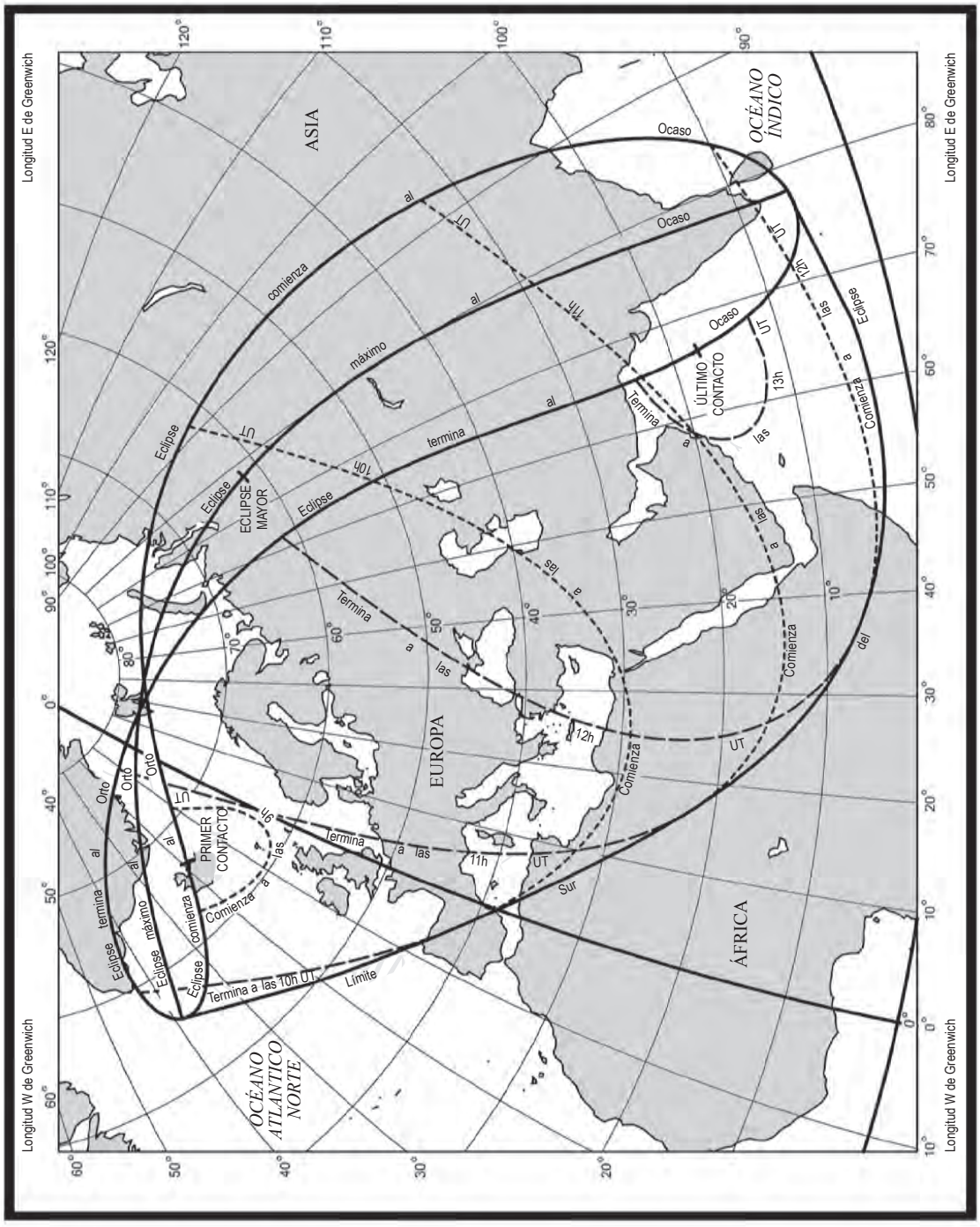
4. *Eclipse total de Luna,* el 8 de noviembre. El umbral del eclipse comenzará a las $09^h\ 09^m$ y terminará a las $12^h\ 49^m$. El eclipse total será entre las $10^h\ 16^m$ y las $11^h\ 42^m$. Será visible desde la parte noroeste de Sudamérica, América del Norte y Central, la región del océano Pacífico, Australasia, sureste de Asia, Japón, China y Rusia oriental y central.

Nota: Las horas indicadas corresponden a la Hora media de Greenwich (HmGr).



DIAGRAMAS DE LOS ECLIPSES SOLARES

Las principales características indicadas en los diagramas son: el paso de los eclipses; los límites norte y sur; las curvas de orto y ocaso del Sol; las líneas segmentadas que muestran las horas de inicio y término a intervalos de una hora. Mayores detalles del paso y momentos de los eclipses se encuentran en *"The Astronomical Almanac"* (Almanaque Astronómico).


ASIA
EUROPA
ÁFRICA
OCÉANO ATLÁNTICO NORTE
OCÉANO ÍNDICO
Longitud E de Greenwich
Longitud W de Greenwich
Ocaso
Onto
Eclipse comienza al Onto UT
Eclipse termina al Onto UT
Eclipse máximo 9h
Eclipse comienza a las 10h UT
Eclipse termina a las 10h UT
Límite
Comienza a las 11h UT
Termina a las 12h UT
Comienza a las 12h UT
Termina a las 13h UT
Comienza a las 13h UT
PRIMER CONTACTO
ÚLTIMO CONTACTO
ECLIPSE MAYOR
Sur
del

VISIBILIDAD DE LOS PLANETAS

VENUS es un cuerpo brillante en el cielo que puede verse por la tarde desde comienzos de enero; pero, después de unos pocos días, se acerca demasiado al Sol como para ser observado; hasta mediados de enero, cuando reaparece como estrella matutina. Posteriormente, puede verse en el cielo por la mañana hasta mediados de septiembre, cuando vuelve a acercarse demasiado al Sol como para ser observado; desde principios de diciembre hasta finales del año, es visible en el cielo por la tarde. Venus está en conjunción con Marte el 13 de febrero y el 12 de marzo, con Saturno el 29 de marzo y con Júpiter el 30 de abril y con Mercurio, el 29 de diciembre.

MARTE es visible en el cielo por la mañana desde principios de año, cuando pasa por *Ofiuco*, Sagitario, Capricornio, Acuario, Piscis, brevemente hacia *Cetus*, regresando a Piscis a mediados de junio, luego hacia Aries y Tauro. Su elongación W aumenta gradualmente (pasando a 4º N de *Aldebarán* el 9 de septiembre) hasta estar en oposición el 8 de diciembre, cuando es visible durante toda la noche. Su elongación E disminuye en forma gradual el resto del año (pasando a 8° N de *Aldebarán* el 22 de diciembre). Marte está en conjunción con Venus el 13 de febrero y el 12 de marzo, con Saturno el 4 de abril y con Júpiter, el 29 de mayo.

JÚPITER puede ser visto en el cielo por la tarde en Acuario a comienzos del año. Se acerca demasiado al Sol como para ser observado después de mediados de febrero y reaparece en el cielo por la mañana durante mediados de marzo. Se mueve hacia Piscis a mediados de abril y a *Cetus* a fines de junio. Su elongación W aumenta gradualmente, y a principios de septiembre, vuelve a dirigirse hacia Piscis. Júpiter está en oposición el 26 de septiembre cuando es visible a lo largo de toda la noche, y desde fines de diciembre, puede ser visto en el cielo por la tarde. Júpiter está en conjunción con Mercurio el 20 de marzo, con Venus el 30 de abril y con Marte, el 29 de mayo.

SATURNO puede verse en Capricornio en el cielo por la tarde y permanece en esta constelación por todo el año. A mediados de enero, se acerca demasiado al Sol como para ser observado y reaparece en el cielo por la mañana a fines de febrero. Está en oposición el 14 de agosto cuando es visible durante toda la noche. Su elongación E disminuye gradualmente y a mediados de noviembre, puede ser visto en el cielo por la tarde. Saturno está en conjunción con Mercurio el 2 de marzo, con Venus el 29 de marzo y con Marte, el 4 de abril.

MERCURIO puede ser visto solo a baja altura por el E antes del orto de Sol, o también a baja altura por el W después del ocaso de Sol (en las horas cercanas al inicio y término del crepúsculo civil). Es visible por las mañanas, entre las siguientes fechas aproximadas: desde 29 de enero (+2,2) al 24 de marzo (–1,0), desde el 31 de mayo (+3,2) al 9 de julio (–1,4) y desde el 30 de septiembre (+1,9) hasta el 26 de octubre (–1,1); el planeta es más luminoso al final de cada período. Es visible por las tardes entre las siguientes fechas aproximadas: desde el 1 de enero (–0,7) hasta el 17 de enero (+1,4), desde el 11 de abril (–1,5) hasta el 12 de mayo (+2,9), desde el 25 de julio (–1,2) hasta el 17 de septiembre (+2,6), desde el 25 de noviembre (–0,7) hasta el 31 de diciembre (+0,8); el planeta es más luminoso al principio de cada período. **Los valores entre paréntesis representan las magnitudes.**

DIAGRAMA PLANETARIO

Descripción general: El diagrama de la página opuesta muestra, de modo gráfico, para cualquier fecha del año, la hora media local del paso por el meridiano del Sol, de los cinco planetas (Mercurio, Venus, Marte, Júpiter y Saturno) y de los AHS cada 30°; si el usuario lo requiere, puede trazar líneas intermedias a las del gráfico para estrellas particulares. El propósito de este diagrama es proporcionar una imagen general de la disponibilidad de los planetas y estrellas para su observación.

A cada lado de la línea que marca la hora del paso del Sol por el meridiano, se muestra una banda sombreada de 45 minutos de ancho, para indicar que los planetas y la mayoría de las estrellas que crucen el meridiano dentro de ese lapso, estarán demasiado cerca de este como para poder observarlos.

Método de uso e interpretación. Para cualquier fecha, el diagrama entrega inmediatamente las horas medias locales del paso del Sol, planetas y estrellas por el meridiano, y consecuentemente, la siguiente información:

a) Si un planeta o estrella está demasiado cerca del Sol como para poder ser observado.

b) Alguna indicación de su posición en el cielo, especialmente durante el crepúsculo.

c) La proximidad de otros planetas.

Cuando el paso por el meridiano de un planeta remoto ocurre a medianoche, el cuerpo celeste está en oposición al Sol y es visible toda la noche; dicho planeta puede entonces ser observado durante las auroras y crepúsculos. A medida que la hora de paso por el meridiano decrece, el cuerpo celeste eventualmente deja de ser observable en la mañana, pero su altura sobre el horizonte hacia el E aumenta en forma gradual a la hora del ocaso del Sol; este proceso continúa hasta que el cuerpo se encuentre en el meridiano durante el crepúsculo. De ahí en adelante, el cuerpo es observable sobre el horizonte por el W y su altura decrece gradualmente al ocaso del Sol; eventualmente el cuerpo queda demasiado cerca del Sol como para poder ser observado. Cuando el cuerpo vuelve a ser visible, aparecerá a baja altura por el E durante la aurora; su altura al orto del Sol aumentará hasta que el paso por el meridiano ocurra durante la aurora. Entonces, a medida que la hora del paso por el meridiano decrece hacia la 0^h, el cuerpo celeste es observable hacia el W durante la aurora con una disminución gradual en su altura, hasta entrar nuevamente en oposición.

NO CONFUNDIR

Mercurio con Saturno a mediados de enero y nuevamente desde finales de febrero a principios de marzo; en ambas ocasiones, Mercurio es el objeto más brillante.

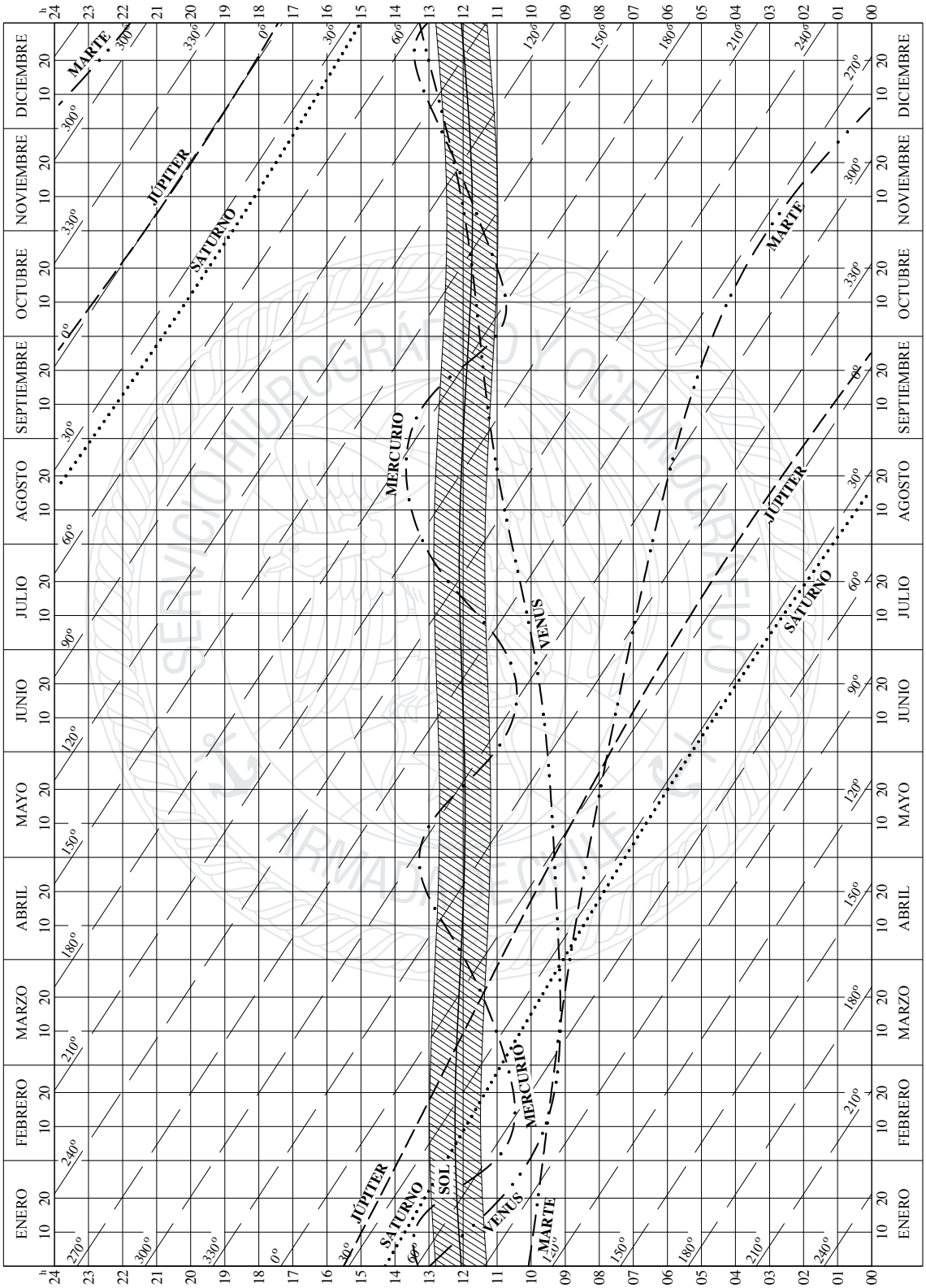
Venus con Marte desde comienzos de marzo a fines del mismo mes, con Saturno desde finales de marzo a principios de abril, con Júpiter desde fines de abril a inicios de mayo y con Mercurio, a principios de diciembre y, nuevamente, a fines del mismo mes; en todas las ocasiones Venus es el objeto más brillante.

Júpiter con Mercurio a mediados de marzo y con Marte desde fines de mayo a principios de junio; en ambas ocasiones, Júpiter es el objeto más brillante.

Marte con Saturno, desde fines de marzo hasta mediados de abril cuando Saturno sea el objeto más brillante.

DIAGRAMA PLANETARIO, 2022

HORA MEDIA LOCAL DE PASO POR EL MERIDIANO



UT (HmGr)	ARIES	VENUS −4·2		MARTE +1·5		JÚPITER −2·1		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1 00	100 37.6	166 00.5	S18 35.2	208 58.0	S22 30.0	127 39.4	S12 12.7	146 01.3	S18 00.6
01	115 40.0	181 04.3	34.7	223 58.6	30.2	142 41.4	12.5	161 03.5	00.6
02	130 42.5	196 08.1	34.3	238 59.1	30.5	157 43.4	12.3	176 05.7	00.5
03	145 45.0	211 12.0	33.9	253 59.7	30.7	172 45.4	12.1	191 07.9	00.4
04	160 47.4	226 15.8	33.4	269 00.3	31.0	187 47.3	12.0	206 10.1	00.3
05	175 49.9	241 19.7	33.0	284 00.8	31.2	202 49.3	11.8	221 12.3	00.3
06	190 52.4	256 23.6	S18 32.5	299 01.4	S22 31.5	217 51.3	S12 11.6	236 14.5	S18 00.2
07	205 54.8	271 27.4	32.1	314 01.9	31.7	232 53.3	11.4	251 16.6	00.1
08	220 57.3	286 31.3	31.7	329 02.5	32.0	247 55.3	11.3	266 18.8	00.0
S 09	235 59.8	301 35.1	31.2	344 03.1	32.2	262 57.3	11.1	281 21.0	18 00.0
Á 10	251 02.2	316 39.0	30.8	359 03.6	32.5	277 59.3	10.9	296 23.2	17 59.9
B 11	266 04.7	331 42.9	30.4	14 04.2	32.7	293 01.3	10.7	311 25.4	59.8
A 12	281 07.2	346 46.8	S18 29.9	29 04.7	S22 33.0	308 03.3	S12 10.5	326 27.6	S17 59.7
D 13	296 09.6	1 50.6	29.5	44 05.3	33.2	323 05.3	10.4	341 29.8	59.7
O 14	311 12.1	16 54.5	29.1	59 05.8	33.5	338 07.3	10.2	356 32.0	59.6
15	326 14.5	31 58.4	28.6	74 06.4	33.7	353 09.3	10.0	11 34.2	59.5
16	341 17.0	47 02.3	28.2	89 07.0	33.9	8 11.3	09.8	26 36.4	59.4
17	356 19.5	62 06.2	27.8	104 07.5	34.2	23 13.3	09.7	41 38.5	59.4
18	11 21.9	77 10.1	S18 27.3	119 08.1	S22 34.4	38 15.3	S12 09.5	56 40.7	S17 59.3
19	26 24.4	92 14.0	26.9	134 08.6	34.7	53 17.3	09.3	71 42.9	59.2
20	41 26.9	107 17.9	26.5	149 09.2	34.9	68 19.3	09.1	86 45.1	59.1
21	56 29.3	122 21.8	26.0	164 09.7	35.2	83 21.3	09.0	101 47.3	59.1
22	71 31.8	137 25.7	25.6	179 10.3	35.4	98 23.3	08.8	116 49.5	59.0
23	86 34.3	152 29.6	25.2	194 10.8	35.6	113 25.3	08.6	131 51.7	58.9
2 00	101 36.7	167 33.5	S18 24.7	209 11.4	S22 35.9	128 27.3	S12 08.4	146 53.9	S17 58.8
01	116 39.2	182 37.4	24.3	224 12.0	36.1	143 29.3	08.2	161 56.1	58.8
02	131 41.7	197 41.3	23.9	239 12.5	36.4	158 31.3	08.1	176 58.3	58.7
03	146 44.1	212 45.2	23.4	254 13.1	36.6	173 33.2	07.9	192 00.4	58.6
04	161 46.6	227 49.1	23.0	269 13.6	36.8	188 35.2	07.7	207 02.6	58.5
05	176 49.0	242 53.1	22.6	284 14.2	37.1	203 37.2	07.5	222 04.8	58.5
06	191 51.5	257 57.0	S18 22.2	299 14.7	S22 37.3	218 39.2	S12 07.4	237 07.0	S17 58.4
07	206 54.0	273 00.9	21.7	314 15.3	37.6	233 41.2	07.2	252 09.2	58.3
D 08	221 56.4	288 04.8	21.3	329 15.8	37.8	248 43.2	07.0	267 11.4	58.2
O 09	236 58.9	303 08.8	20.9	344 16.4	38.0	263 45.2	06.8	282 13.6	58.2
M 10	252 01.4	318 12.7	20.5	359 16.9	38.3	278 47.2	06.6	297 15.8	58.1
I 11	267 03.8	333 16.6	20.0	14 17.5	38.5	293 49.2	06.5	312 18.0	58.0
N 12	282 06.3	348 20.6	S18 19.6	29 18.0	S22 38.8	308 51.2	S12 06.3	327 20.1	S17 57.9
G 13	297 08.8	3 24.5	19.2	44 18.6	39.0	323 53.2	06.1	342 22.3	57.9
O 14	312 11.2	18 28.5	18.8	59 19.2	39.2	338 55.2	05.9	357 24.5	57.8
15	327 13.7	33 32.4	18.3	74 19.7	39.5	353 57.2	05.7	12 26.7	57.7
16	342 16.2	48 36.4	17.9	89 20.3	39.7	8 59.2	05.6	27 28.9	57.6
17	357 18.6	63 40.3	17.5	104 20.8	39.9	24 01.2	05.4	42 31.1	57.6
18	12 21.1	78 44.3	S18 17.1	119 21.4	S22 40.2	39 03.1	S12 05.2	57 33.3	S17 57.5
19	27 23.5	93 48.2	16.7	134 21.9	40.4	54 05.1	05.0	72 35.5	57.4
20	42 26.0	108 52.2	16.2	149 22.5	40.6	69 07.1	04.9	87 37.6	57.3
21	57 28.5	123 56.1	15.8	164 23.0	40.9	84 09.1	04.7	102 39.8	57.3
22	72 30.9	139 00.1	15.4	179 23.6	41.1	99 11.1	04.5	117 42.0	57.2
23	87 33.4	154 04.1	15.0	194 24.1	41.3	114 13.1	04.3	132 44.2	57.1
3 00	102 35.9	169 08.0	S18 14.6	209 24.7	S22 41.6	129 15.1	S12 04.1	147 46.4	S17 57.0
01	117 38.3	184 12.0	14.1	224 25.2	41.8	144 17.1	04.0	162 48.6	57.0
02	132 40.8	199 16.0	13.7	239 25.8	42.0	159 19.1	03.8	177 50.8	56.9
03	147 43.3	214 20.0	13.3	254 26.3	42.3	174 21.1	03.6	192 53.0	56.8
04	162 45.7	229 23.9	12.9	269 26.9	42.5	189 23.1	03.4	207 55.1	56.7
05	177 48.2	244 27.9	12.5	284 27.4	42.7	204 25.0	03.2	222 57.3	56.7
06	192 50.7	259 31.9	S18 12.1	299 28.0	S22 43.0	219 27.0	S12 03.1	237 59.5	S17 56.6
07	207 53.1	274 35.9	11.6	314 28.5	43.2	234 29.0	02.9	253 01.7	56.5
L 08	222 55.6	289 39.9	11.2	329 29.1	43.4	249 31.0	02.7	268 03.9	56.4
U 09	237 58.0	304 43.9	10.8	344 29.6	43.6	264 33.0	02.5	283 06.1	56.4
N 10	253 00.5	319 47.9	10.4	359 30.2	43.9	279 35.0	02.3	298 08.3	56.3
E 11	268 03.0	334 51.8	10.0	14 30.7	44.1	294 37.0	02.2	313 10.5	56.2
S 12	283 05.4	349 55.8	S18 09.6	29 31.3	S22 44.3	309 39.0	S12 02.0	328 12.6	S17 56.1
13	298 07.9	4 59.8	09.2	44 31.8	44.6	324 41.0	01.8	343 14.8	56.1
14	313 10.4	20 03.8	08.7	59 32.4	44.8	339 43.0	01.6	358 17.0	56.0
15	328 12.8	35 07.8	08.3	74 32.9	45.0	354 44.9	01.4	13 19.2	55.9
16	343 15.3	50 11.8	07.9	89 33.5	45.2	9 46.9	01.3	28 21.4	55.8
17	358 17.8	65 15.9	07.5	104 34.0	45.5	24 48.9	01.1	43 23.6	55.7
18	13 20.2	80 19.9	S18 07.1	119 34.6	S22 45.7	39 50.9	S12 00.9	58 25.8	S17 55.7
19	28 22.7	95 23.9	06.7	134 35.1	45.9	54 52.9	00.7	73 27.9	55.6
20	43 25.2	110 27.9	06.3	149 35.6	46.1	69 54.9	00.5	88 30.1	55.5
21	58 27.6	125 31.9	05.9	164 36.2	46.4	84 56.9	00.4	103 32.3	55.4
22	73 30.1	140 35.9	05.5	179 36.7	46.6	99 58.9	00.2	118 34.5	55.4
23	88 32.5	155 39.9	05.1	194 37.3	46.8	115 00.8	00.0	133 36.7	55.3
	h m								
Paso Mer.	17 10.7	*v* 3.9	*d* 0.4	*v* 0.6	*d* 0.2	*v* 2.0	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.4	S40 13.3
Achernar	335 22.0	S57 07.9
Acrux	173 02.7	S63 12.9
Adhara	255 07.4	S29 00.1
Aldebaran	290 42.2	N16 33.2
Alioth	166 15.2	N55 50.2
Alkaid	152 54.2	N49 12.0
Alnair	27 36.4	S46 51.5
Alnilam	275 39.9	S 1 11.3
Alphard	217 49.9	S 8 45.2
Alphecca	126 06.1	N26 38.4
Alpheratz	357 37.4	N29 12.8
Altair	62 02.7	N 8 55.6
Ankaa	353 09.7	S42 11.5
Antares	112 19.2	S26 28.7
Arcturus	145 50.3	N19 04.0
Atria	107 16.1	S69 03.8
Avior	234 15.1	S59 34.6
Bellatrix	278 25.2	N 6 22.1
Betelgeuse	270 54.4	N 7 24.6
Canopus	263 52.9	S52 42.5
Capella	280 25.1	N46 01.2
Deneb	49 27.9	N45 21.6
Denebola	182 27.4	N14 26.9
Diphda	348 49.8	S17 52.2
Dubhe	193 43.8	N61 37.7
Elnath	278 04.6	N28 37.5
Eltanin	90 43.9	N51 29.1
Enif	33 41.5	N 9 58.5
Fomalhaut	15 17.4	S29 30.6
Gacrux	171 54.3	S57 13.8
Gienah	175 46.1	S17 39.7
Hadar	148 39.7	S60 28.4
Hamal	327 53.8	N23 34.0
Kaus Aust.	83 36.2	S34 22.4
Kochab	137 20.5	N74 03.7
Markab	13 32.5	N15 19.4
Menkar	314 08.5	N 4 10.5
Menkent	148 00.7	S36 28.4
Miaplacidus	221 37.9	S69 48.2
Mirfak	308 31.4	N49 56.4
Nunki	75 51.2	S26 16.2
Peacock	53 10.2	S56 40.0
Pollux	243 20.0	N27 58.3
Procyon	244 53.1	N 5 10.1
Rasalhague	96 01.2	N12 32.6
Regulus	207 36.9	N11 51.6
Rigel	281 05.9	S 8 10.7
Rigil Kent.	139 44.0	S60 55.2
Sabik	102 05.9	S15 45.1
Schedar	349 33.8	N56 39.7
Shaula	96 14.1	S37 07.1
Sirius	258 28.1	S16 44.8
Spica	158 25.0	S11 16.4
Suhail	222 47.7	S43 31.1
Vega	80 35.3	N38 48.2
Zuben'ubi	136 58.9	S16 07.8

	AHS	Paso Mer.
	° ′	h m
Venus	65 56.7	12 46
Marte	107 34.7	10 03
Júpiter	26 50.5	15 24
Saturno	45 17.2	14 10

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	′	°	′	′	′
1 00	179	10.3	S23	01.2	206	32.5	2.8	S23	55.2	7.3	61.1
01	194	10.0		01.0	220	54.3	2.8	24	02.5	7.1	61.1
02	209	09.7		00.8	235	16.1	2.7	24	09.6	7.0	61.1
03	224	09.4	. .	00.6	249	37.8	2.6	24	16.6	6.8	61.1
04	239	09.1		00.4	263	59.4	2.5	24	23.4	6.6	61.1
05	254	08.8		00.2	278	20.9	2.4	24	30.0	6.4	61.2
06	269	08.6	S23	00.0	292	42.3	2.4	S24	36.4	6.2	61.2
07	284	08.3	22	59.8	307	03.7	2.2	24	42.6	6.0	61.2
S 08	299	08.0		59.6	321	24.9	2.2	24	48.6	5.9	61.2
Á 09	314	07.7	. .	59.4	335	46.1	2.1	24	54.5	5.7	61.2
B 10	329	07.4		59.2	350	07.2	2.1	25	00.2	5.4	61.2
A 11	344	07.1		58.9	4	28.3	1.9	25	05.6	5.3	61.2
D 12	359	06.8	S22	58.7	18	49.2	1.9	S25	10.9	5.1	61.2
O 13	14	06.5		58.5	33	10.1	1.8	25	16.0	4.9	61.2
14	29	06.2		58.3	47	30.9	1.8	25	20.9	4.7	61.2
15	44	05.9	. .	58.1	61	51.7	1.7	25	25.6	4.6	61.2
16	59	05.6		57.9	76	12.4	1.6	25	30.2	4.3	61.2
17	74	05.3		57.7	90	33.0	1.6	25	34.5	4.1	61.2
18	89	05.0	S22	57.5	104	53.6	1.5	S25	38.6	3.9	61.2
19	104	04.7		57.2	119	14.1	1.5	25	42.5	3.7	61.2
20	119	04.4		57.0	133	34.6	1.4	25	46.2	3.5	61.2
21	134	04.1	. .	56.8	147	55.0	1.4	25	49.7	3.3	61.2
22	149	03.8		56.6	162	15.4	1.4	25	53.0	3.2	61.2
23	164	03.5		56.4	176	35.8	1.3	25	56.2	2.9	61.2
2 00	179	03.2	S22	56.1	190	56.1	1.3	S25	59.1	2.7	61.2
01	194	03.0		55.9	205	16.4	1.2	26	01.8	2.5	61.2
02	209	02.7		55.7	219	36.6	1.2	26	04.3	2.3	61.2
03	224	02.4	. .	55.5	233	56.8	1.2	26	06.6	2.1	61.2
04	239	02.1		55.3	248	17.0	1.2	26	08.7	1.8	61.2
05	254	01.8		55.0	262	37.2	1.2	26	10.5	1.7	61.2
06	269	01.5	S22	54.8	276	57.4	1.1	S26	12.2	1.5	61.2
07	284	01.2		54.6	291	17.5	1.2	26	13.7	1.2	61.2
D 08	299	00.9		54.4	305	37.7	1.1	26	14.9	1.1	61.2
O 09	314	00.6	. .	54.1	319	57.8	1.1	26	16.0	0.8	61.2
M 10	329	00.3		53.9	334	17.9	1.1	26	16.8	0.7	61.2
I 11	344	00.0		53.7	348	38.0	1.2	26	17.5	0.4	61.2
N 12	358	59.7	S22	53.4	2	58.2	1.1	S26	17.9	0.2	61.2
G 13	13	59.4		53.2	17	18.3	1.1	26	18.1	0.1	61.2
O 14	28	59.2		53.0	31	38.4	1.2	26	18.2	0.2	61.2
15	43	58.9	. .	52.8	45	58.6	1.1	26	18.0	0.4	61.2
16	58	58.6		52.5	60	18.7	1.2	26	17.6	0.6	61.2
17	73	58.3		52.3	74	38.9	1.2	26	17.0	0.8	61.2
18	88	58.0	S22	52.1	88	59.1	1.3	S26	16.2	1.1	61.1
19	103	57.7		51.8	103	19.4	1.2	26	15.1	1.2	61.1
20	118	57.4		51.6	117	39.6	1.3	26	13.9	1.4	61.1
21	133	57.1	. .	51.3	131	59.9	1.4	26	12.5	1.6	61.1
22	148	56.8		51.1	146	20.3	1.4	26	10.9	1.9	61.1
23	163	56.5		50.9	160	40.7	1.4	26	09.0	2.0	61.1
3 00	178	56.2	S22	50.6	175	01.1	1.4	S26	07.0	2.3	61.1
01	193	56.0		50.4	189	21.5	1.5	26	04.7	2.4	61.1
02	208	55.7		50.2	203	42.0	1.6	26	02.3	2.6	61.0
03	223	55.4	. .	49.9	218	02.6	1.6	25	59.7	2.9	61.0
04	238	55.1		49.7	232	23.2	1.7	25	56.8	3.0	61.0
05	253	54.8		49.4	246	43.9	1.7	25	53.8	3.3	61.0
06	268	54.5	S22	49.2	261	04.6	1.8	S25	50.5	3.4	61.0
07	283	54.2		48.9	275	25.4	1.9	25	47.1	3.6	61.0
L 08	298	53.9		48.7	289	46.3	1.9	25	43.5	3.9	60.9
U 09	313	53.6	. .	48.4	304	07.2	2.0	25	39.6	4.0	60.9
N 10	328	53.4		48.2	318	28.2	2.1	25	35.6	4.2	60.9
E 11	343	53.1		48.0	332	49.3	2.2	25	31.4	4.4	60.9
S 12	358	52.8	S22	47.7	347	10.5	2.2	S25	27.0	4.6	60.9
13	13	52.5		47.5	1	31.7	2.3	25	22.4	4.8	60.8
14	28	52.2		47.2	15	53.0	2.4	25	17.6	4.9	60.8
15	43	51.9	. .	47.0	30	14.4	2.5	25	12.7	5.2	60.8
16	58	51.6		46.7	44	35.9	2.6	25	07.5	5.3	60.8
17	73	51.3		46.4	58	57.5	2.7	25	02.2	5.5	60.7
18	88	51.1	S22	46.2	73	19.2	2.8	S24	56.7	5.7	60.7
19	103	50.8		45.9	87	41.0	2.9	24	51.0	5.9	60.7
20	118	50.5		45.7	102	02.9	2.9	24	45.1	6.1	60.7
21	133	50.2	. .	45.4	116	24.8	3.1	24	39.0	6.2	60.7
22	148	49.9		45.2	130	46.9	3.2	24	32.8	6.4	60.6
23	163	49.6		44.9	145	09.1	3.2	S24	26.4	6.6	60.6
	S/D	16.3	d	0.2	S/D		16.7		16.7		16.6

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		1	2	3	4
°	h m	h m	h m	h m	h m	h m	h m
N 72	08 23	10 39	▬	▬	▬	▬	▬
N 70	08 04	09 48	▬	▬	▬	▬	▬
68	07 49	09 16	▬	▬	▬	▬	▬
66	07 37	08 52	10 26	▬	▬	▬	12 39
64	07 26	08 34	09 48	09 35	▬	12 09	11 53
62	07 17	08 18	09 22	08 42	10 21	11 08	11 23
60	07 09	08 05	09 02	08 10	09 40	10 34	11 00
N 58	07 02	07 54	08 45	07 47	09 12	10 09	10 41
56	06 55	07 44	08 31	07 27	08 50	09 49	10 26
54	06 50	07 35	08 19	07 11	08 32	09 32	10 12
52	06 44	07 27	08 08	06 58	08 16	09 17	10 00
50	06 39	07 20	07 58	06 45	08 03	09 05	09 50
45	06 28	07 05	07 38	06 21	07 36	08 39	09 28
N 40	06 18	06 52	07 22	06 01	07 14	08 18	09 10
35	06 09	06 40	07 08	05 44	06 56	08 01	08 55
30	06 00	06 30	06 56	05 30	06 41	07 46	08 42
20	05 44	06 11	06 35	05 06	06 15	07 21	08 19
N 10	05 28	05 55	06 17	04 45	05 53	06 59	08 00
0	05 12	05 38	06 00	04 26	05 32	06 38	07 42
S 10	04 53	05 20	05 43	04 07	05 11	06 18	07 23
20	04 31	05 00	05 25	03 46	04 49	05 56	07 04
30	04 03	04 36	05 03	03 23	04 23	05 30	06 41
35	03 44	04 21	04 50	03 09	04 08	05 15	06 28
40	03 22	04 03	04 36	02 53	03 50	04 58	06 12
45	02 52	03 41	04 18	02 35	03 29	04 37	05 54
S 50	02 09	03 12	03 56	02 11	03 03	04 11	05 31
52	01 43	02 58	03 46	02 00	02 50	03 58	05 20
54	01 03	02 41	03 34	01 48	02 35	03 43	05 07
56	////	02 19	03 20	01 33	02 18	03 26	04 53
58	////	01 52	03 04	01 17	01 58	03 05	04 36
S 60	////	01 09	02 45	00 56	01 32	02 39	04 15

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	1	2	3	4
°	h m	h m	h m	h m	h m	h m	h m
N 72	▬	13 29	15 46	▬	▬	▬	▬
N 70	▬	14 21	16 04	▬	▬	▬	▬
68	▬	14 53	16 19	▬	▬	▬	▬
66	13 42	15 16	16 32	▬	▬	▬	15 27
64	14 20	15 35	16 42	11 40	▬	13 45	16 12
62	14 46	15 50	16 51	12 33	13 13	14 45	16 41
60	15 07	16 03	16 59	13 05	13 55	15 19	17 03
N 58	15 23	16 14	17 06	13 30	14 23	15 44	17 21
56	15 37	16 24	17 13	13 49	14 45	16 04	17 36
54	15 50	16 33	17 19	14 06	15 03	16 20	17 49
52	16 00	16 41	17 24	14 20	15 18	16 34	18 01
50	16 10	16 48	17 29	14 32	15 32	16 47	18 11
45	16 30	17 03	17 41	14 58	15 59	17 12	18 32
N 40	16 46	17 17	17 51	15 18	16 21	17 32	18 48
35	17 00	17 28	18 00	15 35	16 38	17 49	19 03
30	17 12	17 38	18 08	15 50	16 54	18 04	19 15
20	17 33	17 57	18 24	16 15	17 20	18 28	19 36
N 10	17 51	18 13	18 40	16 37	17 42	18 49	19 54
0	18 08	18 30	18 56	16 57	18 03	19 09	20 10
S 10	18 25	18 48	19 15	17 17	18 24	19 28	20 27
20	18 43	19 08	19 37	17 39	18 47	19 49	20 45
30	19 05	19 32	20 05	18 04	19 12	20 13	21 05
35	19 17	19 47	20 23	18 19	19 28	20 27	21 16
40	19 32	20 05	20 46	18 36	19 45	20 43	21 30
45	19 50	20 27	21 15	18 57	20 06	21 03	21 45
S 50	20 11	20 55	21 58	19 23	20 33	21 26	22 05
52	20 22	21 10	22 24	19 35	20 46	21 38	22 14
54	20 34	21 27	23 02	19 50	21 01	21 51	22 24
56	20 47	21 48	////	20 07	21 18	22 06	22 35
58	21 03	22 15	////	20 27	21 39	22 23	22 48
S 60	21 23	22 56	////	20 53	22 05	22 44	23 03

Día	SOL			LUNA				
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
1	03 18	03 32	12 04	10 41	23 14	28	2
2	03 46	04 00	12 04	11 48	24 21	29	0
3	04 14	04 28	12 04	12 54	00 21	01	1

UT (HmGr)	ARIES	VENUS −4·3		MARTE +1·5		JÚPITER −2·1		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
4 00	103 35.0	170 44.0	S18 04.7	209 37.8	S22 47.0	130 02.8	S11 59.8	148 38.9	S17 55.2
01	118 37.5	185 48.0	04.3	224 38.4	47.3	145 04.8	59.6	163 41.1	55.1
02	133 39.9	200 52.0	03.8	239 38.9	47.5	160 06.8	59.5	178 43.3	55.1
03	148 42.4	215 56.0	03.4	254 39.5	47.7	175 08.8	59.3	193 45.4	55.0
04	163 44.9	231 00.1	03.0	269 40.0	47.9	190 10.8	59.1	208 47.6	54.9
05	178 47.3	246 04.1	02.6	284 40.6	48.2	205 12.8	58.9	223 49.8	54.8
06	193 49.8	261 08.1	S18 02.2	299 41.1	S22 48.4	220 14.8	S11 58.7	238 52.0	S17 54.8
07	208 52.3	276 12.1	01.8	314 41.7	48.6	235 16.7	58.6	253 54.2	54.7
08	223 54.7	291 16.2	01.4	329 42.2	48.8	250 18.7	58.4	268 56.4	54.6
M 09	238 57.2	306 20.2	01.0	344 42.7	49.0	265 20.7	58.2	283 58.6	54.5
A 10	253 59.7	321 24.3	00.6	359 43.3	49.3	280 22.7	58.0	299 00.7	54.5
R 11	269 02.1	336 28.3	18 00.2	14 43.8	49.5	295 24.7	57.8	314 02.9	54.4
T 12	284 04.6	351 32.3	S17 59.8	29 44.4	S22 49.7	310 26.7	S11 57.6	329 05.1	S17 54.3
E 13	299 07.0	6 36.4	59.4	44 44.9	49.9	325 28.7	57.5	344 07.3	54.2
S 14	314 09.5	21 40.4	59.0	59 45.5	50.1	340 30.7	57.3	359 09.5	54.1
15	329 12.0	36 44.5	58.6	74 46.0	50.4	355 32.6	57.1	14 11.7	54.1
16	344 14.4	51 48.5	58.2	89 46.6	50.6	10 34.6	56.9	29 13.8	54.0
17	359 16.9	66 52.6	57.8	104 47.1	50.8	25 36.6	56.7	44 16.0	53.9
18	14 19.4	81 56.6	S17 57.4	119 47.6	S22 51.0	40 38.6	S11 56.6	59 18.2	S17 53.8
19	29 21.8	97 00.7	57.0	134 48.2	51.2	55 40.6	56.4	74 20.4	53.8
20	44 24.3	112 04.7	56.6	149 48.7	51.4	70 42.6	56.2	89 22.6	53.7
21	59 26.8	127 08.8	56.3	164 49.3	51.7	85 44.5	56.0	104 24.8	53.6
22	74 29.2	142 12.9	55.9	179 49.8	51.9	100 46.5	55.8	119 27.0	53.5
23	89 31.7	157 16.9	55.5	194 50.4	52.1	115 48.5	55.6	134 29.1	53.5
5 00	104 34.1	172 21.0	S17 55.1	209 50.9	S22 52.3	130 50.5	S11 55.5	149 31.3	S17 53.4
01	119 36.6	187 25.0	54.7	224 51.4	52.5	145 52.5	55.3	164 33.5	53.3
02	134 39.1	202 29.1	54.3	239 52.0	52.7	160 54.5	55.1	179 35.7	53.2
03	149 41.5	217 33.2	53.9	254 52.5	52.9	175 56.5	54.9	194 37.9	53.2
04	164 44.0	232 37.2	53.5	269 53.1	53.2	190 58.4	54.7	209 40.1	53.1
05	179 46.5	247 41.3	53.1	284 53.6	53.4	206 00.4	54.6	224 42.3	53.0
06	194 48.9	262 45.4	S17 52.7	299 54.2	S22 53.6	221 02.4	S11 54.4	239 44.4	S17 52.9
07	209 51.4	277 49.5	52.3	314 54.7	53.8	236 04.4	54.2	254 46.6	52.8
M 08	224 53.9	292 53.5	51.9	329 55.2	54.0	251 06.4	54.0	269 48.8	52.8
I 09	239 56.3	307 57.6	51.6	344 55.8	54.2	266 08.4	53.8	284 51.0	52.7
É 10	254 58.8	323 01.7	51.2	359 56.3	54.4	281 10.3	53.6	299 53.2	52.6
R 11	270 01.3	338 05.8	50.8	14 56.9	54.6	296 12.3	53.5	314 55.4	52.5
C 12	285 03.7	353 09.8	S17 50.4	29 57.4	S22 54.9	311 14.3	S11 53.3	329 57.5	S17 52.5
O 13	300 06.2	8 13.9	50.0	44 57.9	55.1	326 16.3	53.1	344 59.7	52.4
L 14	315 08.6	23 18.0	49.6	59 58.5	55.3	341 18.3	52.9	0 01.9	52.3
E 15	330 11.1	38 22.1	49.2	74 59.0	55.5	356 20.3	52.7	15 04.1	52.2
S 16	345 13.6	53 26.2	48.9	89 59.6	55.7	11 22.2	52.5	30 06.3	52.2
17	0 16.0	68 30.2	48.5	105 00.1	55.9	26 24.2	52.4	45 08.5	52.1
18	15 18.5	83 34.3	S17 48.1	120 00.6	S22 56.1	41 26.2	S11 52.2	60 10.6	S17 52.0
19	30 21.0	98 38.4	47.7	135 01.2	56.3	56 28.2	52.0	75 12.8	51.9
20	45 23.4	113 42.5	47.3	150 01.7	56.5	71 30.2	51.8	90 15.0	51.8
21	60 25.9	128 46.6	46.9	165 02.3	56.7	86 32.1	51.6	105 17.2	51.8
22	75 28.4	143 50.7	46.6	180 02.8	56.9	101 34.1	51.4	120 19.4	51.7
23	90 30.8	158 54.8	46.2	195 03.3	57.1	116 36.1	51.3	135 21.6	51.6
6 00	105 33.3	173 58.9	S17 45.8	210 03.9	S22 57.3	131 38.1	S11 51.1	150 23.7	S17 51.5
01	120 35.8	189 03.0	45.4	225 04.4	57.6	146 40.1	50.9	165 25.9	51.5
02	135 38.2	204 07.1	45.1	240 04.9	57.8	161 42.1	50.7	180 28.1	51.4
03	150 40.7	219 11.2	44.7	255 05.5	58.0	176 44.0	50.5	195 30.3	51.3
04	165 43.1	234 15.2	44.3	270 06.0	58.2	191 46.0	50.3	210 32.5	51.2
05	180 45.6	249 19.3	43.9	285 06.6	58.4	206 48.0	50.2	225 34.7	51.2
06	195 48.1	264 23.4	S17 43.5	300 07.1	S22 58.6	221 50.0	S11 50.0	240 36.8	S17 51.1
07	210 50.5	279 27.5	43.2	315 07.6	58.8	236 52.0	49.8	255 39.0	51.0
J 08	225 53.0	294 31.6	42.8	330 08.2	59.0	251 53.9	49.6	270 41.2	50.9
U 09	240 55.5	309 35.7	42.4	345 08.7	59.2	266 55.9	49.4	285 43.4	50.8
E 10	255 57.9	324 39.8	42.1	0 09.2	59.4	281 57.9	49.2	300 45.6	50.8
V 11	271 00.4	339 44.0	41.7	15 09.8	59.6	296 59.9	49.1	315 47.8	50.7
E 12	286 02.9	354 48.1	S17 41.3	30 10.3	S22 59.8	312 01.9	S11 48.9	330 49.9	S17 50.6
S 13	301 05.3	9 52.2	40.9	45 10.9	23 00.0	327 03.8	48.7	345 52.1	50.5
14	316 07.8	24 56.3	40.6	60 11.4	00.2	342 05.8	48.5	0 54.3	50.5
15	331 10.3	40 00.4	40.2	75 11.9	00.4	357 07.8	48.3	15 56.5	50.4
16	346 12.7	55 04.5	39.8	90 12.5	00.6	12 09.8	48.1	30 58.7	50.3
17	1 15.2	70 08.6	39.5	105 13.0	00.8	27 11.8	47.9	46 00.8	50.2
18	16 17.6	85 12.7	S17 39.1	120 13.5	S23 01.0	42 13.7	S11 47.8	61 03.0	S17 50.1
19	31 20.1	100 16.8	38.7	135 14.1	01.2	57 15.7	47.6	76 05.2	50.1
20	46 22.6	115 20.9	38.4	150 14.6	01.4	72 17.7	47.4	91 07.4	50.0
21	61 25.0	130 25.0	38.0	165 15.1	01.6	87 19.7	47.2	106 09.6	49.9
22	76 27.5	145 29.1	37.6	180 15.7	01.8	102 21.6	47.0	121 11.8	49.8
23	91 30.0	160 33.2	37.3	195 16.2	02.0	117 23.6	46.8	136 13.9	49.8
	h m								
Paso Mer.	16 58.9	*v* 4.1	*d* 0.4	*v* 0.5	*d* 0.2	*v* 2.0	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.4	S40 13.3
Achernar	335 22.0	S57 07.9
Acrux	173 02.6	S63 12.9
Adhara	255 07.4	S29 00.1
Aldebaran	290 42.1	N16 33.2
Alioth	166 15.2	N55 50.2
Alkaid	152 54.1	N49 12.0
Alnair	27 36.4	S46 51.5
Alnilam	275 39.9	S 1 11.3
Alphard	217 49.9	S 8 45.2
Alphecca	126 06.1	N26 38.3
Alpheratz	357 37.4	N29 12.8
Altair	62 02.7	N 8 55.5
Ankaa	353 09.7	S42 11.5
Antares	112 19.2	S26 28.7
Arcturus	145 50.3	N19 04.0
Atria	107 16.1	S69 03.8
Avior	234 15.1	S59 34.6
Bellatrix	278 25.2	N 6 22.1
Betelgeuse	270 54.4	N 7 24.6
Canopus	263 52.9	S52 42.5
Capella	280 25.1	N46 01.2
Deneb	49 27.9	N45 21.6
Denebola	182 27.4	N14 26.9
Diphda	348 49.8	S17 52.2
Dubhe	193 43.8	N61 37.7
Elnath	278 04.6	N28 37.5
Eltanin	90 43.9	N51 29.1
Enif	33 41.5	N 9 58.5
Fomalhaut	15 17.4	S29 30.6
Gacrux	171 54.3	S57 13.8
Gienah	175 46.1	S17 39.7
Hadar	148 39.7	S60 28.4
Hamal	327 53.8	N23 34.0
Kaus Aust.	83 36.2	S34 22.4
Kochab	137 20.5	N74 03.6
Markab	13 32.5	N15 19.4
Menkar	314 08.5	N 4 10.5
Menkent	148 00.6	S36 28.4
Miaplacidus	221 37.9	S69 48.2
Mirfak	308 31.4	N49 56.4
Nunki	75 51.2	S26 16.2
Peacock	53 10.2	S56 40.0
Pollux	243 20.0	N27 58.3
Procyon	244 53.1	N 5 10.1
Rasalhague	96 01.2	N12 32.6
Regulus	207 36.8	N11 51.6
Rigel	281 05.9	S 8 10.7
Rigil Kent.	139 43.9	S60 55.2
Sabik	102 05.9	S15 45.1
Schedar	349 33.8	N56 39.7
Shaula	96 14.1	S37 07.1
Sirius	258 28.1	S16 44.8
Spica	158 24.9	S11 16.4
Suhail	222 47.7	S43 31.1
Vega	80 35.3	N38 48.2
Zuben'ubi	136 58.9	S16 07.9

	AHS	Paso Mer.
	° ′	h m
Venus	67 46.8	12 27
Marte	105 16.8	10 00
Júpiter	26 16.4	15 15
Saturno	44 57.2	14 00

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	′	°	′	′	′
4 00	178	49.3	S22	44.7	159	31.3	3.4	S24	19.8	6.7	60.6
01	193	49.1		44.4	173	53.7	3.5	24	13.1	6.9	60.6
02	208	48.8		44.1	188	16.2	3.6	24	06.2	7.1	60.5
03	223	48.5	. .	43.9	202	38.8	3.7	23	59.1	7.2	60.5
04	238	48.2		43.6	217	01.5	3.9	23	51.9	7.4	60.5
05	253	47.9		43.4	231	24.4	3.9	23	44.5	7.6	60.4
06	268	47.6	S22	43.1	245	47.3	4.1	S23	36.9	7.7	60.4
07	283	47.3		42.8	260	10.4	4.1	23	29.2	7.9	60.4
08	298	47.1		42.6	274	33.5	4.3	23	21.3	8.1	60.4
09	313	46.8	. .	42.3	288	56.8	4.4	23	13.2	8.2	60.3
10	328	46.5		42.0	303	20.2	4.6	23	05.0	8.3	60.3
11	343	46.2		41.8	317	43.8	4.6	22	56.7	8.5	60.3
12	358	45.9	S22	41.5	332	07.4	4.8	S22	48.2	8.6	60.2
13	13	45.6		41.2	346	31.2	4.9	22	39.6	8.8	60.2
14	28	45.4		41.0	0	55.1	5.0	22	30.8	8.9	60.2
15	43	45.1	. .	40.7	15	19.1	5.2	22	21.9	9.1	60.1
16	58	44.8		40.4	29	43.3	5.3	22	12.8	9.2	60.1
17	73	44.5		40.2	44	07.6	5.4	22	03.6	9.4	60.1
18	88	44.2	S22	39.9	58	32.0	5.5	S21	54.2	9.4	60.0
19	103	43.9		39.6	72	56.5	5.7	21	44.8	9.7	60.0
20	118	43.7		39.3	87	21.2	5.8	21	35.1	9.7	60.0
21	133	43.4	. .	39.1	101	46.0	5.9	21	25.4	9.9	59.9
22	148	43.1		38.8	116	10.9	6.1	21	15.5	10.0	59.9
23	163	42.8		38.5	130	36.0	6.1	21	05.5	10.1	59.9
5 00	178	42.5	S22	38.2	145	01.1	6.4	S20	55.4	10.2	59.8
01	193	42.3		38.0	159	26.5	6.4	20	45.2	10.4	59.8
02	208	42.0		37.7	173	51.9	6.6	20	34.8	10.5	59.8
03	223	41.7	. .	37.4	188	17.5	6.7	20	24.3	10.6	59.7
04	238	41.4		37.1	202	43.2	6.8	20	13.7	10.7	59.7
05	253	41.1		36.8	217	09.0	7.0	20	03.0	10.8	59.7
06	268	40.9	S22	36.6	231	35.0	7.1	S19	52.2	10.9	59.6
07	283	40.6		36.3	246	01.1	7.2	19	41.3	11.1	59.6
08	298	40.3		36.0	260	27.3	7.3	19	30.2	11.1	59.6
09	313	40.0	. .	35.7	274	53.6	7.5	19	19.1	11.3	59.5
10	328	39.7		35.4	289	20.1	7.6	19	07.8	11.3	59.5
11	343	39.5		35.1	303	46.7	7.8	18	56.5	11.5	59.4
12	358	39.2	S22	34.9	318	13.5	7.9	S18	45.0	11.5	59.4
13	13	38.9		34.6	332	40.4	8.0	18	33.5	11.7	59.4
14	28	38.6		34.3	347	07.4	8.1	18	21.8	11.7	59.3
15	43	38.3	. .	34.0	1	34.5	8.3	18	10.1	11.8	59.3
16	58	38.1		33.7	16	01.8	8.3	17	58.3	11.9	59.3
17	73	37.8		33.4	30	29.1	8.5	17	46.4	12.0	59.2
18	88	37.5	S22	33.1	44	56.6	8.7	S17	34.4	12.1	59.2
19	103	37.2		32.8	59	24.3	8.7	17	22.3	12.2	59.1
20	118	37.0		32.5	73	52.0	8.9	17	10.1	12.3	59.1
21	133	36.7	. .	32.3	88	19.9	9.0	16	57.8	12.3	59.1
22	148	36.4		32.0	102	47.9	9.2	16	45.5	12.4	59.0
23	163	36.1		31.7	117	16.1	9.2	16	33.1	12.5	59.0
6 00	178	35.8	S22	31.4	131	44.3	9.4	S16	20.6	12.6	58.9
01	193	35.6		31.1	146	12.7	9.5	16	08.0	12.6	58.9
02	208	35.3		30.8	160	41.2	9.6	15	55.4	12.7	58.9
03	223	35.0	. .	30.5	175	09.8	9.8	15	42.7	12.8	58.8
04	238	34.7		30.2	189	38.6	9.8	15	29.9	12.8	58.8
05	253	34.5		29.9	204	07.4	10.0	15	17.1	12.9	58.7
06	268	34.2	S22	29.6	218	36.4	10.1	S15	04.2	13.0	58.7
07	283	33.9		29.3	233	05.5	10.2	14	51.2	13.0	58.7
08	298	33.6		29.0	247	34.7	10.3	14	38.2	13.1	58.6
09	313	33.4	. .	28.7	262	04.0	10.4	14	25.1	13.2	58.6
10	328	33.1		28.4	276	33.4	10.6	14	11.9	13.2	58.5
11	343	32.8		28.1	291	03.0	10.6	13	58.7	13.2	58.5
12	358	32.5	S22	27.8	305	32.6	10.8	S13	45.5	13.3	58.5
13	13	32.3		27.5	320	02.4	10.9	13	32.2	13.4	58.4
14	28	32.0		27.2	334	32.3	10.9	13	18.8	13.4	58.4
15	43	31.7	. .	26.8	349	02.2	11.1	13	05.4	13.5	58.3
16	58	31.5		26.5	3	32.3	11.2	12	51.9	13.5	58.3
17	73	31.2		26.2	18	02.5	11.3	12	38.4	13.5	58.3
18	88	30.9	S22	25.9	32	32.8	11.4	S12	24.9	13.6	58.2
19	103	30.6		25.6	47	03.2	11.5	12	11.3	13.6	58.2
20	118	30.4		25.3	61	33.7	11.6	11	57.7	13.7	58.1
21	133	30.1	. .	25.0	76	04.3	11.7	11	44.0	13.7	58.1
22	148	29.8		24.7	90	35.0	11.8	11	30.3	13.8	58.1
23	163	29.5		24.4	105	05.8	11.9	S11	16.5	13.8	58.0
	S/D	16.3	d	0.3	S/D	16.4		16.2			15.9

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			4	5	6	7
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	08	19	10	30	▬	▬	▬	12 54	12 12
N 70	08	01	09	43	▬	▬	13 22	12 29	12 00
68	07	47	09	12	11 29	▬	12 38	12 09	11 50
66	07	35	08	49	10 20	12 39	12 08	11 53	11 42
64	07	25	08	31	09 45	11 53	11 46	11 40	11 35
62	07	16	08	16	09 19	11 23	11 28	11 29	11 29
60	07	08	08	04	09 00	11 00	11 12	11 19	11 24
N 58	07	01	07	53	08 43	10 41	11 00	11 11	11 19
56	06	55	07	43	08 30	10 26	10 48	11 04	11 15
54	06	49	07	35	08 18	10 12	10 39	10 57	11 11
52	06	44	07	27	08 07	10 00	10 30	10 51	11 07
50	06	39	07	20	07 58	09 50	10 22	10 46	11 04
45	06	28	07	05	07 38	09 28	10 05	10 34	10 58
N 40	06	18	06	52	07 22	09 10	09 51	10 24	10 52
35	06	09	06	41	07 08	08 55	09 39	10 16	10 47
30	06	01	06	30	06 57	08 42	09 29	10 08	10 42
20	05	45	06	12	06 36	08 19	09 11	09 55	10 35
N 10	05	30	05	56	06 18	08 00	08 55	09 44	10 28
0	05	13	05	39	06 02	07 42	08 40	09 33	10 22
S 10	04	55	05	22	05 45	07 23	08 26	09 23	10 15
20	04	33	05	02	05 26	07 04	08 10	09 11	10 09
30	04	05	04	38	05 05	06 41	07 51	08 58	10 01
35	03	47	04	23	04 53	06 28	07 41	08 51	09 56
40	03	25	04	06	04 38	06 12	07 28	08 42	09 51
45	02	56	03	44	04 21	05 54	07 14	08 32	09 45
S 50	02	14	03	16	04 00	05 31	06 56	08 19	09 38
52	01	49	03	02	03 49	05 20	06 47	08 13	09 35
54	01	13	02	45	03 38	05 07	06 38	08 07	09 31
56	////		02	25	03 24	04 53	06 27	08 00	09 27
58	////		01	58	03 09	04 36	06 15	07 52	09 23
S 60	////		01	19	02 50	04 15	06 00	07 42	09 18

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 4	5	6	7
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	▬		13	42	15 52	▬	▬	19 03	21 24
N 70	▬		14	29	16 10	▬	16 45	19 26	21 33
68	12	42	14	59	16 24	▬	17 28	19 44	21 41
66	13	51	15	22	16 36	15 27	17 56	19 58	21 47
64	14	27	15	40	16 46	16 12	18 18	20 10	21 52
62	14	52	15	55	16 55	16 41	18 35	20 20	21 57
60	15	11	16	07	17 03	17 03	18 49	20 28	22 01
N 58	15	28	16	18	17 10	17 21	19 01	20 35	22 04
56	15	41	16	28	17 16	17 36	19 11	20 42	22 07
54	15	53	16	36	17 22	17 49	19 20	20 48	22 10
52	16	04	16	44	17 27	18 01	19 28	20 53	22 12
50	16	13	16	51	17 32	18 11	19 36	20 57	22 14
45	16	33	17	06	17 43	18 32	19 51	21 07	22 19
N 40	16	49	17	19	17 53	18 48	20 04	21 16	22 23
35	17	02	17	30	18 02	19 03	20 14	21 23	22 27
30	17	14	17	40	18 10	19 15	20 24	21 29	22 30
20	17	35	17	58	18 26	19 36	20 40	21 39	22 35
N 10	17	52	18	15	18 41	19 54	20 53	21 48	22 39
0	18	09	18	31	18 58	20 10	21 06	21 57	22 44
S 10	18	26	18	49	19 16	20 27	21 19	22 05	22 48
20	18	44	19	09	19 38	20 45	21 32	22 14	22 52
30	19	05	19	32	20 05	21 05	21 48	22 25	22 57
35	19	18	19	47	20 23	21 16	21 57	22 30	23 00
40	19	32	20	04	20 45	21 30	22 07	22 37	23 03
45	19	49	20	26	21 14	21 45	22 18	22 45	23 07
S 50	20	11	20	54	21 56	22 05	22 32	22 54	23 11
52	20	21	21	08	22 20	22 14	22 39	22 58	23 13
54	20	32	21	25	22 56	22 24	22 46	23 02	23 15
56	20	46	21	45	////	22 35	22 54	23 07	23 18
58	21	01	22	11	////	22 48	23 03	23 13	23 20
S 60	21	20	22	49	////	23 03	23 13	23 19	23 23

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		SOL Paso Mer.	LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		LUNA Edad	LUNA Fase
d	m	s	m	s	h m	h	m	h	m	d	%
4	04	42	04	56	12 05	13	56	01	25	02	5
5	05	09	05	23	12 05	14	53	02	26	03	11
6	05	36	05	49	12 06	15	45	03	20	04	19

MARTES MIÉRCOLES JUEVES

UT (HmGr)	ARIES	VENUS −4·1		MARTE +1·5		JÚPITER −2·1		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
7 00	106 32.4	175 37.4	S17 36.9	210 16.7	S23 02.2	132 25.6	S11 46.6	151 16.1	S17 49.7
01	121 34.9	190 41.5	36.5	225 17.3	02.4	147 27.6	46.5	166 18.3	49.6
02	136 37.4	205 45.6	36.2	240 17.8	02.6	162 29.6	46.3	181 20.5	49.5
03	151 39.8	220 49.7	35.8	255 18.4	02.8	177 31.5	46.1	196 22.7	49.5
04	166 42.3	235 53.8	35.4	270 18.9	03.0	192 33.5	45.9	211 24.9	49.4
05	181 44.7	250 57.9	35.1	285 19.4	03.2	207 35.5	45.7	226 27.0	49.3
06	196 47.2	266 02.0	S17 34.7	300 20.0	S23 03.4	222 37.5	S11 45.5	241 29.2	S17 49.2
07	211 49.7	281 06.2	34.4	315 20.5	03.5	237 39.4	45.4	256 31.4	49.1
08	226 52.1	296 10.3	34.0	330 21.0	03.7	252 41.4	45.2	271 33.6	49.1
V 09	241 54.6	311 14.4	33.6	345 21.6	03.9	267 43.4	45.0	286 35.8	49.0
I 10	256 57.1	326 18.5	33.3	0 22.1	04.1	282 45.4	44.8	301 37.9	48.9
E 11	271 59.5	341 22.6	32.9	15 22.6	04.3	297 47.4	44.6	316 40.1	48.8
R 12	287 02.0	356 26.7	S17 32.6	30 23.2	S23 04.5	312 49.3	S11 44.4	331 42.3	S17 48.8
N 13	302 04.5	11 30.9	32.2	45 23.7	04.7	327 51.3	44.2	346 44.5	48.7
E 14	317 06.9	26 35.0	31.8	60 24.2	04.9	342 53.3	44.1	1 46.7	48.6
S 15	332 09.4	41 39.1	31.5	75 24.8	05.1	357 55.3	43.9	16 48.8	48.5
16	347 11.9	56 43.2	31.1	90 25.3	05.3	12 57.2	43.7	31 51.0	48.4
17	2 14.3	71 47.3	30.8	105 25.8	05.5	27 59.2	43.5	46 53.2	48.4
18	17 16.8	86 51.5	S17 30.4	120 26.3	S23 05.7	43 01.2	S11 43.3	61 55.4	S17 48.3
19	32 19.2	101 55.6	30.1	135 26.9	05.8	58 03.2	43.1	76 57.6	48.2
20	47 21.7	116 59.7	29.7	150 27.4	06.0	73 05.1	42.9	91 59.7	48.1
21	62 24.2	132 03.8	29.4	165 27.9	06.2	88 07.1	42.7	107 01.9	48.0
22	77 26.6	147 07.9	29.0	180 28.5	06.4	103 09.1	42.6	122 04.1	48.0
23	92 29.1	162 12.1	28.7	195 29.0	06.6	118 11.1	42.4	137 06.3	47.9
8 00	107 31.6	177 16.2	S17 28.3	210 29.5	S23 06.8	133 13.0	S11 42.2	152 08.5	S17 47.8
01	122 34.0	192 20.3	28.0	225 30.1	07.0	148 15.0	42.0	167 10.7	47.7
02	137 36.5	207 24.4	27.6	240 30.6	07.2	163 17.0	41.8	182 12.8	47.7
03	152 39.0	222 28.5	27.3	255 31.1	07.3	178 19.0	41.6	197 15.0	47.6
04	167 41.4	237 32.7	26.9	270 31.7	07.5	193 20.9	41.4	212 17.2	47.5
05	182 43.9	252 36.8	26.6	285 32.2	07.7	208 22.9	41.3	227 19.4	47.4
06	197 46.4	267 40.9	S17 26.2	300 32.7	S23 07.9	223 24.9	S11 41.1	242 21.6	S17 47.3
07	212 48.8	282 45.0	25.9	315 33.2	08.1	238 26.9	40.9	257 23.7	47.3
S 08	227 51.3	297 49.2	25.5	330 33.8	08.3	253 28.8	40.7	272 25.9	47.2
Á 09	242 53.7	312 53.3	25.2	345 34.3	08.5	268 30.8	40.5	287 28.1	47.1
B 10	257 56.2	327 57.4	24.8	0 34.8	08.6	283 32.8	40.3	302 30.3	47.0
A 11	272 58.7	343 01.5	24.5	15 35.4	08.8	298 34.8	40.1	317 32.5	47.0
D 12	288 01.1	358 05.6	S17 24.2	30 35.9	S23 09.0	313 36.7	S11 39.9	332 34.6	S17 46.9
O 13	303 03.6	13 09.8	23.8	45 36.4	09.2	328 38.7	39.8	347 36.8	46.8
14	318 06.1	28 13.9	23.5	60 36.9	09.4	343 40.7	39.6	2 39.0	46.7
15	333 08.5	43 18.0	23.1	75 37.5	09.6	358 42.7	39.4	17 41.2	46.6
16	348 11.0	58 22.1	22.8	90 38.0	09.7	13 44.6	39.2	32 43.4	46.6
17	3 13.5	73 26.2	22.5	105 38.5	09.9	28 46.6	39.0	47 45.5	46.5
18	18 15.9	88 30.4	S17 22.1	120 39.1	S23 10.1	43 48.6	S11 38.8	62 47.7	S17 46.4
19	33 18.4	103 34.5	21.8	135 39.6	10.3	58 50.5	38.6	77 49.9	46.3
20	48 20.8	118 38.6	21.4	150 40.1	10.5	73 52.5	38.4	92 52.1	46.2
21	63 23.3	133 42.7	21.1	165 40.6	10.6	88 54.5	38.3	107 54.3	46.2
22	78 25.8	148 46.8	20.8	180 41.2	10.8	103 56.5	38.1	122 56.4	46.1
23	93 28.2	163 51.0	20.4	195 41.7	11.0	118 58.4	37.9	137 58.6	46.0
9 00	108 30.7	178 55.1	S17 20.1	210 42.2	S23 11.2	134 00.4	S11 37.7	153 00.8	S17 45.9
01	123 33.2	193 59.2	19.7	225 42.8	11.4	149 02.4	37.5	168 03.0	45.9
02	138 35.6	209 03.3	19.4	240 43.3	11.5	164 04.4	37.3	183 05.2	45.8
03	153 38.1	224 07.4	19.1	255 43.8	11.7	179 06.3	37.1	198 07.3	45.7
04	168 40.6	239 11.6	18.7	270 44.3	11.9	194 08.3	36.9	213 09.5	45.6
05	183 43.0	254 15.7	18.4	285 44.9	12.1	209 10.3	36.8	228 11.7	45.5
06	198 45.5	269 19.8	S17 18.1	300 45.4	S23 12.2	224 12.2	S11 36.6	243 13.9	S17 45.5
07	213 48.0	284 23.9	17.7	315 45.9	12.4	239 14.2	36.4	258 16.0	45.4
D 08	228 50.4	299 28.0	17.4	330 46.4	12.6	254 16.2	36.2	273 18.2	45.3
O 09	243 52.9	314 32.1	17.1	345 47.0	12.8	269 18.2	36.0	288 20.4	45.2
M 10	258 55.3	329 36.3	16.8	0 47.5	12.9	284 20.1	35.8	303 22.6	45.1
I 11	273 57.8	344 40.4	16.4	15 48.0	13.1	299 22.1	35.6	318 24.8	45.1
N 12	289 00.3	359 44.5	S17 16.1	30 48.5	S23 13.3	314 24.1	S11 35.4	333 26.9	S17 45.0
G 13	304 02.7	14 48.6	15.8	45 49.1	13.5	329 26.0	35.2	348 29.1	44.9
O 14	319 05.2	29 52.7	15.4	60 49.6	13.6	344 28.0	35.1	3 31.3	44.8
15	334 07.7	44 56.8	15.1	75 50.1	13.8	359 30.0	34.9	18 33.5	44.8
16	349 10.1	60 01.0	14.8	90 50.6	14.0	14 31.9	34.7	33 35.7	44.7
17	4 12.6	75 05.1	14.5	105 51.2	14.2	29 33.9	34.5	48 37.8	44.6
18	19 15.1	90 09.2	S17 14.1	120 51.7	S23 14.3	44 35.9	S11 34.3	63 40.0	S17 44.5
19	34 17.5	105 13.3	13.8	135 52.2	14.5	59 37.9	34.1	78 42.2	44.4
20	49 20.0	120 17.4	13.5	150 52.7	14.7	74 39.8	33.9	93 44.4	44.4
21	64 22.4	135 21.5	13.2	165 53.3	14.8	89 41.8	33.7	108 46.5	44.3
22	79 24.9	150 25.6	12.8	180 53.8	15.0	104 43.8	33.5	123 48.7	44.2
23	94 27.4	165 29.7	12.5	195 54.3	15.2	119 45.7	33.4	138 50.9	44.1
	h m								
Paso Mer.	16 47.1	*v* 4.1	*d* 0.3	*v* 0.5	*d* 0.2	*v* 2.0	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.5	S40 13.3
Achernar	335 22.0	S57 07.9
Acrux	173 02.6	S63 12.9
Adhara	255 07.4	S29 00.1
Aldebaran	290 42.2	N16 33.2
Alioth	166 15.2	N55 50.2
Alkaid	152 54.1	N49 12.0
Alnair	27 36.4	S46 51.5
Alnilam	275 39.9	S 1 11.4
Alphard	217 49.9	S 8 45.2
Alphecca	126 06.1	N26 38.3
Alpheratz	357 37.4	N29 12.8
Altair	62 02.7	N 8 55.5
Ankaa	353 09.7	S42 11.5
Antares	112 19.1	S26 28.7
Arcturus	145 50.3	N19 04.0
Atria	107 16.1	S69 03.8
Avior	234 15.1	S59 34.7
Bellatrix	278 25.2	N 6 22.1
Betelgeuse	270 54.4	N 7 24.6
Canopus	263 52.9	S52 42.5
Capella	280 25.1	N46 01.2
Deneb	49 27.9	N45 21.5
Denebola	182 27.4	N14 26.9
Diphda	348 49.8	S17 52.2
Dubhe	193 43.7	N61 37.7
Elnath	278 04.6	N28 37.5
Eltanin	90 43.8	N51 29.0
Enif	33 41.5	N 9 58.5
Fomalhaut	15 17.5	S29 30.6
Gacrux	171 54.2	S57 13.8
Gienah	175 46.0	S17 39.7
Hadar	148 39.6	S60 28.4
Hamal	327 53.9	N23 34.0
Kaus Aust.	83 36.2	S34 22.4
Kochab	137 20.4	N74 03.6
Markab	13 32.5	N15 19.4
Menkar	314 08.6	N 4 10.5
Menkent	148 00.6	S36 28.4
Miaplacidus	221 37.9	S69 48.2
Mirfak	308 31.4	N49 56.5
Nunki	75 51.2	S26 16.2
Peacock	53 10.2	S56 40.0
Pollux	243 19.9	N27 58.3
Procyon	244 53.1	N 5 10.1
Rasalhague	96 01.2	N12 32.6
Regulus	207 36.8	N11 51.5
Rigel	281 05.9	S 8 10.7
Rigil Kent.	139 43.9	S60 55.2
Sabik	102 05.9	S15 45.1
Schedar	349 33.8	N56 39.7
Shaula	96 14.1	S37 07.1
Sirius	258 28.0	S16 44.8
Spica	158 24.9	S11 16.5
Suhail	222 47.7	S43 31.1
Vega	80 35.3	N38 48.2
Zuben'ubi	136 58.9	S16 07.9

	AHS	Paso Mer.
	° ′	h m
Venus	69 44.6	12 08
Marte	102 58.0	9 58
Júpiter	25 41.5	15 05
Saturno	44 36.9	13 49

UT (HmGr)	SOL				LUNA							
	AHGr		Dec		AHGr	v		Dec	d		Ph	
d h	°	′	°	′	°	′	′	°	′	′	′	
7 00	178	29.3	S22	24.1	119	36.7	12.0	S11	02.7	13.8	58.0	
01	193	29.0		23.7	134	07.7	12.1	10	48.9	13.9	57.9	
02	208	28.7		23.4	148	38.8	12.2	10	35.0	13.8	57.9	
03	223	28.5	. .	23.1	163	10.0	12.2	10	21.2	14.0	57.9	
04	238	28.2		22.8	177	41.2	12.4	10	07.2	13.9	57.8	
05	253	27.9		22.5	192	12.6	12.4	9	53.3	14.0	57.8	
06	268	27.7	S22	22.2	206	44.0	12.6	S 9	39.3	14.0	57.7	
07	283	27.4		21.8	221	15.6	12.6	9	25.3	14.0	57.7	
08	298	27.1		21.5	235	47.2	12.7	9	11.3	14.0	57.7	
09	313	26.8	. .	21.2	250	18.9	12.8	8	57.3	14.1	57.6	
10	328	26.6		20.9	264	50.7	12.9	8	43.2	14.1	57.6	
11	343	26.3		20.6	279	22.6	13.0	8	29.1	14.1	57.5	
12	358	26.0	S22	20.2	293	54.6	13.0	S 8	15.0	14.1	57.5	
13	13	25.8		19.9	308	26.6	13.1	8	00.9	14.2	57.5	
14	28	25.5		19.6	322	58.7	13.2	7	46.7	14.1	57.4	
15	43	25.2	. .	19.3	337	30.9	13.3	7	32.6	14.2	57.4	
16	58	25.0		18.9	352	03.2	13.4	7	18.4	14.2	57.3	
17	73	24.7		18.6	6	35.6	13.4	7	04.2	14.2	57.3	
18	88	24.4	S22	18.3	21	08.0	13.5	S 6	50.0	14.2	57.3	
19	103	24.2		17.9	35	40.5	13.5	6	35.8	14.2	57.2	
20	118	23.9		17.6	50	13.0	13.7	6	21.6	14.2	57.2	
21	133	23.6	. .	17.3	64	45.7	13.7	6	07.4	14.3	57.1	
22	148	23.4		17.0	79	18.4	13.8	5	53.1	14.2	57.1	
23	163	23.1		16.6	93	51.2	13.8	5	38.9	14.3	57.1	
8 00	178	22.8	S22	16.3	108	24.0	13.9	S 5	24.6	14.2	57.0	
01	193	22.6		16.0	122	56.9	14.0	5	10.4	14.3	57.0	
02	208	22.3		15.6	137	29.9	14.0	4	56.1	14.2	57.0	
03	223	22.0	. .	15.3	152	02.9	14.1	4	41.9	14.3	56.9	
04	238	21.8		15.0	166	36.0	14.1	4	27.6	14.2	56.9	
05	253	21.5		14.6	181	09.1	14.2	4	13.4	14.3	56.8	
06	268	21.2	S22	14.3	195	42.3	14.3	S 3	59.1	14.2	56.8	
07	283	21.0		13.9	210	15.6	14.3	3	44.9	14.3	56.8	
08	298	20.7		13.6	224	48.9	14.4	3	30.6	14.2	56.7	
09	313	20.4	. .	13.3	239	22.3	14.4	3	16.4	14.3	56.7	
10	328	20.2		12.9	253	55.7	14.5	3	02.1	14.2	56.7	
11	343	19.9		12.6	268	29.2	14.5	2	47.9	14.3	56.6	
12	358	19.7	S22	12.3	283	02.7	14.6	S 2	33.6	14.2	56.6	
13	13	19.4		11.9	297	36.3	14.6	2	19.4	14.2	56.5	
14	28	19.1		11.6	312	09.9	14.7	2	05.2	14.2	56.5	
15	43	18.9	. .	11.2	326	43.6	14.7	1	51.0	14.2	56.5	
16	58	18.6		10.9	341	17.3	14.7	1	36.8	14.2	56.4	
17	73	18.3		10.5	355	51.0	14.8	1	22.6	14.1	56.4	
18	88	18.1	S22	10.2	10	24.8	14.9	S 1	08.5	14.2	56.4	
19	103	17.8		09.8	24	58.7	14.9	0	54.3	14.1	56.3	
20	118	17.6		09.5	39	32.6	14.9	0	40.2	14.2	56.3	
21	133	17.3	. .	09.1	54	06.5	14.9	0	26.0	14.1	56.3	
22	148	17.0		08.8	68	40.4	15.0	S 0	11.9	14.1	56.2	
23	163	16.8		08.4	83	14.4	15.1	N 0	02.2	14.0	56.2	
9 00	178	16.5	S22	08.1	97	48.5	15.0	N 0	16.2	14.1	56.2	
01	193	16.3		07.7	112	22.5	15.1	0	30.3	14.0	56.1	
02	208	16.0		07.4	126	56.6	15.1	0	44.3	14.1	56.1	
03	223	15.7	. .	07.0	141	30.7	15.2	0	58.4	14.0	56.1	
04	238	15.5		06.7	156	04.9	15.2	1	12.4	13.9	56.0	
05	253	15.2		06.3	170	39.1	15.2	1	26.3	14.0	56.0	
06	268	15.0	S22	06.0	185	13.3	15.2	N 1	40.3	13.9	56.0	
07	283	14.7		05.6	199	47.5	15.3	1	54.2	13.9	55.9	
08	298	14.4		05.3	214	21.8	15.3	2	08.1	13.9	55.9	
09	313	14.2	. .	04.9	228	56.1	15.3	2	22.0	13.9	55.9	
10	328	13.9		04.6	243	30.4	15.3	2	35.9	13.8	55.8	
11	343	13.7		04.2	258	04.7	15.4	2	49.7	13.8	55.8	
12	358	13.4	S22	03.8	272	39.1	15.3	N 3	03.5	13.8	55.8	
13	13	13.1		03.5	287	13.4	15.4	3	17.3	13.7	55.7	
14	28	12.9		03.1	301	47.8	15.4	3	31.0	13.8	55.7	
15	43	12.6	. .	02.8	316	22.2	15.4	3	44.8	13.6	55.7	
16	58	12.4		02.4	330	56.6	15.5	3	58.4	13.7	55.7	
17	73	12.1		02.0	345	31.1	15.4	4	12.1	13.6	55.6	
18	88	11.9	S22	01.7	0	05.5	15.5	N 4	25.7	13.6	55.6	
19	103	11.6		01.3	14	40.0	15.5	4	39.3	13.6	55.6	
20	118	11.4		00.9	29	14.5	15.4	4	52.9	13.5	55.5	
21	133	11.1	. .	00.6	43	48.9	15.5	5	06.4	13.5	55.5	
22	148	10.8	22	00.2	58	23.4	15.5	5	19.9	13.5	55.5	
23	163	10.6	S21	59.8	72	57.9	15.5	N 5	33.4	13.4	55.5	
	S/D	16.3	d	0.3	S/D	15.7			15.4		15.2	

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 7	Orto Luna 8	Orto Luna 9	Orto Luna 10
°	h m	h m	h m	h m	h m	h m	h m
N 72	08 15	10 19	▬	12 12	11 41	11 14	10 45
N 70	07 58	09 36	▬	12 00	11 38	11 18	10 57
68	07 44	09 07	11 09	11 50	11 35	11 21	11 06
66	07 32	08 46	10 13	11 42	11 32	11 23	11 14
64	07 23	08 28	09 40	11 35	11 30	11 25	11 21
62	07 14	08 14	09 16	11 29	11 28	11 27	11 27
60	07 07	08 02	08 57	11 24	11 26	11 29	11 32
N 58	07 00	07 51	08 41	11 19	11 25	11 30	11 36
56	06 54	07 42	08 28	11 15	11 24	11 32	11 40
54	06 48	07 34	08 16	11 11	11 22	11 33	11 44
52	06 43	07 26	08 06	11 07	11 21	11 34	11 47
50	06 38	07 19	07 57	11 04	11 20	11 35	11 50
45	06 28	07 04	07 38	10 58	11 18	11 37	11 57
N 40	06 18	06 52	07 22	10 52	11 16	11 39	12 02
35	06 09	06 41	07 09	10 47	11 15	11 41	12 07
30	06 01	06 31	06 57	10 42	11 13	11 42	12 11
20	05 46	06 13	06 37	10 35	11 11	11 45	12 19
N 10	05 31	05 57	06 19	10 28	11 09	11 47	12 25
0	05 15	05 41	06 03	10 22	11 07	11 50	12 32
S 10	04 57	05 24	05 46	10 15	11 05	11 52	12 38
20	04 35	05 04	05 28	10 09	11 03	11 54	12 45
30	04 08	04 41	05 08	10 01	11 00	11 57	12 52
35	03 50	04 26	04 55	09 56	10 59	11 58	12 57
40	03 28	04 09	04 41	09 51	10 57	12 00	13 02
45	03 00	03 48	04 24	09 45	10 55	12 02	13 08
S 50	02 19	03 20	04 03	09 38	10 53	12 05	13 15
52	01 56	03 06	03 53	09 35	10 52	12 06	13 18
54	01 22	02 50	03 42	09 31	10 51	12 07	13 22
56	////	02 31	03 29	09 27	10 50	12 09	13 26
58	////	02 06	03 14	09 23	10 48	12 10	13 31
S 60	////	01 30	02 56	09 18	10 47	12 12	13 36

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 7	Ocaso Luna 8	Ocaso Luna 9	Ocaso Luna 10
°	h m	h m	h m	h m	h m	h m	h m
N 72	▬	13 55	15 59	21 24	23 28	25 28	01 28
N 70	▬	14 38	16 16	21 33	23 28	25 19	01 19
68	13 05	15 06	16 30	21 41	23 28	25 11	01 11
66	14 01	15 28	16 41	21 47	23 28	25 05	01 05
64	14 34	15 45	16 51	21 52	23 28	25 00	01 00
62	14 58	16 00	17 00	21 57	23 28	24 56	00 56
60	15 17	16 12	17 07	22 01	23 28	24 52	00 52
N 58	15 33	16 22	17 14	22 04	23 28	24 49	00 49
56	15 46	16 32	17 20	22 07	23 28	24 46	00 46
54	15 58	16 40	17 26	22 10	23 28	24 43	00 43
52	16 08	16 48	17 31	22 12	23 28	24 41	00 41
50	16 17	16 54	17 35	22 14	23 28	24 39	00 39
45	16 36	17 09	17 46	22 19	23 28	24 34	00 34
N 40	16 52	17 22	17 56	22 23	23 28	24 30	00 30
35	17 05	17 33	18 04	22 27	23 28	24 27	00 27
30	17 17	17 43	18 12	22 30	23 28	24 24	00 24
20	17 37	18 00	18 28	22 35	23 28	24 18	00 18
N 10	17 54	18 17	18 43	22 39	23 27	24 14	00 14
0	18 10	18 33	18 59	22 44	23 27	24 10	00 10
S 10	18 27	18 50	19 17	22 48	23 27	24 05	00 05
20	18 45	19 09	19 38	22 52	23 27	24 01	00 01
30	19 06	19 33	20 05	22 57	23 27	23 56	24 25
35	19 18	19 47	20 23	23 00	23 27	23 53	24 19
40	19 32	20 04	20 44	23 03	23 27	23 50	24 13
45	19 49	20 25	21 13	23 07	23 27	23 46	24 06
S 50	20 09	20 52	21 53	23 11	23 26	23 41	23 57
52	20 19	21 06	22 16	23 13	23 26	23 39	23 53
54	20 31	21 22	22 48	23 15	23 26	23 37	23 48
56	20 44	21 41	////	23 18	23 26	23 34	23 43
58	20 59	22 06	////	23 20	23 26	23 32	23 38
S 60	21 17	22 41	////	23 23	23 26	23 29	23 31

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
7	06 02	06 15	12 06	16 33	04 10	05 28	
8	06 28	06 41	12 07	17 17	04 55	06 38	
9	06 53	07 06	12 07	18 00	05 38	07 48	

VIERNES SÁBADO DOMINGO

UT (HmGr)	ARIES	VENUS −4·3		MARTE +1·5		JÚPITER −2·1		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
10 00	109 29.8	180 33.8	S17 12.2	210 54.8	S23 15.4	134 47.7	S11 33.2	153 53.1	S17 44.0
01	124 32.3	195 38.0	11.9	225 55.4	15.5	149 49.7	33.0	168 55.3	44.0
02	139 34.8	210 42.1	11.6	240 55.9	15.7	164 51.6	32.8	183 57.4	43.9
03	154 37.2	225 46.2 . .	11.2	255 56.4 . .	15.9	179 53.6 . .	32.6	198 59.6 . .	43.8
04	169 39.7	240 50.3	10.9	270 56.9	16.0	194 55.6	32.4	214 01.8	43.7
05	184 42.2	255 54.4	10.6	285 57.4	16.2	209 57.6	32.2	229 04.0	43.6
06	199 44.6	270 58.5	S17 10.3	300 58.0	S23 16.4	224 59.5	S11 32.0	244 06.2	S17 43.6
07	214 47.1	286 02.6	10.0	315 58.5	16.5	240 01.5	31.8	259 08.3	43.5
08	229 49.6	301 06.7	09.7	330 59.0	16.7	255 03.5	31.6	274 10.5	43.4
L 09	244 52.0	316 10.8 . .	09.3	345 59.5 . .	16.9	270 05.4 . .	31.5	289 12.7 . .	43.3
U 10	259 54.5	331 14.9	09.0	1 00.1	17.0	285 07.4	31.3	304 14.9	43.2
N 11	274 56.9	346 19.0	08.7	16 00.6	17.2	300 09.4	31.1	319 17.0	43.2
E 12	289 59.4	1 23.1	S17 08.4	31 01.1	S23 17.4	315 11.3	S11 30.9	334 19.2	S17 43.1
S 13	305 01.9	16 27.2	08.1	46 01.6	17.5	330 13.3	30.7	349 21.4	43.0
14	320 04.3	31 31.3	07.8	61 02.1	17.7	345 15.3	30.5	4 23.6	42.9
15	335 06.8	46 35.4 . .	07.5	76 02.7 . .	17.8	0 17.2 . .	30.3	19 25.7 . .	42.9
16	350 09.3	61 39.5	07.2	91 03.2	18.0	15 19.2	30.1	34 27.9	42.8
17	5 11.7	76 43.6	06.9	106 03.7	18.2	30 21.2	29.9	49 30.1	42.7
18	20 14.2	91 47.7	S17 06.6	121 04.2	S23 18.3	45 23.1	S11 29.7	64 32.3	S17 42.6
19	35 16.7	106 51.8	06.2	136 04.8	18.5	60 25.1	29.6	79 34.5	42.5
20	50 19.1	121 55.9	05.9	151 05.3	18.7	75 27.1	29.4	94 36.6	42.5
21	65 21.6	137 00.0 . .	05.6	166 05.8 . .	18.8	90 29.0 . .	29.2	109 38.8 . .	42.4
22	80 24.1	152 04.0	05.3	181 06.3	19.0	105 31.0	29.0	124 41.0	42.3
23	95 26.5	167 08.1	05.0	196 06.8	19.1	120 33.0	28.8	139 43.2	42.2
11 00	110 29.0	182 12.2	S17 04.7	211 07.4	S23 19.3	135 34.9	S11 28.6	154 45.3	S17 42.1
01	125 31.4	197 16.3	04.4	226 07.9	19.5	150 36.9	28.4	169 47.5	42.1
02	140 33.9	212 20.4	04.1	241 08.4	19.6	165 38.9	28.2	184 49.7	42.0
03	155 36.4	227 24.5 . .	03.8	256 08.9 . .	19.8	180 40.8 . .	28.0	199 51.9 . .	41.9
04	170 38.8	242 28.6	03.5	271 09.4	19.9	195 42.8	27.8	214 54.1	41.8
05	185 41.3	257 32.6	03.2	286 10.0	20.1	210 44.8	27.6	229 56.2	41.7
06	200 43.8	272 36.7	S17 02.9	301 10.5	S23 20.3	225 46.7	S11 27.5	244 58.4	S17 41.7
07	215 46.2	287 40.8	02.6	316 11.0	20.4	240 48.7	27.3	260 00.6	41.6
M 08	230 48.7	302 44.9	02.3	331 11.5	20.6	255 50.7	27.1	275 02.8	41.5
A 09	245 51.2	317 49.0 . .	02.0	346 12.0 . .	20.7	270 52.6 . .	26.9	290 04.9 . .	41.4
R 10	260 53.6	332 53.0	01.7	1 12.5	20.9	285 54.6	26.7	305 07.1	41.3
T 11	275 56.1	347 57.1	01.4	16 13.1	21.0	300 56.6	26.5	320 09.3	41.3
E 12	290 58.5	3 01.2	S17 01.1	31 13.6	S23 21.2	315 58.5	S11 26.3	335 11.5	S17 41.2
S 13	306 01.0	18 05.3	00.8	46 14.1	21.3	331 00.5	26.1	350 13.6	41.1
14	321 03.5	33 09.3	00.6	61 14.6	21.5	346 02.5	25.9	5 15.8	41.0
15	336 05.9	48 13.4 . .	00.3	76 15.1 . .	21.7	1 04.4 . .	25.7	20 18.0 . .	40.9
16	351 08.4	63 17.5	17 00.0	91 15.7	21.8	16 06.4	25.5	35 20.2	40.9
17	6 10.9	78 21.5	16 59.7	106 16.2	22.0	31 08.3	25.3	50 22.3	40.8
18	21 13.3	93 25.6	S16 59.4	121 16.7	S23 22.1	46 10.3	S11 25.2	65 24.5	S17 40.7
19	36 15.8	108 29.7	59.1	136 17.2	22.3	61 12.3	25.0	80 26.7	40.6
20	51 18.3	123 33.7	58.8	151 17.7	22.4	76 14.2	24.8	95 28.9	40.5
21	66 20.7	138 37.8 . .	58.5	166 18.2 . .	22.6	91 16.2 . .	24.6	110 31.1 . .	40.5
22	81 23.2	153 41.8	58.2	181 18.8	22.7	106 18.2	24.4	125 33.2	40.4
23	96 25.7	168 45.9	58.0	196 19.3	22.9	121 20.1	24.2	140 35.4	40.3
12 00	111 28.1	183 50.0	S16 57.7	211 19.8	S23 23.0	136 22.1	S11 24.0	155 37.6	S17 40.2
01	126 30.6	198 54.0	57.4	226 20.3	23.2	151 24.1	23.8	170 39.8	40.1
02	141 33.0	213 58.1	57.1	241 20.8	23.3	166 26.0	23.6	185 41.9	40.1
03	156 35.5	229 02.1 . .	56.8	256 21.3 . .	23.5	181 28.0 . .	23.4	200 44.1 . .	40.0
04	171 38.0	244 06.2	56.5	271 21.9	23.6	196 30.0	23.2	215 46.3	39.9
05	186 40.4	259 10.2	56.3	286 22.4	23.8	211 31.9	23.0	230 48.5	39.8
06	201 42.9	274 14.3	S16 56.0	301 22.9	S23 23.9	226 33.9	S11 22.8	245 50.6	S17 39.7
07	216 45.4	289 18.3	55.7	316 23.4	24.1	241 35.8	22.7	260 52.8	39.7
M 08	231 47.8	304 22.3	55.4	331 23.9	24.2	256 37.8	22.5	275 55.0	39.6
I 09	246 50.3	319 26.4 . .	55.2	346 24.4 . .	24.4	271 39.8 . .	22.3	290 57.2 . .	39.5
É 10	261 52.8	334 30.4	54.9	1 24.9	24.5	286 41.7	22.1	305 59.3	39.4
R 11	276 55.2	349 34.5	54.6	16 25.5	24.7	301 43.7	21.9	321 01.5	39.3
C 12	291 57.7	4 38.5	S16 54.3	31 26.0	S23 24.8	316 45.7	S11 21.7	336 03.7	S17 39.3
O 13	307 00.2	19 42.5	54.1	46 26.5	25.0	331 47.6	21.5	351 05.9	39.2
L 14	322 02.6	34 46.6	53.8	61 27.0	25.1	346 49.6	21.3	6 08.0	39.1
E 15	337 05.1	49 50.6 . .	53.5	76 27.5 . .	25.2	1 51.5 . .	21.1	21 10.2 . .	39.0
S 16	352 07.5	64 54.6	53.2	91 28.0	25.4	16 53.5	20.9	36 12.4	38.9
17	7 10.0	79 58.6	53.0	106 28.6	25.5	31 55.5	20.7	51 14.6	38.9
18	22 12.5	95 02.7	S16 52.7	121 29.1	S23 25.7	46 57.4	S11 20.5	66 16.7	S17 38.8
19	37 14.9	110 06.7	52.4	136 29.6	25.8	61 59.4	20.3	81 18.9	38.7
20	52 17.4	125 10.7	52.2	151 30.1	26.0	77 01.4	20.1	96 21.1	38.6
21	67 19.9	140 14.7 . .	51.9	166 30.6 . .	26.1	92 03.3 . .	20.0	111 23.3 . .	38.5
22	82 22.3	155 18.7	51.6	181 31.1	26.2	107 05.3	19.8	126 25.4	38.5
23	97 24.8	170 22.8	51.4	196 31.6	26.4	122 07.2	19.6	141 27.6	38.4
	h m								
Paso Mer.	16 35.3	*v* 4.1	*d* 0.3	*v* 0.5	*d* 0.2	*v* 2.0	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.5	S40 13.3
Achernar	335 22.0	S57 07.9
Acrux	173 02.6	S63 12.9
Adhara	255 07.4	S29 00.2
Aldebaran	290 42.2	N16 33.2
Alioth	166 15.1	N55 50.2
Alkaid	152 54.1	N49 12.0
Alnair	27 36.4	S46 51.5
Alnilam	275 39.9	S 1 11.4
Alphard	217 49.9	S 8 45.2
Alphecca	126 06.1	N26 38.3
Alpheratz	357 37.4	N29 12.7
Altair	62 02.7	N 8 55.5
Ankaa	353 09.7	S42 11.5
Antares	112 19.1	S26 28.7
Arcturus	145 50.3	N19 04.0
Atria	107 16.0	S69 03.8
Avior	234 15.0	S59 34.7
Bellatrix	278 25.2	N 6 22.1
Betelgeuse	270 54.4	N 7 24.6
Canopus	263 52.9	S52 42.5
Capella	280 25.1	N46 01.2
Deneb	49 27.9	N45 21.5
Denebola	182 27.3	N14 26.9
Diphda	348 49.8	S17 52.2
Dubhe	193 43.7	N61 37.7
Elnath	278 04.6	N28 37.5
Eltanin	90 43.8	N51 29.0
Enif	33 41.5	N 9 58.5
Fomalhaut	15 17.5	S29 30.6
Gacrux	171 54.2	S57 13.8
Gienah	175 46.0	S17 39.7
Hadar	148 39.6	S60 28.4
Hamal	327 53.9	N23 34.0
Kaus Aust.	83 36.2	S34 22.4
Kochab	137 20.3	N74 03.6
Markab	13 32.5	N15 19.4
Menkar	314 08.6	N 4 10.5
Menkent	148 00.6	S36 28.4
Miaplacidus	221 37.8	S69 48.2
Mirfak	308 31.5	N49 56.5
Nunki	75 51.2	S26 16.2
Peacock	53 10.2	S56 40.0
Pollux	243 19.9	N27 58.3
Procyon	244 53.1	N 5 10.1
Rasalhague	96 01.1	N12 32.6
Regulus	207 36.8	N11 51.5
Rigel	281 05.9	S 8 10.7
Rigil Kent.	139 43.9	S60 55.2
Sabik	102 05.9	S15 45.1
Schedar	349 33.9	N56 39.6
Shaula	96 14.1	S37 07.1
Sirius	258 28.0	S16 44.8
Spica	158 24.9	S11 16.5
Suhail	222 47.7	S43 31.1
Vega	80 35.3	N38 48.2
Zuben'ubi	136 58.9	S16 07.9

	AHS	Paso Mer.
	° ′	h m
Venus	71 43.2	11 48
Marte	100 38.4	9 55
Júpiter	25 06.0	14 56
Saturno	44 16.4	13 39

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v		Dec		d	Ph
d h	°	′	°	′	°	′	′	°	′	′	′
10 00	178	10.3	S21	59.5	87	32.4	15.5	N 5	46.8	13.4	55.4
01	193	10.1		59.1	102	06.9	15.6	6	00.2	13.4	55.4
02	208	09.8		58.7	116	41.5	15.5	6	13.6	13.3	55.4
03	223	09.6	. .	58.4	131	16.0	15.5	6	26.9	13.3	55.3
04	238	09.3		58.0	145	50.5	15.5	6	40.2	13.2	55.3
05	253	09.1		57.6	160	25.0	15.5	6	53.4	13.2	55.3
06	268	08.8	S21	57.2	174	59.5	15.5	N 7	06.6	13.2	55.3
07	283	08.6		56.9	189	34.0	15.6	7	19.8	13.1	55.2
L 08	298	08.3		56.5	204	08.6	15.5	7	32.9	13.1	55.2
U 09	313	08.1	. .	56.1	218	43.1	15.5	7	46.0	13.0	55.2
N 10	328	07.8		55.7	233	17.6	15.5	7	59.0	13.0	55.2
E 11	343	07.6		55.4	247	52.1	15.5	8	12.0	13.0	55.1
S 12	358	07.3	S21	55.0	262	26.6	15.5	N 8	25.0	12.9	55.1
13	13	07.0		54.6	277	01.1	15.5	8	37.9	12.8	55.1
14	28	06.8		54.2	291	35.6	15.4	8	50.7	12.8	55.1
15	43	06.5	. .	53.9	306	10.0	15.5	9	03.5	12.8	55.0
16	58	06.3		53.5	320	44.5	15.5	9	16.3	12.7	55.0
17	73	06.0		53.1	335	19.0	15.4	9	29.0	12.7	55.0
18	88	05.8	S21	52.7	349	53.4	15.4	N 9	41.7	12.6	55.0
19	103	05.5		52.3	4	27.8	15.4	9	54.3	12.6	55.0
20	118	05.3		51.9	19	02.2	15.4	10	06.9	12.6	54.9
21	133	05.0	. .	51.6	33	36.6	15.4	10	19.5	12.4	54.9
22	148	04.8		51.2	48	11.0	15.4	10	31.9	12.5	54.9
23	163	04.5		50.8	62	45.4	15.3	10	44.4	12.4	54.9
11 00	178	04.3	S21	50.4	77	19.7	15.4	N10	56.8	12.3	54.8
01	193	04.1		50.0	91	54.1	15.3	11	09.1	12.3	54.8
02	208	03.8		49.6	106	28.4	15.3	11	21.4	12.2	54.8
03	223	03.6	. .	49.2	121	02.7	15.2	11	33.6	12.1	54.8
04	238	03.3		48.9	135	36.9	15.3	11	45.7	12.2	54.8
05	253	03.1		48.5	150	11.2	15.2	11	57.9	12.0	54.7
06	268	02.8	S21	48.1	164	45.4	15.2	N12	09.9	12.0	54.7
07	283	02.6		47.7	179	19.6	15.2	12	21.9	12.0	54.7
M 08	298	02.3		47.3	193	53.8	15.1	12	33.9	11.9	54.7
A 09	313	02.1	. .	46.9	208	27.9	15.1	12	45.8	11.8	54.7
R 10	328	01.8		46.5	223	02.0	15.1	12	57.6	11.8	54.7
T 11	343	01.6		46.1	237	36.1	15.1	13	09.4	11.7	54.6
E 12	358	01.3	S21	45.7	252	10.2	15.0	N13	21.1	11.6	54.6
S 13	13	01.1		45.3	266	44.2	15.0	13	32.7	11.6	54.6
14	28	00.9		44.9	281	18.2	15.0	13	44.3	11.6	54.6
15	43	00.6	. .	44.5	295	52.2	14.9	13	55.9	11.4	54.6
16	58	00.4		44.1	310	26.1	14.9	14	07.3	11.4	54.5
17	73	00.1		43.7	325	00.0	14.9	14	18.7	11.4	54.5
18	87	59.9	S21	43.3	339	33.9	14.8	N14	30.1	11.3	54.5
19	102	59.6		42.9	354	07.7	14.8	14	41.4	11.2	54.5
20	117	59.4		42.5	8	41.5	14.8	14	52.6	11.1	54.5
21	132	59.1	. .	42.1	23	15.3	14.8	15	03.7	11.1	54.5
22	147	58.9		41.7	37	49.1	14.7	15	14.8	11.0	54.5
23	162	58.7		41.3	52	22.8	14.6	15	25.8	11.0	54.4
12 00	177	58.4	S21	40.9	66	56.4	14.6	N15	36.8	10.9	54.4
01	192	58.2		40.5	81	30.0	14.6	15	47.7	10.8	54.4
02	207	57.9		40.1	96	03.6	14.6	15	58.5	10.7	54.4
03	222	57.7	. .	39.7	110	37.2	14.5	16	09.2	10.7	54.4
04	237	57.5		39.3	125	10.7	14.4	16	19.9	10.6	54.4
05	252	57.2		38.9	139	44.1	14.4	16	30.5	10.6	54.4
06	267	57.0	S21	38.5	154	17.5	14.4	N16	41.1	10.4	54.3
07	282	56.7		38.1	168	50.9	14.4	16	51.5	10.4	54.3
M 08	297	56.5		37.7	183	24.3	14.3	17	01.9	10.3	54.3
I 09	312	56.3	. .	37.3	197	57.6	14.2	17	12.2	10.3	54.3
É 10	327	56.0		36.8	212	30.8	14.2	17	22.5	10.2	54.3
R 11	342	55.8		36.4	227	04.0	14.2	17	32.7	10.1	54.3
C 12	357	55.5	S21	36.0	241	37.2	14.1	N17	42.8	10.0	54.3
O 13	12	55.3		35.6	256	10.3	14.1	17	52.8	9.9	54.3
L 14	27	55.1		35.2	270	43.4	14.0	18	02.7	9.9	54.3
E 15	42	54.8	. .	34.8	285	16.4	14.0	18	12.6	9.8	54.2
S 16	57	54.6		34.4	299	49.4	13.9	18	22.4	9.7	54.2
17	72	54.3		34.0	314	22.3	13.9	18	32.1	9.6	54.2
18	87	54.1	S21	33.5	328	55.2	13.8	N18	41.7	9.6	54.2
19	102	53.9		33.1	343	28.0	13.8	18	51.3	9.4	54.2
20	117	53.6		32.7	358	00.8	13.7	19	00.7	9.4	54.2
21	132	53.4	. .	32.3	12	33.5	13.7	19	10.1	9.3	54.2
22	147	53.2		31.9	27	06.2	13.6	19	19.4	9.2	54.2
23	162	52.9		31.4	41	38.8	13.6	N19	28.6	9.2	54.2
	S/D	16.3	d	0.4	S/D		15.0		14.9		14.8

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			10	11	12	13
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	08	09	10	07	▬	10 45	10 09	09 02	▭
N 70	07	53	09	29	▬	10 57	10 32	09 55	▭
68	07	40	09	02	10 53	11 06	10 50	10 28	09 48
66	07	29	08	41	10 05	11 14	11 04	10 52	10 35
64	07	20	08	25	09 34	11 21	11 16	11 11	11 06
62	07	12	08	11	09 11	11 27	11 26	11 27	11 29
60	07	04	07	59	08 53	11 32	11 35	11 40	11 48
N 58	06	58	07	49	08 38	11 36	11 43	11 51	12 04
56	06	52	07	40	08 25	11 40	11 50	12 01	12 17
54	06	47	07	32	08 14	11 44	11 56	12 10	12 28
52	06	42	07	25	08 04	11 47	12 01	12 18	12 39
50	06	37	07	18	07 55	11 50	12 06	12 25	12 48
45	06	27	07	04	07 37	11 57	12 17	12 40	13 07
N 40	06	18	06	51	07 21	12 02	12 26	12 53	13 23
35	06	09	06	41	07 08	12 07	12 34	13 04	13 37
30	06	01	06	31	06 57	12 11	12 41	13 13	13 48
20	05	47	06	14	06 37	12 19	12 53	13 30	14 09
N 10	05	32	05	58	06 20	12 25	13 04	13 44	14 26
0	05	16	05	42	06 04	12 32	13 14	13 57	14 43
S 10	04	58	05	25	05 48	12 38	13 24	14 11	15 00
20	04	37	05	06	05 30	12 45	13 35	14 26	15 17
30	04	10	04	43	05 10	12 52	13 47	14 43	15 38
35	03	53	04	29	04 58	12 57	13 54	14 52	15 50
40	03	32	04	12	04 44	13 02	14 03	15 04	16 04
45	03	04	03	52	04 28	13 08	14 13	15 17	16 21
S 50	02	25	03	25	04 07	13 15	14 24	15 33	16 42
52	02	03	03	12	03 58	13 18	14 30	15 41	16 52
54	01	32	02	56	03 47	13 22	14 36	15 50	17 03
56	00	31	02	37	03 34	13 26	14 43	15 59	17 16
58	////		02	13	03 19	13 31	14 50	16 11	17 30
S 60	////		01	41	03 02	13 36	14 59	16 23	17 48

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 10	11	12	13
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	▬		14	09	16 07	01 28	03 33	06 10	▭
N 70	▬		14	48	16 23	01 19	03 12	05 19	▭
68	13	24	15	15	16 36	01 11	02 56	04 47	07 01
66	14	12	15	35	16 47	01 05	02 43	04 24	06 14
64	14	42	15	52	16 57	01 00	02 32	04 06	05 44
62	15	05	16	05	17 05	00 56	02 23	03 52	05 22
60	15	23	16	17	17 12	00 52	02 16	03 39	05 04
N 58	15	38	16	27	17 18	00 49	02 09	03 29	04 49
56	15	51	16	36	17 24	00 46	02 03	03 19	04 36
54	16	02	16	44	17 29	00 43	01 57	03 11	04 25
52	16	12	16	52	17 34	00 41	01 53	03 04	04 15
50	16	21	16	58	17 39	00 39	01 48	02 58	04 06
45	16	40	17	13	17 49	00 34	01 39	02 44	03 48
N 40	16	55	17	25	17 58	00 30	01 31	02 32	03 33
35	17	08	17	35	18 07	00 27	01 25	02 22	03 20
30	17	19	17	45	18 15	00 24	01 19	02 14	03 09
20	17	38	18	02	18 29	00 18	01 09	01 59	02 51
N 10	17	56	18	18	18 44	00 14	01 00	01 47	02 34
0	18	12	18	34	19 00	00 10	00 52	01 35	02 19
S 10	18	28	18	51	19 17	00 05	00 44	01 23	02 04
20	18	45	19	09	19 38	00 01	00 35	01 10	01 48
30	19	05	19	32	20 05	24 25	00 25	00 56	01 29
35	19	17	19	46	20 22	24 19	00 19	00 48	01 19
40	19	31	20	03	20 43	24 13	00 13	00 38	01 06
45	19	47	20	23	21 10	24 06	00 06	00 27	00 52
S 50	20	08	20	50	21 49	23 57	24 14	00 14	00 34
52	20	17	21	03	22 11	23 53	24 08	00 08	00 26
54	20	28	21	19	22 41	23 48	24 01	00 01	00 17
56	20	41	21	37	23 35	23 43	23 54	24 07	00 07
58	20	55	22	00	////	23 38	23 45	23 55	24 10
S 60	21	12	22	32	////	23 31	23 35	23 42	23 52

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		SOL Paso Mer.	LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		LUNA Edad		LUNA Fase
d	m	s	m	s	h m	h	m	h	m	d	%	
10	07	18	07	30	12 08	18	42	06	21	08	57	
11	07	42	07	54	12 08	19	24	07	03	09	67	
12	08	06	08	17	12 08	20	08	07	46	10	75	

UT (HmGr)	ARIES	VENUS −4·2		MARTE +1·5		JÚPITER −2·1		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
13 00	112 27.3	185 26.8	S16 51.1	211 32.1	S23 26.5	137 09.2	S11 19.4	156 29.8	S17 38.3
01	127 29.7	200 30.8	50.8	226 32.7	26.7	152 11.2	19.2	171 32.0	38.2
02	142 32.2	215 34.8	50.6	241 33.2	26.8	167 13.1	19.0	186 34.1	38.1
03	157 34.7	230 38.8 . .	50.3	256 33.7 . .	27.0	182 15.1 . .	18.8	201 36.3 . .	38.1
04	172 37.1	245 42.8	50.0	271 34.2	27.1	197 17.0	18.6	216 38.5	38.0
05	187 39.6	260 46.8	49.8	286 34.7	27.2	212 19.0	18.4	231 40.7	37.9
06	202 42.0	275 50.8	S16 49.5	301 35.2	S23 27.4	227 21.0	S11 18.2	246 42.8	S17 37.8
07	217 44.5	290 54.8	49.3	316 35.7	27.5	242 22.9	18.0	261 45.0	37.7
08	232 47.0	305 58.8	49.0	331 36.2	27.6	257 24.9	17.8	276 47.2	37.6
J 09	247 49.4	321 02.8 . .	48.7	346 36.8 . .	27.8	272 26.8 . .	17.6	291 49.4 . .	37.6
U 10	262 51.9	336 06.8	48.5	1 37.3	27.9	287 28.8	17.4	306 51.5	37.5
E 11	277 54.4	351 10.8	48.2	16 37.8	28.1	302 30.8	17.2	321 53.7	37.4
V 12	292 56.8	6 14.7	S16 48.0	31 38.3	S23 28.2	317 32.7	S11 17.0	336 55.9	S17 37.3
E 13	307 59.3	21 18.7	47.7	46 38.8	28.3	332 34.7	16.8	351 58.1	37.2
S 14	323 01.8	36 22.7	47.5	61 39.3	28.5	347 36.6	16.7	7 00.2	37.2
15	338 04.2	51 26.7 . .	47.2	76 39.8 . .	28.6	2 38.6 . .	16.5	22 02.4 . .	37.1
16	353 06.7	66 30.7	47.0	91 40.3	28.7	17 40.6	16.3	37 04.6	37.0
17	8 09.1	81 34.6	46.7	106 40.8	28.9	32 42.5	16.1	52 06.8	36.9
18	23 11.6	96 38.6	S16 46.5	121 41.4	S23 29.0	47 44.5	S11 15.9	67 08.9	S17 36.8
19	38 14.1	111 42.6	46.2	136 41.9	29.1	62 46.4	15.7	82 11.1	36.8
20	53 16.5	126 46.6	46.0	151 42.4	29.3	77 48.4	15.5	97 13.3	36.7
21	68 19.0	141 50.5 . .	45.7	166 42.9 . .	29.4	92 50.4 . .	15.3	112 15.5 . .	36.6
22	83 21.5	156 54.5	45.5	181 43.4	29.5	107 52.3	15.1	127 17.6	36.5
23	98 23.9	171 58.4	45.2	196 43.9	29.7	122 54.3	14.9	142 19.8	36.4
14 00	113 26.4	187 02.4	S16 45.0	211 44.4	S23 29.8	137 56.2	S11 14.7	157 22.0	S17 36.4
01	128 28.9	202 06.4	44.7	226 44.9	29.9	152 58.2	14.5	172 24.2	36.3
02	143 31.3	217 10.3	44.5	241 45.4	30.1	168 00.1	14.3	187 26.3	36.2
03	158 33.8	232 14.3 . .	44.3	256 46.0 . .	30.2	183 02.1 . .	14.1	202 28.5 . .	36.1
04	173 36.3	247 18.2	44.0	271 46.5	30.3	198 04.1	13.9	217 30.7	36.0
05	188 38.7	262 22.2	43.8	286 47.0	30.5	213 06.0	13.7	232 32.8	36.0
06	203 41.2	277 26.1	S16 43.5	301 47.5	S23 30.6	228 08.0	S11 13.5	247 35.0	S17 35.9
07	218 43.6	292 30.0	43.3	316 48.0	30.7	243 09.9	13.3	262 37.2	35.8
V 08	233 46.1	307 34.0	43.1	331 48.5	30.9	258 11.9	13.1	277 39.4	35.7
I 09	248 48.6	322 37.9 . .	42.8	346 49.0 . .	31.0	273 13.9 . .	13.0	292 41.5 . .	35.6
E 10	263 51.0	337 41.8	42.6	1 49.5	31.1	288 15.8	12.8	307 43.7	35.5
R 11	278 53.5	352 45.8	42.3	16 50.0	31.2	303 17.8	12.6	322 45.9	35.5
N 12	293 56.0	7 49.7	S16 42.1	31 50.5	S23 31.4	318 19.7	S11 12.4	337 48.1	S17 35.4
E 13	308 58.4	22 53.6	41.9	46 51.0	31.5	333 21.7	12.2	352 50.2	35.3
S 14	324 00.9	37 57.6	41.6	61 51.5	31.6	348 23.6	12.0	7 52.4	35.2
15	339 03.4	53 01.5 . .	41.4	76 52.1 . .	31.7	3 25.6 . .	11.8	22 54.6 . .	35.1
16	354 05.8	68 05.4	41.2	91 52.6	31.9	18 27.6	11.6	37 56.8	35.1
17	9 08.3	83 09.3	41.0	106 53.1	32.0	33 29.5	11.4	52 58.9	35.0
18	24 10.8	98 13.2	S16 40.7	121 53.6	S23 32.1	48 31.5	S11 11.2	68 01.1	S17 34.9
19	39 13.2	113 17.1	40.5	136 54.1	32.2	63 33.4	11.0	83 03.3	34.8
20	54 15.7	128 21.0	40.3	151 54.6	32.4	78 35.4	10.8	98 05.4	34.7
21	69 18.1	143 24.9 . .	40.0	166 55.1 . .	32.5	93 37.3 . .	10.6	113 07.6 . .	34.7
22	84 20.6	158 28.8	39.8	181 55.6	32.6	108 39.3	10.4	128 09.8	34.6
23	99 23.1	173 32.7	39.6	196 56.1	32.7	123 41.2	10.2	143 12.0	34.5
15 00	114 25.5	188 36.6	S16 39.4	211 56.6	S23 32.9	138 43.2	S11 10.0	158 14.1	S17 34.4
01	129 28.0	203 40.5	39.1	226 57.1	33.0	153 45.2	09.8	173 16.3	34.3
02	144 30.5	218 44.4	38.9	241 57.6	33.1	168 47.1	09.6	188 18.5	34.2
03	159 32.9	233 48.3 . .	38.7	256 58.1 . .	33.2	183 49.1 . .	09.4	203 20.7 . .	34.2
04	174 35.4	248 52.2	38.5	271 58.6	33.3	198 51.0	09.2	218 22.8	34.1
05	189 37.9	263 56.1	38.3	286 59.2	33.5	213 53.0	09.0	233 25.0	34.0
06	204 40.3	278 59.9	S16 38.0	301 59.7	S23 33.6	228 54.9	S11 08.8	248 27.2	S17 33.9
07	219 42.8	294 03.8	37.8	317 00.2	33.7	243 56.9	08.6	263 29.3	33.8
S 08	234 45.3	309 07.7	37.6	332 00.7	33.8	258 58.8	08.4	278 31.5	33.8
Á 09	249 47.7	324 11.6 . .	37.4	347 01.2 . .	33.9	274 00.8 . .	08.2	293 33.7 . .	33.7
B 10	264 50.2	339 15.4	37.2	2 01.7	34.1	289 02.8	08.1	308 35.9	33.6
A 11	279 52.6	354 19.3	37.0	17 02.2	34.2	304 04.7	07.9	323 38.0	33.5
D 12	294 55.1	9 23.2	S16 36.7	32 02.7	S23 34.3	319 06.7	S11 07.7	338 40.2	S17 33.4
O 13	309 57.6	24 27.0	36.5	47 03.2	34.4	334 08.6	07.5	353 42.4	33.4
14	325 00.0	39 30.9	36.3	62 03.7	34.5	349 10.6	07.3	8 44.6	33.3
15	340 02.5	54 34.7 . .	36.1	77 04.2 . .	34.6	4 12.5 . .	07.1	23 46.7 . .	33.2
16	355 05.0	69 38.6	35.9	92 04.7	34.8	19 14.5	06.9	38 48.9	33.1
17	10 07.4	84 42.4	35.7	107 05.2	34.9	34 16.4	06.7	53 51.1	33.0
18	25 09.9	99 46.3	S16 35.5	122 05.7	S23 35.0	49 18.4	S11 06.5	68 53.2	S17 32.9
19	40 12.4	114 50.1	35.3	137 06.2	35.1	64 20.3	06.3	83 55.4	32.9
20	55 14.8	129 53.9	35.1	152 06.7	35.2	79 22.3	06.1	98 57.6	32.8
21	70 17.3	144 57.8 . .	34.9	167 07.2 . .	35.3	94 24.3 . .	05.9	113 59.8 . .	32.7
22	85 19.8	160 01.6	34.6	182 07.7	35.5	109 26.2	05.7	129 01.9	32.6
23	100 22.2	175 05.4	34.4	197 08.2	35.6	124 28.2	05.5	144 04.1	32.5
	h m								
Paso Mer.	16 23.5	*v* 3.9	*d* 0.2	*v* 0.5	*d* 0.1	*v* 2.0	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.5	S40 13.3
Achernar	335 22.0	S57 07.9
Acrux	173 02.5	S63 12.9
Adhara	255 07.4	S29 00.2
Aldebaran	290 42.2	N16 33.2
Alioth	166 15.1	N55 50.2
Alkaid	152 54.0	N49 12.0
Alnair	27 36.4	S46 51.5
Alnilam	275 39.9	S 1 11.4
Alphard	217 49.9	S 8 45.2
Alphecca	126 06.0	N26 38.3
Alpheratz	357 37.4	N29 12.7
Altair	62 02.7	N 8 55.5
Ankaa	353 09.7	S42 11.5
Antares	112 19.1	S26 28.7
Arcturus	145 50.2	N19 04.0
Atria	107 16.0	S69 03.8
Avior	234 15.0	S59 34.7
Bellatrix	278 25.2	N 6 22.1
Betelgeuse	270 54.4	N 7 24.6
Canopus	263 52.9	S52 42.5
Capella	280 25.1	N46 01.2
Deneb	49 27.9	N45 21.5
Denebola	182 27.3	N14 26.9
Diphda	348 49.8	S17 52.2
Dubhe	193 43.7	N61 37.7
Elnath	278 04.6	N28 37.5
Eltanin	90 43.8	N51 29.0
Enif	33 41.5	N 9 58.5
Fomalhaut	15 17.5	S29 30.6
Gacrux	171 54.2	S57 13.9
Gienah	175 46.0	S17 39.7
Hadar	148 39.5	S60 28.4
Hamal	327 53.9	N23 34.0
Kaus Aust.	83 36.2	S34 22.4
Kochab	137 20.3	N74 03.6
Markab	13 32.5	N15 19.4
Menkar	314 08.6	N 4 10.5
Menkent	148 00.6	S36 28.4
Miaplacidus	221 37.8	S69 48.3
Mirfak	308 31.5	N49 56.5
Nunki	75 51.2	S26 16.2
Peacock	53 10.2	S56 40.0
Pollux	243 19.9	N27 58.3
Procyon	244 53.1	N 5 10.1
Rasalhague	96 01.1	N12 32.6
Regulus	207 36.8	N11 51.5
Rigel	281 05.9	S 8 10.7
Rigil Kent.	139 43.8	S60 55.2
Sabik	102 05.9	S15 45.1
Schedar	349 33.9	N56 39.6
Shaula	96 14.1	S37 07.1
Sirius	258 28.0	S16 44.9
Spica	158 24.9	S11 16.5
Suhail	222 47.7	S43 31.2
Vega	80 35.3	N38 48.1
Zuben'ubi	136 58.8	S16 07.9

	AHS	Paso Mer.
	° ′	h m
Venus	73 36.0	11 29
Marte	98 18.0	9 53
Júpiter	24 29.8	14 46
Saturno	43 55.6	13 29

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph		
d h	°	′	°	′	°	′	′	°	′	′	′
13 00	177	52.7	S21	31.0	56	11.4	13.5	N19	37.8	9.0	54.2
01	192	52.5		30.6	70	43.9	13.5	19	46.8	9.0	54.2
02	207	52.2		30.2	85	16.4	13.5	19	55.8	8.9	54.1
03	222	52.0	. .	29.8	99	48.9	13.3	20	04.7	8.8	54.1
04	237	51.8		29.3	114	21.2	13.4	20	13.5	8.7	54.1
05	252	51.5		28.9	128	53.6	13.3	20	22.2	8.6	54.1
06	267	51.3	S21	28.5	143	25.9	13.2	N20	30.8	8.6	54.1
07	282	51.1		28.1	157	58.1	13.1	20	39.4	8.4	54.1
J 08	297	50.8		27.6	172	30.2	13.2	20	47.8	8.3	54.1
U 09	312	50.6	. .	27.2	187	02.4	13.0	20	56.1	8.3	54.1
E 10	327	50.4		26.8	201	34.4	13.1	21	04.4	8.2	54.1
V 11	342	50.1		26.3	216	06.5	12.9	21	12.6	8.1	54.1
E 12	357	49.9	S21	25.9	230	38.4	12.9	N21	20.7	7.9	54.1
S 13	12	49.7		25.5	245	10.3	12.9	21	28.6	7.9	54.1
14	27	49.4		25.1	259	42.2	12.8	21	36.5	7.8	54.1
15	42	49.2	. .	24.6	274	14.0	12.7	21	44.3	7.7	54.1
16	57	49.0		24.2	288	45.7	12.7	21	52.0	7.7	54.1
17	72	48.7		23.8	303	17.4	12.7	21	59.7	7.5	54.1
18	87	48.5	S21	23.3	317	49.1	12.5	N22	07.2	7.4	54.1
19	102	48.3		22.9	332	20.6	12.6	22	14.6	7.3	54.1
20	117	48.0		22.5	346	52.2	12.5	22	21.9	7.2	54.1
21	132	47.8	. .	22.0	1	23.7	12.4	22	29.1	7.1	54.1
22	147	47.6		21.6	15	55.1	12.4	22	36.2	7.1	54.0
23	162	47.4		21.1	30	26.5	12.3	22	43.3	6.9	54.0
14 00	177	47.1	S21	20.7	44	57.8	12.3	N22	50.2	6.8	54.0
01	192	46.9		20.3	59	29.1	12.2	22	57.0	6.7	54.0
02	207	46.7		19.8	74	00.3	12.1	23	03.7	6.6	54.0
03	222	46.4	. .	19.4	88	31.4	12.1	23	10.3	6.5	54.0
04	237	46.2		18.9	103	02.5	12.1	23	16.8	6.4	54.0
05	252	46.0		18.5	117	33.6	12.0	23	23.2	6.3	54.0
06	267	45.8	S21	18.1	132	04.6	12.0	N23	29.5	6.2	54.0
07	282	45.5		17.6	146	35.6	11.9	23	35.7	6.1	54.0
V 08	297	45.3		17.2	161	06.5	11.8	23	41.8	6.0	54.0
I 09	312	45.1	. .	16.7	175	37.3	11.8	23	47.8	5.9	54.0
E 10	327	44.9		16.3	190	08.1	11.8	23	53.7	5.7	54.0
R 11	342	44.6		15.8	204	38.9	11.7	23	59.4	5.7	54.0
N 12	357	44.4	S21	15.4	219	09.6	11.6	N24	05.1	5.6	54.0
E 13	12	44.2		14.9	233	40.2	11.6	24	10.7	5.4	54.0
S 14	27	44.0		14.5	248	10.8	11.6	24	16.1	5.3	54.0
15	42	43.7	. .	14.0	262	41.4	11.5	24	21.4	5.2	54.0
16	57	43.5		13.6	277	11.9	11.4	24	26.6	5.1	54.0
17	72	43.3		13.1	291	42.3	11.4	24	31.7	5.0	54.0
18	87	43.1	S21	12.7	306	12.7	11.4	N24	36.7	4.9	54.0
19	102	42.8		12.2	320	43.1	11.3	24	41.6	4.8	54.0
20	117	42.6		11.8	335	13.4	11.3	24	46.4	4.6	54.0
21	132	42.4	. .	11.3	349	43.7	11.2	24	51.0	4.6	54.0
22	147	42.2		10.9	4	13.9	11.2	24	55.6	4.4	54.1
23	162	41.9		10.4	18	44.1	11.1	25	00.0	4.3	54.1
15 00	177	41.7	S21	10.0	33	14.2	11.1	N25	04.3	4.2	54.1
01	192	41.5		09.5	47	44.3	11.0	25	08.5	4.1	54.1
02	207	41.3		09.1	62	14.3	11.0	25	12.6	3.9	54.1
03	222	41.1	. .	08.6	76	44.3	11.0	25	16.5	3.9	54.1
04	237	40.8		08.1	91	14.3	10.9	25	20.4	3.7	54.1
05	252	40.6		07.7	105	44.2	10.9	25	24.1	3.6	54.1
06	267	40.4	S21	07.2	120	14.1	10.8	N25	27.7	3.5	54.1
07	282	40.2		06.8	134	43.9	10.8	25	31.2	3.3	54.1
S 08	297	40.0		06.3	149	13.7	10.8	25	34.5	3.3	54.1
Á 09	312	39.7	. .	05.8	163	43.5	10.7	25	37.8	3.1	54.1
B 10	327	39.5		05.4	178	13.2	10.7	25	40.9	3.0	54.1
A 11	342	39.3		04.9	192	42.9	10.6	25	43.9	2.9	54.1
D 12	357	39.1	S21	04.5	207	12.5	10.7	N25	46.8	2.7	54.1
O 13	12	38.9		04.0	221	42.2	10.5	25	49.5	2.7	54.1
14	27	38.7		03.5	236	11.7	10.6	25	52.2	2.5	54.1
15	42	38.4	. .	03.1	250	41.3	10.5	25	54.7	2.4	54.1
16	57	38.2		02.6	265	10.8	10.5	25	57.1	2.2	54.1
17	72	38.0		02.1	279	40.3	10.5	25	59.3	2.2	54.1
18	87	37.8	S21	01.7	294	09.8	10.4	N26	01.5	2.0	54.1
19	102	37.6		01.2	308	39.2	10.4	26	03.5	1.9	54.1
20	117	37.4		00.7	323	08.6	10.4	26	05.4	1.7	54.2
21	132	37.1	21	00.3	337	38.0	10.3	26	07.1	1.7	54.2
22	147	36.9	20	59.8	352	07.3	10.3	26	08.8	1.5	54.2
23	162	36.7	S20	59.3	6	36.6	10.3	N26	10.3	1.3	54.2
	S/D	16.3	*d*	0.4	S/D	14.7		14.7			14.7

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 13	Orto Luna 14	Orto Luna 15	Orto Luna 16
°	h m	h m	h m	h m	h m	h m	h m
N 72	08 03	09 56	▬	▭	▭	▭	▭
N 70	07 48	09 21	▬	▭	▭	▭	▭
68	07 36	08 56	10 38	09 48	▭	▭	▭
66	07 25	08 36	09 56	10 35	09 51	▭	▭
64	07 16	08 20	09 28	11 06	11 00	10 50	▭
62	07 09	08 07	09 06	11 29	11 36	11 52	12 30
60	07 02	07 56	08 49	11 48	12 02	12 26	13 09
N 58	06 56	07 46	08 35	12 04	12 22	12 51	13 36
56	06 50	07 38	08 22	12 17	12 39	13 11	13 57
54	06 45	07 30	08 12	12 28	12 53	13 28	14 14
52	06 40	07 23	08 02	12 39	13 06	13 42	14 29
50	06 36	07 16	07 53	12 48	13 17	13 55	14 42
45	06 26	07 02	07 35	13 07	13 40	14 20	15 09
N 40	06 17	06 51	07 20	13 23	13 59	14 41	15 30
35	06 09	06 40	07 08	13 37	14 15	14 58	15 48
30	06 01	06 31	06 57	13 48	14 28	15 13	16 03
20	05 47	06 14	06 38	14 09	14 51	15 38	16 29
N 10	05 33	05 59	06 21	14 26	15 12	16 00	16 51
0	05 17	05 43	06 05	14 43	15 31	16 20	17 11
S 10	05 00	05 27	05 50	15 00	15 50	16 41	17 32
20	04 40	05 08	05 32	15 17	16 10	17 03	17 54
30	04 13	04 46	05 13	15 38	16 34	17 28	18 20
35	03 57	04 32	05 01	15 50	16 48	17 43	18 35
40	03 36	04 16	04 48	16 04	17 04	18 01	18 53
45	03 09	03 56	04 32	16 21	17 23	18 22	19 14
S 50	02 32	03 30	04 12	16 42	17 48	18 48	19 41
52	02 11	03 17	04 02	16 52	17 59	19 01	19 54
54	01 43	03 02	03 52	17 03	18 13	19 16	20 09
56	00 57	02 44	03 40	17 16	18 29	19 34	20 26
58	////	02 22	03 26	17 30	18 47	19 55	20 47
S 60	////	01 52	03 09	17 48	19 10	20 22	21 14

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 13	Ocaso Luna 14	Ocaso Luna 15	Ocaso Luna 16
°	h m	h m	h m	h m	h m	h m	h m
N 72	▬	14 23	16 16	▭	▭	▭	▭
N 70	▬	14 58	16 31	▭	▭	▭	▭
68	13 41	15 23	16 43	07 01	▭	▭	▭
66	14 23	15 43	16 54	06 14	08 36	▭	▭
64	14 51	15 58	17 02	05 44	07 28	09 20	▭
62	15 12	16 11	17 10	05 22	06 53	08 19	09 26
60	15 29	16 23	17 17	05 04	06 27	07 45	08 48
N 58	15 44	16 32	17 23	04 49	06 07	07 20	08 21
56	15 56	16 41	17 28	04 36	05 51	07 00	07 59
54	16 07	16 49	17 33	04 25	05 37	06 44	07 42
52	16 17	16 56	17 38	04 15	05 25	06 30	07 27
50	16 25	17 02	17 43	04 06	05 14	06 17	07 14
45	16 43	17 16	17 52	03 48	04 51	05 52	06 47
N 40	16 58	17 28	18 01	03 33	04 33	05 32	06 26
35	17 11	17 38	18 09	03 20	04 18	05 15	06 09
30	17 22	17 47	18 17	03 09	04 05	05 00	05 53
20	17 40	18 04	18 31	02 51	03 43	04 36	05 28
N 10	17 57	18 20	18 46	02 34	03 24	04 14	05 06
0	18 13	18 35	19 01	02 19	03 06	03 54	04 45
S 10	18 28	18 51	19 18	02 04	02 48	03 35	04 24
20	18 45	19 10	19 38	01 48	02 29	03 13	04 02
30	19 05	19 32	20 04	01 29	02 07	02 49	03 36
35	19 17	19 46	20 21	01 19	01 54	02 35	03 21
40	19 30	20 02	20 41	01 06	01 39	02 18	03 04
45	19 46	20 22	21 08	00 52	01 22	01 58	02 42
S 50	20 06	20 47	21 45	00 34	01 00	01 33	02 16
52	20 15	21 00	22 06	00 26	00 50	01 21	02 03
54	20 25	21 15	22 33	00 17	00 38	01 07	01 48
56	20 37	21 32	23 16	00 07	00 25	00 52	01 30
58	20 51	21 54	////	24 10	00 10	00 33	01 09
S 60	21 08	22 23	////	23 52	24 09	00 09	00 41

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d	%
13	08 29	08 40	12 09	20 54	08 31	11	83
14	08 51	09 02	12 09	21 42	09 18	12	89
15	09 13	09 23	12 09	22 33	10 07	13	94

UT (HmGr)	ARIES	VENUS −4·3		MARTE +1·5		JÚPITER −2·1		SATURNO +0·7	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
16 00	115 24.7	190 09.2	S16 34.2	212 08.7	S23 35.7	139 30.1	S11 05.3	159 06.3	S17 32.5
01	130 27.1	205 13.1	34.0	227 09.2	35.8	154 32.1	05.1	174 08.5	32.4
02	145 29.6	220 16.9	33.8	242 09.8	35.9	169 34.0	04.9	189 10.6	32.3
03	160 32.1	235 20.7	33.6	257 10.3	36.0	184 36.0	04.7	204 12.8	32.2
04	175 34.5	250 24.5	33.4	272 10.8	36.1	199 37.9	04.5	219 15.0	32.1
05	190 37.0	265 28.3	33.2	287 11.3	36.2	214 39.9	04.3	234 17.1	32.0
06	205 39.5	280 32.1	S16 33.0	302 11.8	S23 36.4	229 41.8	S11 04.1	249 19.3	S17 32.0
07	220 41.9	295 35.9	32.8	317 12.3	36.5	244 43.8	03.9	264 21.5	31.9
08	235 44.4	310 39.7	32.6	332 12.8	36.6	259 45.7	03.7	279 23.7	31.8
D 09	250 46.9	325 43.5	32.4	347 13.3	36.7	274 47.7	03.5	294 25.8	31.7
O 10	265 49.3	340 47.3	32.3	2 13.8	36.8	289 49.6	03.3	309 28.0	31.6
M 11	280 51.8	355 51.1	32.1	17 14.3	36.9	304 51.6	03.1	324 30.2	31.6
I 12	295 54.2	10 54.9	S16 31.9	32 14.8	S23 37.0	319 53.6	S11 02.9	339 32.3	S17 31.5
N 13	310 56.7	25 58.7	31.7	47 15.3	37.1	334 55.5	02.7	354 34.5	31.4
G 14	325 59.2	41 02.4	31.5	62 15.8	37.2	349 57.5	02.5	9 36.7	31.3
O 15	341 01.6	56 06.2	31.3	77 16.3	37.3	4 59.4	02.3	24 38.9	31.2
16	356 04.1	71 10.0	31.1	92 16.8	37.4	20 01.4	02.1	39 41.0	31.1
17	11 06.6	86 13.8	30.9	107 17.3	37.5	35 03.3	01.9	54 43.2	31.1
18	26 09.0	101 17.5	S16 30.7	122 17.8	S23 37.6	50 05.3	S11 01.7	69 45.4	S17 31.0
19	41 11.5	116 21.3	30.5	137 18.3	37.8	65 07.2	01.5	84 47.5	30.9
20	56 14.0	131 25.0	30.4	152 18.8	37.9	80 09.2	01.3	99 49.7	30.8
21	71 16.4	146 28.8	30.2	167 19.3	38.0	95 11.1	01.1	114 51.9	30.7
22	86 18.9	161 32.6	30.0	182 19.8	38.1	110 13.1	00.9	129 54.1	30.7
23	101 21.4	176 36.3	29.8	197 20.3	38.2	125 15.0	00.7	144 56.2	30.6
17 00	116 23.8	191 40.0	S16 29.6	212 20.8	S23 38.3	140 17.0	S11 00.5	159 58.4	S17 30.5
01	131 26.3	206 43.8	29.4	227 21.3	38.4	155 18.9	00.3	175 00.6	30.4
02	146 28.7	221 47.5	29.3	242 21.8	38.5	170 20.9	N 00.1	190 02.7	30.3
03	161 31.2	236 51.3	29.1	257 22.3	38.6	185 22.8	N 01.9	205 04.9	30.2
04	176 33.7	251 55.0	28.9	272 22.8	38.7	200 24.8	03.7	220 07.1	30.2
05	191 36.1	266 58.7	28.7	287 23.3	38.8	215 26.7	05.5	235 09.3	30.1
06	206 38.6	282 02.4	S16 28.5	302 23.8	S23 38.9	230 28.7	N 07.3	250 11.4	S17 30.0
07	221 41.1	297 06.2	28.4	317 24.3	39.0	245 30.6	09.1	265 13.6	29.9
L 08	236 43.5	312 09.9	28.2	332 24.8	39.1	260 32.6	10.9	280 15.8	29.8
U 09	251 46.0	327 13.6	28.0	347 25.3	39.2	275 34.5	12.7	295 17.9	29.7
N 10	266 48.5	342 17.3	27.8	2 25.8	39.3	290 36.5	14.5	310 20.1	29.7
E 11	281 50.9	357 21.0	27.7	17 26.3	39.4	305 38.4	16.3	325 22.3	29.6
S 12	296 53.4	12 24.7	S16 27.5	32 26.8	S23 39.5	320 40.4	N 18.1	340 24.5	S17 29.5
13	311 55.9	27 28.4	27.3	47 27.3	39.6	335 42.3	19.9	355 26.6	29.4
14	326 58.3	42 32.1	27.2	62 27.8	39.7	350 44.3	21.7	10 28.8	29.3
15	342 00.8	57 35.8	27.0	77 28.3	39.8	5 46.2	23.5	25 31.0	29.3
16	357 03.2	72 39.5	26.8	92 28.8	39.9	20 48.2	25.3	40 33.1	29.2
17	12 05.7	87 43.2	26.6	107 29.3	40.0	35 50.1	27.2	55 35.3	29.1
18	27 08.2	102 46.8	S16 26.5	122 29.8	S23 40.1	50 52.1	N 29.0	70 37.5	S17 29.0
19	42 10.6	117 50.5	26.3	137 30.3	40.2	65 54.0	30.8	85 39.6	28.9
20	57 13.1	132 54.2	26.1	152 30.8	40.3	80 56.0	32.6	100 41.8	28.8
21	72 15.6	147 57.9	26.0	167 31.3	40.4	95 57.9	34.4	115 44.0	28.8
22	87 18.0	163 01.5	25.8	182 31.8	40.4	110 59.9	36.2	130 46.2	28.7
23	102 20.5	178 05.2	25.7	197 32.3	40.5	126 01.8	38.0	145 48.3	28.6
18 00	117 23.0	193 08.9	S16 25.5	212 32.8	S23 40.6	141 03.8	N 39.8	160 50.5	S17 28.5
01	132 25.4	208 12.5	25.3	227 33.3	40.7	156 05.7	41.6	175 52.7	28.4
02	147 27.9	223 16.2	25.2	242 33.8	40.8	171 07.7	43.4	190 54.8	28.3
03	162 30.4	238 19.8	25.0	257 34.3	40.9	186 09.6	45.2	205 57.0	28.3
04	177 32.8	253 23.5	24.9	272 34.8	41.0	201 11.6	47.0	220 59.2	28.2
05	192 35.3	268 27.1	24.7	287 35.3	41.1	216 13.5	48.8	236 01.4	28.1
06	207 37.7	283 30.7	S16 24.5	302 35.8	S23 41.2	231 15.5	N 50.6	251 03.5	S17 28.0
07	222 40.2	298 34.4	24.4	317 36.3	41.3	246 17.4	52.4	266 05.7	27.9
M 08	237 42.7	313 38.0	24.2	332 36.8	41.4	261 19.4	54.2	281 07.9	27.9
A 09	252 45.1	328 41.6	24.1	347 37.2	41.5	276 21.3	54.0	296 10.0	27.8
R 10	267 47.6	343 45.2	23.9	2 37.7	41.6	291 23.3	53.8	311 12.2	27.7
T 11	282 50.1	358 48.9	23.8	17 38.2	41.6	306 25.2	53.6	326 14.4	27.6
E 12	297 52.5	13 52.5	S16 23.6	32 38.7	S23 41.7	321 27.1	N 53.3	341 16.5	S17 27.5
S 13	312 55.0	28 56.1	23.5	47 39.2	41.8	336 29.1	53.1	356 18.7	27.4
14	327 57.5	43 59.7	23.3	62 39.7	41.9	351 31.0	52.9	11 20.9	27.4
15	342 59.9	59 03.3	23.2	77 40.2	42.0	6 33.0	52.7	26 23.1	27.3
16	358 02.4	74 06.9	23.0	92 40.7	42.1	21 34.9	52.5	41 25.2	27.2
17	13 04.9	89 10.5	22.9	107 41.2	42.2	36 36.9	52.3	56 27.4	27.1
18	28 07.3	104 14.1	S16 22.7	122 41.7	S23 42.3	51 38.8	N 52.1	71 29.6	S17 27.0
19	43 09.8	119 17.7	22.6	137 42.2	42.3	66 40.8	51.9	86 31.7	26.9
20	58 12.2	134 21.2	22.4	152 42.7	42.4	81 42.7	51.7	101 33.9	26.9
21	73 14.7	149 24.8	22.3	167 43.2	42.5	96 44.7	51.5	116 36.1	26.8
22	88 17.2	164 28.4	22.2	182 43.7	42.6	111 46.6	51.3	131 38.2	26.7
23	103 19.6	179 32.0	22.0	197 44.2	42.7	126 48.6	51.1	146 40.4	26.6
	h m								
Paso Mer.	16 11.8	*v* 3.7	*d* 0.2	*v* 0.5	*d* 0.1	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS		
Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.5	S40 13.3
Achernar	335 22.1	S57 07.9
Acrux	173 02.5	S63 12.9
Adhara	255 07.4	S29 00.2
Aldebaran	290 42.2	N16 33.2
Alioth	166 15.0	N55 50.2
Alkaid	152 54.0	N49 12.0
Alnair	27 36.4	S46 51.5
Alnilam	275 39.9	S 1 11.4
Alphard	217 49.8	S 8 45.2
Alphecca	126 06.0	N26 38.3
Alpheratz	357 37.4	N29 12.7
Altair	62 02.7	N 8 55.5
Ankaa	353 09.7	S42 11.5
Antares	112 19.1	S26 28.7
Arcturus	145 50.2	N19 04.0
Atria	107 15.9	S69 03.7
Avior	234 15.0	S59 34.7
Bellatrix	278 25.2	N 6 22.1
Betelgeuse	270 54.4	N 7 24.6
Canopus	263 52.9	S52 42.6
Capella	280 25.1	N46 01.2
Deneb	49 27.9	N45 21.5
Denebola	182 27.3	N14 26.9
Diphda	348 49.8	S17 52.2
Dubhe	193 43.6	N61 37.7
Elnath	278 04.6	N28 37.5
Eltanin	90 43.8	N51 29.0
Enif	33 41.5	N 9 58.5
Fomalhaut	15 17.5	S29 30.6
Gacrux	171 54.1	S57 13.9
Gienah	175 46.0	S17 39.7
Hadar	148 39.5	S60 28.4
Hamal	327 53.9	N23 34.0
Kaus Aust.	83 36.1	S34 22.4
Kochab	137 20.2	N74 03.6
Markab	13 32.5	N15 19.4
Menkar	314 08.6	N 4 10.4
Menkent	148 00.5	S36 28.5
Miaplacidus	221 37.8	S69 48.3
Mirfak	308 31.5	N49 56.5
Nunki	75 51.1	S26 16.2
Peacock	53 10.2	S56 39.9
Pollux	243 19.9	N27 58.3
Procyon	244 53.0	N 5 10.1
Rasalhague	96 01.1	N12 32.6
Regulus	207 36.8	N11 51.5
Rigel	281 05.9	S 8 10.7
Rigil Kent.	139 43.8	S60 55.2
Sabik	102 05.9	S15 45.1
Schedar	349 33.9	N56 39.6
Shaula	96 14.0	S37 07.1
Sirius	258 28.0	S16 44.9
Spica	158 24.8	S11 16.5
Suhail	222 47.6	S43 31.2
Vega	80 35.3	N38 48.1
Zuben'ubi	136 58.8	S16 07.9

	AHS	Paso Mer.
	° ′	h m
Venus	75 16.2	11 11
Marte	95 57.0	9 50
Júpiter	23 53.2	14 37
Saturno	43 34.6	13 18

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	′	°	′	′	′
16 00	177	36.5	S20	58.8	21	05.9	10.3	N26	11.6	1.3	54.2
01	192	36.3		58.4	35	35.2	10.2	26	12.9	1.1	54.2
02	207	36.1		57.9	50	04.4	10.3	26	14.0	1.0	54.2
03	222	35.9	. .	57.4	64	33.7	10.2	26	15.0	0.9	54.2
04	237	35.6		56.9	79	02.9	10.2	26	15.9	0.8	54.2
05	252	35.4		56.5	93	32.1	10.1	26	16.7	0.6	54.2
06	267	35.2	S20	56.0	108	01.2	10.2	N26	17.3	0.5	54.2
07	282	35.0		55.5	122	30.4	10.1	26	17.8	0.3	54.2
D 08	297	34.8		55.0	136	59.5	10.2	26	18.1	0.3	54.2
O 09	312	34.6	. .	54.6	151	28.7	10.1	26	18.4	0.1	54.2
M 10	327	34.4		54.1	165	57.8	10.1	26	18.5	0.1	54.3
I 11	342	34.2		53.6	180	26.9	10.1	26	18.4	0.1	54.3
N 12	357	33.9	S20	53.1	194	56.0	10.0	N26	18.3	0.3	54.3
G 13	12	33.7		52.6	209	25.0	10.1	26	18.0	0.4	54.3
O 14	27	33.5		52.2	223	54.1	10.1	26	17.6	0.6	54.3
15	42	33.3	. .	51.7	238	23.2	10.0	26	17.0	0.6	54.3
16	57	33.1		51.2	252	52.2	10.0	26	16.4	0.8	54.3
17	72	32.9		50.7	267	21.2	10.1	26	15.6	1.0	54.3
18	87	32.7	S20	50.2	281	50.3	10.0	N26	14.6	1.0	54.3
19	102	32.5		49.7	296	19.3	10.1	26	13.6	1.2	54.3
20	117	32.3		49.3	310	48.4	10.0	26	12.4	1.3	54.4
21	132	32.1	. .	48.8	325	17.4	10.0	26	11.1	1.5	54.4
22	147	31.8		48.3	339	46.4	10.0	26	09.6	1.6	54.4
23	162	31.6		47.8	354	15.4	10.1	26	08.0	1.7	54.4
17 00	177	31.4	S20	47.3	8	44.5	10.0	N26	06.3	1.8	54.4
01	192	31.2		46.8	23	13.5	10.1	26	04.5	2.0	54.4
02	207	31.0		46.3	37	42.6	10.0	26	02.5	2.1	54.4
03	222	30.8	. .	45.8	52	11.6	10.0	26	00.4	2.2	54.4
04	237	30.6		45.3	66	40.6	10.1	25	58.2	2.4	54.4
05	252	30.4		44.9	81	09.7	10.1	25	55.8	2.5	54.4
06	267	30.2	S20	44.4	95	38.8	10.0	N25	53.3	2.6	54.5
07	282	30.0		43.9	110	07.8	10.1	25	50.7	2.7	54.5
L 08	297	29.8		43.4	124	36.9	10.1	25	48.0	2.9	54.5
U 09	312	29.6	. .	42.9	139	06.0	10.1	25	45.1	3.0	54.5
N 10	327	29.4		42.4	153	35.1	10.2	25	42.1	3.1	54.5
E 11	342	29.2		41.9	168	04.3	10.1	25	39.0	3.3	54.5
S 12	357	29.0	S20	41.4	182	33.4	10.1	N25	35.7	3.4	54.5
13	12	28.8		40.9	197	02.5	10.2	25	32.3	3.5	54.5
14	27	28.6		40.4	211	31.7	10.2	25	28.8	3.6	54.6
15	42	28.4	. .	39.9	226	00.9	10.2	25	25.2	3.8	54.6
16	57	28.2		39.4	240	30.1	10.2	25	21.4	3.9	54.6
17	72	28.0		38.9	254	59.3	10.3	25	17.5	4.0	54.6
18	87	27.8	S20	38.4	269	28.6	10.2	N25	13.5	4.1	54.6
19	102	27.5		37.9	283	57.8	10.3	25	09.4	4.3	54.6
20	117	27.3		37.4	298	27.1	10.4	25	05.1	4.4	54.6
21	132	27.1	. .	36.9	312	56.5	10.3	25	00.7	4.5	54.6
22	147	26.9		36.4	327	25.8	10.4	24	56.2	4.7	54.7
23	162	26.7		35.9	341	55.2	10.3	24	51.5	4.7	54.7
18 00	177	26.5	S20	35.4	356	24.5	10.5	N24	46.8	4.9	54.7
01	192	26.3		34.9	10	54.0	10.4	24	41.9	5.0	54.7
02	207	26.1		34.4	25	23.4	10.5	24	36.9	5.2	54.7
03	222	25.9	. .	33.9	39	52.9	10.5	24	31.7	5.2	54.7
04	237	25.7		33.4	54	22.4	10.5	24	26.5	5.4	54.7
05	252	25.6		32.8	68	51.9	10.6	24	21.1	5.5	54.7
06	267	25.4	S20	32.3	83	21.5	10.6	N24	15.6	5.7	54.8
07	282	25.2		31.8	97	51.1	10.6	24	09.9	5.7	54.8
M 08	297	25.0		31.3	112	20.7	10.6	24	04.2	5.9	54.8
A 09	312	24.8	. .	30.8	126	50.3	10.7	23	58.3	6.0	54.8
R 10	327	24.6		30.3	141	20.0	10.8	23	52.3	6.1	54.8
T 11	342	24.4		29.8	155	49.8	10.7	23	46.2	6.2	54.8
E 12	357	24.2	S20	29.3	170	19.5	10.8	N23	40.0	6.3	54.8
S 13	12	24.0		28.8	184	49.3	10.9	23	33.7	6.5	54.9
14	27	23.8		28.2	199	19.2	10.8	23	27.2	6.6	54.9
15	42	23.6	. .	27.7	213	49.0	10.9	23	20.6	6.7	54.9
16	57	23.4		27.2	228	18.9	11.0	23	13.9	6.8	54.9
17	72	23.2		26.7	242	48.9	11.0	23	07.1	6.9	54.9
18	87	23.0	S20	26.2	257	18.9	11.0	N23	00.2	7.0	54.9
19	102	22.8		25.7	271	48.9	11.1	22	53.2	7.2	55.0
20	117	22.6		25.1	286	19.0	11.1	22	46.0	7.3	55.0
21	132	22.4	. .	24.6	300	49.1	11.1	22	38.7	7.3	55.0
22	147	22.2		24.1	315	19.2	11.2	22	31.4	7.5	55.0
23	162	22.0		23.6	329	49.4	11.2	N22	23.9	7.6	55.0
	S/D	16.3	d	0.5	S/D	14.8		14.9			14.9

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		16	17	18	19
°	h m	h m	h m	h m	h m	h m	h m
N 72	07 56	09 43	▬	▭	▭	▭	▭
N 70	07 42	09 12	11 42	▭	▭	▭	▭
68	07 30	08 49	10 24	▭	▭	▭	15 15
66	07 21	08 30	09 47	▭	▭	13 36	15 56
64	07 12	08 16	09 21	▭	12 41	14 36	16 24
62	07 05	08 03	09 01	12 30	13 40	15 10	16 45
60	06 59	07 52	08 44	13 09	14 14	15 34	17 02
N 58	06 53	07 43	08 31	13 36	14 38	15 54	17 17
56	06 48	07 35	08 19	13 57	14 58	16 10	17 29
54	06 43	07 27	08 08	14 14	15 14	16 24	17 40
52	06 38	07 21	07 59	14 29	15 28	16 36	17 49
50	06 34	07 14	07 51	14 42	15 40	16 47	17 58
45	06 25	07 01	07 34	15 09	16 06	17 09	18 15
N 40	06 16	06 50	07 19	15 30	16 26	17 26	18 30
35	06 09	06 40	07 07	15 48	16 43	17 41	18 42
30	06 01	06 31	06 56	16 03	16 57	17 54	18 53
20	05 47	06 14	06 38	16 29	17 22	18 16	19 11
N 10	05 33	05 59	06 22	16 51	17 43	18 35	19 27
0	05 19	05 44	06 06	17 11	18 03	18 53	19 42
S 10	05 02	05 28	05 51	17 32	18 22	19 11	19 56
20	04 42	05 10	05 34	17 54	18 43	19 29	20 12
30	04 16	04 49	05 15	18 20	19 08	19 51	20 30
35	04 00	04 35	05 04	18 35	19 22	20 04	20 40
40	03 40	04 19	04 51	18 53	19 39	20 18	20 52
45	03 14	04 00	04 35	19 14	19 58	20 35	21 06
S 50	02 38	03 35	04 16	19 41	20 23	20 57	21 23
52	02 19	03 23	04 07	19 54	20 35	21 07	21 31
54	01 53	03 08	03 57	20 09	20 49	21 18	21 40
56	01 15	02 51	03 45	20 26	21 04	21 31	21 50
58	////	02 30	03 32	20 47	21 23	21 46	22 01
S 60	////	02 03	03 16	21 14	21 46	22 04	22 14

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	16	17	18	19
°	h m	h m	h m	h m	h m	h m	h m
N 72	▬	14 38	16 25	▭	▭	▭	▭
N 70	12 39	15 09	16 39	▭	▭	▭	▭
68	13 57	15 32	16 51	▭	▭	▭	11 58
66	14 34	15 51	17 00	▭	▭	11 53	11 16
64	15 00	16 05	17 08	▭	11 02	10 53	10 47
62	15 20	16 18	17 16	09 26	10 03	10 18	10 25
60	15 36	16 28	17 22	08 48	09 29	09 53	10 07
N 58	15 50	16 38	17 28	08 21	09 05	09 33	09 52
56	16 02	16 46	17 33	07 59	08 45	09 17	09 39
54	16 12	16 53	17 38	07 42	08 28	09 03	09 28
52	16 21	17 00	17 42	07 27	08 14	08 50	09 18
50	16 30	17 06	17 46	07 14	08 02	08 39	09 09
45	16 47	17 20	17 56	06 47	07 36	08 16	08 50
N 40	17 01	17 31	18 04	06 26	07 15	07 58	08 35
35	17 13	17 41	18 12	06 09	06 58	07 42	08 21
30	17 24	17 50	18 19	05 53	06 43	07 29	08 10
20	17 42	18 06	18 33	05 28	06 18	07 06	07 50
N 10	17 59	18 21	18 47	05 06	05 57	06 46	07 33
0	18 14	18 36	19 02	04 45	05 36	06 27	07 17
S 10	18 29	18 52	19 18	04 24	05 16	06 08	07 00
20	18 45	19 09	19 38	04 02	04 54	05 48	06 43
30	19 05	19 31	20 03	03 36	04 29	05 24	06 22
35	19 16	19 44	20 19	03 21	04 13	05 11	06 10
40	19 29	20 00	20 39	03 04	03 56	04 54	05 57
45	19 44	20 19	21 05	02 42	03 35	04 35	05 40
S 50	20 03	20 44	21 40	02 16	03 09	04 11	05 20
52	20 12	20 56	22 00	02 03	02 56	03 59	05 10
54	20 22	21 10	22 24	01 48	02 41	03 46	05 00
56	20 34	21 27	23 01	01 30	02 23	03 31	04 47
58	20 47	21 48	////	01 09	02 02	03 12	04 33
S 60	21 02	22 14	////	00 41	01 35	02 50	04 16

Día	SOL		Paso Mer.	LUNA			
	Ec. Tiempo			Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
16	09 34	09 44	12 10	23 24	10 58	14 98	
17	09 54	10 04	12 10	24 15	11 49	15 100	
18	10 13	10 23	12 10	00 15	12 40	16 100	○

UT (HmGr)	ARIES	VENUS −4·5		MARTE +1·5		JÚPITER −2·1		SATURNO +0·7	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
19 00	118 22.1	194 35.5	S16 21.9	212 44.7	S23 42.8	141 50.5	S10 50.9	161 42.6	S17 26.5
01	133 24.6	209 39.1	21.7	227 45.2	42.8	156 52.5	50.7	176 44.8	26.4
02	148 27.0	224 42.6	21.6	242 45.7	42.9	171 54.4	50.5	191 46.9	26.4
03	163 29.5	239 46.2	21.5	257 46.2	43.0	186 56.4	50.3	206 49.1	26.3
04	178 32.0	254 49.8	21.3	272 46.7	43.1	201 58.3	50.1	221 51.3	26.2
05	193 34.4	269 53.3	21.2	287 47.2	43.2	217 00.2	49.9	236 53.4	26.1
06	208 36.9	284 56.8	S16 21.1	302 47.7	S23 43.3	232 02.2	S10 49.7	251 55.6	S17 26.0
07	223 39.3	300 00.4	20.9	317 48.1	43.3	247 04.1	49.5	266 57.8	26.0
08	238 41.8	315 03.9	20.8	332 48.6	43.4	262 06.1	49.3	281 59.9	25.9
M 09	253 44.3	330 07.4	20.7	347 49.1	43.5	277 08.0	49.1	297 02.1	25.8
I 10	268 46.7	345 11.0	20.5	2 49.6	43.6	292 10.0	48.9	312 04.3	25.7
É 11	283 49.2	0 14.5	20.4	17 50.1	43.7	307 11.9	48.7	327 06.4	25.6
R 12	298 51.7	15 18.0	S16 20.3	32 50.6	S23 43.7	322 13.9	S10 48.5	342 08.6	S17 25.5
C 13	313 54.1	30 21.5	20.1	47 51.1	43.8	337 15.8	48.3	357 10.8	25.5
O 14	328 56.6	45 25.0	20.0	62 51.6	43.9	352 17.8	48.1	12 13.0	25.4
L 15	343 59.1	60 28.5	19.9	77 52.1	44.0	7 19.7	47.9	27 15.1	25.3
E 16	359 01.5	75 32.1	19.7	92 52.6	44.1	22 21.6	47.7	42 17.3	25.2
S 17	14 04.0	90 35.5	19.6	107 53.1	44.1	37 23.6	47.5	57 19.5	25.1
18	29 06.5	105 39.0	S16 19.5	122 53.6	S23 44.2	52 25.5	S10 47.3	72 21.6	S17 25.0
19	44 08.9	120 42.5	19.4	137 54.1	44.3	67 27.5	47.1	87 23.8	25.0
20	59 11.4	135 46.0	19.2	152 54.6	44.4	82 29.4	46.9	102 26.0	24.9
21	74 13.8	150 49.5	19.1	167 55.1	44.4	97 31.4	46.7	117 28.1	24.8
22	89 16.3	165 53.0	19.0	182 55.5	44.5	112 33.3	46.5	132 30.3	24.7
23	104 18.8	180 56.5	18.9	197 56.0	44.6	127 35.3	46.3	147 32.5	24.6
20 00	119 21.2	195 59.9	S16 18.8	212 56.5	S23 44.7	142 37.2	S10 46.1	162 34.6	S17 24.5
01	134 23.7	211 03.4	18.6	227 57.0	44.7	157 39.1	45.9	177 36.8	24.5
02	149 26.2	226 06.9	18.5	242 57.5	44.8	172 41.1	45.7	192 39.0	24.4
03	164 28.6	241 10.3	18.4	257 58.0	44.9	187 43.0	45.5	207 41.2	24.3
04	179 31.1	256 13.8	18.3	272 58.5	45.0	202 45.0	45.3	222 43.3	24.2
05	194 33.6	271 17.2	18.2	287 59.0	45.0	217 46.9	45.1	237 45.5	24.1
06	209 36.0	286 20.7	S16 18.1	302 59.5	S23 45.1	232 48.9	S10 44.9	252 47.7	S17 24.0
07	224 38.5	301 24.1	17.9	318 00.0	45.2	247 50.8	44.7	267 49.8	24.0
08	239 41.0	316 27.5	17.8	333 00.5	45.2	262 52.7	44.5	282 52.0	23.9
09	254 43.4	331 31.0	17.7	348 01.0	45.3	277 54.7	44.3	297 54.2	23.8
J 10	269 45.9	346 34.4	17.6	3 01.5	45.4	292 56.6	44.1	312 56.3	23.7
U 11	284 48.3	1 37.8	17.5	18 01.9	45.5	307 58.6	43.9	327 58.5	23.6
E 12	299 50.8	16 41.2	S16 17.4	33 02.4	S23 45.5	323 00.5	S10 43.7	343 00.7	S17 23.5
V 13	314 53.3	31 44.7	17.3	48 02.9	45.6	338 02.5	43.5	358 02.8	23.5
E 14	329 55.7	46 48.1	17.2	63 03.4	45.7	353 04.4	43.3	13 05.0	23.4
S 15	344 58.2	61 51.5	17.1	78 03.9	45.7	8 06.4	43.1	28 07.2	23.3
16	0 00.7	76 54.9	17.0	93 04.4	45.8	23 08.3	42.9	43 09.3	23.2
17	15 03.1	91 58.3	16.9	108 04.9	45.9	38 10.2	42.7	58 11.5	23.1
18	30 05.6	107 01.7	S16 16.7	123 05.4	S23 45.9	53 12.2	S10 42.4	73 13.7	S17 23.0
19	45 08.1	122 05.1	16.6	138 05.9	46.0	68 14.1	42.2	88 15.9	23.0
20	60 10.5	137 08.4	16.5	153 06.4	46.1	83 16.1	42.0	103 18.0	22.9
21	75 13.0	152 11.8	16.4	168 06.8	46.1	98 18.0	41.8	118 20.2	22.8
22	90 15.5	167 15.2	16.3	183 07.3	46.2	113 19.9	41.6	133 22.4	22.7
23	105 17.9	182 18.6	16.2	198 07.8	46.3	128 21.9	41.4	148 24.5	22.6
21 00	120 20.4	197 21.9	S16 16.1	213 08.3	S23 46.3	143 23.8	S10 41.2	163 26.7	S17 22.5
01	135 22.8	212 25.3	16.0	228 08.8	46.4	158 25.8	41.0	178 28.9	22.5
02	150 25.3	227 28.7	15.9	243 09.3	46.5	173 27.7	40.8	193 31.0	22.4
03	165 27.8	242 32.0	15.8	258 09.8	46.5	188 29.7	40.6	208 33.2	22.3
04	180 30.2	257 35.4	15.7	273 10.3	46.6	203 31.6	40.4	223 35.4	22.2
05	195 32.7	272 38.7	15.7	288 10.8	46.6	218 33.5	40.2	238 37.5	22.1
06	210 35.2	287 42.1	S16 15.6	303 11.3	S23 46.7	233 35.5	S10 40.0	253 39.7	S17 22.0
07	225 37.6	302 45.4	15.5	318 11.7	46.8	248 37.4	39.8	268 41.9	22.0
V 08	240 40.1	317 48.7	15.4	333 12.2	46.8	263 39.4	39.6	283 44.0	21.9
I 09	255 42.6	332 52.1	15.3	348 12.7	46.9	278 41.3	39.4	298 46.2	21.8
E 10	270 45.0	347 55.4	15.2	3 13.2	47.0	293 43.2	39.2	313 48.4	21.7
R 11	285 47.5	2 58.7	15.1	18 13.7	47.0	308 45.2	39.0	328 50.5	21.6
N 12	300 49.9	18 02.0	S16 15.0	33 14.2	S23 47.1	323 47.1	S10 38.8	343 52.7	S17 21.5
E 13	315 52.4	33 05.3	14.9	48 14.7	47.1	338 49.1	38.6	358 54.9	21.5
S 14	330 54.9	48 08.6	14.8	63 15.2	47.2	353 51.0	38.4	13 57.0	21.4
15	345 57.3	63 11.9	14.7	78 15.7	47.3	8 53.0	38.2	28 59.2	21.3
16	0 59.8	78 15.2	14.7	93 16.1	47.3	23 54.9	38.0	44 01.4	21.2
17	16 02.3	93 18.5	14.6	108 16.6	47.4	38 56.8	37.8	59 03.6	21.1
18	31 04.7	108 21.8	S16 14.5	123 17.1	S23 47.4	53 58.8	S10 37.6	74 05.7	S17 21.0
19	46 07.2	123 25.1	14.4	138 17.6	47.5	69 00.7	37.4	89 07.9	21.0
20	61 09.7	138 28.4	14.3	153 18.1	47.5	84 02.7	37.1	104 10.1	20.9
21	76 12.1	153 31.7	14.2	168 18.6	47.6	99 04.6	36.9	119 12.2	20.8
22	91 14.6	168 35.0	14.2	183 19.1	47.6	114 06.5	36.7	134 14.4	20.7
23	106 17.1	183 38.2	14.1	198 19.6	47.7	129 08.5	36.5	149 16.6	20.6
	h m								
Paso Mer.	16 00.0	*v* 3.4	*d* 0.1	*v* 0.5	*d* 0.1	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.5	S40 13.3
Achernar	335 22.1	S57 07.9
Acrux	173 02.4	S63 12.9
Adhara	255 07.4	S29 00.2
Aldebaran	290 42.2	N16 33.2
Alioth	166 15.0	N55 50.2
Alkaid	152 54.0	N49 12.0
Alnair	27 36.4	S46 51.5
Alnilam	275 39.9	S 1 11.4
Alphard	217 49.8	S 8 45.2
Alphecca	126 06.0	N26 38.3
Alpheratz	357 37.4	N29 12.7
Altair	62 02.7	N 8 55.5
Ankaa	353 09.7	S42 11.5
Antares	112 19.0	S26 28.7
Arcturus	145 50.2	N19 04.0
Atria	107 15.9	S69 03.7
Avior	234 15.0	S59 34.7
Bellatrix	278 25.2	N 6 22.1
Betelgeuse	270 54.4	N 7 24.6
Canopus	263 52.9	S52 42.6
Capella	280 25.1	N46 01.2
Deneb	49 27.9	N45 21.5
Denebola	182 27.3	N14 26.9
Diphda	348 49.8	S17 52.2
Dubhe	193 43.6	N61 37.7
Elnath	278 04.6	N28 37.5
Eltanin	90 43.8	N51 29.0
Enif	33 41.5	N 9 58.5
Fomalhaut	15 17.5	S29 30.6
Gacrux	171 54.1	S57 13.9
Gienah	175 45.9	S17 39.7
Hadar	148 39.4	S60 28.4
Hamal	327 53.9	N23 34.0
Kaus Aust.	83 36.1	S34 22.4
Kochab	137 20.2	N74 03.6
Markab	13 32.5	N15 19.4
Menkar	314 08.6	N 4 10.4
Menkent	148 00.5	S36 28.5
Miaplacidus	221 37.8	S69 48.3
Mirfak	308 31.5	N49 56.5
Nunki	75 51.1	S26 16.2
Peacock	53 10.2	S56 39.9
Pollux	243 19.9	N27 58.3
Procyon	244 53.0	N 5 10.0
Rasalhague	96 01.1	N12 32.6
Regulus	207 36.7	N11 51.5
Rigel	281 05.9	S 8 10.7
Rigil Kent.	139 43.7	S60 55.2
Sabik	102 05.8	S15 45.1
Schedar	349 33.9	N56 39.6
Shaula	96 14.0	S37 07.1
Sirius	258 28.0	S16 44.9
Spica	158 24.8	S11 16.5
Suhail	222 47.6	S43 31.2
Vega	80 35.3	N38 48.1
Zuben'ubi	136 58.8	S16 07.9

	AHS	Paso Mer.
	° ′	h m
Venus	76 38.7	10 53
Marte	93 35.3	9 48
Júpiter	23 16.0	14 28
Saturno	43 13.4	13 08

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph		
d h	°	′	°	′	°	′	°	′	′	′	
19 00	177	21.8	S20	23.1	344	19.6	11.3	N22	16.3	7.7	55.0
01	192	21.6		22.5	358	49.9	11.3	22	08.6	7.8	55.0
02	207	21.5		22.0	13	20.2	11.3	22	00.8	8.0	55.1
03	222	21.3		21.5	27	50.5	11.4	21	52.8	8.0	55.1
04	237	21.1		21.0	42	20.9	11.5	21	44.8	8.2	55.1
05	252	20.9		20.4	56	51.4	11.5	21	36.6	8.2	55.1
06	267	20.7	S20	19.9	71	21.9	11.5	N21	28.4	8.4	55.1
07	282	20.5		19.4	85	52.4	11.5	21	20.0	8.4	55.1
08	297	20.3		18.9	100	22.9	11.7	21	11.6	8.6	55.2
09	312	20.1		18.3	114	53.6	11.6	21	03.0	8.7	55.2
10	327	19.9		17.8	129	24.2	11.7	20	54.3	8.7	55.2
11	342	19.7		17.3	143	54.9	11.8	20	45.6	8.9	55.2
12	357	19.6	S20	16.8	158	25.7	11.7	N20	36.7	9.0	55.2
13	12	19.4		16.2	172	56.4	11.9	20	27.7	9.1	55.2
14	27	19.2		15.7	187	27.3	11.9	20	18.6	9.2	55.3
15	42	19.0		15.2	201	58.2	11.9	20	09.4	9.2	55.3
16	57	18.8		14.6	216	29.1	11.9	20	00.2	9.4	55.3
17	72	18.6		14.1	231	00.0	12.1	19	50.8	9.5	55.3
18	87	18.4	S20	13.6	245	31.1	12.0	N19	41.3	9.6	55.3
19	102	18.2		13.0	260	02.1	12.1	19	31.7	9.6	55.3
20	117	18.1		12.5	274	33.2	12.2	19	22.1	9.8	55.4
21	132	17.9		12.0	289	04.4	12.1	19	12.3	9.8	55.4
22	147	17.7		11.4	303	35.5	12.3	19	02.5	10.0	55.4
23	162	17.5		10.9	318	06.8	12.3	18	52.5	10.0	55.4
20 00	177	17.3	S20	10.4	332	38.1	12.3	N18	42.5	10.2	55.4
01	192	17.1		09.8	347	09.4	12.3	18	32.3	10.2	55.5
02	207	16.9		09.3	1	40.7	12.4	18	22.1	10.3	55.5
03	222	16.8		08.7	16	12.1	12.5	18	11.8	10.4	55.5
04	237	16.6		08.2	30	43.6	12.5	18	01.4	10.5	55.5
05	252	16.4		07.7	45	15.1	12.5	17	50.9	10.6	55.5
06	267	16.2	S20	07.1	59	46.6	12.6	N17	40.3	10.7	55.5
07	282	16.0		06.6	74	18.2	12.6	17	29.6	10.7	55.6
08	297	15.8		06.0	88	49.8	12.7	17	18.9	10.9	55.6
09	312	15.7		05.5	103	21.5	12.7	17	08.0	10.9	55.6
10	327	15.5		05.0	117	53.2	12.8	16	57.1	11.0	55.6
11	342	15.3		04.4	132	25.0	12.8	16	46.1	11.1	55.6
12	357	15.1	S20	03.9	146	56.8	12.8	N16	35.0	11.2	55.7
13	12	14.9		03.3	161	28.6	12.9	16	23.8	11.3	55.7
14	27	14.8		02.8	176	00.5	12.9	16	12.5	11.3	55.7
15	42	14.6		02.2	190	32.4	12.9	16	01.2	11.4	55.7
16	57	14.4		01.7	205	04.3	13.0	15	49.8	11.5	55.7
17	72	14.2		01.1	219	36.3	13.0	15	38.3	11.6	55.7
18	87	14.0	S20	00.6	234	08.3	13.1	N15	26.7	11.6	55.8
19	102	13.9	20	00.0	248	40.4	13.1	15	15.1	11.7	55.8
20	117	13.7	19	59.5	263	12.5	13.2	15	03.4	11.8	55.8
21	132	13.5		58.9	277	44.7	13.1	14	51.6	11.9	55.8
22	147	13.3		58.4	292	16.8	13.3	14	39.7	12.0	55.8
23	162	13.2		57.8	306	49.1	13.2	14	27.7	12.0	55.9
21 00	177	13.0	S19	57.3	321	21.3	13.3	N14	15.7	12.1	55.9
01	192	12.8		56.7	335	53.6	13.3	14	03.6	12.1	55.9
02	207	12.6		56.2	350	25.9	13.4	13	51.5	12.2	55.9
03	222	12.4		55.6	4	58.3	13.4	13	39.3	12.3	55.9
04	237	12.3		55.1	19	30.7	13.4	13	27.0	12.4	56.0
05	252	12.1		54.5	34	03.1	13.4	13	14.6	12.4	56.0
06	267	11.9	S19	54.0	48	35.5	13.5	N13	02.2	12.5	56.0
07	282	11.7		53.4	63	08.0	13.5	12	49.7	12.6	56.0
08	297	11.6		52.8	77	40.5	13.6	12	37.1	12.6	56.0
09	312	11.4		52.3	92	13.1	13.5	12	24.5	12.7	56.1
10	327	11.2		51.7	106	45.6	13.6	12	11.8	12.8	56.1
11	342	11.0		51.2	121	18.2	13.7	11	59.0	12.8	56.1
12	357	10.9	S19	50.6	135	50.9	13.6	N11	46.2	12.8	56.1
13	12	10.7		50.0	150	23.5	13.7	11	33.4	13.0	56.1
14	27	10.5		49.5	164	56.2	13.7	11	20.4	13.0	56.2
15	42	10.4		48.9	179	28.9	13.7	11	07.4	13.0	56.2
16	57	10.2		48.4	194	01.6	13.8	10	54.4	13.1	56.2
17	72	10.0		47.8	208	34.4	13.8	10	41.3	13.2	56.2
18	87	09.8	S19	47.2	223	07.2	13.8	N10	28.1	13.2	56.3
19	102	09.7		46.7	237	40.0	13.8	10	14.9	13.3	56.3
20	117	09.5		46.1	252	12.8	13.8	10	01.6	13.3	56.3
21	132	09.3		45.5	266	45.6	13.9	9	48.3	13.4	56.3
22	147	09.2		45.0	281	18.5	13.9	9	34.9	13.4	56.3
23	162	09.0		44.4	295	51.4	13.9	N 9	21.5	13.5	56.4
	S/D	16.3	*d*	0.5	S/D	15.0		15.2			15.3

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		19	20	21	22
°	h m	h m	h m	h m	h m	h m	h m
N 72	07 48	09 31	■	▭	16 22	18 56	21 05
N 70	07 35	09 02	11 05	▭	17 03	19 13	21 11
68	07 24	08 41	10 10	15 15	17 30	19 26	21 16
66	07 15	08 24	09 37	15 56	17 51	19 37	21 20
64	07 08	08 10	09 13	16 24	18 07	19 46	21 24
62	07 01	07 58	08 55	16 45	18 21	19 54	21 27
60	06 55	07 48	08 39	17 02	18 32	20 01	21 29
N 58	06 50	07 39	08 26	17 17	18 42	20 07	21 32
56	06 45	07 31	08 15	17 29	18 50	20 12	21 34
54	06 40	07 24	08 05	17 40	18 58	20 16	21 35
52	06 36	07 18	07 56	17 49	19 05	20 21	21 37
50	06 32	07 12	07 48	17 58	19 11	20 24	21 38
45	06 23	06 59	07 31	18 15	19 24	20 33	21 42
N 40	06 15	06 48	07 18	18 30	19 34	20 39	21 44
35	06 08	06 39	07 06	18 42	19 44	20 45	21 47
30	06 01	06 30	06 56	18 53	19 52	20 50	21 49
20	05 47	06 14	06 38	19 11	20 05	20 59	21 52
N 10	05 34	06 00	06 22	19 27	20 17	21 07	21 55
0	05 20	05 45	06 07	19 42	20 29	21 14	21 58
S 10	05 04	05 30	05 52	19 56	20 40	21 21	22 01
20	04 44	05 13	05 36	20 12	20 51	21 29	22 04
30	04 19	04 51	05 18	20 30	21 05	21 37	22 08
35	04 04	04 38	05 07	20 40	21 13	21 42	22 10
40	03 44	04 23	04 54	20 52	21 22	21 48	22 12
45	03 20	04 04	04 39	21 06	21 32	21 54	22 15
S 50	02 45	03 40	04 21	21 23	21 44	22 02	22 18
52	02 27	03 29	04 12	21 31	21 50	22 06	22 20
54	02 03	03 15	04 03	21 40	21 56	22 09	22 21
56	01 30	02 59	03 52	21 50	22 03	22 14	22 23
58	////	02 39	03 39	22 01	22 11	22 18	22 25
S 60	////	02 14	03 24	22 14	22 20	22 24	22 27

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	19	20	21	22
°	h m	h m	h m	h m	h m	h m	h m
N 72	■	14 52	16 35	▭	12 32	11 35	11 00
N 70	13 18	15 21	16 48	▭	11 50	11 16	10 51
68	14 13	15 42	16 59	11 58	11 21	11 00	10 44
66	14 46	15 59	17 07	11 16	10 59	10 47	10 37
64	15 09	16 13	17 15	10 47	10 42	10 37	10 32
62	15 28	16 24	17 22	10 25	10 27	10 28	10 28
60	15 43	16 35	17 28	10 07	10 15	10 20	10 23
N 58	15 56	16 43	17 33	09 52	10 04	10 13	10 20
56	16 08	16 51	17 38	09 39	09 55	10 07	10 17
54	16 18	16 58	17 42	09 28	09 47	10 01	10 14
52	16 26	17 05	17 47	09 18	09 39	09 56	10 11
50	16 34	17 11	17 50	09 09	09 32	09 52	10 09
45	16 51	17 23	17 59	08 50	09 18	09 42	10 03
N 40	17 05	17 34	18 07	08 35	09 06	09 34	09 59
35	17 16	17 44	18 15	08 21	08 56	09 27	09 55
30	17 27	17 52	18 21	08 10	08 47	09 20	09 52
20	17 44	18 08	18 35	07 50	08 31	09 09	09 46
N 10	18 00	18 22	18 48	07 33	08 17	09 00	09 40
0	18 15	18 37	19 02	07 17	08 04	08 50	09 35
S 10	18 29	18 52	19 18	07 00	07 51	08 41	09 30
20	18 45	19 09	19 37	06 43	07 37	08 31	09 25
30	19 04	19 30	20 02	06 22	07 21	08 20	09 18
35	19 15	19 43	20 18	06 10	07 12	08 13	09 15
40	19 27	19 58	20 37	05 57	07 01	08 06	09 10
45	19 42	20 17	21 01	05 40	06 48	07 57	09 06
S 50	20 00	20 40	21 35	05 20	06 32	07 46	09 00
52	20 09	20 52	21 53	05 10	06 25	07 41	08 57
54	20 18	21 06	22 16	05 00	06 17	07 35	08 54
56	20 29	21 21	22 48	04 47	06 08	07 29	08 51
58	20 42	21 40	23 58	04 33	05 57	07 22	08 47
S 60	20 57	22 05	////	04 16	05 45	07 14	08 43

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00^h	12^h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
19	10 32	10 41	12 11	01 05	13 29	17	98
20	10 50	10 59	12 11	01 53	14 16	18	94
21	11 08	11 16	12 11	02 39	15 02	19	88

MIÉRCOLES JUEVES VIERNES

UT (HmGr)	ARIES	VENUS −4·6		MARTE +1·4		JÚPITER −2·1		SATURNO +0·6	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
22 00	121 19.5	198 41.5	S16 14.0	213 20.0	S23 47.8	144 10.4	S10 36.3	164 18.7	S17 20.5
01	136 22.0	213 44.7	13.9	228 20.5	47.8	159 12.4	36.1	179 20.9	20.4
02	151 24.4	228 48.0	13.8	243 21.0	47.9	174 14.3	35.9	194 23.1	20.4
03	166 26.9	243 51.2	13.8	258 21.5	47.9	189 16.2	35.7	209 25.2	20.3
04	181 29.4	258 54.5	13.7	273 22.0	48.0	204 18.2	35.5	224 27.4	20.2
05	196 31.8	273 57.7	13.6	288 22.5	48.0	219 20.1	35.3	239 29.6	20.1
06	211 34.3	289 01.0	S16 13.5	303 23.0	S23 48.1	234 22.1	S10 35.1	254 31.7	S17 20.0
07	226 36.8	304 04.2	13.5	318 23.5	48.1	249 24.0	34.9	269 33.9	19.9
08	241 39.2	319 07.4	13.4	333 23.9	48.2	264 25.9	34.7	284 36.1	19.9
S 09	256 41.7	334 10.7	13.3	348 24.4	48.2	279 27.9	34.5	299 38.2	19.8
Á 10	271 44.2	349 13.9	13.2	3 24.9	48.3	294 29.8	34.3	314 40.4	19.7
B 11	286 46.6	4 17.1	13.2	18 25.4	48.3	309 31.8	34.1	329 42.6	19.6
A 12	301 49.1	19 20.3	S16 13.1	33 25.9	S23 48.4	324 33.7	S10 33.9	344 44.7	S17 19.5
D 13	316 51.5	34 23.5	13.0	48 26.4	48.4	339 35.6	33.7	359 46.9	19.4
O 14	331 54.0	49 26.7	13.0	63 26.9	48.5	354 37.6	33.5	14 49.1	19.4
15	346 56.5	64 29.9	12.9	78 27.3	48.5	9 39.5	33.3	29 51.2	19.3
16	1 58.9	79 33.1	12.8	93 27.8	48.6	24 41.4	33.1	44 53.4	19.2
17	17 01.4	94 36.3	12.8	108 28.3	48.6	39 43.4	32.8	59 55.6	19.1
18	32 03.9	109 39.5	S16 12.7	123 28.8	S23 48.7	54 45.3	S10 32.6	74 57.7	S17 19.0
19	47 06.3	124 42.7	12.6	138 29.3	48.7	69 47.3	32.4	89 59.9	18.9
20	62 08.8	139 45.8	12.6	153 29.8	48.8	84 49.2	32.2	105 02.1	18.9
21	77 11.3	154 49.0	12.5	168 30.3	48.8	99 51.1	32.0	120 04.2	18.8
22	92 13.7	169 52.2	12.4	183 30.7	48.9	114 53.1	31.8	135 06.4	18.7
23	107 16.2	184 55.3	12.4	198 31.2	48.9	129 55.0	31.6	150 08.6	18.6
23 00	122 18.7	199 58.5	S16 12.3	213 31.7	S23 49.0	144 57.0	S10 31.4	165 10.7	S17 18.5
01	137 21.1	215 01.6	12.3	228 32.2	49.0	159 58.9	31.2	180 12.9	18.4
02	152 23.6	230 04.8	12.2	243 32.7	49.0	175 00.8	31.0	195 15.1	18.3
03	167 26.0	245 07.9	12.1	258 33.2	49.1	190 02.8	30.8	210 17.2	18.3
04	182 28.5	260 11.1	12.1	273 33.6	49.1	205 04.7	30.6	225 19.4	18.2
05	197 31.0	275 14.2	12.0	288 34.1	49.2	220 06.6	30.4	240 21.6	18.1
06	212 33.4	290 17.3	S16 12.0	303 34.6	S23 49.2	235 08.6	S10 30.2	255 23.7	S17 18.0
07	227 35.9	305 20.5	11.9	318 35.1	49.3	250 10.5	30.0	270 25.9	17.9
D 08	242 38.4	320 23.6	11.9	333 35.6	49.3	265 12.5	29.8	285 28.1	17.8
O 09	257 40.8	335 26.7	11.8	348 36.1	49.3	280 14.4	29.6	300 30.2	17.8
M 10	272 43.3	350 29.8	11.8	3 36.6	49.4	295 16.3	29.3	315 32.4	17.7
I 11	287 45.8	5 32.9	11.7	18 37.0	49.4	310 18.3	29.1	330 34.6	17.6
N 12	302 48.2	20 36.0	S16 11.7	33 37.5	S23 49.5	325 20.2	S10 28.9	345 36.7	S17 17.5
G 13	317 50.7	35 39.1	11.6	48 38.0	49.5	340 22.1	28.7	0 38.9	17.4
O 14	332 53.2	50 42.2	11.6	63 38.5	49.5	355 24.1	28.5	15 41.1	17.3
15	347 55.6	65 45.3	11.5	78 39.0	49.6	10 26.0	28.3	30 43.2	17.3
16	2 58.1	80 48.4	11.5	93 39.5	49.6	25 27.9	28.1	45 45.4	17.2
17	18 00.5	95 51.5	11.4	108 39.9	49.7	40 29.9	27.9	60 47.6	17.1
18	33 03.0	110 54.5	S16 11.4	123 40.4	S23 49.7	55 31.8	S10 27.7	75 49.7	S17 17.0
19	48 05.5	125 57.6	11.3	138 40.9	49.7	70 33.8	27.5	90 51.9	16.9
20	63 07.9	141 00.7	11.3	153 41.4	49.8	85 35.7	27.3	105 54.1	16.8
21	78 10.4	156 03.7	11.2	168 41.9	49.8	100 37.6	27.1	120 56.2	16.7
22	93 12.9	171 06.8	11.2	183 42.4	49.8	115 39.6	26.9	135 58.4	16.7
23	108 15.3	186 09.9	11.1	198 42.8	49.9	130 41.5	26.7	151 00.6	16.6
24 00	123 17.8	201 12.9	S16 11.1	213 43.3	S23 49.9	145 43.4	S10 26.5	166 02.7	S17 16.5
01	138 20.3	216 15.9	11.1	228 43.8	49.9	160 45.4	26.2	181 04.9	16.4
02	153 22.7	231 19.0	11.0	243 44.3	50.0	175 47.3	26.0	196 07.1	16.3
03	168 25.2	246 22.0	11.0	258 44.8	50.0	190 49.2	25.8	211 09.2	16.2
04	183 27.6	261 25.0	10.9	273 45.2	50.0	205 51.2	25.6	226 11.4	16.2
05	198 30.1	276 28.1	10.9	288 45.7	50.1	220 53.1	25.4	241 13.6	16.1
06	213 32.6	291 31.1	S16 10.9	303 46.2	S23 50.1	235 55.0	S10 25.2	256 15.7	S17 16.0
07	228 35.0	306 34.1	10.8	318 46.7	50.1	250 57.0	25.0	271 17.9	15.9
L 08	243 37.5	321 37.1	10.8	333 47.2	50.2	265 58.9	24.8	286 20.1	15.8
U 09	258 40.0	336 40.1	10.8	348 47.7	50.2	281 00.9	24.6	301 22.2	15.7
N 10	273 42.4	351 43.1	10.7	3 48.1	50.2	296 02.8	24.4	316 24.4	15.7
E 11	288 44.9	6 46.1	10.7	18 48.6	50.3	311 04.7	24.2	331 26.6	15.6
S 12	303 47.4	21 49.1	S16 10.7	33 49.1	S23 50.3	326 06.7	S10 24.0	346 28.7	S17 15.5
13	318 49.8	36 52.1	10.6	48 49.6	50.3	341 08.6	23.8	1 30.9	15.4
14	333 52.3	51 55.1	10.6	63 50.1	50.4	356 10.5	23.6	16 33.1	15.3
15	348 54.8	66 58.1	10.6	78 50.5	50.4	11 12.5	23.3	31 35.2	15.2
16	3 57.2	82 01.1	10.5	93 51.0	50.4	26 14.4	23.1	46 37.4	15.1
17	18 59.7	97 04.0	10.5	108 51.5	50.4	41 16.3	22.9	61 39.6	15.1
18	34 02.1	112 07.0	S16 10.5	123 52.0	S23 50.5	56 18.3	S10 22.7	76 41.7	S17 15.0
19	49 04.6	127 10.0	10.4	138 52.5	50.5	71 20.2	22.5	91 43.9	14.9
20	64 07.1	142 12.9	10.4	153 53.0	50.5	86 22.1	22.3	106 46.1	14.8
21	79 09.5	157 15.9	10.4	168 53.4	50.6	101 24.1	22.1	121 48.2	14.7
22	94 12.0	172 18.8	10.4	183 53.9	50.6	116 26.0	21.9	136 50.4	14.6
23	109 14.5	187 21.8	10.3	198 54.4	50.6	131 27.9	21.7	151 52.6	14.6
	h m								
Paso Mer.	15 48.2	*v* 3.1	*d* 0.1	*v* 0.5	*d* 0.0	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.5	S40 13.3
Achernar	335 22.1	S57 07.9
Acrux	173 02.4	S63 13.0
Adhara	255 07.4	S29 00.2
Aldebaran	290 42.2	N16 33.2
Alioth	166 15.0	N55 50.2
Alkaid	152 53.9	N49 12.0
Alnair	27 36.4	S46 51.5
Alnilam	275 39.9	S 1 11.4
Alphard	217 49.8	S 8 45.3
Alphecca	126 06.0	N26 38.3
Alpheratz	357 37.4	N29 12.7
Altair	62 02.6	N 8 55.5
Ankaa	353 09.8	S42 11.5
Antares	112 19.0	S26 28.7
Arcturus	145 50.2	N19 03.9
Atria	107 15.8	S69 03.7
Avior	234 15.0	S59 34.8
Bellatrix	278 25.2	N 6 22.1
Betelgeuse	270 54.4	N 7 24.6
Canopus	263 53.0	S52 42.6
Capella	280 25.1	N46 01.3
Deneb	49 27.9	N45 21.5
Denebola	182 27.2	N14 26.9
Diphda	348 49.9	S17 52.2
Dubhe	193 43.5	N61 37.8
Elnath	278 04.6	N28 37.5
Eltanin	90 43.8	N51 29.0
Enif	33 41.5	N 9 58.5
Fomalhaut	15 17.5	S29 30.6
Gacrux	171 54.1	S57 13.9
Gienah	175 45.9	S17 39.8
Hadar	148 39.4	S60 28.4
Hamal	327 53.9	N23 34.0
Kaus Aust.	83 36.1	S34 22.4
Kochab	137 20.1	N74 03.6
Markab	13 32.5	N15 19.3
Menkar	314 08.6	N 4 10.4
Menkent	148 00.5	S36 28.5
Miaplacidus	221 37.8	S69 48.3
Mirfak	308 31.5	N49 56.5
Nunki	75 51.1	S26 16.2
Peacock	53 10.2	S56 39.9
Pollux	243 19.9	N27 58.3
Procyon	244 53.0	N 5 10.0
Rasalhague	96 01.1	N12 32.5
Regulus	207 36.7	N11 51.5
Rigel	281 05.9	S 8 10.7
Rigil Kent.	139 43.7	S60 55.2
Sabik	102 05.8	S15 45.1
Schedar	349 34.0	N56 39.6
Shaula	96 14.0	S37 07.1
Sirius	258 28.0	S16 44.9
Spica	158 24.8	S11 16.5
Suhail	222 47.6	S43 31.2
Vega	80 35.3	N38 48.1
Zuben'ubi	136 58.8	S16 07.9

	AHS	Paso Mer.
	° ′	h m
Venus	77 39.8	10 38
Marte	91 13.1	9 46
Júpiter	22 38.3	14 18
Saturno	42 52.1	12 57

UT (HmGr)	SOL				LUNA							
	AHGr		Dec		AHGr	v		Dec	d		Ph	
d h	°	′	°	′	°	′	′	°	′	′	′	
22 00	177	08.8	S19	43.8	310	24.3	13.9	N 9	08.0	13.5	56.4	
01	192	08.6		43.3	324	57.2	13.9	8	54.5	13.6	56.4	
02	207	08.5		42.7	339	30.1	14.0	8	40.9	13.6	56.4	
03	222	08.3	. .	42.1	354	03.1	14.0	8	27.3	13.7	56.5	
04	237	08.1		41.6	8	36.1	13.9	8	13.6	13.7	56.5	
05	252	08.0		41.0	23	09.0	14.0	7	59.9	13.7	56.5	
06	267	07.8	S19	40.4	37	42.0	14.0	N 7	46.2	13.8	56.5	
07	282	07.6		39.8	52	15.0	14.0	7	32.4	13.9	56.5	
S 08	297	07.5		39.3	66	48.0	14.0	7	18.5	13.9	56.6	
Á 09	312	07.3	. .	38.7	81	21.0	14.1	7	04.6	13.9	56.6	
B 10	327	07.1		38.1	95	54.1	14.0	6	50.7	14.0	56.6	
A 11	342	07.0		37.5	110	27.1	14.1	6	36.7	14.0	56.6	
D 12	357	06.8	S19	37.0	125	00.2	14.0	N 6	22.7	14.0	56.7	
O 13	12	06.6		36.4	139	33.2	14.1	6	08.7	14.1	56.7	
14	27	06.5		35.8	154	06.3	14.0	5	54.6	14.1	56.7	
15	42	06.3	. .	35.2	168	39.3	14.1	5	40.5	14.2	56.7	
16	57	06.2		34.7	183	12.4	14.0	5	26.3	14.2	56.7	
17	72	06.0		34.1	197	45.4	14.1	5	12.1	14.2	56.8	
18	87	05.8	S19	33.5	212	18.5	14.1	N 4	57.9	14.3	56.8	
19	102	05.7		32.9	226	51.6	14.0	4	43.6	14.3	56.8	
20	117	05.5		32.3	241	24.6	14.1	4	29.3	14.3	56.8	
21	132	05.3	. .	31.8	255	57.7	14.0	4	15.0	14.3	56.9	
22	147	05.2		31.2	270	30.7	14.1	4	00.7	14.4	56.9	
23	162	05.0		30.6	285	03.8	14.0	3	46.3	14.4	56.9	
23 00	177	04.9	S19	30.0	299	36.8	14.1	N 3	31.9	14.4	56.9	
01	192	04.7		29.4	314	09.9	14.0	3	17.5	14.5	57.0	
02	207	04.5		28.8	328	42.9	14.0	3	03.0	14.5	57.0	
03	222	04.4	. .	28.3	343	15.9	14.0	2	48.5	14.5	57.0	
04	237	04.2		27.7	357	48.9	14.0	2	34.0	14.5	57.0	
05	252	04.0		27.1	12	21.9	14.0	2	19.5	14.5	57.1	
06	267	03.9	S19	26.5	26	54.9	14.0	N 2	05.0	14.6	57.1	
07	282	03.7		25.9	41	27.9	13.9	1	50.4	14.6	57.1	
D 08	297	03.6		25.3	56	00.8	13.9	1	35.8	14.6	57.1	
O 09	312	03.4	. .	24.7	70	33.7	14.0	1	21.2	14.6	57.2	
M 10	327	03.3		24.1	85	06.7	13.9	1	06.6	14.7	57.2	
I 11	342	03.1		23.6	99	39.6	13.9	0	51.9	14.6	57.2	
N 12	357	02.9	S19	23.0	114	12.5	13.8	N 0	37.3	14.7	57.2	
G 13	12	02.8		22.4	128	45.3	13.9	0	22.6	14.7	57.2	
O 14	27	02.6		21.8	143	18.2	13.8	N 0	07.9	14.7	57.3	
15	42	02.5	. .	21.2	157	51.0	13.8	S 0	06.8	14.7	57.3	
16	57	02.3		20.6	172	23.8	13.7	0	21.5	14.7	57.3	
17	72	02.2		20.0	186	56.5	13.8	0	36.2	14.8	57.3	
18	87	02.0	S19	19.4	201	29.3	13.7	S 0	51.0	14.7	57.4	
19	102	01.8		18.8	216	02.0	13.7	1	05.7	14.8	57.4	
20	117	01.7		18.2	230	34.7	13.6	1	20.5	14.7	57.4	
21	132	01.5	. .	17.6	245	07.3	13.6	1	35.2	14.8	57.4	
22	147	01.4		17.0	259	39.9	13.6	1	50.0	14.7	57.5	
23	162	01.2		16.4	274	12.5	13.6	2	04.7	14.8	57.5	
24 00	177	01.1	S19	15.8	288	45.1	13.5	S 2	19.5	14.8	57.5	
01	192	00.9		15.2	303	17.6	13.5	2	34.3	14.7	57.6	
02	207	00.8		14.6	317	50.1	13.4	2	49.0	14.8	57.6	
03	222	00.6	. .	14.0	332	22.5	13.4	3	03.8	14.8	57.6	
04	237	00.5		13.4	346	54.9	13.4	3	18.6	14.7	57.6	
05	252	00.3		12.8	1	27.3	13.3	3	33.3	14.8	57.7	
06	267	00.2	S19	12.2	15	59.6	13.3	S 3	48.1	14.7	57.7	
07	282	00.0		11.6	30	31.9	13.2	4	02.8	14.8	57.7	
L 08	296	59.9		11.0	45	04.1	13.2	4	17.6	14.7	57.7	
U 09	311	59.7	. .	10.4	59	36.3	13.2	4	32.3	14.8	57.8	
N 10	326	59.6		09.8	74	08.5	13.0	4	47.1	14.7	57.8	
E 11	341	59.4		09.2	88	40.5	13.1	5	01.8	14.7	57.8	
S 12	356	59.3	S19	08.6	103	12.6	13.0	S 5	16.5	14.7	57.8	
13	11	59.1		08.0	117	44.6	12.9	5	31.2	14.7	57.9	
14	26	59.0		07.4	132	16.5	12.9	5	45.9	14.7	57.9	
15	41	58.8	. .	06.8	146	48.4	12.9	6	00.6	14.6	57.9	
16	56	58.7		06.2	161	20.3	12.7	6	15.2	14.7	57.9	
17	71	58.5		05.6	175	52.0	12.8	6	29.9	14.6	58.0	
18	86	58.4	S19	05.0	190	23.8	12.6	S 6	44.5	14.6	58.0	
19	101	58.2		04.4	204	55.4	12.6	6	59.1	14.6	58.0	
20	116	58.1		03.7	219	27.0	12.6	7	13.7	14.5	58.0	
21	131	57.9	. .	03.1	233	58.6	12.5	7	28.2	14.6	58.1	
22	146	57.8		02.5	248	30.1	12.4	7	42.8	14.5	58.1	
23	161	57.6		01.9	263	01.5	12.3	S 7	57.3	14.5	58.1	
	S/D	16.3	d	0.6	S/D	15.4			15.6		15.8	

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			22	23	24	25
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	07	39	09	18	▬	21 05	23 11	25 25	01 25
N 70	07	27	08	52	10 41	21 11	23 08	25 11	01 11
68	07	18	08	33	09 56	21 16	23 06	24 59	00 59
66	07	10	08	17	09 27	21 20	23 03	24 50	00 50
64	07	03	08	04	09 05	21 24	23 02	24 43	00 43
62	06	56	07	53	08 48	21 27	23 00	24 36	00 36
60	06	51	07	43	08 33	21 29	22 59	24 31	00 31
N 58	06	46	07	35	08 21	21 32	22 57	24 26	00 26
56	06	41	07	28	08 10	21 34	22 56	24 21	00 21
54	06	37	07	21	08 01	21 35	22 55	24 17	00 17
52	06	33	07	15	07 53	21 37	22 54	24 14	00 14
50	06	30	07	09	07 45	21 38	22 54	24 11	00 11
45	06	21	06	57	07 29	21 42	22 52	24 04	00 04
N 40	06	14	06	47	07 16	21 44	22 50	23 58	25 09
35	06	07	06	37	07 05	21 47	22 49	23 53	25 00
30	06	00	06	29	06 55	21 49	22 48	23 49	24 53
20	05	47	06	14	06 37	21 52	22 46	23 42	24 40
N 10	05	35	06	00	06 22	21 55	22 45	23 35	24 29
0	05	21	05	46	06 08	21 58	22 43	23 29	24 18
S 10	05	05	05	31	05 54	22 01	22 42	23 24	24 08
20	04	47	05	15	05 38	22 04	22 40	23 17	23 57
30	04	23	04	54	05 20	22 08	22 39	23 10	23 45
35	04	07	04	42	05 10	22 10	22 38	23 06	23 38
40	03	49	04	27	04 58	22 12	22 36	23 02	23 30
45	03	25	04	09	04 44	22 15	22 35	22 57	23 20
S 50	02	52	03	46	04 26	22 18	22 34	22 50	23 09
52	02	35	03	35	04 18	22 20	22 33	22 47	23 04
54	02	14	03	22	04 08	22 21	22 32	22 44	22 58
56	01	45	03	07	03 58	22 23	22 32	22 41	22 52
58	00	54	02	48	03 46	22 25	22 31	22 37	22 45
S 60	////		02	26	03 32	22 27	22 30	22 33	22 37

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 22	23	24	25
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	▬		15	07	16 46	11 00	10 31	10 02	09 27
N 70	13	44	15	32	16 57	10 51	10 30	10 08	09 44
68	14	28	15	52	17 07	10 44	10 29	10 14	09 57
66	14	57	16	08	17 15	10 37	10 28	10 19	10 08
64	15	19	16	21	17 22	10 32	10 27	10 23	10 18
62	15	36	16	31	17 28	10 28	10 27	10 26	10 26
60	15	51	16	41	17 33	10 23	10 26	10 29	10 32
N 58	16	03	16	49	17 38	10 20	10 26	10 32	10 39
56	16	14	16	57	17 43	10 17	10 25	10 34	10 44
54	16	23	17	03	17 47	10 14	10 25	10 36	10 49
52	16	31	17	09	17 51	10 11	10 25	10 38	10 53
50	16	39	17	15	17 55	10 09	10 24	10 40	10 58
45	16	55	17	27	18 03	10 03	10 24	10 44	11 06
N 40	17	08	17	37	18 10	09 59	10 23	10 47	11 14
35	17	19	17	47	18 17	09 55	10 22	10 50	11 20
30	17	29	17	55	18 24	09 52	10 22	10 53	11 26
20	17	46	18	10	18 36	09 46	10 21	10 57	11 36
N 10	18	01	18	23	18 49	09 40	10 20	11 01	11 44
0	18	15	18	37	19 03	09 35	10 20	11 05	11 52
S 10	18	30	18	52	19 18	09 30	10 19	11 09	12 00
20	18	45	19	09	19 37	09 25	10 18	11 13	12 09
30	19	03	19	29	20 01	09 18	10 17	11 17	12 19
35	19	13	19	41	20 16	09 15	10 17	11 20	12 25
40	19	25	19	56	20 34	09 10	10 16	11 23	12 32
45	19	39	20	14	20 58	09 06	10 15	11 26	12 39
S 50	19	57	20	36	21 30	09 00	10 14	11 30	12 49
52	20	05	20	48	21 47	08 57	10 14	11 32	12 53
54	20	14	21	00	22 08	08 54	10 13	11 34	12 58
56	20	24	21	15	22 35	08 51	10 13	11 36	13 03
58	20	36	21	33	23 21	08 47	10 12	11 39	13 09
S 60	20	50	21	55	////	08 43	10 12	11 42	13 16

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
22	11 24	11 32	12 12	03 25	15 47	20 81	
23	11 40	11 48	12 12	04 09	16 31	21 72	
24	11 55	12 03	12 12	04 54	17 17	22 62	

UT (HmGr)	ARIES	VENUS −4·7		MARTE +1·4		JÚPITER −2·1		SATURNO +0·6	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
25 00	124 16.9	202 24.7	S16 10.3	213 54.9	S23 50.6	146 29.9	S10 21.5	166 54.7	S17 14.5
01	139 19.4	217 27.6	10.3	228 55.4	50.7	161 31.8	21.3	181 56.9	14.4
02	154 21.9	232 30.6	10.3	243 55.8	50.7	176 33.7	21.1	196 59.1	14.3
03	169 24.3	247 33.5	10.2	258 56.3	50.7	191 35.7	20.9	212 01.2	14.2
04	184 26.8	262 36.4	10.2	273 56.8	50.7	206 37.6	20.6	227 03.4	14.1
05	199 29.2	277 39.3	10.2	288 57.3	50.8	221 39.5	20.4	242 05.6	14.0
06	214 31.7	292 42.2	S16 10.2	303 57.8	S23 50.8	236 41.5	S10 20.2	257 07.7	S17 14.0
07	229 34.2	307 45.1	10.2	318 58.2	50.8	251 43.4	20.0	272 09.9	13.9
08	244 36.6	322 48.0	10.1	333 58.7	50.8	266 45.3	19.8	287 12.1	13.8
M 09	259 39.1	337 50.9	10.1	348 59.2	50.8	281 47.3	19.6	302 14.2	13.7
A 10	274 41.6	352 53.8	10.1	3 59.7	50.9	296 49.2	19.4	317 16.4	13.6
R 11	289 44.0	7 56.7	10.1	19 00.2	50.9	311 51.1	19.2	332 18.6	13.5
T 12	304 46.5	22 59.6	S16 10.1	34 00.6	S23 50.9	326 53.1	S10 19.0	347 20.7	S17 13.4
E 13	319 49.0	38 02.5	10.1	49 01.1	50.9	341 55.0	18.8	2 22.9	13.4
S 14	334 51.4	53 05.4	10.0	64 01.6	50.9	356 56.9	18.6	17 25.1	13.3
15	349 53.9	68 08.2	10.0	79 02.1	51.0	11 58.9	18.4	32 27.2	13.2
16	4 56.4	83 11.1	10.0	94 02.6	51.0	27 00.8	18.1	47 29.4	13.1
17	19 58.8	98 13.9	10.0	109 03.0	51.0	42 02.7	17.9	62 31.6	13.0
18	35 01.3	113 16.8	S16 10.0	124 03.5	S23 51.0	57 04.7	S10 17.7	77 33.7	S17 12.9
19	50 03.7	128 19.7	10.0	139 04.0	51.0	72 06.6	17.5	92 35.9	12.9
20	65 06.2	143 22.5	10.0	154 04.5	51.0	87 08.5	17.3	107 38.1	12.8
21	80 08.7	158 25.3	10.0	169 05.0	51.1	102 10.5	17.1	122 40.2	12.7
22	95 11.1	173 28.2	10.0	184 05.4	51.1	117 12.4	16.9	137 42.4	12.6
23	110 13.6	188 31.0	10.0	199 05.9	51.1	132 14.3	16.7	152 44.6	12.5
26 00	125 16.1	203 33.8	S16 09.9	214 06.4	S23 51.1	147 16.3	S10 16.5	167 46.7	S17 12.4
01	140 18.5	218 36.7	09.9	229 06.9	51.1	162 18.2	16.3	182 48.9	12.3
02	155 21.0	233 39.5	09.9	244 07.3	51.1	177 20.1	16.1	197 51.1	12.3
03	170 23.5	248 42.3	09.9	259 07.8	51.2	192 22.1	15.8	212 53.2	12.2
04	185 25.9	263 45.1	09.9	274 08.3	51.2	207 24.0	15.6	227 55.4	12.1
05	200 28.4	278 47.9	09.9	289 08.8	51.2	222 25.9	15.4	242 57.5	12.0
06	215 30.9	293 50.7	S16 09.9	304 09.3	S23 51.2	237 27.9	S10 15.2	257 59.7	S17 11.9
07	230 33.3	308 53.5	09.9	319 09.7	51.2	252 29.8	15.0	273 01.9	11.8
M 08	245 35.8	323 56.3	09.9	334 10.2	51.2	267 31.7	14.8	288 04.0	11.7
I 09	260 38.2	338 59.1	09.9	349 10.7	51.2	282 33.6	14.6	303 06.2	11.7
É 10	275 40.7	354 01.9	09.9	4 11.2	51.2	297 35.6	14.4	318 08.4	11.6
R 11	290 43.2	9 04.7	09.9	19 11.6	51.3	312 37.5	14.2	333 10.5	11.5
C 12	305 45.6	24 07.4	S16 09.9	34 12.1	S23 51.3	327 39.4	S10 14.0	348 12.7	S17 11.4
O 13	320 48.1	39 10.2	09.9	49 12.6	51.3	342 41.4	13.7	3 14.9	11.3
L 14	335 50.6	54 13.0	09.9	64 13.1	51.3	357 43.3	13.5	18 17.0	11.2
E 15	350 53.0	69 15.7	09.9	79 13.6	51.3	12 45.2	13.3	33 19.2	11.2
S 16	5 55.5	84 18.5	09.9	94 14.0	51.3	27 47.2	13.1	48 21.4	11.1
17	20 58.0	99 21.2	09.9	109 14.5	51.3	42 49.1	12.9	63 23.5	11.0
18	36 00.4	114 24.0	S16 09.9	124 15.0	S23 51.3	57 51.0	S10 12.7	78 25.7	S17 10.9
19	51 02.9	129 26.7	09.9	139 15.5	51.3	72 53.0	12.5	93 27.9	10.8
20	66 05.4	144 29.5	09.9	154 15.9	51.3	87 54.9	12.3	108 30.0	10.7
21	81 07.8	159 32.2	09.9	169 16.4	51.3	102 56.8	12.1	123 32.2	10.6
22	96 10.3	174 34.9	09.9	184 16.9	51.3	117 58.7	11.9	138 34.4	10.6
23	111 12.7	189 37.6	10.0	199 17.4	51.4	133 00.7	11.6	153 36.5	10.5
27 00	126 15.2	204 40.4	S16 10.0	214 17.9	S23 51.4	148 02.6	S10 11.4	168 38.7	S17 10.4
01	141 17.7	219 43.1	10.0	229 18.3	51.4	163 04.5	11.2	183 40.9	10.3
02	156 20.1	234 45.8	10.0	244 18.8	51.4	178 06.5	11.0	198 43.0	10.2
03	171 22.6	249 48.5	10.0	259 19.3	51.4	193 08.4	10.8	213 45.2	10.1
04	186 25.1	264 51.2	10.0	274 19.8	51.4	208 10.3	10.6	228 47.4	10.0
05	201 27.5	279 53.9	10.0	289 20.2	51.4	223 12.3	10.4	243 49.5	10.0
06	216 30.0	294 56.6	S16 10.0	304 20.7	S23 51.4	238 14.2	S10 10.2	258 51.7	S17 09.9
07	231 32.5	309 59.3	10.0	319 21.2	51.4	253 16.1	10.0	273 53.8	09.8
J 08	246 34.9	325 01.9	10.0	334 21.7	51.4	268 18.0	09.8	288 56.0	09.7
U 09	261 37.4	340 04.6	10.1	349 22.1	51.4	283 20.0	09.5	303 58.2	09.6
E 10	276 39.8	355 07.3	10.1	4 22.6	51.4	298 21.9	09.3	319 00.3	09.5
V 11	291 42.3	10 10.0	10.1	19 23.1	51.4	313 23.8	09.1	334 02.5	09.4
E 12	306 44.8	25 12.6	S16 10.1	34 23.6	S23 51.4	328 25.8	S10 08.9	349 04.7	S17 09.4
S 13	321 47.2	40 15.3	10.1	49 24.0	51.4	343 27.7	08.7	4 06.8	09.3
14	336 49.7	55 17.9	10.1	64 24.5	51.4	358 29.6	08.5	19 09.0	09.2
15	351 52.2	70 20.6	10.2	79 25.0	51.4	13 31.5	08.3	34 11.2	09.1
16	6 54.6	85 23.2	10.2	94 25.5	51.4	28 33.5	08.1	49 13.3	09.0
17	21 57.1	100 25.9	10.2	109 25.9	51.4	43 35.4	07.9	64 15.5	08.9
18	36 59.6	115 28.5	S16 10.2	124 26.4	S23 51.4	58 37.3	S10 07.6	79 17.7	S17 08.8
19	52 02.0	130 31.2	10.2	139 26.9	51.4	73 39.3	07.4	94 19.8	08.8
20	67 04.5	145 33.8	10.3	154 27.4	51.4	88 41.2	07.2	109 22.0	08.7
21	82 07.0	160 36.4	10.3	169 27.9	51.4	103 43.1	07.0	124 24.2	08.6
22	97 09.4	175 39.0	10.3	184 28.3	51.4	118 45.1	06.8	139 26.3	08.5
23	112 11.9	190 41.6	10.3	199 28.8	51.4	133 47.0	06.6	154 28.5	08.4
	h m								
Paso Mer.	15 36.4	*v* 2.8	*d* 0.0	*v* 0.5	*d* 0.0	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.6	S40 13.3
Achernar	335 22.1	S57 07.9
Acrux	173 02.4	S63 13.0
Adhara	255 07.4	S29 00.2
Aldebaran	290 42.2	N16 33.2
Alioth	166 14.9	N55 50.2
Alkaid	152 53.9	N49 12.0
Alnair	27 36.4	S46 51.5
Alnilam	275 39.9	S 1 11.4
Alphard	217 49.8	S 8 45.3
Alphecca	126 05.9	N26 38.3
Alpheratz	357 37.5	N29 12.7
Altair	62 02.6	N 8 55.5
Ankaa	353 09.8	S42 11.5
Antares	112 19.0	S26 28.7
Arcturus	145 50.1	N19 03.9
Atria	107 15.8	S69 03.7
Avior	234 15.0	S59 34.8
Bellatrix	278 25.2	N 6 22.1
Betelgeuse	270 54.4	N 7 24.6
Canopus	263 53.0	S52 42.6
Capella	280 25.1	N46 01.3
Deneb	49 27.9	N45 21.5
Denebola	182 27.2	N14 26.9
Diphda	348 49.9	S17 52.2
Dubhe	193 43.5	N61 37.8
Elnath	278 04.6	N28 37.5
Eltanin	90 43.7	N51 28.9
Enif	33 41.5	N 9 58.5
Fomalhaut	15 17.5	S29 30.6
Gacrux	171 54.0	S57 13.9
Gienah	175 45.9	S17 39.8
Hadar	148 39.4	S60 28.4
Hamal	327 53.9	N23 34.0
Kaus Aust.	83 36.1	S34 22.4
Kochab	137 20.0	N74 03.6
Markab	13 32.6	N15 19.3
Menkar	314 08.6	N 4 10.4
Menkent	148 00.4	S36 28.5
Miaplacidus	221 37.8	S69 48.3
Mirfak	308 31.5	N49 56.5
Nunki	75 51.1	S26 16.2
Peacock	53 10.2	S56 39.9
Pollux	243 19.9	N27 58.3
Procyon	244 53.0	N 5 10.0
Rasalhague	96 01.1	N12 32.5
Regulus	207 36.7	N11 51.5
Rigel	281 06.0	S 8 10.7
Rigil Kent.	139 43.6	S60 55.2
Sabik	102 05.8	S15 45.1
Schedar	349 34.0	N56 39.6
Shaula	96 14.0	S37 07.1
Sirius	258 28.0	S16 44.9
Spica	158 24.8	S11 16.5
Suhail	222 47.6	S43 31.2
Vega	80 35.2	N38 48.1
Zuben'ubi	136 58.7	S16 07.9

	AHS	Paso Mer.
	° ′	h m
Venus	78 17.8	10 24
Marte	88 50.3	9 43
Júpiter	22 00.2	14 09
Saturno	42 30.7	12 47

UT (HmGr)	SOL				LUNA							
	AHGr		Dec		AHGr	v		Dec		d	Ph	
d h	°	′	°	′	°	′	′	°	′	′	′	
25 00	176	57.5	S19	01.3	277	32.8	12.3	S 8	11.8	14.5	58.2	
01	191	57.3		00.7	292	04.1	12.3	8	26.3	14.4	58.2	
02	206	57.2	19	00.1	306	35.4	12.1	8	40.7	14.4	58.2	
03	221	57.1	18	59.5	321	06.5	12.1	8	55.1	14.4	58.2	
04	236	56.9		58.8	335	37.6	12.0	9	09.5	14.3	58.3	
05	251	56.8		58.2	350	08.6	12.0	9	23.8	14.3	58.3	
06	266	56.6	S18	57.6	4	39.6	11.8	S 9	38.1	14.3	58.3	
07	281	56.5		57.0	19	10.4	11.8	9	52.4	14.2	58.3	
M 08	296	56.3		56.4	33	41.2	11.8	10	06.6	14.2	58.4	
A 09	311	56.2	. .	55.8	48	12.0	11.6	10	20.8	14.2	58.4	
R 10	326	56.1		55.1	62	42.6	11.6	10	35.0	14.1	58.4	
11	341	55.9		54.5	77	13.2	11.5	10	49.1	14.1	58.4	
T 12	356	55.8	S18	53.9	91	43.7	11.4	S11	03.2	14.0	58.5	
E 13	11	55.6		53.3	106	14.1	11.3	11	17.2	14.0	58.5	
S 14	26	55.5		52.7	120	44.4	11.2	11	31.2	14.0	58.5	
15	41	55.3	. .	52.0	135	14.6	11.2	11	45.2	13.9	58.6	
16	56	55.2		51.4	149	44.8	11.1	11	59.1	13.8	58.6	
17	71	55.1		50.8	164	14.9	11.0	12	12.9	13.8	58.6	
18	86	54.9	S18	50.2	178	44.9	10.9	S12	26.7	13.8	58.6	
19	101	54.8		49.5	193	14.8	10.8	12	40.5	13.7	58.7	
20	116	54.6		48.9	207	44.6	10.7	12	54.2	13.6	58.7	
21	131	54.5	. .	48.3	222	14.3	10.6	13	07.8	13.6	58.7	
22	146	54.4		47.7	236	43.9	10.6	13	21.4	13.5	58.7	
23	161	54.2		47.0	251	13.5	10.4	13	34.9	13.5	58.8	
26 00	176	54.1	S18	46.4	265	42.9	10.4	S13	48.4	13.4	58.8	
01	191	54.0		45.8	280	12.3	10.3	14	01.8	13.3	58.8	
02	206	53.8		45.2	294	41.6	10.1	14	15.1	13.3	58.8	
03	221	53.7	. .	44.5	309	10.7	10.1	14	28.4	13.2	58.9	
04	236	53.5		43.9	323	39.8	10.0	14	41.6	13.1	58.9	
05	251	53.4		43.3	338	08.8	9.8	14	54.7	13.1	58.9	
06	266	53.3	S18	42.6	352	37.6	9.8	S15	07.8	13.0	58.9	
07	281	53.1		42.0	7	06.4	9.7	15	20.8	12.9	59.0	
M 08	296	53.0		41.4	21	35.1	9.6	15	33.7	12.9	59.0	
I 09	311	52.9	. .	40.7	36	03.7	9.4	15	46.6	12.7	59.0	
É 10	326	52.7		40.1	50	32.1	9.4	15	59.3	12.7	59.1	
R 11	341	52.6		39.5	65	00.5	9.3	16	12.0	12.6	59.1	
C 12	356	52.5	S18	38.8	79	28.8	9.1	S16	24.6	12.6	59.1	
O 13	11	52.3		38.2	93	56.9	9.1	16	37.2	12.4	59.1	
L 14	26	52.2		37.6	108	25.0	8.9	16	49.6	12.4	59.2	
E 15	41	52.1	. .	36.9	122	52.9	8.9	17	02.0	12.3	59.2	
S 16	56	51.9		36.3	137	20.8	8.7	17	14.3	12.2	59.2	
17	71	51.8		35.7	151	48.5	8.6	17	26.5	12.1	59.2	
18	86	51.7	S18	35.0	166	16.1	8.5	S17	38.6	12.0	59.3	
19	101	51.5		34.4	180	43.6	8.4	17	50.6	11.9	59.3	
20	116	51.4		33.7	195	11.0	8.3	18	02.5	11.8	59.3	
21	131	51.3	. .	33.1	209	38.3	8.2	18	14.3	11.8	59.3	
22	146	51.2		32.5	224	05.5	8.1	18	26.1	11.6	59.4	
23	161	51.0		31.8	238	32.6	8.0	18	37.7	11.5	59.4	
27 00	176	50.9	S18	31.2	252	59.6	7.8	S18	49.2	11.4	59.4	
01	191	50.8		30.5	267	26.4	7.8	19	00.6	11.4	59.4	
02	206	50.6		29.9	281	53.2	7.6	19	12.0	11.2	59.5	
03	221	50.5	. .	29.3	296	19.8	7.5	19	23.2	11.1	59.5	
04	236	50.4		28.6	310	46.3	7.4	19	34.3	11.0	59.5	
05	251	50.3		28.0	325	12.7	7.3	19	45.3	10.8	59.5	
06	266	50.1	S18	27.3	339	39.0	7.2	S19	56.1	10.8	59.5	
07	281	50.0		26.7	354	05.2	7.0	20	06.9	10.7	59.6	
J 08	296	49.9		26.0	8	31.2	7.0	20	17.6	10.5	59.6	
U 09	311	49.7	. .	25.4	22	57.2	6.8	20	28.1	10.4	59.6	
E 10	326	49.6		24.7	37	23.0	6.8	20	38.5	10.3	59.6	
V 11	341	49.5		24.1	51	48.8	6.6	20	48.8	10.2	59.7	
E 12	356	49.4	S18	23.4	66	14.4	6.5	S20	59.0	10.0	59.7	
S 13	11	49.2		22.8	80	39.9	6.3	21	09.0	10.0	59.7	
14	26	49.1		22.1	95	05.2	6.3	21	19.0	9.8	59.7	
15	41	49.0	. .	21.5	109	30.5	6.2	21	28.8	9.6	59.7	
16	56	48.9		20.8	123	55.7	6.0	21	38.4	9.6	59.8	
17	71	48.7		20.2	138	20.7	6.0	21	48.0	9.4	59.8	
18	86	48.6	S18	19.5	152	45.7	5.8	S21	57.4	9.2	59.8	
19	101	48.5		18.9	167	10.5	5.7	22	06.6	9.2	59.8	
20	116	48.4		18.2	181	35.2	5.6	22	15.8	8.9	59.9	
21	131	48.3	. .	17.6	195	59.8	5.5	22	24.7	8.9	59.9	
22	146	48.1		16.9	210	24.3	5.4	22	33.6	8.7	59.9	
23	161	48.0		16.3	224	48.7	5.3	S22	42.3	8.6	59.9	
	S/D	16.3	d	0.6	S/D	15.9			16.1		16.3	

Lat.	Aurora				Orto Sol		Orto Luna							
	Náut.		Civil				25		26		27		28	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	07	30	09	05	11	39	01	25	04	05				
N 70	07	19	08	42	10	21	01	11	03	29				
68	07	11	08	24	09	43	00	59	03	05	05	38		
66	07	03	08	09	09	17	00	50	02	46	04	57		
64	06	57	07	57	08	57	00	43	02	31	04	29	06	41
62	06	51	07	47	08	41	00	36	02	18	04	07	06	02
60	06	46	07	38	08	27	00	31	02	07	03	50	05	35
N 58	06	42	07	30	08	16	00	26	01	58	03	36	05	15
56	06	38	07	23	08	06	00	21	01	50	03	23	04	57
54	06	34	07	17	07	57	00	17	01	43	03	13	04	43
52	06	30	07	11	07	49	00	14	01	37	03	03	04	30
50	06	27	07	06	07	42	00	11	01	31	02	55	04	19
45	06	19	06	54	07	26	00	04	01	19	02	37	03	56
N 40	06	12	06	45	07	14	25	09	01	09	02	22	03	38
35	06	05	06	36	07	03	25	00	01	00	02	10	03	22
30	05	59	06	28	06	53	24	53	00	53	02	00	03	09
20	05	47	06	14	06	37	24	40	00	40	01	42	02	47
N 10	05	35	06	00	06	23	24	29	00	29	01	26	02	27
0	05	22	05	47	06	09	24	18	00	18	01	11	02	09
S 10	05	07	05	33	05	55	24	08	00	08	00	57	01	51
20	04	49	05	17	05	40	23	57	24	42	00	42	01	32
30	04	26	04	57	05	23	23	45	24	24	00	24	01	10
35	04	11	04	45	05	13	23	38	24	14	00	14	00	57
40	03	53	04	31	05	02	23	30	24	03	00	03	00	43
45	03	30	04	14	04	48	23	20	23	49	24	25	00	25
S 50	02	59	03	52	04	31	23	09	23	33	24	04	00	04
52	02	43	03	41	04	23	23	04	23	25	23	54	24	35
54	02	24	03	29	04	14	22	58	23	17	23	42	24	21
56	01	58	03	15	04	04	22	52	23	07	23	30	24	04
58	01	19	02	58	03	53	22	45	22	57	23	15	23	45
S 60	////		02	37	03	40	22	37	22	44	22	57	23	21

Lat.	Ocaso Sol		Crepúsculo				Ocaso Luna							
			Civil		Náut.		25		26		27		28	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	12	47	15	21	16	57	09	27	08	32				
N 70	14	05	15	44	17	07	09	44	09	09				
68	14	43	16	02	17	15	09	57	09	35	08	54		
66	15	09	16	17	17	23	10	08	09	56	09	37		
64	15	29	16	29	17	29	10	18	10	12	10	06	09	56
62	15	45	16	39	17	34	10	26	10	26	10	28	10	35
60	15	58	16	48	17	39	10	32	10	38	10	46	11	02
N 58	16	10	16	55	17	44	10	39	10	48	11	01	11	24
56	16	20	17	02	17	48	10	44	10	57	11	14	11	41
54	16	29	17	09	17	52	10	49	11	05	11	26	11	56
52	16	37	17	14	17	56	10	53	11	12	11	36	12	09
50	16	44	17	20	17	59	10	58	11	18	11	45	12	21
45	16	59	17	31	18	07	11	06	11	32	12	04	12	45
N 40	17	12	17	41	18	14	11	14	11	44	12	20	13	04
35	17	22	17	49	18	20	11	20	11	54	12	33	13	20
30	17	32	17	57	18	26	11	26	12	02	12	44	13	34
20	17	48	18	11	18	38	11	36	12	17	13	04	13	58
N 10	18	03	18	25	18	50	11	44	12	31	13	22	14	19
0	18	16	18	38	19	03	11	52	12	43	13	38	14	38
S 10	18	30	18	52	19	18	12	00	12	55	13	55	14	57
20	18	44	19	08	19	36	12	09	13	09	14	12	15	18
30	19	01	19	28	19	59	12	19	13	24	14	32	15	42
35	19	11	19	39	20	13	12	25	13	33	14	44	15	56
40	19	23	19	53	20	31	12	32	13	43	14	58	16	13
45	19	36	20	10	20	53	12	39	13	56	15	14	16	33
S 50	19	53	20	32	21	24	12	49	14	10	15	35	16	57
52	20	01	20	43	21	40	12	53	14	17	15	44	17	09
54	20	09	20	55	21	59	12	58	14	25	15	55	17	23
56	20	19	21	09	22	24	13	03	14	34	16	07	17	39
58	20	31	21	25	23	00	13	09	14	43	16	22	17	58
S 60	20	44	21	46	////		13	16	14	55	16	39	18	21

Día	SOL						LUNA					
	Ec. Tiempo				Paso Mer.		Paso Mer.				Edad	Fase
	00^h		12^h				Sup.		Inf.			
d	m	s	m	s	h	m	h	m	h	m	d	%
25	12	10	12	17	12	12	05	41	18	05	23	51
26	12	23	12	30	12	12	06	31	18	57	24	40
27	12	36	12	42	12	13	07	25	19	53	25	29

UT (HmGr)	ARIES	VENUS −4·8		MARTE +1·4		JÚPITER −2·1		SATURNO +0·6	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
28 00	127 14.3	205 44.2	S16 10.3	214 29.3	S23 51.4	148 48.9	S10 06.4	169 30.7	S17 08.3
01	142 16.8	220 46.9	10.4	229 29.8	51.4	163 50.8	06.2	184 32.8	08.2
02	157 19.3	235 49.5	10.4	244 30.2	51.3	178 52.8	06.0	199 35.0	08.2
03	172 21.7	250 52.1	10.4	259 30.7	51.3	193 54.7	05.7	214 37.2	08.1
04	187 24.2	265 54.6	10.4	274 31.2	51.3	208 56.6	05.5	229 39.3	08.0
05	202 26.7	280 57.2	10.5	289 31.7	51.3	223 58.5	05.3	244 41.5	07.9
06	217 29.1	295 59.8	S16 10.5	304 32.1	S23 51.3	239 00.5	S10 05.1	259 43.6	S17 07.8
07	232 31.6	311 02.4	10.5	319 32.6	51.3	254 02.4	04.9	274 45.8	07.7
08	247 34.1	326 05.0	10.5	334 33.1	51.3	269 04.3	04.7	289 48.0	07.6
V 09	262 36.5	341 07.5	10.6	349 33.6	51.3	284 06.3	04.5	304 50.1	07.6
I 10	277 39.0	356 10.1	10.6	4 34.0	51.3	299 08.2	04.3	319 52.3	07.5
E 11	292 41.5	11 12.7	10.6	19 34.5	51.3	314 10.1	04.1	334 54.5	07.4
R 12	307 43.9	26 15.2	S16 10.7	34 35.0	S23 51.3	329 12.0	S10 03.8	349 56.6	S17 07.3
N 13	322 46.4	41 17.8	10.7	49 35.4	51.3	344 14.0	03.6	4 58.8	07.2
E 14	337 48.8	56 20.3	10.7	64 35.9	51.3	359 15.9	03.4	20 01.0	07.1
S 15	352 51.3	71 22.9	10.8	79 36.4	51.2	14 17.8	03.2	35 03.1	07.0
16	7 53.8	86 25.4	10.8	94 36.9	51.2	29 19.8	03.0	50 05.3	07.0
17	22 56.2	101 27.9	10.8	109 37.3	51.2	44 21.7	02.8	65 07.5	06.9
18	37 58.7	116 30.5	S16 10.9	124 37.8	S23 51.2	59 23.6	S10 02.6	80 09.6	S17 06.8
19	53 01.2	131 33.0	10.9	139 38.3	51.2	74 25.5	02.4	95 11.8	06.7
20	68 03.6	146 35.5	10.9	154 38.8	51.2	89 27.5	02.2	110 14.0	06.6
21	83 06.1	161 38.0	11.0	169 39.2	51.2	104 29.4	01.9	125 16.1	06.5
22	98 08.6	176 40.5	11.0	184 39.7	51.2	119 31.3	01.7	140 18.3	06.4
23	113 11.0	191 43.0	11.0	199 40.2	51.1	134 33.2	01.5	155 20.4	06.4
29 00	128 13.5	206 45.5	S16 11.1	214 40.7	S23 51.1	149 35.2	S10 01.3	170 22.6	S17 06.3
01	143 16.0	221 48.0	11.1	229 41.1	51.1	164 37.1	01.1	185 24.8	06.2
02	158 18.4	236 50.5	11.1	244 41.6	51.1	179 39.0	00.9	200 26.9	06.1
03	173 20.9	251 53.0	11.2	259 42.1	51.1	194 40.9	00.7	215 29.1	06.0
04	188 23.3	266 55.5	11.2	274 42.6	51.1	209 42.9	00.5	230 31.3	05.9
05	203 25.8	281 58.0	11.3	289 43.0	51.0	224 44.8	00.2	245 33.4	05.8
06	218 28.3	297 00.5	S16 11.3	304 43.5	S23 51.0	239 46.7	S10 00.0	260 35.6	S17 05.8
07	233 30.7	312 02.9	11.3	319 44.0	51.0	254 48.7	9 59.8	275 37.8	05.7
S 08	248 33.2	327 05.4	11.4	334 44.4	51.0	269 50.6	59.6	290 39.9	05.6
Á 09	263 35.7	342 07.9	11.4	349 44.9	51.0	284 52.5	59.4	305 42.1	05.5
B 10	278 38.1	357 10.3	11.5	4 45.4	51.0	299 54.4	59.2	320 44.3	05.4
A 11	293 40.6	12 12.8	11.5	19 45.9	50.9	314 56.4	59.0	335 46.4	05.3
D 12	308 43.1	27 15.2	S16 11.5	34 46.3	S23 50.9	329 58.3	S 9 58.8	350 48.6	S17 05.2
O 13	323 45.5	42 17.7	11.6	49 46.8	50.9	345 00.2	58.5	5 50.8	05.2
14	338 48.0	57 20.1	11.6	64 47.3	50.9	0 02.1	58.3	20 52.9	05.1
15	353 50.5	72 22.5	11.7	79 47.8	50.9	15 04.1	58.1	35 55.1	05.0
16	8 52.9	87 25.0	11.7	94 48.2	50.8	30 06.0	57.9	50 57.2	04.9
17	23 55.4	102 27.4	11.8	109 48.7	50.8	45 07.9	57.7	65 59.4	04.8
18	38 57.8	117 29.8	S16 11.8	124 49.2	S23 50.8	60 09.8	S 9 57.5	81 01.6	S17 04.7
19	54 00.3	132 32.2	11.9	139 49.6	50.8	75 11.8	57.3	96 03.7	04.6
20	69 02.8	147 34.7	11.9	154 50.1	50.7	90 13.7	57.0	111 05.9	04.6
21	84 05.2	162 37.1	12.0	169 50.6	50.7	105 15.6	56.8	126 08.1	04.5
22	99 07.7	177 39.5	12.0	184 51.1	50.7	120 17.5	56.6	141 10.2	04.4
23	114 10.2	192 41.9	12.1	199 51.5	50.7	135 19.5	56.4	156 12.4	04.3
30 00	129 12.6	207 44.3	S16 12.1	214 52.0	S23 50.6	150 21.4	S 9 56.2	171 14.6	S17 04.2
01	144 15.1	222 46.7	12.2	229 52.5	50.6	165 23.3	56.0	186 16.7	04.1
02	159 17.6	237 49.0	12.2	244 53.0	50.6	180 25.2	55.8	201 18.9	04.0
03	174 20.0	252 51.4	12.3	259 53.4	50.6	195 27.2	55.6	216 21.1	04.0
04	189 22.5	267 53.8	12.3	274 53.9	50.5	210 29.1	55.3	231 23.2	03.9
05	204 25.0	282 56.2	12.4	289 54.4	50.5	225 31.0	55.1	246 25.4	03.8
06	219 27.4	297 58.5	S16 12.4	304 54.8	S23 50.5	240 32.9	S 9 54.9	261 27.5	S17 03.7
07	234 29.9	313 00.9	12.5	319 55.3	50.5	255 34.9	54.7	276 29.7	03.6
D 08	249 32.3	328 03.3	12.5	334 55.8	50.4	270 36.8	54.5	291 31.9	03.5
O 09	264 34.8	343 05.6	12.6	349 56.3	50.4	285 38.7	54.3	306 34.0	03.4
M 10	279 37.3	358 08.0	12.6	4 56.7	50.4	300 40.6	54.1	321 36.2	03.4
I 11	294 39.7	13 10.3	12.7	19 57.2	50.4	315 42.6	53.8	336 38.4	03.3
N 12	309 42.2	28 12.7	S16 12.7	34 57.7	S23 50.3	330 44.5	S 9 53.6	351 40.5	S17 03.2
G 13	324 44.7	43 15.0	12.8	49 58.1	50.3	345 46.4	53.4	6 42.7	03.1
O 14	339 47.1	58 17.4	12.8	64 58.6	50.3	0 48.3	53.2	21 44.9	03.0
15	354 49.6	73 19.7	12.9	79 59.1	50.2	15 50.3	53.0	36 47.0	02.9
16	9 52.1	88 22.0	13.0	94 59.6	50.2	30 52.2	52.8	51 49.2	02.8
17	24 54.5	103 24.3	13.0	110 00.0	50.2	45 54.1	52.6	66 51.4	02.8
18	39 57.0	118 26.6	S16 13.1	125 00.5	S23 50.1	60 56.0	S 9 52.4	81 53.5	S17 02.7
19	54 59.5	133 29.0	13.1	140 01.0	50.1	75 57.9	52.1	96 55.7	02.6
20	70 01.9	148 31.3	13.2	155 01.4	50.1	90 59.9	51.9	111 57.8	02.5
21	85 04.4	163 33.6	13.2	170 01.9	50.0	106 01.8	51.7	127 00.0	02.4
22	100 06.8	178 35.9	13.3	185 02.4	50.0	121 03.7	51.5	142 02.2	02.3
23	115 09.3	193 38.2	13.4	200 02.9	50.0	136 05.6	51.3	157 04.3	02.2
	h m								
Paso Mer.	15 24.6	*v* 2.4	*d* 0.0	*v* 0.5	*d* 0.0	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.6	S40 13.3
Achernar	335 22.2	S57 07.9
Acrux	173 02.3	S63 13.0
Adhara	255 07.4	S29 00.2
Aldebaran	290 42.2	N16 33.2
Alioth	166 14.9	N55 50.2
Alkaid	152 53.9	N49 12.0
Alnair	27 36.4	S46 51.5
Alnilam	275 39.9	S 1 11.4
Alphard	217 49.8	S 8 45.3
Alphecca	126 05.9	N26 38.3
Alpheratz	357 37.5	N29 12.7
Altair	62 02.6	N 8 55.5
Ankaa	353 09.8	S42 11.5
Antares	112 19.0	S26 28.7
Arcturus	145 50.1	N19 03.9
Atria	107 15.7	S69 03.7
Avior	234 15.0	S59 34.8
Bellatrix	278 25.2	N 6 22.1
Betelgeuse	270 54.4	N 7 24.6
Canopus	263 53.0	S52 42.6
Capella	280 25.1	N46 01.3
Deneb	49 27.9	N45 21.4
Denebola	182 27.2	N14 26.9
Diphda	348 49.9	S17 52.2
Dubhe	193 43.5	N61 37.8
Elnath	278 04.6	N28 37.5
Eltanin	90 43.7	N51 28.9
Enif	33 41.5	N 9 58.4
Fomalhaut	15 17.5	S29 30.6
Gacrux	171 54.0	S57 13.9
Gienah	175 45.9	S17 39.8
Hadar	148 39.3	S60 28.4
Hamal	327 53.9	N23 34.0
Kaus Aust.	83 36.1	S34 22.4
Kochab	137 20.0	N74 03.6
Markab	13 32.5	N15 19.3
Menkar	314 08.6	N 4 10.4
Menkent	148 00.4	S36 28.5
Miaplacidus	221 37.7	S69 48.4
Mirfak	308 31.5	N49 56.5
Nunki	75 51.1	S26 16.2
Peacock	53 10.1	S56 39.9
Pollux	243 19.9	N27 58.3
Procyon	244 53.0	N 5 10.0
Rasalhague	96 01.0	N12 32.5
Regulus	207 36.7	N11 51.5
Rigel	281 06.0	S 8 10.7
Rigil Kent.	139 43.6	S60 55.2
Sabik	102 05.8	S15 45.1
Schedar	349 34.0	N56 39.6
Shaula	96 13.9	S37 07.1
Sirius	258 28.0	S16 44.9
Spica	158 24.7	S11 16.5
Suhail	222 47.6	S43 31.3
Vega	80 35.2	N38 48.1
Zuben'ubi	136 58.7	S16 07.9

	AHS	Paso Mer.
	° ′	h m
Venus	78 32.0	10 11
Marte	86 27.2	9 41
Júpiter	21 21.7	14 00
Saturno	42 09.1	12 37

UT (HmGr)		SOL			LUNA					
		AHGr	Dec		AHGr	*v*	Dec	*d*	Ph	
d	h	° ′	° ′		° ′	′	° ′	′	′	
28	00	176 47.9	S18 15.6		239 13.0	5.1	S22 50.9	8.4	59.9	
	01	191 47.8	15.0		253 37.1	5.1	22 59.3	8.2	60.0	
	02	206 47.7	14.3		268 01.2	5.0	23 07.5	8.1	60.0	
	03	221 47.5	13.6		282 25.2	4.8	23 15.6	8.0	60.0	
	04	236 47.4	13.0		296 49.0	4.8	23 23.6	7.8	60.0	
	05	251 47.3	12.3		311 12.8	4.6	23 31.4	7.7	60.0	
	06	266 47.2	S18 11.7		325 36.4	4.6	S23 39.1	7.5	60.0	
	07	281 47.1	11.0		340 00.0	4.4	23 46.6	7.3	60.1	
	08	296 46.9	10.4		354 23.4	4.4	23 53.9	7.2	60.1	
V	09	311 46.8	09.7		8 46.8	4.2	24 01.1	7.0	60.1	
I	10	326 46.7	09.0		23 10.0	4.2	24 08.1	6.9	60.1	
E	11	341 46.6	08.4		37 33.2	4.0	24 15.0	6.7	60.1	
R	12	356 46.5	S18 07.7		51 56.2	4.0	S24 21.7	6.5	60.2	
N	13	11 46.3	07.0		66 19.2	3.9	24 28.2	6.4	60.2	
E	14	26 46.2	06.4		80 42.1	3.7	24 34.6	6.1	60.2	
S	15	41 46.1	05.7		95 04.8	3.7	24 40.7	6.1	60.2	
	16	56 46.0	05.1		109 27.5	3.6	24 46.8	5.8	60.2	
	17	71 45.9	04.4		123 50.1	3.6	24 52.6	5.7	60.2	
	18	86 45.8	S18 03.7		138 12.7	3.4	S24 58.3	5.5	60.2	
	19	101 45.7	03.1		152 35.1	3.4	25 03.8	5.3	60.3	
	20	116 45.5	02.4		166 57.5	3.3	25 09.1	5.1	60.3	
	21	131 45.4	01.7		181 19.8	3.2	25 14.2	5.0	60.3	
	22	146 45.3	01.1		195 42.0	3.1	25 19.2	4.8	60.3	
	23	161 45.2	18 00.4		210 04.1	3.0	25 24.0	4.6	60.3	
29	00	176 45.1	S17 59.7		224 26.1	3.0	S25 28.6	4.4	60.3	
	01	191 45.0	59.0		238 48.1	3.0	25 33.0	4.2	60.3	
	02	206 44.9	58.4		253 10.1	2.8	25 37.2	4.1	60.4	
	03	221 44.8	57.7		267 31.9	2.8	25 41.3	3.8	60.4	
	04	236 44.6	57.0		281 53.7	2.7	25 45.1	3.7	60.4	
	05	251 44.5	56.4		296 15.4	2.7	25 48.8	3.5	60.4	
	06	266 44.4	S17 55.7		310 37.1	2.6	S25 52.3	3.3	60.4	
	07	281 44.3	55.0		324 58.7	2.6	25 55.6	3.1	60.4	
S	08	296 44.2	54.3		339 20.3	2.5	25 58.7	2.9	60.4	
Á	09	311 44.1	53.7		353 41.8	2.4	26 01.6	2.7	60.4	
B	10	326 44.0	53.0		8 03.2	2.4	26 04.3	2.6	60.4	
A	11	341 43.9	52.3		22 24.6	2.4	26 06.9	2.3	60.4	
D	12	356 43.8	S17 51.6		36 46.0	2.4	S26 09.2	2.2	60.5	
O	13	11 43.7	51.0		51 07.4	2.2	26 11.4	1.9	60.5	
	14	26 43.5	50.3		65 28.6	2.3	26 13.3	1.8	60.5	
	15	41 43.4	49.6		79 49.9	2.2	26 15.1	1.5	60.5	
	16	56 43.3	48.9		94 11.1	2.2	26 16.6	1.4	60.5	
	17	71 43.2	48.3		108 32.3	2.2	26 18.0	1.1	60.5	
	18	86 43.1	S17 47.6		122 53.5	2.2	S26 19.1	1.0	60.5	
	19	101 43.0	46.9		137 14.7	2.1	26 20.1	0.8	60.5	
	20	116 42.9	46.2		151 35.8	2.1	26 20.9	0.6	60.5	
	21	131 42.8	45.5		165 56.9	2.1	26 21.5	0.3	60.5	
	22	146 42.7	44.9		180 18.0	2.1	26 21.8	0.2	60.5	
	23	161 42.6	44.2		194 39.1	2.0	26 22.0	0.0	60.5	
30	00	176 42.5	S17 43.5		209 00.1	2.1	S26 22.0	0.2	60.5	
	01	191 42.4	42.8		223 21.2	2.1	26 21.8	0.5	60.5	
	02	206 42.3	42.1		237 42.3	2.1	26 21.3	0.6	60.5	
	03	221 42.2	41.4		252 03.4	2.0	26 20.7	0.8	60.5	
	04	236 42.1	40.8		266 24.4	2.1	26 19.9	1.0	60.5	
	05	251 42.0	40.1		280 45.5	2.1	26 18.9	1.2	60.5	
	06	266 41.9	S17 39.4		295 06.6	2.1	S26 17.7	1.5	60.5	
	07	281 41.8	38.7		309 27.7	2.1	26 16.2	1.6	60.5	
D	08	296 41.7	38.0		323 48.8	2.2	26 14.6	1.8	60.5	
O	09	311 41.6	37.3		338 10.0	2.1	26 12.8	2.0	60.5	
M	10	326 41.5	36.6		352 31.1	2.2	26 10.8	2.2	60.5	
I	11	341 41.4	36.0		6 52.3	2.2	26 08.6	2.4	60.5	
N	12	356 41.3	S17 35.3		21 13.5	2.2	S26 06.2	2.6	60.5	
G	13	11 41.2	34.6		35 34.7	2.3	26 03.6	2.8	60.5	
O	14	26 41.1	33.9		49 56.0	2.3	26 00.8	3.0	60.5	
	15	41 41.0	33.2		64 17.3	2.4	25 57.8	3.1	60.5	
	16	56 40.9	32.5		78 38.7	2.3	25 54.7	3.4	60.5	
	17	71 40.8	31.8		93 00.0	2.5	25 51.3	3.6	60.5	
	18	86 40.7	S17 31.1		107 21.5	2.4	S25 47.7	3.7	60.5	
	19	101 40.6	30.4		121 42.9	2.6	25 44.0	4.0	60.5	
	20	116 40.5	29.7		136 04.5	2.6	25 40.0	4.1	60.5	
	21	131 40.4	29.0		150 26.1	2.6	25 35.9	4.3	60.5	
	22	146 40.3	28.3		164 47.7	2.7	25 31.6	4.6	60.5	
	23	161 40.2	27.7		179 09.4	2.7	S25 27.0	4.7	60.5	
		S/D 16.3	*d* 0.7		S/D	16.4		16.5		16.5

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 28	Orto Luna 29	Orto Luna 30	Orto Luna 31
°	h m	h m	h m	h m	h m	h m	h m
N 72	07 20	08 52	10 55	▬	▬	▬	▬
N 70	07 11	08 31	10 02	▬	▬	▬	▬
68	07 03	08 15	09 30	▬	▬	▬	▬
66	06 57	08 01	09 07	▬	▬	▬	▬
64	06 51	07 50	08 48	06 41	▬	▬	10 10
62	06 46	07 41	08 33	06 02	07 52	09 03	09 28
60	06 41	07 33	08 21	05 35	07 13	08 23	09 00
N 58	06 37	07 25	08 10	05 15	06 46	07 55	08 38
56	06 33	07 19	08 00	04 57	06 25	07 34	08 20
54	06 30	07 13	07 52	04 43	06 07	07 16	08 04
52	06 27	07 07	07 45	04 30	05 52	07 00	07 51
50	06 23	07 03	07 38	04 19	05 39	06 47	07 39
45	06 16	06 52	07 23	03 56	05 13	06 20	07 15
N 40	06 10	06 42	07 11	03 38	04 51	05 59	06 56
35	06 04	06 34	07 01	03 22	04 34	05 41	06 39
30	05 58	06 27	06 52	03 09	04 19	05 25	06 25
20	05 47	06 13	06 36	02 47	03 53	04 59	06 01
N 10	05 35	06 01	06 23	02 27	03 31	04 37	05 40
0	05 23	05 48	06 10	02 09	03 11	04 16	05 20
S 10	05 08	05 34	05 56	01 51	02 51	03 55	05 01
20	04 51	05 19	05 42	01 32	02 29	03 32	04 40
30	04 29	05 00	05 26	01 10	02 04	03 07	04 15
35	04 15	04 48	05 16	00 57	01 49	02 51	04 01
40	03 58	04 35	05 05	00 43	01 32	02 33	03 44
45	03 36	04 18	04 52	00 25	01 12	02 12	03 24
S 50	03 07	03 58	04 36	00 04	00 47	01 45	02 59
52	02 52	03 47	04 29	24 35	00 35	01 32	02 47
54	02 33	03 36	04 20	24 21	00 21	01 17	02 33
56	02 10	03 23	04 11	24 04	00 04	00 59	02 17
58	01 38	03 07	04 00	23 45	24 38	00 38	01 57
S 60	00 19	02 47	03 48	23 21	24 11	00 11	01 33

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 28	Ocaso Luna 29	Ocaso Luna 30	Ocaso Luna 31
°	h m	h m	h m	h m	h m	h m	h m
N 72	13 32	15 36	17 08	▬	▬	▬	▬
N 70	14 25	15 56	17 17	▬	▬	▬	▬
68	14 57	16 13	17 24	▬	▬	▬	▬
66	15 20	16 26	17 31	▬	▬	▬	▬
64	15 39	16 37	17 36	09 56	▬	▬	13 10
62	15 54	16 46	17 41	10 35	10 57	12 02	13 51
60	16 06	16 54	17 46	11 02	11 36	12 42	14 19
N 58	16 17	17 02	17 50	11 24	12 04	13 10	14 40
56	16 26	17 08	17 54	11 41	12 25	13 31	14 58
54	16 35	17 14	17 57	11 56	12 43	13 49	15 13
52	16 42	17 19	18 00	12 09	12 58	14 04	15 26
50	16 49	17 24	18 03	12 21	13 11	14 17	15 37
45	17 03	17 35	18 10	12 45	13 38	14 44	16 01
N 40	17 15	17 44	18 17	13 04	13 59	15 06	16 20
35	17 26	17 52	18 23	13 20	14 17	15 23	16 35
30	17 35	18 00	18 28	13 34	14 32	15 38	16 49
20	17 50	18 13	18 40	13 58	14 58	16 04	17 12
N 10	18 04	18 26	18 51	14 19	15 21	16 26	17 31
0	18 17	18 38	19 04	14 38	15 42	16 47	17 50
S 10	18 30	18 52	19 18	14 57	16 03	17 07	18 08
20	18 44	19 07	19 35	15 18	16 25	17 29	18 28
30	19 00	19 26	19 57	15 42	16 51	17 54	18 50
35	19 09	19 37	20 11	15 56	17 06	18 09	19 03
40	19 20	19 51	20 28	16 13	17 24	18 26	19 18
45	19 33	20 07	20 49	16 33	17 45	18 47	19 35
S 50	19 49	20 27	21 18	16 57	18 12	19 12	19 57
52	19 56	20 37	21 33	17 09	18 25	19 25	20 08
54	20 05	20 49	21 50	17 23	18 40	19 39	20 19
56	20 14	21 02	22 13	17 39	18 58	19 55	20 33
58	20 24	21 17	22 43	17 58	19 19	20 15	20 48
S 60	20 36	21 36	00 08	18 21	19 46	20 39	21 06

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
28	12 48	12 54	12 13	08 23	20 54	26 19	
29	12 59	13 05	12 13	09 26	21 59	27 11	
30	13 10	13 15	12 13	10 31	23 04	28 4	

UT (HmGr)	ARIES	VENUS −4·9		MARTE +1·4		JÚPITER −2·1		SATURNO +0·6	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
31 00	130 11.8	208 40.5	S16 13.4	215 03.3	S23 49.9	151 07.6	S 9 51.1	172 06.5	S17 02.2
01	145 14.2	223 42.8	13.5	230 03.8	49.9	166 09.5	50.9	187 08.7	02.1
02	160 16.7	238 45.0	13.5	245 04.3	49.9	181 11.4	50.6	202 10.8	02.0
03	175 19.2	253 47.3	13.6	260 04.7	49.8	196 13.3	50.4	217 13.0	01.9
04	190 21.6	268 49.6	13.7	275 05.2	49.8	211 15.3	50.2	232 15.2	01.8
05	205 24.1	283 51.9	13.7	290 05.7	49.8	226 17.2	50.0	247 17.3	01.7
06	220 26.6	298 54.1	S16 13.8	305 06.2	S23 49.7	241 19.1	S 9 49.8	262 19.5	S17 01.6
07	235 29.0	313 56.4	13.9	320 06.6	49.7	256 21.0	49.6	277 21.7	01.5
08	250 31.5	328 58.6	13.9	335 07.1	49.6	271 22.9	49.4	292 23.8	01.5
L 09	265 33.9	344 00.9	14.0	350 07.6	49.6	286 24.9	49.1	307 26.0	01.4
U 10	280 36.4	359 03.2	14.1	5 08.0	49.6	301 26.8	48.9	322 28.1	01.3
N 11	295 38.9	14 05.4	14.1	20 08.5	49.5	316 28.7	48.7	337 30.3	01.2
E 12	310 41.3	29 07.6	S16 14.2	35 09.0	S23 49.5	331 30.6	S 9 48.5	352 32.5	S17 01.1
S 13	325 43.8	44 09.9	14.2	50 09.4	49.4	346 32.6	48.3	7 34.6	01.0
14	340 46.3	59 12.1	14.3	65 09.9	49.4	1 34.5	48.1	22 36.8	00.9
15	355 48.7	74 14.3	14.4	80 10.4	49.4	16 36.4	47.9	37 39.0	00.9
16	10 51.2	89 16.6	14.4	95 10.9	49.3	31 38.3	47.6	52 41.1	00.8
17	25 53.7	104 18.8	14.5	110 11.3	49.3	46 40.3	47.4	67 43.3	00.7
18	40 56.1	119 21.0	S16 14.6	125 11.8	S23 49.2	61 42.2	S 9 47.2	82 45.5	S17 00.6
19	55 58.6	134 23.2	14.7	140 12.3	49.2	76 44.1	47.0	97 47.6	00.5
20	71 01.1	149 25.4	14.7	155 12.7	49.2	91 46.0	46.8	112 49.8	00.4
21	86 03.5	164 27.6	14.8	170 13.2	49.1	106 47.9	46.6	127 51.9	00.3
22	101 06.0	179 29.8	14.9	185 13.7	49.1	121 49.9	46.3	142 54.1	00.3
23	116 08.4	194 32.0	14.9	200 14.2	49.0	136 51.8	46.1	157 56.3	00.2
1 00	131 10.9	209 34.2	S16 15.0	215 14.6	S23 49.0	151 53.7	S 9 45.9	172 58.4	S17 00.1
01	146 13.4	224 36.4	15.1	230 15.1	48.9	166 55.6	45.7	188 00.6	17 00.0
02	161 15.8	239 38.6	15.1	245 15.6	48.9	181 57.5	45.5	203 02.8	16 59.9
03	176 18.3	254 40.7	15.2	260 16.0	48.8	196 59.5	45.3	218 04.9	59.8
04	191 20.8	269 42.9	15.3	275 16.5	48.8	212 01.4	45.1	233 07.1	59.7
05	206 23.2	284 45.1	15.4	290 17.0	48.7	227 03.3	44.8	248 09.3	59.6
06	221 25.7	299 47.3	S16 15.4	305 17.4	S23 48.7	242 05.2	S 9 44.6	263 11.4	S16 59.6
07	236 28.2	314 49.4	15.5	320 17.9	48.7	257 07.2	44.4	278 13.6	59.5
M 08	251 30.6	329 51.6	15.6	335 18.4	48.6	272 09.1	44.2	293 15.8	59.4
A 09	266 33.1	344 53.7	15.7	350 18.9	48.6	287 11.0	44.0	308 17.9	59.3
R 10	281 35.6	359 55.9	15.7	5 19.3	48.5	302 12.9	43.8	323 20.1	59.2
T 11	296 38.0	14 58.0	15.8	20 19.8	48.5	317 14.8	43.5	338 22.2	59.1
E 12	311 40.5	30 00.2	S16 15.9	35 20.3	S23 48.4	332 16.8	S 9 43.3	353 24.4	S16 59.0
S 13	326 42.9	45 02.3	16.0	50 20.7	48.4	347 18.7	43.1	8 26.6	59.0
14	341 45.4	60 04.4	16.0	65 21.2	48.3	2 20.6	42.9	23 28.7	58.9
15	356 47.9	75 06.5	16.1	80 21.7	48.3	17 22.5	42.7	38 30.9	58.8
16	11 50.3	90 08.7	16.2	95 22.1	48.2	32 24.4	42.5	53 33.1	58.7
17	26 52.8	105 10.8	16.3	110 22.6	48.2	47 26.4	42.3	68 35.2	58.6
18	41 55.3	120 12.9	S16 16.3	125 23.1	S23 48.1	62 28.3	S 9 42.0	83 37.4	S16 58.5
19	56 57.7	135 15.0	16.4	140 23.5	48.0	77 30.2	41.8	98 39.6	58.4
20	72 00.2	150 17.1	16.5	155 24.0	48.0	92 32.1	41.6	113 41.7	58.4
21	87 02.7	165 19.2	16.6	170 24.5	47.9	107 34.1	41.4	128 43.9	58.3
22	102 05.1	180 21.3	16.6	185 25.0	47.9	122 36.0	41.2	143 46.1	58.2
23	117 07.6	195 23.4	16.7	200 25.4	47.8	137 37.9	41.0	158 48.2	58.1
2 00	132 10.1	210 25.5	S16 16.8	215 25.9	S23 47.8	152 39.8	S 9 40.7	173 50.4	S16 58.0
01	147 12.5	225 27.6	16.9	230 26.4	47.7	167 41.7	40.5	188 52.5	57.9
02	162 15.0	240 29.7	17.0	245 26.8	47.7	182 43.7	40.3	203 54.7	57.8
03	177 17.4	255 31.8	17.0	260 27.3	47.6	197 45.6	40.1	218 56.9	57.7
04	192 19.9	270 33.8	17.1	275 27.8	47.6	212 47.5	39.9	233 59.0	57.7
05	207 22.4	285 35.9	17.2	290 28.2	47.5	227 49.4	39.7	249 01.2	57.6
06	222 24.8	300 38.0	S16 17.3	305 28.7	S23 47.4	242 51.3	S 9 39.4	264 03.4	S16 57.5
07	237 27.3	315 40.0	17.4	320 29.2	47.4	257 53.3	39.2	279 05.5	57.4
M 08	252 29.8	330 42.1	17.5	335 29.6	47.3	272 55.2	39.0	294 07.7	57.3
I 09	267 32.2	345 44.1	17.5	350 30.1	47.3	287 57.1	38.8	309 09.9	57.2
É 10	282 34.7	0 46.2	17.6	5 30.6	47.2	302 59.0	38.6	324 12.0	57.1
R 11	297 37.2	15 48.2	17.7	20 31.0	47.1	318 00.9	38.4	339 14.2	57.1
C 12	312 39.6	30 50.3	S16 17.8	35 31.5	S23 47.1	333 02.9	S 9 38.1	354 16.3	S16 57.0
O 13	327 42.1	45 52.3	17.9	50 32.0	47.0	348 04.8	37.9	9 18.5	56.9
L 14	342 44.5	60 54.4	18.0	65 32.5	47.0	3 06.7	37.7	24 20.7	56.8
E 15	357 47.0	75 56.4	18.0	80 32.9	46.9	18 08.6	37.5	39 22.8	56.7
S 16	12 49.5	90 58.4	18.1	95 33.4	46.8	33 10.5	37.3	54 25.0	56.6
17	27 51.9	106 00.4	18.2	110 33.9	46.8	48 12.4	37.1	69 27.2	56.5
18	42 54.4	121 02.4	S16 18.3	125 34.3	S23 46.7	63 14.4	S 9 36.9	84 29.3	S16 56.4
19	57 56.9	136 04.5	18.4	140 34.8	46.7	78 16.3	36.6	99 31.5	56.4
20	72 59.3	151 06.5	18.5	155 35.3	46.6	93 18.2	36.4	114 33.7	56.3
21	88 01.8	166 08.5	18.5	170 35.7	46.5	108 20.1	36.2	129 35.8	56.2
22	103 04.3	181 10.5	18.6	185 36.2	46.5	123 22.0	36.0	144 38.0	56.1
23	118 06.7	196 12.5	18.7	200 36.7	46.4	138 24.0	35.8	159 40.2	56.0
	h m								
Paso Mer.	15 12.8	*v* 2.1	*d* 0.1	*v* 0.5	*d* 0.0	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.6	S40 13.3
Achernar	335 22.2	S57 07.9
Acrux	173 02.3	S63 13.0
Adhara	255 07.4	S29 00.3
Aldebaran	290 42.2	N16 33.2
Alioth	166 14.9	N55 50.2
Alkaid	152 53.8	N49 11.9
Alnair	27 36.4	S46 51.5
Alnilam	275 39.9	S 1 11.4
Alphard	217 49.8	S 8 45.3
Alphecca	126 05.9	N26 38.2
Alpheratz	357 37.5	N29 12.7
Altair	62 02.6	N 8 55.5
Ankaa	353 09.8	S42 11.5
Antares	112 18.9	S26 28.7
Arcturus	145 50.1	N19 03.9
Atria	107 15.6	S69 03.7
Avior	234 15.0	S59 34.8
Bellatrix	278 25.2	N 6 22.1
Betelgeuse	270 54.4	N 7 24.6
Canopus	263 53.0	S52 42.6
Capella	280 25.1	N46 01.3
Deneb	49 27.9	N45 21.4
Denebola	182 27.2	N14 26.8
Diphda	348 49.9	S17 52.2
Dubhe	193 43.4	N61 37.8
Elnath	278 04.6	N28 37.5
Eltanin	90 43.7	N51 28.9
Enif	33 41.5	N 9 58.4
Fomalhaut	15 17.5	S29 30.6
Gacrux	171 53.9	S57 13.9
Gienah	175 45.8	S17 39.8
Hadar	148 39.3	S60 28.4
Hamal	327 53.9	N23 34.0
Kaus Aust.	83 36.0	S34 22.4
Kochab	137 19.9	N74 03.6
Markab	13 32.5	N15 19.3
Menkar	314 08.6	N 4 10.4
Menkent	148 00.4	S36 28.5
Miaplacidus	221 37.7	S69 48.4
Mirfak	308 31.6	N49 56.5
Nunki	75 51.1	S26 16.2
Peacock	53 10.1	S56 39.9
Pollux	243 19.9	N27 58.3
Procyon	244 53.0	N 5 10.0
Rasalhague	96 01.0	N12 32.5
Regulus	207 36.7	N11 51.5
Rigel	281 06.0	S 8 10.7
Rigil Kent.	139 43.5	S60 55.2
Sabik	102 05.7	S15 45.1
Schedar	349 34.0	N56 39.6
Shaula	96 13.9	S37 07.1
Sirius	258 28.0	S16 44.9
Spica	158 24.7	S11 16.5
Suhail	222 47.6	S43 31.3
Vega	80 35.2	N38 48.0
Zuben'ubi	136 58.7	S16 07.9

	AHS	Paso Mer.
	° ′	h m
Venus	78 23.3	10 00
Marte	84 03.7	9 39
Júpiter	20 42.8	13 51
Saturno	41 47.5	12 26

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	′	°	′	′	′
31 00	176	40.1	S17	27.0	193	31.1	2.8	S25	22.3	4.9	60.5
01	191	40.0		26.3	207	52.9	2.9	25	17.4	5.0	60.5
02	206	39.9		25.6	222	14.8	3.0	25	12.4	5.3	60.5
03	221	39.8	. .	24.9	236	36.8	3.0	25	07.1	5.4	60.4
04	236	39.7		24.2	250	58.8	3.1	25	01.7	5.6	60.4
05	251	39.6		23.5	265	20.9	3.1	24	56.1	5.8	60.4
06	266	39.5	S17	22.8	279	43.0	3.3	S24	50.3	6.0	60.4
07	281	39.4		22.1	294	05.3	3.3	24	44.3	6.2	60.4
L 08	296	39.3		21.4	308	27.6	3.4	24	38.1	6.3	60.4
U 09	311	39.2	. .	20.7	322	50.0	3.5	24	31.8	6.5	60.4
N 10	326	39.1		20.0	337	12.5	3.5	24	25.3	6.7	60.4
E 11	341	39.0		19.3	351	35.0	3.7	24	18.6	6.8	60.4
S 12	356	38.9	S17	18.6	5	57.7	3.7	S24	11.8	7.0	60.3
13	11	38.9		17.9	20	20.4	3.8	24	04.8	7.2	60.3
14	26	38.8		17.2	34	43.2	4.0	23	57.6	7.4	60.3
15	41	38.7	. .	16.5	49	06.2	4.0	23	50.2	7.5	60.3
16	56	38.6		15.8	63	29.2	4.1	23	42.7	7.7	60.3
17	71	38.5		15.1	77	52.3	4.2	23	35.0	7.8	60.3
18	86	38.4	S17	14.3	92	15.5	4.3	S23	27.2	8.0	60.3
19	101	38.3		13.6	106	38.8	4.4	23	19.2	8.2	60.2
20	116	38.2		12.9	121	02.2	4.5	23	11.0	8.3	60.2
21	131	38.1	. .	12.2	135	25.7	4.6	23	02.7	8.5	60.2
22	146	38.0		11.5	149	49.3	4.7	22	54.2	8.6	60.2
23	161	38.0		10.8	164	13.0	4.8	22	45.6	8.8	60.2
1 00	176	37.9	S17	10.1	178	36.8	4.9	S22	36.8	8.9	60.2
01	191	37.8		09.4	193	00.7	5.1	22	27.9	9.1	60.1
02	206	37.7		08.7	207	24.8	5.1	22	18.8	9.2	60.1
03	221	37.6	. .	08.0	221	48.9	5.2	22	09.6	9.3	60.1
04	236	37.5		07.3	236	13.1	5.4	22	00.3	9.5	60.1
05	251	37.4		06.6	250	37.5	5.5	21	50.8	9.7	60.1
06	266	37.4	S17	05.8	265	02.0	5.5	S21	41.1	9.8	60.0
07	281	37.3		05.1	279	26.5	5.7	21	31.3	9.9	60.0
M 08	296	37.2		04.4	293	51.2	5.8	21	21.4	10.0	60.0
A 09	311	37.1	. .	03.7	308	16.0	5.9	21	11.4	10.2	60.0
R 10	326	37.0		03.0	322	40.9	6.1	21	01.2	10.3	60.0
T 11	341	36.9		02.3	337	06.0	6.1	20	50.9	10.4	59.9
E 12	356	36.8	S17	01.6	351	31.1	6.3	S20	40.5	10.6	59.9
S 13	11	36.8		00.9	5	56.4	6.3	20	29.9	10.7	59.9
14	26	36.7	17	00.1	20	21.7	6.5	20	19.2	10.8	59.9
15	41	36.6	16	59.4	34	47.2	6.6	20	08.4	10.9	59.8
16	56	36.5		58.7	49	12.8	6.8	19	57.5	11.1	59.8
17	71	36.4		58.0	63	38.6	6.8	19	46.4	11.1	59.8
18	86	36.4	S16	57.3	78	04.4	7.0	S19	35.3	11.3	59.8
19	101	36.3		56.6	92	30.4	7.0	19	24.0	11.4	59.7
20	116	36.2		55.8	106	56.4	7.2	19	12.6	11.5	59.7
21	131	36.1	. .	55.1	121	22.6	7.3	19	01.1	11.6	59.7
22	146	36.0		54.4	135	48.9	7.4	18	49.5	11.7	59.7
23	161	36.0		53.7	150	15.3	7.6	18	37.8	11.8	59.6
2 00	176	35.9	S16	53.0	164	41.9	7.6	S18	26.0	11.9	59.6
01	191	35.8		52.2	179	08.5	7.8	18	14.1	12.0	59.6
02	206	35.7		51.5	193	35.3	7.9	18	02.1	12.1	59.6
03	221	35.6	. .	50.8	208	02.2	8.0	17	50.0	12.2	59.5
04	236	35.6		50.1	222	29.2	8.1	17	37.8	12.3	59.5
05	251	35.5		49.3	236	56.3	8.2	17	25.5	12.4	59.5
06	266	35.4	S16	48.6	251	23.5	8.4	S17	13.1	12.5	59.4
07	281	35.3		47.9	265	50.9	8.4	17	00.6	12.6	59.4
M 08	296	35.3		47.2	280	18.3	8.6	16	48.0	12.6	59.4
I 09	311	35.2	. .	46.4	294	45.9	8.7	16	35.4	12.8	59.4
É 10	326	35.1		45.7	309	13.6	8.8	16	22.6	12.8	59.3
R 11	341	35.0		45.0	323	41.4	8.9	16	09.8	12.9	59.3
C 12	356	35.0	S16	44.3	338	09.3	9.0	S15	56.9	13.0	59.3
O 13	11	34.9		43.5	352	37.3	9.2	15	43.9	13.0	59.2
L 14	26	34.8		42.8	7	05.5	9.2	15	30.9	13.2	59.2
E 15	41	34.7	. .	42.1	21	33.7	9.4	15	17.7	13.2	59.2
S 16	56	34.7		41.4	36	02.1	9.4	15	04.5	13.2	59.1
17	71	34.6		40.6	50	30.5	9.6	14	51.3	13.4	59.1
18	86	34.5	S16	39.9	64	59.1	9.7	S14	37.9	13.4	59.1
19	101	34.4		39.2	79	27.8	9.8	14	24.5	13.4	59.0
20	116	34.4		38.4	93	56.6	9.9	14	11.1	13.6	59.0
21	131	34.3	. .	37.7	108	25.5	10.0	13	57.5	13.6	59.0
22	146	34.2		37.0	122	54.5	10.1	13	43.9	13.6	58.9
23	161	34.2		36.2	137	23.6	10.2	S13	30.3	13.7	58.9
	S/D	16.3	d	0.7	S/D	16.4		16.3			16.1

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			31	1	2	3
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	07	10	08	38	10 27	▬	▬	11 40	10 40
N 70	07	02	08	20	09 45	▬	▬	10 59	10 23
68	06	55	08	05	09 17	▬	11 18	10 32	10 09
66	06	49	07	53	08 56	▬	10 31	10 10	09 57
64	06	44	07	43	08 39	10 10	10 00	09 53	09 48
62	06	40	07	34	08 26	09 28	09 36	09 39	09 39
60	06	36	07	27	08 14	09 00	09 18	09 27	09 32
N 58	06	32	07	20	08 04	08 38	09 02	09 16	09 26
56	06	29	07	14	07 55	08 20	08 49	09 07	09 20
54	06	26	07	08	07 47	08 04	08 37	08 59	09 15
52	06	23	07	03	07 40	07 51	08 27	08 52	09 10
50	06	20	06	59	07 34	07 39	08 17	08 45	09 06
45	06	13	06	49	07 20	07 15	07 58	08 31	08 57
N 40	06	08	06	40	07 09	06 56	07 42	08 19	08 49
35	06	02	06	32	06 59	06 39	07 28	08 09	08 43
30	05	57	06	25	06 50	06 25	07 16	08 00	08 37
20	05	46	06	12	06 35	06 01	06 56	07 44	08 27
N 10	05	35	06	00	06 22	05 40	06 38	07 31	08 18
0	05	23	05	48	06 10	05 20	06 21	07 18	08 10
S 10	05	10	05	35	05 58	05 01	06 05	07 05	08 01
20	04	53	05	21	05 44	04 40	05 47	06 51	07 52
30	04	32	05	03	05 28	04 15	05 26	06 36	07 42
35	04	18	04	52	05 19	04 01	05 14	06 26	07 36
40	04	02	04	39	05 09	03 44	05 00	06 16	07 29
45	03	41	04	23	04 57	03 24	04 43	06 03	07 21
S 50	03	14	04	04	04 42	02 59	04 22	05 48	07 11
52	03	00	03	54	04 34	02 47	04 13	05 41	07 07
54	02	43	03	43	04 27	02 33	04 01	05 33	07 02
56	02	22	03	31	04 18	02 17	03 49	05 24	06 56
58	01	55	03	16	04 08	01 57	03 34	05 14	06 50
S 60	01	10	02	58	03 56	01 33	03 16	05 02	06 43

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	31	1	2	3
°	h m	h m	h m	h m	h m	h m	h m
N 72	14 01	15 50	17 19	▬	▬	15 46	18 32
N 70	14 43	16 08	17 27	▬	▬	16 25	18 47
68	15 11	16 23	17 33	▬	14 09	16 51	18 58
66	15 32	16 35	17 39	▬	14 56	17 11	19 08
64	15 49	16 45	17 44	13 10	15 26	17 26	19 16
62	16 02	16 54	17 48	13 51	15 48	17 39	19 23
60	16 14	17 01	17 52	14 19	16 06	17 50	19 29
N 58	16 24	17 08	17 56	14 40	16 21	18 00	19 34
56	16 33	17 14	17 59	14 58	16 33	18 08	19 38
54	16 41	17 19	18 02	15 13	16 45	18 16	19 42
52	16 48	17 24	18 05	15 26	16 54	18 22	19 46
50	16 54	17 29	18 08	15 37	17 03	18 28	19 49
45	17 08	17 39	18 14	16 01	17 21	18 41	19 57
N 40	17 19	17 48	18 20	16 20	17 36	18 51	20 03
35	17 29	17 55	18 25	16 35	17 49	19 00	20 08
30	17 37	18 02	18 31	16 49	17 59	19 08	20 12
20	17 52	18 15	18 41	17 12	18 18	19 21	20 20
N 10	18 05	18 27	18 52	17 31	18 34	19 32	20 26
0	18 17	18 39	19 04	17 50	18 49	19 43	20 33
S 10	18 29	18 51	19 17	18 08	19 04	19 54	20 39
20	18 43	19 06	19 34	18 28	19 19	20 05	20 45
30	18 58	19 24	19 55	18 50	19 37	20 18	20 53
35	19 07	19 35	20 08	19 03	19 48	20 25	20 57
40	19 18	19 47	20 24	19 18	19 59	20 33	21 02
45	19 30	20 03	20 44	19 35	20 13	20 43	21 07
S 50	19 45	20 22	21 11	19 57	20 30	20 54	21 14
52	19 51	20 32	21 25	20 08	20 38	20 59	21 16
54	19 59	20 42	21 42	20 19	20 46	21 05	21 20
56	20 08	20 55	22 02	20 33	20 56	21 12	21 23
58	20 18	21 09	22 28	20 48	21 07	21 19	21 27
S 60	20 29	21 26	23 09	21 06	21 20	21 27	21 32

Día	SOL			LUNA				
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
31	13 20	13 24	12 13	11 35	24 06	29 1	
1	13 28	13 32	12 14	12 35	00 06	00 0	●
2	13 36	13 40	12 14	13 31	01 04	01 2	

UT (HmGr)	ARIES	VENUS −4·9		MARTE +1·4		JÚPITER −2·0		SATURNO +0·5	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
3 00	133 09.2	211 14.5	S16 18.8	215 37.1	S23 46.3	153 25.9	S 9 35.6	174 42.3	S16 55.9
01	148 11.7	226 16.5	18.9	230 37.6	46.3	168 27.8	35.3	189 44.5	55.8
02	163 14.1	241 18.4	19.0	245 38.1	46.2	183 29.7	35.1	204 46.6	55.8
03	178 16.6	256 20.4	19.1	260 38.5	46.1	198 31.6	34.9	219 48.8	55.7
04	193 19.0	271 22.4	19.2	275 39.0	46.1	213 33.6	34.7	234 51.0	55.6
05	208 21.5	286 24.4	19.2	290 39.5	46.0	228 35.5	34.5	249 53.1	55.5
06	223 24.0	301 26.3	S16 19.3	305 40.0	S23 45.9	243 37.4	S 9 34.2	264 55.3	S16 55.4
07	238 26.4	316 28.3	19.4	320 40.4	45.9	258 39.3	34.0	279 57.5	55.3
08	253 28.9	331 30.3	19.5	335 40.9	45.8	273 41.2	33.8	294 59.6	55.2
J 09	268 31.4	346 32.2	19.6	350 41.4	45.7	288 43.2	33.6	310 01.8	55.2
U 10	283 33.8	1 34.2	19.7	5 41.8	45.7	303 45.1	33.4	325 04.0	55.1
E 11	298 36.3	16 36.1	19.8	20 42.3	45.6	318 47.0	33.2	340 06.1	55.0
V 12	313 38.8	31 38.1	S16 19.9	35 42.8	S23 45.5	333 48.9	S 9 32.9	355 08.3	S16 54.9
E 13	328 41.2	46 40.0	20.0	50 43.2	45.5	348 50.8	32.7	10 10.4	54.8
S 14	343 43.7	61 42.0	20.1	65 43.7	45.4	3 52.7	32.5	25 12.6	54.7
15	358 46.2	76 43.9	20.1	80 44.2	45.3	18 54.7	32.3	40 14.8	54.6
16	13 48.6	91 45.8	20.2	95 44.6	45.2	33 56.6	32.1	55 16.9	54.5
17	28 51.1	106 47.8	20.3	110 45.1	45.2	48 58.5	31.9	70 19.1	54.5
18	43 53.5	121 49.7	S16 20.4	125 45.6	S23 45.1	64 00.4	S 9 31.6	85 21.3	S16 54.4
19	58 56.0	136 51.6	20.5	140 46.0	45.0	79 02.3	31.4	100 23.4	54.3
20	73 58.5	151 53.5	20.6	155 46.5	45.0	94 04.2	31.2	115 25.6	54.2
21	89 00.9	166 55.4	20.7	170 47.0	44.9	109 06.2	31.0	130 27.8	54.1
22	104 03.4	181 57.3	20.8	185 47.4	44.8	124 08.1	30.8	145 29.9	54.0
23	119 05.9	196 59.2	20.9	200 47.9	44.7	139 10.0	30.6	160 32.1	53.9
4 00	134 08.3	212 01.1	S16 21.0	215 48.4	S23 44.7	154 11.9	S 9 30.3	175 34.3	S16 53.9
01	149 10.8	227 03.0	21.1	230 48.8	44.6	169 13.8	30.1	190 36.4	53.8
02	164 13.3	242 04.9	21.2	245 49.3	44.5	184 15.8	29.9	205 38.6	53.7
03	179 15.7	257 06.8	21.3	260 49.8	44.4	199 17.7	29.7	220 40.7	53.6
04	194 18.2	272 08.7	21.4	275 50.2	44.4	214 19.6	29.5	235 42.9	53.5
05	209 20.6	287 10.6	21.4	290 50.7	44.3	229 21.5	29.2	250 45.1	53.4
06	224 23.1	302 12.4	S16 21.5	305 51.2	S23 44.2	244 23.4	S 9 29.0	265 47.2	S16 53.3
07	239 25.6	317 14.3	21.6	320 51.6	44.1	259 25.3	28.8	280 49.4	53.2
V 08	254 28.0	332 16.2	21.7	335 52.1	44.0	274 27.3	28.6	295 51.6	53.2
I 09	269 30.5	347 18.0	21.8	350 52.6	44.0	289 29.2	28.4	310 53.7	53.1
E 10	284 33.0	2 19.9	21.9	5 53.1	43.9	304 31.1	28.2	325 55.9	53.0
R 11	299 35.4	17 21.8	22.0	20 53.5	43.8	319 33.0	27.9	340 58.1	52.9
N 12	314 37.9	32 23.6	S16 22.1	35 54.0	S23 43.7	334 34.9	S 9 27.7	356 00.2	S16 52.8
E 13	329 40.4	47 25.5	22.2	50 54.5	43.6	349 36.8	27.5	11 02.4	52.7
S 14	344 42.8	62 27.3	22.3	65 54.9	43.6	4 38.8	27.3	26 04.5	52.6
15	359 45.3	77 29.2	22.4	80 55.4	43.5	19 40.7	27.1	41 06.7	52.6
16	14 47.8	92 31.0	22.5	95 55.9	43.4	34 42.6	26.8	56 08.9	52.5
17	29 50.2	107 32.8	22.6	110 56.3	43.3	49 44.5	26.6	71 11.0	52.4
18	44 52.7	122 34.7	S16 22.7	125 56.8	S23 43.2	64 46.4	S 9 26.4	86 13.2	S16 52.3
19	59 55.1	137 36.5	22.8	140 57.3	43.2	79 48.3	26.2	101 15.4	52.2
20	74 57.6	152 38.3	22.9	155 57.7	43.1	94 50.3	26.0	116 17.5	52.1
21	90 00.1	167 40.1	23.0	170 58.2	43.0	109 52.2	25.8	131 19.7	52.0
22	105 02.5	182 41.9	23.1	185 58.7	42.9	124 54.1	25.5	146 21.9	51.9
23	120 05.0	197 43.7	23.2	200 59.1	42.8	139 56.0	25.3	161 24.0	51.9
5 00	135 07.5	212 45.6	S16 23.3	215 59.6	S23 42.7	154 57.9	S 9 25.1	176 26.2	S16 51.8
01	150 09.9	227 47.4	23.4	231 00.1	42.6	169 59.8	24.9	191 28.4	51.7
02	165 12.4	242 49.2	23.5	246 00.5	42.6	185 01.8	24.7	206 30.5	51.6
03	180 14.9	257 50.9	23.6	261 01.0	42.5	200 03.7	24.4	221 32.7	51.5
04	195 17.3	272 52.7	23.7	276 01.5	42.4	215 05.6	24.2	236 34.9	51.4
05	210 19.8	287 54.5	23.8	291 01.9	42.3	230 07.5	24.0	251 37.0	51.3
06	225 22.2	302 56.3	S16 23.9	306 02.4	S23 42.2	245 09.4	S 9 23.8	266 39.2	S16 51.2
07	240 24.7	317 58.1	24.0	321 02.9	42.1	260 11.3	23.6	281 41.3	51.2
S 08	255 27.2	332 59.9	24.1	336 03.3	42.0	275 13.3	23.4	296 43.5	51.1
Á 09	270 29.6	348 01.6	24.2	351 03.8	42.0	290 15.2	23.1	311 45.7	51.0
B 10	285 32.1	3 03.4	24.3	6 04.3	41.9	305 17.1	22.9	326 47.8	50.9
A 11	300 34.6	18 05.2	24.4	21 04.7	41.8	320 19.0	22.7	341 50.0	50.8
D 12	315 37.0	33 06.9	S16 24.5	36 05.2	S23 41.7	335 20.9	S 9 22.5	356 52.2	S16 50.7
O 13	330 39.5	48 08.7	24.6	51 05.7	41.6	350 22.8	22.3	11 54.3	50.6
14	345 42.0	63 10.5	24.7	66 06.1	41.5	5 24.8	22.0	26 56.5	50.6
15	0 44.4	78 12.2	24.8	81 06.6	41.4	20 26.7	21.8	41 58.7	50.5
16	15 46.9	93 14.0	24.9	96 07.1	41.3	35 28.6	21.6	57 00.8	50.4
17	30 49.4	108 15.7	25.0	111 07.5	41.2	50 30.5	21.4	72 03.0	50.3
18	45 51.8	123 17.4	S16 25.1	126 08.0	S23 41.1	65 32.4	S 9 21.2	87 05.2	S16 50.2
19	60 54.3	138 19.2	25.2	141 08.5	41.0	80 34.3	20.9	102 07.3	50.1
20	75 56.7	153 20.9	25.3	156 08.9	40.9	95 36.2	20.7	117 09.5	50.0
21	90 59.2	168 22.6	25.4	171 09.4	40.9	110 38.2	20.5	132 11.6	49.9
22	106 01.7	183 24.4	25.5	186 09.9	40.8	125 40.1	20.3	147 13.8	49.9
23	121 04.1	198 26.1	25.6	201 10.3	40.7	140 42.0	20.1	162 16.0	49.8
	h m								
Paso Mer.	15 01.0	*v* 1.9	*d* 0.1	*v* 0.5	*d* 0.1	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.6	S40 13.3
Achernar	335 22.2	S57 07.9
Acrux	173 02.2	S63 13.0
Adhara	255 07.4	S29 00.3
Aldebaran	290 42.2	N16 33.2
Alioth	166 14.8	N55 50.2
Alkaid	152 53.8	N49 11.9
Alnair	27 36.4	S46 51.4
Alnilam	275 39.9	S 1 11.4
Alphard	217 49.8	S 8 45.3
Alphecca	126 05.8	N26 38.2
Alpheratz	357 37.5	N29 12.7
Altair	62 02.6	N 8 55.5
Ankaa	353 09.8	S42 11.5
Antares	112 18.9	S26 28.7
Arcturus	145 50.1	N19 03.9
Atria	107 15.6	S69 03.7
Avior	234 15.0	S59 34.8
Bellatrix	278 25.2	N 6 22.1
Betelgeuse	270 54.4	N 7 24.6
Canopus	263 53.0	S52 42.6
Capella	280 25.1	N46 01.3
Deneb	49 27.9	N45 21.4
Denebola	182 27.2	N14 26.8
Diphda	348 49.9	S17 52.2
Dubhe	193 43.4	N61 37.8
Elnath	278 04.7	N28 37.6
Eltanin	90 43.7	N51 28.9
Enif	33 41.5	N 9 58.4
Fomalhaut	15 17.5	S29 30.6
Gacrux	171 53.9	S57 13.9
Gienah	175 45.8	S17 39.8
Hadar	148 39.2	S60 28.4
Hamal	327 54.0	N23 34.0
Kaus Aust.	83 36.0	S34 22.4
Kochab	137 19.8	N74 03.6
Markab	13 32.6	N15 19.3
Menkar	314 08.6	N 4 10.4
Menkent	148 00.3	S36 28.5
Miaplacidus	221 37.8	S69 48.4
Mirfak	308 31.6	N49 56.5
Nunki	75 51.0	S26 16.2
Peacock	53 10.1	S56 39.9
Pollux	243 19.9	N27 58.3
Procyon	244 53.0	N 5 10.0
Rasalhague	96 01.0	N12 32.5
Regulus	207 36.7	N11 51.5
Rigel	281 06.0	S 8 10.7
Rigil Kent.	139 43.5	S60 55.2
Sabik	102 05.7	S15 45.1
Schedar	349 34.0	N56 39.6
Shaula	96 13.9	S37 07.1
Sirius	258 28.1	S16 44.9
Spica	158 24.7	S11 16.5
Suhail	222 47.6	S43 31.3
Vega	80 35.2	N38 48.0
Zuben'ubi	136 58.7	S16 07.9

	AHS	Paso Mer.
	° ′	h m
Venus	77 52.8	9 51
Marte	81 40.0	9 36
Júpiter	20 03.6	13 41
Saturno	41 25.9	12 16

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v		Dec	d		Ph
d h	°	′	°	′	°	′	′	°	′	′	′
3 00	176	34.1	S16	35.5	151	52.8	10.3	S13	16.6	13.8	58.9
01	191	34.0		34.8	166	22.1	10.4	13	02.8	13.8	58.8
02	206	33.9		34.0	180	51.5	10.5	12	49.0	13.9	58.8
03	221	33.9	. .	33.3	195	21.0	10.6	12	35.1	13.9	58.8
04	236	33.8		32.6	209	50.6	10.7	12	21.2	14.0	58.7
05	251	33.7		31.8	224	20.3	10.8	12	07.2	14.0	58.7
06	266	33.7	S16	31.1	238	50.1	10.9	S11	53.2	14.1	58.7
07	281	33.6		30.4	253	20.0	11.0	11	39.1	14.1	58.6
J 08	296	33.5		29.6	267	50.0	11.1	11	25.0	14.1	58.6
U 09	311	33.5	. .	28.9	282	20.1	11.2	11	10.9	14.2	58.6
E 10	326	33.4		28.2	296	50.3	11.3	10	56.7	14.2	58.5
V 11	341	33.3		27.4	311	20.6	11.3	10	42.5	14.3	58.5
E 12	356	33.3	S16	26.7	325	50.9	11.5	S10	28.2	14.3	58.5
S 13	11	33.2		25.9	340	21.4	11.5	10	13.9	14.3	58.4
14	26	33.1		25.2	354	51.9	11.7	9	59.6	14.4	58.4
15	41	33.1	. .	24.5	9	22.6	11.7	9	45.2	14.4	58.4
16	56	33.0		23.7	23	53.3	11.8	9	30.8	14.4	58.3
17	71	32.9		23.0	38	24.1	11.9	9	16.4	14.5	58.3
18	86	32.9	S16	22.2	52	55.0	12.0	S 9	01.9	14.5	58.2
19	101	32.8		21.5	67	26.0	12.0	8	47.4	14.5	58.2
20	116	32.7		20.7	81	57.0	12.2	8	32.9	14.5	58.2
21	131	32.7	. .	20.0	96	28.2	12.2	8	18.4	14.6	58.1
22	146	32.6		19.3	110	59.4	12.3	8	03.8	14.5	58.1
23	161	32.6		18.5	125	30.7	12.4	7	49.3	14.6	58.1
4 00	176	32.5	S16	17.8	140	02.1	12.4	S 7	34.7	14.6	58.0
01	191	32.4		17.0	154	33.5	12.6	7	20.1	14.7	58.0
02	206	32.4		16.3	169	05.1	12.6	7	05.4	14.6	58.0
03	221	32.3	. .	15.5	183	36.7	12.7	6	50.8	14.6	57.9
04	236	32.2		14.8	198	08.4	12.7	6	36.2	14.7	57.9
05	251	32.2		14.0	212	40.1	12.8	6	21.5	14.7	57.8
06	266	32.1	S16	13.3	227	11.9	12.9	S 6	06.8	14.7	57.8
07	281	32.1		12.5	241	43.8	13.0	5	52.1	14.7	57.8
V 08	296	32.0		11.8	256	15.8	13.0	5	37.4	14.7	57.7
I 09	311	32.0	. .	11.0	270	47.8	13.1	5	22.7	14.7	57.7
E 10	326	31.9		10.3	285	19.9	13.1	5	08.0	14.7	57.7
R 11	341	31.8		09.5	299	52.0	13.3	4	53.3	14.7	57.6
N 12	356	31.8	S16	08.8	314	24.3	13.2	S 4	38.6	14.7	57.6
E 13	11	31.7		08.0	328	56.5	13.4	4	23.9	14.7	57.6
S 14	26	31.7		07.3	343	28.9	13.4	4	09.2	14.7	57.5
15	41	31.6	. .	06.5	358	01.3	13.5	3	54.5	14.7	57.5
16	56	31.5		05.8	12	33.8	13.5	3	39.8	14.7	57.4
17	71	31.5		05.0	27	06.3	13.5	3	25.1	14.8	57.4
18	86	31.4	S16	04.3	41	38.8	13.7	S 3	10.3	14.7	57.4
19	101	31.4		03.5	56	11.5	13.7	2	55.6	14.6	57.3
20	116	31.3		02.8	70	44.2	13.7	2	41.0	14.7	57.3
21	131	31.3	. .	02.0	85	16.9	13.8	2	26.3	14.7	57.3
22	146	31.2		01.3	99	49.7	13.8	2	11.6	14.7	57.2
23	161	31.2	16	00.5	114	22.5	13.9	1	56.9	14.6	57.2
5 00	176	31.1	S15	59.8	128	55.4	13.9	S 1	42.3	14.7	57.2
01	191	31.1		59.0	143	28.3	14.0	1	27.6	14.6	57.1
02	206	31.0		58.2	158	01.3	14.0	1	13.0	14.6	57.1
03	221	31.0	. .	57.5	172	34.3	14.1	0	58.4	14.6	57.0
04	236	30.9		56.7	187	07.4	14.1	0	43.8	14.6	57.0
05	251	30.9		56.0	201	40.5	14.2	0	29.2	14.6	57.0
06	266	30.8	S15	55.2	216	13.7	14.2	S 0	14.6	14.5	56.9
07	281	30.7		54.4	230	46.9	14.2	S 0	00.1	14.6	56.9
S 08	296	30.7		53.7	245	20.1	14.3	N 0	14.5	14.5	56.9
Á 09	311	30.6	. .	52.9	259	53.4	14.3	0	29.0	14.5	56.8
B 10	326	30.6		52.2	274	26.7	14.3	0	43.5	14.4	56.8
A 11	341	30.5		51.4	289	00.0	14.4	0	57.9	14.5	56.8
D 12	356	30.5	S15	50.6	303	33.4	14.4	N 1	12.4	14.4	56.7
O 13	11	30.5		49.9	318	06.8	14.4	1	26.8	14.4	56.7
14	26	30.4		49.1	332	40.2	14.5	1	41.2	14.4	56.7
15	41	30.4	. .	48.3	347	13.7	14.5	1	55.6	14.3	56.6
16	56	30.3		47.6	1	47.2	14.5	2	09.9	14.3	56.6
17	71	30.3		46.8	16	20.7	14.6	2	24.2	14.3	56.6
18	86	30.2	S15	46.1	30	54.3	14.6	N 2	38.5	14.3	56.5
19	101	30.2		45.3	45	27.9	14.6	2	52.8	14.2	56.5
20	116	30.1		44.5	60	01.5	14.6	3	07.0	14.2	56.4
21	131	30.1	. .	43.8	74	35.1	14.7	3	21.2	14.2	56.4
22	146	30.0		43.0	89	08.8	14.6	3	35.4	14.1	56.4
23	161	30.0		42.2	103	42.4	14.7	N 3	49.5	14.1	56.3
	S/D	16.3	d	0.8	S/D	15.9		15.7			15.5

Lat.	Aurora				Orto Sol		Orto Luna							
	Náut.		Civil				3		4		5		6	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	06	59	08	25	10	04	10	40	10	05	09	35	09	07
N 70	06	52	08	09	09	29	10	23	09	57	09	36	09	15
68	06	46	07	55	09	05	10	09	09	52	09	37	09	22
66	06	42	07	44	08	46	09	57	09	47	09	37	09	28
64	06	37	07	35	08	30	09	48	09	42	09	37	09	33
62	06	34	07	27	08	18	09	39	09	39	09	38	09	37
60	06	30	07	20	08	07	09	32	09	36	09	38	09	41
N 58	06	27	07	14	07	57	09	26	09	33	09	38	09	44
56	06	24	07	09	07	49	09	20	09	30	09	39	09	47
54	06	21	07	03	07	42	09	15	09	28	09	39	09	50
52	06	19	06	59	07	35	09	10	09	26	09	39	09	52
50	06	16	06	55	07	29	09	06	09	24	09	39	09	54
45	06	10	06	45	07	16	08	57	09	19	09	40	09	59
N 40	06	05	06	37	07	06	08	49	09	16	09	40	10	04
35	06	00	06	30	06	57	08	43	09	13	09	40	10	07
30	05	55	06	24	06	48	08	37	09	10	09	41	10	10
20	05	45	06	12	06	34	08	27	09	05	09	41	10	16
N 10	05	35	06	00	06	22	08	18	09	01	09	42	10	21
0	05	24	05	49	06	10	08	10	08	57	09	42	10	26
S 10	05	11	05	37	05	59	08	01	08	53	09	43	10	30
20	04	55	05	23	05	46	07	52	08	49	09	43	10	35
30	04	35	05	06	05	31	07	42	08	44	09	44	10	41
35	04	22	04	55	05	22	07	36	08	42	09	44	10	45
40	04	07	04	43	05	13	07	29	08	38	09	45	10	49
45	03	47	04	28	05	01	07	21	08	35	09	45	10	53
S 50	03	21	04	09	04	47	07	11	08	30	09	46	10	59
52	03	08	04	00	04	40	07	07	08	28	09	46	11	01
54	02	52	03	50	04	33	07	02	08	26	09	46	11	04
56	02	34	03	39	04	25	06	56	08	24	09	47	11	07
58	02	09	03	25	04	15	06	50	08	21	09	47	11	10
S 60	01	34	03	09	04	04	06	43	08	18	09	48	11	14

Lat.	Ocaso Sol		Crepúsculo				Ocaso Luna							
			Civil		Náut.		3		4		5		6	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	14	25	16	04	17	31	18	32	20	46	22	50	24	56
N 70	15	00	16	21	17	37	18	47	20	50	22	45	24	40
68	15	24	16	34	17	43	18	58	20	53	22	41	24	27
66	15	43	16	44	17	47	19	08	20	55	22	37	24	17
64	15	58	16	54	17	52	19	16	20	58	22	34	24	08
62	16	11	17	02	17	55	19	23	20	59	22	31	24	01
60	16	22	17	08	17	59	19	29	21	01	22	29	23	55
N 58	16	31	17	15	18	02	19	34	21	02	22	27	23	49
56	16	39	17	20	18	05	19	38	21	04	22	25	23	45
54	16	47	17	25	18	07	19	42	21	05	22	24	23	40
52	16	53	17	30	18	10	19	46	21	06	22	22	23	36
50	16	59	17	34	18	12	19	49	21	07	22	21	23	33
45	17	12	17	43	18	18	19	57	21	09	22	18	23	25
N 40	17	23	17	51	18	23	20	03	21	10	22	16	23	19
35	17	32	17	58	18	28	20	08	21	12	22	13	23	13
30	17	40	18	05	18	33	20	12	21	13	22	12	23	09
20	17	54	18	16	18	43	20	20	21	15	22	08	23	00
N 10	18	06	18	28	18	53	20	26	21	17	22	06	22	53
0	18	17	18	39	19	04	20	33	21	19	22	03	22	46
S 10	18	29	18	51	19	17	20	39	21	21	22	00	22	39
20	18	42	19	05	19	32	20	45	21	22	21	58	22	32
30	18	56	19	22	19	52	20	53	21	24	21	54	22	24
35	19	05	19	32	20	05	20	57	21	26	21	53	22	19
40	19	14	19	44	20	20	21	02	21	27	21	51	22	14
45	19	26	19	59	20	40	21	07	21	28	21	48	22	08
S 50	19	40	20	17	21	05	21	14	21	30	21	45	22	01
52	19	46	20	26	21	18	21	16	21	31	21	44	21	57
54	19	54	20	36	21	33	21	20	21	32	21	43	21	54
56	20	02	20	47	21	51	21	23	21	33	21	41	21	50
58	20	11	21	01	22	15	21	27	21	34	21	39	21	45
S 60	20	21	21	17	22	47	21	32	21	35	21	37	21	40

Día	SOL						LUNA					
	Ec. Tiempo				Paso Mer.		Paso Mer.				Edad	Fase
	00^h		12^h				Sup.		Inf.			
d	m	s	m	s	h	m	h	m	h	m	d	%
3	13	44	13	47	12	14	14	21	01	56	02	7
4	13	50	13	53	12	14	15	08	02	45	03	13
5	13	55	13	58	12	14	15	53	03	31	04	21

UT (HmGr)	ARIES	VENUS −4·9		MARTE +1·4		JÚPITER −2·0		SATURNO +0·6	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
6 00	136 06.6	213 27.8	S16 25.7	216 10.8	S23 40.6	155 43.9	S 9 19.8	177 18.1	S16 49.7
01	151 09.1	228 29.5	25.8	231 11.3	40.5	170 45.8	19.6	192 20.3	49.6
02	166 11.5	243 31.2	25.9	246 11.7	40.4	185 47.7	19.4	207 22.5	49.5
03	181 14.0	258 32.9	26.0	261 12.2	40.3	200 49.6	19.2	222 24.6	49.4
04	196 16.5	273 34.6	26.1	276 12.7	40.2	215 51.6	19.0	237 26.8	49.3
05	211 18.9	288 36.3	26.2	291 13.1	40.1	230 53.5	18.7	252 29.0	49.2
06	226 21.4	303 38.0	S16 26.3	306 13.6	S23 40.0	245 55.4	S 9 18.5	267 31.1	S16 49.2
07	241 23.9	318 39.7	26.4	321 14.1	39.9	260 57.3	18.3	282 33.3	49.1
08	256 26.3	333 41.4	26.5	336 14.5	39.8	275 59.2	18.1	297 35.5	49.0
D 09	271 28.8	348 43.1	26.6	351 15.0	39.7	291 01.1	17.9	312 37.6	48.9
O 10	286 31.2	3 44.8	26.7	6 15.5	39.6	306 03.1	17.7	327 39.8	48.8
M 11	301 33.7	18 46.5	26.8	21 15.9	39.5	321 05.0	17.4	342 41.9	48.7
I 12	316 36.2	33 48.1	S16 26.9	36 16.4	S23 39.4	336 06.9	S 9 17.2	357 44.1	S16 48.6
N 13	331 38.6	48 49.8	27.0	51 16.9	39.3	351 08.8	17.0	12 46.3	48.5
G 14	346 41.1	63 51.5	27.2	66 17.3	39.2	6 10.7	16.8	27 48.4	48.5
O 15	1 43.6	78 53.1	27.3	81 17.8	39.1	21 12.6	16.6	42 50.6	48.4
16	16 46.0	93 54.8	27.4	96 18.3	39.0	36 14.5	16.3	57 52.8	48.3
17	31 48.5	108 56.5	27.5	111 18.7	38.9	51 16.5	16.1	72 54.9	48.2
18	46 51.0	123 58.1	S16 27.6	126 19.2	S23 38.8	66 18.4	S 9 15.9	87 57.1	S16 48.1
19	61 53.4	138 59.8	27.7	141 19.7	38.7	81 20.3	15.7	102 59.3	48.0
20	76 55.9	154 01.4	27.8	156 20.1	38.6	96 22.2	15.5	118 01.4	47.9
21	91 58.3	169 03.0	27.9	171 20.6	38.5	111 24.1	15.2	133 03.6	47.9
22	107 00.8	184 04.7	28.0	186 21.1	38.4	126 26.0	15.0	148 05.8	47.8
23	122 03.3	199 06.3	28.1	201 21.5	38.3	141 27.9	14.8	163 07.9	47.7
7 00	137 05.7	214 07.9	S16 28.2	216 22.0	S23 38.2	156 29.9	S 9 14.6	178 10.1	S16 47.6
01	152 08.2	229 09.6	28.3	231 22.5	38.1	171 31.8	14.4	193 12.2	47.5
02	167 10.7	244 11.2	28.4	246 22.9	38.0	186 33.7	14.1	208 14.4	47.4
03	182 13.1	259 12.8	28.5	261 23.4	37.8	201 35.6	13.9	223 16.6	47.3
04	197 15.6	274 14.4	28.6	276 23.9	37.7	216 37.5	13.7	238 18.7	47.2
05	212 18.1	289 16.0	28.7	291 24.3	37.6	231 39.4	13.5	253 20.9	47.2
06	227 20.5	304 17.7	S16 28.8	306 24.8	S23 37.5	246 41.3	S 9 13.3	268 23.1	S16 47.1
07	242 23.0	319 19.3	28.9	321 25.3	37.4	261 43.2	13.0	283 25.2	47.0
L 08	257 25.5	334 20.9	29.0	336 25.7	37.3	276 45.2	12.8	298 27.4	46.9
U 09	272 27.9	349 22.5	29.2	351 26.2	37.2	291 47.1	12.6	313 29.6	46.8
N 10	287 30.4	4 24.1	29.3	6 26.7	37.1	306 49.0	12.4	328 31.7	46.7
E 11	302 32.8	19 25.7	29.4	21 27.1	37.0	321 50.9	12.1	343 33.9	46.6
S 12	317 35.3	34 27.2	S16 29.5	36 27.6	S23 36.9	336 52.8	S 9 11.9	358 36.1	S16 46.5
13	332 37.8	49 28.8	29.6	51 28.1	36.8	351 54.7	11.7	13 38.2	46.5
14	347 40.2	64 30.4	29.7	66 28.5	36.6	6 56.6	11.5	28 40.4	46.4
15	2 42.7	79 32.0	29.8	81 29.0	36.5	21 58.6	11.3	43 42.6	46.3
16	17 45.2	94 33.6	29.9	96 29.5	36.4	37 00.5	11.0	58 44.7	46.2
17	32 47.6	109 35.1	30.0	111 29.9	36.3	52 02.4	10.8	73 46.9	46.1
18	47 50.1	124 36.7	S16 30.1	126 30.4	S23 36.2	67 04.3	S 9 10.6	88 49.0	S16 46.0
19	62 52.6	139 38.3	30.2	141 30.9	36.1	82 06.2	10.4	103 51.2	45.9
20	77 55.0	154 39.8	30.3	156 31.3	36.0	97 08.1	10.2	118 53.4	45.8
21	92 57.5	169 41.4	30.4	171 31.8	35.9	112 10.0	09.9	133 55.5	45.8
22	107 59.9	184 42.9	30.5	186 32.3	35.7	127 11.9	09.7	148 57.7	45.7
23	123 02.4	199 44.5	30.6	201 32.7	35.6	142 13.9	09.5	163 59.9	45.6
8 00	138 04.9	214 46.0	S16 30.8	216 33.2	S23 35.5	157 15.8	S 9 09.3	179 02.0	S16 45.5
01	153 07.3	229 47.6	30.9	231 33.7	35.4	172 17.7	09.1	194 04.2	45.4
02	168 09.8	244 49.1	31.0	246 34.2	35.3	187 19.6	08.8	209 06.4	45.3
03	183 12.3	259 50.7	31.1	261 34.6	35.2	202 21.5	08.6	224 08.5	45.2
04	198 14.7	274 52.2	31.2	276 35.1	35.0	217 23.4	08.4	239 10.7	45.1
05	213 17.2	289 53.7	31.3	291 35.6	34.9	232 25.3	08.2	254 12.9	45.1
06	228 19.7	304 55.3	S16 31.4	306 36.0	S23 34.8	247 27.3	S 9 08.0	269 15.0	S16 45.0
07	243 22.1	319 56.8	31.5	321 36.5	34.7	262 29.2	07.7	284 17.2	44.9
M 08	258 24.6	334 58.3	31.6	336 37.0	34.6	277 31.1	07.5	299 19.4	44.8
A 09	273 27.1	349 59.8	31.7	351 37.4	34.5	292 33.0	07.3	314 21.5	44.7
R 10	288 29.5	5 01.3	31.8	6 37.9	34.3	307 34.9	07.1	329 23.7	44.6
T 11	303 32.0	20 02.8	31.9	21 38.4	34.2	322 36.8	06.8	344 25.8	44.5
E 12	318 34.4	35 04.3	S16 32.0	36 38.8	S23 34.1	337 38.7	S 9 06.6	359 28.0	S16 44.4
S 13	333 36.9	50 05.9	32.2	51 39.3	34.0	352 40.6	06.4	14 30.2	44.4
14	348 39.4	65 07.4	32.3	66 39.8	33.9	7 42.6	06.2	29 32.3	44.3
15	3 41.8	80 08.8	32.4	81 40.2	33.7	22 44.5	06.0	44 34.5	44.2
16	18 44.3	95 10.3	32.5	96 40.7	33.6	37 46.4	05.7	59 36.7	44.1
17	33 46.8	110 11.8	32.6	111 41.2	33.5	52 48.3	05.5	74 38.8	44.0
18	48 49.2	125 13.3	S16 32.7	126 41.6	S23 33.4	67 50.2	S 9 05.3	89 41.0	S16 43.9
19	63 51.7	140 14.8	32.8	141 42.1	33.2	82 52.1	05.1	104 43.2	43.8
20	78 54.2	155 16.3	32.9	156 42.6	33.1	97 54.0	04.9	119 45.3	43.8
21	93 56.6	170 17.8	33.0	171 43.0	33.0	112 55.9	04.6	134 47.5	43.7
22	108 59.1	185 19.2	33.1	186 43.5	32.9	127 57.8	04.4	149 49.7	43.6
23	124 01.6	200 20.7	33.2	201 44.0	32.8	142 59.8	04.2	164 51.8	43.5
	h m								
Paso Mer.	14 49.2	*v* 1.6	*d* 0.1	*v* 0.5	*d* 0.1	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.6	S40 13.3
Achernar	335 22.2	S57 07.9
Acrux	173 02.2	S63 13.0
Adhara	255 07.4	S29 00.3
Aldebaran	290 42.2	N16 33.2
Alioth	166 14.8	N55 50.2
Alkaid	152 53.8	N49 11.9
Alnair	27 36.4	S46 51.4
Alnilam	275 39.9	S 1 11.4
Alphard	217 49.8	S 8 45.3
Alphecca	126 05.8	N26 38.2
Alpheratz	357 37.5	N29 12.7
Altair	62 02.6	N 8 55.5
Ankaa	353 09.8	S42 11.5
Antares	112 18.9	S26 28.8
Arcturus	145 50.0	N19 03.9
Atria	107 15.5	S69 03.7
Avior	234 15.0	S59 34.8
Bellatrix	278 25.2	N 6 22.1
Betelgeuse	270 54.4	N 7 24.6
Canopus	263 53.0	S52 42.6
Capella	280 25.2	N46 01.3
Deneb	49 27.9	N45 21.4
Denebola	182 27.1	N14 26.8
Diphda	348 49.9	S17 52.2
Dubhe	193 43.4	N61 37.8
Elnath	278 04.7	N28 37.6
Eltanin	90 43.7	N51 28.9
Enif	33 41.5	N 9 58.4
Fomalhaut	15 17.5	S29 30.6
Gacrux	171 53.9	S57 14.0
Gienah	175 45.8	S17 39.8
Hadar	148 39.2	S60 28.5
Hamal	327 54.0	N23 34.0
Kaus Aust.	83 36.0	S34 22.4
Kochab	137 19.8	N74 03.6
Markab	13 32.6	N15 19.3
Menkar	314 08.6	N 4 10.4
Menkent	148 00.3	S36 28.5
Miaplacidus	221 37.8	S69 48.4
Mirfak	308 31.6	N49 56.5
Nunki	75 51.0	S26 16.2
Peacock	53 10.1	S56 39.9
Pollux	243 19.9	N27 58.3
Procyon	244 53.0	N 5 10.0
Rasalhague	96 01.0	N12 32.5
Regulus	207 36.7	N11 51.5
Rigel	281 06.0	S 8 10.7
Rigil Kent.	139 43.5	S60 55.2
Sabik	102 05.7	S15 45.1
Schedar	349 34.1	N56 39.6
Shaula	96 13.9	S37 07.1
Sirius	258 28.1	S16 44.9
Spica	158 24.7	S11 16.6
Suhail	222 47.6	S43 31.3
Vega	80 35.2	N38 48.0
Zuben'ubi	136 58.6	S16 07.9

	AHS	Paso Mer.
	° ′	h m
Venus	77 02.2	9 42
Marte	79 16.3	9 34
Júpiter	19 24.1	13 32
Saturno	41 04.3	12 06

UT (HmGr)	SOL				LUNA							
	AHGr		Dec		AHGr	v		Dec		d	Ph	
d h	°	′	°	′	°	′	′	°	′	′	′	
6 00	176	29.9	S15	41.5	118	16.1	14.8	N 4	03.6	14.1	56.3	
01	191	29.9		40.7	132	49.9	14.7	4	17.7	14.0	56.3	
02	206	29.8		39.9	147	23.6	14.7	4	31.7	14.0	56.2	
03	221	29.8	. .	39.1	161	57.3	14.8	4	45.7	14.0	56.2	
04	236	29.8		38.4	176	31.1	14.8	4	59.7	13.9	56.2	
05	251	29.7		37.6	191	04.9	14.8	5	13.6	13.9	56.1	
06	266	29.7	S15	36.8	205	38.7	14.8	N 5	27.5	13.8	56.1	
07	281	29.6		36.1	220	12.5	14.8	5	41.3	13.8	56.1	
08	296	29.6		35.3	234	46.3	14.9	5	55.1	13.8	56.1	
09	311	29.5	. .	34.5	249	20.2	14.8	6	08.9	13.7	56.0	
10	326	29.5		33.8	263	54.0	14.9	6	22.6	13.6	56.0	
11	341	29.5		33.0	278	27.9	14.8	6	36.2	13.7	56.0	
12	356	29.4	S15	32.2	293	01.7	14.9	N 6	49.9	13.6	55.9	
13	11	29.4		31.4	307	35.6	14.9	7	03.5	13.5	55.9	
14	26	29.3		30.7	322	09.5	14.8	7	17.0	13.5	55.9	
15	41	29.3	. .	29.9	336	43.3	14.9	7	30.5	13.5	55.8	
16	56	29.3		29.1	351	17.2	14.9	7	44.0	13.4	55.8	
17	71	29.2		28.3	5	51.1	14.9	7	57.4	13.3	55.8	
18	86	29.2	S15	27.6	20	25.0	14.9	N 8	10.7	13.3	55.7	
19	101	29.2		26.8	34	58.9	14.8	8	24.0	13.3	55.7	
20	116	29.1		26.0	49	32.7	14.9	8	37.3	13.2	55.7	
21	131	29.1	. .	25.2	64	06.6	14.9	8	50.5	13.2	55.7	
22	146	29.0		24.4	78	40.5	14.9	9	03.7	13.1	55.6	
23	161	29.0		23.7	93	14.4	14.8	9	16.8	13.1	55.6	
7 00	176	29.0	S15	22.9	107	48.2	14.9	N 9	29.9	13.0	55.6	
01	191	28.9		22.1	122	22.1	14.9	9	42.9	12.9	55.5	
02	206	28.9		21.3	136	56.0	14.8	9	55.8	12.9	55.5	
03	221	28.9	. .	20.6	151	29.8	14.8	10	08.7	12.9	55.5	
04	236	28.8		19.8	166	03.6	14.9	10	21.6	12.7	55.5	
05	251	28.8		19.0	180	37.5	14.8	10	34.3	12.8	55.4	
06	266	28.8	S15	18.2	195	11.3	14.8	N10	47.1	12.7	55.4	
07	281	28.7		17.4	209	45.1	14.8	10	59.8	12.6	55.4	
08	296	28.7		16.6	224	18.9	14.8	11	12.4	12.5	55.4	
09	311	28.7	. .	15.9	238	52.7	14.8	11	24.9	12.5	55.3	
10	326	28.6		15.1	253	26.5	14.7	11	37.4	12.5	55.3	
11	341	28.6		14.3	268	00.2	14.7	11	49.9	12.4	55.3	
12	356	28.6	S15	13.5	282	33.9	14.8	N12	02.3	12.3	55.3	
13	11	28.5		12.7	297	07.7	14.7	12	14.6	12.3	55.2	
14	26	28.5		11.9	311	41.4	14.7	12	26.9	12.2	55.2	
15	41	28.5	. .	11.2	326	15.1	14.6	12	39.1	12.1	55.2	
16	56	28.4		10.4	340	48.7	14.7	12	51.2	12.1	55.2	
17	71	28.4		09.6	355	22.4	14.6	13	03.3	12.0	55.1	
18	86	28.4	S15	08.8	9	56.0	14.6	N13	15.3	11.9	55.1	
19	101	28.3		08.0	24	29.6	14.6	13	27.2	11.9	55.1	
20	116	28.3		07.2	39	03.2	14.5	13	39.1	11.8	55.1	
21	131	28.3	. .	06.4	53	36.7	14.6	13	50.9	11.8	55.0	
22	146	28.3		05.6	68	10.3	14.5	14	02.7	11.6	55.0	
23	161	28.2		04.9	82	43.8	14.5	14	14.3	11.7	55.0	
8 00	176	28.2	S15	04.1	97	17.3	14.4	N14	26.0	11.5	55.0	
01	191	28.2		03.3	111	50.7	14.4	14	37.5	11.5	54.9	
02	206	28.1		02.5	126	24.1	14.4	14	49.0	11.4	54.9	
03	221	28.1	. .	01.7	140	57.5	14.4	15	00.4	11.3	54.9	
04	236	28.1		00.9	155	30.9	14.4	15	11.7	11.3	54.9	
05	251	28.1	15	00.1	170	04.3	14.3	15	23.0	11.2	54.9	
06	266	28.0	S14	59.3	184	37.6	14.2	N15	34.2	11.1	54.8	
07	281	28.0		58.5	199	10.8	14.3	15	45.3	11.0	54.8	
08	296	28.0		57.7	213	44.1	14.2	15	56.3	11.0	54.8	
09	311	28.0	. .	56.9	228	17.3	14.2	16	07.3	10.9	54.8	
10	326	27.9		56.2	242	50.5	14.1	16	18.2	10.8	54.8	
11	341	27.9		55.4	257	23.6	14.2	16	29.0	10.8	54.7	
12	356	27.9	S14	54.6	271	56.8	14.0	N16	39.8	10.7	54.7	
13	11	27.9		53.8	286	29.8	14.1	16	50.5	10.6	54.7	
14	26	27.8		53.0	301	02.9	14.0	17	01.1	10.5	54.7	
15	41	27.8	. .	52.2	315	35.9	14.0	17	11.6	10.4	54.7	
16	56	27.8		51.4	330	08.9	13.9	17	22.0	10.4	54.7	
17	71	27.8		50.6	344	41.8	13.9	17	32.4	10.3	54.6	
18	86	27.8	S14	49.8	359	14.7	13.9	N17	42.7	10.2	54.6	
19	101	27.7		49.0	13	47.6	13.8	17	52.9	10.1	54.6	
20	116	27.7		48.2	28	20.4	13.8	18	03.0	10.0	54.6	
21	131	27.7	. .	47.4	42	53.2	13.7	18	13.0	10.0	54.6	
22	146	27.7		46.6	57	25.9	13.7	18	23.0	9.9	54.6	
23	161	27.7		45.8	71	58.6	13.7	N18	32.9	9.8	54.5	
	S/D	16.2	d	0.8	S/D		15.2		15.1		14.9	

DOMINGO · LUNES · MARTES

Lat.	Aurora Náut.		Aurora Civil		Orto Sol	Orto Luna 6		Orto Luna 7		Orto Luna 8		Orto Luna 9	
°	h	m	h	m	h m	h	m	h	m	h	m	h	m
N 72	06	47	08	11	09 43	09	07	08	33	07	43		
N 70	06	42	07	57	09 14	09	15	08	51	08	20	07	06
68	06	37	07	45	08 52	09	22	09	06	08	46	08	14
66	06	33	07	35	08 35	09	28	09	18	09	06	08	51
64	06	30	07	27	08 21	09	33	09	28	09	23	09	17
62	06	27	07	20	08 09	09	37	09	36	09	36	09	38
60	06	24	07	14	07 59	09	41	09	44	09	48	09	54
N 58	06	21	07	08	07 51	09	44	09	50	09	58	10	08
56	06	19	07	03	07 43	09	47	09	56	10	07	10	21
54	06	16	06	58	07 36	09	50	10	01	10	15	10	31
52	06	14	06	54	07 30	09	52	10	06	10	22	10	41
50	06	12	06	50	07 24	09	54	10	10	10	28	10	49
45	06	07	06	42	07 12	09	59	10	20	10	42	11	08
N 40	06	02	06	34	07 03	10	04	10	28	10	53	11	22
35	05	58	06	28	06 54	10	07	10	34	11	03	11	35
30	05	53	06	22	06 46	10	10	10	40	11	12	11	46
20	05	44	06	10	06 33	10	16	10	51	11	27	12	05
N 10	05	35	06	00	06 22	10	21	11	00	11	40	12	22
0	05	24	05	49	06 11	10	26	11	09	11	52	12	38
S 10	05	12	05	38	06 00	10	30	11	17	12	05	12	53
20	04	57	05	24	05 48	10	35	11	27	12	18	13	10
30	04	38	05	08	05 34	10	41	11	38	12	34	13	30
35	04	26	04	58	05 26	10	45	11	44	12	43	13	41
40	04	11	04	47	05 16	10	49	11	51	12	53	13	55
45	03	53	04	33	05 05	10	53	12	00	13	05	14	10
S 50	03	28	04	15	04 52	10	59	12	10	13	20	14	30
52	03	16	04	07	04 46	11	01	12	15	13	27	14	39
54	03	02	03	57	04 39	11	04	12	20	13	35	14	49
56	02	44	03	47	04 31	11	07	12	26	13	44	15	01
58	02	23	03	34	04 23	11	10	12	32	13	54	15	15
S 60	01	54	03	19	04 13	11	14	12	40	14	05	15	31

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 6		Ocaso Luna 7		Ocaso Luna 8		Ocaso Luna 9	
°	h	m	h	m	h m	h	m	h	m	h	m	h	m
N 72	14	47	16	18	17 43	24	56	00	56	03	18		
N 70	15	16	16	33	17 48	24	40	00	40	02	43	05	30
68	15	38	16	44	17 52	24	27	00	27	02	18	04	23
66	15	55	16	54	17 56	24	17	00	17	01	59	03	47
64	16	08	17	02	18 00	24	08	00	08	01	44	03	22
62	16	20	17	09	18 03	24	01	00	01	01	31	03	02
60	16	30	17	16	18 05	23	55	25	20	01	20	02	46
N 58	16	38	17	21	18 08	23	49	25	11	01	11	02	32
56	16	46	17	26	18 10	23	45	25	03	01	03	02	21
54	16	53	17	31	18 13	23	40	24	56	00	56	02	11
52	16	59	17	35	18 15	23	36	24	49	00	49	02	02
50	17	04	17	39	18 17	23	33	24	44	00	44	01	54
45	17	16	17	47	18 22	23	25	24	31	00	31	01	37
N 40	17	26	17	54	18 27	23	19	24	21	00	21	01	23
35	17	35	18	01	18 31	23	13	24	12	00	12	01	11
30	17	42	18	07	18 35	23	09	24	05	00	05	01	01
20	17	55	18	18	18 44	23	00	23	52	24	43	00	43
N 10	18	07	18	28	18 53	22	53	23	40	24	28	00	28
0	18	18	18	39	19 04	22	46	23	30	24	14	00	14
S 10	18	29	18	50	19 16	22	39	23	19	24	00	00	00
20	18	40	19	03	19 31	22	32	23	08	23	45	24	25
30	18	54	19	19	19 50	22	24	22	55	23	28	24	04
35	19	02	19	29	20 02	22	19	22	47	23	18	23	51
40	19	11	19	41	20 16	22	14	22	39	23	06	23	37
45	19	22	19	54	20 34	22	08	22	29	22	53	23	21
S 50	19	35	20	12	20 58	22	01	22	17	22	37	23	00
52	19	41	20	20	21 10	21	57	22	12	22	29	22	51
54	19	48	20	29	21 24	21	54	22	06	22	21	22	40
56	19	55	20	40	21 41	21	50	21	59	22	11	22	28
58	20	04	20	52	22 02	21	45	21	52	22	01	22	13
S 60	20	14	21	07	22 30	21	40	21	44	21	49	21	57

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		SOL Paso Mer.	LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		LUNA Edad		LUNA Fase
d	m	s	m	s	h m	h	m	h	m	d	%	
6	14	00	14	02	12 14	16	36	04	14	05	30	
7	14	04	14	06	12 14	17	19	04	57	06	40	
8	14	07	14	08	12 14	18	03	05	41	07	49	

UT (HmGr)	ARIES	VENUS −4·9		MARTE +1·4		JÚPITER −2·0		SATURNO +0·6	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
9 00	139 04.0	215 22.2	S16 33.3	216 44.4	S23 32.6	158 01.7	S 9 04.0	179 54.0	S16 43.4
01	154 06.5	230 23.6	33.4	231 44.9	32.5	173 03.6	03.7	194 56.2	43.3
02	169 08.9	245 25.1	33.5	246 45.4	32.4	188 05.5	03.5	209 58.3	43.2
03	184 11.4	260 26.5	33.7	261 45.8	32.2	203 07.4	03.3	225 00.5	43.1
04	199 13.9	275 28.0	33.8	276 46.3	32.1	218 09.3	03.1	240 02.6	43.1
05	214 16.3	290 29.4	33.9	291 46.8	32.0	233 11.2	02.9	255 04.8	43.0
06	229 18.8	305 30.9	S16 34.0	306 47.2	S23 31.9	248 13.1	S 9 02.6	270 07.0	S16 42.9
07	244 21.3	320 32.3	34.1	321 47.7	31.7	263 15.1	02.4	285 09.1	42.8
08	259 23.7	335 33.8	34.2	336 48.2	31.6	278 17.0	02.2	300 11.3	42.7
M 09	274 26.2	350 35.2	34.3	351 48.6	31.5	293 18.9	02.0	315 13.5	42.6
I 10	289 28.7	5 36.6	34.4	6 49.1	31.4	308 20.8	01.7	330 15.6	42.5
É 11	304 31.1	20 38.1	34.5	21 49.6	31.2	323 22.7	01.5	345 17.8	42.4
R 12	319 33.6	35 39.5	S16 34.6	36 50.0	S23 31.1	338 24.6	S 9 01.3	0 20.0	S16 42.4
C 13	334 36.1	50 40.9	34.7	51 50.5	31.0	353 26.5	01.1	15 22.1	42.3
O 14	349 38.5	65 42.3	34.8	66 51.0	30.8	8 28.4	00.9	30 24.3	42.2
L 15	4 41.0	80 43.8	34.9	81 51.4	30.7	23 30.3	00.6	45 26.5	42.1
E 16	19 43.4	95 45.2	35.1	96 51.9	30.6	38 32.3	00.4	60 28.6	42.0
S 17	34 45.9	110 46.6	35.2	111 52.4	30.4	53 34.2	00.2	75 30.8	41.9
18	49 48.4	125 48.0	S16 35.3	126 52.8	S23 30.3	68 36.1	S 9 00.0	90 33.0	S16 41.8
19	64 50.8	140 49.4	35.4	141 53.3	30.2	83 38.0	8 59.8	105 35.1	41.7
20	79 53.3	155 50.8	35.5	156 53.8	30.0	98 39.9	59.5	120 37.3	41.7
21	94 55.8	170 52.2	35.6	171 54.2	29.9	113 41.8	59.3	135 39.5	41.6
22	109 58.2	185 53.6	35.7	186 54.7	29.8	128 43.7	59.1	150 41.6	41.5
23	125 00.7	200 55.0	35.8	201 55.2	29.6	143 45.6	58.9	165 43.8	41.4
10 00	140 03.2	215 56.4	S16 35.9	216 55.6	S23 29.5	158 47.5	S 8 58.6	180 46.0	S16 41.3
01	155 05.6	230 57.8	36.0	231 56.1	29.4	173 49.5	58.4	195 48.1	41.2
02	170 08.1	245 59.1	36.1	246 56.6	29.2	188 51.4	58.2	210 50.3	41.1
03	185 10.5	261 00.5	36.2	261 57.0	29.1	203 53.3	58.0	225 52.4	41.0
04	200 13.0	276 01.9	36.3	276 57.5	29.0	218 55.2	57.7	240 54.6	41.0
05	215 15.5	291 03.3	36.4	291 58.0	28.8	233 57.1	57.5	255 56.8	40.9
06	230 17.9	306 04.6	S16 36.5	306 58.4	S23 28.7	248 59.0	S 8 57.3	270 58.9	S16 40.8
07	245 20.4	321 06.0	36.7	321 58.9	28.5	264 00.9	57.1	286 01.1	40.7
08	260 22.9	336 07.4	36.8	336 59.4	28.4	279 02.8	56.9	301 03.3	40.6
J 09	275 25.3	351 08.7	36.9	351 59.8	28.3	294 04.7	56.6	316 05.4	40.5
U 10	290 27.8	6 10.1	37.0	7 00.3	28.1	309 06.7	56.4	331 07.6	40.4
E 11	305 30.3	21 11.4	37.1	22 00.8	28.0	324 08.6	56.2	346 09.8	40.3
V 12	320 32.7	36 12.8	S16 37.2	37 01.2	S23 27.8	339 10.5	S 8 56.0	1 11.9	S16 40.3
E 13	335 35.2	51 14.1	37.3	52 01.7	27.7	354 12.4	55.7	16 14.1	40.2
S 14	350 37.7	66 15.5	37.4	67 02.2	27.6	9 14.3	55.5	31 16.3	40.1
15	5 40.1	81 16.8	37.5	82 02.6	27.4	24 16.2	55.3	46 18.4	40.0
16	20 42.6	96 18.1	37.6	97 03.1	27.3	39 18.1	55.1	61 20.6	39.9
17	35 45.0	111 19.5	37.7	112 03.6	27.1	54 20.0	54.9	76 22.8	39.8
18	50 47.5	126 20.8	S16 37.8	127 04.0	S23 27.0	69 21.9	S 8 54.6	91 24.9	S16 39.7
19	65 50.0	141 22.1	37.9	142 04.5	26.8	84 23.8	54.4	106 27.1	39.6
20	80 52.4	156 23.5	38.0	157 05.0	26.7	99 25.8	54.2	121 29.3	39.6
21	95 54.9	171 24.8	38.1	172 05.4	26.6	114 27.7	54.0	136 31.4	39.5
22	110 57.4	186 26.1	38.2	187 05.9	26.4	129 29.6	53.7	151 33.6	39.4
23	125 59.8	201 27.4	38.3	202 06.4	26.3	144 31.5	53.5	166 35.8	39.3
11 00	141 02.3	216 28.7	S16 38.5	217 06.8	S23 26.1	159 33.4	S 8 53.3	181 37.9	S16 39.2
01	156 04.8	231 30.0	38.6	232 07.3	26.0	174 35.3	53.1	196 40.1	39.1
02	171 07.2	246 31.3	38.7	247 07.8	25.8	189 37.2	52.8	211 42.3	39.0
03	186 09.7	261 32.6	38.8	262 08.2	25.7	204 39.1	52.6	226 44.4	38.9
04	201 12.2	276 33.9	38.9	277 08.7	25.5	219 41.0	52.4	241 46.6	38.9
05	216 14.6	291 35.2	39.0	292 09.2	25.4	234 42.9	52.2	256 48.8	38.8
06	231 17.1	306 36.5	S16 39.1	307 09.6	S23 25.2	249 44.9	S 8 52.0	271 50.9	S16 38.7
07	246 19.5	321 37.8	39.2	322 10.1	25.1	264 46.8	51.7	286 53.1	38.6
V 08	261 22.0	336 39.1	39.3	337 10.6	25.0	279 48.7	51.5	301 55.3	38.5
I 09	276 24.5	351 40.4	39.4	352 11.0	24.8	294 50.6	51.3	316 57.4	38.4
E 10	291 26.9	6 41.7	39.5	7 11.5	24.7	309 52.5	51.1	331 59.6	38.3
R 11	306 29.4	21 43.0	39.6	22 12.0	24.5	324 54.4	50.8	347 01.7	38.2
N 12	321 31.9	36 44.2	S16 39.7	37 12.4	S23 24.4	339 56.3	S 8 50.6	2 03.9	S16 38.2
E 13	336 34.3	51 45.5	39.8	52 12.9	24.2	354 58.2	50.4	17 06.1	38.1
S 14	351 36.8	66 46.8	39.9	67 13.4	24.1	10 00.1	50.2	32 08.2	38.0
15	6 39.3	81 48.0	40.0	82 13.8	23.9	25 02.0	49.9	47 10.4	37.9
16	21 41.7	96 49.3	40.1	97 14.3	23.7	40 03.9	49.7	62 12.6	37.8
17	36 44.2	111 50.6	40.2	112 14.8	23.6	55 05.9	49.5	77 14.7	37.7
18	51 46.7	126 51.8	S16 40.3	127 15.2	S23 23.4	70 07.8	S 8 49.3	92 16.9	S16 37.6
19	66 49.1	141 53.1	40.4	142 15.7	23.3	85 09.7	49.1	107 19.1	37.5
20	81 51.6	156 54.3	40.5	157 16.2	23.1	100 11.6	48.8	122 21.2	37.5
21	96 54.0	171 55.6	40.6	172 16.6	23.0	115 13.5	48.6	137 23.4	37.4
22	111 56.5	186 56.8	40.7	187 17.1	22.8	130 15.4	48.4	152 25.6	37.3
23	126 59.0	201 58.1	40.8	202 17.6	22.7	145 17.3	48.2	167 27.7	37.2
	h m								
Paso Mer.	14 37.4	*v* 1.3	*d* 0.1	*v* 0.5	*d* 0.1	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.6	S40 13.3
Achernar	335 22.3	S57 07.9
Acrux	173 02.2	S63 13.0
Adhara	255 07.4	S29 00.3
Aldebaran	290 42.2	N16 33.2
Alioth	166 14.8	N55 50.2
Alkaid	152 53.7	N49 11.9
Alnair	27 36.4	S46 51.4
Alnilam	275 40.0	S 1 11.4
Alphard	217 49.8	S 8 45.3
Alphecca	126 05.8	N26 38.2
Alpheratz	357 37.5	N29 12.7
Altair	62 02.6	N 8 55.4
Ankaa	353 09.8	S42 11.5
Antares	112 18.9	S26 28.8
Arcturus	145 50.0	N19 03.9
Atria	107 15.5	S69 03.7
Avior	234 15.0	S59 34.9
Bellatrix	278 25.3	N 6 22.1
Betelgeuse	270 54.5	N 7 24.6
Canopus	263 53.1	S52 42.7
Capella	280 25.2	N46 01.3
Deneb	49 27.9	N45 21.4
Denebola	182 27.1	N14 26.8
Diphda	348 49.9	S17 52.2
Dubhe	193 43.4	N61 37.8
Elnath	278 04.7	N28 37.6
Eltanin	90 43.6	N51 28.9
Enif	33 41.5	N 9 58.4
Fomalhaut	15 17.5	S29 30.5
Gacrux	171 53.9	S57 14.0
Gienah	175 45.8	S17 39.8
Hadar	148 39.2	S60 28.5
Hamal	327 54.0	N23 34.0
Kaus Aust.	83 36.0	S34 22.4
Kochab	137 19.7	N74 03.6
Markab	13 32.6	N15 19.3
Menkar	314 08.7	N 4 10.4
Menkent	148 00.3	S36 28.5
Miaplacidus	221 37.8	S69 48.4
Mirfak	308 31.6	N49 56.5
Nunki	75 51.0	S26 16.2
Peacock	53 10.1	S56 39.9
Pollux	243 19.9	N27 58.3
Procyon	244 53.0	N 5 10.0
Rasalhague	96 00.9	N12 32.5
Regulus	207 36.7	N11 51.5
Rigel	281 06.0	S 8 10.7
Rigil Kent.	139 43.4	S60 55.2
Sabik	102 05.7	S15 45.1
Schedar	349 34.1	N56 39.6
Shaula	96 13.8	S37 07.1
Sirius	258 28.1	S16 44.9
Spica	158 24.7	S11 16.6
Suhail	222 47.6	S43 31.3
Vega	80 35.1	N38 48.0
Zuben'ubi	136 58.6	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	75 53.2	9 35
Marte	76 52.5	9 32
Júpiter	18 44.4	13 23
Saturno	40 42.8	11 55

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	°	′	′	′	
9 00	176	27.6	S14	45.0	86	31.3	13.6	N18	42.7	9.7	54.5
01	191	27.6		44.2	101	03.9	13.6	18	52.4	9.6	54.5
02	206	27.6		43.4	115	36.5	13.5	19	02.0	9.5	54.5
03	221	27.6	. .	42.6	130	09.0	13.5	19	11.5	9.5	54.5
04	236	27.6		41.8	144	41.5	13.4	19	21.0	9.4	54.5
05	251	27.5		41.0	159	13.9	13.4	19	30.4	9.2	54.5
06	266	27.5	S14	40.2	173	46.3	13.4	N19	39.6	9.2	54.4
07	281	27.5		39.4	188	18.7	13.3	19	48.8	9.1	54.4
08	296	27.5		38.6	202	51.0	13.3	19	57.9	9.1	54.4
09	311	27.5	. .	37.8	217	23.3	13.2	20	07.0	8.9	54.4
10	326	27.5		37.0	231	55.5	13.2	20	15.9	8.8	54.4
11	341	27.4		36.2	246	27.7	13.1	20	24.7	8.8	54.4
12	356	27.4	S14	35.4	260	59.8	13.1	N20	33.5	8.6	54.4
13	11	27.4		34.6	275	31.9	13.0	20	42.1	8.6	54.4
14	26	27.4		33.7	290	03.9	13.0	20	50.7	8.5	54.3
15	41	27.4	. .	32.9	304	35.9	13.0	20	59.2	8.3	54.3
16	56	27.4		32.1	319	07.9	12.9	21	07.5	8.3	54.3
17	71	27.4		31.3	333	39.8	12.8	21	15.8	8.2	54.3
18	86	27.3	S14	30.5	348	11.6	12.8	N21	24.0	8.1	54.3
19	101	27.3		29.7	2	43.4	12.8	21	32.1	8.0	54.3
20	116	27.3		28.9	17	15.2	12.7	21	40.1	7.9	54.3
21	131	27.3	. .	28.1	31	46.9	12.7	21	48.0	7.8	54.3
22	146	27.3		27.3	46	18.6	12.6	21	55.8	7.7	54.3
23	161	27.3		26.5	60	50.2	12.5	22	03.5	7.6	54.3
10 00	176	27.3	S14	25.7	75	21.7	12.6	N22	11.1	7.5	54.3
01	191	27.3		24.9	89	53.3	12.4	22	18.6	7.4	54.2
02	206	27.3		24.0	104	24.7	12.5	22	26.0	7.3	54.2
03	221	27.2	. .	23.2	118	56.2	12.3	22	33.3	7.2	54.2
04	236	27.2		22.4	133	27.5	12.4	22	40.5	7.1	54.2
05	251	27.2		21.6	147	58.9	12.2	22	47.6	7.0	54.2
06	266	27.2	S14	20.8	162	30.1	12.3	N22	54.6	6.9	54.2
07	281	27.2		20.0	177	01.4	12.1	23	01.5	6.8	54.2
08	296	27.2		19.2	191	32.5	12.2	23	08.3	6.7	54.2
09	311	27.2	. .	18.4	206	03.7	12.1	23	15.0	6.6	54.2
10	326	27.2		17.5	220	34.8	12.0	23	21.6	6.5	54.2
11	341	27.2		16.7	235	05.8	12.0	23	28.1	6.3	54.2
12	356	27.2	S14	15.9	249	36.8	11.9	N23	34.4	6.3	54.2
13	11	27.2		15.1	264	07.7	11.9	23	40.7	6.2	54.2
14	26	27.2		14.3	278	38.6	11.9	23	46.9	6.0	54.2
15	41	27.1	. .	13.5	293	09.5	11.8	23	52.9	6.0	54.2
16	56	27.1		12.7	307	40.3	11.7	23	58.9	5.8	54.2
17	71	27.1		11.8	322	11.0	11.7	24	04.7	5.7	54.2
18	86	27.1	S14	11.0	336	41.7	11.7	N24	10.4	5.6	54.2
19	101	27.1		10.2	351	12.4	11.6	24	16.0	5.5	54.2
20	116	27.1		09.4	5	43.0	11.5	24	21.5	5.4	54.2
21	131	27.1	. .	08.6	20	13.5	11.6	24	26.9	5.3	54.2
22	146	27.1		07.7	34	44.1	11.4	24	32.2	5.2	54.2
23	161	27.1		06.9	49	14.5	11.5	24	37.4	5.0	54.2
11 00	176	27.1	S14	06.1	63	45.0	11.4	N24	42.4	5.0	54.2
01	191	27.1		05.3	78	15.4	11.3	24	47.4	4.8	54.2
02	206	27.1		04.5	92	45.7	11.3	24	52.2	4.7	54.2
03	221	27.1	. .	03.6	107	16.0	11.2	24	56.9	4.6	54.2
04	236	27.1		02.8	121	46.2	11.3	25	01.5	4.5	54.2
05	251	27.1		02.0	136	16.5	11.1	25	06.0	4.4	54.2
06	266	27.1	S14	01.2	150	46.6	11.2	N25	10.4	4.2	54.2
07	281	27.1	14	00.4	165	16.8	11.0	25	14.6	4.2	54.2
08	296	27.1	13	59.5	179	46.8	11.1	25	18.8	4.0	54.2
09	311	27.1	. .	58.7	194	16.9	11.0	25	22.8	3.9	54.2
10	326	27.1		57.9	208	46.9	11.0	25	26.7	3.8	54.2
11	341	27.1		57.1	223	16.9	10.9	25	30.5	3.6	54.2
12	356	27.1	S13	56.2	237	46.8	10.9	N25	34.1	3.6	54.2
13	11	27.1		55.4	252	16.7	10.8	25	37.7	3.4	54.2
14	26	27.1		54.6	266	46.5	10.8	25	41.1	3.3	54.2
15	41	27.1	. .	53.8	281	16.3	10.8	25	44.4	3.2	54.2
16	56	27.1		52.9	295	46.1	10.8	25	47.6	3.0	54.2
17	71	27.1		52.1	310	15.9	10.7	25	50.6	3.0	54.2
18	86	27.1	S13	51.3	324	45.6	10.6	N25	53.6	2.8	54.2
19	101	27.1		50.5	339	15.2	10.7	25	56.4	2.7	54.2
20	116	27.1		49.6	353	44.9	10.6	25	59.1	2.5	54.2
21	131	27.1	. .	48.8	8	14.5	10.6	26	01.6	2.5	54.2
22	146	27.1		48.0	22	44.1	10.5	26	04.1	2.3	54.2
23	161	27.1		47.1	37	13.6	10.5	N26	06.4	2.2	54.2
	S/D	16.2	*d*	0.8	S/D		14.8		14.8		14.8

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		9	10	11	12
°	h m	h m	h m	h m	h m	h m	h m
N 72	06 35	07 58	09 24	▭	▭	▭	▭
N 70	06 31	07 45	08 58	▭	▭	▭	▭
68	06 28	07 35	08 39	07 06	▭	▭	▭
66	06 25	07 26	08 24	08 14	▭	▭	▭
64	06 22	07 19	08 11	08 51	08 22	▭	▭
62	06 20	07 12	08 01	09 17	09 11	09 00	▭
60	06 17	07 07	07 52	09 38	09 42	09 53	10 21
58	06 15	07 02	07 44	09 54	10 05	10 25	11 00
56	06 13	06 57	07 37	10 08	10 24	10 49	11 27
54	06 11	06 53	07 30	10 21	10 40	11 08	11 49
52	06 09	06 49	07 25	10 31	10 54	11 24	12 06
50	06 08	06 46	07 19	10 41	11 05	11 38	12 21
45	06 03	06 38	07 08	10 49	11 16	11 50	12 34
N 40	05 59	06 31	06 59	11 08	11 38	12 16	13 01
35	05 55	06 25	06 51	11 22	11 56	12 36	13 22
30	05 51	06 19	06 44	11 35	12 11	12 53	13 40
20	05 43	06 09	06 32	11 46	12 24	13 07	13 55
N 10	05 34	05 59	06 21	12 05	12 47	13 32	14 21
0	05 25	05 49	06 11	12 22	13 06	13 54	14 44
S 10	05 13	05 39	06 00	12 38	13 25	14 14	15 04
20	04 59	05 26	05 49	12 53	13 43	14 34	15 25
30	04 41	05 11	05 36	13 10	14 03	14 56	15 48
35	04 29	05 02	05 29	13 30	14 26	15 21	16 14
40	04 15	04 51	05 20	13 41	14 39	15 36	16 29
45	03 58	04 38	05 10	13 55	14 55	15 53	16 47
S 50	03 35	04 21	04 57	14 10	15 14	16 14	17 08
52	03 24	04 13	04 52	14 30	15 37	16 40	17 35
54	03 11	04 04	04 45	14 39	15 48	16 53	17 49
56	02 55	03 54	04 38	14 49	16 01	17 07	18 04
58	02 36	03 43	04 30	15 01	16 16	17 25	18 22
S 60	02 10	03 29	04 21	15 15	16 34	17 45	18 44
				15 31	16 55	18 12	19 12

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	9	10	11	12
°	h m	h m	h m	h m	h m	h m	h m
N 72	15 06	16 32	17 55	▭	▭	▭	▭
N 70	15 31	16 45	17 59	05 30	▭	▭	▭
68	15 50	16 55	18 02	04 23	▭	▭	▭
66	16 06	17 04	18 05	03 47	05 53	▭	▭
64	16 18	17 11	18 08	03 22	05 05	06 56	▭
62	16 29	17 17	18 10	03 02	04 34	06 04	07 20
60	16 38	17 23	18 12	02 46	04 11	05 32	06 41
N 58	16 46	17 28	18 14	02 32	03 53	05 08	06 14
56	16 53	17 32	18 16	02 21	03 37	04 49	05 53
54	16 59	17 36	18 18	02 11	03 24	04 33	05 35
52	17 05	17 40	18 20	02 02	03 13	04 20	05 20
50	17 10	17 43	18 22	01 54	03 02	04 08	05 07
45	17 21	17 51	18 26	01 37	02 41	03 43	04 40
N 40	17 30	17 58	18 30	01 23	02 24	03 23	04 19
35	17 38	18 04	18 34	01 11	02 09	03 07	04 02
30	17 45	18 09	18 38	01 01	01 57	02 53	03 47
20	17 57	18 19	18 46	00 43	01 36	02 28	03 21
N 10	18 07	18 29	18 54	00 28	01 17	02 08	02 59
0	18 18	18 39	19 04	00 14	01 00	01 48	02 38
S 10	18 28	18 50	19 15	00 00	00 43	01 29	02 17
20	18 39	19 02	19 29	24 25	00 25	01 08	01 55
30	18 52	19 17	19 47	24 04	00 04	00 44	01 30
35	18 59	19 26	19 58	23 51	24 30	00 30	01 15
40	19 08	19 37	20 12	23 37	24 14	00 14	00 57
45	19 18	19 50	20 29	23 21	23 55	24 36	00 36
S 50	19 30	20 06	20 52	23 00	23 31	24 09	00 09
52	19 35	20 14	21 03	22 51	23 19	23 56	24 45
54	19 42	20 22	21 16	22 40	23 06	23 42	24 30
56	19 49	20 32	21 31	22 28	22 51	23 24	24 12
58	19 57	20 44	21 50	22 13	22 33	23 03	23 50
S 60	20 06	20 57	22 14	21 57	22 11	22 37	23 22

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
9	14 09	14 10	12 14	18 49	06 26	08 59	
10	14 11	14 11	12 14	19 36	07 12	09 68	
11	14 12	14 12	12 14	20 26	08 01	10 76	

MIÉRCOLES JUEVES VIERNES

UT (HmGr)	ARIES	VENUS −4·9		MARTE +1·3		JÚPITER −2·0		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
12 00	142 01.4	216 59.3	S16 40.9	217 18.0	S23 22.5	160 19.2	S 8 47.9	182 29.9	S16 37.1
01	157 03.9	232 00.5	41.0	232 18.5	22.4	175 21.1	47.7	197 32.1	37.0
02	172 06.4	247 01.8	41.1	247 19.0	22.2	190 23.0	47.5	212 34.2	36.9
03	187 08.8	262 03.0	41.2	262 19.4	22.1	205 24.9	47.3	227 36.4	36.9
04	202 11.3	277 04.2	41.3	277 19.9	21.9	220 26.9	47.0	242 38.6	36.8
05	217 13.8	292 05.4	41.4	292 20.4	21.7	235 28.8	46.8	257 40.7	36.7
06	232 16.2	307 06.7	S16 41.6	307 20.9	S23 21.6	250 30.7	S 8 46.6	272 42.9	S16 36.6
07	247 18.7	322 07.9	41.7	322 21.3	21.4	265 32.6	46.4	287 45.1	36.5
08	262 21.1	337 09.1	41.8	337 21.8	21.3	280 34.5	46.1	302 47.2	36.4
S 09	277 23.6	352 10.3	41.9	352 22.3	21.1	295 36.4	45.9	317 49.4	36.3
Á 10	292 26.1	7 11.5	42.0	7 22.7	20.9	310 38.3	45.7	332 51.6	36.2
B 11	307 28.5	22 12.7	42.1	22 23.2	20.8	325 40.2	45.5	347 53.7	36.2
A 12	322 31.0	37 13.9	S16 42.2	37 23.7	S23 20.6	340 42.1	S 8 45.2	2 55.9	S16 36.1
D 13	337 33.5	52 15.1	42.3	52 24.1	20.5	355 44.0	45.0	17 58.1	36.0
O 14	352 35.9	67 16.3	42.4	67 24.6	20.3	10 45.9	44.8	33 00.2	35.9
15	7 38.4	82 17.5	42.5	82 25.1	20.1	25 47.9	44.6	48 02.4	35.8
16	22 40.9	97 18.7	42.6	97 25.5	20.0	40 49.8	44.4	63 04.6	35.7
17	37 43.3	112 19.9	42.7	112 26.0	19.8	55 51.7	44.1	78 06.7	35.6
18	52 45.8	127 21.1	S16 42.8	127 26.5	S23 19.7	70 53.6	S 8 43.9	93 08.9	S16 35.5
19	67 48.3	142 22.3	42.9	142 26.9	19.5	85 55.5	43.7	108 11.1	35.5
20	82 50.7	157 23.4	43.0	157 27.4	19.3	100 57.4	43.5	123 13.2	35.4
21	97 53.2	172 24.6	43.1	172 27.9	19.2	115 59.3	43.2	138 15.4	35.3
22	112 55.6	187 25.8	43.2	187 28.3	19.0	131 01.2	43.0	153 17.6	35.2
23	127 58.1	202 27.0	43.2	202 28.8	18.8	146 03.1	42.8	168 19.7	35.1
13 00	143 00.6	217 28.1	S16 43.3	217 29.3	S23 18.7	161 05.0	S 8 42.6	183 21.9	S16 35.0
01	158 03.0	232 29.3	43.4	232 29.7	18.5	176 06.9	42.3	198 24.1	34.9
02	173 05.5	247 30.5	43.5	247 30.2	18.3	191 08.8	42.1	213 26.2	34.8
03	188 08.0	262 31.6	43.6	262 30.7	18.2	206 10.8	41.9	228 28.4	34.8
04	203 10.4	277 32.8	43.7	277 31.1	18.0	221 12.7	41.7	243 30.6	34.7
05	218 12.9	292 33.9	43.8	292 31.6	17.8	236 14.6	41.4	258 32.7	34.6
06	233 15.4	307 35.1	S16 43.9	307 32.1	S23 17.7	251 16.5	S 8 41.2	273 34.9	S16 34.5
07	248 17.8	322 36.2	44.0	322 32.5	17.5	266 18.4	41.0	288 37.1	34.4
D 08	263 20.3	337 37.4	44.1	337 33.0	17.3	281 20.3	40.8	303 39.2	34.3
O 09	278 22.8	352 38.5	44.2	352 33.5	17.2	296 22.2	40.5	318 41.4	34.2
M 10	293 25.2	7 39.7	44.3	7 34.0	17.0	311 24.1	40.3	333 43.6	34.1
I 11	308 27.7	22 40.8	44.4	22 34.4	16.8	326 26.0	40.1	348 45.7	34.1
N 12	323 30.1	37 41.9	S16 44.5	37 34.9	S23 16.7	341 27.9	S 8 39.9	3 47.9	S16 34.0
G 13	338 32.6	52 43.1	44.6	52 35.4	16.5	356 29.8	39.6	18 50.1	33.9
O 14	353 35.1	67 44.2	44.7	67 35.8	16.3	11 31.7	39.4	33 52.2	33.8
15	8 37.5	82 45.3	44.8	82 36.3	16.1	26 33.6	39.2	48 54.4	33.7
16	23 40.0	97 46.4	44.9	97 36.8	16.0	41 35.6	39.0	63 56.6	33.6
17	38 42.5	112 47.6	45.0	112 37.2	15.8	56 37.5	38.7	78 58.7	33.5
18	53 44.9	127 48.7	S16 45.1	127 37.7	S23 15.6	71 39.4	S 8 38.5	94 00.9	S16 33.4
19	68 47.4	142 49.8	45.2	142 38.2	15.5	86 41.3	38.3	109 03.1	33.4
20	83 49.9	157 50.9	45.3	157 38.6	15.3	101 43.2	38.1	124 05.2	33.3
21	98 52.3	172 52.0	45.4	172 39.1	15.1	116 45.1	37.8	139 07.4	33.2
22	113 54.8	187 53.1	45.5	187 39.6	14.9	131 47.0	37.6	154 09.6	33.1
23	128 57.3	202 54.2	45.6	202 40.0	14.8	146 48.9	37.4	169 11.7	33.0
14 00	143 59.7	217 55.3	S16 45.6	217 40.5	S23 14.6	161 50.8	S 8 37.2	184 13.9	S16 32.9
01	159 02.2	232 56.4	45.7	232 41.0	14.4	176 52.7	36.9	199 16.1	32.8
02	174 04.6	247 57.5	45.8	247 41.4	14.2	191 54.6	36.7	214 18.2	32.7
03	189 07.1	262 58.6	45.9	262 41.9	14.1	206 56.5	36.5	229 20.4	32.7
04	204 09.6	277 59.7	46.0	277 42.4	13.9	221 58.4	36.3	244 22.6	32.6
05	219 12.0	293 00.8	46.1	292 42.9	13.7	237 00.4	36.0	259 24.7	32.5
06	234 14.5	308 01.9	S16 46.2	307 43.3	S23 13.5	252 02.3	S 8 35.8	274 26.9	S16 32.4
07	249 17.0	323 02.9	46.3	322 43.8	13.3	267 04.2	35.6	289 29.1	32.3
L 08	264 19.4	338 04.0	46.4	337 44.3	13.2	282 06.1	35.4	304 31.2	32.2
U 09	279 21.9	353 05.1	46.5	352 44.7	13.0	297 08.0	35.1	319 33.4	32.1
N 10	294 24.4	8 06.2	46.6	7 45.2	12.8	312 09.9	34.9	334 35.6	32.0
E 11	309 26.8	23 07.2	46.7	22 45.7	12.6	327 11.8	34.7	349 37.7	32.0
S 12	324 29.3	38 08.3	S16 46.8	37 46.1	S23 12.5	342 13.7	S 8 34.5	4 39.9	S16 31.9
13	339 31.7	53 09.4	46.8	52 46.6	12.3	357 15.6	34.2	19 42.1	31.8
14	354 34.2	68 10.4	46.9	67 47.1	12.1	12 17.5	34.0	34 44.2	31.7
15	9 36.7	83 11.5	47.0	82 47.5	11.9	27 19.4	33.8	49 46.4	31.6
16	24 39.1	98 12.5	47.1	97 48.0	11.7	42 21.3	33.6	64 48.6	31.5
17	39 41.6	113 13.6	47.2	112 48.5	11.5	57 23.2	33.3	79 50.7	31.4
18	54 44.1	128 14.6	S16 47.3	127 48.9	S23 11.4	72 25.1	S 8 33.1	94 52.9	S16 31.3
19	69 46.5	143 15.7	47.4	142 49.4	11.2	87 27.1	32.9	109 55.1	31.3
20	84 49.0	158 16.7	47.5	157 49.9	11.0	102 29.0	32.7	124 57.2	31.2
21	99 51.5	173 17.8	47.6	172 50.4	10.8	117 30.9	32.4	139 59.4	31.1
22	114 53.9	188 18.8	47.6	187 50.8	10.6	132 32.8	32.2	155 01.6	31.0
23	129 56.4	203 19.9	47.7	202 51.3	10.4	147 34.7	32.0	170 03.7	30.9
	h m								
Paso Mer.	14 25.6	*v* 1.1	*d* 0.1	*v* 0.5	*d* 0.2	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.6	S40 13.3
Achernar	335 22.3	S57 07.8
Acrux	173 02.1	S63 13.1
Adhara	255 07.4	S29 00.3
Aldebaran	290 42.2	N16 33.2
Alioth	166 14.7	N55 50.2
Alkaid	152 53.7	N49 11.9
Alnair	27 36.4	S46 51.4
Alnilam	275 40.0	S 1 11.4
Alphard	217 49.8	S 8 45.3
Alphecca	126 05.8	N26 38.2
Alpheratz	357 37.5	N29 12.7
Altair	62 02.6	N 8 55.4
Ankaa	353 09.8	S42 11.5
Antares	112 18.8	S26 28.8
Arcturus	145 50.0	N19 03.9
Atria	107 15.4	S69 03.7
Avior	234 15.1	S59 34.9
Bellatrix	278 25.3	N 6 22.1
Betelgeuse	270 54.5	N 7 24.6
Canopus	263 53.1	S52 42.7
Capella	280 25.2	N46 01.3
Deneb	49 27.8	N45 21.4
Denebola	182 27.1	N14 26.8
Diphda	348 49.9	S17 52.2
Dubhe	193 43.3	N61 37.8
Elnath	278 04.7	N28 37.6
Eltanin	90 43.6	N51 28.9
Enif	33 41.4	N 9 58.4
Fomalhaut	15 17.5	S29 30.5
Gacrux	171 53.8	S57 14.0
Gienah	175 45.8	S17 39.8
Hadar	148 39.1	S60 28.5
Hamal	327 54.0	N23 34.0
Kaus Aust.	83 35.9	S34 22.4
Kochab	137 19.6	N74 03.6
Markab	13 32.6	N15 19.3
Menkar	314 08.7	N 4 10.4
Menkent	148 00.3	S36 28.5
Miaplacidus	221 37.8	S69 48.4
Mirfak	308 31.6	N49 56.5
Nunki	75 51.0	S26 16.2
Peacock	53 10.0	S56 39.8
Pollux	243 19.9	N27 58.3
Procyon	244 53.0	N 5 10.0
Rasalhague	96 00.9	N12 32.5
Regulus	207 36.6	N11 51.5
Rigel	281 06.0	S 8 10.7
Rigil Kent.	139 43.4	S60 55.3
Sabik	102 05.6	S15 45.1
Schedar	349 34.1	N56 39.6
Shaula	96 13.8	S37 07.1
Sirius	258 28.1	S16 44.9
Spica	158 24.6	S11 16.6
Suhail	222 47.6	S43 31.3
Vega	80 35.1	N38 48.0
Zuben'ubi	136 58.6	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	74 27.6	9 29
Marte	74 28.7	9 30
Júpiter	18 04.5	13 14
Saturno	40 21.3	11 45

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	′	°	′	′	′
12 00	176	27.1	S13	46.3	51	43.1	10.5	N26	08.6	2.1	54.2
01	191	27.1		45.5	66	12.6	10.4	26	10.7	1.9	54.2
02	206	27.1		44.6	80	42.0	10.5	26	12.6	1.8	54.2
03	221	27.2	. .	43.8	95	11.5	10.4	26	14.4	1.7	54.2
04	236	27.2		43.0	109	40.9	10.3	26	16.1	1.6	54.2
05	251	27.2		42.2	124	10.2	10.4	26	17.7	1.4	54.2
06	266	27.2	S13	41.3	138	39.6	10.3	N26	19.1	1.3	54.3
07	281	27.2		40.5	153	08.9	10.3	26	20.4	1.2	54.3
S 08	296	27.2		39.7	167	38.2	10.3	26	21.6	1.1	54.3
Á 09	311	27.2	. .	38.8	182	07.5	10.2	26	22.7	0.9	54.3
B 10	326	27.2		38.0	196	36.7	10.3	26	23.6	0.8	54.3
A 11	341	27.2		37.2	211	06.0	10.2	26	24.4	0.7	54.3
D 12	356	27.2	S13	36.3	225	35.2	10.2	N26	25.1	0.6	54.3
O 13	11	27.2		35.5	240	04.4	10.1	26	25.7	0.4	54.3
14	26	27.2		34.7	254	33.5	10.2	26	26.1	0.3	54.3
15	41	27.3	. .	33.8	269	02.7	10.1	26	26.4	0.1	54.3
16	56	27.3		33.0	283	31.8	10.2	26	26.5	0.1	54.3
17	71	27.3		32.2	298	01.0	10.1	26	26.6	0.1	54.3
18	86	27.3	S13	31.3	312	30.1	10.1	N26	26.5	0.3	54.4
19	101	27.3		30.5	326	59.2	10.0	26	26.2	0.3	54.4
20	116	27.3		29.6	341	28.2	10.1	26	25.9	0.5	54.4
21	131	27.3	. .	28.8	355	57.3	10.1	26	25.4	0.6	54.4
22	146	27.3		28.0	10	26.4	10.0	26	24.8	0.8	54.4
23	161	27.3		27.1	24	55.4	10.1	26	24.0	0.8	54.4
13 00	176	27.4	S13	26.3	39	24.5	10.0	N26	23.2	1.0	54.4
01	191	27.4		25.4	53	53.5	10.0	26	22.2	1.2	54.4
02	206	27.4		24.6	68	22.5	10.1	26	21.0	1.2	54.4
03	221	27.4	. .	23.8	82	51.6	10.0	26	19.8	1.4	54.5
04	236	27.4		22.9	97	20.6	10.0	26	18.4	1.6	54.5
05	251	27.4		22.1	111	49.6	10.0	26	16.8	1.6	54.5
06	266	27.4	S13	21.2	126	18.6	10.0	N26	15.2	1.8	54.5
07	281	27.5		20.4	140	47.6	10.0	26	13.4	1.9	54.5
D 08	296	27.5		19.6	155	16.6	10.1	26	11.5	2.1	54.5
O 09	311	27.5	. .	18.7	169	45.7	10.0	26	09.4	2.1	54.5
M 10	326	27.5		17.9	184	14.7	10.0	26	07.3	2.3	54.5
I 11	341	27.5		17.0	198	43.7	10.0	26	05.0	2.5	54.5
N 12	356	27.5	S13	16.2	213	12.7	10.0	N26	02.5	2.6	54.6
G 13	11	27.6		15.4	227	41.7	10.1	25	59.9	2.7	54.6
O 14	26	27.6		14.5	242	10.8	10.0	25	57.2	2.8	54.6
15	41	27.6	. .	13.7	256	39.8	10.1	25	54.4	2.9	54.6
16	56	27.6		12.8	271	08.9	10.0	25	51.5	3.1	54.6
17	71	27.6		12.0	285	37.9	10.1	25	48.4	3.2	54.6
18	86	27.7	S13	11.1	300	07.0	10.1	N25	45.2	3.4	54.6
19	101	27.7		10.3	314	36.1	10.0	25	41.8	3.5	54.7
20	116	27.7		09.4	329	05.1	10.1	25	38.3	3.6	54.7
21	131	27.7	. .	08.6	343	34.2	10.2	25	34.7	3.7	54.7
22	146	27.7		07.7	358	03.4	10.1	25	31.0	3.9	54.7
23	161	27.8		06.9	12	32.5	10.1	25	27.1	4.0	54.7
14 00	176	27.8	S13	06.0	27	01.6	10.2	N25	23.1	4.1	54.7
01	191	27.8		05.2	41	30.8	10.2	25	19.0	4.2	54.7
02	206	27.8		04.4	56	00.0	10.1	25	14.8	4.4	54.8
03	221	27.8	. .	03.5	70	29.1	10.3	25	10.4	4.5	54.8
04	236	27.9		02.7	84	58.4	10.2	25	05.9	4.6	54.8
05	251	27.9		01.8	99	27.6	10.2	25	01.3	4.8	54.8
06	266	27.9	S13	01.0	113	56.8	10.3	N24	56.5	4.9	54.8
07	281	27.9	13	00.1	128	26.1	10.3	24	51.6	5.0	54.8
L 08	296	28.0	12	59.3	142	55.4	10.3	24	46.6	5.1	54.9
U 09	311	28.0	. .	58.4	157	24.7	10.4	24	41.5	5.3	54.9
N 10	326	28.0		57.6	171	54.1	10.3	24	36.2	5.3	54.9
E 11	341	28.0		56.7	186	23.4	10.4	24	30.9	5.5	54.9
S 12	356	28.0	S12	55.9	200	52.8	10.5	N24	25.4	5.7	54.9
13	11	28.1		55.0	215	22.3	10.4	24	19.7	5.7	54.9
14	26	28.1		54.1	229	51.7	10.5	24	14.0	5.9	55.0
15	41	28.1	. .	53.3	244	21.2	10.5	24	08.1	6.0	55.0
16	56	28.2		52.4	258	50.7	10.5	24	02.1	6.1	55.0
17	71	28.2		51.6	273	20.2	10.6	23	56.0	6.3	55.0
18	86	28.2	S12	50.7	287	49.8	10.5	N23	49.7	6.3	55.0
19	101	28.2		49.9	302	19.3	10.7	23	43.4	6.5	55.0
20	116	28.3		49.0	316	49.0	10.6	23	36.9	6.6	55.1
21	131	28.3	. .	48.2	331	18.6	10.7	23	30.3	6.7	55.1
22	146	28.3		47.3	345	48.3	10.7	23	23.6	6.9	55.1
23	161	28.3		46.5	0	18.0	10.8	N23	16.7	7.0	55.1
	S/D	16.2	d	0.8	S/D	14.8		14.9		15.0	

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		12	13	14	15
°	h m	h m	h m	h m	h m	h m	h m
N 72	06 23	07 44	09 05	▭	▭	▭	▭
N 70	06 20	07 33	08 44	▭	▭	▭	▭
68	06 18	07 24	08 27	▭	▭	▭	12 18
66	06 16	07 16	08 13	▭	▭	▭	13 23
64	06 14	07 10	08 02	▭	▭	12 05	13 57
62	06 12	07 04	07 52	10 21	11 20	12 46	14 23
60	06 10	06 59	07 44	11 00	11 57	13 15	14 42
N 58	06 09	06 55	07 36	11 27	12 24	13 36	14 58
56	06 07	06 51	07 30	11 49	12 44	13 54	15 12
54	06 06	06 47	07 24	12 06	13 02	14 09	15 24
52	06 04	06 44	07 19	12 21	13 16	14 22	15 34
50	06 03	06 41	07 14	12 34	13 29	14 33	15 44
45	05 59	06 34	07 04	13 01	13 55	14 57	16 03
N 40	05 56	06 28	06 56	13 22	14 16	15 16	16 19
35	05 52	06 22	06 48	13 40	14 33	15 31	16 32
30	05 49	06 17	06 42	13 55	14 48	15 45	16 44
20	05 42	06 08	06 30	14 21	15 14	16 08	17 03
N 10	05 34	05 59	06 20	14 44	15 35	16 28	17 20
0	05 25	05 50	06 11	15 04	15 56	16 47	17 36
S 10	05 14	05 39	06 01	15 25	16 16	17 05	17 52
20	05 01	05 28	05 51	15 48	16 38	17 25	18 09
30	04 44	05 14	05 39	16 14	17 03	17 48	18 29
35	04 33	05 05	05 32	16 29	17 18	18 01	18 40
40	04 20	04 55	05 24	16 47	17 35	18 17	18 53
45	04 03	04 42	05 14	17 08	17 55	18 35	19 08
S 50	03 42	04 27	05 03	17 35	18 21	18 58	19 26
52	03 31	04 20	04 57	17 49	18 34	19 09	19 35
54	03 19	04 11	04 52	18 04	18 48	19 21	19 45
56	03 05	04 02	04 45	18 22	19 05	19 35	19 56
58	02 47	03 51	04 38	18 44	19 25	19 51	20 08
S 60	02 26	03 39	04 29	19 12	19 50	20 11	20 23

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	12	13	14	15
°	h m	h m	h m	h m	h m	h m	h m
N 72	15 24	16 46	18 07	▭	▭	▭	▭
N 70	15 46	16 57	18 10	▭	▭	▭	▭
68	16 03	17 06	18 12	▭	▭	▭	10 42
66	16 17	17 13	18 14	▭	▭	▭	09 37
64	16 28	17 20	18 16	▭	▭	09 09	09 01
62	16 37	17 25	18 17	07 20	08 07	08 28	08 36
60	16 46	17 30	18 19	06 41	07 30	07 59	08 15
N 58	16 53	17 34	18 21	06 14	07 04	07 37	07 58
56	16 59	17 38	18 22	05 53	06 43	07 19	07 44
54	17 05	17 42	18 24	05 35	06 26	07 04	07 32
52	17 10	17 45	18 25	05 20	06 11	06 51	07 21
50	17 15	17 48	18 26	05 07	05 58	06 39	07 11
45	17 25	17 55	18 30	04 40	05 31	06 15	06 51
N 40	17 33	18 01	18 33	04 19	05 10	05 55	06 34
35	17 41	18 07	18 36	04 02	04 53	05 39	06 20
30	17 47	18 12	18 40	03 47	04 38	05 25	06 08
20	17 58	18 21	18 47	03 21	04 12	05 01	05 47
N 10	18 08	18 30	18 55	02 59	03 50	04 40	05 28
0	18 18	18 39	19 03	02 38	03 29	04 20	05 11
S 10	18 27	18 49	19 14	02 17	03 08	04 01	04 53
20	18 37	19 00	19 27	01 55	02 46	03 40	04 35
30	18 49	19 14	19 44	01 30	02 20	03 15	04 13
35	18 56	19 23	19 55	01 15	02 05	03 01	04 00
40	19 04	19 33	20 08	00 57	01 47	02 44	03 46
45	19 13	19 45	20 24	00 36	01 26	02 24	03 28
S 50	19 24	20 00	20 45	00 09	00 59	01 58	03 06
52	19 30	20 07	20 55	24 45	00 45	01 46	02 56
54	19 35	20 15	21 07	24 30	00 30	01 32	02 44
56	19 42	20 24	21 21	24 12	00 12	01 15	02 30
58	19 49	20 35	21 38	23 50	24 56	00 56	02 14
S 60	19 57	20 47	21 59	23 22	24 31	00 31	01 55

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
12	14 11	14 11	12 14	21 17	08 51	11 84	
13	14 11	14 10	12 14	22 08	09 42	12 90	
14	14 09	14 08	12 14	22 59	10 34	13 95	

UT (HmGr)	ARIES	VENUS −4·9		MARTE +1·3		JÚPITER −2·0		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
15 00	144 58.9	218 20.9	S16 47.8	217 51.8	S23 10.3	162 36.6	S 8 31.8	185 05.9	S16 30.8
01	160 01.3	233 21.9	47.9	232 52.2	10.1	177 38.5	31.5	200 08.1	30.7
02	175 03.8	248 23.0	48.0	247 52.7	09.9	192 40.4	31.3	215 10.3	30.7
03	190 06.2	263 24.0	48.1	262 53.2	09.7	207 42.3	31.1	230 12.4	30.6
04	205 08.7	278 25.0	48.2	277 53.6	09.5	222 44.2	30.9	245 14.6	30.5
05	220 11.2	293 26.0	48.3	292 54.1	09.3	237 46.1	30.6	260 16.8	30.4
06	235 13.6	308 27.0	S16 48.3	307 54.6	S23 09.1	252 48.0	S 8 30.4	275 18.9	S16 30.3
07	250 16.1	323 28.1	48.4	322 55.0	09.0	267 49.9	30.2	290 21.1	30.2
08	265 18.6	338 29.1	48.5	337 55.5	08.8	282 51.8	30.0	305 23.3	30.1
M 09	280 21.0	353 30.1	48.6	352 56.0	08.6	297 53.7	29.7	320 25.4	30.0
A 10	295 23.5	8 31.1	48.7	7 56.5	08.4	312 55.7	29.5	335 27.6	30.0
R 11	310 26.0	23 32.1	48.8	22 56.9	08.2	327 57.6	29.3	350 29.8	29.9
T 12	325 28.4	38 33.1	S16 48.8	37 57.4	S23 08.0	342 59.5	S 8 29.1	5 31.9	S16 29.8
E 13	340 30.9	53 34.1	48.9	52 57.9	07.8	358 01.4	28.8	20 34.1	29.7
S 14	355 33.4	68 35.1	49.0	67 58.3	07.6	13 03.3	28.6	35 36.3	29.6
15	10 35.8	83 36.1	49.1	82 58.8	07.4	28 05.2	28.4	50 38.4	29.5
16	25 38.3	98 37.1	49.2	97 59.3	07.2	43 07.1	28.1	65 40.6	29.4
17	40 40.7	113 38.1	49.3	112 59.7	07.1	58 09.0	27.9	80 42.8	29.3
18	55 43.2	128 39.1	S16 49.3	128 00.2	S23 06.9	73 10.9	S 8 27.7	95 44.9	S16 29.3
19	70 45.7	143 40.0	49.4	143 00.7	06.7	88 12.8	27.5	110 47.1	29.2
20	85 48.1	158 41.0	49.5	158 01.2	06.5	103 14.7	27.2	125 49.3	29.1
21	100 50.6	173 42.0	49.6	173 01.6	06.3	118 16.6	27.0	140 51.4	29.0
22	115 53.1	188 43.0	49.7	188 02.1	06.1	133 18.5	26.8	155 53.6	28.9
23	130 55.5	203 44.0	49.8	203 02.6	05.9	148 20.4	26.6	170 55.8	28.8
16 00	145 58.0	218 44.9	S16 49.8	218 03.0	S23 05.7	163 22.3	S 8 26.3	185 57.9	S16 28.7
01	161 00.5	233 45.9	49.9	233 03.5	05.5	178 24.2	26.1	201 00.1	28.6
02	176 02.9	248 46.9	50.0	248 04.0	05.3	193 26.1	25.9	216 02.3	28.6
03	191 05.4	263 47.8	50.1	263 04.4	05.1	208 28.1	25.7	231 04.5	28.5
04	206 07.9	278 48.8	50.2	278 04.9	04.9	223 30.0	25.4	246 06.6	28.4
05	221 10.3	293 49.7	50.2	293 05.4	04.7	238 31.9	25.2	261 08.8	28.3
06	236 12.8	308 50.7	S16 50.3	308 05.9	S23 04.5	253 33.8	S 8 25.0	276 11.0	S16 28.2
07	251 15.2	323 51.7	50.4	323 06.3	04.3	268 35.7	24.8	291 13.1	28.1
M 08	266 17.7	338 52.6	50.5	338 06.8	04.1	283 37.6	24.5	306 15.3	28.0
I 09	281 20.2	353 53.6	50.5	353 07.3	03.9	298 39.5	24.3	321 17.5	27.9
É 10	296 22.6	8 54.5	50.6	8 07.7	03.7	313 41.4	24.1	336 19.6	27.9
R 11	311 25.1	23 55.4	50.7	23 08.2	03.5	328 43.3	23.9	351 21.8	27.8
C 12	326 27.6	38 56.4	S16 50.8	38 08.7	S23 03.3	343 45.2	S 8 23.6	6 24.0	S16 27.7
O 13	341 30.0	53 57.3	50.9	53 09.1	03.1	358 47.1	23.4	21 26.1	27.6
L 14	356 32.5	68 58.3	50.9	68 09.6	02.9	13 49.0	23.2	36 28.3	27.5
E 15	11 35.0	83 59.2	51.0	83 10.1	02.7	28 50.9	22.9	51 30.5	27.4
S 16	26 37.4	99 00.1	51.1	98 10.6	02.5	43 52.8	22.7	66 32.6	27.3
17	41 39.9	114 01.0	51.2	113 11.0	02.3	58 54.7	22.5	81 34.8	27.2
18	56 42.3	129 02.0	S16 51.2	128 11.5	S23 02.1	73 56.6	S 8 22.3	96 37.0	S16 27.2
19	71 44.8	144 02.9	51.3	143 12.0	01.9	88 58.5	22.0	111 39.1	27.1
20	86 47.3	159 03.8	51.4	158 12.4	01.7	104 00.5	21.8	126 41.3	27.0
21	101 49.7	174 04.7	51.5	173 12.9	01.5	119 02.4	21.6	141 43.5	26.9
22	116 52.2	189 05.6	51.5	188 13.4	01.3	134 04.3	21.4	156 45.7	26.8
23	131 54.7	204 06.6	51.6	203 13.9	01.1	149 06.2	21.1	171 47.8	26.7
17 00	146 57.1	219 07.5	S16 51.7	218 14.3	S23 00.9	164 08.1	S 8 20.9	186 50.0	S16 26.6
01	161 59.6	234 08.4	51.7	233 14.8	00.7	179 10.0	20.7	201 52.2	26.6
02	177 02.1	249 09.3	51.8	248 15.3	00.5	194 11.9	20.5	216 54.3	26.5
03	192 04.5	264 10.2	51.9	263 15.7	00.3	209 13.8	20.2	231 56.5	26.4
04	207 07.0	279 11.1	52.0	278 16.2	23 00.1	224 15.7	20.0	246 58.7	26.3
05	222 09.5	294 12.0	52.0	293 16.7	22 59.9	239 17.6	19.8	262 00.8	26.2
06	237 11.9	309 12.9	S16 52.1	308 17.2	S22 59.7	254 19.5	S 8 19.5	277 03.0	S16 26.1
07	252 14.4	324 13.8	52.2	323 17.6	59.5	269 21.4	19.3	292 05.2	26.0
J 08	267 16.8	339 14.7	52.2	338 18.1	59.3	284 23.3	19.1	307 07.3	25.9
U 09	282 19.3	354 15.6	52.3	353 18.6	59.0	299 25.2	18.9	322 09.5	25.9
E 10	297 21.8	9 16.4	52.4	8 19.0	58.8	314 27.1	18.6	337 11.7	25.8
V 11	312 24.2	24 17.3	52.4	23 19.5	58.6	329 29.0	18.4	352 13.8	25.7
E 12	327 26.7	39 18.2	S16 52.5	38 20.0	S22 58.4	344 30.9	S 8 18.2	7 16.0	S16 25.6
S 13	342 29.2	54 19.1	52.6	53 20.5	58.2	359 32.8	18.0	22 18.2	25.5
14	357 31.6	69 20.0	52.7	68 20.9	58.0	14 34.7	17.7	37 20.4	25.4
15	12 34.1	84 20.8	52.7	83 21.4	57.8	29 36.7	17.5	52 22.5	25.3
16	27 36.6	99 21.7	52.8	98 21.9	57.6	44 38.6	17.3	67 24.7	25.2
17	42 39.0	114 22.6	52.9	113 22.3	57.4	59 40.5	17.1	82 26.9	25.2
18	57 41.5	129 23.4	S16 52.9	128 22.8	S22 57.1	74 42.4	S 8 16.8	97 29.0	S16 25.1
19	72 43.9	144 24.3	53.0	143 23.3	56.9	89 44.3	16.6	112 31.2	25.0
20	87 46.4	159 25.2	53.0	158 23.8	56.7	104 46.2	16.4	127 33.4	24.9
21	102 48.9	174 26.0	53.1	173 24.2	56.5	119 48.1	16.1	142 35.5	24.8
22	117 51.3	189 26.9	53.2	188 24.7	56.3	134 50.0	15.9	157 37.7	24.7
23	132 53.8	204 27.7	53.2	203 25.2	56.1	149 51.9	15.7	172 39.9	24.6
	h m								
Paso Mer.	14 13.8	*v* 0.9	*d* 0.1	*v* 0.5	*d* 0.2	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.7	S40 13.3
Achernar	335 22.3	S57 07.8
Acrux	173 02.1	S63 13.1
Adhara	255 07.4	S29 00.3
Aldebaran	290 42.2	N16 33.2
Alioth	166 14.7	N55 50.2
Alkaid	152 53.7	N49 11.9
Alnair	27 36.4	S46 51.4
Alnilam	275 40.0	S 1 11.4
Alphard	217 49.7	S 8 45.3
Alphecca	126 05.7	N26 38.2
Alpheratz	357 37.5	N29 12.7
Altair	62 02.5	N 8 55.4
Ankaa	353 09.8	S42 11.5
Antares	112 18.8	S26 28.8
Arcturus	145 50.0	N19 03.9
Atria	107 15.3	S69 03.7
Avior	234 15.1	S59 34.9
Bellatrix	278 25.3	N 6 22.1
Betelgeuse	270 54.5	N 7 24.6
Canopus	263 53.1	S52 42.7
Capella	280 25.2	N46 01.3
Deneb	49 27.8	N45 21.4
Denebola	182 27.1	N14 26.8
Diphda	348 49.9	S17 52.2
Dubhe	193 43.3	N61 37.8
Elnath	278 04.7	N28 37.6
Eltanin	90 43.6	N51 28.9
Enif	33 41.4	N 9 58.4
Fomalhaut	15 17.5	S29 30.5
Gacrux	171 53.8	S57 14.0
Gienah	175 45.8	S17 39.8
Hadar	148 39.1	S60 28.5
Hamal	327 54.0	N23 34.0
Kaus Aust.	83 35.9	S34 22.4
Kochab	137 19.6	N74 03.6
Markab	13 32.6	N15 19.3
Menkar	314 08.7	N 4 10.4
Menkent	148 00.2	S36 28.6
Miaplacidus	221 37.8	S69 48.5
Mirfak	308 31.7	N49 56.5
Nunki	75 51.0	S26 16.2
Peacock	53 10.0	S56 39.8
Pollux	243 19.9	N27 58.3
Procyon	244 53.0	N 5 10.0
Rasalhague	96 00.9	N12 32.5
Regulus	207 36.6	N11 51.5
Rigel	281 06.0	S 8 10.7
Rigil Kent.	139 43.3	S60 55.3
Sabik	102 05.6	S15 45.1
Schedar	349 34.1	N56 39.6
Shaula	96 13.8	S37 07.1
Sirius	258 28.1	S16 45.0
Spica	158 24.6	S11 16.6
Suhail	222 47.6	S43 31.4
Vega	80 35.1	N38 48.0
Zuben'ubi	136 58.6	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	72 46.9	9 24
Marte	72 05.0	9 28
Júpiter	17 24.3	13 05
Saturno	40 00.0	11 34

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	′	°	′	′	′
15 00	176	28.4	S12	45.6	14	47.8	10.8	N23	09.7	7.0	55.1
01	191	28.4		44.7	29	17.6	10.8	23	02.7	7.2	55.2
02	206	28.4		43.9	43	47.4	10.8	22	55.5	7.3	55.2
03	221	28.5	. .	43.0	58	17.2	10.9	22	48.2	7.5	55.2
04	236	28.5		42.2	72	47.1	10.9	22	40.7	7.5	55.2
05	251	28.5		41.3	87	17.0	11.0	22	33.2	7.7	55.2
06	266	28.5	S12	40.5	101	47.0	11.0	N22	25.5	7.8	55.3
07	281	28.6		39.6	116	17.0	11.0	22	17.7	7.9	55.3
M 08	296	28.6		38.7	130	47.0	11.1	22	09.8	8.0	55.3
A 09	311	28.6	. .	37.9	145	17.1	11.1	22	01.8	8.1	55.3
R 10	326	28.7		37.0	159	47.2	11.1	21	53.7	8.2	55.3
T 11	341	28.7		36.2	174	17.3	11.2	21	45.5	8.3	55.3
E 12	356	28.7	S12	35.3	188	47.5	11.2	N21	37.2	8.5	55.4
S 13	11	28.8		34.4	203	17.7	11.3	21	28.7	8.5	55.4
14	26	28.8		33.6	217	48.0	11.3	21	20.2	8.7	55.4
15	41	28.8	. .	32.7	232	18.3	11.3	21	11.5	8.8	55.4
16	56	28.9		31.9	246	48.6	11.4	21	02.7	8.9	55.4
17	71	28.9		31.0	261	19.0	11.4	20	53.8	9.0	55.5
18	86	28.9	S12	30.1	275	49.4	11.5	N20	44.8	9.0	55.5
19	101	29.0		29.3	290	19.9	11.5	20	35.8	9.2	55.5
20	116	29.0		28.4	304	50.4	11.5	20	26.6	9.4	55.5
21	131	29.0	. .	27.5	319	20.9	11.6	20	17.2	9.4	55.5
22	146	29.1		26.7	333	51.5	11.6	20	07.8	9.5	55.6
23	161	29.1		25.8	348	22.1	11.7	19	58.3	9.6	55.6
16 00	176	29.2	S12	24.9	2	52.8	11.7	N19	48.7	9.7	55.6
01	191	29.2		24.1	17	23.5	11.7	19	39.0	9.8	55.6
02	206	29.2		23.2	31	54.2	11.8	19	29.2	9.9	55.6
03	221	29.3	. .	22.3	46	25.0	11.8	19	19.3	10.0	55.7
04	236	29.3		21.5	60	55.8	11.9	19	09.3	10.2	55.7
05	251	29.3		20.6	75	26.7	11.9	18	59.1	10.2	55.7
06	266	29.4	S12	19.7	89	57.6	12.0	N18	48.9	10.3	55.7
07	281	29.4		18.9	104	28.6	11.9	18	38.6	10.4	55.7
M 08	296	29.5		18.0	118	59.5	12.1	18	28.2	10.5	55.8
I 09	311	29.5	. .	17.1	133	30.6	12.0	18	17.7	10.6	55.8
É 10	326	29.5		16.3	148	01.6	12.1	18	07.1	10.7	55.8
R 11	341	29.6		15.4	162	32.7	12.2	17	56.4	10.7	55.8
C 12	356	29.6	S12	14.5	177	03.9	12.2	N17	45.7	10.9	55.9
O 13	11	29.6		13.7	191	35.1	12.2	17	34.8	11.0	55.9
L 14	26	29.7		12.8	206	06.3	12.3	17	23.8	11.0	55.9
E 15	41	29.7	. .	11.9	220	37.6	12.3	17	12.8	11.1	55.9
S 16	56	29.8		11.1	235	08.9	12.3	17	01.7	11.3	55.9
17	71	29.8		10.2	249	40.2	12.4	16	50.4	11.3	56.0
18	86	29.9	S12	09.3	264	11.6	12.4	N16	39.1	11.4	56.0
19	101	29.9		08.5	278	43.0	12.5	16	27.7	11.5	56.0
20	116	29.9		07.6	293	14.5	12.5	16	16.2	11.5	56.0
21	131	30.0	. .	06.7	307	46.0	12.5	16	04.7	11.7	56.0
22	146	30.0		05.8	322	17.5	12.6	15	53.0	11.7	56.1
23	161	30.1		05.0	336	49.1	12.6	15	41.3	11.8	56.1
17 00	176	30.1	S12	04.1	351	20.7	12.6	N15	29.5	11.9	56.1
01	191	30.2		03.2	5	52.3	12.7	15	17.6	12.0	56.1
02	206	30.2		02.3	20	24.0	12.7	15	05.6	12.0	56.1
03	221	30.2	. .	01.5	34	55.7	12.8	14	53.6	12.2	56.2
04	236	30.3	12	00.6	49	27.5	12.8	14	41.4	12.2	56.2
05	251	30.3	11	59.7	63	59.3	12.8	14	29.2	12.2	56.2
06	266	30.4	S11	58.8	78	31.1	12.8	N14	17.0	12.4	56.2
07	281	30.4		58.0	93	02.9	12.9	14	04.6	12.4	56.2
J 08	296	30.5		57.1	107	34.8	13.0	13	52.2	12.5	56.3
U 09	311	30.5	. .	56.2	122	06.8	12.9	13	39.7	12.6	56.3
E 10	326	30.6		55.3	136	38.7	13.0	13	27.1	12.7	56.3
V 11	341	30.6		54.5	151	10.7	13.0	13	14.4	12.7	56.3
E 12	356	30.7	S11	53.6	165	42.7	13.1	N13	01.7	12.8	56.4
S 13	11	30.7		52.7	180	14.8	13.0	12	48.9	12.8	56.4
14	26	30.8		51.8	194	46.8	13.1	12	36.1	12.9	56.4
15	41	30.8	. .	51.0	209	18.9	13.2	12	23.2	13.0	56.4
16	56	30.8		50.1	223	51.1	13.1	12	10.2	13.0	56.4
17	71	30.9		49.2	238	23.2	13.2	11	57.2	13.2	56.5
18	86	30.9	S11	48.3	252	55.4	13.2	N11	44.0	13.1	56.5
19	101	31.0		47.4	267	27.6	13.3	11	30.9	13.3	56.5
20	116	31.0		46.6	281	59.9	13.2	11	17.6	13.3	56.5
21	131	31.1	. .	45.7	296	32.1	13.3	11	04.3	13.3	56.5
22	146	31.1		44.8	311	04.4	13.4	10	51.0	13.4	56.6
23	161	31.2		43.9	325	36.8	13.3	N10	37.6	13.5	56.6
	S/D	16.2	d	0.9	S/D	15.1		15.2			15.4

Lat.	Aurora				Orto Sol		Orto Luna							
	Náut.		Civil				15		16		17		18	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	06	10	07	30	08	48			13	14	16	22	18	39
N 70	06	09	07	21	08	29			14	23	16	45	18	48
68	06	08	07	13	08	14	12	18	14	59	17	02	18	55
66	06	07	07	07	08	02	13	23	15	25	17	15	19	01
64	06	05	07	01	07	52	13	57	15	44	17	26	19	06
62	06	04	06	56	07	43	14	23	16	00	17	36	19	11
60	06	03	06	52	07	36	14	42	16	13	17	44	19	14
N 58	06	02	06	48	07	29	14	58	16	24	17	51	19	18
56	06	01	06	44	07	23	15	12	16	34	17	57	19	21
54	06	00	06	41	07	18	15	24	16	43	18	03	19	23
52	05	59	06	38	07	13	15	34	16	50	18	08	19	26
50	05	58	06	36	07	09	15	44	16	57	18	12	19	28
45	05	55	06	29	07	00	16	03	17	12	18	22	19	32
N 40	05	52	06	24	06	52	16	19	17	24	18	30	19	36
35	05	50	06	19	06	45	16	32	17	34	18	37	19	40
30	05	47	06	15	06	39	16	44	17	43	18	43	19	43
20	05	40	06	06	06	29	17	03	17	59	18	53	19	48
N 10	05	33	05	58	06	19	17	20	18	12	19	03	19	52
0	05	25	05	49	06	11	17	36	18	24	19	11	19	56
S 10	05	15	05	40	06	02	17	52	18	37	19	19	20	01
20	05	03	05	29	05	52	18	09	18	50	19	28	20	05
30	04	47	05	16	05	41	18	29	19	05	19	39	20	10
35	04	36	05	08	05	35	18	40	19	14	19	44	20	13
40	04	24	04	59	05	27	18	53	19	24	19	51	20	16
45	04	09	04	47	05	19	19	08	19	35	19	59	20	20
S 50	03	49	04	33	05	08	19	26	19	49	20	08	20	25
52	03	39	04	26	05	03	19	35	19	56	20	12	20	27
54	03	28	04	18	04	58	19	45	20	03	20	17	20	29
56	03	14	04	10	04	52	19	56	20	11	20	22	20	31
58	02	59	04	00	04	45	20	08	20	20	20	28	20	34
S 60	02	39	03	48	04	37	20	23	20	30	20	34	20	37

Lat.	Ocaso Sol		Crepúsculo				Ocaso Luna							
			Civil		Náut.		15		16		17		18	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	15	42	17	00	18	20			11	30	10	01	09	21
N 70	16	01	17	09	18	21			10	20	09	36	09	09
68	16	15	17	17	18	22	10	42	09	43	09	18	09	00
66	16	28	17	23	18	23	09	37	09	16	09	02	08	52
64	16	38	17	28	18	24	09	01	08	55	08	50	08	45
62	16	46	17	33	18	25	08	36	08	38	08	39	08	39
60	16	54	17	37	18	26	08	15	08	24	08	30	08	34
N 58	17	00	17	41	18	27	07	58	08	12	08	22	08	29
56	17	06	17	45	18	28	07	44	08	02	08	15	08	25
54	17	11	17	48	18	29	07	32	07	53	08	08	08	21
52	17	16	17	51	18	30	07	21	07	44	08	03	08	18
50	17	20	17	53	18	31	07	11	07	37	07	57	08	15
45	17	29	17	59	18	34	06	51	07	21	07	46	08	08
N 40	17	37	18	05	18	36	06	34	07	07	07	36	08	03
35	17	44	18	09	18	39	06	20	06	56	07	28	07	58
30	17	49	18	14	18	42	06	08	06	46	07	21	07	53
20	18	00	18	22	18	48	05	47	06	29	07	08	07	46
N 10	18	09	18	30	18	55	05	28	06	14	06	57	07	39
0	18	17	18	39	19	03	05	11	06	00	06	47	07	33
S 10	18	26	18	48	19	13	04	53	05	45	06	36	07	26
20	18	36	18	58	19	25	04	35	05	30	06	25	07	20
30	18	47	19	11	19	41	04	13	05	12	06	12	07	12
35	18	53	19	19	19	51	04	00	05	02	06	04	07	07
40	19	00	19	29	20	03	03	46	04	50	05	56	07	02
45	19	09	19	40	20	18	03	28	04	36	05	46	06	56
S 50	19	19	19	54	20	38	03	06	04	19	05	33	06	48
52	19	24	20	01	20	47	02	56	04	10	05	27	06	45
54	19	29	20	08	20	58	02	44	04	01	05	21	06	41
56	19	35	20	17	21	11	02	30	03	51	05	14	06	37
58	19	41	20	26	21	26	02	14	03	39	05	06	06	32
S 60	19	49	20	37	21	45	01	55	03	25	04	56	06	27

Día	SOL				Paso Mer.	LUNA					
	Ec. Tiempo					Paso Mer.				Edad	Fase
	00^h		12^h			Sup.		Inf.			
d	m	s	m	s	h	m	h	m		d	%
15	14	07	14	05	12	14	23	48	11	24	14	98	
16	14	03	14	02	12	14	24	36	12	12	15	100	
17	14	00	13	57	12	14	00	36	12	59	16	99	

UT (HmGr)	ARIES	VENUS −4·8		MARTE +1·3		JÚPITER −2·0		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
18 00	147 56.3	219 28.6	S16 53.3	218 25.6	S22 55.9	164 53.8	S 8 15.5	187 42.1	S16 24.5
01	162 58.7	234 29.4	53.4	233 26.1	55.7	179 55.7	15.2	202 44.2	24.5
02	178 01.2	249 30.3	53.4	248 26.6	55.4	194 57.6	15.0	217 46.4	24.4
03	193 03.7	264 31.1	53.5	263 27.1	55.2	209 59.5	14.8	232 48.6	24.3
04	208 06.1	279 32.0	53.6	278 27.5	55.0	225 01.4	14.6	247 50.7	24.2
05	223 08.6	294 32.8	53.6	293 28.0	54.8	240 03.3	14.3	262 52.9	24.1
06	238 11.1	309 33.6	S16 53.7	308 28.5	S22 54.6	255 05.2	S 8 14.1	277 55.1	S16 24.0
07	253 13.5	324 34.5	53.7	323 28.9	54.4	270 07.1	13.9	292 57.2	23.9
08	268 16.0	339 35.3	53.8	338 29.4	54.1	285 09.0	13.6	307 59.4	23.9
V 09	283 18.4	354 36.1	53.9	353 29.9	53.9	300 10.9	13.4	323 01.6	23.8
I 10	298 20.9	9 37.0	53.9	8 30.4	53.7	315 12.8	13.2	338 03.7	23.7
E 11	313 23.4	24 37.8	54.0	23 30.8	53.5	330 14.7	13.0	353 05.9	23.6
R 12	328 25.8	39 38.6	S16 54.0	38 31.3	S22 53.3	345 16.7	S 8 12.7	8 08.1	S16 23.5
N 13	343 28.3	54 39.4	54.1	53 31.8	53.0	0 18.6	12.5	23 10.3	23.4
E 14	358 30.8	69 40.3	54.2	68 32.3	52.8	15 20.5	12.3	38 12.4	23.3
S 15	13 33.2	84 41.1	54.2	83 32.7	52.6	30 22.4	12.1	53 14.6	23.2
16	28 35.7	99 41.9	54.3	98 33.2	52.4	45 24.3	11.8	68 16.8	23.2
17	43 38.2	114 42.7	54.3	113 33.7	52.2	60 26.2	11.6	83 18.9	23.1
18	58 40.6	129 43.5	S16 54.4	128 34.1	S22 51.9	75 28.1	S 8 11.4	98 21.1	S16 23.0
19	73 43.1	144 44.3	54.4	143 34.6	51.7	90 30.0	11.1	113 23.3	22.9
20	88 45.6	159 45.1	54.5	158 35.1	51.5	105 31.9	10.9	128 25.4	22.8
21	103 48.0	174 45.9	54.6	173 35.6	51.3	120 33.8	10.7	143 27.6	22.7
22	118 50.5	189 46.7	54.6	188 36.0	51.0	135 35.7	10.5	158 29.8	22.6
23	133 52.9	204 47.5	54.7	203 36.5	50.8	150 37.6	10.2	173 32.0	22.5
19 00	148 55.4	219 48.3	S16 54.7	218 37.0	S22 50.6	165 39.5	S 8 10.0	188 34.1	S16 22.5
01	163 57.9	234 49.1	54.8	233 37.5	50.4	180 41.4	09.8	203 36.3	22.4
02	179 00.3	249 49.9	54.8	248 37.9	50.2	195 43.3	09.5	218 38.5	22.3
03	194 02.8	264 50.7	54.9	263 38.4	49.9	210 45.2	09.3	233 40.6	22.2
04	209 05.3	279 51.5	54.9	278 38.9	49.7	225 47.1	09.1	248 42.8	22.1
05	224 07.7	294 52.3	55.0	293 39.3	49.5	240 49.0	08.9	263 45.0	22.0
06	239 10.2	309 53.1	S16 55.0	308 39.8	S22 49.2	255 50.9	S 8 08.6	278 47.1	S16 21.9
07	254 12.7	324 53.8	55.1	323 40.3	49.0	270 52.8	08.4	293 49.3	21.9
S 08	269 15.1	339 54.6	55.1	338 40.8	48.8	285 54.7	08.2	308 51.5	21.8
Á 09	284 17.6	354 55.4	55.2	353 41.2	48.6	300 56.6	08.0	323 53.7	21.7
B 10	299 20.0	9 56.2	55.2	8 41.7	48.3	315 58.5	07.7	338 55.8	21.6
A 11	314 22.5	24 56.9	55.3	23 42.2	48.1	331 00.5	07.5	353 58.0	21.5
D 12	329 25.0	39 57.7	S16 55.3	38 42.7	S22 47.9	346 02.4	S 8 07.3	9 00.2	S16 21.4
O 13	344 27.4	54 58.5	55.4	53 43.1	47.6	1 04.3	07.0	24 02.3	21.3
14	359 29.9	69 59.2	55.4	68 43.6	47.4	16 06.2	06.8	39 04.5	21.2
15	14 32.4	85 00.0	55.5	83 44.1	47.2	31 08.1	06.6	54 06.7	21.2
16	29 34.8	100 00.8	55.5	98 44.6	47.0	46 10.0	06.4	69 08.9	21.1
17	44 37.3	115 01.5	55.6	113 45.0	46.7	61 11.9	06.1	84 11.0	21.0
18	59 39.8	130 02.3	S16 55.6	128 45.5	S22 46.5	76 13.8	S 8 05.9	99 13.2	S16 20.9
19	74 42.2	145 03.0	55.7	143 46.0	46.3	91 15.7	05.7	114 15.4	20.8
20	89 44.7	160 03.8	55.7	158 46.4	46.0	106 17.6	05.4	129 17.5	20.7
21	104 47.2	175 04.5	55.8	173 46.9	45.8	121 19.5	05.2	144 19.7	20.6
22	119 49.6	190 05.3	55.8	188 47.4	45.6	136 21.4	05.0	159 21.9	20.5
23	134 52.1	205 06.0	55.9	203 47.9	45.3	151 23.3	04.8	174 24.1	20.5
20 00	149 54.5	220 06.7	S16 55.9	218 48.3	S22 45.1	166 25.2	S 8 04.5	189 26.2	S16 20.4
01	164 57.0	235 07.5	55.9	233 48.8	44.9	181 27.1	04.3	204 28.4	20.3
02	179 59.5	250 08.2	56.0	248 49.3	44.6	196 29.0	04.1	219 30.6	20.2
03	195 01.9	265 09.0	56.0	263 49.8	44.4	211 30.9	03.9	234 32.7	20.1
04	210 04.4	280 09.7	56.1	278 50.2	44.2	226 32.8	03.6	249 34.9	20.0
05	225 06.9	295 10.4	56.1	293 50.7	43.9	241 34.7	03.4	264 37.1	19.9
06	240 09.3	310 11.2	S16 56.2	308 51.2	S22 43.7	256 36.6	S 8 03.2	279 39.2	S16 19.9
07	255 11.8	325 11.9	56.2	323 51.7	43.4	271 38.5	02.9	294 41.4	19.8
D 08	270 14.3	340 12.6	56.2	338 52.1	43.2	286 40.4	02.7	309 43.6	19.7
O 09	285 16.7	355 13.3	56.3	353 52.6	43.0	301 42.3	02.5	324 45.8	19.6
M 10	300 19.2	10 14.0	56.3	8 53.1	42.7	316 44.2	02.3	339 47.9	19.5
I 11	315 21.6	25 14.8	56.4	23 53.6	42.5	331 46.1	02.0	354 50.1	19.4
N 12	330 24.1	40 15.5	S16 56.4	38 54.0	S22 42.3	346 48.0	S 8 01.8	9 52.3	S16 19.3
G 13	345 26.6	55 16.2	56.4	53 54.5	42.0	1 49.9	01.6	24 54.4	19.2
O 14	0 29.0	70 16.9	56.5	68 55.0	41.8	16 51.9	01.3	39 56.6	19.2
15	15 31.5	85 17.6	56.5	83 55.5	41.5	31 53.8	01.1	54 58.8	19.1
16	30 34.0	100 18.3	56.5	98 55.9	41.3	46 55.7	00.9	70 01.0	19.0
17	45 36.4	115 19.0	56.6	113 56.4	41.1	61 57.6	00.7	85 03.1	18.9
18	60 38.9	130 19.7	S16 56.6	128 56.9	S22 40.8	76 59.5	S 8 00.4	100 05.3	S16 18.8
19	75 41.4	145 20.4	56.6	143 57.4	40.6	92 01.4	00.2	115 07.5	18.7
20	90 43.8	160 21.1	56.7	158 57.8	40.3	107 03.3	8 00.0	130 09.6	18.6
21	105 46.3	175 21.8	56.7	173 58.3	40.1	122 05.2	7 59.7	145 11.8	18.5
22	120 48.8	190 22.5	56.8	188 58.8	39.8	137 07.1	59.5	160 14.0	18.5
23	135 51.2	205 23.2	56.8	203 59.3	39.6	152 09.0	59.3	175 16.2	18.4
	h m								
Paso Mer.	14 02.0	*v* 0.8	*d* 0.0	*v* 0.5	*d* 0.2	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.7	S40 13.3
Achernar	335 22.3	S57 07.8
Acrux	173 02.1	S63 13.1
Adhara	255 07.5	S29 00.3
Aldebaran	290 42.3	N16 33.2
Alioth	166 14.7	N55 50.2
Alkaid	152 53.6	N49 11.9
Alnair	27 36.4	S46 51.4
Alnilam	275 40.0	S 1 11.4
Alphard	217 49.8	S 8 45.3
Alphecca	126 05.7	N26 38.2
Alpheratz	357 37.5	N29 12.7
Altair	62 02.5	N 8 55.4
Ankaa	353 09.8	S42 11.4
Antares	112 18.8	S26 28.8
Arcturus	145 49.9	N19 03.9
Atria	107 15.3	S69 03.7
Avior	234 15.1	S59 34.9
Bellatrix	278 25.3	N 6 22.1
Betelgeuse	270 54.5	N 7 24.6
Canopus	263 53.1	S52 42.7
Capella	280 25.2	N46 01.3
Deneb	49 27.8	N45 21.3
Denebola	182 27.1	N14 26.8
Diphda	348 49.9	S17 52.2
Dubhe	193 43.3	N61 37.8
Elnath	278 04.7	N28 37.6
Eltanin	90 43.5	N51 28.8
Enif	33 41.4	N 9 58.4
Fomalhaut	15 17.5	S29 30.5
Gacrux	171 53.8	S57 14.0
Gienah	175 45.7	S17 39.9
Hadar	148 39.0	S60 28.5
Hamal	327 54.0	N23 33.9
Kaus Aust.	83 35.9	S34 22.4
Kochab	137 19.5	N74 03.6
Markab	13 32.6	N15 19.3
Menkar	314 08.7	N 4 10.4
Menkent	148 00.2	S36 28.6
Miaplacidus	221 37.8	S69 48.5
Mirfak	308 31.7	N49 56.5
Nunki	75 50.9	S26 16.2
Peacock	53 10.0	S56 39.8
Pollux	243 19.9	N27 58.4
Procyon	244 53.0	N 5 10.0
Rasalhague	96 00.9	N12 32.5
Regulus	207 36.6	N11 51.5
Rigel	281 06.0	S 8 10.7
Rigil Kent.	139 43.3	S60 55.3
Sabik	102 05.6	S15 45.1
Schedar	349 34.1	N56 39.6
Shaula	96 13.7	S37 07.1
Sirius	258 28.1	S16 45.0
Spica	158 24.6	S11 16.6
Suhail	222 47.6	S43 31.4
Vega	80 35.1	N38 48.0
Zuben'ubi	136 58.5	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	70 52.9	9 20
Marte	69 41.6	9 25
Júpiter	16 44.1	12 56
Saturno	39 38.7	11 24

UT (HmGr)	SOL		LUNA			
	AHGr	Dec	AHGr	*v*	Dec	*d*	Ph
d h	° ′	° ′	° ′	′	° ′	′	′
18 00	176 31.2	S11 43.0	340 09.1	13.4	N10 24.1	13.5	56.6
01	191 31.3	42.2	354 41.5	13.3	10 10.6	13.6	56.6
02	206 31.3	41.3	9 13.8	13.5	9 57.0	13.7	56.6
03	221 31.4	40.4	23 46.3	13.4	9 43.3	13.7	56.7
04	236 31.5	39.5	38 18.7	13.4	9 29.6	13.7	56.7
05	251 31.5	38.6	52 51.1	13.5	9 15.9	13.8	56.7
06	266 31.6	S11 37.8	67 23.6	13.5	N 9 02.1	13.9	56.7
07	281 31.6	36.9	81 56.1	13.5	8 48.2	13.8	56.7
V 08	296 31.7	36.0	96 28.6	13.5	8 34.4	14.0	56.8
I 09	311 31.7	35.1	111 01.1	13.5	8 20.4	14.0	56.8
E 10	326 31.8	34.2	125 33.6	13.6	8 06.4	14.0	56.8
R 11	341 31.8	33.3	140 06.2	13.5	7 52.4	14.1	56.8
N 12	356 31.9	S11 32.5	154 38.7	13.6	N 7 38.3	14.1	56.9
E 13	11 31.9	31.6	169 11.3	13.6	7 24.2	14.2	56.9
S 14	26 32.0	30.7	183 43.9	13.6	7 10.0	14.2	56.9
15	41 32.0	29.8	198 16.5	13.6	6 55.8	14.3	56.9
16	56 32.1	28.9	212 49.1	13.6	6 41.5	14.3	56.9
17	71 32.2	28.0	227 21.7	13.7	6 27.2	14.3	57.0
18	86 32.2	S11 27.1	241 54.4	13.6	N 6 12.9	14.4	57.0
19	101 32.3	26.3	256 27.0	13.6	5 58.5	14.4	57.0
20	116 32.3	25.4	270 59.6	13.7	5 44.1	14.4	57.0
21	131 32.4	24.5	285 32.3	13.6	5 29.7	14.5	57.0
22	146 32.4	23.6	300 04.9	13.7	5 15.2	14.5	57.1
23	161 32.5	22.7	314 37.6	13.7	5 00.7	14.5	57.1
19 00	176 32.6	S11 21.8	329 10.3	13.6	N 4 46.2	14.6	57.1
01	191 32.6	20.9	343 42.9	13.7	4 31.6	14.6	57.1
02	206 32.7	20.0	358 15.6	13.7	4 17.0	14.6	57.1
03	221 32.7	19.1	12 48.3	13.6	4 02.4	14.7	57.2
04	236 32.8	18.3	27 20.9	13.7	3 47.7	14.7	57.2
05	251 32.8	17.4	41 53.6	13.7	3 33.0	14.7	57.2
06	266 32.9	S11 16.5	56 26.3	13.6	N 3 18.3	14.7	57.2
07	281 33.0	15.6	70 58.9	13.7	3 03.6	14.8	57.2
S 08	296 33.0	14.7	85 31.6	13.6	2 48.8	14.8	57.3
Á 09	311 33.1	13.8	100 04.2	13.7	2 34.0	14.8	57.3
B 10	326 33.1	12.9	114 36.9	13.6	2 19.2	14.8	57.3
A 11	341 33.2	12.0	129 09.5	13.6	2 04.4	14.8	57.3
D 12	356 33.3	S11 11.1	143 42.1	13.6	N 1 49.6	14.9	57.3
O 13	11 33.3	10.2	158 14.7	13.6	1 34.7	14.9	57.4
14	26 33.4	09.3	172 47.3	13.6	1 19.8	14.9	57.4
15	41 33.5	08.5	187 19.9	13.6	1 04.9	14.9	57.4
16	56 33.5	07.6	201 52.5	13.6	0 50.0	14.9	57.4
17	71 33.6	06.7	216 25.1	13.5	0 35.1	14.9	57.4
18	86 33.6	S11 05.8	230 57.6	13.5	N 0 20.2	14.9	57.5
19	101 33.7	04.9	245 30.1	13.6	N 0 05.3	15.0	57.5
20	116 33.8	04.0	260 02.7	13.5	S 0 09.7	15.0	57.5
21	131 33.8	03.1	274 35.2	13.4	0 24.7	14.9	57.5
22	146 33.9	02.2	289 07.6	13.5	0 39.6	15.0	57.5
23	161 34.0	01.3	303 40.1	13.4	0 54.6	15.0	57.5
20 00	176 34.0	S11 00.4	318 12.5	13.4	S 1 09.6	14.9	57.6
01	191 34.1	10 59.5	332 44.9	13.4	1 24.5	15.0	57.6
02	206 34.2	58.6	347 17.3	13.4	1 39.5	15.0	57.6
03	221 34.2	57.7	1 49.7	13.3	1 54.5	15.0	57.6
04	236 34.3	56.8	16 22.0	13.4	2 09.5	15.0	57.6
05	251 34.3	55.9	30 54.4	13.2	2 24.5	15.0	57.7
06	266 34.4	S10 55.0	45 26.6	13.3	S 2 39.5	14.9	57.7
07	281 34.5	54.1	59 58.9	13.2	2 54.4	15.0	57.7
D 08	296 34.5	53.2	74 31.1	13.2	3 09.4	15.0	57.7
O 09	311 34.6	52.3	89 03.3	13.2	3 24.4	14.9	57.7
M 10	326 34.7	51.4	103 35.5	13.1	3 39.3	15.0	57.8
I 11	341 34.8	50.5	118 07.6	13.1	3 54.3	14.9	57.8
N 12	356 34.8	S10 49.6	132 39.7	13.1	S 4 09.2	15.0	57.8
G 13	11 34.9	48.7	147 11.8	13.0	4 24.2	14.9	57.8
O 14	26 35.0	47.8	161 43.8	13.0	4 39.1	14.9	57.8
15	41 35.0	46.9	176 15.8	12.9	4 54.0	14.9	57.8
16	56 35.1	46.0	190 47.7	12.9	5 08.9	14.8	57.9
17	71 35.2	45.1	205 19.6	12.9	5 23.7	14.9	57.9
18	86 35.2	S10 44.2	219 51.5	12.8	S 5 38.6	14.8	57.9
19	101 35.3	43.3	234 23.3	12.8	5 53.4	14.9	57.9
20	116 35.4	42.4	248 55.1	12.7	6 08.3	14.8	57.9
21	131 35.4	41.5	263 26.8	12.7	6 23.1	14.7	58.0
22	146 35.5	40.6	277 58.5	12.6	6 37.8	14.8	58.0
23	161 35.6	39.7	292 30.1	12.6	S 6 52.6	14.7	58.0
	S/D 16.2	*d* 0.9	S/D	15.5	15.6		15.7

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		18	19	20	21
°	h m	h m	h m	h m	h m	h m	h m
N 72	05 57	07 16	08 31	18 39	20 47	22 59	25 28
N 70	05 57	07 08	08 15	18 48	20 47	22 48	25 01
68	05 57	07 02	08 01	18 55	20 46	22 39	24 41
66	05 57	06 56	07 51	19 01	20 46	22 32	24 25
64	05 57	06 52	07 42	19 06	20 45	22 26	24 12
62	05 56	06 48	07 34	19 11	20 45	22 21	24 01
60	05 56	06 44	07 27	19 14	20 45	22 17	23 52
N 58	05 55	06 41	07 21	19 18	20 44	22 13	23 44
56	05 55	06 38	07 16	19 21	20 44	22 09	23 37
54	05 54	06 35	07 11	19 23	20 44	22 06	23 31
52	05 53	06 33	07 07	19 26	20 44	22 03	23 25
50	05 53	06 30	07 03	19 28	20 44	22 01	23 20
45	05 51	06 25	06 55	19 32	20 43	21 55	23 10
N 40	05 49	06 20	06 48	19 36	20 43	21 51	23 01
35	05 46	06 16	06 42	19 40	20 43	21 47	22 53
30	05 44	06 12	06 36	19 43	20 43	21 43	22 46
20	05 39	06 04	06 27	19 48	20 42	21 38	22 35
N 10	05 32	05 57	06 18	19 52	20 42	21 32	22 25
0	05 25	05 49	06 10	19 56	20 42	21 28	22 16
S 10	05 16	05 41	06 02	20 01	20 41	21 23	22 06
20	05 04	05 31	05 54	20 05	20 41	21 18	21 57
30	04 49	05 19	05 43	20 10	20 41	21 12	21 46
35	04 40	05 11	05 38	20 13	20 41	21 09	21 39
40	04 28	05 02	05 31	20 16	20 41	21 05	21 32
45	04 14	04 52	05 23	20 20	20 40	21 01	21 24
S 50	03 55	04 39	05 13	20 25	20 40	20 56	21 14
52	03 46	04 32	05 09	20 27	20 40	20 54	21 10
54	03 36	04 25	05 04	20 29	20 40	20 52	21 05
56	03 24	04 17	04 59	20 31	20 40	20 49	20 59
58	03 09	04 08	04 52	20 34	20 40	20 46	20 53
S 60	02 52	03 58	04 46	20 37	20 40	20 43	20 46

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	18	19	20	21
°	h m	h m	h m	h m	h m	h m	h m
N 72	15 58	17 14	18 33	09 21	08 50	08 21	07 48
N 70	16 15	17 21	18 32	09 09	08 47	08 25	08 01
68	16 28	17 27	18 32	09 00	08 44	08 29	08 12
66	16 38	17 33	18 32	08 52	08 42	08 32	08 21
64	16 47	17 37	18 32	08 45	08 40	08 35	08 29
62	16 55	17 41	18 33	08 39	08 38	08 37	08 36
60	17 01	17 45	18 33	08 34	08 36	08 39	08 42
N 58	17 07	17 48	18 34	08 29	08 35	08 41	08 47
56	17 12	17 51	18 34	08 25	08 34	08 42	08 52
54	17 17	17 53	18 35	08 21	08 33	08 44	08 56
52	17 21	17 56	18 35	08 18	08 32	08 45	09 00
50	17 25	17 58	18 36	08 15	08 31	08 47	09 03
45	17 33	18 03	18 38	08 08	08 29	08 49	09 11
N 40	17 40	18 08	18 40	08 03	08 27	08 51	09 17
35	17 46	18 12	18 42	07 58	08 26	08 53	09 22
30	17 52	18 16	18 44	07 53	08 24	08 55	09 27
20	18 01	18 23	18 49	07 46	08 22	08 58	09 36
N 10	18 09	18 31	18 55	07 39	08 20	09 01	09 43
0	18 17	18 38	19 03	07 33	08 18	09 03	09 50
S 10	18 25	18 47	19 12	07 26	08 16	09 06	09 57
20	18 34	18 56	19 23	07 20	08 14	09 08	10 05
30	18 44	19 08	19 38	07 12	08 11	09 12	10 13
35	18 49	19 16	19 47	07 07	08 10	09 13	10 18
40	18 56	19 24	19 58	07 02	08 08	09 15	10 24
45	19 04	19 35	20 12	06 56	08 06	09 18	10 30
S 50	19 13	19 48	20 31	06 48	08 04	09 20	10 38
52	19 18	19 54	20 40	06 45	08 03	09 22	10 42
54	19 22	20 01	20 50	06 41	08 02	09 23	10 46
56	19 28	20 09	21 02	06 37	08 00	09 24	10 51
58	19 34	20 17	21 15	06 32	07 59	09 26	10 56
S 60	19 40	20 28	21 32	06 27	07 57	09 28	11 01

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer. Sup.	Paso Mer. Inf.	Edad	Fase
	00h	12h					
d	m s	m s	h m	h m	h m	d %	
18	13 55	13 53	12 14	01 22	13 45	17 96	
19	13 50	13 47	12 14	02 07	14 30	18 92	
20	13 44	13 41	12 14	02 52	15 15	19 85	

UT (HmGr)	ARIES	VENUS −4·8		MARTE +1·3		JÚPITER −2·0		SATURNO +0·7	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
21 00	150 53.7	220 23.9	S16 56.8	218 59.7	S22 39.4	167 10.9	S 7 59.1	190 18.3	S16 18.3
01	165 56.1	235 24.6	56.9	234 00.2	39.1	182 12.8	58.8	205 20.5	18.2
02	180 58.6	250 25.3	56.9	249 00.7	38.9	197 14.7	58.6	220 22.7	18.1
03	196 01.1	265 26.0	56.9	264 01.2	38.6	212 16.6	58.4	235 24.9	18.0
04	211 03.5	280 26.6	56.9	279 01.6	38.4	227 18.5	58.1	250 27.0	17.9
05	226 06.0	295 27.3	57.0	294 02.1	38.1	242 20.4	57.9	265 29.2	17.9
06	241 08.5	310 28.0	S16 57.0	309 02.6	S22 37.9	257 22.3	S 7 57.7	280 31.4	S16 17.8
07	256 10.9	325 28.7	57.0	324 03.1	37.6	272 24.2	57.5	295 33.5	17.7
08	271 13.4	340 29.4	57.1	339 03.5	37.4	287 26.1	57.2	310 35.7	17.6
L 09	286 15.9	355 30.0	57.1	354 04.0	37.1	302 28.0	57.0	325 37.9	17.5
U 10	301 18.3	10 30.7	57.1	9 04.5	36.9	317 29.9	56.8	340 40.1	17.4
N 11	316 20.8	25 31.4	57.1	24 05.0	36.7	332 31.8	56.5	355 42.2	17.3
E 12	331 23.2	40 32.0	S16 57.2	39 05.5	S22 36.4	347 33.7	S 7 56.3	10 44.4	S16 17.2
S 13	346 25.7	55 32.7	57.2	54 05.9	36.2	2 35.6	56.1	25 46.6	17.2
14	1 28.2	70 33.3	57.2	69 06.4	35.9	17 37.5	55.9	40 48.7	17.1
15	16 30.6	85 34.0	57.3	84 06.9	35.7	32 39.4	55.6	55 50.9	17.0
16	31 33.1	100 34.7	57.3	99 07.4	35.4	47 41.3	55.4	70 53.1	16.9
17	46 35.6	115 35.3	57.3	114 07.8	35.2	62 43.2	55.2	85 55.3	16.8
18	61 38.0	130 36.0	S16 57.3	129 08.3	S22 34.9	77 45.1	S 7 54.9	100 57.4	S16 16.7
19	76 40.5	145 36.6	57.3	144 08.8	34.7	92 47.0	54.7	115 59.6	16.6
20	91 43.0	160 37.3	57.4	159 09.3	34.4	107 48.9	54.5	131 01.8	16.6
21	106 45.4	175 37.9	57.4	174 09.7	34.1	122 50.9	54.2	146 04.0	16.5
22	121 47.9	190 38.6	57.4	189 10.2	33.9	137 52.8	54.0	161 06.1	16.4
23	136 50.4	205 39.2	57.4	204 10.7	33.6	152 54.7	53.8	176 08.3	16.3
22 00	151 52.8	220 39.8	S16 57.5	219 11.2	S22 33.4	167 56.6	S 7 53.6	191 10.5	S16 16.2
01	166 55.3	235 40.5	57.5	234 11.6	33.1	182 58.5	53.3	206 12.6	16.1
02	181 57.7	250 41.1	57.5	249 12.1	32.9	198 00.4	53.1	221 14.8	16.0
03	197 00.2	265 41.8	57.5	264 12.6	32.6	213 02.3	52.9	236 17.0	15.9
04	212 02.7	280 42.4	57.5	279 13.1	32.4	228 04.2	52.6	251 19.2	15.9
05	227 05.1	295 43.0	57.6	294 13.6	32.1	243 06.1	52.4	266 21.3	15.8
06	242 07.6	310 43.6	S16 57.6	309 14.0	S22 31.9	258 08.0	S 7 52.2	281 23.5	S16 15.7
07	257 10.1	325 44.3	57.6	324 14.5	31.6	273 09.9	52.0	296 25.7	15.6
M 08	272 12.5	340 44.9	57.6	339 15.0	31.3	288 11.8	51.7	311 27.9	15.5
A 09	287 15.0	355 45.5	57.6	354 15.5	31.1	303 13.7	51.5	326 30.0	15.4
R 10	302 17.5	10 46.1	57.6	9 15.9	30.8	318 15.6	51.3	341 32.2	15.3
T 11	317 19.9	25 46.8	57.7	24 16.4	30.6	333 17.5	51.0	356 34.4	15.3
E 12	332 22.4	40 47.4	S16 57.7	39 16.9	S22 30.3	348 19.4	S 7 50.8	11 36.5	S16 15.2
S 13	347 24.9	55 48.0	57.7	54 17.4	30.1	3 21.3	50.6	26 38.7	15.1
14	2 27.3	70 48.6	57.7	69 17.9	29.8	18 23.2	50.4	41 40.9	15.0
15	17 29.8	85 49.2	57.7	84 18.3	29.5	33 25.1	50.1	56 43.1	14.9
16	32 32.2	100 49.8	57.7	99 18.8	29.3	48 27.0	49.9	71 45.2	14.8
17	47 34.7	115 50.4	57.7	114 19.3	29.0	63 28.9	49.7	86 47.4	14.7
18	62 37.2	130 51.0	S16 57.7	129 19.8	S22 28.8	78 30.8	S 7 49.4	101 49.6	S16 14.6
19	77 39.6	145 51.6	57.8	144 20.2	28.5	93 32.7	49.2	116 51.8	14.6
20	92 42.1	160 52.2	57.8	159 20.7	28.2	108 34.6	49.0	131 53.9	14.5
21	107 44.6	175 52.8	57.8	174 21.2	28.0	123 36.5	48.7	146 56.1	14.4
22	122 47.0	190 53.4	57.8	189 21.7	27.7	138 38.4	48.5	161 58.3	14.3
23	137 49.5	205 54.0	57.8	204 22.2	27.5	153 40.3	48.3	177 00.4	14.2
23 00	152 52.0	220 54.6	S16 57.8	219 22.6	S22 27.2	168 42.2	S 7 48.1	192 02.6	S16 14.1
01	167 54.4	235 55.2	57.8	234 23.1	26.9	183 44.1	47.8	207 04.8	14.0
02	182 56.9	250 55.8	57.8	249 23.6	26.7	198 46.0	47.6	222 07.0	14.0
03	197 59.3	265 56.4	57.8	264 24.1	26.4	213 47.9	47.4	237 09.1	13.9
04	213 01.8	280 57.0	57.8	279 24.5	26.1	228 49.8	47.1	252 11.3	13.8
05	228 04.3	295 57.6	57.8	294 25.0	25.9	243 51.7	46.9	267 13.5	13.7
06	243 06.7	310 58.1	S16 57.8	309 25.5	S22 25.6	258 53.6	S 7 46.7	282 15.7	S16 13.6
07	258 09.2	325 58.7	57.8	324 26.0	25.3	273 55.5	46.5	297 17.8	13.5
M 08	273 11.7	340 59.3	57.8	339 26.5	25.1	288 57.4	46.2	312 20.0	13.4
I 09	288 14.1	355 59.9	57.8	354 26.9	24.8	303 59.3	46.0	327 22.2	13.3
É 10	303 16.6	11 00.5	57.8	9 27.4	24.5	319 01.2	45.8	342 24.4	13.3
R 11	318 19.1	26 01.0	57.9	24 27.9	24.3	334 03.1	45.5	357 26.5	13.2
C 12	333 21.5	41 01.6	S16 57.9	39 28.4	S22 24.0	349 05.1	S 7 45.3	12 28.7	S16 13.1
O 13	348 24.0	56 02.2	57.9	54 28.9	23.7	4 07.0	45.1	27 30.9	13.0
L 14	3 26.5	71 02.7	57.9	69 29.3	23.5	19 08.9	44.8	42 33.1	12.9
E 15	18 28.9	86 03.3	57.9	84 29.8	23.2	34 10.8	44.6	57 35.2	12.8
S 16	33 31.4	101 03.9	57.9	99 30.3	22.9	49 12.7	44.4	72 37.4	12.7
17	48 33.8	116 04.4	57.9	114 30.8	22.7	64 14.6	44.2	87 39.6	12.7
18	63 36.3	131 05.0	S16 57.9	129 31.3	S22 22.4	79 16.5	S 7 43.9	102 41.8	S16 12.6
19	78 38.8	146 05.5	57.8	144 31.7	22.1	94 18.4	43.7	117 43.9	12.5
20	93 41.2	161 06.1	57.8	159 32.2	21.8	109 20.3	43.5	132 46.1	12.4
21	108 43.7	176 06.6	57.8	174 32.7	21.6	124 22.2	43.2	147 48.3	12.3
22	123 46.2	191 07.2	57.8	189 33.2	21.3	139 24.1	43.0	162 50.4	12.2
23	138 48.6	206 07.7	57.8	204 33.7	21.0	154 26.0	42.8	177 52.6	12.1
	h m								
Paso Mer.	13 50.2	*v* 0.6	*d* 0.0	*v* 0.5	*d* 0.3	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.7	S40 13.3
Achernar	335 22.3	S57 07.8
Acrux	173 02.1	S63 13.1
Adhara	255 07.5	S29 00.3
Aldebaran	290 42.3	N16 33.1
Alioth	166 14.7	N55 50.2
Alkaid	152 53.6	N49 12.0
Alnair	27 36.4	S46 51.4
Alnilam	275 40.0	S 1 11.4
Alphard	217 49.8	S 8 45.3
Alphecca	126 05.7	N26 38.2
Alpheratz	357 37.5	N29 12.6
Altair	62 02.5	N 8 55.4
Ankaa	353 09.8	S42 11.4
Antares	112 18.8	S26 28.8
Arcturus	145 49.9	N19 03.9
Atria	107 15.2	S69 03.7
Avior	234 15.1	S59 34.9
Bellatrix	278 25.3	N 6 22.1
Betelgeuse	270 54.5	N 7 24.6
Canopus	263 53.1	S52 42.7
Capella	280 25.2	N46 01.3
Deneb	49 27.8	N45 21.3
Denebola	182 27.1	N14 26.8
Diphda	348 49.9	S17 52.2
Dubhe	193 43.3	N61 37.8
Elnath	278 04.7	N28 37.6
Eltanin	90 43.5	N51 28.8
Enif	33 41.4	N 9 58.4
Fomalhaut	15 17.5	S29 30.5
Gacrux	171 53.8	S57 14.0
Gienah	175 45.7	S17 39.9
Hadar	148 39.0	S60 28.5
Hamal	327 54.0	N23 33.9
Kaus Aust.	83 35.9	S34 22.4
Kochab	137 19.4	N74 03.6
Markab	13 32.6	N15 19.3
Menkar	314 08.7	N 4 10.4
Menkent	148 00.2	S36 28.6
Miaplacidus	221 37.8	S69 48.5
Mirfak	308 31.7	N49 56.5
Nunki	75 50.9	S26 16.2
Peacock	53 10.0	S56 39.8
Pollux	243 19.9	N27 58.4
Procyon	244 53.1	N 5 10.0
Rasalhague	96 00.9	N12 32.5
Regulus	207 36.6	N11 51.5
Rigel	281 06.0	S 8 10.8
Rigil Kent.	139 43.3	S60 55.3
Sabik	102 05.6	S15 45.1
Schedar	349 34.1	N56 39.5
Shaula	96 13.7	S37 07.1
Sirius	258 28.1	S16 45.0
Spica	158 24.6	S11 16.6
Suhail	222 47.6	S43 31.4
Vega	80 35.1	N38 48.0
Zuben'ubi	136 58.5	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	68 47.0	9 17
Marte	67 18.4	9 23
Júpiter	16 03.7	12 47
Saturno	39 17.7	11 14

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v		Dec		d	Ph
d h	°	′	°	′	°	′	′	°	′	′	′
21 00	176	35.7	S10	38.8	307	01.7	12.5	S 7	07.3	14.7	58.0
01	191	35.7		37.9	321	33.2	12.5	7	22.0	14.7	58.0
02	206	35.8		37.0	336	04.7	12.5	7	36.7	14.6	58.0
03	221	35.9	. .	36.1	350	36.2	12.3	7	51.3	14.7	58.1
04	236	35.9		35.2	5	07.5	12.4	8	06.0	14.5	58.1
05	251	36.0		34.3	19	38.9	12.2	8	20.5	14.6	58.1
06	266	36.1	S10	33.4	34	10.1	12.3	S 8	35.1	14.5	58.1
07	281	36.2		32.5	48	41.4	12.1	8	49.6	14.5	58.1
L 08	296	36.2		31.6	63	12.5	12.1	9	04.1	14.4	58.1
U 09	311	36.3	. .	30.7	77	43.6	12.1	9	18.5	14.5	58.2
N 10	326	36.4		29.8	92	14.7	12.0	9	33.0	14.3	58.2
E 11	341	36.5		28.9	106	45.7	11.9	9	47.3	14.3	58.2
S 12	356	36.5	S10	28.0	121	16.6	11.8	S10	01.6	14.3	58.2
13	11	36.6		27.1	135	47.4	11.8	10	15.9	14.3	58.2
14	26	36.7		26.2	150	18.2	11.8	10	30.2	14.2	58.2
15	41	36.8	. .	25.2	164	49.0	11.6	10	44.4	14.1	58.3
16	56	36.8		24.3	179	19.6	11.6	10	58.5	14.1	58.3
17	71	36.9		23.4	193	50.2	11.6	11	12.6	14.1	58.3
18	86	37.0	S10	22.5	208	20.8	11.4	S11	26.7	14.0	58.3
19	101	37.1		21.6	222	51.2	11.4	11	40.7	13.9	58.3
20	116	37.1		20.7	237	21.6	11.3	11	54.6	13.9	58.4
21	131	37.2	. .	19.8	251	51.9	11.3	12	08.5	13.9	58.4
22	146	37.3		18.9	266	22.2	11.1	12	22.4	13.8	58.4
23	161	37.4		18.0	280	52.3	11.1	12	36.2	13.7	58.4
22 00	176	37.4	S10	17.1	295	22.4	11.1	S12	49.9	13.7	58.4
01	191	37.5		16.2	309	52.5	10.9	13	03.6	13.6	58.4
02	206	37.6		15.3	324	22.4	10.9	13	17.2	13.5	58.4
03	221	37.7	. .	14.3	338	52.3	10.8	13	30.7	13.5	58.5
04	236	37.8		13.4	353	22.1	10.7	13	44.2	13.4	58.5
05	251	37.8		12.5	7	51.8	10.6	13	57.6	13.4	58.5
06	266	37.9	S10	11.6	22	21.4	10.6	S14	11.0	13.3	58.5
07	281	38.0		10.7	36	51.0	10.5	14	24.3	13.2	58.5
M 08	296	38.1		09.8	51	20.5	10.4	14	37.5	13.1	58.5
A 09	311	38.2	. .	08.9	65	49.9	10.3	14	50.6	13.1	58.6
R 10	326	38.2		08.0	80	19.2	10.2	15	03.7	13.0	58.6
T 11	341	38.3		07.1	94	48.4	10.1	15	16.7	12.9	58.6
E 12	356	38.4	S10	06.1	109	17.5	10.1	S15	29.6	12.9	58.6
S 13	11	38.5		05.2	123	46.6	10.0	15	42.5	12.8	58.6
14	26	38.6		04.3	138	15.6	9.9	15	55.3	12.6	58.6
15	41	38.6	. .	03.4	152	44.5	9.7	16	07.9	12.6	58.7
16	56	38.7		02.5	167	13.2	9.8	16	20.5	12.6	58.7
17	71	38.8		01.6	181	42.0	9.6	16	33.1	12.4	58.7
18	86	38.9	S10	00.7	196	10.6	9.5	S16	45.5	12.4	58.7
19	101	39.0	9	59.7	210	39.1	9.4	16	57.9	12.2	58.7
20	116	39.1		58.8	225	07.5	9.4	17	10.1	12.2	58.7
21	131	39.1	. .	57.9	239	35.9	9.2	17	22.3	12.1	58.7
22	146	39.2		57.0	254	04.1	9.2	17	34.4	12.0	58.8
23	161	39.3		56.1	268	32.3	9.1	17	46.4	11.9	58.8
23 00	176	39.4	S 9	55.2	283	00.4	9.0	S17	58.3	11.8	58.8
01	191	39.5		54.2	297	28.4	8.8	18	10.1	11.7	58.8
02	206	39.6		53.3	311	56.2	8.8	18	21.8	11.6	58.8
03	221	39.6	. .	52.4	326	24.0	8.7	18	33.4	11.5	58.8
04	236	39.7		51.5	340	51.7	8.6	18	44.9	11.4	58.8
05	251	39.8		50.6	355	19.3	8.5	18	56.3	11.3	58.9
06	266	39.9	S 9	49.7	9	46.8	8.4	S19	07.6	11.2	58.9
07	281	40.0		48.7	24	14.2	8.4	19	18.8	11.1	58.9
M 08	296	40.1		47.8	38	41.6	8.2	19	29.9	11.0	58.9
I 09	311	40.2	. .	46.9	53	08.8	8.1	19	40.9	10.8	58.9
É 10	326	40.2		46.0	67	35.9	8.0	19	51.7	10.8	58.9
R 11	341	40.3		45.1	82	02.9	8.0	20	02.5	10.6	58.9
C 12	356	40.4	S 9	44.2	96	29.9	7.8	S20	13.1	10.6	59.0
O 13	11	40.5		43.2	110	56.7	7.7	20	23.7	10.4	59.0
L 14	26	40.6		42.3	125	23.4	7.7	20	34.1	10.3	59.0
E 15	41	40.7	. .	41.4	139	50.1	7.5	20	44.4	10.2	59.0
S 16	56	40.8		40.5	154	16.6	7.4	20	54.6	10.0	59.0
17	71	40.9		39.6	168	43.0	7.4	21	04.6	10.0	59.0
18	86	40.9	S 9	38.6	183	09.4	7.2	S21	14.6	9.8	59.0
19	101	41.0		37.7	197	35.6	7.2	21	24.4	9.7	59.1
20	116	41.1		36.8	212	01.8	7.1	21	34.1	9.5	59.1
21	131	41.2	. .	35.9	226	27.9	6.9	21	43.6	9.4	59.1
22	146	41.3		34.9	240	53.8	6.9	21	53.0	9.3	59.1
23	161	41.4		34.0	255	19.7	6.8	S22	02.3	9.2	59.1
	S/D	16.2	d	0.9	S/D		15.9		16.0		16.1

Lat.	Aurora				Orto Sol		Orto Luna							
	Náut.		Civil				21		22		23		24	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	05	44	07	02	08	14	25	28	01	28	▬		▬	
N 70	05	45	06	56	08	00	25	01	01	01	03	57	▬	
68	05	46	06	51	07	49	24	41	00	41	03	02	▬	
66	05	47	06	46	07	39	24	25	00	25	02	30	05	06
64	05	47	06	42	07	32	24	12	00	12	02	06	04	12
62	05	48	06	39	07	25	24	01	00	01	01	48	03	40
60	05	48	06	36	07	19	23	52	25	32	01	32	03	16
N 58	05	48	06	33	07	14	23	44	25	19	01	19	02	57
56	05	48	06	31	07	09	23	37	25	08	01	08	02	41
54	05	48	06	29	07	05	23	31	24	59	00	59	02	27
52	05	48	06	27	07	01	23	25	24	50	00	50	02	16
50	05	47	06	25	06	58	23	20	24	42	00	42	02	05
45	05	46	06	20	06	50	23	10	24	26	00	26	01	44
N 40	05	45	06	16	06	44	23	01	24	13	00	13	01	26
35	05	43	06	13	06	38	22	53	24	01	00	01	01	12
30	05	41	06	09	06	33	22	46	23	51	24	59	00	59
20	05	37	06	03	06	25	22	35	23	35	24	37	00	37
N 10	05	31	05	56	06	17	22	25	23	20	24	19	00	19
0	05	25	05	49	06	10	22	16	23	07	24	02	00	02
S 10	05	16	05	41	06	03	22	06	22	53	23	45	24	41
20	05	06	05	32	05	55	21	57	22	39	23	26	24	20
30	04	52	05	21	05	46	21	46	22	23	23	06	23	55
35	04	43	05	14	05	40	21	39	22	14	22	53	23	41
40	04	32	05	06	05	34	21	32	22	03	22	40	23	25
45	04	19	04	56	05	27	21	24	21	51	22	23	23	05
S 50	04	02	04	44	05	19	21	14	21	36	22	03	22	40
52	03	53	04	38	05	15	21	10	21	29	21	54	22	29
54	03	44	04	32	05	10	21	05	21	21	21	43	22	15
56	03	33	04	25	05	05	20	59	21	12	21	31	22	00
58	03	20	04	16	05	00	20	53	21	03	21	17	21	42
S 60	03	04	04	07	04	54	20	46	20	52	21	01	21	20

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.		Ocaso Luna 21		22		23		24	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	16	14	17	27	18	46	07	48	07	00	▬		▬	
N 70	16	28	17	33	18	44	08	01	07	30	06	23	▬	
68	16	40	17	38	18	43	08	12	07	52	07	18	▬	
66	16	49	17	42	18	42	08	21	08	09	07	52	07	13
64	16	57	17	46	18	41	08	29	08	24	08	17	08	07
62	17	03	17	49	18	41	08	36	08	36	08	36	08	40
60	17	09	17	52	18	40	08	42	08	46	08	53	09	05
N 58	17	14	17	55	18	40	08	47	08	55	09	06	09	24
56	17	19	17	57	18	40	08	52	09	03	09	18	09	41
54	17	23	17	59	18	40	08	56	09	10	09	29	09	55
52	17	27	18	01	18	40	09	00	09	17	09	38	10	07
50	17	30	18	03	18	41	09	03	09	22	09	46	10	18
45	17	38	18	07	18	41	09	11	09	35	10	04	10	41
N 40	17	44	18	11	18	43	09	17	09	45	10	19	10	59
35	17	49	18	15	18	44	09	22	09	54	10	31	11	14
30	17	54	18	18	18	46	09	27	10	02	10	42	11	28
20	18	02	18	25	18	50	09	36	10	16	11	01	11	51
N 10	18	10	18	31	18	56	09	43	10	28	11	17	12	11
0	18	17	18	38	19	02	09	50	10	39	11	32	12	29
S 10	18	24	18	45	19	10	09	57	10	51	11	48	12	48
20	18	32	18	54	19	21	10	05	11	03	12	04	13	08
30	18	41	19	05	19	34	10	13	11	17	12	23	13	31
35	18	46	19	12	19	43	10	18	11	25	12	35	13	45
40	18	52	19	20	19	54	10	24	11	35	12	47	14	01
45	18	59	19	30	20	07	10	30	11	46	13	03	14	20
S 50	19	07	19	41	20	24	10	38	11	59	13	21	14	43
52	19	11	19	47	20	32	10	42	12	05	13	30	14	55
54	19	15	19	53	20	41	10	46	12	12	13	40	15	08
56	19	20	20	01	20	52	10	51	12	20	13	52	15	23
58	19	26	20	09	21	05	10	56	12	29	14	05	15	41
S 60	19	32	20	18	21	20	11	01	12	39	14	20	16	02

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		SOL Paso Mer.		LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		LUNA Edad		LUNA Fase
d	m	s	m	s	h	m	h	m	h	m	d	%	
21	13	38	13	34	12	14	03	39	16	03	20	76	
22	13	30	13	27	12	13	04	27	16	53	21	66	
23	13	23	13	19	12	13	05	19	17	47	22	55	◐

UT (HmGr)		ARIES	VENUS −4·8		MARTE +1·3		JÚPITER −2·0		SATURNO +0·7	
		AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	24 00	153 51.1	221 08.3	S16 57.8	219 34.1	S22 20.8	169 27.9	S 7 42.5	192 54.8	S16 12.1
	01	168 53.6	236 08.8	57.8	234 34.6	20.5	184 29.8	42.3	207 57.0	12.0
	02	183 56.0	251 09.4	57.8	249 35.1	20.2	199 31.7	42.1	222 59.1	11.9
	03	198 58.5	266 09.9	57.8	264 35.6	19.9	214 33.6	41.9	238 01.3	11.8
	04	214 01.0	281 10.5	57.8	279 36.1	19.7	229 35.5	41.6	253 03.5	11.7
	05	229 03.4	296 11.0	57.8	294 36.5	19.4	244 37.4	41.4	268 05.7	11.6
	06	244 05.9	311 11.5	S16 57.8	309 37.0	S22 19.1	259 39.3	S 7 41.2	283 07.8	S16 11.5
	07	259 08.3	326 12.1	57.8	324 37.5	18.8	274 41.2	40.9	298 10.0	11.4
J	08	274 10.8	341 12.6	57.8	339 38.0	18.6	289 43.1	40.7	313 12.2	11.4
U	09	289 13.3	356 13.1	57.8	354 38.5	18.3	304 45.0	40.5	328 14.4	11.3
E	10	304 15.7	11 13.7	57.7	9 38.9	18.0	319 46.9	40.2	343 16.5	11.2
V	11	319 18.2	26 14.2	57.7	24 39.4	17.7	334 48.8	40.0	358 18.7	11.1
E	12	334 20.7	41 14.7	S16 57.7	39 39.9	S22 17.5	349 50.7	S 7 39.8	13 20.9	S16 11.0
S	13	349 23.1	56 15.3	57.7	54 40.4	17.2	4 52.6	39.6	28 23.1	10.9
	14	4 25.6	71 15.8	57.7	69 40.9	16.9	19 54.5	39.3	43 25.2	10.8
	15	19 28.1	86 16.3	57.7	84 41.3	16.6	34 56.4	39.1	58 27.4	10.8
	16	34 30.5	101 16.8	57.7	99 41.8	16.3	49 58.3	38.9	73 29.6	10.7
	17	49 33.0	116 17.3	57.7	114 42.3	16.1	65 00.2	38.6	88 31.8	10.6
	18	64 35.5	131 17.8	S16 57.6	129 42.8	S22 15.8	80 02.1	S 7 38.4	103 33.9	S16 10.5
	19	79 37.9	146 18.4	57.6	144 43.3	15.5	95 04.0	38.2	118 36.1	10.4
	20	94 40.4	161 18.9	57.6	159 43.8	15.2	110 05.9	37.9	133 38.3	10.3
	21	109 42.8	176 19.4	57.6	174 44.2	14.9	125 07.8	37.7	148 40.5	10.2
	22	124 45.3	191 19.9	57.6	189 44.7	14.7	140 09.7	37.5	163 42.6	10.2
	23	139 47.8	206 20.4	57.5	204 45.2	14.4	155 11.6	37.3	178 44.8	10.1
	25 00	154 50.2	221 20.9	S16 57.5	219 45.7	S22 14.1	170 13.5	S 7 37.0	193 47.0	S16 10.0
	01	169 52.7	236 21.4	57.5	234 46.2	13.8	185 15.4	36.8	208 49.2	09.9
	02	184 55.2	251 21.9	57.5	249 46.6	13.5	200 17.3	36.6	223 51.3	09.8
	03	199 57.6	266 22.4	57.5	264 47.1	13.2	215 19.2	36.3	238 53.5	09.7
	04	215 00.1	281 22.9	57.4	279 47.6	13.0	230 21.1	36.1	253 55.7	09.6
	05	230 02.6	296 23.4	57.4	294 48.1	12.7	245 23.0	35.9	268 57.9	09.6
	06	245 05.0	311 23.9	S16 57.4	309 48.6	S22 12.4	260 24.9	S 7 35.6	284 00.0	S16 09.5
	07	260 07.5	326 24.4	57.4	324 49.1	12.1	275 26.8	35.4	299 02.2	09.4
V	08	275 09.9	341 24.9	57.4	339 49.5	11.8	290 28.7	35.2	314 04.4	09.3
I	09	290 12.4	356 25.4	57.3	354 50.0	11.5	305 30.6	34.9	329 06.6	09.2
E	10	305 14.9	11 25.9	57.3	9 50.5	11.3	320 32.5	34.7	344 08.8	09.1
R	11	320 17.3	26 26.3	57.3	24 51.0	11.0	335 34.4	34.5	359 10.9	09.0
N	12	335 19.8	41 26.8	S16 57.3	39 51.5	S22 10.7	350 36.3	S 7 34.3	14 13.1	S16 08.9
E	13	350 22.3	56 27.3	57.2	54 51.9	10.4	5 38.2	34.0	29 15.3	08.9
S	14	5 24.7	71 27.8	57.2	69 52.4	10.1	20 40.1	33.8	44 17.5	08.8
	15	20 27.2	86 28.3	57.2	84 52.9	09.8	35 42.1	33.6	59 19.6	08.7
	16	35 29.7	101 28.7	57.1	99 53.4	09.5	50 44.0	33.3	74 21.8	08.6
	17	50 32.1	116 29.2	57.1	114 53.9	09.2	65 45.9	33.1	89 24.0	08.5
	18	65 34.6	131 29.7	S16 57.1	129 54.4	S22 09.0	80 47.8	S 7 32.9	104 26.2	S16 08.4
	19	80 37.1	146 30.2	57.1	144 54.8	08.7	95 49.7	32.6	119 28.3	08.3
	20	95 39.5	161 30.6	57.0	159 55.3	08.4	110 51.6	32.4	134 30.5	08.3
	21	110 42.0	176 31.1	57.0	174 55.8	08.1	125 53.5	32.2	149 32.7	08.2
	22	125 44.4	191 31.6	57.0	189 56.3	07.8	140 55.4	32.0	164 34.9	08.1
	23	140 46.9	206 32.0	56.9	204 56.8	07.5	155 57.3	31.7	179 37.0	08.0
	26 00	155 49.4	221 32.5	S16 56.9	219 57.3	S22 07.2	170 59.2	S 7 31.5	194 39.2	S16 07.9
	01	170 51.8	236 33.0	56.9	234 57.7	06.9	186 01.1	31.3	209 41.4	07.8
	02	185 54.3	251 33.4	56.8	249 58.2	06.6	201 03.0	31.0	224 43.6	07.7
	03	200 56.8	266 33.9	56.8	264 58.7	06.3	216 04.9	30.8	239 45.7	07.7
	04	215 59.2	281 34.3	56.8	279 59.2	06.0	231 06.8	30.6	254 47.9	07.6
	05	231 01.7	296 34.8	56.7	294 59.7	05.7	246 08.7	30.3	269 50.1	07.5
	06	246 04.2	311 35.2	S16 56.7	310 00.2	S22 05.5	261 10.6	S 7 30.1	284 52.3	S16 07.4
	07	261 06.6	326 35.7	56.6	325 00.6	05.2	276 12.5	29.9	299 54.5	07.3
S	08	276 09.1	341 36.1	56.6	340 01.1	04.9	291 14.4	29.6	314 56.6	07.2
Á	09	291 11.6	356 36.6	56.6	355 01.6	04.6	306 16.3	29.4	329 58.8	07.1
B	10	306 14.0	11 37.0	56.5	10 02.1	04.3	321 18.2	29.2	345 01.0	07.1
A	11	321 16.5	26 37.5	56.5	25 02.6	04.0	336 20.1	29.0	0 03.2	07.0
D	12	336 18.9	41 37.9	S16 56.4	40 03.1	S22 03.7	351 22.0	S 7 28.7	15 05.3	S16 06.9
O	13	351 21.4	56 38.4	56.4	55 03.6	03.4	6 23.9	28.5	30 07.5	06.8
	14	6 23.9	71 38.8	56.4	70 04.0	03.1	21 25.8	28.3	45 09.7	06.7
	15	21 26.3	86 39.2	56.3	85 04.5	02.8	36 27.7	28.0	60 11.9	06.6
	16	36 28.8	101 39.7	56.3	100 05.0	02.5	51 29.6	27.8	75 14.0	06.5
	17	51 31.3	116 40.1	56.2	115 05.5	02.2	66 31.5	27.6	90 16.2	06.5
	18	66 33.7	131 40.6	S16 56.2	130 06.0	S22 01.9	81 33.4	S 7 27.3	105 18.4	S16 06.4
	19	81 36.2	146 41.0	56.1	145 06.5	01.6	96 35.3	27.1	120 20.6	06.3
	20	96 38.7	161 41.4	56.1	160 07.0	01.3	111 37.2	26.9	135 22.8	06.2
	21	111 41.1	176 41.8	56.0	175 07.4	01.0	126 39.1	26.6	150 24.9	06.1
	22	126 43.6	191 42.3	56.0	190 07.9	00.7	141 41.0	26.4	165 27.1	06.0
	23	141 46.1	206 42.7	55.9	205 08.4	00.4	156 42.9	26.2	180 29.3	05.9
		h m								
Paso Mer.		13 38.4	*v* 0.5	*d* 0.0	*v* 0.5	*d* 0.3	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS ° ′	Dec ° ′
Acamar	315 13.7	S40 13.3
Achernar	335 22.4	S57 07.8
Acrux	173 02.0	S63 13.1
Adhara	255 07.5	S29 00.3
Aldebaran	290 42.3	N16 33.1
Alioth	166 14.6	N55 50.2
Alkaid	152 53.6	N49 12.0
Alnair	27 36.4	S46 51.4
Alnilam	275 40.0	S 1 11.4
Alphard	217 49.7	S 8 45.3
Alphecca	126 05.7	N26 38.2
Alpheratz	357 37.5	N29 12.6
Altair	62 02.5	N 8 55.4
Ankaa	353 09.9	S42 11.4
Antares	112 18.7	S26 28.8
Arcturus	145 49.9	N19 03.9
Atria	107 15.2	S69 03.7
Avior	234 15.1	S59 34.9
Bellatrix	278 25.3	N 6 22.1
Betelgeuse	270 54.5	N 7 24.6
Canopus	263 53.2	S52 42.7
Capella	280 25.2	N46 01.3
Deneb	49 27.8	N45 21.3
Denebola	182 27.1	N14 26.8
Diphda	348 49.9	S17 52.2
Dubhe	193 43.3	N61 37.9
Elnath	278 04.7	N28 37.6
Eltanin	90 43.5	N51 28.8
Enif	33 41.4	N 9 58.4
Fomalhaut	15 17.5	S29 30.5
Gacrux	171 53.7	S57 14.1
Gienah	175 45.7	S17 39.9
Hadar	148 39.0	S60 28.5
Hamal	327 54.0	N23 33.9
Kaus Aust.	83 35.8	S34 22.4
Kochab	137 19.4	N74 03.6
Markab	13 32.6	N15 19.3
Menkar	314 08.7	N 4 10.4
Menkent	148 00.2	S36 28.6
Miaplacidus	221 37.8	S69 48.5
Mirfak	308 31.7	N49 56.5
Nunki	75 50.9	S26 16.1
Peacock	53 10.0	S56 39.8
Pollux	243 19.9	N27 58.4
Procyon	244 53.1	N 5 10.0
Rasalhague	96 00.8	N12 32.5
Regulus	207 36.6	N11 51.5
Rigel	281 06.1	S 8 10.8
Rigil Kent.	139 43.2	S60 55.3
Sabik	102 05.6	S15 45.1
Schedar	349 34.2	N56 39.5
Shaula	96 13.7	S37 07.1
Sirius	258 28.1	S16 45.0
Spica	158 24.6	S11 16.6
Suhail	222 47.6	S43 31.4
Vega	80 35.0	N38 48.0
Zuben'ubi	136 58.5	S16 08.0

	AHS ° ′	Paso Mer. h m
Venus	66 30.7	9 14
Marte	64 55.4	9 21
Júpiter	15 23.3	12 37
Saturno	38 56.8	11 03

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	°	′	′	
24 00	176	41.5	S 9	33.1	269	45.5	6.6	S22	11.5	9.0	59.1
01	191	41.6		32.2	284	11.1	6.6	22	20.5	8.9	59.1
02	206	41.7		31.3	298	36.7	6.5	22	29.4	8.8	59.1
03	221	41.8	. .	30.3	313	02.2	6.4	22	38.2	8.6	59.2
04	236	41.8		29.4	327	27.6	6.3	22	46.8	8.5	59.2
05	251	41.9		28.5	341	52.9	6.2	22	55.3	8.3	59.2
06	266	42.0	S 9	27.6	356	18.1	6.1	S23	03.6	8.2	59.2
07	281	42.1		26.6	10	43.2	6.1	23	11.8	8.1	59.2
J 08	296	42.2		25.7	25	08.3	5.9	23	19.9	7.9	59.2
U 09	311	42.3	. .	24.8	39	33.2	5.9	23	27.8	7.8	59.2
E 10	326	42.4		23.9	53	58.1	5.7	23	35.6	7.6	59.2
V 11	341	42.5		22.9	68	22.8	5.7	23	43.2	7.5	59.2
E 12	356	42.6	S 9	22.0	82	47.5	5.6	S23	50.7	7.3	59.3
S 13	11	42.7		21.1	97	12.1	5.5	23	58.0	7.1	59.3
14	26	42.8		20.2	111	36.6	5.4	24	05.1	7.0	59.3
15	41	42.9	. .	19.2	126	01.0	5.3	24	12.1	6.9	59.3
16	56	43.0		18.3	140	25.3	5.3	24	19.0	6.7	59.3
17	71	43.0		17.4	154	49.6	5.1	24	25.7	6.5	59.3
18	86	43.1	S 9	16.5	169	13.7	5.1	S24	32.2	6.4	59.3
19	101	43.2		15.5	183	37.8	5.0	24	38.6	6.2	59.3
20	116	43.3		14.6	198	01.8	4.9	24	44.8	6.1	59.3
21	131	43.4	. .	13.7	212	25.7	4.9	24	50.9	5.9	59.4
22	146	43.5		12.8	226	49.6	4.8	24	56.8	5.7	59.4
23	161	43.6		11.8	241	13.4	4.7	25	02.5	5.6	59.4
25 00	176	43.7	S 9	10.9	255	37.1	4.6	S25	08.1	5.4	59.4
01	191	43.8		10.0	270	00.7	4.6	25	13.5	5.2	59.4
02	206	43.9		09.0	284	24.3	4.5	25	18.7	5.1	59.4
03	221	44.0	. .	08.1	298	47.8	4.4	25	23.8	4.9	59.4
04	236	44.1		07.2	313	11.2	4.4	25	28.7	4.7	59.4
05	251	44.2		06.3	327	34.6	4.3	25	33.4	4.5	59.4
06	266	44.3	S 9	05.3	341	57.9	4.2	S25	37.9	4.4	59.4
07	281	44.4		04.4	356	21.1	4.2	25	42.3	4.2	59.4
V 08	296	44.5		03.5	10	44.3	4.1	25	46.5	4.0	59.5
I 09	311	44.6	. .	02.5	25	07.4	4.1	25	50.5	3.9	59.5
E 10	326	44.7		01.6	39	30.5	4.0	25	54.4	3.7	59.5
R 11	341	44.8	9	00.7	53	53.5	3.9	25	58.1	3.5	59.5
N 12	356	44.9	S 8	59.7	68	16.4	3.9	S26	01.6	3.3	59.5
E 13	11	45.0		58.8	82	39.3	3.9	26	04.9	3.1	59.5
S 14	26	45.1		57.9	97	02.2	3.8	26	08.0	3.0	59.5
15	41	45.2	. .	56.9	111	25.0	3.8	26	11.0	2.8	59.5
16	56	45.3		56.0	125	47.8	3.7	26	13.8	2.6	59.5
17	71	45.4		55.1	140	10.5	3.7	26	16.4	2.4	59.5
18	86	45.5	S 8	54.1	154	33.2	3.6	S26	18.8	2.2	59.5
19	101	45.6		53.2	168	55.8	3.7	26	21.0	2.1	59.5
20	116	45.7		52.3	183	18.5	3.5	26	23.1	1.8	59.5
21	131	45.8	. .	51.3	197	41.0	3.6	26	24.9	1.7	59.5
22	146	45.9		50.4	212	03.6	3.5	26	26.6	1.5	59.5
23	161	46.0		49.5	226	26.1	3.5	26	28.1	1.3	59.6
26 00	176	46.1	S 8	48.5	240	48.6	3.5	S26	29.4	1.1	59.6
01	191	46.2		47.6	255	11.1	3.4	26	30.5	1.0	59.6
02	206	46.3		46.7	269	33.5	3.5	26	31.5	0.7	59.6
03	221	46.4	. .	45.7	283	56.0	3.4	26	32.2	0.6	59.6
04	236	46.5		44.8	298	18.4	3.4	26	32.8	0.4	59.6
05	251	46.6		43.9	312	40.8	3.4	26	33.2	0.2	59.6
06	266	46.7	S 8	42.9	327	03.2	3.4	S26	33.4	0.0	59.6
07	281	46.8		42.0	341	25.6	3.4	26	33.4	0.2	59.6
S 08	296	46.9		41.1	355	48.0	3.3	26	33.2	0.4	59.6
Á 09	311	47.0	. .	40.1	10	10.3	3.4	26	32.8	0.5	59.6
B 10	326	47.1		39.2	24	32.7	3.4	26	32.3	0.8	59.6
A 11	341	47.2		38.3	38	55.1	3.4	26	31.5	0.9	59.6
D 12	356	47.3	S 8	37.3	53	17.5	3.3	S26	30.6	1.1	59.6
O 13	11	47.4		36.4	67	39.8	3.4	26	29.5	1.3	59.6
14	26	47.5		35.5	82	02.2	3.4	26	28.2	1.5	59.6
15	41	47.6	. .	34.5	96	24.6	3.4	26	26.7	1.7	59.6
16	56	47.8		33.6	110	47.0	3.5	26	25.0	1.8	59.6
17	71	47.9		32.6	125	09.5	3.4	26	23.2	2.1	59.6
18	86	48.0	S 8	31.7	139	31.9	3.5	S26	21.1	2.2	59.6
19	101	48.1		30.8	153	54.4	3.5	26	18.9	2.4	59.6
20	116	48.2		29.8	168	16.9	3.5	26	16.5	2.6	59.6
21	131	48.3	. .	28.9	182	39.4	3.5	26	13.9	2.8	59.6
22	146	48.4		27.9	197	01.9	3.6	26	11.1	3.0	59.6
23	161	48.5		27.0	211	24.5	3.6	S26	08.1	3.2	59.6
	S/D	16.2	d	0.9	S/D		16.1		16.2		16.2

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			24	25	26	27
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	05	30	06	47	07 58	▬	▬	▬	▬
N 70	05	33	06	43	07 46	▬	▬	▬	▬
68	05	35	06	39	07 36	▬	▬	▬	▬
66	05	37	06	36	07 28	05 06	▬	▬	▬
64	05	38	06	33	07 21	04 12	06 47	▬	08 38
62	05	39	06	30	07 15	03 40	05 32	06 59	07 36
60	05	40	06	28	07 10	03 16	04 56	06 15	07 02
N 58	05	41	06	26	07 06	02 57	04 30	05 46	06 36
56	05	41	06	24	07 02	02 41	04 09	05 23	06 16
54	05	41	06	22	06 58	02 27	03 52	05 05	05 59
52	05	42	06	21	06 55	02 16	03 38	04 49	05 45
50	05	42	06	19	06 52	02 05	03 25	04 36	05 32
45	05	41	06	15	06 45	01 44	02 59	04 08	05 06
N 40	05	41	06	12	06 39	01 26	02 39	03 46	04 45
35	05	40	06	09	06 35	01 12	02 22	03 28	04 28
30	05	38	06	06	06 30	00 59	02 07	03 13	04 13
20	05	35	06	01	06 23	00 37	01 42	02 46	03 48
N 10	05	30	05	55	06 16	00 19	01 21	02 24	03 26
0	05	24	05	49	06 10	00 02	01 01	02 03	03 05
S 10	05	17	05	42	06 03	24 41	00 41	01 42	02 45
20	05	07	05	34	05 56	24 20	00 20	01 19	02 23
30	04	55	05	23	05 48	23 55	24 53	00 53	01 57
35	04	46	05	17	05 43	23 41	24 37	00 37	01 42
40	04	36	05	10	05 38	23 25	24 20	00 20	01 25
45	04	24	05	01	05 31	23 05	23 58	25 04	01 04
S 50	04	08	04	50	05 24	22 40	23 31	24 37	00 37
52	04	00	04	44	05 20	22 29	23 18	24 24	00 24
54	03	51	04	39	05 16	22 15	23 03	24 10	00 10
56	03	41	04	32	05 12	22 00	22 45	23 52	25 17
58	03	30	04	24	05 07	21 42	22 24	23 31	25 00
S 60	03	16	04	16	05 02	21 20	21 56	23 04	24 39

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	24	25	26	27
°	h m	h m	h m	h m	h m	h m	h m
N 72	16 30	17 41	18 59	▬	▬	▬	▬
N 70	16 42	17 45	18 56	▬	▬	▬	▬
68	16 51	17 49	18 53	▬	▬	▬	▬
66	16 59	17 52	18 51	07 13	▬	▬	▬
64	17 06	17 55	18 50	08 07	07 37	▬	10 09
62	17 12	17 57	18 48	08 40	08 53	09 37	11 10
60	17 17	17 59	18 47	09 05	09 30	10 20	11 45
N 58	17 21	18 01	18 47	09 24	09 56	10 50	12 10
56	17 25	18 03	18 46	09 41	10 16	11 12	12 29
54	17 29	18 05	18 46	09 55	10 34	11 30	12 46
52	17 32	18 06	18 46	10 07	10 48	11 46	13 00
50	17 35	18 08	18 45	10 18	11 01	12 00	13 12
45	17 42	18 11	18 45	10 41	11 28	12 27	13 38
N 40	17 47	18 15	18 46	10 59	11 49	12 49	13 58
35	17 52	18 17	18 47	11 14	12 06	13 07	14 15
30	17 56	18 20	18 48	11 28	12 21	13 23	14 29
20	18 03	18 26	18 51	11 51	12 47	13 49	14 54
N 10	18 10	18 31	18 56	12 11	13 09	14 11	15 15
0	18 16	18 37	19 02	12 29	13 30	14 33	15 35
S 10	18 23	18 44	19 09	12 48	13 51	14 53	15 54
20	18 30	18 52	19 18	13 08	14 13	15 16	16 15
30	18 38	19 02	19 31	13 31	14 39	15 42	16 39
35	18 42	19 08	19 39	13 45	14 54	15 57	16 53
40	18 48	19 15	19 49	14 01	15 11	16 15	17 09
45	18 54	19 24	20 01	14 20	15 32	16 36	17 28
S 50	19 01	19 35	20 16	14 43	15 59	17 03	17 52
52	19 05	19 40	20 24	14 55	16 12	17 16	18 04
54	19 09	19 46	20 33	15 08	16 27	17 31	18 17
56	19 13	19 52	20 43	15 23	16 45	17 49	18 32
58	19 17	20 00	20 54	15 41	17 06	18 10	18 49
S 60	19 23	20 08	21 08	16 02	17 33	18 37	19 10

Día	SOL				LUNA				
	Ec. Tiempo				Paso Mer.	Paso Mer.		Edad	Fase
	00^h		12^h			Sup.	Inf.		
d	m	s	m	s	h m	h m	h m	d	%
24	13	14	13	10	12 13	06 15	18 45	23	44
25	13	05	13	01	12 13	07 15	19 46	24	33
26	12	56	12	51	12 13	08 18	20 49	25	22

UT (HmGr)	ARIES	VENUS −4·7		MARTE +1·3		JÚPITER −2·0		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
27 00	156 48.5	221 43.1	S16 55.9	220 08.9	S22 00.1	171 44.8	S 7 26.0	195 31.5	S16 05.9
01	171 51.0	236 43.5	55.8	235 09.4	21 59.8	186 46.7	25.7	210 33.6	05.8
02	186 53.4	251 44.0	55.8	250 09.9	59.5	201 48.6	25.5	225 35.8	05.7
03	201 55.9	266 44.4 . .	55.7	265 10.4 . .	59.2	216 50.5 . .	25.3	240 38.0 . .	05.6
04	216 58.4	281 44.8	55.7	280 10.8	58.9	231 52.4	25.0	255 40.2	05.5
05	232 00.8	296 45.2	55.6	295 11.3	58.6	246 54.3	24.8	270 42.4	05.4
06	247 03.3	311 45.6	S16 55.6	310 11.8	S21 58.3	261 56.2	S 7 24.6	285 44.5	S16 05.3
07	262 05.8	326 46.0	55.5	325 12.3	58.0	276 58.1	24.3	300 46.7	05.3
08	277 08.2	341 46.5	55.5	340 12.8	57.7	292 00.0	24.1	315 48.9	05.2
D 09	292 10.7	356 46.9 . .	55.4	355 13.3 . .	57.4	307 01.9 . .	23.9	330 51.1 . .	05.1
O 10	307 13.2	11 47.3	55.4	10 13.8	57.1	322 03.8	23.6	345 53.2	05.0
M 11	322 15.6	26 47.7	55.3	25 14.2	56.8	337 05.7	23.4	0 55.4	04.9
I 12	337 18.1	41 48.1	S16 55.3	40 14.7	S21 56.5	352 07.6	S 7 23.2	15 57.6	S16 04.8
N 13	352 20.6	56 48.5	55.2	55 15.2	56.1	7 09.5	22.9	30 59.8	04.7
G 14	7 23.0	71 48.9	55.1	70 15.7	55.8	22 11.4	22.7	46 02.0	04.7
O 15	22 25.5	86 49.3 . .	55.1	85 16.2 . .	55.5	37 13.3 . .	22.5	61 04.1 . .	04.6
16	37 27.9	101 49.7	55.0	100 16.7	55.2	52 15.2	22.3	76 06.3	04.5
17	52 30.4	116 50.1	55.0	115 17.2	54.9	67 17.1	22.0	91 08.5	04.4
18	67 32.9	131 50.5	S16 54.9	130 17.6	S21 54.6	82 19.0	S 7 21.8	106 10.7	S16 04.3
19	82 35.3	146 50.9	54.9	145 18.1	54.3	97 20.9	21.6	121 12.8	04.2
20	97 37.8	161 51.3	54.8	160 18.6	54.0	112 22.8	21.3	136 15.0	04.1
21	112 40.3	176 51.7 . .	54.7	175 19.1 . .	53.7	127 24.7 . .	21.1	151 17.2 . .	04.1
22	127 42.7	191 52.1	54.7	190 19.6	53.4	142 26.6	20.9	166 19.4	04.0
23	142 45.2	206 52.4	54.6	205 20.1	53.1	157 28.5	20.6	181 21.6	03.9
28 00	157 47.7	221 52.8	S16 54.5	220 20.6	S21 52.8	172 30.4	S 7 20.4	196 23.7	S16 03.8
01	172 50.1	236 53.2	54.5	235 21.1	52.4	187 32.3	20.2	211 25.9	03.7
02	187 52.6	251 53.6	54.4	250 21.6	52.1	202 34.2	19.9	226 28.1	03.6
03	202 55.1	266 54.0 . .	54.3	265 22.0 . .	51.8	217 36.1 . .	19.7	241 30.3 . .	03.5
04	217 57.5	281 54.4	54.3	280 22.5	51.5	232 38.0	19.5	256 32.5	03.5
05	233 00.0	296 54.7	54.2	295 23.0	51.2	247 39.9	19.2	271 34.6	03.4
06	248 02.4	311 55.1	S16 54.1	310 23.5	S21 50.9	262 41.8	S 7 19.0	286 36.8	S16 03.3
07	263 04.9	326 55.5	54.1	325 24.0	50.6	277 43.7	18.8	301 39.0	03.2
L 08	278 07.4	341 55.9	54.0	340 24.5	50.3	292 45.6	18.6	316 41.2	03.1
U 09	293 09.8	356 56.2 . .	53.9	355 25.0 . .	49.9	307 47.5 . .	18.3	331 43.3 . .	03.0
N 10	308 12.3	11 56.6	53.9	10 25.5	49.6	322 49.4	18.1	346 45.5	02.9
E 11	323 14.8	26 57.0	53.8	25 25.9	49.3	337 51.3	17.9	1 47.7	02.9
S 12	338 17.2	41 57.4	S16 53.7	40 26.4	S21 49.0	352 53.2	S 7 17.6	16 49.9	S16 02.8
13	353 19.7	56 57.7	53.6	55 26.9	48.7	7 55.2	17.4	31 52.1	02.7
14	8 22.2	71 58.1	53.6	70 27.4	48.4	22 57.1	17.2	46 54.2	02.6
15	23 24.6	86 58.4 . .	53.5	85 27.9 . .	48.1	37 59.0 . .	16.9	61 56.4 . .	02.5
16	38 27.1	101 58.8	53.4	100 28.4	47.7	53 00.9	16.7	76 58.6	02.4
17	53 29.5	116 59.2	53.3	115 28.9	47.4	68 02.8	16.5	92 00.8	02.3
18	68 32.0	131 59.5	S16 53.3	130 29.4	S21 47.1	83 04.7	S 7 16.2	107 03.0	S16 02.3
19	83 34.5	146 59.9	53.2	145 29.9	46.8	98 06.6	16.0	122 05.1	02.2
20	98 36.9	162 00.2	53.1	160 30.3	46.5	113 08.5	15.8	137 07.3	02.1
21	113 39.4	177 00.6 . .	53.0	175 30.8 . .	46.2	128 10.4 . .	15.5	152 09.5 . .	02.0
22	128 41.9	192 01.0	53.0	190 31.3	45.8	143 12.3	15.3	167 11.7	01.9
23	143 44.3	207 01.3	52.9	205 31.8	45.5	158 14.2	15.1	182 13.9	01.8
1 00	158 46.8	222 01.7	S16 52.8	220 32.3	S21 45.2	173 16.1	S 7 14.8	197 16.0	S16 01.8
01	173 49.3	237 02.0	52.7	235 32.8	44.9	188 18.0	14.6	212 18.2	01.7
02	188 51.7	252 02.4	52.6	250 33.3	44.6	203 19.9	14.4	227 20.4	01.6
03	203 54.2	267 02.7 . .	52.6	265 33.8 . .	44.2	218 21.8 . .	14.2	242 22.6 . .	01.5
04	218 56.7	282 03.0	52.5	280 34.3	43.9	233 23.7	13.9	257 24.8	01.4
05	233 59.1	297 03.4	52.4	295 34.8	43.6	248 25.6	13.7	272 26.9	01.3
06	249 01.6	312 03.7	S16 52.3	310 35.3	S21 43.3	263 27.5	S 7 13.5	287 29.1	S16 01.2
07	264 04.0	327 04.1	52.2	325 35.7	42.9	278 29.4	13.2	302 31.3	01.2
M 08	279 06.5	342 04.4	52.1	340 36.2	42.6	293 31.3	13.0	317 33.5	01.1
A 09	294 09.0	357 04.8 . .	52.0	355 36.7 . .	42.3	308 33.2 . .	12.8	332 35.7 . .	01.0
R 10	309 11.4	12 05.1	52.0	10 37.2	42.0	323 35.1	12.5	347 37.8	00.9
T 11	324 13.9	27 05.4	51.9	25 37.7	41.7	338 37.0	12.3	2 40.0	00.8
E 12	339 16.4	42 05.8	S16 51.8	40 38.2	S21 41.3	353 38.9	S 7 12.1	17 42.2	S16 00.7
S 13	354 18.8	57 06.1	51.7	55 38.7	41.0	8 40.8	11.8	32 44.4	00.6
14	9 21.3	72 06.4	51.6	70 39.2	40.7	23 42.7	11.6	47 46.6	00.6
15	24 23.8	87 06.8 . .	51.5	85 39.7 . .	40.4	38 44.6 . .	11.4	62 48.7 . .	00.5
16	39 26.2	102 07.1	51.4	100 40.2	40.0	53 46.5	11.1	77 50.9	00.4
17	54 28.7	117 07.4	51.3	115 40.7	39.7	68 48.4	10.9	92 53.1	00.3
18	69 31.2	132 07.7	S16 51.2	130 41.1	S21 39.4	83 50.3	S 7 10.7	107 55.3	S16 00.2
19	84 33.6	147 08.1	51.1	145 41.6	39.1	98 52.2	10.4	122 57.5	00.1
20	99 36.1	162 08.4	51.1	160 42.1	38.7	113 54.1	10.2	137 59.6	00.0
21	114 38.5	177 08.7 . .	51.0	175 42.6 . .	38.4	128 56.0 . .	10.0	153 01.8	16 00.0
22	129 41.0	192 09.0	50.9	190 43.1	38.1	143 57.9	09.8	168 04.0	15 59.9
23	144 43.5	207 09.3	50.8	205 43.6	37.7	158 59.8	09.5	183 06.2	S15 59.8
	h m								
Paso Mer.	13 26.6	*v* 0.4	*d* 0.1	*v* 0.5	*d* 0.3	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.7	S40 13.3
Achernar	335 22.4	S57 07.8
Acrux	173 02.0	S63 13.2
Adhara	255 07.5	S29 00.3
Aldebaran	290 42.3	N16 33.1
Alioth	166 14.6	N55 50.2
Alkaid	152 53.6	N49 12.0
Alnair	27 36.3	S46 51.3
Alnilam	275 40.0	S 1 11.4
Alphard	217 49.7	S 8 45.4
Alphecca	126 05.6	N26 38.2
Alpheratz	357 37.5	N29 12.6
Altair	62 02.5	N 8 55.4
Ankaa	353 09.9	S42 11.4
Antares	112 18.7	S26 28.8
Arcturus	145 49.9	N19 03.9
Atria	107 15.1	S69 03.7
Avior	234 15.1	S59 35.0
Bellatrix	278 25.3	N 6 22.1
Betelgeuse	270 54.5	N 7 24.6
Canopus	263 53.2	S52 42.7
Capella	280 25.3	N46 01.3
Deneb	49 27.8	N45 21.3
Denebola	182 27.0	N14 26.8
Diphda	348 49.9	S17 52.2
Dubhe	193 43.3	N61 37.9
Elnath	278 04.7	N28 37.6
Eltanin	90 43.5	N51 28.8
Enif	33 41.4	N 9 58.4
Fomalhaut	15 17.5	S29 30.5
Gacrux	171 53.7	S57 14.1
Gienah	175 45.7	S17 39.9
Hadar	148 38.9	S60 28.5
Hamal	327 54.0	N23 33.9
Kaus Aust.	83 35.8	S34 22.4
Kochab	137 19.3	N74 03.6
Markab	13 32.5	N15 19.3
Menkar	314 08.7	N 4 10.4
Menkent	148 00.1	S36 28.6
Miaplacidus	221 37.8	S69 48.5
Mirfak	308 31.7	N49 56.5
Nunki	75 50.9	S26 16.1
Peacock	53 09.9	S56 39.8
Pollux	243 19.9	N27 58.4
Procyon	244 53.1	N 5 10.0
Rasalhague	96 00.8	N12 32.5
Regulus	207 36.6	N11 51.5
Rigel	281 06.1	S 8 10.8
Rigil Kent.	139 43.2	S60 55.3
Sabik	102 05.5	S15 45.1
Schedar	349 34.2	N56 39.5
Shaula	96 13.7	S37 07.1
Sirius	258 28.1	S16 45.0
Spica	158 24.5	S11 16.6
Suhail	222 47.6	S43 31.4
Vega	80 35.0	N38 48.0
Zuben'ubi	136 58.5	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	64 05.2	9 12
Marte	62 32.9	9 18
Júpiter	14 42.8	12 28
Saturno	38 36.1	10 53

UT (HmGr)	SOL						LUNA							
	AHGr		Dec				AHGr		v		Dec		d	Ph
d h	°	′	°	′			°	′	′		°	′	′	′
27 00	176	48.6	S 8	26.1			225	47.1	3.6	S26	04.9	3.3	59.6	
01	191	48.7		25.1			240	09.7	3.7	26	01.6	3.5	59.6	
02	206	48.8		24.2			254	32.4	3.7	25	58.1	3.7	59.6	
03	221	48.9		23.2			268	55.1	3.8	25	54.4	3.9	59.6	
04	236	49.0		22.3			283	17.9	3.8	25	50.5	4.1	59.6	
05	251	49.1		21.4			297	40.7	3.8	25	46.4	4.2	59.6	
06	266	49.3	S 8	20.4			312	03.5	3.9	S25	42.2	4.4	59.6	
07	281	49.4		19.5			326	26.4	4.0	25	37.8	4.6	59.6	
08	296	49.5		18.5			340	49.4	4.0	25	33.2	4.8	59.6	
09	311	49.6		17.6			355	12.4	4.0	25	28.4	5.0	59.6	
10	326	49.7		16.7			9	35.4	4.1	25	23.4	5.1	59.6	
11	341	49.8		15.7			23	58.5	4.2	25	18.3	5.3	59.6	
12	356	49.9	S 8	14.8			38	21.7	4.2	S25	13.0	5.5	59.6	
13	11	50.0		13.8			52	44.9	4.3	25	07.5	5.6	59.6	
14	26	50.1		12.9			67	08.2	4.3	25	01.9	5.8	59.6	
15	41	50.2		12.0			81	31.5	4.4	24	56.1	6.0	59.6	
16	56	50.4		11.0			95	54.9	4.5	24	50.1	6.2	59.6	
17	71	50.5		10.1			110	18.4	4.6	24	43.9	6.3	59.6	
18	86	50.6	S 8	09.1			124	42.0	4.6	S24	37.6	6.5	59.6	
19	101	50.7		08.2			139	05.6	4.7	24	31.1	6.6	59.6	
20	116	50.8		07.2			153	29.3	4.7	24	24.5	6.9	59.6	
21	131	50.9		06.3			167	53.0	4.9	24	17.6	6.9	59.6	
22	146	51.0		05.3			182	16.9	4.9	24	10.7	7.2	59.5	
23	161	51.1		04.4			196	40.8	5.0	24	03.5	7.3	59.5	
28 00	176	51.3	S 8	03.5			211	04.8	5.1	S23	56.2	7.4	59.5	
01	191	51.4		02.5			225	28.9	5.1	23	48.8	7.7	59.5	
02	206	51.5		01.6			239	53.0	5.2	23	41.1	7.7	59.5	
03	221	51.6	8	00.6			254	17.2	5.4	23	33.4	8.0	59.5	
04	236	51.7	7	59.7			268	41.6	5.4	23	25.4	8.0	59.5	
05	251	51.8		58.7			283	06.0	5.5	23	17.4	8.3	59.5	
06	266	51.9	S 7	57.8			297	30.5	5.5	S23	09.1	8.4	59.5	
07	281	52.0		56.8			311	55.0	5.7	23	00.7	8.5	59.5	
08	296	52.2		55.9			326	19.7	5.8	22	52.2	8.7	59.5	
09	311	52.3		55.0			340	44.5	5.8	22	43.5	8.8	59.5	
10	326	52.4		54.0			355	09.3	5.9	22	34.7	8.9	59.4	
11	341	52.5		53.1			9	34.2	6.1	22	25.8	9.2	59.4	
12	356	52.6	S 7	52.1			23	59.3	6.1	S22	16.6	9.2	59.4	
13	11	52.7		51.2			38	24.4	6.2	22	07.4	9.4	59.4	
14	26	52.9		50.2			52	49.6	6.3	21	58.0	9.5	59.4	
15	41	53.0		49.3			67	14.9	6.4	21	48.5	9.7	59.4	
16	56	53.1		48.3			81	40.3	6.5	21	38.8	9.8	59.4	
17	71	53.2		47.4			96	05.8	6.6	21	29.0	9.9	59.4	
18	86	53.3	S 7	46.4			110	31.4	6.7	S21	19.1	10.0	59.4	
19	101	53.4		45.5			124	57.1	6.8	21	09.1	10.2	59.3	
20	116	53.6		44.5			139	22.9	6.9	20	58.9	10.3	59.3	
21	131	53.7		43.6			153	48.8	7.0	20	48.6	10.5	59.3	
22	146	53.8		42.6			168	14.8	7.0	20	38.1	10.5	59.3	
23	161	53.9		41.7			182	40.8	7.2	20	27.6	10.7	59.3	
1 00	176	54.0	S 7	40.7			197	07.0	7.3	S20	16.9	10.8	59.3	
01	191	54.1		39.8			211	33.3	7.4	20	06.1	10.9	59.3	
02	206	54.3		38.8			225	59.7	7.4	19	55.2	11.1	59.3	
03	221	54.4		37.9			240	26.1	7.6	19	44.1	11.1	59.2	
04	236	54.5		36.9			254	52.7	7.7	19	33.0	11.3	59.2	
05	251	54.6		36.0			269	19.4	7.8	19	21.7	11.4	59.2	
06	266	54.7	S 7	35.0			283	46.2	7.9	S19	10.3	11.5	59.2	
07	281	54.9		34.1			298	13.1	7.9	18	58.8	11.6	59.2	
08	296	55.0		33.1			312	40.0	8.1	18	47.2	11.7	59.2	
09	311	55.1		32.2			327	07.1	8.2	18	35.5	11.8	59.1	
10	326	55.2		31.2			341	34.3	8.3	18	23.7	11.9	59.1	
11	341	55.3		30.3			356	01.6	8.3	18	11.8	12.0	59.1	
12	356	55.5	S 7	29.3			10	28.9	8.5	S17	59.8	12.1	59.1	
13	11	55.6		28.4			24	56.4	8.6	17	47.7	12.2	59.1	
14	26	55.7		27.4			39	24.0	8.6	17	35.5	12.3	59.1	
15	41	55.8		26.5			53	51.6	8.8	17	23.2	12.4	59.0	
16	56	55.9		25.5			68	19.4	8.9	17	10.8	12.5	59.0	
17	71	56.1		24.6			82	47.3	8.9	16	58.3	12.5	59.0	
18	86	56.2	S 7	23.6			97	15.2	9.1	S16	45.8	12.7	59.0	
19	101	56.3		22.7			111	43.3	9.2	16	33.1	12.7	59.0	
20	116	56.4		21.7			126	11.5	9.2	16	20.4	12.9	58.9	
21	131	56.6		20.8			140	39.7	9.4	16	07.5	12.9	58.9	
22	146	56.7		19.8			155	08.1	9.4	15	54.6	13.0	58.9	
23	161	56.8		18.9			169	36.5	9.6	S15	41.6	13.0	58.9	
	S/D	16.2	d	0.9			S/D	16.2			16.2		16.1	

DOMINGO LUNES MARTES

Lat.	Aurora				Orto Sol		Orto Luna							
	Náut.		Civil				27		28		1		2	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	05	15	06	33	07	42	▬		▬		▬		09	14
N 70	05	20	06	30	07	32	▬		▬				09	44
68	05	23	06	27	07	24	▬		▬				09	00
66	05	26	06	25	07	17	▬				09	03	08	31
64	05	28	06	23	07	11					08	38	08	17
62	05	30	06	21	07	06					07	36	07	47
60	05	32	06	20	07	02					07	02	07	24
N 58	05	33	06	18	06	58					06	36	07	05
56	05	34	06	17	06	54					06	16	06	50
54	05	35	06	15	06	51					05	59	06	36
52	05	35	06	14	06	48					05	45	06	25
50	05	36	06	13	06	46					05	32	06	14
45	05	36	06	10	06	40					05	06	05	52
N 40	05	37	06	08	06	35					04	45	05	34
35	05	36	06	05	06	31					04	28	05	19
30	05	35	06	03	06	27					04	13	05	06
20	05	33	05	58	06	21					03	48	04	44
N 10	05	29	05	54	06	15					03	26	04	24
0	05	24	05	48	06	09					03	05	04	06
S 10	05	18	05	42	06	03					02	45	03	48
20	05	09	05	35	05	57					02	23	03	28
30	04	57	05	26	05	50					01	57	03	06
35	04	50	05	20	05	46					01	42	02	52
40	04	40	05	13	05	41					01	25	02	37
45	04	29	05	05	05	36					01	04	02	18
S 50	04	14	04	55	05	29					00	37	01	55
52	04	07	04	50	05	26					00	24	01	44
54	03	59	04	45	05	22					00	10	01	32
56	03	50	04	39	05	18					25	17	01	17
58	03	39	04	32	05	14					25	00	01	00
S 60	03	26	04	25	05	09					24	39	00	39

Lat.	Ocaso Sol		Crepúsculo				Ocaso Luna							
			Civil		Náut.		27		28		1		2	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	16	45	17	54	19	13	▬		▬		▬		15	30
N 70	16	55	17	57	19	08	▬		▬				13	10
68	17	03	18	00	19	04	▬		▬				13	52
66	17	10	18	02	19	01	▬				11	51	14	20
64	17	15	18	03	18	58	10	09	12	36	14	41	16	36
62	17	20	18	05	18	56	11	10	13	05	14	58	16	45
60	17	25	18	07	18	55	11	45	13	27	15	13	16	53
N 58	17	28	18	08	18	53	12	10	13	45	15	24	17	01
56	17	32	18	09	18	52	12	29	14	00	15	35	17	07
54	17	35	18	11	18	51	12	46	14	13	15	44	17	12
52	17	38	18	12	18	51	13	00	14	24	15	52	17	17
50	17	40	18	13	18	50	13	12	14	34	15	59	17	22
45	17	46	18	15	18	49	13	38	14	55	16	14	17	32
N 40	17	51	18	18	18	49	13	58	15	12	16	27	17	40
35	17	55	18	20	18	49	14	15	15	26	16	38	17	47
30	17	58	18	22	18	50	14	29	15	39	16	47	17	53
20	18	05	18	27	18	52	14	54	15	59	17	03	18	03
N 10	18	10	18	32	18	56	15	15	16	17	17	17	18	12
0	18	16	18	37	19	01	15	35	16	34	17	29	18	20
S 10	18	21	18	43	19	07	15	54	16	51	17	42	18	29
20	18	27	18	50	19	16	16	15	17	08	17	55	18	38
30	18	34	18	59	19	27	16	39	17	28	18	11	18	47
35	18	38	19	04	19	35	16	53	17	40	18	19	18	53
40	18	43	19	11	19	44	17	09	17	53	18	29	19	00
45	18	49	19	19	19	55	17	28	18	09	18	41	19	07
S 50	18	55	19	29	20	09	17	52	18	28	18	55	19	16
52	18	58	19	33	20	16	18	04	18	37	19	02	19	20
54	19	02	19	38	20	24	18	17	18	47	19	09	19	24
56	19	05	19	44	20	33	18	32	18	59	19	17	19	29
58	19	09	19	51	20	44	18	49	19	12	19	26	19	35
S 60	19	14	19	59	20	56	19	10	19	27	19	36	19	41

Día	SOL				Paso Mer.	LUNA					
	Ec. Tiempo					Paso Mer.				Edad	Fase
	00^h		12^h			Sup.		Inf.			
d	m	s	m	s	h m	h	m	h	m	d	%
27	12	46	12	41	12 13	09	20	21	50	26	13
28	12	35	12	30	12 12	10	20	22	49	27	7
1	12	24	12	18	12 12	11	16	23	43	28	2

UT (HmGr)	ARIES	VENUS −4·7		MARTE +1·2		JÚPITER −2·0		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
2 00	159 45.9	222 09.7	S16 50.7	220 44.1	S21 37.4	174 01.7	S 7 09.3	198 08.4	S15 59.7
01	174 48.4	237 10.0	50.6	235 44.6	37.1	189 03.6	09.1	213 10.6	59.6
02	189 50.9	252 10.3	50.5	250 45.1	36.8	204 05.5	08.8	228 12.7	59.5
03	204 53.3	267 10.6	50.4	265 45.6	36.4	219 07.4	08.6	243 14.9	59.5
04	219 55.8	282 10.9	50.3	280 46.1	36.1	234 09.3	08.4	258 17.1	59.4
05	234 58.3	297 11.2	50.2	295 46.6	35.8	249 11.2	08.1	273 19.3	59.3
06	250 00.7	312 11.5	S16 50.1	310 47.1	S21 35.4	264 13.1	S 7 07.9	288 21.5	S15 59.2
07	265 03.2	327 11.8	50.0	325 47.5	35.1	279 15.0	07.7	303 23.6	59.1
08	280 05.6	342 12.1	49.9	340 48.0	34.8	294 16.9	07.4	318 25.8	59.0
M 09	295 08.1	357 12.5	49.8	355 48.5	34.4	309 18.8	07.2	333 28.0	58.9
I 10	310 10.6	12 12.8	49.7	10 49.0	34.1	324 20.7	07.0	348 30.2	58.9
É 11	325 13.0	27 13.1	49.6	25 49.5	33.8	339 22.6	06.7	3 32.4	58.8
R 12	340 15.5	42 13.4	S16 49.5	40 50.0	S21 33.4	354 24.5	S 7 06.5	18 34.5	S15 58.7
C 13	355 18.0	57 13.7	49.4	55 50.5	33.1	9 26.4	06.3	33 36.7	58.6
O 14	10 20.4	72 14.0	49.2	70 51.0	32.8	24 28.3	06.0	48 38.9	58.5
L 15	25 22.9	87 14.3	49.1	85 51.5	32.4	39 30.2	05.8	63 41.1	58.4
E 16	40 25.4	102 14.6	49.0	100 52.0	32.1	54 32.1	05.6	78 43.3	58.4
S 17	55 27.8	117 14.8	48.9	115 52.5	31.8	69 34.0	05.3	93 45.5	58.3
18	70 30.3	132 15.1	S16 48.8	130 53.0	S21 31.4	84 35.9	S 7 05.1	108 47.6	S15 58.2
19	85 32.8	147 15.4	48.7	145 53.5	31.1	99 37.8	04.9	123 49.8	58.1
20	100 35.2	162 15.7	48.6	160 54.0	30.8	114 39.7	04.7	138 52.0	58.0
21	115 37.7	177 16.0	48.5	175 54.5	30.4	129 41.6	04.4	153 54.2	57.9
22	130 40.1	192 16.3	48.4	190 55.0	30.1	144 43.5	04.2	168 56.4	57.8
23	145 42.6	207 16.6	48.3	205 55.5	29.7	159 45.4	04.0	183 58.5	57.8
3 00	160 45.1	222 16.9	S16 48.1	220 55.9	S21 29.4	174 47.3	S 7 03.7	199 00.7	S15 57.7
01	175 47.5	237 17.2	48.0	235 56.4	29.1	189 49.2	03.5	214 02.9	57.6
02	190 50.0	252 17.4	47.9	250 56.9	28.7	204 51.1	03.3	229 05.1	57.5
03	205 52.5	267 17.7	47.8	265 57.4	28.4	219 53.0	03.0	244 07.3	57.4
04	220 54.9	282 18.0	47.7	280 57.9	28.1	234 54.9	02.8	259 09.5	57.3
05	235 57.4	297 18.3	47.6	295 58.4	27.7	249 56.8	02.6	274 11.6	57.3
06	250 59.9	312 18.6	S16 47.4	310 58.9	S21 27.4	264 58.7	S 7 02.3	289 13.8	S15 57.2
07	266 02.3	327 18.8	47.3	325 59.4	27.0	280 00.6	02.1	304 16.0	57.1
08	281 04.8	342 19.1	47.2	340 59.9	26.7	295 02.5	01.9	319 18.2	57.0
J 09	296 07.2	357 19.4	47.1	356 00.4	26.4	310 04.4	01.6	334 20.4	56.9
U 10	311 09.7	12 19.6	47.0	11 00.9	26.0	325 06.3	01.4	349 22.6	56.8
E 11	326 12.2	27 19.9	46.8	26 01.4	25.7	340 08.2	01.2	4 24.7	56.7
V 12	341 14.6	42 20.2	S16 46.7	41 01.9	S21 25.3	355 10.1	S 7 00.9	19 26.9	S15 56.7
E 13	356 17.1	57 20.5	46.6	56 02.4	25.0	10 12.0	00.7	34 29.1	56.6
S 14	11 19.6	72 20.7	46.5	71 02.9	24.6	25 13.9	00.5	49 31.3	56.5
15	26 22.0	87 21.0	46.4	86 03.4	24.3	40 15.8	00.2	64 33.5	56.4
16	41 24.5	102 21.3	46.2	101 03.9	24.0	55 17.7	7 00.0	79 35.7	56.3
17	56 27.0	117 21.5	46.1	116 04.4	23.6	70 19.6	6 59.8	94 37.8	56.2
18	71 29.4	132 21.8	S16 46.0	131 04.9	S21 23.3	85 21.5	S 6 59.5	109 40.0	S15 56.2
19	86 31.9	147 22.0	45.9	146 05.4	22.9	100 23.4	59.3	124 42.2	56.1
20	101 34.4	162 22.3	45.7	161 05.9	22.6	115 25.3	59.1	139 44.4	56.0
21	116 36.8	177 22.6	45.6	176 06.4	22.2	130 27.2	58.9	154 46.6	55.9
22	131 39.3	192 22.8	45.5	191 06.9	21.9	145 29.1	58.6	169 48.8	55.8
23	146 41.7	207 23.1	45.3	206 07.4	21.5	160 31.0	58.4	184 50.9	55.7
4 00	161 44.2	222 23.3	S16 45.2	221 07.9	S21 21.2	175 32.9	S 6 58.2	199 53.1	S15 55.6
01	176 46.7	237 23.6	45.1	236 08.4	20.8	190 34.9	57.9	214 55.3	55.6
02	191 49.1	252 23.8	44.9	251 08.9	20.5	205 36.8	57.7	229 57.5	55.5
03	206 51.6	267 24.1	44.8	266 09.3	20.1	220 38.7	57.5	244 59.7	55.4
04	221 54.1	282 24.3	44.7	281 09.8	19.8	235 40.6	57.2	260 01.9	55.3
05	236 56.5	297 24.6	44.5	296 10.3	19.5	250 42.5	57.0	275 04.0	55.2
06	251 59.0	312 24.8	S16 44.4	311 10.8	S21 19.1	265 44.4	S 6 56.8	290 06.2	S15 55.1
07	267 01.5	327 25.1	44.3	326 11.3	18.8	280 46.3	56.5	305 08.4	55.1
V 08	282 03.9	342 25.3	44.1	341 11.8	18.4	295 48.2	56.3	320 10.6	55.0
I 09	297 06.4	357 25.6	44.0	356 12.3	18.1	310 50.1	56.1	335 12.8	54.9
E 10	312 08.8	12 25.8	43.9	11 12.8	17.7	325 52.0	55.8	350 15.0	54.8
R 11	327 11.3	27 26.0	43.7	26 13.3	17.3	340 53.9	55.6	5 17.1	54.7
N 12	342 13.8	42 26.3	S16 43.6	41 13.8	S21 17.0	355 55.8	S 6 55.4	20 19.3	S15 54.6
E 13	357 16.2	57 26.5	43.4	56 14.3	16.6	10 57.7	55.1	35 21.5	54.6
S 14	12 18.7	72 26.8	43.3	71 14.8	16.3	25 59.6	54.9	50 23.7	54.5
15	27 21.2	87 27.0	43.2	86 15.3	15.9	41 01.5	54.7	65 25.9	54.4
16	42 23.6	102 27.2	43.0	101 15.8	15.6	56 03.4	54.4	80 28.1	54.3
17	57 26.1	117 27.5	42.9	116 16.3	15.2	71 05.3	54.2	95 30.3	54.2
18	72 28.6	132 27.7	S16 42.7	131 16.8	S21 14.9	86 07.2	S 6 54.0	110 32.4	S15 54.1
19	87 31.0	147 27.9	42.6	146 17.3	14.5	101 09.1	53.7	125 34.6	54.0
20	102 33.5	162 28.2	42.4	161 17.8	14.2	116 11.0	53.5	140 36.8	54.0
21	117 36.0	177 28.4	42.3	176 18.3	13.8	131 12.9	53.3	155 39.0	53.9
22	132 38.4	192 28.6	42.2	191 18.8	13.5	146 14.8	53.0	170 41.2	53.8
23	147 40.9	207 28.8	42.0	206 19.3	13.1	161 16.7	52.8	185 43.4	53.7
	h m								
Paso Mer.	13 14.8	*v* 0.3	*d* 0.1	*v* 0.5	*d* 0.3	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.7	S40 13.3
Achernar	335 22.4	S57 07.8
Acrux	173 02.0	S63 13.2
Adhara	255 07.5	S29 00.3
Aldebaran	290 42.3	N16 33.1
Alioth	166 14.6	N55 50.2
Alkaid	152 53.5	N49 12.0
Alnair	27 36.3	S46 51.3
Alnilam	275 40.0	S 1 11.4
Alphard	217 49.7	S 8 45.4
Alphecca	126 05.6	N26 38.2
Alpheratz	357 37.5	N29 12.6
Altair	62 02.5	N 8 55.4
Ankaa	353 09.9	S42 11.4
Antares	112 18.7	S26 28.8
Arcturus	145 49.9	N19 03.9
Atria	107 15.1	S69 03.7
Avior	234 15.2	S59 35.0
Bellatrix	278 25.3	N 6 22.1
Betelgeuse	270 54.5	N 7 24.6
Canopus	263 53.2	S52 42.7
Capella	280 25.3	N46 01.3
Deneb	49 27.8	N45 21.3
Denebola	182 27.0	N14 26.8
Diphda	348 49.9	S17 52.2
Dubhe	193 43.2	N61 37.9
Elnath	278 04.8	N28 37.6
Eltanin	90 43.4	N51 28.8
Enif	33 41.4	N 9 58.4
Fomalhaut	15 17.5	S29 30.5
Gacrux	171 53.7	S57 14.1
Gienah	175 45.7	S17 39.9
Hadar	148 38.9	S60 28.6
Hamal	327 54.0	N23 33.9
Kaus Aust.	83 35.8	S34 22.4
Kochab	137 19.3	N74 03.6
Markab	13 32.5	N15 19.3
Menkar	314 08.7	N 4 10.4
Menkent	148 00.1	S36 28.6
Miaplacidus	221 37.9	S69 48.6
Mirfak	308 31.8	N49 56.5
Nunki	75 50.8	S26 16.1
Peacock	53 09.9	S56 39.8
Pollux	243 19.9	N27 58.4
Procyon	244 53.1	N 5 10.0
Rasalhague	96 00.8	N12 32.4
Regulus	207 36.6	N11 51.5
Rigel	281 06.1	S 8 10.8
Rigil Kent.	139 43.1	S60 55.3
Sabik	102 05.5	S15 45.1
Schedar	349 34.2	N56 39.5
Shaula	96 13.6	S37 07.1
Sirius	258 28.1	S16 45.0
Spica	158 24.5	S11 16.6
Suhail	222 47.6	S43 31.4
Vega	80 35.0	N38 47.9
Zuben'ubi	136 58.5	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	61 31.8	9 11
Marte	60 10.9	9 16
Júpiter	14 02.2	12 19
Saturno	38 15.7	10 42

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	°	′	′	′	
MIÉRCOLES 2 00	176	56.9	S 7	17.9	184	05.1	9.6	S15	28.6	13.2	58.9
01	191	57.1		16.9	198	33.7	9.7	15	15.4	13.2	58.8
02	206	57.2		16.0	213	02.4	9.8	15	02.2	13.3	58.8
03	221	57.3	. .	15.0	227	31.2	10.0	14	48.9	13.4	58.8
04	236	57.4		14.1	242	00.2	10.0	14	35.5	13.4	58.8
05	251	57.5		13.1	256	29.2	10.1	14	22.1	13.6	58.8
06	266	57.7	S 7	12.2	270	58.3	10.2	S14	08.5	13.5	58.7
07	281	57.8		11.2	285	27.5	10.2	13	55.0	13.7	58.7
08	296	57.9		10.3	299	56.7	10.4	13	41.3	13.7	58.7
09	311	58.0	. .	09.3	314	26.1	10.5	13	27.6	13.8	58.7
10	326	58.2		08.3	328	55.6	10.5	13	13.8	13.8	58.6
11	341	58.3		07.4	343	25.1	10.6	13	00.0	13.9	58.6
12	356	58.4	S 7	06.4	357	54.7	10.8	S12	46.1	13.9	58.6
13	11	58.6		05.5	12	24.5	10.8	12	32.2	14.0	58.6
14	26	58.7		04.5	26	54.3	10.9	12	18.2	14.1	58.6
15	41	58.8	. .	03.6	41	24.2	10.9	12	04.1	14.1	58.5
16	56	58.9		02.6	55	54.1	11.1	11	50.0	14.2	58.5
17	71	59.1		01.7	70	24.2	11.1	11	35.8	14.2	58.5
18	86	59.2	S 7	00.7	84	54.3	11.2	S11	21.6	14.2	58.5
19	101	59.3	6	59.7	99	24.5	11.3	11	07.4	14.3	58.4
20	116	59.4		58.8	113	54.8	11.4	10	53.1	14.4	58.4
21	131	59.6	. .	57.8	128	25.2	11.5	10	38.7	14.3	58.4
22	146	59.7		56.9	142	55.7	11.5	10	24.4	14.5	58.4
23	161	59.8		55.9	157	26.2	11.6	10	09.9	14.4	58.3
JUEVES 3 00	177	00.0	S 6	55.0	171	56.8	11.7	S 9	55.5	14.5	58.3
01	192	00.1		54.0	186	27.5	11.8	9	41.0	14.6	58.3
02	207	00.2		53.0	200	58.3	11.8	9	26.4	14.5	58.3
03	222	00.3	. .	52.1	215	29.1	11.9	9	11.9	14.6	58.2
04	237	00.5		51.1	230	00.0	12.0	8	57.3	14.7	58.2
05	252	00.6		50.2	244	31.0	12.1	8	42.6	14.6	58.2
06	267	00.7	S 6	49.2	259	02.1	12.1	S 8	28.0	14.7	58.1
07	282	00.9		48.2	273	33.2	12.2	8	13.3	14.7	58.1
08	297	01.0		47.3	288	04.4	12.2	7	58.6	14.8	58.1
09	312	01.1	. .	46.3	302	35.6	12.4	7	43.8	14.8	58.1
10	327	01.2		45.4	317	07.0	12.3	7	29.0	14.7	58.0
11	342	01.4		44.4	331	38.3	12.5	7	14.3	14.9	58.0
12	357	01.5	S 6	43.4	346	09.8	12.5	S 6	59.4	14.8	58.0
13	12	01.6		42.5	0	41.3	12.6	6	44.6	14.8	58.0
14	27	01.8		41.5	15	12.9	12.6	6	29.8	14.9	57.9
15	42	01.9	. .	40.6	29	44.5	12.7	6	14.9	14.9	57.9
16	57	02.0		39.6	44	16.2	12.8	6	00.0	14.9	57.9
17	72	02.2		38.6	58	48.0	12.8	5	45.1	14.9	57.8
18	87	02.3	S 6	37.7	73	19.8	12.9	S 5	30.2	14.9	57.8
19	102	02.4		36.7	87	51.7	12.9	5	15.3	14.9	57.8
20	117	02.6		35.8	102	23.6	13.0	5	00.4	15.0	57.8
21	132	02.7	. .	34.8	116	55.6	13.0	4	45.4	14.9	57.7
22	147	02.8		33.8	131	27.6	13.1	4	30.5	15.0	57.7
23	162	03.0		32.9	145	59.7	13.2	4	15.5	14.9	57.7
VIERNES 4 00	177	03.1	S 6	31.9	160	31.9	13.2	S 4	00.6	15.0	57.6
01	192	03.2		31.0	175	04.1	13.2	3	45.6	14.9	57.6
02	207	03.4		30.0	189	36.3	13.3	3	30.7	15.0	57.6
03	222	03.5	. .	29.0	204	08.6	13.4	3	15.7	15.0	57.6
04	237	03.6		28.1	218	41.0	13.4	3	00.7	14.9	57.5
05	252	03.8		27.1	233	13.4	13.4	2	45.8	15.0	57.5
06	267	03.9	S 6	26.1	247	45.8	13.5	S 2	30.8	14.9	57.5
07	282	04.0		25.2	262	18.3	13.5	2	15.9	15.0	57.4
08	297	04.2		24.2	276	50.8	13.6	2	00.9	14.9	57.4
09	312	04.3	. .	23.2	291	23.4	13.6	1	46.0	14.9	57.4
10	327	04.4		22.3	305	56.0	13.6	1	31.1	15.0	57.3
11	342	04.6		21.3	320	28.6	13.7	1	16.1	14.9	57.3
12	357	04.7	S 6	20.4	335	01.3	13.7	S 1	01.2	14.9	57.3
13	12	04.8		19.4	349	34.0	13.8	0	46.3	14.9	57.3
14	27	05.0		18.4	4	06.8	13.8	0	31.4	14.8	57.2
15	42	05.1	. .	17.5	18	39.6	13.8	0	16.6	14.9	57.2
16	57	05.3		16.5	33	12.4	13.8	S 0	01.7	14.8	57.2
17	72	05.4		15.5	47	45.2	13.9	N 0	13.1	14.9	57.1
18	87	05.5	S 6	14.6	62	18.1	14.0	N 0	28.0	14.8	57.1
19	102	05.7		13.6	76	51.1	13.9	0	42.8	14.8	57.1
20	117	05.8		12.6	91	24.0	14.0	0	57.6	14.7	57.0
21	132	05.9	. .	11.7	105	57.0	14.0	1	12.3	14.8	57.0
22	147	06.1		10.7	120	30.0	14.0	1	27.1	14.7	57.0
23	162	06.2		09.7	135	03.0	14.1	N 1	41.8	14.7	57.0
	S/D	16.2	d	1.0	S/D		16.0		15.8		15.6

Lat.	Aurora		Orto	Orto Luna			
	Náut.	Civil	Sol	2	3	4	5
°	h m	h m	h m	h m	h m	h m	h m
N 72	05 00	06 18	07 26	09 14	08 31	07 59	07 30
N 70	05 06	06 17	07 18	08 49	08 20	07 56	07 35
68	05 11	06 15	07 11	08 30	08 10	07 54	07 39
66	05 15	06 14	07 06	08 14	08 02	07 52	07 42
64	05 18	06 13	07 01	08 02	07 56	07 50	07 45
62	05 21	06 12	06 57	07 51	07 50	07 49	07 48
60	05 23	06 11	06 53	07 41	07 45	07 48	07 50
N 58	05 25	06 10	06 50	07 33	07 41	07 46	07 52
56	05 27	06 09	06 47	07 26	07 37	07 45	07 54
54	05 28	06 09	06 44	07 19	07 33	07 44	07 55
52	05 29	06 08	06 42	07 13	07 30	07 44	07 57
50	05 30	06 07	06 39	07 08	07 27	07 43	07 58
45	05 31	06 05	06 35	06 56	07 20	07 41	08 01
N 40	05 32	06 03	06 31	06 47	07 15	07 40	08 04
35	05 32	06 02	06 27	06 38	07 10	07 38	08 06
30	05 32	06 00	06 24	06 31	07 06	07 37	08 08
20	05 31	05 56	06 18	06 18	06 58	07 35	08 11
N 10	05 28	05 52	06 13	06 07	06 52	07 34	08 14
0	05 24	05 48	06 09	05 57	06 46	07 32	08 17
S 10	05 18	05 43	06 04	05 46	06 40	07 31	08 20
20	05 10	05 36	05 58	05 35	06 33	07 29	08 23
30	04 59	05 28	05 52	05 22	06 26	07 27	08 26
35	04 53	05 23	05 49	05 14	06 22	07 26	08 29
40	04 44	05 17	05 44	05 05	06 17	07 25	08 31
45	04 34	05 10	05 40	04 55	06 11	07 24	08 34
S 50	04 20	05 01	05 34	04 43	06 04	07 22	08 37
52	04 14	04 56	05 31	04 37	06 01	07 21	08 39
54	04 06	04 51	05 28	04 31	05 57	07 20	08 40
56	03 58	04 46	05 25	04 24	05 54	07 19	08 42
58	03 48	04 40	05 21	04 16	05 49	07 18	08 44
S 60	03 37	04 33	05 17	04 07	05 44	07 17	08 47

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	2	3	4	5
°	h m	h m	h m	h m	h m	h m	h m
N 72	16 59	18 08	19 27	15 30	17 55	20 05	22 12
N 70	17 08	18 09	19 20	15 53	18 04	20 04	22 01
68	17 14	18 10	19 15	16 10	18 11	20 03	21 52
66	17 20	18 11	19 11	16 24	18 16	20 02	21 44
64	17 24	18 12	19 07	16 36	18 21	20 01	21 38
62	17 29	18 13	19 05	16 45	18 25	20 01	21 33
60	17 32	18 14	19 02	16 53	18 29	20 00	21 29
N 58	17 35	18 15	19 00	17 01	18 32	20 00	21 25
56	17 38	18 16	18 59	17 07	18 35	19 59	21 21
54	17 41	18 16	18 57	17 12	18 37	19 59	21 18
52	17 43	18 17	18 56	17 17	18 40	19 58	21 15
50	17 45	18 18	18 55	17 22	18 42	19 58	21 12
45	17 50	18 19	18 53	17 32	18 46	19 57	21 07
N 40	17 54	18 21	18 52	17 40	18 50	19 57	21 02
35	17 57	18 23	18 52	17 47	18 53	19 56	20 58
30	18 00	18 24	18 52	17 53	18 56	19 56	20 54
20	18 06	18 28	18 53	18 03	19 00	19 55	20 48
N 10	18 11	18 32	18 56	18 12	19 04	19 54	20 43
0	18 15	18 36	19 00	18 20	19 08	19 54	20 38
S 10	18 20	18 41	19 06	18 29	19 12	19 53	20 33
20	18 25	18 47	19 13	18 38	19 16	19 52	20 28
30	18 31	18 55	19 24	18 47	19 21	19 51	20 22
35	18 35	19 00	19 31	18 53	19 23	19 51	20 18
40	18 39	19 06	19 39	19 00	19 26	19 50	20 14
45	18 43	19 13	19 49	19 07	19 29	19 50	20 10
S 50	18 49	19 22	20 02	19 16	19 33	19 49	20 04
52	18 52	19 26	20 09	19 20	19 35	19 49	20 02
54	18 54	19 31	20 16	19 24	19 37	19 48	19 59
56	18 58	19 36	20 24	19 29	19 39	19 48	19 56
58	19 01	19 42	20 34	19 35	19 42	19 47	19 53
S 60	19 05	19 49	20 45	19 41	19 44	19 47	19 49

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
2	12 13	12 07	12 12	12 09	24 33	29 0	
3	12 00	11 54	12 12	12 57	00 33	01 1	
4	11 48	11 41	12 12	13 43	01 20	02 4	●

UT (HmGr)	ARIES	VENUS −4·7		MARTE +1·2		JÚPITER −2·0		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
5 00	162 43.3	222 29.1	S16 41.9	221 19.8	S21 12.8	176 18.6	S 6 52.6	200 45.5	S15 53.6
01	177 45.8	237 29.3	41.7	236 20.3	12.4	191 20.5	52.4	215 47.7	53.5
02	192 48.3	252 29.5	41.6	251 20.8	12.0	206 22.4	52.1	230 49.9	53.5
03	207 50.7	267 29.7	41.4	266 21.3	11.7	221 24.3	51.9	245 52.1	53.4
04	222 53.2	282 30.0	41.3	281 21.8	11.3	236 26.2	51.7	260 54.3	53.3
05	237 55.7	297 30.2	41.1	296 22.3	11.0	251 28.1	51.4	275 56.5	53.2
06	252 58.1	312 30.4	S16 41.0	311 22.8	S21 10.6	266 30.0	S 6 51.2	290 58.7	S15 53.1
07	268 00.6	327 30.6	40.8	326 23.3	10.3	281 31.9	51.0	306 00.8	53.0
08	283 03.1	342 30.8	40.6	341 23.8	09.9	296 33.8	50.7	321 03.0	53.0
S 09	298 05.5	357 31.0	40.5	356 24.3	09.5	311 35.7	50.5	336 05.2	52.9
Á 10	313 08.0	12 31.3	40.3	11 24.8	09.2	326 37.6	50.3	351 07.4	52.8
B 11	328 10.5	27 31.5	40.2	26 25.3	08.8	341 39.5	50.0	6 09.6	52.7
A 12	343 12.9	42 31.7	S16 40.0	41 25.8	S21 08.5	356 41.4	S 6 49.8	21 11.8	S15 52.6
D 13	358 15.4	57 31.9	39.9	56 26.3	08.1	11 43.3	49.6	36 14.0	52.5
O 14	13 17.8	72 32.1	39.7	71 26.8	07.7	26 45.2	49.3	51 16.1	52.4
15	28 20.3	87 32.3	39.5	86 27.3	07.4	41 47.1	49.1	66 18.3	52.4
16	43 22.8	102 32.5	39.4	101 27.8	07.0	56 49.0	48.9	81 20.5	52.3
17	58 25.2	117 32.7	39.2	116 28.3	06.6	71 50.9	48.6	96 22.7	52.2
18	73 27.7	132 32.9	S16 39.1	131 28.9	S21 06.3	86 52.8	S 6 48.4	111 24.9	S15 52.1
19	88 30.2	147 33.1	38.9	146 29.4	05.9	101 54.7	48.2	126 27.1	52.0
20	103 32.6	162 33.3	38.7	161 29.9	05.6	116 56.6	47.9	141 29.3	51.9
21	118 35.1	177 33.5	38.6	176 30.4	05.2	131 58.5	47.7	156 31.4	51.9
22	133 37.6	192 33.7	38.4	191 30.9	04.8	147 00.4	47.5	171 33.6	51.8
23	148 40.0	207 33.9	38.2	206 31.4	04.5	162 02.3	47.2	186 35.8	51.7
6 00	163 42.5	222 34.1	S16 38.1	221 31.9	S21 04.1	177 04.2	S 6 47.0	201 38.0	S15 51.6
01	178 44.9	237 34.3	37.9	236 32.4	03.7	192 06.1	46.8	216 40.2	51.5
02	193 47.4	252 34.5	37.7	251 32.9	03.4	207 08.0	46.5	231 42.4	51.4
03	208 49.9	267 34.7	37.6	266 33.4	03.0	222 09.9	46.3	246 44.6	51.4
04	223 52.3	282 34.9	37.4	281 33.9	02.6	237 11.8	46.1	261 46.8	51.3
05	238 54.8	297 35.1	37.2	296 34.4	02.3	252 13.7	45.8	276 48.9	51.2
06	253 57.3	312 35.3	S16 37.1	311 34.9	S21 01.9	267 15.6	S 6 45.6	291 51.1	S15 51.1
07	268 59.7	327 35.5	36.9	326 35.4	01.5	282 17.5	45.4	306 53.3	51.0
D 08	284 02.2	342 35.7	36.7	341 35.9	01.2	297 19.4	45.1	321 55.5	50.9
O 09	299 04.7	357 35.9	36.6	356 36.4	00.8	312 21.3	44.9	336 57.7	50.9
M 10	314 07.1	12 36.1	36.4	11 36.9	00.4	327 23.2	44.7	351 59.9	50.8
I 11	329 09.6	27 36.2	36.2	26 37.4	21 00.1	342 25.1	44.4	7 02.1	50.7
N 12	344 12.1	42 36.4	S16 36.0	41 37.9	S20 59.7	357 27.0	S 6 44.2	22 04.2	S15 50.6
G 13	359 14.5	57 36.6	35.9	56 38.4	59.3	12 28.9	44.0	37 06.4	50.5
O 14	14 17.0	72 36.8	35.7	71 38.9	59.0	27 30.9	43.8	52 08.6	50.4
15	29 19.4	87 37.0	35.5	86 39.4	58.6	42 32.8	43.5	67 10.8	50.4
16	44 21.9	102 37.2	35.3	101 39.9	58.2	57 34.7	43.3	82 13.0	50.3
17	59 24.4	117 37.3	35.1	116 40.4	57.8	72 36.6	43.1	97 15.2	50.2
18	74 26.8	132 37.5	S16 35.0	131 40.9	S20 57.5	87 38.5	S 6 42.8	112 17.4	S15 50.1
19	89 29.3	147 37.7	34.8	146 41.4	57.1	102 40.4	42.6	127 19.6	50.0
20	104 31.8	162 37.9	34.6	161 41.9	56.7	117 42.3	42.4	142 21.7	49.9
21	119 34.2	177 38.0	34.4	176 42.5	56.4	132 44.2	42.1	157 23.9	49.9
22	134 36.7	192 38.2	34.2	191 43.0	56.0	147 46.1	41.9	172 26.1	49.8
23	149 39.2	207 38.4	34.1	206 43.5	55.6	162 48.0	41.7	187 28.3	49.7
7 00	164 41.6	222 38.6	S16 33.9	221 44.0	S20 55.2	177 49.9	S 6 41.4	202 30.5	S15 49.6
01	179 44.1	237 38.7	33.7	236 44.5	54.9	192 51.8	41.2	217 32.7	49.5
02	194 46.5	252 38.9	33.5	251 45.0	54.5	207 53.7	41.0	232 34.9	49.4
03	209 49.0	267 39.1	33.3	266 45.5	54.1	222 55.6	40.7	247 37.1	49.4
04	224 51.5	282 39.2	33.1	281 46.0	53.7	237 57.5	40.5	262 39.3	49.3
05	239 53.9	297 39.4	32.9	296 46.5	53.4	252 59.4	40.3	277 41.4	49.2
06	254 56.4	312 39.6	S16 32.8	311 47.0	S20 53.0	268 01.3	S 6 40.0	292 43.6	S15 49.1
07	269 58.9	327 39.7	32.6	326 47.5	52.6	283 03.2	39.8	307 45.8	49.0
L 08	285 01.3	342 39.9	32.4	341 48.0	52.2	298 05.1	39.6	322 48.0	48.9
U 09	300 03.8	357 40.1	32.2	356 48.5	51.9	313 07.0	39.3	337 50.2	48.9
N 10	315 06.3	12 40.2	32.0	11 49.0	51.5	328 08.9	39.1	352 52.4	48.8
E 11	330 08.7	27 40.4	31.8	26 49.5	51.1	343 10.8	38.9	7 54.6	48.7
S 12	345 11.2	42 40.5	S16 31.6	41 50.0	S20 50.7	358 12.7	S 6 38.6	22 56.8	S15 48.6
13	0 13.7	57 40.7	31.4	56 50.6	50.3	13 14.6	38.4	37 58.9	48.5
14	15 16.1	72 40.9	31.2	71 51.1	50.0	28 16.5	38.2	53 01.1	48.4
15	30 18.6	87 41.0	31.0	86 51.6	49.6	43 18.4	37.9	68 03.3	48.4
16	45 21.0	102 41.2	30.8	101 52.1	49.2	58 20.3	37.7	83 05.5	48.3
17	60 23.5	117 41.3	30.6	116 52.6	48.8	73 22.2	37.5	98 07.7	48.2
18	75 26.0	132 41.5	S16 30.4	131 53.1	S20 48.4	88 24.1	S 6 37.2	113 09.9	S15 48.1
19	90 28.4	147 41.6	30.2	146 53.6	48.1	103 26.0	37.0	128 12.1	48.0
20	105 30.9	162 41.8	30.0	161 54.1	47.7	118 27.9	36.8	143 14.3	47.9
21	120 33.4	177 41.9	29.8	176 54.6	47.3	133 29.8	36.5	158 16.5	47.9
22	135 35.8	192 42.1	29.6	191 55.1	46.9	148 31.7	36.3	173 18.6	47.8
23	150 38.3	207 42.2	29.4	206 55.6	46.5	163 33.6	36.1	188 20.8	47.7
	h m								
Paso Mer.	13 03.0	*v* 0.2	*d* 0.2	*v* 0.5	*d* 0.4	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.8	S40 13.3
Achernar	335 22.4	S57 07.8
Acrux	173 02.0	S63 13.2
Adhara	255 07.5	S29 00.3
Aldebaran	290 42.3	N16 33.1
Alioth	166 14.6	N55 50.2
Alkaid	152 53.5	N49 12.0
Alnair	27 36.3	S46 51.3
Alnilam	275 40.0	S 1 11.4
Alphard	217 49.8	S 8 45.4
Alphecca	126 05.6	N26 38.2
Alpheratz	357 37.5	N29 12.6
Altair	62 02.4	N 8 55.4
Ankaa	353 09.9	S42 11.4
Antares	112 18.7	S26 28.8
Arcturus	145 49.8	N19 03.9
Atria	107 15.0	S69 03.7
Avior	234 15.2	S59 35.0
Bellatrix	278 25.3	N 6 22.1
Betelgeuse	270 54.5	N 7 24.6
Canopus	263 53.2	S52 42.7
Capella	280 25.3	N46 01.3
Deneb	49 27.8	N45 21.3
Denebola	182 27.0	N14 26.8
Diphda	348 49.9	S17 52.2
Dubhe	193 43.2	N61 37.9
Elnath	278 04.8	N28 37.6
Eltanin	90 43.4	N51 28.8
Enif	33 41.4	N 9 58.4
Fomalhaut	15 17.5	S29 30.5
Gacrux	171 53.7	S57 14.1
Gienah	175 45.7	S17 39.9
Hadar	148 38.9	S60 28.6
Hamal	327 54.1	N23 33.9
Kaus Aust.	83 35.8	S34 22.4
Kochab	137 19.2	N74 03.6
Markab	13 32.5	N15 19.3
Menkar	314 08.7	N 4 10.4
Menkent	148 00.1	S36 28.6
Miaplacidus	221 37.9	S69 48.6
Mirfak	308 31.8	N49 56.5
Nunki	75 50.8	S26 16.1
Peacock	53 09.9	S56 39.8
Pollux	243 19.9	N27 58.4
Procyon	244 53.1	N 5 10.0
Rasalhague	96 00.8	N12 32.4
Regulus	207 36.6	N11 51.5
Rigel	281 06.1	S 8 10.8
Rigil Kent.	139 43.1	S60 55.3
Sabik	102 05.5	S15 45.1
Schedar	349 34.2	N56 39.5
Shaula	96 13.6	S37 07.1
Sirius	258 28.2	S16 45.0
Spica	158 24.5	S11 16.6
Suhail	222 47.6	S43 31.4
Vega	80 35.0	N38 47.9
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	58 51.7	9 10
Marte	57 49.4	9 14
Júpiter	13 21.7	12 10
Saturno	37 55.5	10 32

UT (HmGr)	SOL				LUNA							
	AHGr		Dec		AHGr	v		Dec	d		Ph	
d h	°	′	°	′	°	′	′	°	′	′	′	
5 00	177	06.4	S 6	08.8	149	36.1	14.1	N 1	56.5	14.7	56.9	
01	192	06.5		07.8	164	09.2	14.1	2	11.2	14.6	56.9	
02	207	06.6		06.8	178	42.3	14.2	2	25.8	14.6	56.9	
03	222	06.8	. .	05.9	193	15.5	14.1	2	40.4	14.6	56.8	
04	237	06.9		04.9	207	48.6	14.2	2	55.0	14.6	56.8	
05	252	07.0		04.0	222	21.8	14.2	3	09.6	14.5	56.8	
06	267	07.2	S 6	03.0	236	55.0	14.2	N 3	24.1	14.5	56.7	
07	282	07.3		02.0	251	28.2	14.2	3	38.6	14.5	56.7	
S 08	297	07.5		01.1	266	01.4	14.3	3	53.1	14.4	56.7	
Á 09	312	07.6	6	00.1	280	34.7	14.3	4	07.5	14.4	56.6	
B 10	327	07.7	5	59.1	295	08.0	14.2	4	21.9	14.4	56.6	
A 11	342	07.9		58.2	309	41.2	14.3	4	36.3	14.3	56.6	
D 12	357	08.0	S 5	57.2	324	14.5	14.4	N 4	50.6	14.3	56.6	
O 13	12	08.2		56.2	338	47.9	14.3	5	04.9	14.3	56.5	
14	27	08.3		55.2	353	21.2	14.3	5	19.2	14.2	56.5	
15	42	08.4	. .	54.3	7	54.5	14.3	5	33.4	14.2	56.5	
16	57	08.6		53.3	22	27.8	14.4	5	47.6	14.1	56.4	
17	72	08.7		52.3	37	01.2	14.4	6	01.7	14.1	56.4	
18	87	08.9	S 5	51.4	51	34.6	14.3	N 6	15.8	14.1	56.4	
19	102	09.0		50.4	66	07.9	14.4	6	29.9	14.0	56.4	
20	117	09.2		49.4	80	41.3	14.4	6	43.9	14.0	56.3	
21	132	09.3	. .	48.5	95	14.7	14.3	6	57.9	13.9	56.3	
22	147	09.4		47.5	109	48.0	14.4	7	11.8	13.9	56.3	
23	162	09.6		46.5	124	21.4	14.4	7	25.7	13.8	56.2	
6 00	177	09.7	S 5	45.6	138	54.8	14.4	N 7	39.5	13.8	56.2	
01	192	09.9		44.6	153	28.2	14.4	7	53.3	13.7	56.2	
02	207	10.0		43.6	168	01.6	14.4	8	07.0	13.7	56.1	
03	222	10.2	. .	42.7	182	35.0	14.4	8	20.7	13.6	56.1	
04	237	10.3		41.7	197	08.4	14.3	8	34.3	13.6	56.1	
05	252	10.4		40.7	211	41.7	14.4	8	47.9	13.6	56.1	
06	267	10.6	S 5	39.7	226	15.1	14.4	N 9	01.5	13.5	56.0	
07	282	10.7		38.8	240	48.5	14.4	9	15.0	13.4	56.0	
D 08	297	10.9		37.8	255	21.9	14.3	9	28.4	13.4	56.0	
O 09	312	11.0	. .	36.8	269	55.2	14.4	9	41.8	13.3	55.9	
M 10	327	11.2		35.9	284	28.6	14.3	9	55.1	13.2	55.9	
I 11	342	11.3		34.9	299	01.9	14.4	10	08.3	13.2	55.9	
N 12	357	11.5	S 5	33.9	313	35.3	14.3	N10	21.5	13.2	55.9	
G 13	12	11.6		33.0	328	08.6	14.3	10	34.7	13.1	55.8	
O 14	27	11.7		32.0	342	41.9	14.3	10	47.8	13.0	55.8	
15	42	11.9	. .	31.0	357	15.2	14.3	11	00.8	13.0	55.8	
16	57	12.0		30.0	11	48.5	14.3	11	13.8	12.9	55.8	
17	72	12.2		29.1	26	21.8	14.3	11	26.7	12.8	55.7	
18	87	12.3	S 5	28.1	40	55.1	14.2	N11	39.5	12.8	55.7	
19	102	12.5		27.1	55	28.3	14.3	11	52.3	12.8	55.7	
20	117	12.6		26.2	70	01.6	14.2	12	05.1	12.6	55.7	
21	132	12.8	. .	25.2	84	34.8	14.2	12	17.7	12.6	55.6	
22	147	12.9		24.2	99	08.0	14.2	12	30.3	12.5	55.6	
23	162	13.1		23.2	113	41.2	14.1	12	42.8	12.5	55.6	
7 00	177	13.2	S 5	22.3	128	14.3	14.2	N12	55.3	12.4	55.5	
01	192	13.4		21.3	142	47.5	14.1	13	07.7	12.3	55.5	
02	207	13.5		20.3	157	20.6	14.1	13	20.0	12.3	55.5	
03	222	13.6	. .	19.4	171	53.7	14.1	13	32.3	12.2	55.5	
04	237	13.8		18.4	186	26.8	14.1	13	44.5	12.1	55.4	
05	252	13.9		17.4	200	59.9	14.0	13	56.6	12.1	55.4	
06	267	14.1	S 5	16.4	215	32.9	14.1	N14	08.7	12.0	55.4	
07	282	14.2		15.5	230	06.0	14.0	14	20.7	11.9	55.4	
L 08	297	14.4		14.5	244	39.0	13.9	14	32.6	11.8	55.3	
U 09	312	14.5	. .	13.5	259	11.9	14.0	14	44.4	11.8	55.3	
N 10	327	14.7		12.5	273	44.9	13.9	14	56.2	11.7	55.3	
E 11	342	14.8		11.6	288	17.8	13.9	15	07.9	11.6	55.3	
S 12	357	15.0	S 5	10.6	302	50.7	13.9	N15	19.5	11.5	55.3	
13	12	15.1		09.6	317	23.6	13.8	15	31.0	11.5	55.2	
14	27	15.3		08.6	331	56.4	13.8	15	42.5	11.4	55.2	
15	42	15.4	. .	07.7	346	29.2	13.8	15	53.9	11.3	55.2	
16	57	15.6		06.7	1	02.0	13.8	16	05.2	11.2	55.2	
17	72	15.7		05.7	15	34.8	13.7	16	16.4	11.2	55.1	
18	87	15.9	S 5	04.8	30	07.5	13.7	N16	27.6	11.0	55.1	
19	102	16.0		03.8	44	40.2	13.6	16	38.6	11.0	55.1	
20	117	16.2		02.8	59	12.8	13.7	16	49.6	11.0	55.1	
21	132	16.3	. .	01.8	73	45.5	13.6	17	00.6	10.8	55.1	
22	147	16.5	5	00.9	88	18.1	13.5	17	11.4	10.7	55.0	
23	162	16.6	S 4	59.9	102	50.6	13.5	N17	22.1	10.7	55.0	
	S/D	16.1	d	1.0	S/D	15.4			15.2		15.1	

Lat.	Aurora				Orto Sol		Orto Luna							
	Náut.		Civil				5		6		7		8	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	04	44	06	03	07	11	07	30	06	58	06	16		
N 70	04	52	06	03	07	04	07	35	07	12	06	43	05	55
68	04	59	06	03	06	59	07	39	07	23	07	04	06	37
66	05	04	06	03	06	54	07	42	07	32	07	20	07	06
64	05	08	06	03	06	50	07	45	07	40	07	34	07	28
62	05	11	06	03	06	47	07	48	07	46	07	46	07	46
60	05	14	06	03	06	44	07	50	07	52	07	56	08	01
N 58	05	17	06	02	06	41	07	52	07	57	08	04	08	13
56	05	19	06	02	06	39	07	54	08	02	08	12	08	24
54	05	21	06	02	06	37	07	55	08	06	08	19	08	34
52	05	22	06	01	06	35	07	57	08	10	08	25	08	42
50	05	24	06	01	06	33	07	58	08	14	08	30	08	50
45	05	26	06	00	06	29	08	01	08	21	08	43	09	07
N 40	05	28	05	59	06	26	08	04	08	27	08	53	09	21
35	05	29	05	58	06	23	08	06	08	33	09	01	09	32
30	05	29	05	57	06	21	08	08	08	38	09	09	09	42
20	05	28	05	54	06	16	08	11	08	46	09	22	10	00
N 10	05	26	05	51	06	12	08	14	08	54	09	34	10	16
0	05	23	05	47	06	08	08	17	09	01	09	45	10	30
S 10	05	18	05	43	06	04	08	20	09	08	09	56	10	45
20	05	11	05	37	05	59	08	23	09	16	10	08	11	01
30	05	02	05	30	05	54	08	26	09	24	10	22	11	19
35	04	56	05	26	05	51	08	29	09	30	10	30	11	30
40	04	48	05	20	05	48	08	31	09	35	10	39	11	42
45	04	38	05	14	05	44	08	34	09	42	10	50	11	56
S 50	04	26	05	06	05	39	08	37	09	50	11	03	12	14
52	04	20	05	02	05	37	08	39	09	54	11	09	12	23
54	04	13	04	58	05	34	08	40	09	59	11	16	12	32
56	04	06	04	53	05	31	08	42	10	03	11	23	12	43
58	03	57	04	48	05	28	08	44	10	08	11	32	12	55
S 60	03	46	04	41	05	25	08	47	10	14	11	42	13	10

Lat.	Ocaso Sol		Crepúsculo				Ocaso Luna							
			Civil		Náut.		5		6		7		8	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	17	14	18	22	19	41	22	12	24	27	00	27		
N 70	17	20	18	21	19	33	22	01	24	02	00	02	02	24
68	17	25	18	21	19	26	21	52	23	43	25	43	01	43
66	17	30	18	21	19	21	21	44	23	28	25	15	01	15
64	17	34	18	21	19	16	21	38	23	15	24	54	00	54
62	17	37	18	21	19	13	21	33	23	05	24	38	00	38
60	17	40	18	21	19	10	21	29	22	56	24	24	00	24
N 58	17	42	18	22	19	07	21	25	22	48	24	12	00	12
56	17	45	18	22	19	05	21	21	22	42	24	02	00	02
54	17	47	18	22	19	03	21	18	22	36	23	52	25	08
52	17	48	18	22	19	01	21	15	22	30	23	44	24	57
50	17	50	18	23	19	00	21	12	22	25	23	37	24	48
45	17	54	18	23	18	57	21	07	22	15	23	22	24	28
N 40	17	57	18	24	18	56	21	02	22	06	23	09	24	12
35	18	00	18	25	18	55	20	58	21	59	22	59	23	58
30	18	02	18	26	18	54	20	54	21	52	22	49	23	46
20	18	07	18	29	18	54	20	48	21	41	22	33	23	26
N 10	18	11	18	32	18	56	20	43	21	31	22	20	23	09
0	18	15	18	35	18	59	20	38	21	22	22	07	22	53
S 10	18	18	18	40	19	04	20	33	21	13	21	54	22	36
20	18	23	18	45	19	11	20	28	21	03	21	40	22	19
30	18	28	18	52	19	20	20	22	20	52	21	24	21	59
35	18	31	18	56	19	26	20	18	20	46	21	15	21	48
40	18	34	19	01	19	34	20	14	20	39	21	05	21	35
45	18	38	19	08	19	43	20	10	20	30	20	53	21	19
S 50	18	43	19	15	19	55	20	04	20	20	20	38	21	00
52	18	45	19	19	20	01	20	02	20	16	20	32	20	51
54	18	47	19	23	20	08	19	59	20	11	20	24	20	41
56	18	50	19	28	20	15	19	56	20	05	20	16	20	30
58	18	53	19	33	20	24	19	53	19	59	20	06	20	17
S 60	18	56	19	39	20	34	19	49	19	52	19	56	20	02

Día	SOL					LUNA					
	Ec. Tiempo				Paso Mer.	Paso Mer.				Edad	Fase
	00h		12h			Sup.		Inf.			
d	m	s	m	s	h m	h	m	h	m	d	%
5	11	35	11	28	12 11	14	27	02	05	03	9
6	11	21	11	14	12 11	15	11	02	49	04	15
7	11	07	11	00	12 11	15	56	03	33	05	23

UT (HmGr)	ARIES	VENUS −4·6		MARTE +1·2		JÚPITER −2·0		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
8 00	165 40.8	222 42.4	S16 29.2	221 56.1	S20 46.2	178 35.5	S 6 35.8	203 23.0	S15 47.6
01	180 43.2	237 42.5	29.0	236 56.7	45.8	193 37.4	35.6	218 25.2	47.5
02	195 45.7	252 42.7	28.8	251 57.2	45.4	208 39.3	35.4	233 27.4	47.4
03	210 48.2	267 42.8	28.6	266 57.7	45.0	223 41.2	35.1	248 29.6	47.4
04	225 50.6	282 42.9	28.4	281 58.2	44.6	238 43.1	34.9	263 31.8	47.3
05	240 53.1	297 43.1	28.2	296 58.7	44.2	253 45.0	34.7	278 34.0	47.2
06	255 55.5	312 43.2	S16 28.0	311 59.2	S20 43.9	268 46.9	S 6 34.4	293 36.2	S15 47.1
07	270 58.0	327 43.4	27.8	326 59.7	43.5	283 48.8	34.2	308 38.4	47.0
08	286 00.5	342 43.5	27.6	342 00.2	43.1	298 50.7	34.0	323 40.5	46.9
M 09	301 02.9	357 43.6	27.4	357 00.7	42.7	313 52.6	33.7	338 42.7	46.9
A 10	316 05.4	12 43.8	27.2	12 01.2	42.3	328 54.5	33.5	353 44.9	46.8
R 11	331 07.9	27 43.9	27.0	27 01.7	41.9	343 56.4	33.3	8 47.1	46.7
T 12	346 10.3	42 44.1	S16 26.8	42 02.3	S20 41.5	358 58.3	S 6 33.0	23 49.3	S15 46.6
E 13	1 12.8	57 44.2	26.5	57 02.8	41.2	14 00.2	32.8	38 51.5	46.5
S 14	16 15.3	72 44.3	26.3	72 03.3	40.8	29 02.2	32.6	53 53.7	46.4
15	31 17.7	87 44.5	26.1	87 03.8	40.4	44 04.1	32.3	68 55.9	46.4
16	46 20.2	102 44.6	25.9	102 04.3	40.0	59 06.0	32.1	83 58.1	46.3
17	61 22.6	117 44.7	25.7	117 04.8	39.6	74 07.9	31.9	99 00.3	46.2
18	76 25.1	132 44.8	S16 25.5	132 05.3	S20 39.2	89 09.8	S 6 31.6	114 02.4	S15 46.1
19	91 27.6	147 45.0	25.3	147 05.8	38.8	104 11.7	31.4	129 04.6	46.0
20	106 30.0	162 45.1	25.0	162 06.3	38.4	119 13.6	31.2	144 06.8	46.0
21	121 32.5	177 45.2	24.8	177 06.9	38.0	134 15.5	30.9	159 09.0	45.9
22	136 35.0	192 45.3	24.6	192 07.4	37.7	149 17.4	30.7	174 11.2	45.8
23	151 37.4	207 45.5	24.4	207 07.9	37.3	164 19.3	30.5	189 13.4	45.7
9 00	166 39.9	222 45.6	S16 24.2	222 08.4	S20 36.9	179 21.2	S 6 30.3	204 15.6	S15 45.6
01	181 42.4	237 45.7	23.9	237 08.9	36.5	194 23.1	30.0	219 17.8	45.5
02	196 44.8	252 45.8	23.7	252 09.4	36.1	209 25.0	29.8	234 20.0	45.5
03	211 47.3	267 46.0	23.5	267 09.9	35.7	224 26.9	29.6	249 22.2	45.4
04	226 49.8	282 46.1	23.3	282 10.4	35.3	239 28.8	29.3	264 24.4	45.3
05	241 52.2	297 46.2	23.0	297 10.9	34.9	254 30.7	29.1	279 26.5	45.2
06	256 54.7	312 46.3	S16 22.8	312 11.5	S20 34.5	269 32.6	S 6 28.9	294 28.7	S15 45.1
07	271 57.1	327 46.4	22.6	327 12.0	34.1	284 34.5	28.6	309 30.9	45.0
M 08	286 59.6	342 46.5	22.4	342 12.5	33.7	299 36.4	28.4	324 33.1	45.0
I 09	302 02.1	357 46.7	22.1	357 13.0	33.3	314 38.3	28.2	339 35.3	44.9
É 10	317 04.5	12 46.8	21.9	12 13.5	32.9	329 40.2	27.9	354 37.5	44.8
R 11	332 07.0	27 46.9	21.7	27 14.0	32.5	344 42.1	27.7	9 39.7	44.7
C 12	347 09.5	42 47.0	S16 21.4	42 14.5	S20 32.2	359 44.0	S 6 27.5	24 41.9	S15 44.6
O 13	2 11.9	57 47.1	21.2	57 15.1	31.8	14 45.9	27.2	39 44.1	44.5
L 14	17 14.4	72 47.2	21.0	72 15.6	31.4	29 47.8	27.0	54 46.3	44.5
E 15	32 16.9	87 47.3	20.8	87 16.1	31.0	44 49.7	26.8	69 48.5	44.4
S 16	47 19.3	102 47.4	20.5	102 16.6	30.6	59 51.6	26.5	84 50.7	44.3
17	62 21.8	117 47.5	20.3	117 17.1	30.2	74 53.5	26.3	99 52.8	44.2
18	77 24.3	132 47.7	S16 20.0	132 17.6	S20 29.8	89 55.4	S 6 26.1	114 55.0	S15 44.1
19	92 26.7	147 47.8	19.8	147 18.1	29.4	104 57.3	25.8	129 57.2	44.1
20	107 29.2	162 47.9	19.6	162 18.6	29.0	119 59.2	25.6	144 59.4	44.0
21	122 31.6	177 48.0	19.3	177 19.2	28.6	135 01.1	25.4	160 01.6	43.9
22	137 34.1	192 48.1	19.1	192 19.7	28.2	150 03.0	25.1	175 03.8	43.8
23	152 36.6	207 48.2	18.9	207 20.2	27.8	165 04.9	24.9	190 06.0	43.7
10 00	167 39.0	222 48.3	S16 18.6	222 20.7	S20 27.4	180 06.8	S 6 24.7	205 08.2	S15 43.6
01	182 41.5	237 48.4	18.4	237 21.2	27.0	195 08.7	24.4	220 10.4	43.6
02	197 44.0	252 48.5	18.1	252 21.7	26.6	210 10.6	24.2	235 12.6	43.5
03	212 46.4	267 48.6	17.9	267 22.2	26.2	225 12.6	24.0	250 14.8	43.4
04	227 48.9	282 48.7	17.7	282 22.8	25.8	240 14.5	23.7	265 17.0	43.3
05	242 51.4	297 48.8	17.4	297 23.3	25.4	255 16.4	23.5	280 19.2	43.2
06	257 53.8	312 48.9	S16 17.2	312 23.8	S20 25.0	270 18.3	S 6 23.3	295 21.3	S15 43.2
07	272 56.3	327 49.0	16.9	327 24.3	24.6	285 20.2	23.0	310 23.5	43.1
J 08	287 58.7	342 49.0	16.7	342 24.8	24.2	300 22.1	22.8	325 25.7	43.0
U 09	303 01.2	357 49.1	16.4	357 25.3	23.8	315 24.0	22.6	340 27.9	42.9
E 10	318 03.7	12 49.2	16.2	12 25.9	23.4	330 25.9	22.3	355 30.1	42.8
V 11	333 06.1	27 49.3	15.9	27 26.4	23.0	345 27.8	22.1	10 32.3	42.7
E 12	348 08.6	42 49.4	S16 15.7	42 26.9	S20 22.6	0 29.7	S 6 21.9	25 34.5	S15 42.7
S 13	3 11.1	57 49.5	15.4	57 27.4	22.2	15 31.6	21.6	40 36.7	42.6
14	18 13.5	72 49.6	15.2	72 27.9	21.8	30 33.5	21.4	55 38.9	42.5
15	33 16.0	87 49.7	14.9	87 28.4	21.3	45 35.4	21.2	70 41.1	42.4
16	48 18.5	102 49.8	14.7	102 29.0	20.9	60 37.3	20.9	85 43.3	42.3
17	63 20.9	117 49.9	14.4	117 29.5	20.5	75 39.2	20.7	100 45.5	42.2
18	78 23.4	132 49.9	S16 14.2	132 30.0	S20 20.1	90 41.1	S 6 20.5	115 47.7	S15 42.2
19	93 25.9	147 50.0	13.9	147 30.5	19.7	105 43.0	20.2	130 49.9	42.1
20	108 28.3	162 50.1	13.7	162 31.0	19.3	120 44.9	20.0	145 52.1	42.0
21	123 30.8	177 50.2	13.4	177 31.5	18.9	135 46.8	19.8	160 54.3	41.9
22	138 33.2	192 50.3	13.2	192 32.1	18.5	150 48.7	19.5	175 56.4	41.8
23	153 35.7	207 50.4	12.9	207 32.6	18.1	165 50.6	19.3	190 58.6	41.8
	h m								
Paso Mer.	12 51.2	*v* 0.1	*d* 0.2	*v* 0.5	*d* 0.4	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.8	S40 13.3
Achernar	335 22.4	S57 07.8
Acrux	173 02.0	S63 13.2
Adhara	255 07.5	S29 00.4
Aldebaran	290 42.3	N16 33.1
Alioth	166 14.5	N55 50.3
Alkaid	152 53.5	N49 12.0
Alnair	27 36.3	S46 51.3
Alnilam	275 40.1	S 1 11.4
Alphard	217 49.8	S 8 45.4
Alphecca	126 05.6	N26 38.2
Alpheratz	357 37.5	N29 12.6
Altair	62 02.4	N 8 55.4
Ankaa	353 09.9	S42 11.4
Antares	112 18.6	S26 28.8
Arcturus	145 49.8	N19 03.9
Atria	107 14.9	S69 03.7
Avior	234 15.2	S59 35.0
Bellatrix	278 25.4	N 6 22.1
Betelgeuse	270 54.5	N 7 24.6
Canopus	263 53.3	S52 42.7
Capella	280 25.3	N46 01.3
Deneb	49 27.7	N45 21.3
Denebola	182 27.0	N14 26.8
Diphda	348 49.9	S17 52.1
Dubhe	193 43.2	N61 37.9
Elnath	278 04.8	N28 37.6
Eltanin	90 43.4	N51 28.8
Enif	33 41.4	N 9 58.4
Fomalhaut	15 17.5	S29 30.5
Gacrux	171 53.7	S57 14.1
Gienah	175 45.7	S17 39.9
Hadar	148 38.8	S60 28.6
Hamal	327 54.1	N23 33.9
Kaus Aust.	83 35.7	S34 22.4
Kochab	137 19.1	N74 03.6
Markab	13 32.5	N15 19.3
Menkar	314 08.8	N 4 10.4
Menkent	148 00.1	S36 28.6
Miaplacidus	221 37.9	S69 48.6
Mirfak	308 31.8	N49 56.4
Nunki	75 50.8	S26 16.1
Peacock	53 09.8	S56 39.7
Pollux	243 19.9	N27 58.4
Procyon	244 53.1	N 5 10.0
Rasalhague	96 00.8	N12 32.4
Regulus	207 36.6	N11 51.5
Rigel	281 06.1	S 8 10.8
Rigil Kent.	139 43.1	S60 55.3
Sabik	102 05.5	S15 45.1
Schedar	349 34.2	N56 39.5
Shaula	96 13.6	S37 07.1
Sirius	258 28.2	S16 45.0
Spica	158 24.5	S11 16.6
Suhail	222 47.6	S43 31.5
Vega	80 34.9	N38 47.9
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	56 05.7	9 09
Marte	55 28.5	9 11
Júpiter	12 41.3	12 01
Saturno	37 35.7	10 21

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	°	′	′	
8 00	177	16.8	S 4	58.9	117	23.1	13.5	N17 32.8	10.6	55.0
01	192	16.9		57.9	131	55.6	13.5	17 43.4	10.5	55.0
02	207	17.1		57.0	146	28.1	13.4	17 53.9	10.4	55.0
03	222	17.2	. .	56.0	161	00.5	13.4	18 04.3	10.3	54.9
04	237	17.4		55.0	175	32.9	13.4	18 14.6	10.3	54.9
05	252	17.5		54.0	190	05.3	13.3	18 24.9	10.1	54.9
06	267	17.7	S 4	53.1	204	37.6	13.3	N18 35.0	10.1	54.9
07	282	17.8		52.1	219	09.9	13.2	18 45.1	10.0	54.9
M 08	297	18.0		51.1	233	42.1	13.2	18 55.1	9.9	54.8
A 09	312	18.2	. .	50.1	248	14.3	13.2	19 05.0	9.8	54.8
R 10	327	18.3		49.2	262	46.5	13.1	19 14.8	9.7	54.8
T 11	342	18.5		48.2	277	18.6	13.1	19 24.5	9.6	54.8
E 12	357	18.6	S 4	47.2	291	50.7	13.0	N19 34.1	9.6	54.8
S 13	12	18.8		46.2	306	22.7	13.1	19 43.7	9.4	54.7
14	27	18.9		45.2	320	54.8	12.9	19 53.1	9.3	54.7
15	42	19.1	. .	44.3	335	26.7	13.0	20 02.4	9.3	54.7
16	57	19.2		43.3	349	58.7	12.9	20 11.7	9.2	54.7
17	72	19.4		42.3	4	30.6	12.8	20 20.9	9.0	54.7
18	87	19.5	S 4	41.3	19	02.4	12.8	N20 29.9	9.0	54.7
19	102	19.7		40.4	33	34.2	12.8	20 38.9	8.9	54.6
20	117	19.8		39.4	48	06.0	12.7	20 47.8	8.7	54.6
21	132	20.0	. .	38.4	62	37.7	12.7	20 56.5	8.7	54.6
22	147	20.2		37.4	77	09.4	12.6	21 05.2	8.6	54.6
23	162	20.3		36.5	91	41.0	12.7	21 13.8	8.5	54.6
9 00	177	20.5	S 4	35.5	106	12.7	12.5	N21 22.3	8.4	54.6
01	192	20.6		34.5	120	44.2	12.5	21 30.7	8.3	54.6
02	207	20.8		33.5	135	15.7	12.5	21 39.0	8.2	54.5
03	222	20.9	. .	32.5	149	47.2	12.4	21 47.2	8.0	54.5
04	237	21.1		31.6	164	18.6	12.4	21 55.2	8.0	54.5
05	252	21.2		30.6	178	50.0	12.4	22 03.2	7.9	54.5
06	267	21.4	S 4	29.6	193	21.4	12.3	N22 11.1	7.8	54.5
07	282	21.6		28.6	207	52.7	12.3	22 18.9	7.7	54.5
M 08	297	21.7		27.7	222	24.0	12.2	22 26.6	7.5	54.5
I 09	312	21.9	. .	26.7	236	55.2	12.2	22 34.1	7.5	54.5
É 10	327	22.0		25.7	251	26.4	12.1	22 41.6	7.4	54.4
R 11	342	22.2		24.7	265	57.5	12.1	22 49.0	7.2	54.4
C 12	357	22.3	S 4	23.7	280	28.6	12.1	N22 56.2	7.2	54.4
O 13	12	22.5		22.8	294	59.7	12.0	23 03.4	7.0	54.4
L 14	27	22.7		21.8	309	30.7	11.9	23 10.4	7.0	54.4
E 15	42	22.8	. .	20.8	324	01.6	12.0	23 17.4	6.8	54.4
S 16	57	23.0		19.8	338	32.6	11.9	23 24.2	6.8	54.4
17	72	23.1		18.8	353	03.5	11.8	23 31.0	6.6	54.4
18	87	23.3	S 4	17.9	7	34.3	11.8	N23 37.6	6.5	54.4
19	102	23.4		16.9	22	05.1	11.8	23 44.1	6.4	54.4
20	117	23.6		15.9	36	35.9	11.7	23 50.5	6.3	54.4
21	132	23.8	. .	14.9	51	06.6	11.7	23 56.8	6.1	54.3
22	147	23.9		13.9	65	37.3	11.6	24 02.9	6.1	54.3
23	162	24.1		13.0	80	07.9	11.6	24 09.0	6.0	54.3
10 00	177	24.2	S 4	12.0	94	38.5	11.5	N24 15.0	5.8	54.3
01	192	24.4		11.0	109	09.0	11.5	24 20.8	5.7	54.3
02	207	24.6		10.0	123	39.5	11.5	24 26.5	5.7	54.3
03	222	24.7	. .	09.1	138	10.0	11.5	24 32.2	5.5	54.3
04	237	24.9		08.1	152	40.5	11.4	24 37.7	5.3	54.3
05	252	25.0		07.1	167	10.9	11.3	24 43.0	5.3	54.3
06	267	25.2	S 4	06.1	181	41.2	11.3	N24 48.3	5.2	54.3
07	282	25.4		05.1	196	11.5	11.3	24 53.5	5.0	54.3
J 08	297	25.5		04.2	210	41.8	11.2	24 58.5	4.9	54.3
U 09	312	25.7	. .	03.2	225	12.0	11.3	25 03.4	4.8	54.3
E 10	327	25.8		02.2	239	42.3	11.1	25 08.2	4.7	54.3
V 11	342	26.0		01.2	254	12.4	11.1	25 12.9	4.6	54.3
E 12	357	26.2	S 4	00.2	268	42.5	11.1	N25 17.5	4.5	54.3
S 13	12	26.3	3	59.2	283	12.6	11.1	25 22.0	4.3	54.3
14	27	26.5		58.3	297	42.7	11.0	25 26.3	4.2	54.3
15	42	26.6	. .	57.3	312	12.7	11.0	25 30.5	4.1	54.2
16	57	26.8		56.3	326	42.7	11.0	25 34.6	4.0	54.2
17	72	27.0		55.3	341	12.7	10.9	25 38.6	3.9	54.2
18	87	27.1	S 3	54.3	355	42.6	10.9	N25 42.5	3.7	54.2
19	102	27.3		53.4	10	12.5	10.8	25 46.2	3.6	54.2
20	117	27.4		52.4	24	42.3	10.8	25 49.8	3.5	54.2
21	132	27.6	. .	51.4	39	12.1	10.8	25 53.3	3.4	54.2
22	147	27.8		50.4	53	41.9	10.8	25 56.7	3.2	54.2
23	162	27.9		49.4	68	11.7	10.7	N25 59.9	3.2	54.2
	S/D	16.1	d	1.0	S/D		14.9		14.8	14.8

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			8	9	10	11
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	04	28	05	48	06 55	▭	▭	▭	▭
N 70	04	38	05	50	06 50	05 55	▭	▭	▭
68	04	46	05	51	06 46	06 37	05 13	▭	▭
66	04	52	05	52	06 43	07 06	06 43	▭	▭
64	04	57	05	53	06 40	07 28	07 21	07 10	▭
62	05	02	05	53	06 37	07 46	07 48	07 54	08 12
60	05	05	05	54	06 35	08 01	08 09	08 24	08 51
N 58	05	09	05	54	06 33	08 13	08 26	08 46	09 18
56	05	11	05	54	06 31	08 24	08 41	09 05	09 40
54	05	14	05	54	06 30	08 34	08 53	09 20	09 57
52	05	16	05	55	06 28	08 42	09 05	09 34	10 12
50	05	17	05	55	06 27	08 50	09 15	09 46	10 26
45	05	21	05	55	06 24	09 07	09 35	10 10	10 52
N 40	05	23	05	54	06 21	09 21	09 52	10 30	11 14
35	05	25	05	54	06 19	09 32	10 07	10 46	11 31
30	05	26	05	53	06 17	09 42	10 19	11 01	11 47
20	05	26	05	52	06 14	10 00	10 41	11 25	12 13
N 10	05	25	05	49	06 10	10 16	11 00	11 46	12 35
0	05	22	05	47	06 07	10 30	11 17	12 06	12 56
S 10	05	18	05	43	06 04	10 45	11 35	12 26	13 17
20	05	13	05	38	06 00	11 01	11 54	12 47	13 39
30	05	04	05	32	05 56	11 19	12 16	13 12	14 05
35	04	58	05	28	05 54	11 30	12 29	13 26	14 21
40	04	51	05	24	05 51	11 42	12 44	13 43	14 39
45	04	43	05	18	05 48	11 56	13 01	14 04	15 01
S 50	04	32	05	11	05 44	12 14	13 24	14 29	15 28
52	04	26	05	08	05 42	12 23	13 34	14 42	15 41
54	04	20	05	04	05 40	12 32	13 47	14 56	15 57
56	04	13	05	00	05 38	12 43	14 00	15 13	16 15
58	04	05	04	55	05 35	12 55	14 17	15 33	16 38
S 60	03	56	04	50	05 32	13 10	14 37	15 59	17 07

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 8	9	10	11
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	17	28	18	35	19 56	▭	▭	▭	▭
N 70	17	33	18	34	19 46	02 24	▭	▭	▭
68	17	37	18	32	19 38	01 43	04 44	▭	▭
66	17	40	18	31	19 31	01 15	03 15	▭	▭
64	17	43	18	30	19 26	00 54	02 38	04 29	▭
62	17	45	18	29	19 21	00 38	02 12	03 45	05 11
60	17	47	18	29	19 17	00 24	01 51	03 16	04 32
N 58	17	49	18	28	19 14	00 12	01 34	02 54	04 05
56	17	51	18	28	19 11	00 02	01 20	02 36	03 43
54	17	52	18	28	19 09	25 08	01 08	02 20	03 26
52	17	54	18	27	19 07	24 57	00 57	02 07	03 11
50	17	55	18	27	19 05	24 48	00 48	01 56	02 58
45	17	58	18	27	19 01	24 28	00 28	01 32	02 31
N 40	18	00	18	27	18 59	24 12	00 12	01 13	02 10
35	18	02	18	28	18 57	23 58	24 57	00 57	01 53
30	18	04	18	28	18 56	23 46	24 43	00 43	01 38
20	18	08	18	30	18 55	23 26	24 19	00 19	01 12
N 10	18	11	18	32	18 56	23 09	23 59	24 50	00 50
0	18	14	18	35	18 59	22 53	23 40	24 30	00 30
S 10	18	17	18	38	19 02	22 36	23 22	24 09	00 09
20	18	20	18	42	19 08	22 19	23 02	23 47	24 37
30	18	24	18	48	19 16	21 59	22 38	23 22	24 11
35	18	27	18	52	19 22	21 48	22 25	23 07	23 55
40	18	29	18	57	19 29	21 35	22 09	22 50	23 37
45	18	32	19	02	19 37	21 19	21 51	22 29	23 15
S 50	18	36	19	09	19 48	21 00	21 28	22 03	22 48
52	18	38	19	12	19 53	20 51	21 17	21 50	22 34
54	18	40	19	16	19 59	20 41	21 04	21 35	22 19
56	18	42	19	20	20 06	20 30	20 50	21 19	22 00
58	18	44	19	24	20 14	20 17	20 33	20 58	21 38
S 60	18	47	19	30	20 23	20 02	20 13	20 32	21 09

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		SOL Paso Mer.	LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		LUNA Edad	LUNA Fase
d	m	s	m	s	h m	h	m	h	m	d	%
8	10	53	10	46	12 11	16	41	04	18	06	32
9	10	38	10	31	12 11	17	29	05	05	07	41
10	10	23	10	16	12 10	18	18	05	53	08	51

UT (HmGr)	ARIES	VENUS −4·6		MARTE +1·2		JÚPITER −2·0		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
11 00	168 38.2	222 50.4	S16 12.6	222 33.1	S20 17.7	180 52.5	S 6 19.1	206 00.8	S15 41.7
01	183 40.6	237 50.5	12.4	237 33.6	17.3	195 54.4	18.8	221 03.0	41.6
02	198 43.1	252 50.6	12.1	252 34.1	16.9	210 56.3	18.6	236 05.2	41.5
03	213 45.6	267 50.7	11.9	267 34.6	16.5	225 58.2	18.4	251 07.4	41.4
04	228 48.0	282 50.7	11.6	282 35.2	16.1	241 00.1	18.1	266 09.6	41.3
05	243 50.5	297 50.8	11.3	297 35.7	15.6	256 02.0	17.9	281 11.8	41.3
06	258 53.0	312 50.9	S16 11.1	312 36.2	S20 15.2	271 03.9	S 6 17.7	296 14.0	S15 41.2
07	273 55.4	327 51.0	10.8	327 36.7	14.8	286 05.8	17.4	311 16.2	41.1
08	288 57.9	342 51.0	10.5	342 37.2	14.4	301 07.7	17.2	326 18.4	41.0
V 09	304 00.4	357 51.1	10.3	357 37.8	14.0	316 09.6	17.0	341 20.6	40.9
I 10	319 02.8	12 51.2	10.0	12 38.3	13.6	331 11.6	16.7	356 22.8	40.9
E 11	334 05.3	27 51.3	09.7	27 38.8	13.2	346 13.5	16.5	11 25.0	40.8
R 12	349 07.7	42 51.3	S16 09.5	42 39.3	S20 12.8	1 15.4	S 6 16.3	26 27.2	S15 40.7
N 13	4 10.2	57 51.4	09.2	57 39.8	12.4	16 17.3	16.0	41 29.4	40.6
E 14	19 12.7	72 51.5	08.9	72 40.4	11.9	31 19.2	15.8	56 31.6	40.5
S 15	34 15.1	87 51.5	08.7	87 40.9	11.5	46 21.1	15.6	71 33.8	40.5
16	49 17.6	102 51.6	08.4	102 41.4	11.1	61 23.0	15.3	86 35.9	40.4
17	64 20.1	117 51.7	08.1	117 41.9	10.7	76 24.9	15.1	101 38.1	40.3
18	79 22.5	132 51.7	S16 07.9	132 42.4	S20 10.3	91 26.8	S 6 14.9	116 40.3	S15 40.2
19	94 25.0	147 51.8	07.6	147 43.0	09.9	106 28.7	14.7	131 42.5	40.1
20	109 27.5	162 51.9	07.3	162 43.5	09.5	121 30.6	14.4	146 44.7	40.0
21	124 29.9	177 51.9	07.0	177 44.0	09.0	136 32.5	14.2	161 46.9	40.0
22	139 32.4	192 52.0	06.8	192 44.5	08.6	151 34.4	14.0	176 49.1	39.9
23	154 34.9	207 52.0	06.5	207 45.0	08.2	166 36.3	13.7	191 51.3	39.8
12 00	169 37.3	222 52.1	S16 06.2	222 45.6	S20 07.8	181 38.2	S 6 13.5	206 53.5	S15 39.7
01	184 39.8	237 52.2	05.9	237 46.1	07.4	196 40.1	13.3	221 55.7	39.6
02	199 42.2	252 52.2	05.6	252 46.6	07.0	211 42.0	13.0	236 57.9	39.6
03	214 44.7	267 52.3	05.4	267 47.1	06.5	226 43.9	12.8	252 00.1	39.5
04	229 47.2	282 52.3	05.1	282 47.6	06.1	241 45.8	12.6	267 02.3	39.4
05	244 49.6	297 52.4	04.8	297 48.2	05.7	256 47.7	12.3	282 04.5	39.3
06	259 52.1	312 52.4	S16 04.5	312 48.7	S20 05.3	271 49.6	S 6 12.1	297 06.7	S15 39.2
07	274 54.6	327 52.5	04.2	327 49.2	04.9	286 51.5	11.9	312 08.9	39.1
S 08	289 57.0	342 52.5	04.0	342 49.7	04.4	301 53.4	11.6	327 11.1	39.1
Á 09	304 59.5	357 52.6	03.7	357 50.3	04.0	316 55.3	11.4	342 13.3	39.0
B 10	320 02.0	12 52.6	03.4	12 50.8	03.6	331 57.2	11.2	357 15.5	38.9
A 11	335 04.4	27 52.7	03.1	27 51.3	03.2	346 59.1	10.9	12 17.7	38.8
D 12	350 06.9	42 52.7	S16 02.8	42 51.8	S20 02.8	2 01.1	S 6 10.7	27 19.9	S15 38.7
O 13	5 09.3	57 52.8	02.5	57 52.3	02.3	17 03.0	10.5	42 22.1	38.7
14	20 11.8	72 52.8	02.2	72 52.9	01.9	32 04.9	10.2	57 24.3	38.6
15	35 14.3	87 52.9	02.0	87 53.4	01.5	47 06.8	10.0	72 26.5	38.5
16	50 16.7	102 52.9	01.7	102 53.9	01.1	62 08.7	09.8	87 28.7	38.4
17	65 19.2	117 53.0	01.4	117 54.4	00.7	77 10.6	09.5	102 30.9	38.3
18	80 21.7	132 53.0	S16 01.1	132 55.0	S20 00.2	92 12.5	S 6 09.3	117 33.0	S15 38.3
19	95 24.1	147 53.1	00.8	147 55.5	19 59.8	107 14.4	09.1	132 35.2	38.2
20	110 26.6	162 53.1	00.5	162 56.0	59.4	122 16.3	08.8	147 37.4	38.1
21	125 29.1	177 53.2	16 00.2	177 56.5	59.0	137 18.2	08.6	162 39.6	38.0
22	140 31.5	192 53.2	15 59.9	192 57.0	58.5	152 20.1	08.4	177 41.8	37.9
23	155 34.0	207 53.2	59.6	207 57.6	58.1	167 22.0	08.1	192 44.0	37.9
13 00	170 36.5	222 53.3	S15 59.3	222 58.1	S19 57.7	182 23.9	S 6 07.9	207 46.2	S15 37.8
01	185 38.9	237 53.3	59.0	237 58.6	57.3	197 25.8	07.7	222 48.4	37.7
02	200 41.4	252 53.4	58.7	252 59.1	56.8	212 27.7	07.4	237 50.6	37.6
03	215 43.8	267 53.4	58.4	267 59.7	56.4	227 29.6	07.2	252 52.8	37.5
04	230 46.3	282 53.4	58.1	283 00.2	56.0	242 31.5	07.0	267 55.0	37.4
05	245 48.8	297 53.5	57.8	298 00.7	55.6	257 33.4	06.7	282 57.2	37.4
06	260 51.2	312 53.5	S15 57.5	313 01.2	S19 55.1	272 35.3	S 6 06.5	297 59.4	S15 37.3
07	275 53.7	327 53.6	57.2	328 01.8	54.7	287 37.2	06.3	313 01.6	37.2
D 08	290 56.2	342 53.6	56.9	343 02.3	54.3	302 39.1	06.0	328 03.8	37.1
O 09	305 58.6	357 53.6	56.6	358 02.8	53.9	317 41.0	05.8	343 06.0	37.0
M 10	321 01.1	12 53.7	56.3	13 03.3	53.4	332 42.9	05.6	358 08.2	37.0
I 11	336 03.6	27 53.7	56.0	28 03.9	53.0	347 44.9	05.3	13 10.4	36.9
N 12	351 06.0	42 53.7	S15 55.7	43 04.4	S19 52.6	2 46.8	S 6 05.1	28 12.6	S15 36.8
G 13	6 08.5	57 53.8	55.4	58 04.9	52.1	17 48.7	04.9	43 14.8	36.7
O 14	21 11.0	72 53.8	55.1	73 05.4	51.7	32 50.6	04.6	58 17.0	36.6
15	36 13.4	87 53.8	54.8	88 06.0	51.3	47 52.5	04.4	73 19.2	36.6
16	51 15.9	102 53.8	54.5	103 06.5	50.8	62 54.4	04.2	88 21.4	36.5
17	66 18.3	117 53.9	54.1	118 07.0	50.4	77 56.3	03.9	103 23.6	36.4
18	81 20.8	132 53.9	S15 53.8	133 07.6	S19 50.0	92 58.2	S 6 03.7	118 25.8	S15 36.3
19	96 23.3	147 53.9	53.5	148 08.1	49.6	108 00.1	03.5	133 28.0	36.2
20	111 25.7	162 53.9	53.2	163 08.6	49.1	123 02.0	03.2	148 30.2	36.2
21	126 28.2	177 54.0	52.9	178 09.1	48.7	138 03.9	03.0	163 32.4	36.1
22	141 30.7	192 54.0	52.6	193 09.7	48.3	153 05.8	02.8	178 34.6	36.0
23	156 33.1	207 54.0	52.3	208 10.2	47.8	168 07.7	02.5	193 36.8	35.9
	h m								
Paso Mer.	12 39.4	*v* 0.0	*d* 0.3	*v* 0.5	*d* 0.4	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS		
Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.8	S40 13.3
Achernar	335 22.4	S57 07.7
Acrux	173 01.9	S63 13.2
Adhara	255 07.5	S29 00.4
Aldebaran	290 42.4	N16 33.1
Alioth	166 14.5	N55 50.3
Alkaid	152 53.5	N49 12.0
Alnair	27 36.3	S46 51.3
Alnilam	275 40.1	S 1 11.4
Alphard	217 49.8	S 8 45.4
Alphecca	126 05.6	N26 38.2
Alpheratz	357 37.5	N29 12.6
Altair	62 02.4	N 8 55.4
Ankaa	353 09.9	S42 11.4
Antares	112 18.6	S26 28.8
Arcturus	145 49.8	N19 03.9
Atria	107 14.9	S69 03.7
Avior	234 15.2	S59 35.0
Bellatrix	278 25.4	N 6 22.1
Betelgeuse	270 54.6	N 7 24.6
Canopus	263 53.3	S52 42.7
Capella	280 25.3	N46 01.3
Deneb	49 27.7	N45 21.3
Denebola	182 27.0	N14 26.8
Diphda	348 49.9	S17 52.1
Dubhe	193 43.2	N61 37.9
Elnath	278 04.8	N28 37.6
Eltanin	90 43.3	N51 28.8
Enif	33 41.4	N 9 58.4
Fomalhaut	15 17.4	S29 30.5
Gacrux	171 53.7	S57 14.1
Gienah	175 45.7	S17 39.9
Hadar	148 38.8	S60 28.6
Hamal	327 54.1	N23 33.9
Kaus Aust.	83 35.7	S34 22.4
Kochab	137 19.1	N74 03.6
Markab	13 32.5	N15 19.3
Menkar	314 08.8	N 4 10.4
Menkent	148 00.1	S36 28.6
Miaplacidus	221 37.9	S69 48.6
Mirfak	308 31.8	N49 56.4
Nunki	75 50.8	S26 16.1
Peacock	53 09.8	S56 39.7
Pollux	243 20.0	N27 58.4
Procyon	244 53.1	N 5 10.0
Rasalhague	96 00.7	N12 32.4
Regulus	207 36.6	N11 51.5
Rigel	281 06.1	S 8 10.8
Rigil Kent.	139 43.0	S60 55.4
Sabik	102 05.4	S15 45.1
Schedar	349 34.2	N56 39.5
Shaula	96 13.5	S37 07.1
Sirius	258 28.2	S16 45.0
Spica	158 24.5	S11 16.6
Suhail	222 47.6	S43 31.5
Vega	80 34.9	N38 47.9
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	53 14.8	9 08
Marte	53 08.2	9 09
Júpiter	12 00.9	11 52
Saturno	37 16.2	10 11

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	°	′	′	′
11 00	177	28.1	S 3	48.5	82	41.4	10.7	N26	03.1	3.0	54.2
01	192	28.3		47.5	97	11.1	10.7	26	06.1	2.8	54.2
02	207	28.4		46.5	111	40.8	10.6	26	08.9	2.8	54.2
03	222	28.6	. .	45.5	126	10.4	10.7	26	11.7	2.6	54.2
04	237	28.8		44.5	140	40.1	10.6	26	14.3	2.5	54.2
05	252	28.9		43.5	155	09.7	10.5	26	16.8	2.4	54.2
06	267	29.1	S 3	42.6	169	39.2	10.6	N26	19.2	2.3	54.2
07	282	29.2		41.6	184	08.8	10.5	26	21.5	2.1	54.2
V 08	297	29.4		40.6	198	38.3	10.5	26	23.6	2.0	54.3
I 09	312	29.6	. .	39.6	213	07.8	10.4	26	25.6	1.9	54.3
E 10	327	29.7		38.6	227	37.2	10.5	26	27.5	1.8	54.3
R 11	342	29.9		37.7	242	06.7	10.4	26	29.3	1.6	54.3
N 12	357	30.1	S 3	36.7	256	36.1	10.4	N26	30.9	1.5	54.3
E 13	12	30.2		35.7	271	05.5	10.4	26	32.4	1.4	54.3
S 14	27	30.4		34.7	285	34.9	10.3	26	33.8	1.2	54.3
15	42	30.6	. .	33.7	300	04.2	10.4	26	35.0	1.1	54.3
16	57	30.7		32.7	314	33.6	10.3	26	36.1	1.0	54.3
17	72	30.9		31.8	329	02.9	10.3	26	37.1	0.9	54.3
18	87	31.1	S 3	30.8	343	32.2	10.3	N26	38.0	0.7	54.3
19	102	31.2		29.8	358	01.5	10.3	26	38.7	0.6	54.3
20	117	31.4		28.8	12	30.8	10.2	26	39.3	0.5	54.3
21	132	31.5	. .	27.8	27	00.0	10.3	26	39.8	0.4	54.3
22	147	31.7		26.8	41	29.3	10.2	26	40.2	0.2	54.3
23	162	31.9		25.9	55	58.5	10.2	26	40.4	0.1	54.3
12 00	177	32.0	S 3	24.9	70	27.7	10.3	N26	40.5	0.0	54.3
01	192	32.2		23.9	84	57.0	10.2	26	40.5	0.2	54.3
02	207	32.4		22.9	99	26.2	10.1	26	40.3	0.3	54.3
03	222	32.5	. .	21.9	113	55.3	10.2	26	40.0	0.4	54.4
04	237	32.7		20.9	128	24.5	10.2	26	39.6	0.6	54.4
05	252	32.9		20.0	142	53.7	10.2	26	39.0	0.7	54.4
06	267	33.0	S 3	19.0	157	22.9	10.1	N26	38.3	0.8	54.4
07	282	33.2		18.0	171	52.0	10.2	26	37.5	0.9	54.4
S 08	297	33.4		17.0	186	21.2	10.2	26	36.6	1.1	54.4
Á 09	312	33.5	. .	16.0	200	50.4	10.1	26	35.5	1.2	54.4
B 10	327	33.7		15.0	215	19.5	10.2	26	34.3	1.3	54.4
A 11	342	33.9		14.1	229	48.7	10.1	26	33.0	1.5	54.4
D 12	357	34.0	S 3	13.1	244	17.8	10.2	N26	31.5	1.6	54.4
O 13	12	34.2		12.1	258	47.0	10.1	26	29.9	1.7	54.5
14	27	34.4		11.1	273	16.1	10.2	26	28.2	1.8	54.5
15	42	34.6	. .	10.1	287	45.3	10.1	26	26.4	2.0	54.5
16	57	34.7		09.1	302	14.4	10.2	26	24.4	2.1	54.5
17	72	34.9		08.1	316	43.6	10.1	26	22.3	2.3	54.5
18	87	35.1	S 3	07.2	331	12.7	10.2	N26	20.0	2.3	54.5
19	102	35.2		06.2	345	41.9	10.1	26	17.7	2.5	54.5
20	117	35.4		05.2	0	11.0	10.2	26	15.2	2.7	54.5
21	132	35.6	. .	04.2	14	40.2	10.2	26	12.5	2.7	54.6
22	147	35.7		03.2	29	09.4	10.2	26	09.8	2.9	54.6
23	162	35.9		02.2	43	38.6	10.2	26	06.9	3.0	54.6
13 00	177	36.1	S 3	01.3	58	07.8	10.2	N26	03.9	3.2	54.6
01	192	36.2	3	00.3	72	37.0	10.2	26	00.7	3.2	54.6
02	207	36.4	2	59.3	87	06.2	10.2	25	57.5	3.4	54.6
03	222	36.6	. .	58.3	101	35.4	10.3	25	54.1	3.6	54.6
04	237	36.7		57.3	116	04.7	10.2	25	50.5	3.6	54.7
05	252	36.9		56.3	130	33.9	10.3	25	46.9	3.8	54.7
06	267	37.1	S 2	55.3	145	03.2	10.3	N25	43.1	3.9	54.7
07	282	37.3		54.4	159	32.5	10.3	25	39.2	4.1	54.7
D 08	297	37.4		53.4	174	01.8	10.3	25	35.1	4.2	54.7
O 09	312	37.6	. .	52.4	188	31.1	10.3	25	30.9	4.3	54.7
M 10	327	37.8		51.4	203	00.4	10.4	25	26.6	4.4	54.7
I 11	342	37.9		50.4	217	29.8	10.4	25	22.2	4.5	54.8
N 12	357	38.1	S 2	49.4	231	59.2	10.3	N25	17.7	4.7	54.8
G 13	12	38.3		48.4	246	28.5	10.4	25	13.0	4.8	54.8
O 14	27	38.4		47.5	260	57.9	10.5	25	08.2	5.0	54.8
15	42	38.6	. .	46.5	275	27.4	10.4	25	03.2	5.0	54.8
16	57	38.8		45.5	289	56.8	10.5	24	58.2	5.2	54.8
17	72	39.0		44.5	304	26.3	10.5	24	53.0	5.3	54.9
18	87	39.1	S 2	43.5	318	55.8	10.5	N24	47.7	5.4	54.9
19	102	39.3		42.5	333	25.3	10.5	24	42.3	5.6	54.9
20	117	39.5		41.5	347	54.8	10.6	24	36.7	5.7	54.9
21	132	39.6	. .	40.6	2	24.4	10.6	24	31.0	5.8	54.9
22	147	39.8		39.6	16	54.0	10.6	24	25.2	5.9	55.0
23	162	40.0		38.6	31	23.6	10.6	N24	19.3	6.0	55.0
	S/D	16.1	d	1.0	S/D		14.8		14.8		14.9

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		11	12	13	14
°	h m	h m	h m	h m	h m	h m	h m
N 72	04 11	05 33	06 40	▭	▭	▭	▭
N 70	04 23	05 36	06 36	▭	▭	▭	▭
68	04 33	05 39	06 34	▭	▭	▭	▭
66	04 40	05 41	06 31	▭	▭	▭	10 30
64	04 47	05 42	06 29	▭	▭	09 20	11 21
62	04 52	05 44	06 28	08 12	08 58	10 17	11 52
60	04 56	05 45	06 26	08 51	09 39	10 50	12 15
N 58	05 00	05 46	06 25	09 18	10 08	11 15	12 34
56	05 03	05 47	06 23	09 40	10 30	11 34	12 50
54	05 06	05 47	06 22	09 57	10 47	11 50	13 03
52	05 09	05 48	06 21	10 12	11 03	12 04	13 14
50	05 11	05 48	06 20	10 26	11 16	12 16	13 25
45	05 15	05 49	06 18	10 52	11 43	12 42	13 46
N 40	05 18	05 50	06 17	11 14	12 05	13 02	14 04
35	05 20	05 50	06 15	11 31	12 22	13 18	14 18
30	05 22	05 50	06 14	11 47	12 38	13 33	14 31
20	05 24	05 49	06 11	12 13	13 04	13 57	14 52
N 10	05 23	05 48	06 09	12 35	13 26	14 18	15 11
0	05 22	05 46	06 06	12 56	13 47	14 38	15 28
S 10	05 19	05 43	06 04	13 17	14 08	14 57	15 45
20	05 14	05 39	06 01	13 39	14 30	15 18	16 04
30	05 06	05 34	05 58	14 05	14 56	15 43	16 25
35	05 01	05 31	05 56	14 21	15 11	15 57	16 37
40	04 55	05 27	05 54	14 39	15 29	16 13	16 51
45	04 47	05 22	05 52	15 01	15 51	16 33	17 08
S 50	04 37	05 16	05 49	15 28	16 18	16 57	17 28
52	04 32	05 13	05 47	15 41	16 31	17 09	17 38
54	04 27	05 10	05 46	15 57	16 46	17 22	17 49
56	04 21	05 06	05 44	16 15	17 04	17 38	18 01
58	04 13	05 02	05 42	16 38	17 25	17 56	18 16
S 60	04 05	04 58	05 40	17 07	17 53	18 19	18 32

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	11	12	13	14
°	h m	h m	h m	h m	h m	h m	h m
N 72	17 42	18 49	20 12	▭	▭	▭	▭
N 70	17 45	18 46	19 59	▭	▭	▭	▭
68	17 48	18 43	19 50	▭	▭	▭	▭
66	17 50	18 41	19 42	▭	▭	▭	08 11
64	17 52	18 39	19 35	▭	▭	07 36	07 20
62	17 53	18 37	19 30	05 11	06 11	06 38	06 48
60	17 55	18 36	19 25	04 32	05 29	06 04	06 24
N 58	17 56	18 35	19 21	04 05	05 01	05 40	06 05
56	17 57	18 34	19 18	03 43	04 39	05 20	05 49
54	17 58	18 33	19 15	03 26	04 21	05 04	05 35
52	17 59	18 33	19 12	03 11	04 06	04 49	05 23
50	18 00	18 32	19 10	02 58	03 52	04 37	05 12
45	18 02	18 31	19 05	02 31	03 25	04 11	04 50
N 40	18 04	18 31	19 02	02 10	03 04	03 51	04 32
35	18 05	18 30	19 00	01 53	02 46	03 34	04 16
30	18 06	18 30	18 58	01 38	02 30	03 19	04 03
20	18 09	18 31	18 56	01 12	02 04	02 54	03 40
N 10	18 11	18 32	18 56	00 50	01 42	02 32	03 21
0	18 13	18 34	18 58	00 30	01 20	02 12	03 02
S 10	18 15	18 36	19 01	00 09	00 59	01 51	02 44
20	18 18	18 40	19 06	24 37	00 37	01 29	02 24
30	18 21	18 45	19 13	24 11	00 11	01 04	02 00
35	18 22	18 48	19 18	23 55	24 49	00 49	01 47
40	18 24	18 52	19 24	23 37	24 31	00 31	01 31
45	18 27	18 56	19 31	23 15	24 10	00 10	01 12
S 50	18 30	19 02	19 41	22 48	23 43	24 48	00 48
52	18 31	19 05	19 46	22 34	23 30	24 37	00 37
54	18 33	19 08	19 51	22 19	23 15	24 24	00 24
56	18 34	19 12	19 57	22 00	22 58	24 08	00 08
58	18 36	19 16	20 04	21 38	22 36	23 51	25 14
S 60	18 38	19 20	20 12	21 09	22 09	23 29	24 58

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
11	10 08	10 00	12 10	19 08	06 43	09	60
12	09 52	09 44	12 10	19 59	07 34	10	69
13	09 36	09 28	12 09	20 50	08 25	11	77

UT (HmGr)	ARIES	VENUS −4·5		MARTE +1·2		JÚPITER −2·0		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
14 00	171 35.6	222 54.0	S15 52.0	223 10.7	S19 47.4	183 09.6	S 6 02.3	208 39.0	S15 35.8
01	186 38.1	237 54.1	51.6	238 11.2	47.0	198 11.5	02.1	223 41.2	35.8
02	201 40.5	252 54.1	51.3	253 11.8	46.5	213 13.4	01.8	238 43.4	35.7
03	216 43.0	267 54.1 . .	51.0	268 12.3 . .	46.1	228 15.3 . .	01.6	253 45.6 . .	35.6
04	231 45.5	282 54.1	50.7	283 12.8	45.7	243 17.2	01.4	268 47.8	35.5
05	246 47.9	297 54.1	50.4	298 13.3	45.2	258 19.1	01.2	283 50.0	35.4
06	261 50.4	312 54.2	S15 50.0	313 13.9	S19 44.8	273 21.0	S 6 00.9	298 52.2	S15 35.4
07	276 52.8	327 54.2	49.7	328 14.4	44.4	288 23.0	00.7	313 54.4	35.3
08	291 55.3	342 54.2	49.4	343 14.9	43.9	303 24.9	00.5	328 56.6	35.2
L 09	306 57.8	357 54.2 . .	49.1	358 15.5 . .	43.5	318 26.8 . .	00.2	343 58.8 . .	35.1
U 10	322 00.2	12 54.2	48.8	13 16.0	43.0	333 28.7	6 00.0	359 01.0	35.0
N 11	337 02.7	27 54.3	48.4	28 16.5	42.6	348 30.6	5 59.8	14 03.2	35.0
E 12	352 05.2	42 54.3	S15 48.1	43 17.0	S19 42.2	3 32.5	S 5 59.5	29 05.4	S15 34.9
S 13	7 07.6	57 54.3	47.8	58 17.6	41.7	18 34.4	59.3	44 07.6	34.8
14	22 10.1	72 54.3	47.5	73 18.1	41.3	33 36.3	59.1	59 09.8	34.7
15	37 12.6	87 54.3 . .	47.1	88 18.6 . .	40.9	48 38.2 . .	58.8	74 12.0 . .	34.6
16	52 15.0	102 54.3	46.8	103 19.2	40.4	63 40.1	58.6	89 14.2	34.6
17	67 17.5	117 54.3	46.5	118 19.7	40.0	78 42.0	58.4	104 16.4	34.5
18	82 19.9	132 54.3	S15 46.1	133 20.2	S19 39.5	93 43.9	S 5 58.1	119 18.6	S15 34.4
19	97 22.4	147 54.3	45.8	148 20.8	39.1	108 45.8	57.9	134 20.8	34.3
20	112 24.9	162 54.4	45.5	163 21.3	38.7	123 47.7	57.7	149 23.0	34.2
21	127 27.3	177 54.4 . .	45.1	178 21.8 . .	38.2	138 49.6 . .	57.4	164 25.2 . .	34.2
22	142 29.8	192 54.4	44.8	193 22.3	37.8	153 51.5	57.2	179 27.4	34.1
23	157 32.3	207 54.4	44.5	208 22.9	37.3	168 53.4	57.0	194 29.6	34.0
15 00	172 34.7	222 54.4	S15 44.1	223 23.4	S19 36.9	183 55.3	S 5 56.7	209 31.8	S15 33.9
01	187 37.2	237 54.4	43.8	238 23.9	36.5	198 57.2	56.5	224 34.0	33.8
02	202 39.7	252 54.4	43.5	253 24.5	36.0	213 59.2	56.3	239 36.2	33.8
03	217 42.1	267 54.4 . .	43.1	268 25.0 . .	35.6	229 01.1 . .	56.0	254 38.4 . .	33.7
04	232 44.6	282 54.4	42.8	283 25.5	35.1	244 03.0	55.8	269 40.6	33.6
05	247 47.1	297 54.4	42.4	298 26.1	34.7	259 04.9	55.6	284 42.8	33.5
06	262 49.5	312 54.4	S15 42.1	313 26.6	S19 34.2	274 06.8	S 5 55.3	299 45.0	S15 33.4
07	277 52.0	327 54.4	41.8	328 27.1	33.8	289 08.7	55.1	314 47.2	33.4
M 08	292 54.4	342 54.4	41.4	343 27.7	33.4	304 10.6	54.9	329 49.4	33.3
A 09	307 56.9	357 54.4 . .	41.1	358 28.2 . .	32.9	319 12.5 . .	54.6	344 51.6 . .	33.2
R 10	322 59.4	12 54.4	40.7	13 28.7	32.5	334 14.4	54.4	359 53.8	33.1
T 11	338 01.8	27 54.4	40.4	28 29.2	32.0	349 16.3	54.2	14 56.0	33.0
E 12	353 04.3	42 54.4	S15 40.1	43 29.8	S19 31.6	4 18.2	S 5 53.9	29 58.2	S15 33.0
S 13	8 06.8	57 54.4	39.7	58 30.3	31.1	19 20.1	53.7	45 00.4	32.9
14	23 09.2	72 54.4	39.4	73 30.8	30.7	34 22.0	53.5	60 02.6	32.8
15	38 11.7	87 54.4 . .	39.0	88 31.4 . .	30.2	49 23.9 . .	53.2	75 04.8 . .	32.7
16	53 14.2	102 54.4	38.7	103 31.9	29.8	64 25.8	53.0	90 07.0	32.6
17	68 16.6	117 54.4	38.3	118 32.4	29.3	79 27.7	52.8	105 09.2	32.6
18	83 19.1	132 54.4	S15 38.0	133 33.0	S19 28.9	94 29.6	S 5 52.5	120 11.4	S15 32.5
19	98 21.6	147 54.4	37.6	148 33.5	28.5	109 31.6	52.3	135 13.6	32.4
20	113 24.0	162 54.4	37.3	163 34.0	28.0	124 33.5	52.1	150 15.8	32.3
21	128 26.5	177 54.4 . .	36.9	178 34.6 . .	27.6	139 35.4 . .	51.8	165 18.0 . .	32.2
22	143 28.9	192 54.3	36.6	193 35.1	27.1	154 37.3	51.6	180 20.2	32.2
23	158 31.4	207 54.3	36.2	208 35.6	26.7	169 39.2	51.4	195 22.4	32.1
16 00	173 33.9	222 54.3	S15 35.9	223 36.2	S19 26.2	184 41.1	S 5 51.1	210 24.6	S15 32.0
01	188 36.3	237 54.3	35.5	238 36.7	25.8	199 43.0	50.9	225 26.9	31.9
02	203 38.8	252 54.3	35.1	253 37.2	25.3	214 44.9	50.7	240 29.1	31.8
03	218 41.3	267 54.3 . .	34.8	268 37.8 . .	24.9	229 46.8 . .	50.5	255 31.3 . .	31.8
04	233 43.7	282 54.3	34.4	283 38.3	24.4	244 48.7	50.2	270 33.5	31.7
05	248 46.2	297 54.3	34.1	298 38.8	24.0	259 50.6	50.0	285 35.7	31.6
06	263 48.7	312 54.3	S15 33.7	313 39.4	S19 23.5	274 52.5	S 5 49.8	300 37.9	S15 31.5
07	278 51.1	327 54.2	33.3	328 39.9	23.1	289 54.4	49.5	315 40.1	31.4
M 08	293 53.6	342 54.2	33.0	343 40.4	22.6	304 56.3	49.3	330 42.3	31.4
I 09	308 56.0	357 54.2 . .	32.6	358 41.0 . .	22.2	319 58.2 . .	49.1	345 44.5 . .	31.3
É 10	323 58.5	12 54.2	32.3	13 41.5	21.7	335 00.1	48.8	0 46.7	31.2
R 11	339 01.0	27 54.2	31.9	28 42.1	21.2	350 02.1	48.6	15 48.9	31.1
C 12	354 03.4	42 54.2	S15 31.5	43 42.6	S19 20.8	5 04.0	S 5 48.4	30 51.1	S15 31.1
O 13	9 05.9	57 54.1	31.2	58 43.1	20.3	20 05.9	48.1	45 53.3	31.0
L 14	24 08.4	72 54.1	30.8	73 43.7	19.9	35 07.8	47.9	60 55.5	30.9
E 15	39 10.8	87 54.1 . .	30.4	88 44.2 . .	19.4	50 09.7 . .	47.7	75 57.7 . .	30.8
S 16	54 13.3	102 54.1	30.1	103 44.7	19.0	65 11.6	47.4	90 59.9	30.7
17	69 15.8	117 54.1	29.7	118 45.3	18.5	80 13.5	47.2	106 02.1	30.7
18	84 18.2	132 54.0	S15 29.3	133 45.8	S19 18.1	95 15.4	S 5 47.0	121 04.3	S15 30.6
19	99 20.7	147 54.0	29.0	148 46.3	17.6	110 17.3	46.7	136 06.5	30.5
20	114 23.2	162 54.0	28.6	163 46.9	17.2	125 19.2	46.5	151 08.7	30.4
21	129 25.6	177 54.0 . .	28.2	178 47.4 . .	16.7	140 21.1 . .	46.3	166 10.9 . .	30.3
22	144 28.1	192 54.0	27.8	193 48.0	16.2	155 23.0	46.0	181 13.1	30.3
23	159 30.5	207 53.9	27.5	208 48.5	15.8	170 24.9	45.8	196 15.3	30.2
	h m								
Paso Mer.	12 27.6	*v* 0.0	*d* 0.3	*v* 0.5	*d* 0.4	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.8	S40 13.3
Achernar	335 22.4	S57 07.7
Acrux	173 01.9	S63 13.2
Adhara	255 07.6	S29 00.4
Aldebaran	290 42.4	N16 33.1
Alioth	166 14.5	N55 50.3
Alkaid	152 53.5	N49 12.0
Alnair	27 36.3	S46 51.3
Alnilam	275 40.1	S 1 11.4
Alphard	217 49.8	S 8 45.4
Alphecca	126 05.5	N26 38.2
Alpheratz	357 37.5	N29 12.6
Altair	62 02.4	N 8 55.4
Ankaa	353 09.9	S42 11.4
Antares	112 18.6	S26 28.8
Arcturus	145 49.8	N19 03.9
Atria	107 14.8	S69 03.7
Avior	234 15.2	S59 35.0
Bellatrix	278 25.4	N 6 22.1
Betelgeuse	270 54.6	N 7 24.6
Canopus	263 53.3	S52 42.7
Capella	280 25.4	N46 01.3
Deneb	49 27.7	N45 21.3
Denebola	182 27.0	N14 26.8
Diphda	348 49.9	S17 52.1
Dubhe	193 43.2	N61 37.9
Elnath	278 04.8	N28 37.6
Eltanin	90 43.3	N51 28.8
Enif	33 41.4	N 9 58.4
Fomalhaut	15 17.4	S29 30.5
Gacrux	171 53.6	S57 14.2
Gienah	175 45.6	S17 39.9
Hadar	148 38.8	S60 28.6
Hamal	327 54.1	N23 33.9
Kaus Aust.	83 35.7	S34 22.4
Kochab	137 19.0	N74 03.6
Markab	13 32.5	N15 19.3
Menkar	314 08.8	N 4 10.4
Menkent	148 00.0	S36 28.7
Miaplacidus	221 38.0	S69 48.6
Mirfak	308 31.8	N49 56.4
Nunki	75 50.8	S26 16.1
Peacock	53 09.8	S56 39.7
Pollux	243 20.0	N27 58.4
Procyon	244 53.1	N 5 10.0
Rasalhague	96 00.7	N12 32.4
Regulus	207 36.6	N11 51.5
Rigel	281 06.1	S 8 10.8
Rigil Kent.	139 43.0	S60 55.4
Sabik	102 05.4	S15 45.2
Schedar	349 34.2	N56 39.5
Shaula	96 13.5	S37 07.1
Sirius	258 28.2	S16 45.0
Spica	158 24.5	S11 16.6
Suhail	222 47.7	S43 31.5
Vega	80 34.9	N38 47.9
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	50 19.7	9 08
Marte	50 48.7	9 06
Júpiter	11 20.6	11 43
Saturno	36 57.1	10 00

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph	
d h	°	′	°	′	°	′	°	′	′	′
14 LUNES 00	177	40.2	S 2	37.6	45	53.2	10.7	N24	13.3	6.2	55.0
01	192	40.3		36.6	60	22.9	10.7	24	07.1	6.3	55.0
02	207	40.5		35.6	74	52.6	10.7	24	00.8	6.4	55.0
03	222	40.7		34.6	89	22.3	10.7	23	54.4	6.6	55.1
04	237	40.9		33.7	103	52.0	10.8	23	47.8	6.6	55.1
05	252	41.0		32.7	118	21.8	10.8	23	41.2	6.8	55.1
06	267	41.2	S 2	31.7	132	51.6	10.8	N23	34.4	6.9	55.1
07	282	41.4		30.7	147	21.4	10.9	23	27.5	7.0	55.1
08	297	41.5		29.7	161	51.3	10.9	23	20.5	7.1	55.2
09	312	41.7		28.7	176	21.2	10.9	23	13.4	7.3	55.2
10	327	41.9		27.7	190	51.1	11.0	23	06.1	7.4	55.2
11	342	42.1		26.8	205	21.1	11.0	22	58.7	7.4	55.2
12	357	42.2	S 2	25.8	219	51.1	11.0	N22	51.3	7.6	55.2
13	12	42.4		24.8	234	21.1	11.0	22	43.7	7.8	55.3
14	27	42.6		23.8	248	51.1	11.1	22	35.9	7.8	55.3
15	42	42.8		22.8	263	21.2	11.1	22	28.1	7.9	55.3
16	57	42.9		21.8	277	51.3	11.2	22	20.2	8.1	55.3
17	72	43.1		20.8	292	21.5	11.1	22	12.1	8.2	55.4
18	87	43.3	S 2	19.8	306	51.6	11.2	N22	03.9	8.3	55.4
19	102	43.5		18.9	321	21.8	11.3	21	55.6	8.4	55.4
20	117	43.6		17.9	335	52.1	11.3	21	47.2	8.5	55.4
21	132	43.8		16.9	350	22.4	11.3	21	38.7	8.6	55.4
22	147	44.0		15.9	4	52.7	11.3	21	30.1	8.8	55.5
23	162	44.2		14.9	19	23.0	11.4	21	21.3	8.8	55.5
15 00	177	44.3	S 2	13.9	33	53.4	11.4	N21	12.5	9.0	55.5
01	192	44.5		12.9	48	23.8	11.5	21	03.5	9.0	55.5
02	207	44.7		12.0	62	54.3	11.5	20	54.5	9.2	55.6
03	222	44.9		11.0	77	24.8	11.5	20	45.3	9.3	55.6
04	237	45.0		10.0	91	55.3	11.5	20	36.0	9.4	55.6
05	252	45.2		09.0	106	25.8	11.6	20	26.6	9.5	55.6
06	267	45.4	S 2	08.0	120	56.4	11.7	N20	17.1	9.6	55.7
07	282	45.6		07.0	135	27.1	11.6	20	07.5	9.7	55.7
MARTES 08	297	45.7		06.0	149	57.7	11.7	19	57.8	9.8	55.7
09	312	45.9		05.0	164	28.4	11.7	19	48.0	9.9	55.7
10	327	46.1		04.1	178	59.1	11.8	19	38.1	10.0	55.8
11	342	46.3		03.1	193	29.9	11.8	19	28.1	10.1	55.8
12	357	46.4	S 2	02.1	208	00.7	11.8	N19	18.0	10.3	55.8
13	12	46.6		01.1	222	31.5	11.9	19	07.7	10.3	55.8
14	27	46.8	2	00.1	237	02.4	11.9	18	57.4	10.4	55.9
15	42	47.0	1	59.1	251	33.3	11.9	18	47.0	10.5	55.9
16	57	47.1		58.1	266	04.2	12.0	18	36.5	10.6	55.9
17	72	47.3		57.1	280	35.2	12.0	18	25.9	10.8	55.9
18	87	47.5	S 1	56.2	295	06.2	12.1	N18	15.1	10.8	56.0
19	102	47.7		55.2	309	37.3	12.0	18	04.3	10.9	56.0
20	117	47.8		54.2	324	08.3	12.1	17	53.4	11.0	56.0
21	132	48.0		53.2	338	39.4	12.2	17	42.4	11.1	56.0
22	147	48.2		52.2	353	10.6	12.1	17	31.3	11.2	56.1
23	162	48.4		51.2	7	41.7	12.3	17	20.1	11.2	56.1
16 00	177	48.6	S 1	50.2	22	13.0	12.2	N17	08.9	11.4	56.1
01	192	48.7		49.2	36	44.2	12.3	16	57.5	11.5	56.1
02	207	48.9		48.3	51	15.5	12.3	16	46.0	11.5	56.2
03	222	49.1		47.3	65	46.8	12.3	16	34.5	11.7	56.2
04	237	49.3		46.3	80	18.1	12.3	16	22.8	11.7	56.2
05	252	49.4		45.3	94	49.4	12.4	16	11.1	11.8	56.3
06	267	49.6	S 1	44.3	109	20.8	12.5	N15	59.3	11.9	56.3
07	282	49.8		43.3	123	52.3	12.4	15	47.4	12.0	56.3
MIÉRCOLES 08	297	50.0		42.3	138	23.7	12.5	15	35.4	12.1	56.3
09	312	50.2		41.3	152	55.2	12.5	15	23.3	12.2	56.4
10	327	50.3		40.4	167	26.7	12.6	15	11.1	12.2	56.4
11	342	50.5		39.4	181	58.3	12.5	14	58.9	12.3	56.4
12	357	50.7	S 1	38.4	196	29.8	12.6	N14	46.6	12.4	56.4
13	12	50.9		37.4	211	01.4	12.6	14	34.2	12.5	56.5
14	27	51.0		36.4	225	33.0	12.7	14	21.7	12.6	56.5
15	42	51.2		35.4	240	04.7	12.7	14	09.1	12.6	56.5
16	57	51.4		34.4	254	36.4	12.7	13	56.5	12.7	56.5
17	72	51.6		33.4	269	08.1	12.7	13	43.8	12.8	56.6
18	87	51.8	S 1	32.4	283	39.8	12.7	N13	31.0	12.9	56.6
19	102	51.9		31.5	298	11.5	12.8	13	18.1	13.0	56.6
20	117	52.1		30.5	312	43.3	12.8	13	05.1	13.0	56.7
21	132	52.3		29.5	327	15.1	12.8	12	52.1	13.1	56.7
22	147	52.5		28.5	341	46.9	12.9	12	39.0	13.1	56.7
23	162	52.7		27.5	356	18.8	12.9	N12	25.9	13.3	56.7
	S/D	16.1	*d*	1.0	S/D	15.1		15.2			15.4

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			14	15	16	17
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	03	54	05	17	06 24			13 29	15 58
N 70	04	08	05	22	06 23		11 08	14 01	16 12
68	04	19	05	26	06 21		12 11	14 24	16 22
66	04	28	05	29	06 20	10 30	12 46	14 42	16 31
64	04	35	05	32	06 19	11 21	13 11	14 56	16 39
62	04	42	05	34	06 18	11 52	13 30	15 08	16 45
60	04	47	05	36	06 17	12 15	13 46	15 18	16 50
N 58	04	51	05	37	06 16	12 34	13 59	15 27	16 55
56	04	55	05	39	06 16	12 50	14 11	15 35	16 59
54	04	59	05	40	06 15	13 03	14 21	15 42	17 03
52	05	02	05	41	06 14	13 14	14 30	15 48	17 06
50	05	04	05	42	06 14	13 25	14 38	15 53	17 10
45	05	09	05	44	06 13	13 46	14 55	16 05	17 16
N 40	05	13	05	45	06 12	14 04	15 08	16 15	17 22
35	05	16	05	46	06 11	14 18	15 20	16 23	17 27
30	05	18	05	46	06 10	14 31	15 30	16 30	17 31
20	05	21	05	47	06 09	14 52	15 48	16 43	17 38
N 10	05	22	05	46	06 07	15 11	16 03	16 54	17 44
0	05	21	05	45	06 06	15 28	16 17	17 04	17 50
S 10	05	19	05	43	06 04	15 45	16 31	17 14	17 56
20	05	15	05	40	06 02	16 04	16 46	17 25	18 03
30	05	08	05	36	06 00	16 25	17 03	17 37	18 10
35	05	04	05	34	05 59	16 37	17 13	17 44	18 14
40	04	58	05	30	05 57	16 51	17 24	17 52	18 18
45	04	51	05	26	05 56	17 08	17 37	18 02	18 24
S 50	04	42	05	21	05 54	17 28	17 53	18 13	18 30
52	04	38	05	19	05 53	17 38	18 00	18 18	18 33
54	04	33	05	16	05 52	17 49	18 09	18 24	18 36
56	04	28	05	13	05 50	18 01	18 18	18 30	18 40
58	04	21	05	09	05 49	18 16	18 28	18 37	18 44
S 60	04	14	05	05	05 47	18 32	18 40	18 45	18 48

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna			
						14	15	16	17
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	17	56	19	03	20 28			08 38	07 48
N 70	17	57	18	58	20 13		09 17	08 04	07 32
68	17	59	18	54	20 02		08 13	07 40	07 19
66	18	00	18	51	19 52	08 11	07 37	07 20	07 08
64	18	01	18	48	19 45	07 20	07 11	07 05	06 59
62	18	01	18	46	19 38	06 48	06 51	06 52	06 51
60	18	02	18	44	19 33	06 24	06 34	06 41	06 45
N 58	18	03	18	42	19 28	06 05	06 20	06 31	06 39
56	18	03	18	40	19 24	05 49	06 08	06 22	06 33
54	18	04	18	39	19 21	05 35	05 58	06 15	06 28
52	18	04	18	38	19 17	05 23	05 48	06 08	06 24
50	18	05	18	37	19 15	05 12	05 40	06 02	06 20
45	18	06	18	35	19 09	04 50	05 22	05 48	06 12
N 40	18	07	18	34	19 05	04 32	05 07	05 37	06 04
35	18	07	18	33	19 02	04 16	04 54	05 28	05 58
30	18	08	18	32	19 00	04 03	04 43	05 19	05 53
20	18	10	18	32	18 57	03 40	04 24	05 05	05 43
N 10	18	11	18	32	18 56	03 21	04 07	04 52	05 34
0	18	12	18	33	18 57	03 02	03 52	04 40	05 26
S 10	18	14	18	35	18 59	02 44	03 36	04 27	05 18
20	18	15	18	37	19 03	02 24	03 19	04 14	05 09
30	18	17	18	41	19 09	02 00	02 59	03 59	04 59
35	18	18	18	44	19 13	01 47	02 48	03 50	04 54
40	18	20	18	47	19 19	01 31	02 34	03 40	04 47
45	18	21	18	51	19 25	01 12	02 19	03 28	04 39
S 50	18	23	18	56	19 34	00 48	01 59	03 14	04 30
52	18	24	18	58	19 38	00 37	01 50	03 07	04 25
54	18	25	19	01	19 43	00 24	01 40	02 59	04 20
56	18	26	19	04	19 48	00 08	01 28	02 51	04 15
58	18	27	19	07	19 55	25 14	01 14	02 41	04 09
S 60	18	29	19	11	20 02	24 58	00 58	02 30	04 02

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		SOL Paso Mer.	LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		LUNA Edad	LUNA Fase
d	m	s	m	s	h m	h	m	h	m	d	%
14	09	20	09	11	12 09	21	40	09	15	12	85
15	09	03	08	55	12 09	22	28	10	04	13	91
16	08	46	08	38	12 09	23	15	10	52	14	96

UT (HmGr)		ARIES	VENUS −4·5		MARTE +1·2		JÚPITER −2·0		SATURNO +0·7	
	d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
		° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	17 00	174 33.0	222 53.9	S15 27.1	223 49.0	S19 15.3	185 26.8	S 5 45.6	211 17.5	S15 30.1
	01	189 35.5	237 53.9	26.7	238 49.6	14.9	200 28.7	45.3	226 19.7	30.0
	02	204 37.9	252 53.9	26.4	253 50.1	14.4	215 30.7	45.1	241 21.9	29.9
	03	219 40.4	267 53.8 . .	26.0	268 50.6 . .	14.0	230 32.6 . .	44.9	256 24.2 . .	29.9
	04	234 42.9	282 53.8	25.6	283 51.2	13.5	245 34.5	44.6	271 26.4	29.8
	05	249 45.3	297 53.8	25.2	298 51.7	13.0	260 36.4	44.4	286 28.6	29.7
	06	264 47.8	312 53.7	S15 24.8	313 52.2	S19 12.6	275 38.3	S 5 44.2	301 30.8	S15 29.6
	07	279 50.3	327 53.7	24.5	328 52.8	12.1	290 40.2	43.9	316 33.0	29.6
	08	294 52.7	342 53.7	24.1	343 53.3	11.7	305 42.1	43.7	331 35.2	29.5
J	09	309 55.2	357 53.7 . .	23.7	358 53.9 . .	11.2	320 44.0 . .	43.5	346 37.4 . .	29.4
U	10	324 57.6	12 53.6	23.3	13 54.4	10.7	335 45.9	43.2	1 39.6	29.3
E	11	340 00.1	27 53.6	22.9	28 54.9	10.3	350 47.8	43.0	16 41.8	29.2
V	12	355 02.6	42 53.6	S15 22.6	43 55.5	S19 09.8	5 49.7	S 5 42.8	31 44.0	S15 29.2
E	13	10 05.0	57 53.5	22.2	58 56.0	09.4	20 51.6	42.6	46 46.2	29.1
S	14	25 07.5	72 53.5	21.8	73 56.6	08.9	35 53.5	42.3	61 48.4	29.0
	15	40 10.0	87 53.5 . .	21.4	88 57.1 . .	08.4	50 55.4 . .	42.1	76 50.6 . .	28.9
	16	55 12.4	102 53.4	21.0	103 57.6	08.0	65 57.4	41.9	91 52.8	28.8
	17	70 14.9	117 53.4	20.6	118 58.2	07.5	80 59.3	41.6	106 55.0	28.8
	18	85 17.4	132 53.4	S15 20.2	133 58.7	S19 07.0	96 01.2	S 5 41.4	121 57.2	S15 28.7
	19	100 19.8	147 53.3	19.8	148 59.3	06.6	111 03.1	41.2	136 59.4	28.6
	20	115 22.3	162 53.3	19.5	163 59.8	06.1	126 05.0	40.9	152 01.7	28.5
	21	130 24.8	177 53.2 . .	19.1	179 00.3 . .	05.7	141 06.9 . .	40.7	167 03.9 . .	28.5
	22	145 27.2	192 53.2	18.7	194 00.9	05.2	156 08.8	40.5	182 06.1	28.4
	23	160 29.7	207 53.2	18.3	209 01.4	04.7	171 10.7	40.2	197 08.3	28.3
	18 00	175 32.1	222 53.1	S15 17.9	224 02.0	S19 04.3	186 12.6	S 5 40.0	212 10.5	S15 28.2
	01	190 34.6	237 53.1	17.5	239 02.5	03.8	201 14.5	39.8	227 12.7	28.1
	02	205 37.1	252 53.1	17.1	254 03.0	03.3	216 16.4	39.5	242 14.9	28.1
	03	220 39.5	267 53.0 . .	16.7	269 03.6 . .	02.9	231 18.3 . .	39.3	257 17.1 . .	28.0
	04	235 42.0	282 53.0	16.3	284 04.1	02.4	246 20.2	39.1	272 19.3	27.9
	05	250 44.5	297 52.9	15.9	299 04.7	01.9	261 22.2	38.8	287 21.5	27.8
	06	265 46.9	312 52.9	S15 15.5	314 05.2	S19 01.5	276 24.1	S 5 38.6	302 23.7	S15 27.8
	07	280 49.4	327 52.8	15.1	329 05.7	01.0	291 26.0	38.4	317 25.9	27.7
V	08	295 51.9	342 52.8	14.7	344 06.3	00.5	306 27.9	38.1	332 28.1	27.6
I	09	310 54.3	357 52.8 . .	14.3	359 06.8 19	00.1	321 29.8 . .	37.9	347 30.3 . .	27.5
E	10	325 56.8	12 52.7	13.9	14 07.4 18	59.6	336 31.7	37.7	2 32.5	27.4
R	11	340 59.2	27 52.7	13.5	29 07.9	59.1	351 33.6	37.4	17 34.8	27.4
N	12	356 01.7	42 52.6	S15 13.1	44 08.4	S18 58.7	6 35.5	S 5 37.2	32 37.0	S15 27.3
E	13	11 04.2	57 52.6	12.7	59 09.0	58.2	21 37.4	37.0	47 39.2	27.2
S	14	26 06.6	72 52.5	12.3	74 09.5	57.7	36 39.3	36.7	62 41.4	27.1
	15	41 09.1	87 52.5 . .	11.9	89 10.1 . .	57.2	51 41.2 . .	36.5	77 43.6 . .	27.0
	16	56 11.6	102 52.4	11.5	104 10.6	56.8	66 43.1	36.3	92 45.8	27.0
	17	71 14.0	117 52.4	11.1	119 11.2	56.3	81 45.0	36.0	107 48.0	26.9
	18	86 16.5	132 52.3	S15 10.7	134 11.7	S18 55.8	96 47.0	S 5 35.8	122 50.2	S15 26.8
	19	101 19.0	147 52.3	10.3	149 12.2	55.4	111 48.9	35.6	137 52.4	26.7
	20	116 21.4	162 52.2	09.8	164 12.8	54.9	126 50.8	35.4	152 54.6	26.7
	21	131 23.9	177 52.2 . .	09.4	179 13.3 . .	54.4	141 52.7 . .	35.1	167 56.8 . .	26.6
	22	146 26.4	192 52.1	09.0	194 13.9	53.9	156 54.6	34.9	182 59.0	26.5
	23	161 28.8	207 52.1	08.6	209 14.4	53.5	171 56.5	34.7	198 01.3	26.4
	19 00	176 31.3	222 52.0	S15 08.2	224 15.0	S18 53.0	186 58.4	S 5 34.4	213 03.5	S15 26.3
	01	191 33.7	237 52.0	07.8	239 15.5	52.5	202 00.3	34.2	228 05.7	26.3
	02	206 36.2	252 51.9	07.4	254 16.0	52.1	217 02.2	34.0	243 07.9	26.2
	03	221 38.7	267 51.9 . .	07.0	269 16.6 . .	51.6	232 04.1 . .	33.7	258 10.1 . .	26.1
	04	236 41.1	282 51.8	06.5	284 17.1	51.1	247 06.0	33.5	273 12.3	26.0
	05	251 43.6	297 51.8	06.1	299 17.7	50.6	262 07.9	33.3	288 14.5	26.0
	06	266 46.1	312 51.7	S15 05.7	314 18.2	S18 50.2	277 09.9	S 5 33.0	303 16.7	S15 25.9
	07	281 48.5	327 51.7	05.3	329 18.8	49.7	292 11.8	32.8	318 18.9	25.8
S	08	296 51.0	342 51.6	04.9	344 19.3	49.2	307 13.7	32.6	333 21.1	25.7
Á	09	311 53.5	357 51.5 . .	04.4	359 19.9 . .	48.7	322 15.6 . .	32.3	348 23.3 . .	25.6
B	10	326 55.9	12 51.5	04.0	14 20.4	48.3	337 17.5	32.1	3 25.6	25.6
A	11	341 58.4	27 51.4	03.6	29 20.9	47.8	352 19.4	31.9	18 27.8	25.5
D	12	357 00.8	42 51.4	S15 03.2	44 21.5	S18 47.3	7 21.3	S 5 31.6	33 30.0	S15 25.4
O	13	12 03.3	57 51.3	02.8	59 22.0	46.8	22 23.2	31.4	48 32.2	25.3
	14	27 05.8	72 51.2	02.3	74 22.6	46.3	37 25.1	31.2	63 34.4	25.3
	15	42 08.2	87 51.2 . .	01.9	89 23.1 . .	45.9	52 27.0 . .	30.9	78 36.6 . .	25.2
	16	57 10.7	102 51.1	01.5	104 23.7	45.4	67 28.9	30.7	93 38.8	25.1
	17	72 13.2	117 51.1	01.1	119 24.2	44.9	82 30.9	30.5	108 41.0	25.0
	18	87 15.6	132 51.0	S15 00.6	134 24.8	S18 44.4	97 32.8	S 5 30.3	123 43.2	S15 25.0
	19	102 18.1	147 50.9	15 00.2	149 25.3	44.0	112 34.7	30.0	138 45.4	24.9
	20	117 20.6	162 50.9	14 59.8	164 25.9	43.5	127 36.6	29.8	153 47.6	24.8
	21	132 23.0	177 50.8 . .	59.3	179 26.4 . .	43.0	142 38.5 . .	29.6	168 49.9 . .	24.7
	22	147 25.5	192 50.8	58.9	194 27.0	42.5	157 40.4	29.3	183 52.1	24.6
	23	162 28.0	207 50.7	58.5	209 27.5	42.0	172 42.3	29.1	198 54.3	24.6
		h m								
Paso Mer.		12 15.8	*v* 0.0	*d* 0.4	*v* 0.5	*d* 0.5	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.8	S40 13.2
Achernar	335 22.5	S57 07.7
Acrux	173 01.9	S63 13.3
Adhara	255 07.6	S29 00.4
Aldebaran	290 42.4	N16 33.1
Alioth	166 14.5	N55 50.3
Alkaid	152 53.4	N49 12.0
Alnair	27 36.2	S46 51.3
Alnilam	275 40.1	S 1 11.4
Alphard	217 49.8	S 8 45.4
Alphecca	126 05.5	N26 38.2
Alpheratz	357 37.5	N29 12.6
Altair	62 02.4	N 8 55.4
Ankaa	353 09.9	S42 11.3
Antares	112 18.6	S26 28.8
Arcturus	145 49.8	N19 03.9
Atria	107 14.8	S69 03.7
Avior	234 15.3	S59 35.0
Bellatrix	278 25.4	N 6 22.1
Betelgeuse	270 54.6	N 7 24.6
Canopus	263 53.3	S52 42.7
Capella	280 25.4	N46 01.3
Deneb	49 27.7	N45 21.2
Denebola	182 27.0	N14 26.8
Diphda	348 49.9	S17 52.1
Dubhe	193 43.2	N61 37.9
Elnath	278 04.8	N28 37.6
Eltanin	90 43.3	N51 28.8
Enif	33 41.3	N 9 58.4
Fomalhaut	15 17.4	S29 30.4
Gacrux	171 53.6	S57 14.2
Gienah	175 45.6	S17 39.9
Hadar	148 38.8	S60 28.6
Hamal	327 54.1	N23 33.9
Kaus Aust.	83 35.6	S34 22.4
Kochab	137 19.0	N74 03.6
Markab	13 32.5	N15 19.3
Menkar	314 08.8	N 4 10.4
Menkent	148 00.0	S36 28.7
Miaplacidus	221 38.0	S69 48.6
Mirfak	308 31.8	N49 56.4
Nunki	75 50.7	S26 16.1
Peacock	53 09.7	S56 39.7
Pollux	243 20.0	N27 58.4
Procyon	244 53.1	N 5 10.0
Rasalhague	96 00.7	N12 32.4
Regulus	207 36.6	N11 51.5
Rigel	281 06.1	S 8 10.8
Rigil Kent.	139 43.0	S60 55.4
Sabik	102 05.4	S15 45.2
Schedar	349 34.2	N56 39.4
Shaula	96 13.5	S37 07.1
Sirius	258 28.2	S16 45.0
Spica	158 24.5	S11 16.7
Suhail	222 47.7	S43 31.5
Vega	80 34.9	N38 47.9
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	47 21.0	9 08
Marte	48 29.8	9 04
Júpiter	10 40.5	11 34
Saturno	36 38.3	9 50

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v		Dec	d		Ph
d h	°	′	°	′	°	′	′	°	′	′	′
17 00	177	52.8	S 1	26.5	10	50.7	12.8	N12	12.6	13.3	56.8
01	192	53.0		25.5	25	22.5	12.9	11	59.3	13.4	56.8
02	207	53.2		24.5	39	54.4	13.0	11	45.9	13.4	56.8
03	222	53.4	. .	23.6	54	26.4	12.9	11	32.5	13.5	56.8
04	237	53.6		22.6	68	58.3	13.0	11	19.0	13.6	56.9
05	252	53.7		21.6	83	30.3	13.0	11	05.4	13.6	56.9
06	267	53.9	S 1	20.6	98	02.3	13.0	N10	51.8	13.7	56.9
07	282	54.1		19.6	112	34.3	13.0	10	38.1	13.8	57.0
J 08	297	54.3		18.6	127	06.3	13.0	10	24.3	13.8	57.0
U 09	312	54.5	. .	17.6	141	38.3	13.1	10	10.5	13.9	57.0
E 10	327	54.6		16.6	156	10.4	13.0	9	56.6	14.0	57.0
V 11	342	54.8		15.7	170	42.4	13.1	9	42.6	14.0	57.1
E 12	357	55.0	S 1	14.7	185	14.5	13.1	N 9	28.6	14.0	57.1
S 13	12	55.2		13.7	199	46.6	13.1	9	14.6	14.2	57.1
14	27	55.4		12.7	214	18.7	13.1	9	00.4	14.1	57.1
15	42	55.5	. .	11.7	228	50.8	13.1	8	46.3	14.3	57.2
16	57	55.7		10.7	243	22.9	13.1	8	32.0	14.3	57.2
17	72	55.9		09.7	257	55.0	13.2	8	17.7	14.3	57.2
18	87	56.1	S 1	08.7	272	27.2	13.1	N 8	03.4	14.4	57.2
19	102	56.3		07.7	286	59.3	13.2	7	49.0	14.4	57.3
20	117	56.4		06.8	301	31.5	13.1	7	34.6	14.5	57.3
21	132	56.6	. .	05.8	316	03.6	13.2	7	20.1	14.5	57.3
22	147	56.8		04.8	330	35.8	13.2	7	05.6	14.6	57.3
23	162	57.0		03.8	345	08.0	13.1	6	51.0	14.6	57.4
18 00	177	57.2	S 1	02.8	359	40.1	13.2	N 6	36.4	14.7	57.4
01	192	57.4		01.8	14	12.3	13.2	6	21.7	14.7	57.4
02	207	57.5	1	00.8	28	44.5	13.2	6	07.0	14.7	57.4
03	222	57.7	0	59.8	43	16.7	13.1	5	52.3	14.8	57.5
04	237	57.9		58.8	57	48.8	13.2	5	37.5	14.9	57.5
05	252	58.1		57.9	72	21.0	13.2	5	22.6	14.8	57.5
06	267	58.3	S 0	56.9	86	53.2	13.2	N 5	07.8	14.9	57.5
07	282	58.4		55.9	101	25.4	13.1	4	52.9	15.0	57.6
V 08	297	58.6		54.9	115	57.5	13.2	4	37.9	15.0	57.6
I 09	312	58.8	. .	53.9	130	29.7	13.2	4	22.9	15.0	57.6
E 10	327	59.0		52.9	145	01.9	13.1	4	07.9	15.0	57.6
R 11	342	59.2		51.9	159	34.0	13.2	3	52.9	15.1	57.7
N 12	357	59.4	S 0	50.9	174	06.2	13.1	N 3	37.8	15.1	57.7
E 13	12	59.5		50.0	188	38.3	13.1	3	22.7	15.1	57.7
S 14	27	59.7		49.0	203	10.4	13.2	3	07.6	15.2	57.7
15	42	59.9	. .	48.0	217	42.6	13.1	2	52.4	15.2	57.8
16	58	00.1		47.0	232	14.7	13.1	2	37.2	15.2	57.8
17	73	00.3		46.0	246	46.8	13.0	2	22.0	15.2	57.8
18	88	00.5	S 0	45.0	261	18.8	13.1	N 2	06.8	15.3	57.8
19	103	00.6		44.0	275	50.9	13.1	1	51.5	15.2	57.9
20	118	00.8		43.0	290	23.0	13.0	1	36.3	15.3	57.9
21	133	01.0	. .	42.0	304	55.0	13.0	1	21.0	15.4	57.9
22	148	01.2		41.1	319	27.0	13.0	1	05.6	15.3	57.9
23	163	01.4		40.1	333	59.0	13.0	0	50.3	15.3	58.0
19 00	178	01.5	S 0	39.1	348	31.0	13.0	N 0	35.0	15.4	58.0
01	193	01.7		38.1	3	03.0	12.9	0	19.6	15.4	58.0
02	208	01.9		37.1	17	34.9	12.9	N 0	04.2	15.4	58.0
03	223	02.1	. .	36.1	32	06.8	12.9	S 0	11.2	15.4	58.0
04	238	02.3		35.1	46	38.7	12.9	0	26.6	15.4	58.1
05	253	02.5		34.1	61	10.6	12.9	0	42.0	15.4	58.1
06	268	02.6	S 0	33.2	75	42.5	12.8	S 0	57.4	15.4	58.1
07	283	02.8		32.2	90	14.3	12.8	1	12.8	15.4	58.1
S 08	298	03.0		31.2	104	46.1	12.7	1	28.2	15.5	58.1
Á 09	313	03.2	. .	30.2	119	17.8	12.8	1	43.7	15.4	58.2
B 10	328	03.4		29.2	133	49.6	12.7	1	59.1	15.4	58.2
A 11	343	03.6		28.2	148	21.3	12.7	2	14.5	15.5	58.2
D 12	358	03.8	S 0	27.2	162	53.0	12.6	S 2	30.0	15.4	58.2
O 13	13	03.9		26.2	177	24.6	12.6	2	45.4	15.5	58.3
14	28	04.1		25.2	191	56.2	12.6	3	00.9	15.4	58.3
15	43	04.3	. .	24.3	206	27.8	12.5	3	16.3	15.4	58.3
16	58	04.5		23.3	220	59.3	12.5	3	31.7	15.4	58.3
17	73	04.7		22.3	235	30.8	12.5	3	47.1	15.4	58.3
18	88	04.9	S 0	21.3	250	02.3	12.4	S 4	02.5	15.4	58.4
19	103	05.0		20.3	264	33.7	12.4	4	17.9	15.4	58.4
20	118	05.2		19.3	279	05.1	12.4	4	33.3	15.4	58.4
21	133	05.4	. .	18.3	293	36.5	12.3	4	48.7	15.3	58.4
22	148	05.6		17.3	308	07.8	12.2	5	04.0	15.4	58.4
23	163	05.8		16.4	322	39.0	12.3	S 5	19.4	15.3	58.4
	S/D	16.1	d	1.0	S/D		15.6		15.7		15.9

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			17	18	19	20
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	03	35	05	02	06 09	15 58	18 11	20 24	22 50
N 70	03	52	05	08	06 09	16 12	18 14	20 17	22 29
68	04	05	05	13	06 09	16 22	18 16	20 12	22 13
66	04	15	05	17	06 08	16 31	18 18	20 07	22 00
64	04	24	05	21	06 08	16 39	18 20	20 03	21 50
62	04	31	05	24	06 08	16 45	18 21	19 59	21 41
60	04	37	05	27	06 08	16 50	18 23	19 56	21 33
N 58	04	42	05	29	06 08	16 55	18 24	19 54	21 27
56	04	47	05	31	06 08	16 59	18 25	19 51	21 21
54	04	51	05	32	06 08	17 03	18 25	19 49	21 15
52	04	54	05	34	06 08	17 06	18 26	19 47	21 11
50	04	57	05	35	06 07	17 10	18 27	19 46	21 06
45	05	04	05	38	06 07	17 16	18 28	19 42	20 57
N 40	05	08	05	40	06 07	17 22	18 30	19 39	20 50
35	05	12	05	41	06 07	17 27	18 31	19 36	20 43
30	05	15	05	43	06 06	17 31	18 32	19 34	20 38
20	05	18	05	44	06 06	17 38	18 33	19 30	20 28
N 10	05	20	05	44	06 05	17 44	18 35	19 26	20 19
0	05	20	05	44	06 05	17 50	18 36	19 23	20 11
S 10	05	19	05	43	06 04	17 56	18 38	19 20	20 04
20	05	16	05	41	06 03	18 03	18 39	19 17	19 55
30	05	10	05	38	06 02	18 10	18 41	19 13	19 46
35	05	07	05	36	06 01	18 14	18 42	19 11	19 41
40	05	02	05	34	06 01	18 18	18 43	19 08	19 35
45	04	56	05	30	06 00	18 24	18 45	19 05	19 28
S 50	04	48	05	26	05 58	18 30	18 46	19 02	19 19
52	04	44	05	24	05 58	18 33	18 47	19 01	19 16
54	04	40	05	22	05 57	18 36	18 48	18 59	19 11
56	04	35	05	19	05 57	18 40	18 49	18 57	19 07
58	04	29	05	16	05 56	18 44	18 50	18 55	19 02
S 60	04	22	05	13	05 55	18 48	18 51	18 53	18 56

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	17	18	19	20
°	h m	h m	h m	h m	h m	h m	h m
N 72	18 10	19 18	20 46	07 48	07 13	06 43	06 10
N 70	18 10	19 11	20 28	07 32	07 07	06 44	06 21
68	18 09	19 05	20 14	07 19	07 02	06 46	06 29
66	18 09	19 01	20 04	07 08	06 57	06 47	06 36
64	18 09	18 57	19 55	06 59	06 53	06 48	06 42
62	18 09	18 54	19 47	06 51	06 50	06 49	06 47
60	18 09	18 51	19 41	06 45	06 47	06 49	06 52
N 58	18 09	18 49	19 35	06 39	06 45	06 50	06 56
56	18 10	18 47	19 31	06 33	06 42	06 51	07 00
54	18 10	18 45	19 27	06 28	06 40	06 51	07 03
52	18 10	18 43	19 23	06 24	06 38	06 52	07 06
50	18 10	18 42	19 20	06 20	06 37	06 52	07 09
45	18 10	18 39	19 13	06 12	06 33	06 53	07 15
N 40	18 10	18 37	19 08	06 04	06 30	06 54	07 20
35	18 10	18 35	19 05	05 58	06 27	06 55	07 24
30	18 10	18 34	19 02	05 53	06 24	06 55	07 28
20	18 10	18 32	18 58	05 43	06 20	06 57	07 34
N 10	18 11	18 32	18 56	05 34	06 16	06 58	07 40
0	18 11	18 32	18 56	05 26	06 12	06 58	07 46
S 10	18 12	18 33	18 57	05 18	06 09	06 59	07 51
20	18 13	18 35	19 00	05 09	06 05	07 00	07 57
30	18 14	18 37	19 05	04 59	06 00	07 01	08 04
35	18 14	18 39	19 09	04 54	05 57	07 02	08 08
40	18 15	18 42	19 14	04 47	05 54	07 03	08 12
45	18 16	18 45	19 19	04 39	05 51	07 03	08 18
S 50	18 17	18 49	19 27	04 30	05 46	07 04	08 24
52	18 17	18 51	19 31	04 25	05 44	07 05	08 27
54	18 18	18 53	19 35	04 20	05 42	07 05	08 30
56	18 18	18 56	19 40	04 15	05 40	07 06	08 33
58	18 19	18 58	19 45	04 09	05 37	07 06	08 37
S 60	18 20	19 01	19 52	04 02	05 34	07 07	08 42

Día	SOL				LUNA				
	Ec. Tiempo			Paso Mer.	Paso Mer.		Edad	Fase
	00h		12h		Sup.	Inf.		
d	m	s	m	s	h m	h m	h m	d	%
17	08	29	08	20	12 08	24 01	11 38	15	99
18	08	12	08	03	12 08	00 01	12 24	16	100
19	07	54	07	45	12 08	00 47	13 11	17	98

UT (HmGr)	ARIES	VENUS −4·5		MARTE +1·1		JÚPITER −2·0		SATURNO +0·7		ESTRELLAS		
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec	Nombre	AHS	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′		° ′	° ′
20 00	177 30.4	222 50.6	S14 58.0	224 28.0	S18 41.6	187 44.2	S 5 28.9	213 56.5	S15 24.5	Acamar	315 13.8	S40 13.2
01	192 32.9	237 50.6	57.6	239 28.6	41.1	202 46.1	28.6	228 58.7	24.4	Achernar	335 22.5	S57 07.7
02	207 35.3	252 50.5	57.2	254 29.1	40.6	217 48.0	28.4	244 00.9	24.3	Acrux	173 01.9	S63 13.3
03	222 37.8	267 50.4	56.7	269 29.7	40.1	232 49.9	28.2	259 03.1	24.3	Adhara	255 07.6	S29 00.4
04	237 40.3	282 50.4	56.3	284 30.2	39.6	247 51.9	27.9	274 05.3	24.2	Aldebaran	290 42.4	N16 33.1
05	252 42.7	297 50.3	55.9	299 30.8	39.1	262 53.8	27.7	289 07.5	24.1			
06	267 45.2	312 50.2	S14 55.4	314 31.3	S18 38.7	277 55.7	S 5 27.5	304 09.8	S15 24.0	Alioth	166 14.5	N55 50.3
07	282 47.7	327 50.2	55.0	329 31.9	38.2	292 57.6	27.2	319 12.0	23.9	Alkaid	152 53.4	N49 12.0
08	297 50.1	342 50.1	54.6	344 32.4	37.7	307 59.5	27.0	334 14.2	23.9	Alnair	27 36.2	S46 51.3
D 09	312 52.6	357 50.0	54.1	359 33.0	37.2	323 01.4	26.8	349 16.4	23.8	Alnilam	275 40.1	S 1 11.4
O 10	327 55.1	12 50.0	53.7	14 33.5	36.7	338 03.3	26.5	4 18.6	23.7	Alphard	217 49.8	S 8 45.4
M 11	342 57.5	27 49.9	53.2	29 34.1	36.2	353 05.2	26.3	19 20.8	23.6			
I 12	358 00.0	42 49.8	S14 52.8	44 34.6	S18 35.8	8 07.1	S 5 26.1	34 23.0	S15 23.6	Alphecca	126 05.5	N26 38.2
N 13	13 02.5	57 49.7	52.3	59 35.2	35.3	23 09.0	25.8	49 25.2	23.5	Alpheratz	357 37.5	N29 12.6
G 14	28 04.9	72 49.7	51.9	74 35.7	34.8	38 11.0	25.6	64 27.4	23.4	Altair	62 02.4	N 8 55.4
O 15	43 07.4	87 49.6	51.5	89 36.3	34.3	53 12.9	25.4	79 29.7	23.3	Ankaa	353 09.9	S42 11.3
16	58 09.8	102 49.5	51.0	104 36.8	33.8	68 14.8	25.2	94 31.9	23.3	Antares	112 18.5	S26 28.8
17	73 12.3	117 49.5	50.6	119 37.4	33.3	83 16.7	24.9	109 34.1	23.2			
18	88 14.8	132 49.4	S14 50.1	134 37.9	S18 32.9	98 18.6	S 5 24.7	124 36.3	S15 23.1	Arcturus	145 49.8	N19 03.9
19	103 17.2	147 49.3	49.7	149 38.5	32.4	113 20.5	24.5	139 38.5	23.0	Atria	107 14.7	S69 03.7
20	118 19.7	162 49.2	49.2	164 39.0	31.9	128 22.4	24.2	154 40.7	22.9	Avior	234 15.3	S59 35.0
21	133 22.2	177 49.2	48.8	179 39.6	31.4	143 24.3	24.0	169 42.9	22.9	Bellatrix	278 25.4	N 6 22.1
22	148 24.6	192 49.1	48.3	194 40.1	30.9	158 26.2	23.8	184 45.1	22.8	Betelgeuse	270 54.6	N 7 24.6
23	163 27.1	207 49.0	47.9	209 40.7	30.4	173 28.1	23.5	199 47.4	22.7			
21 00	178 29.6	222 48.9	S14 47.4	224 41.2	S18 29.9	188 30.0	S 5 23.3	214 49.6	S15 22.6	Canopus	263 53.4	S52 42.7
01	193 32.0	237 48.9	47.0	239 41.8	29.4	203 32.0	23.1	229 51.8	22.6	Capella	280 25.4	N46 01.3
02	208 34.5	252 48.8	46.5	254 42.3	29.0	218 33.9	22.8	244 54.0	22.5	Deneb	49 27.7	N45 21.2
03	223 36.9	267 48.7	46.1	269 42.9	28.5	233 35.8	22.6	259 56.2	22.4	Denebola	182 27.0	N14 26.8
04	238 39.4	282 48.6	45.6	284 43.4	28.0	248 37.7	22.4	274 58.4	22.3	Diphda	348 49.9	S17 52.1
05	253 41.9	297 48.5	45.2	299 44.0	27.5	263 39.6	22.1	290 00.6	22.3			
06	268 44.3	312 48.5	S14 44.7	314 44.5	S18 27.0	278 41.5	S 5 21.9	305 02.8	S15 22.2	Dubhe	193 43.2	N61 38.0
07	283 46.8	327 48.4	44.2	329 45.1	26.5	293 43.4	21.7	320 05.1	22.1	Elnath	278 04.8	N28 37.6
L 08	298 49.3	342 48.3	43.8	344 45.6	26.0	308 45.3	21.4	335 07.3	22.0	Eltanin	90 43.2	N51 28.8
U 09	313 51.7	357 48.2	43.3	359 46.2	25.5	323 47.2	21.2	350 09.5	22.0	Enif	33 41.3	N 9 58.4
N 10	328 54.2	12 48.1	42.9	14 46.7	25.0	338 49.2	21.0	5 11.7	21.9	Fomalhaut	15 17.4	S29 30.4
E 11	343 56.7	27 48.1	42.4	29 47.3	24.5	353 51.1	20.8	20 13.9	21.8			
S 12	358 59.1	42 48.0	S14 41.9	44 47.8	S18 24.0	8 53.0	S 5 20.5	35 16.1	S15 21.7	Gacrux	171 53.6	S57 14.2
13	14 01.6	57 47.9	41.5	59 48.4	23.6	23 54.9	20.3	50 18.3	21.6	Gienah	175 45.6	S17 39.9
14	29 04.1	72 47.8	41.0	74 48.9	23.1	38 56.8	20.1	65 20.6	21.6	Hadar	148 38.7	S60 28.6
15	44 06.5	87 47.7	40.5	89 49.5	22.6	53 58.7	19.8	80 22.8	21.5	Hamal	327 54.1	N23 33.9
16	59 09.0	102 47.7	40.1	104 50.0	22.1	69 00.6	19.6	95 25.0	21.4	Kaus Aust.	83 35.6	S34 22.4
17	74 11.4	117 47.6	39.6	119 50.6	21.6	84 02.5	19.4	110 27.2	21.3			
18	89 13.9	132 47.5	S14 39.2	134 51.1	S18 21.1	99 04.4	S 5 19.1	125 29.4	S15 21.3	Kochab	137 19.0	N74 03.6
19	104 16.4	147 47.4	38.7	149 51.7	20.6	114 06.3	18.9	140 31.6	21.2	Markab	13 32.5	N15 19.2
20	119 18.8	162 47.3	38.2	164 52.3	20.1	129 08.3	18.7	155 33.8	21.1	Menkar	314 08.8	N 4 10.4
21	134 21.3	177 47.2	37.7	179 52.8	19.6	144 10.2	18.4	170 36.1	21.0	Menkent	148 00.0	S36 28.7
22	149 23.8	192 47.1	37.3	194 53.4	19.1	159 12.1	18.2	185 38.3	21.0	Miaplacidus	221 38.0	S69 48.6
23	164 26.2	207 47.1	36.8	209 53.9	18.6	174 14.0	18.0	200 40.5	20.9			
22 00	179 28.7	222 47.0	S14 36.3	224 54.5	S18 18.1	189 15.9	S 5 17.7	215 42.7	S15 20.8	Mirfak	308 31.9	N49 56.4
01	194 31.2	237 46.9	35.9	239 55.0	17.6	204 17.8	17.5	230 44.9	20.7	Nunki	75 50.7	S26 16.1
02	209 33.6	252 46.8	35.4	254 55.6	17.1	219 19.7	17.3	245 47.1	20.7	Peacock	53 09.7	S56 39.7
03	224 36.1	267 46.7	34.9	269 56.1	16.6	234 21.6	17.0	260 49.3	20.6	Pollux	243 20.0	N27 58.4
04	239 38.5	282 46.6	34.4	284 56.7	16.1	249 23.5	16.8	275 51.6	20.5	Procyon	244 53.1	N 5 10.0
05	254 41.0	297 46.5	34.0	299 57.2	15.6	264 25.5	16.6	290 53.8	20.4			
06	269 43.5	312 46.4	S14 33.5	314 57.8	S18 15.1	279 27.4	S 5 16.4	305 56.0	S15 20.4	Rasalhague	96 00.7	N12 32.4
07	284 45.9	327 46.4	33.0	329 58.3	14.6	294 29.3	16.1	320 58.2	20.3	Regulus	207 36.6	N11 51.5
M 08	299 48.4	342 46.3	32.5	344 58.9	14.1	309 31.2	15.9	336 00.4	20.2	Rigel	281 06.2	S 8 10.8
A 09	314 50.9	357 46.2	32.1	359 59.5	13.6	324 33.1	15.7	351 02.6	20.1	Rigil Kent.	139 43.0	S60 55.4
R 10	329 53.3	12 46.1	31.6	15 00.0	13.1	339 35.0	15.4	6 04.8	20.0	Sabik	102 05.4	S15 45.2
T 11	344 55.8	27 46.0	31.1	30 00.6	12.6	354 36.9	15.2	21 07.1	20.0			
E 12	359 58.3	42 45.9	S14 30.6	45 01.1	S18 12.1	9 38.8	S 5 15.0	36 09.3	S15 19.9	Schedar	349 34.2	N56 39.4
S 13	15 00.7	57 45.8	30.1	60 01.7	11.6	24 40.7	14.7	51 11.5	19.8	Shaula	96 13.5	S37 07.1
14	30 03.2	72 45.7	29.7	75 02.2	11.1	39 42.7	14.5	66 13.7	19.7	Sirius	258 28.2	S16 45.0
15	45 05.7	87 45.6	29.2	90 02.8	10.6	54 44.6	14.3	81 15.9	19.7	Spica	158 24.4	S11 16.7
16	60 08.1	102 45.5	28.7	105 03.3	10.1	69 46.5	14.0	96 18.1	19.6	Suhail	222 47.7	S43 31.5
17	75 10.6	117 45.4	28.2	120 03.9	09.6	84 48.4	13.8	111 20.4	19.5			
18	90 13.0	132 45.3	S14 27.7	135 04.5	S18 09.1	99 50.3	S 5 13.6	126 22.6	S15 19.4	Vega	80 34.8	N38 47.9
19	105 15.5	147 45.2	27.2	150 05.0	08.6	114 52.2	13.3	141 24.8	19.4	Zuben'ubi	136 58.3	S16 08.0
20	120 18.0	162 45.1	26.7	165 05.6	08.1	129 54.1	13.1	156 27.0	19.3			
21	135 20.4	177 45.1	26.3	180 06.1	07.6	144 56.0	12.9	171 29.2	19.2		AHS	Paso Mer.
22	150 22.9	192 45.0	25.8	195 06.7	07.1	159 57.9	12.7	186 31.4	19.1		° ′	h m
23	165 25.4	207 44.9	25.3	210 07.2	06.6	174 59.9	12.4	201 33.7	19.1	Venus	44 19.4	9 09
	h m									Marte	46 11.7	9 01
Paso Mer.	12 04.0	*v* −0.1	*d* 0.5	*v* 0.6	*d* 0.5	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1	Júpiter	10 00.5	11 25
										Saturno	36 20.0	9 39

UT (HmGr)	SOL AHGr	SOL Dec	LUNA AHGr	LUNA v	LUNA Dec	LUNA d	LUNA Ph
d h	° ′	° ′	° ′	′	° ′	′	′
20 00	178 06.0	S 0 15.4	337 10.3	12.1	S 5 34.7	15.3	58.5
01	193 06.1	14.4	351 41.4	12.2	5 50.0	15.3	58.5
02	208 06.3	13.4	6 12.6	12.0	6 05.3	15.3	58.5
03	223 06.5	12.4	20 43.6	12.1	6 20.6	15.2	58.5
04	238 06.7	11.4	35 14.7	11.9	6 35.8	15.3	58.5
05	253 06.9	10.4	49 45.6	12.0	6 51.1	15.1	58.6
06	268 07.1	S 0 09.4	64 16.6	11.9	S 7 06.2	15.2	58.6
07	283 07.3	08.5	78 47.5	11.8	7 21.4	15.2	58.6
D 08	298 07.4	07.5	93 18.3	11.8	7 36.6	15.1	58.6
O 09	313 07.6	06.5	107 49.1	11.7	7 51.7	15.0	58.6
M 10	328 07.8	05.5	122 19.8	11.6	8 06.7	15.1	58.6
I 11	343 08.0	04.5	136 50.4	11.7	8 21.8	15.0	58.7
N 12	358 08.2	S 0 03.5	151 21.1	11.5	S 8 36.8	15.0	58.7
G 13	13 08.4	02.5	165 51.6	11.5	8 51.8	14.9	58.7
O 14	28 08.6	01.5	180 22.1	11.4	9 06.7	14.9	58.7
15	43 08.7	S 00.5	194 52.5	11.4	9 21.6	14.9	58.7
16	58 08.9	N 00.4	209 22.9	11.3	9 36.5	14.8	58.7
17	73 09.1	01.4	223 53.2	11.3	9 51.3	14.7	58.7
18	88 09.3	N 0 02.4	238 23.5	11.2	S10 06.0	14.8	58.8
19	103 09.5	03.4	252 53.7	11.1	10 20.8	14.6	58.8
20	118 09.7	04.4	267 23.8	11.1	10 35.4	14.7	58.8
21	133 09.9	05.4	281 53.9	10.9	10 50.1	14.5	58.8
22	148 10.0	06.4	296 23.8	11.0	11 04.6	14.6	58.8
23	163 10.2	07.4	310 53.8	10.8	11 19.2	14.4	58.8
21 00	178 10.4	N 0 08.3	325 23.6	10.8	S11 33.6	14.5	58.8
01	193 10.6	09.3	339 53.4	10.7	11 48.1	14.3	58.9
02	208 10.8	10.3	354 23.1	10.7	12 02.4	14.3	58.9
03	223 11.0	11.3	8 52.8	10.6	12 16.7	14.3	58.9
04	238 11.2	12.3	23 22.4	10.5	12 31.0	14.1	58.9
05	253 11.3	13.3	37 51.9	10.4	12 45.1	14.2	58.9
06	268 11.5	N 0 14.3	52 21.3	10.4	S12 59.3	14.0	58.9
07	283 11.7	15.3	66 50.7	10.3	13 13.3	14.0	58.9
L 08	298 11.9	16.2	81 20.0	10.2	13 27.3	13.9	58.9
U 09	313 12.1	17.2	95 49.2	10.1	13 41.2	13.9	59.0
N 10	328 12.3	18.2	110 18.3	10.1	13 55.1	13.7	59.0
E 11	343 12.5	19.2	124 47.4	10.0	14 08.8	13.7	59.0
S 12	358 12.6	N 0 20.2	139 16.4	9.9	S14 22.5	13.7	59.0
13	13 12.8	21.2	153 45.3	9.8	14 36.2	13.5	59.0
14	28 13.0	22.2	168 14.1	9.7	14 49.7	13.5	59.0
15	43 13.2	23.1	182 42.8	9.7	15 03.2	13.4	59.0
16	58 13.4	24.1	197 11.5	9.6	15 16.6	13.3	59.0
17	73 13.6	25.1	211 40.1	9.5	15 29.9	13.3	59.0
18	88 13.8	N 0 26.1	226 08.6	9.4	S15 43.2	13.1	59.1
19	103 14.0	27.1	240 37.0	9.3	15 56.3	13.1	59.1
20	118 14.1	28.1	255 05.3	9.3	16 09.4	13.0	59.1
21	133 14.3	29.1	269 33.6	9.2	16 22.4	12.9	59.1
22	148 14.5	30.1	284 01.8	9.1	16 35.3	12.8	59.1
23	163 14.7	31.0	298 29.9	9.0	16 48.1	12.7	59.1
22 00	178 14.9	N 0 32.0	312 57.9	8.9	S17 00.8	12.6	59.1
01	193 15.1	33.0	327 25.8	8.8	17 13.4	12.5	59.1
02	208 15.3	34.0	341 53.6	8.8	17 25.9	12.4	59.1
03	223 15.4	35.0	356 21.4	8.6	17 38.3	12.3	59.1
04	238 15.6	36.0	10 49.0	8.6	17 50.6	12.2	59.1
05	253 15.8	37.0	25 16.6	8.5	18 02.8	12.2	59.1
06	268 16.0	N 0 38.0	39 44.1	8.4	S18 15.0	12.0	59.2
07	283 16.2	38.9	54 11.5	8.3	18 27.0	11.9	59.2
M 08	298 16.4	39.9	68 38.8	8.2	18 38.9	11.8	59.2
A 09	313 16.6	40.9	83 06.0	8.2	18 50.7	11.7	59.2
R 10	328 16.8	41.9	97 33.2	8.0	19 02.4	11.6	59.2
T 11	343 16.9	42.9	112 00.2	8.0	19 14.0	11.4	59.2
E 12	358 17.1	N 0 43.9	126 27.2	7.8	S19 25.4	11.4	59.2
S 13	13 17.3	44.9	140 54.0	7.8	19 36.8	11.2	59.2
14	28 17.5	45.8	155 20.8	7.7	19 48.0	11.2	59.2
15	43 17.7	46.8	169 47.5	7.6	19 59.2	11.0	59.2
16	58 17.9	47.8	184 14.1	7.6	20 10.2	10.9	59.2
17	73 18.1	48.8	198 40.7	7.4	20 21.1	10.7	59.2
18	88 18.3	N 0 49.8	213 07.1	7.3	S20 31.8	10.7	59.2
19	103 18.4	50.8	227 33.4	7.3	20 42.5	10.5	59.2
20	118 18.6	51.8	241 59.7	7.2	20 53.0	10.4	59.2
21	133 18.8	52.7	256 25.9	7.1	21 03.4	10.2	59.2
22	148 19.0	53.7	270 52.0	7.0	21 13.6	10.2	59.2
23	163 19.2	54.7	285 18.0	6.9	S21 23.8	10.0	59.3
	S/D 16.1	d 1.0	S/D	16.0		16.1	16.1

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 20	Orto Luna 21	Orto Luna 22	Orto Luna 23
°	h m	h m	h m	h m	h m	h m	h m
N 72	03 15	04 45	05 54	22 50	26 29	02 29	
N 70	03 35	04 54	05 55	22 29	25 08	01 08	
68	03 50	05 00	05 56	22 13	24 31	00 31	
66	04 02	05 06	05 57	22 00	24 04	00 04	02 31
64	04 12	05 10	05 58	21 50	23 44	25 49	01 49
62	04 20	05 14	05 58	21 41	23 28	25 21	01 21
60	04 27	05 17	05 59	21 33	23 15	25 00	01 00
N 58	04 33	05 20	05 59	21 27	23 03	24 42	00 42
56	04 39	05 23	06 00	21 21	22 53	24 28	00 28
54	04 43	05 25	06 00	21 15	22 44	24 15	00 15
52	04 47	05 27	06 01	21 11	22 37	24 04	00 04
50	04 51	05 29	06 01	21 06	22 30	23 54	25 16
45	04 58	05 32	06 02	20 57	22 15	23 34	24 51
N 40	05 03	05 35	06 02	20 50	22 03	23 17	24 31
35	05 08	05 37	06 02	20 43	21 52	23 03	24 14
30	05 11	05 39	06 03	20 38	21 43	22 51	24 00
20	05 16	05 41	06 03	20 28	21 28	22 31	23 36
N 10	05 18	05 43	06 04	20 19	21 15	22 13	23 15
0	05 19	05 43	06 04	20 11	21 02	21 57	22 55
S 10	05 19	05 43	06 04	20 04	20 50	21 41	22 36
20	05 16	05 42	06 04	19 55	20 37	21 24	22 15
30	05 12	05 40	06 04	19 46	20 22	21 04	21 52
35	05 09	05 39	06 04	19 41	20 14	20 52	21 38
40	05 05	05 37	06 04	19 35	20 04	20 39	21 22
45	05 00	05 34	06 03	19 28	19 53	20 24	21 03
S 50	04 53	05 31	06 03	19 19	19 40	20 05	20 39
52	04 49	05 29	06 03	19 16	19 33	19 56	20 28
54	04 46	05 28	06 03	19 11	19 26	19 46	20 15
56	04 41	05 26	06 03	19 07	19 19	19 35	20 00
58	04 36	05 23	06 02	19 02	19 10	19 23	19 43
S 60	04 31	05 21	06 02	18 56	19 00	19 08	19 22

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 20	Ocaso Luna 21	Ocaso Luna 22	Ocaso Luna 23
°	h m	h m	h m	h m	h m	h m	h m
N 72	18 23	19 32	21 04	06 10	05 28	03 38	
N 70	18 22	19 24	20 44	06 21	05 51	05 00	
68	18 20	19 17	20 28	06 29	06 09	05 40	
66	18 19	19 11	20 15	06 36	06 24	06 07	05 37
64	18 18	19 06	20 05	06 42	06 36	06 29	06 19
62	18 17	19 02	19 56	06 47	06 46	06 46	06 48
60	18 17	18 59	19 49	06 52	06 55	07 00	07 10
N 58	18 16	18 56	19 43	06 56	07 03	07 13	07 28
56	18 16	18 53	19 37	07 00	07 10	07 24	07 43
54	18 15	18 51	19 33	07 03	07 16	07 33	07 56
52	18 15	18 49	19 29	07 06	07 22	07 42	08 08
50	18 14	18 47	19 25	07 09	07 27	07 49	08 18
45	18 14	18 43	19 17	07 15	07 38	08 06	08 40
N 40	18 13	18 40	19 12	07 20	07 47	08 19	08 57
35	18 12	18 38	19 07	07 24	07 55	08 31	09 12
30	18 12	18 36	19 04	07 28	08 02	08 41	09 25
20	18 11	18 33	18 59	07 34	08 14	08 58	09 47
N 10	18 11	18 32	18 56	07 40	08 25	09 14	10 06
0	18 10	18 31	18 55	07 46	08 35	09 28	10 24
S 10	18 10	18 31	18 56	07 51	08 45	09 42	10 42
20	18 10	18 32	18 58	07 57	08 56	09 58	11 02
30	18 10	18 34	19 02	08 04	09 09	10 16	11 24
35	18 10	18 35	19 05	08 08	09 16	10 26	11 37
40	18 10	18 37	19 08	08 12	09 24	10 38	11 53
45	18 10	18 39	19 14	08 18	09 34	10 52	12 11
S 50	18 10	18 42	19 20	08 24	09 46	11 10	12 33
52	18 10	18 44	19 24	08 27	09 51	11 18	12 44
54	18 10	18 46	19 27	08 30	09 57	11 27	12 57
56	18 11	18 47	19 31	08 33	10 04	11 38	13 11
58	18 11	18 50	19 36	08 37	10 12	11 49	13 28
S 60	18 11	18 52	19 42	08 42	10 20	12 03	13 48

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
20	07 37	07 28	12 07	01 34	13 58	18 94	
21	07 19	07 10	12 07	02 23	14 49	19 88	
22	07 01	06 52	12 07	03 15	15 42	20 79	

UT (HmGr)		ARIES	VENUS −4·4		MARTE +1·1		JÚPITER −2·0		SATURNO +0·7		ESTRELLAS		
	d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec	Nombre	AHS	Dec
		° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′		° ′	° ′
	23 00	180 27.8	222 44.8	S14 24.8	225 07.8	S18 06.1	190 01.8	S 5 12.2	216 35.9	S15 19.0	Acamar	315 13.9	S40 13.2
	01	195 30.3	237 44.7	24.3	240 08.4	05.6	205 03.7	12.0	231 38.1	18.9	Achernar	335 22.5	S57 07.7
	02	210 32.8	252 44.6	23.8	255 08.9	05.1	220 05.6	11.7	246 40.3	18.8	Acrux	173 01.9	S63 13.3
	03	225 35.2	267 44.5	23.3	270 09.5	04.6	235 07.5	11.5	261 42.5	18.8	Adhara	255 07.6	S29 00.4
	04	240 37.7	282 44.4	22.8	285 10.0	04.1	250 09.4	11.3	276 44.7	18.7	Aldebaran	290 42.4	N16 33.1
	05	255 40.2	297 44.3	22.3	300 10.6	03.6	265 11.3	11.0	291 47.0	18.6			
	06	270 42.6	312 44.2	S14 21.8	315 11.1	S18 03.1	280 13.2	S 5 10.8	306 49.2	S15 18.5	Alioth	166 14.5	N55 50.3
	07	285 45.1	327 44.1	21.3	330 11.7	02.6	295 15.2	10.6	321 51.4	18.5	Alkaid	152 53.4	N49 12.0
	08	300 47.5	342 44.0	20.8	345 12.3	02.1	310 17.1	10.3	336 53.6	18.4	Alnair	27 36.2	S46 51.2
M	09	315 50.0	357 43.9	20.3	0 12.8	01.6	325 19.0	10.1	351 55.8	18.3	Alnilam	275 40.1	S 1 11.4
I	10	330 52.5	12 43.8	19.8	15 13.4	01.1	340 20.9	09.9	6 58.0	18.2	Alphard	217 49.8	S 8 45.4
É	11	345 54.9	27 43.7	19.3	30 13.9	00.6	355 22.8	09.6	22 00.3	18.2			
R	12	0 57.4	42 43.6	S14 18.8	45 14.5	S18 00.1	10 24.7	S 5 09.4	37 02.5	S15 18.1	Alphecca	126 05.5	N26 38.2
C	13	15 59.9	57 43.5	18.3	60 15.1	17 59.6	25 26.6	09.2	52 04.7	18.0	Alpheratz	357 37.5	N29 12.6
O	14	31 02.3	72 43.4	17.8	75 15.6	59.1	40 28.5	09.0	67 06.9	17.9	Altair	62 02.3	N 8 55.4
L	15	46 04.8	87 43.3	17.3	90 16.2	58.5	55 30.5	08.7	82 09.1	17.9	Ankaa	353 09.9	S42 11.3
E	16	61 07.3	102 43.2	16.8	105 16.7	58.0	70 32.4	08.5	97 11.4	17.8	Antares	112 18.5	S26 28.8
S	17	76 09.7	117 43.1	16.3	120 17.3	57.5	85 34.3	08.3	112 13.6	17.7			
	18	91 12.2	132 43.0	S14 15.8	135 17.9	S17 57.0	100 36.2	S 5 08.0	127 15.8	S15 17.6	Arcturus	145 49.7	N19 03.9
	19	106 14.7	147 42.9	15.3	150 18.4	56.5	115 38.1	07.8	142 18.0	17.6	Atria	107 14.7	S69 03.7
	20	121 17.1	162 42.7	14.8	165 19.0	56.0	130 40.0	07.6	157 20.2	17.5	Avior	234 15.3	S59 35.1
	21	136 19.6	177 42.6	14.3	180 19.5	55.5	145 41.9	07.3	172 22.4	17.4	Bellatrix	278 25.4	N 6 22.1
	22	151 22.0	192 42.5	13.8	195 20.1	55.0	160 43.8	07.1	187 24.7	17.3	Betelgeuse	270 54.6	N 7 24.6
	23	166 24.5	207 42.4	13.3	210 20.7	54.5	175 45.8	06.9	202 26.9	17.3			
	24 00	181 27.0	222 42.3	S14 12.8	225 21.2	S17 54.0	190 47.7	S 5 06.6	217 29.1	S15 17.2	Canopus	263 53.4	S52 42.7
	01	196 29.4	237 42.2	12.3	240 21.8	53.5	205 49.6	06.4	232 31.3	17.1	Capella	280 25.4	N46 01.3
	02	211 31.9	252 42.1	11.8	255 22.3	52.9	220 51.5	06.2	247 33.5	17.0	Deneb	49 27.6	N45 21.2
	03	226 34.4	267 42.0	11.2	270 22.9	52.4	235 53.4	06.0	262 35.8	17.0	Denebola	182 27.0	N14 26.8
	04	241 36.8	282 41.9	10.7	285 23.5	51.9	250 55.3	05.7	277 38.0	16.9	Diphda	348 49.9	S17 52.1
	05	256 39.3	297 41.8	10.2	300 24.0	51.4	265 57.2	05.5	292 40.2	16.8			
	06	271 41.8	312 41.7	S14 09.7	315 24.6	S17 50.9	280 59.1	S 5 05.3	307 42.4	S15 16.7	Dubhe	193 43.2	N61 38.0
	07	286 44.2	327 41.6	09.2	330 25.1	50.4	296 01.1	05.0	322 44.6	16.7	Elnath	278 04.9	N28 37.6
	08	301 46.7	342 41.5	08.7	345 25.7	49.9	311 03.0	04.8	337 46.9	16.6	Eltanin	90 43.2	N51 28.8
J	09	316 49.1	357 41.4	08.2	0 26.3	49.4	326 04.9	04.6	352 49.1	16.5	Enif	33 41.3	N 9 58.4
U	10	331 51.6	12 41.2	07.6	15 26.8	48.8	341 06.8	04.3	7 51.3	16.4	Fomalhaut	15 17.4	S29 30.4
E	11	346 54.1	27 41.1	07.1	30 27.4	48.3	356 08.7	04.1	22 53.5	16.4			
V	12	1 56.5	42 41.0	S14 06.6	45 28.0	S17 47.8	11 10.6	S 5 03.9	37 55.7	S15 16.3	Gacrux	171 53.6	S57 14.2
E	13	16 59.0	57 40.9	06.1	60 28.5	47.3	26 12.5	03.6	52 58.0	16.2	Gienah	175 45.6	S17 40.0
S	14	32 01.5	72 40.8	05.6	75 29.1	46.8	41 14.4	03.4	68 00.2	16.1	Hadar	148 38.7	S60 28.7
	15	47 03.9	87 40.7	05.0	90 29.6	46.3	56 16.4	03.2	83 02.4	16.1	Hamal	327 54.1	N23 33.9
	16	62 06.4	102 40.6	04.5	105 30.2	45.8	71 18.3	03.0	98 04.6	16.0	Kaus Aust.	83 35.6	S34 22.4
	17	77 08.9	117 40.5	04.0	120 30.8	45.2	86 20.2	02.7	113 06.8	15.9			
	18	92 11.3	132 40.4	S14 03.5	135 31.3	S17 44.7	101 22.1	S 5 02.5	128 09.1	S15 15.8	Kochab	137 18.9	N74 03.7
	19	107 13.8	147 40.2	02.9	150 31.9	44.2	116 24.0	02.3	143 11.3	15.8	Markab	13 32.5	N15 19.2
	20	122 16.3	162 40.1	02.4	165 32.5	43.7	131 25.9	02.0	158 13.5	15.7	Menkar	314 08.8	N 4 10.4
	21	137 18.7	177 40.0	01.9	180 33.0	43.2	146 27.8	01.8	173 15.7	15.6	Menkent	148 00.0	S36 28.7
	22	152 21.2	192 39.9	01.4	195 33.6	42.7	161 29.8	01.6	188 17.9	15.5	Miaplacidus	221 38.1	S69 48.7
	23	167 23.6	207 39.8	00.8	210 34.1	42.1	176 31.7	01.3	203 20.2	15.5			
	25 00	182 26.1	222 39.7	S14 00.3	225 34.7	S17 41.6	191 33.6	S 5 01.1	218 22.4	S15 15.4	Mirfak	308 31.9	N49 56.4
	01	197 28.6	237 39.6	13 59.8	240 35.3	41.1	206 35.5	00.9	233 24.6	15.3	Nunki	75 50.7	S26 16.1
	02	212 31.0	252 39.4	59.3	255 35.8	40.6	221 37.4	00.6	248 26.8	15.3	Peacock	53 09.7	S56 39.7
	03	227 33.5	267 39.3	58.7	270 36.4	40.1	236 39.3	00.4	263 29.0	15.2	Pollux	243 20.0	N27 58.4
	04	242 36.0	282 39.2	58.2	285 37.0	39.5	251 41.2	00.2	278 31.3	15.1	Procyon	244 53.1	N 5 10.0
	05	257 38.4	297 39.1	57.7	300 37.5	39.0	266 43.2	5 00.0	293 33.5	15.0			
	06	272 40.9	312 39.0	S13 57.1	315 38.1	S17 38.5	281 45.1	S 4 59.7	308 35.7	S15 15.0	Rasalhague	96 00.6	N12 32.4
	07	287 43.4	327 38.9	56.6	330 38.7	38.0	296 47.0	59.5	323 37.9	14.9	Regulus	207 36.6	N11 51.5
V	08	302 45.8	342 38.7	56.1	345 39.2	37.5	311 48.9	59.3	338 40.1	14.8	Rigel	281 06.2	S 8 10.8
I	09	317 48.3	357 38.6	55.5	0 39.8	37.0	326 50.8	59.0	353 42.4	14.7	Rigil Kent.	139 42.9	S60 55.4
E	10	332 50.8	12 38.5	55.0	15 40.4	36.4	341 52.7	58.8	8 44.6	14.7	Sabik	102 05.3	S15 45.2
R	11	347 53.2	27 38.4	54.4	30 40.9	35.9	356 54.6	58.6	23 46.8	14.6			
N	12	2 55.7	42 38.3	S13 53.9	45 41.5	S17 35.4	11 56.6	S 4 58.3	38 49.0	S15 14.5	Schedar	349 34.2	N56 39.4
E	13	17 58.1	57 38.2	53.4	60 42.1	34.9	26 58.5	58.1	53 51.3	14.4	Shaula	96 13.4	S37 07.1
S	14	33 00.6	72 38.0	52.8	75 42.6	34.3	42 00.4	57.9	68 53.5	14.4	Sirius	258 28.2	S16 45.0
	15	48 03.1	87 37.9	52.3	90 43.2	33.8	57 02.3	57.6	83 55.7	14.3	Spica	158 24.4	S11 16.7
	16	63 05.5	102 37.8	51.7	105 43.8	33.3	72 04.2	57.4	98 57.9	14.2	Suhail	222 47.7	S43 31.5
	17	78 08.0	117 37.7	51.2	120 44.3	32.8	87 06.1	57.2	114 00.1	14.1			
	18	93 10.5	132 37.6	S13 50.7	135 44.9	S17 32.3	102 08.0	S 4 57.0	129 02.4	S15 14.1	Vega	80 34.8	N38 47.9
	19	108 12.9	147 37.4	50.1	150 45.5	31.7	117 10.0	56.7	144 04.6	14.0	Zuben'ubi	136 58.3	S16 08.0
	20	123 15.4	162 37.3	49.6	165 46.0	31.2	132 11.9	56.5	159 06.8	13.9			
	21	138 17.9	177 37.2	49.0	180 46.6	30.7	147 13.8	56.3	174 09.0	13.8		AHS	Paso Mer.
	22	153 20.3	192 37.1	48.5	195 47.2	30.2	162 15.7	56.0	189 11.3	13.8		° ′	h m
	23	168 22.8	207 37.0	47.9	210 47.7	29.6	177 17.6	55.8	204 13.5	13.7	Venus	41 15.4	9 09
		h m									Marte	43 54.2	8 58
	Paso Mer.	11 52.3	*v* −0.1	*d* 0.5	*v* 0.6	*d* 0.5	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1	Júpiter	9 20.7	11 15
											Saturno	36 02.1	9 29

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph	
d h	°	′	°	′	°	′	°	′	′	′
23 00	178	19.4	N 0	55.7	299	43.9	6.8	S21	33.8	9.9	59.3
01	193	19.6		56.7	314	09.7	6.7	21	43.7	9.7	59.3
02	208	19.8		57.7	328	35.4	6.7	21	53.4	9.6	59.3
03	223	19.9	. .	58.7	343	01.1	6.6	22	03.0	9.5	59.3
04	238	20.1	0	59.6	357	26.7	6.5	22	12.5	9.3	59.3
05	253	20.3	1	00.6	11	52.2	6.4	22	21.8	9.2	59.3
06	268	20.5	N 1	01.6	26	17.6	6.3	S22	31.0	9.0	59.3
07	283	20.7		02.6	40	42.9	6.2	22	40.0	8.9	59.3
M 08	298	20.9		03.6	55	08.1	6.2	22	48.9	8.8	59.3
I 09	313	21.1	. .	04.6	69	33.3	6.0	22	57.7	8.6	59.3
É 10	328	21.3		05.6	83	58.3	6.0	23	06.3	8.5	59.3
R 11	343	21.4		06.5	98	23.3	6.0	23	14.8	8.3	59.3
C 12	358	21.6	N 1	07.5	112	48.3	5.8	S23	23.1	8.2	59.3
O 13	13	21.8		08.5	127	13.1	5.8	23	31.3	8.0	59.3
L 14	28	22.0		09.5	141	37.9	5.6	23	39.3	7.8	59.3
E 15	43	22.2	. .	10.5	156	02.5	5.6	23	47.1	7.8	59.3
S 16	58	22.4		11.5	170	27.1	5.6	23	54.9	7.5	59.3
17	73	22.6		12.5	184	51.7	5.4	24	02.4	7.4	59.3
18	88	22.8	N 1	13.4	199	16.1	5.4	S24	09.8	7.3	59.3
19	103	22.9		14.4	213	40.5	5.4	24	17.1	7.1	59.3
20	118	23.1		15.4	228	04.9	5.2	24	24.2	6.9	59.3
21	133	23.3	. .	16.4	242	29.1	5.2	24	31.1	6.8	59.3
22	148	23.5		17.4	256	53.3	5.1	24	37.9	6.6	59.3
23	163	23.7		18.4	271	17.4	5.0	24	44.5	6.4	59.3
24 00	178	23.9	N 1	19.4	285	41.4	5.0	S24	50.9	6.3	59.3
01	193	24.1		20.3	300	05.4	4.9	24	57.2	6.1	59.3
02	208	24.3		21.3	314	29.3	4.9	25	03.3	5.9	59.3
03	223	24.4	. .	22.3	328	53.2	4.8	25	09.2	5.8	59.3
04	238	24.6		23.3	343	17.0	4.7	25	15.0	5.6	59.3
05	253	24.8		24.3	357	40.7	4.7	25	20.6	5.5	59.3
06	268	25.0	N 1	25.3	12	04.4	4.7	S25	26.1	5.2	59.3
07	283	25.2		26.2	26	28.1	4.5	25	31.3	5.1	59.3
J 08	298	25.4		27.2	40	51.6	4.6	25	36.4	5.0	59.3
U 09	313	25.6	. .	28.2	55	15.2	4.4	25	41.4	4.7	59.3
E 10	328	25.8		29.2	69	38.6	4.5	25	46.1	4.6	59.3
V 11	343	26.0		30.2	84	02.1	4.3	25	50.7	4.4	59.3
E 12	358	26.1	N 1	31.2	98	25.4	4.4	S25	55.1	4.3	59.3
S 13	13	26.3		32.2	112	48.8	4.3	25	59.4	4.0	59.3
14	28	26.5		33.1	127	12.1	4.2	26	03.4	3.9	59.3
15	43	26.7	. .	34.1	141	35.3	4.3	26	07.3	3.7	59.3
16	58	26.9		35.1	155	58.6	4.1	26	11.0	3.5	59.3
17	73	27.1		36.1	170	21.7	4.2	26	14.5	3.4	59.3
18	88	27.3	N 1	37.1	184	44.9	4.1	S26	17.9	3.1	59.3
19	103	27.5		38.1	199	08.0	4.1	26	21.0	3.0	59.3
20	118	27.6		39.0	213	31.1	4.0	26	24.0	2.8	59.3
21	133	27.8	. .	40.0	227	54.1	4.0	26	26.8	2.7	59.3
22	148	28.0		41.0	242	17.1	4.0	26	29.5	2.4	59.3
23	163	28.2		42.0	256	40.1	4.0	26	31.9	2.3	59.3
25 00	178	28.4	N 1	43.0	271	03.1	4.0	S26	34.2	2.1	59.3
01	193	28.6		44.0	285	26.1	3.9	26	36.3	1.9	59.3
02	208	28.8		44.9	299	49.0	3.9	26	38.2	1.7	59.3
03	223	29.0	. .	45.9	314	11.9	4.0	26	39.9	1.5	59.2
04	238	29.2		46.9	328	34.9	3.9	26	41.4	1.4	59.2
05	253	29.3		47.9	342	57.8	3.9	26	42.8	1.1	59.2
06	268	29.5	N 1	48.9	357	20.7	3.8	S26	43.9	1.0	59.2
07	283	29.7		49.9	11	43.5	3.9	26	44.9	0.8	59.2
V 08	298	29.9		50.8	26	06.4	3.9	26	45.7	0.6	59.2
I 09	313	30.1	. .	51.8	40	29.3	3.9	26	46.3	0.5	59.2
E 10	328	30.3		52.8	54	52.2	3.9	26	46.8	0.2	59.2
R 11	343	30.5		53.8	69	15.1	3.8	26	47.0	0.1	59.2
N 12	358	30.7	N 1	54.8	83	37.9	3.9	S26	47.1	0.1	59.2
E 13	13	30.9		55.7	98	00.8	3.9	26	47.0	0.3	59.2
S 14	28	31.0		56.7	112	23.7	3.9	26	46.7	0.5	59.2
15	43	31.2	. .	57.7	126	46.6	4.0	26	46.2	0.6	59.2
16	58	31.4		58.7	141	09.6	3.9	26	45.6	0.9	59.2
17	73	31.6	1	59.7	155	32.5	4.0	26	44.7	1.0	59.2
18	88	31.8	N 2	00.7	169	55.5	3.9	S26	43.7	1.2	59.2
19	103	32.0		01.6	184	18.4	4.0	26	42.5	1.4	59.2
20	118	32.2		02.6	198	41.4	4.1	26	41.1	1.6	59.2
21	133	32.4	. .	03.6	213	04.5	4.0	26	39.5	1.7	59.2
22	148	32.5		04.6	227	27.5	4.1	26	37.8	2.0	59.2
23	163	32.7		05.6	241	50.6	4.1	S26	35.8	2.1	59.1
	S/D	16.1	*d*	1.0	S/D		16.2		16.2		16.1

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			23	24	25	26
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	02	53	04	29	05 38	▬	▬	▬	▬
N 70	03	17	04	39	05 41	▬	▬	▬	▬
68	03	35	04	47	05 43	▬	▬	▬	▬
66	03	49	04	54	05 45	02 31	▬	▬	▬
64	04	00	04	59	05 47	01 49	04 16	▬	▬
62	04	09	05	04	05 49	01 21	03 17	04 57	05 47
60	04	17	05	08	05 50	01 00	02 43	04 11	05 06
N 58	04	24	05	12	05 51	00 42	02 19	03 41	04 38
56	04	30	05	15	05 52	00 28	01 59	03 18	04 17
54	04	35	05	17	05 53	00 15	01 43	03 00	03 59
52	04	40	05	20	05 54	00 04	01 29	02 44	03 43
50	04	44	05	22	05 54	25 16	01 16	02 30	03 30
45	04	52	05	27	05 56	24 51	00 51	02 02	03 03
N 40	04	58	05	30	05 57	24 31	00 31	01 40	02 41
35	05	03	05	33	05 58	24 14	00 14	01 22	02 23
30	05	07	05	35	05 59	24 00	00 00	01 07	02 08
20	05	13	05	39	06 01	23 36	24 40	00 40	01 42
N 10	05	17	05	41	06 02	23 15	24 17	00 17	01 19
0	05	18	05	42	06 03	22 55	23 56	24 58	00 58
S 10	05	19	05	43	06 04	22 36	23 35	24 37	00 37
20	05	17	05	43	06 05	22 15	23 13	24 14	00 14
30	05	14	05	42	06 06	21 52	22 47	23 48	24 54
35	05	12	05	41	06 06	21 38	22 31	23 33	24 40
40	05	08	05	40	06 07	21 22	22 13	23 15	24 24
45	05	04	05	38	06 07	21 03	21 52	22 53	24 04
S 50	04	58	05	36	06 08	20 39	21 25	22 26	23 39
52	04	55	05	35	06 08	20 28	21 12	22 12	23 27
54	04	52	05	33	06 09	20 15	20 57	21 57	23 14
56	04	48	05	32	06 09	20 00	20 39	21 39	22 58
58	04	44	05	30	06 09	19 43	20 18	21 17	22 39
S 60	04	39	05	28	06 10	19 22	19 51	20 48	22 15

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 23	24	25	26
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	18	37	19	47	21 25	▬	▬	▬	▬
N 70	18	34	19	37	21 00	▬	▬	▬	▬
68	18	31	19	28	20 41	▬	▬	▬	▬
66	18	29	19	21	20 27	05 37	▬	▬	▬
64	18	27	19	15	20 15	06 19	05 56	▬	▬
62	18	26	19	10	20 05	06 48	06 55	07 24	08 44
60	18	24	19	06	19 57	07 10	07 29	08 10	09 24
N 58	18	23	19	02	19 50	07 28	07 54	08 40	09 51
56	18	22	18	59	19 44	07 43	08 14	09 03	10 13
54	18	21	18	56	19 39	07 56	08 31	09 21	10 30
52	18	20	18	54	19 34	08 08	08 45	09 37	10 46
50	18	19	18	52	19 30	08 18	08 58	09 51	10 59
45	18	17	18	47	19 21	08 40	09 24	10 19	11 25
N 40	18	16	18	43	19 15	08 57	09 44	10 41	11 47
35	18	15	18	40	19 10	09 12	10 02	10 59	12 04
30	18	14	18	38	19 06	09 25	10 16	11 15	12 19
20	18	12	18	34	19 00	09 47	10 42	11 42	12 45
N 10	18	11	18	32	18 56	10 06	11 04	12 05	13 07
0	18	10	18	30	18 54	10 24	11 24	12 26	13 27
S 10	18	08	18	29	18 54	10 42	11 45	12 47	13 48
20	18	07	18	29	18 55	11 02	12 07	13 10	14 09
30	18	06	18	30	18 58	11 24	12 32	13 36	14 34
35	18	06	18	31	19 00	11 37	12 47	13 52	14 49
40	18	05	18	32	19 04	11 53	13 05	14 10	15 06
45	18	04	18	34	19 08	12 11	13 26	14 32	15 26
S 50	18	04	18	36	19 13	12 33	13 52	14 59	15 52
52	18	03	18	37	19 16	12 44	14 05	15 13	16 04
54	18	03	18	38	19 19	12 57	14 20	15 28	16 18
56	18	03	18	39	19 23	13 11	14 37	15 47	16 34
58	18	02	18	41	19 27	13 28	14 58	16 09	16 54
S 60	18	02	18	43	19 32	13 48	15 25	16 37	17 17

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
23	06 43	06 34	12 07	04 11	16 40	21 69	
24	06 25	06 16	12 06	05 10	17 40	22 58	
25	06 07	05 58	12 06	06 11	18 42	23 47	

UT (HmGr)	ARIES	VENUS −4·4		MARTE +1·1		JÚPITER −2·0		SATURNO +0·7		ESTRELLAS		
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec	Nombre	AHS	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′		° ′	° ′
26 00	183 25.3	222 36.8	S13 47.4	225 48.3	S17 29.1	192 19.5	S 4 55.6	219 15.7	S15 13.6	Acamar	315 13.9	S40 13.2
01	198 27.7	237 36.7	46.8	240 48.9	28.6	207 21.4	55.3	234 17.9	13.6	Achernar	335 22.5	S57 07.7
02	213 30.2	252 36.6	46.3	255 49.4	28.1	222 23.4	55.1	249 20.2	13.5	Acrux	173 01.9	S63 13.3
03	228 32.6	267 36.5 . .	45.7	270 50.0 . .	27.5	237 25.3 . .	54.9	264 22.4 . .	13.4	Adhara	255 07.6	S29 00.4
04	243 35.1	282 36.3	45.2	285 50.6	27.0	252 27.2	54.7	279 24.6	13.3	Aldebaran	290 42.4	N16 33.1
05	258 37.6	297 36.2	44.6	300 51.1	26.5	267 29.1	54.4	294 26.8	13.3			
06	273 40.0	312 36.1	S13 44.1	315 51.7	S17 26.0	282 31.0	S 4 54.2	309 29.0	S15 13.2	Alioth	166 14.5	N55 50.3
07	288 42.5	327 36.0	43.5	330 52.3	25.4	297 32.9	54.0	324 31.3	13.1	Alkaid	152 53.4	N49 12.0
08	303 45.0	342 35.8	43.0	345 52.8	24.9	312 34.8	53.7	339 33.5	13.0	Alnair	27 36.2	S46 51.2
S 09	318 47.4	357 35.7 . .	42.4	0 53.4 . .	24.4	327 36.8 . .	53.5	354 35.7 . .	13.0	Alnilam	275 40.1	S 1 11.4
Á 10	333 49.9	12 35.6	41.9	15 54.0	23.8	342 38.7	53.3	9 37.9	12.9	Alphard	217 49.8	S 8 45.4
B 11	348 52.4	27 35.5	41.3	30 54.6	23.3	357 40.6	53.0	24 40.2	12.8			
A 12	3 54.8	42 35.3	S13 40.8	45 55.1	S17 22.8	12 42.5	S 4 52.8	39 42.4	S15 12.7	Alphecca	126 05.5	N26 38.2
D 13	18 57.3	57 35.2	40.2	60 55.7	22.3	27 44.4	52.6	54 44.6	12.7	Alpheratz	357 37.5	N29 12.6
O 14	33 59.8	72 35.1	39.6	75 56.3	21.7	42 46.3	52.4	69 46.8	12.6	Altair	62 02.3	N 8 55.4
15	49 02.2	87 35.0 . .	39.1	90 56.8 . .	21.2	57 48.3 . .	52.1	84 49.1 . .	12.5	Ankaa	353 09.9	S42 11.3
16	64 04.7	102 34.8	38.5	105 57.4	20.7	72 50.2	51.9	99 51.3	12.5	Antares	112 18.5	S26 28.8
17	79 07.1	117 34.7	38.0	120 58.0	20.1	87 52.1	51.7	114 53.5	12.4			
18	94 09.6	132 34.6	S13 37.4	135 58.5	S17 19.6	102 54.0	S 4 51.4	129 55.7	S15 12.3	Arcturus	145 49.7	N19 03.9
19	109 12.1	147 34.5	36.8	150 59.1	19.1	117 55.9	51.2	144 58.0	12.2	Atria	107 14.6	S69 03.8
20	124 14.5	162 34.3	36.3	165 59.7	18.6	132 57.8	51.0	160 00.2	12.2	Avior	234 15.4	S59 35.1
21	139 17.0	177 34.2 . .	35.7	181 00.3 . .	18.0	147 59.7 . .	50.7	175 02.4 . .	12.1	Bellatrix	278 25.4	N 6 22.1
22	154 19.5	192 34.1	35.2	196 00.8	17.5	163 01.7	50.5	190 04.6	12.0	Betelgeuse	270 54.6	N 7 24.6
23	169 21.9	207 33.9	34.6	211 01.4	17.0	178 03.6	50.3	205 06.9	11.9			
27 00	184 24.4	222 33.8	S13 34.0	226 02.0	S17 16.4	193 05.5	S 4 50.1	220 09.1	S15 11.9	Canopus	263 53.4	S52 42.7
01	199 26.9	237 33.7	33.5	241 02.5	15.9	208 07.4	49.8	235 11.3	11.8	Capella	280 25.4	N46 01.3
02	214 29.3	252 33.6	32.9	256 03.1	15.4	223 09.3	49.6	250 13.5	11.7	Deneb	49 27.6	N45 21.2
03	229 31.8	267 33.4 . .	32.3	271 03.7 . .	14.8	238 11.2 . .	49.4	265 15.8 . .	11.7	Denebola	182 27.0	N14 26.8
04	244 34.2	282 33.3	31.7	286 04.3	14.3	253 13.2	49.1	280 18.0	11.6	Diphda	348 49.9	S17 52.1
05	259 36.7	297 33.2	31.2	301 04.8	13.8	268 15.1	48.9	295 20.2	11.5			
06	274 39.2	312 33.0	S13 30.6	316 05.4	S17 13.2	283 17.0	S 4 48.7	310 22.4	S15 11.4	Dubhe	193 43.2	N61 38.0
07	289 41.6	327 32.9	30.0	331 06.0	12.7	298 18.9	48.4	325 24.7	11.4	Elnath	278 04.9	N28 37.6
D 08	304 44.1	342 32.8	29.5	346 06.5	12.2	313 20.8	48.2	340 26.9	11.3	Eltanin	90 43.2	N51 28.8
O 09	319 46.6	357 32.6 . .	28.9	1 07.1 . .	11.6	328 22.7 . .	48.0	355 29.1 . .	11.2	Enif	33 41.3	N 9 58.4
M 10	334 49.0	12 32.5	28.3	16 07.7	11.1	343 24.7	47.8	10 31.4	11.1	Fomalhaut	15 17.4	S29 30.4
I 11	349 51.5	27 32.4	27.7	31 08.3	10.6	358 26.6	47.5	25 33.6	11.1			
N 12	4 54.0	42 32.2	S13 27.2	46 08.8	S17 10.0	13 28.5	S 4 47.3	40 35.8	S15 11.0	Gacrux	171 53.6	S57 14.2
G 13	19 56.4	57 32.1	26.6	61 09.4	09.5	28 30.4	47.1	55 38.0	10.9	Gienah	175 45.6	S17 40.0
O 14	34 58.9	72 32.0	26.0	76 10.0	09.0	43 32.3	46.8	70 40.3	10.9	Hadar	148 38.7	S60 28.7
15	50 01.4	87 31.8 . .	25.4	91 10.6 . .	08.4	58 34.2 . .	46.6	85 42.5 . .	10.8	Hamal	327 54.1	N23 33.9
16	65 03.8	102 31.7	24.9	106 11.1	07.9	73 36.2	46.4	100 44.7	10.7	Kaus Aust.	83 35.6	S34 22.4
17	80 06.3	117 31.6	24.3	121 11.7	07.3	88 38.1	46.1	115 46.9	10.6			
18	95 08.7	132 31.4	S13 23.7	136 12.3	S17 06.8	103 40.0	S 4 45.9	130 49.2	S15 10.6	Kochab	137 18.9	N74 03.7
19	110 11.2	147 31.3	23.1	151 12.8	06.3	118 41.9	45.7	145 51.4	10.5	Markab	13 32.5	N15 19.2
20	125 13.7	162 31.2	22.5	166 13.4	05.7	133 43.8	45.5	160 53.6	10.4	Menkar	314 08.8	N 4 10.4
21	140 16.1	177 31.0 . .	22.0	181 14.0 . .	05.2	148 45.7 . .	45.2	175 55.9 . .	10.3	Menkent	148 00.0	S36 28.7
22	155 18.6	192 30.9	21.4	196 14.6	04.7	163 47.7	45.0	190 58.1	10.3	Miaplacidus	221 38.1	S69 48.7
23	170 21.1	207 30.8	20.8	211 15.1	04.1	178 49.6	44.8	206 00.3	10.2			
28 00	185 23.5	222 30.6	S13 20.2	226 15.7	S17 03.6	193 51.5	S 4 44.5	221 02.5	S15 10.1	Mirfak	308 31.9	N49 56.4
01	200 26.0	237 30.5	19.6	241 16.3	03.0	208 53.4	44.3	236 04.8	10.1	Nunki	75 50.7	S26 16.1
02	215 28.5	252 30.4	19.0	256 16.9	02.5	223 55.3	44.1	251 07.0	10.0	Peacock	53 09.6	S56 39.7
03	230 30.9	267 30.2 . .	18.4	271 17.4 . .	02.0	238 57.2 . .	43.9	266 09.2 . .	09.9	Pollux	243 20.0	N27 58.4
04	245 33.4	282 30.1	17.9	286 18.0	01.4	253 59.2	43.6	281 11.4	09.8	Procyon	244 53.2	N 5 10.0
05	260 35.9	297 29.9	17.3	301 18.6	00.9	269 01.1	43.4	296 13.7	09.8			
06	275 38.3	312 29.8	S13 16.7	316 19.2	S17 00.3	284 03.0	S 4 43.2	311 15.9	S15 09.7	Rasalhague	96 00.6	N12 32.4
07	290 40.8	327 29.7	16.1	331 19.7	16 59.8	299 04.9	42.9	326 18.1	09.6	Regulus	207 36.6	N11 51.5
L 08	305 43.2	342 29.5	15.5	346 20.3	59.3	314 06.8	42.7	341 20.4	09.6	Rigel	281 06.2	S 8 10.8
U 09	320 45.7	357 29.4 . .	14.9	1 20.9 . .	58.7	329 08.7 . .	42.5	356 22.6 . .	09.5	Rigil Kent.	139 42.9	S60 55.4
N 10	335 48.2	12 29.3	14.3	16 21.5	58.2	344 10.7	42.2	11 24.8	09.4	Sabik	102 05.3	S15 45.2
E 11	350 50.6	27 29.1	13.7	31 22.1	57.6	359 12.6	42.0	26 27.0	09.3			
S 12	5 53.1	42 29.0	S13 13.1	46 22.6	S16 57.1	14 14.5	S 4 41.8	41 29.3	S15 09.3	Schedar	349 34.2	N56 39.4
13	20 55.6	57 28.8	12.5	61 23.2	56.6	29 16.4	41.6	56 31.5	09.2	Shaula	96 13.4	S37 07.1
14	35 58.0	72 28.7	11.9	76 23.8	56.0	44 18.3	41.3	71 33.7	09.1	Sirius	258 28.2	S16 45.0
15	51 00.5	87 28.6 . .	11.3	91 24.4 . .	55.5	59 20.3 . .	41.1	86 36.0 . .	09.1	Spica	158 24.4	S11 16.7
16	66 03.0	102 28.4	10.8	106 24.9	54.9	74 22.2	40.9	101 38.2	09.0	Suhail	222 47.7	S43 31.5
17	81 05.4	117 28.3	10.2	121 25.5	54.4	89 24.1	40.6	116 40.4	08.9			
18	96 07.9	132 28.1	S13 09.6	136 26.1	S16 53.8	104 26.0	S 4 40.4	131 42.6	S15 08.8	Vega	80 34.8	N38 47.9
19	111 10.3	147 28.0	09.0	151 26.7	53.3	119 27.9	40.2	146 44.9	08.8	Zuben'ubi	136 58.3	S16 08.1
20	126 12.8	162 27.9	08.4	166 27.3	52.8	134 29.8	40.0	161 47.1	08.7			
21	141 15.3	177 27.7 . .	07.8	181 27.8 . .	52.2	149 31.8 . .	39.7	176 49.3 . .	08.6		AHS	Paso Mer.
22	156 17.7	192 27.6	07.2	196 28.4	51.7	164 33.7	39.5	191 51.6	08.6		° ′	h m
23	171 20.2	207 27.4	06.6	211 29.0	51.1	179 35.6	39.3	206 53.8	08.5	Venus	38 09.4	9 10
	h m									Marte	41 37.6	8 56
Paso Mer.	11 40.5	*v* −0.1	*d* 0.6	*v* 0.6	*d* 0.5	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1	Júpiter	8 41.1	11 06
										Saturno	35 44.7	9 18

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	° ′		° ′		° ′	′	° ′	′	′	
26 00	178 32.9	N	2 06.6		256 13.7	4.2	S26 33.7	2.3	59.1	
01	193 33.1		07.5		270 36.9	4.1	26 31.4	2.5	59.1	
02	208 33.3		08.5		285 00.0	4.2	26 28.9	2.6	59.1	
03	223 33.5	. .	09.5		299 23.2	4.3	26 26.3	2.8	59.1	
04	238 33.7		10.5		313 46.5	4.3	26 23.5	3.1	59.1	
05	253 33.9		11.5		328 09.8	4.3	26 20.4	3.1	59.1	
06	268 34.1	N	2 12.4		342 33.1	4.4	S26 17.3	3.4	59.1	
07	283 34.2		13.4		356 56.5	4.5	26 13.9	3.5	59.1	
S 08	298 34.4		14.4		11 20.0	4.4	26 10.4	3.7	59.1	
Á 09	313 34.6	. .	15.4		25 43.4	4.6	26 06.7	3.9	59.1	
B 10	328 34.8		16.4		40 07.0	4.5	26 02.8	4.1	59.1	
A 11	343 35.0		17.3		54 30.5	4.7	25 58.7	4.2	59.1	
D 12	358 35.2	N	2 18.3		68 54.2	4.7	S25 54.5	4.4	59.1	
O 13	13 35.4		19.3		83 17.9	4.7	25 50.1	4.6	59.0	
14	28 35.6		20.3		97 41.6	4.8	25 45.5	4.7	59.0	
15	43 35.7	. .	21.3		112 05.4	4.9	25 40.8	4.9	59.0	
16	58 35.9		22.2		126 29.3	4.9	25 35.9	5.1	59.0	
17	73 36.1		23.2		140 53.2	5.1	25 30.8	5.3	59.0	
18	88 36.3	N	2 24.2		155 17.3	5.0	S25 25.5	5.4	59.0	
19	103 36.5		25.2		169 41.3	5.2	25 20.1	5.5	59.0	
20	118 36.7		26.2		184 05.5	5.2	25 14.6	5.8	59.0	
21	133 36.9	. .	27.2		198 29.7	5.2	25 08.8	5.9	59.0	
22	148 37.1		28.1		212 53.9	5.4	25 02.9	6.0	59.0	
23	163 37.3		29.1		227 18.3	5.4	24 56.9	6.2	59.0	
27 00	178 37.4	N	2 30.1		241 42.7	5.5	S24 50.7	6.4	58.9	
01	193 37.6		31.1		256 07.2	5.6	24 44.3	6.5	58.9	
02	208 37.8		32.0		270 31.8	5.6	24 37.8	6.7	58.9	
03	223 38.0	. .	33.0		284 56.4	5.7	24 31.1	6.9	58.9	
04	238 38.2		34.0		299 21.1	5.8	24 24.2	7.0	58.9	
05	253 38.4		35.0		313 45.9	5.9	24 17.2	7.1	58.9	
06	268 38.6	N	2 36.0		328 10.8	6.0	S24 10.1	7.3	58.9	
07	283 38.8		36.9		342 35.8	6.0	24 02.8	7.5	58.9	
D 08	298 38.9		37.9		357 00.8	6.2	23 55.3	7.6	58.9	
O 09	313 39.1	. .	38.9		11 26.0	6.2	23 47.7	7.7	58.9	
M 10	328 39.3		39.9		25 51.2	6.3	23 40.0	7.9	58.8	
I 11	343 39.5		40.9		40 16.5	6.4	23 32.1	8.1	58.8	
N 12	358 39.7	N	2 41.8		54 41.9	6.5	S23 24.0	8.1	58.8	
G 13	13 39.9		42.8		69 07.4	6.5	23 15.9	8.4	58.8	
O 14	28 40.1		43.8		83 32.9	6.7	23 07.5	8.4	58.8	
15	43 40.3	. .	44.8		97 58.6	6.7	22 59.1	8.6	58.8	
16	58 40.5		45.8		112 24.3	6.9	22 50.5	8.8	58.8	
17	73 40.6		46.7		126 50.2	6.9	22 41.7	8.9	58.8	
18	88 40.8	N	2 47.7		141 16.1	7.0	S22 32.8	9.0	58.8	
19	103 41.0		48.7		155 42.1	7.1	22 23.8	9.1	58.7	
20	118 41.2		49.7		170 08.2	7.2	22 14.7	9.3	58.7	
21	133 41.4	. .	50.6		184 34.4	7.3	22 05.4	9.4	58.7	
22	148 41.6		51.6		199 00.7	7.4	21 56.0	9.5	58.7	
23	163 41.8		52.6		213 27.1	7.4	21 46.5	9.7	58.7	
28 00	178 42.0	N	2 53.6		227 53.5	7.6	S21 36.8	9.8	58.7	
01	193 42.1		54.6		242 20.1	7.7	21 27.0	9.9	58.7	
02	208 42.3		55.5		256 46.8	7.7	21 17.1	10.0	58.7	
03	223 42.5	. .	56.5		271 13.5	7.9	21 07.1	10.2	58.6	
04	238 42.7		57.5		285 40.4	7.9	20 56.9	10.2	58.6	
05	253 42.9		58.5		300 07.3	8.0	20 46.7	10.4	58.6	
06	268 43.1	N	2 59.4		314 34.3	8.2	S20 36.3	10.5	58.6	
07	283 43.3		3 00.4		329 01.5	8.2	20 25.8	10.6	58.6	
L 08	298 43.5		01.4		343 28.7	8.3	20 15.2	10.8	58.6	
U 09	313 43.6	. .	02.4		357 56.0	8.4	20 04.4	10.8	58.6	
N 10	328 43.8		03.3		12 23.4	8.5	19 53.6	11.0	58.6	
E 11	343 44.0		04.3		26 50.9	8.6	19 42.6	11.0	58.5	
S 12	358 44.2	N	3 05.3		41 18.5	8.7	S19 31.6	11.2	58.5	
13	13 44.4		06.3		55 46.2	8.8	19 20.4	11.3	58.5	
14	28 44.6		07.3		70 14.0	8.9	19 09.1	11.4	58.5	
15	43 44.8	. .	08.2		84 41.9	9.0	18 57.7	11.4	58.5	
16	58 45.0		09.2		99 09.9	9.1	18 46.3	11.6	58.5	
17	73 45.1		10.2		113 38.0	9.1	18 34.7	11.7	58.5	
18	88 45.3	N	3 11.2		128 06.1	9.3	S18 23.0	11.8	58.4	
19	103 45.5		12.1		142 34.4	9.3	18 11.2	11.9	58.4	
20	118 45.7		13.1		157 02.7	9.5	17 59.3	11.9	58.4	
21	133 45.9	. .	14.1		171 31.2	9.5	17 47.4	12.1	58.4	
22	148 46.1		15.1		185 59.7	9.6	17 35.3	12.1	58.4	
23	163 46.3		16.0		200 28.3	9.7	S17 23.2	12.3	58.4	
	S/D 16.1		d 1.0		S/D	16.1		16.0		15.9

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			26	27	28	29
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	02	29	04	12	05 22	▬	▬	▬	07 55
N 70	02	58	04	24	05 27	▬	▬	▬	07 19
68	03	18	04	33	05 31	▬	▬	07 35	06 53
66	03	35	04	41	05 34	▬	▬	06 54	06 34
64	03	47	04	48	05 36	▬	06 38	06 25	06 17
62	03	58	04	54	05 39	05 47	06 00	06 04	06 04
60	04	07	04	59	05 41	05 06	05 33	05 46	05 52
N 58	04	15	05	03	05 42	04 38	05 12	05 31	05 42
56	04	21	05	07	05 44	04 17	04 54	05 18	05 34
54	04	27	05	10	05 45	03 59	04 39	05 07	05 26
52	04	32	05	13	05 47	03 43	04 27	04 57	05 19
50	04	37	05	15	05 48	03 30	04 15	04 48	05 12
45	04	46	05	21	05 50	03 03	03 51	04 29	04 59
N 40	04	53	05	25	05 52	02 41	03 32	04 13	04 47
35	04	59	05	29	05 54	02 23	03 16	04 00	04 37
30	05	04	05	32	05 56	02 08	03 02	03 49	04 29
20	05	10	05	36	05 58	01 42	02 38	03 29	04 14
N 10	05	15	05	39	06 00	01 19	02 18	03 12	04 01
0	05	17	05	41	06 02	00 58	01 58	02 56	03 49
S 10	05	19	05	43	06 04	00 37	01 39	02 39	03 36
20	05	18	05	44	06 06	00 14	01 18	02 22	03 23
30	05	16	05	44	06 08	24 54	00 54	02 02	03 08
35	05	14	05	43	06 09	24 40	00 40	01 50	02 59
40	05	11	05	43	06 10	24 24	00 24	01 36	02 49
45	05	08	05	42	06 11	24 04	00 04	01 20	02 37
S 50	05	03	05	40	06 13	23 39	25 00	01 00	02 22
52	05	00	05	40	06 13	23 27	24 51	00 51	02 16
54	04	58	05	39	06 14	23 14	24 40	00 40	02 08
56	04	54	05	38	06 15	22 58	24 28	00 28	01 59
58	04	51	05	37	06 16	22 39	24 13	00 13	01 50
S 60	04	46	05	35	06 17	22 15	23 57	25 38	01 38

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	26	27	28	29
°	h m	h m	h m	h m	h m	h m	h m
N 72	18 51	20 03	21 49	▬	▬	▬	12 32
N 70	18 46	19 50	21 18	▬	▬	▬	13 05
68	18 42	19 40	20 56	▬	▬	10 59	13 29
66	18 39	19 32	20 39	▬	▬	11 39	13 48
64	18 36	19 25	20 26	▬	09 57	12 07	14 03
62	18 34	19 19	20 15	08 44	10 35	12 28	14 15
60	18 31	19 14	20 06	09 24	11 01	12 45	14 25
N 58	18 30	19 09	19 58	09 51	11 22	12 59	14 34
56	18 28	19 06	19 51	10 13	11 39	13 11	14 42
54	18 26	19 02	19 45	10 30	11 53	13 21	14 49
52	18 25	18 59	19 40	10 46	12 06	13 31	14 55
50	18 24	18 56	19 35	10 59	12 17	13 39	15 01
45	18 21	18 51	19 26	11 25	12 40	13 57	15 13
N 40	18 19	18 46	19 18	11 47	12 58	14 11	15 23
35	18 17	18 43	19 12	12 04	13 13	14 23	15 31
30	18 16	18 40	19 08	12 19	13 26	14 34	15 39
20	18 13	18 35	19 01	12 45	13 49	14 51	15 51
N 10	18 11	18 32	18 56	13 07	14 08	15 07	16 02
0	18 09	18 29	18 53	13 27	14 26	15 21	16 13
S 10	18 07	18 28	18 52	13 48	14 44	15 36	16 23
20	18 05	18 27	18 52	14 09	15 03	15 51	16 34
30	18 03	18 27	18 54	14 34	15 25	16 08	16 46
35	18 02	18 27	18 56	14 49	15 38	16 18	16 53
40	18 00	18 27	18 59	15 06	15 52	16 29	17 01
45	17 59	18 28	19 02	15 26	16 09	16 43	17 10
S 50	17 57	18 29	19 07	15 52	16 30	16 59	17 21
52	17 56	18 30	19 09	16 04	16 41	17 06	17 26
54	17 56	18 31	19 12	16 18	16 52	17 15	17 31
56	17 55	18 32	19 15	16 34	17 05	17 24	17 37
58	17 54	18 33	19 18	16 54	17 19	17 35	17 44
S 60	17 53	18 34	19 23	17 17	17 37	17 47	17 52

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00^h	12^h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
26	05 49	05 40	12 06	07 13	19 43	24	36
27	05 31	05 22	12 05	08 12	20 41	25	25
28	05 13	05 04	12 05	09 09	21 35	26	16

UT (HmGr)	ARIES	VENUS −4·4		MARTE +1·1		JÚPITER −2·0		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
29 00	186 22.7	222 27.3	S13 06.0	226 29.6	S16 50.6	194 37.5	S 4 39.0	221 56.0	S15 08.4
01	201 25.1	237 27.2	05.3	241 30.1	50.0	209 39.4	38.8	236 58.3	08.3
02	216 27.6	252 27.0	04.7	256 30.7	49.5	224 41.3	38.6	252 00.5	08.3
03	231 30.1	267 26.9	04.1	271 31.3	48.9	239 43.3	38.4	267 02.7	08.2
04	246 32.5	282 26.7	03.5	286 31.9	48.4	254 45.2	38.1	282 05.0	08.1
05	261 35.0	297 26.6	02.9	301 32.5	47.8	269 47.1	37.9	297 07.2	08.1
06	276 37.5	312 26.4	S13 02.3	316 33.0	S16 47.3	284 49.0	S 4 37.7	312 09.4	S15 08.0
07	291 39.9	327 26.3	01.7	331 33.6	46.8	299 50.9	37.4	327 11.6	07.9
08	306 42.4	342 26.2	01.1	346 34.2	46.2	314 52.9	37.2	342 13.9	07.8
M 09	321 44.8	357 26.0	13 00.5	1 34.8	45.7	329 54.8	37.0	357 16.1	07.8
A 10	336 47.3	12 25.9	12 59.9	16 35.4	45.1	344 56.7	36.7	12 18.3	07.7
R 11	351 49.8	27 25.7	59.3	31 35.9	44.6	359 58.6	36.5	27 20.6	07.6
T 12	6 52.2	42 25.6	S12 58.7	46 36.5	S16 44.0	15 00.5	S 4 36.3	42 22.8	S15 07.6
E 13	21 54.7	57 25.4	58.1	61 37.1	43.5	30 02.5	36.1	57 25.0	07.5
S 14	36 57.2	72 25.3	57.4	76 37.7	42.9	45 04.4	35.8	72 27.3	07.4
15	51 59.6	87 25.2	56.8	91 38.3	42.4	60 06.3	35.6	87 29.5	07.3
16	67 02.1	102 25.0	56.2	106 38.8	41.8	75 08.2	35.4	102 31.7	07.3
17	82 04.6	117 24.9	55.6	121 39.4	41.3	90 10.1	35.1	117 34.0	07.2
18	97 07.0	132 24.7	S12 55.0	136 40.0	S16 40.7	105 12.0	S 4 34.9	132 36.2	S15 07.1
19	112 09.5	147 24.6	54.4	151 40.6	40.2	120 14.0	34.7	147 38.4	07.1
20	127 12.0	162 24.4	53.7	166 41.2	39.6	135 15.9	34.5	162 40.7	07.0
21	142 14.4	177 24.3	53.1	181 41.8	39.1	150 17.8	34.2	177 42.9	06.9
22	157 16.9	192 24.1	52.5	196 42.3	38.5	165 19.7	34.0	192 45.1	06.8
23	172 19.3	207 24.0	51.9	211 42.9	38.0	180 21.6	33.8	207 47.3	06.8
30 00	187 21.8	222 23.8	S12 51.3	226 43.5	S16 37.4	195 23.6	S 4 33.5	222 49.6	S15 06.7
01	202 24.3	237 23.7	50.6	241 44.1	36.9	210 25.5	33.3	237 51.8	06.6
02	217 26.7	252 23.5	50.0	256 44.7	36.3	225 27.4	33.1	252 54.0	06.6
03	232 29.2	267 23.4	49.4	271 45.2	35.8	240 29.3	32.9	267 56.3	06.5
04	247 31.7	282 23.3	48.8	286 45.8	35.2	255 31.2	32.6	282 58.5	06.4
05	262 34.1	297 23.1	48.2	301 46.4	34.6	270 33.2	32.4	298 00.7	06.4
06	277 36.6	312 23.0	S12 47.5	316 47.0	S16 34.1	285 35.1	S 4 32.2	313 03.0	S15 06.3
07	292 39.1	327 22.8	46.9	331 47.6	33.5	300 37.0	31.9	328 05.2	06.2
M 08	307 41.5	342 22.7	46.3	346 48.2	33.0	315 38.9	31.7	343 07.4	06.1
I 09	322 44.0	357 22.5	45.6	1 48.7	32.4	330 40.8	31.5	358 09.7	06.1
É 10	337 46.4	12 22.4	45.0	16 49.3	31.9	345 42.8	31.3	13 11.9	06.0
R 11	352 48.9	27 22.2	44.4	31 49.9	31.3	0 44.7	31.0	28 14.1	05.9
C 12	7 51.4	42 22.1	S12 43.8	46 50.5	S16 30.8	15 46.6	S 4 30.8	43 16.4	S15 05.9
O 13	22 53.8	57 21.9	43.1	61 51.1	30.2	30 48.5	30.6	58 18.6	05.8
L 14	37 56.3	72 21.8	42.5	76 51.7	29.7	45 50.4	30.3	73 20.8	05.7
E 15	52 58.8	87 21.6	41.9	91 52.3	29.1	60 52.4	30.1	88 23.1	05.7
S 16	68 01.2	102 21.5	41.2	106 52.8	28.5	75 54.3	29.9	103 25.3	05.6
17	83 03.7	117 21.3	40.6	121 53.4	28.0	90 56.2	29.7	118 27.5	05.5
18	98 06.2	132 21.2	S12 40.0	136 54.0	S16 27.4	105 58.1	S 4 29.4	133 29.8	S15 05.4
19	113 08.6	147 21.0	39.3	151 54.6	26.9	121 00.0	29.2	148 32.0	05.4
20	128 11.1	162 20.9	38.7	166 55.2	26.3	136 02.0	29.0	163 34.3	05.3
21	143 13.6	177 20.7	38.1	181 55.8	25.8	151 03.9	28.7	178 36.5	05.2
22	158 16.0	192 20.6	37.4	196 56.3	25.2	166 05.8	28.5	193 38.7	05.2
23	173 18.5	207 20.4	36.8	211 56.9	24.6	181 07.7	28.3	208 41.0	05.1
31 00	188 20.9	222 20.3	S12 36.2	226 57.5	S16 24.1	196 09.6	S 4 28.1	223 43.2	S15 05.0
01	203 23.4	237 20.1	35.5	241 58.1	23.5	211 11.6	27.8	238 45.4	05.0
02	218 25.9	252 20.0	34.9	256 58.7	23.0	226 13.5	27.6	253 47.7	04.9
03	233 28.3	267 19.8	34.2	271 59.3	22.4	241 15.4	27.4	268 49.9	04.8
04	248 30.8	282 19.7	33.6	286 59.9	21.8	256 17.3	27.2	283 52.1	04.7
05	263 33.3	297 19.5	33.0	302 00.5	21.3	271 19.3	26.9	298 54.4	04.7
06	278 35.7	312 19.4	S12 32.3	317 01.0	S16 20.7	286 21.2	S 4 26.7	313 56.6	S15 04.6
07	293 38.2	327 19.2	31.7	332 01.6	20.2	301 23.1	26.5	328 58.8	04.5
J 08	308 40.7	342 19.0	31.0	347 02.2	19.6	316 25.0	26.2	344 01.1	04.5
U 09	323 43.1	357 18.9	30.4	2 02.8	19.0	331 26.9	26.0	359 03.3	04.4
E 10	338 45.6	12 18.7	29.7	17 03.4	18.5	346 28.9	25.8	14 05.5	04.3
V 11	353 48.0	27 18.6	29.1	32 04.0	17.9	1 30.8	25.6	29 07.8	04.3
E 12	8 50.5	42 18.4	S12 28.4	47 04.6	S16 17.4	16 32.7	S 4 25.3	44 10.0	S15 04.2
S 13	23 53.0	57 18.3	27.8	62 05.2	16.8	31 34.6	25.1	59 12.3	04.1
14	38 55.4	72 18.1	27.1	77 05.7	16.2	46 36.5	24.9	74 14.5	04.0
15	53 57.9	87 18.0	26.5	92 06.3	15.7	61 38.5	24.6	89 16.7	04.0
16	69 00.4	102 17.8	25.8	107 06.9	15.1	76 40.4	24.4	104 19.0	03.9
17	84 02.8	117 17.7	25.2	122 07.5	14.6	91 42.3	24.2	119 21.2	03.8
18	99 05.3	132 17.5	S12 24.5	137 08.1	S16 14.0	106 44.2	S 4 24.0	134 23.4	S15 03.8
19	114 07.8	147 17.4	23.9	152 08.7	13.4	121 46.2	23.7	149 25.7	03.7
20	129 10.2	162 17.2	23.2	167 09.3	12.9	136 48.1	23.5	164 27.9	03.6
21	144 12.7	177 17.1	22.6	182 09.9	12.3	151 50.0	23.3	179 30.2	03.6
22	159 15.2	192 16.9	21.9	197 10.5	11.7	166 51.9	23.0	194 32.4	03.5
23	174 17.6	207 16.7	21.3	212 11.0	11.2	181 53.8	22.8	209 34.6	03.4
	h m								
Paso Mer.	11 28.7	*v* −0.1	*d* 0.6	*v* 0.6	*d* 0.6	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 13.2
Achernar	335 22.5	S57 07.6
Acrux	173 01.9	S63 13.3
Adhara	255 07.6	S29 00.4
Aldebaran	290 42.4	N16 33.1
Alioth	166 14.5	N55 50.3
Alkaid	152 53.4	N49 12.0
Alnair	27 36.2	S46 51.2
Alnilam	275 40.1	S 1 11.4
Alphard	217 49.8	S 8 45.4
Alphecca	126 05.4	N26 38.2
Alpheratz	357 37.5	N29 12.6
Altair	62 02.3	N 8 55.4
Ankaa	353 09.8	S42 11.3
Antares	112 18.5	S26 28.8
Arcturus	145 49.7	N19 03.9
Atria	107 14.5	S69 03.8
Avior	234 15.4	S59 35.1
Bellatrix	278 25.4	N 6 22.1
Betelgeuse	270 54.6	N 7 24.6
Canopus	263 53.4	S52 42.7
Capella	280 25.4	N46 01.3
Deneb	49 27.6	N45 21.2
Denebola	182 27.0	N14 26.8
Diphda	348 49.9	S17 52.1
Dubhe	193 43.2	N61 38.0
Elnath	278 04.9	N28 37.6
Eltanin	90 43.2	N51 28.8
Enif	33 41.3	N 9 58.4
Fomalhaut	15 17.4	S29 30.4
Gacrux	171 53.6	S57 14.3
Gienah	175 45.6	S17 40.0
Hadar	148 38.7	S60 28.7
Hamal	327 54.1	N23 33.9
Kaus Aust.	83 35.5	S34 22.4
Kochab	137 18.8	N74 03.7
Markab	13 32.5	N15 19.2
Menkar	314 08.8	N 4 10.4
Menkent	148 00.0	S36 28.7
Miaplacidus	221 38.2	S69 48.7
Mirfak	308 31.9	N49 56.4
Nunki	75 50.6	S26 16.1
Peacock	53 09.6	S56 39.7
Pollux	243 20.0	N27 58.4
Procyon	244 53.2	N 5 10.0
Rasalhague	96 00.6	N12 32.4
Regulus	207 36.6	N11 51.5
Rigel	281 06.2	S 8 10.7
Rigil Kent.	139 42.9	S60 55.4
Sabik	102 05.3	S15 45.2
Schedar	349 34.2	N56 39.4
Shaula	96 13.4	S37 07.1
Sirius	258 28.3	S16 45.0
Spica	158 24.4	S11 16.7
Suhail	222 47.7	S43 31.5
Vega	80 34.8	N38 47.9
Zuben'ubi	136 58.3	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	35 02.0	9 10
Marte	39 21.7	8 53
Júpiter	8 01.8	10 57
Saturno	35 27.8	9 07

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	′	°	′	′	′
29 00	178	46.5	N 3	17.0	214	57.0	9.8	S17	10.9	12.3	58.3
01	193	46.6		18.0	229	25.8	9.9	16	58.6	12.4	58.3
02	208	46.8		19.0	243	54.7	10.0	16	46.2	12.5	58.3
03	223	47.0	. .	19.9	258	23.7	10.1	16	33.7	12.6	58.3
04	238	47.2		20.9	272	52.8	10.1	16	21.1	12.7	58.3
05	253	47.4		21.9	287	21.9	10.3	16	08.4	12.7	58.3
06	268	47.6	N 3	22.9	301	51.2	10.3	S15	55.7	12.8	58.2
07	283	47.8		23.8	316	20.5	10.4	15	42.9	12.9	58.2
M 08	298	48.0		24.8	330	49.9	10.5	15	30.0	13.0	58.2
A 09	313	48.1	. .	25.8	345	19.4	10.6	15	17.0	13.1	58.2
R 10	328	48.3		26.8	359	49.0	10.7	15	03.9	13.1	58.2
11	343	48.5		27.7	14	18.7	10.8	14	50.8	13.2	58.2
T 12	358	48.7	N 3	28.7	28	48.5	10.8	S14	37.6	13.2	58.1
E 13	13	48.9		29.7	43	18.3	10.9	14	24.4	13.4	58.1
S 14	28	49.1		30.7	57	48.2	11.0	14	11.0	13.4	58.1
15	43	49.3	. .	31.6	72	18.2	11.1	13	57.6	13.4	58.1
16	58	49.5		32.6	86	48.3	11.2	13	44.2	13.5	58.1
17	73	49.6		33.6	101	18.5	11.2	13	30.7	13.6	58.1
18	88	49.8	N 3	34.5	115	48.7	11.3	S13	17.1	13.7	58.0
19	103	50.0		35.5	130	19.0	11.4	13	03.4	13.7	58.0
20	118	50.2		36.5	144	49.4	11.5	12	49.7	13.7	58.0
21	133	50.4	. .	37.5	159	19.9	11.5	12	36.0	13.9	58.0
22	148	50.6		38.4	173	50.4	11.6	12	22.1	13.8	58.0
23	163	50.8		39.4	188	21.0	11.7	12	08.3	14.0	58.0
30 00	178	50.9	N 3	40.4	202	51.7	11.8	S11	54.3	13.9	57.9
01	193	51.1		41.4	217	22.5	11.8	11	40.4	14.1	57.9
02	208	51.3		42.3	231	53.3	11.9	11	26.3	14.0	57.9
03	223	51.5	. .	43.3	246	24.2	12.0	11	12.3	14.2	57.9
04	238	51.7		44.3	260	55.2	12.1	10	58.1	14.1	57.9
05	253	51.9		45.2	275	26.3	12.1	10	44.0	14.2	57.8
06	268	52.1	N 3	46.2	289	57.4	12.2	S10	29.8	14.3	57.8
07	283	52.3		47.2	304	28.6	12.2	10	15.5	14.3	57.8
M 08	298	52.4		48.2	318	59.8	12.3	10	01.2	14.3	57.8
I 09	313	52.6	. .	49.1	333	31.1	12.4	9	46.9	14.4	57.8
É 10	328	52.8		50.1	348	02.5	12.5	9	32.5	14.4	57.7
R 11	343	53.0		51.1	2	34.0	12.5	9	18.1	14.4	57.7
C 12	358	53.2	N 3	52.0	17	05.5	12.5	S 9	03.7	14.5	57.7
O 13	13	53.4		53.0	31	37.0	12.7	8	49.2	14.5	57.7
L 14	28	53.6		54.0	46	08.7	12.7	8	34.7	14.6	57.7
E 15	43	53.7	. .	55.0	60	40.4	12.7	8	20.1	14.6	57.6
S 16	58	53.9		55.9	75	12.1	12.8	8	05.5	14.6	57.6
17	73	54.1		56.9	89	43.9	12.9	7	50.9	14.6	57.6
18	88	54.3	N 3	57.9	104	15.8	12.9	S 7	36.3	14.6	57.6
19	103	54.5		58.8	118	47.7	12.9	7	21.7	14.7	57.6
20	118	54.7	3	59.8	133	19.6	13.1	7	07.0	14.7	57.5
21	133	54.9	4	00.8	147	51.7	13.0	6	52.3	14.8	57.5
22	148	55.0		01.7	162	23.7	13.2	6	37.5	14.7	57.5
23	163	55.2		02.7	176	55.9	13.1	6	22.8	14.8	57.5
31 00	178	55.4	N 4	03.7	191	28.0	13.3	S 6	08.0	14.8	57.5
01	193	55.6		04.7	206	00.3	13.2	5	53.2	14.8	57.4
02	208	55.8		05.6	220	32.5	13.4	5	38.4	14.8	57.4
03	223	56.0	. .	06.6	235	04.9	13.3	5	23.6	14.8	57.4
04	238	56.2		07.6	249	37.2	13.4	5	08.8	14.9	57.4
05	253	56.3		08.5	264	09.6	13.5	4	53.9	14.8	57.3
06	268	56.5	N 4	09.5	278	42.1	13.5	S 4	39.1	14.9	57.3
07	283	56.7		10.5	293	14.6	13.5	4	24.2	14.9	57.3
J 08	298	56.9		11.4	307	47.1	13.6	4	09.3	14.9	57.3
U 09	313	57.1	. .	12.4	322	19.7	13.6	3	54.4	14.9	57.3
E 10	328	57.3		13.4	336	52.3	13.7	3	39.5	14.9	57.2
V 11	343	57.5		14.3	351	25.0	13.7	3	24.6	14.9	57.2
E 12	358	57.6	N 4	15.3	5	57.7	13.7	S 3	09.7	14.9	57.2
S 13	13	57.8		16.3	20	30.4	13.8	2	54.8	14.9	57.2
14	28	58.0		17.2	35	03.2	13.8	2	39.9	14.9	57.1
15	43	58.2	. .	18.2	49	36.0	13.8	2	25.0	14.9	57.1
16	58	58.4		19.2	64	08.8	13.9	2	10.1	14.9	57.1
17	73	58.6		20.1	78	41.7	13.9	1	55.2	14.9	57.1
18	88	58.8	N 4	21.1	93	14.6	13.9	S 1	40.3	14.9	57.1
19	103	58.9		22.1	107	47.5	14.0	1	25.4	14.9	57.0
20	118	59.1		23.0	122	20.5	14.0	1	10.5	14.9	57.0
21	133	59.3	. .	24.0	136	53.5	14.0	0	55.6	14.9	57.0
22	148	59.5		25.0	151	26.5	14.1	0	40.7	14.9	57.0
23	163	59.7		25.9	165	59.6	14.0	S 0	25.8	14.8	56.9
	S/D	16.0	d	1.0	S/D		15.8		15.7		15.6

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			29	30	31	1
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	02	01	03	54	05 07	07 55	07 00	06 24	05 54
N 70	02	37	04	08	05 13	07 19	06 44	06 18	05 56
68	03	01	04	20	05 18	06 53	06 31	06 13	05 57
66	03	20	04	29	05 22	06 34	06 20	06 09	05 58
64	03	34	04	37	05 26	06 17	06 11	06 05	05 59
62	03	47	04	43	05 29	06 04	06 03	06 01	06 00
60	03	57	04	49	05 32	05 52	05 56	05 59	06 01
N 58	04	05	04	54	05 34	05 42	05 50	05 56	06 01
56	04	13	04	58	05 36	05 34	05 45	05 54	06 02
54	04	19	05	02	05 38	05 26	05 40	05 52	06 02
52	04	25	05	06	05 40	05 19	05 36	05 50	06 03
50	04	30	05	09	05 41	05 12	05 32	05 48	06 03
45	04	40	05	15	05 45	04 59	05 23	05 44	06 04
N 40	04	48	05	20	05 48	04 47	05 16	05 41	06 05
35	04	55	05	24	05 50	04 37	05 10	05 38	06 06
30	05	00	05	28	05 52	04 29	05 04	05 36	06 06
20	05	08	05	33	05 55	04 14	04 55	05 32	06 07
N 10	05	13	05	37	05 58	04 01	04 46	05 28	06 08
0	05	16	05	40	06 01	03 49	04 38	05 25	06 09
S 10	05	18	05	43	06 04	03 36	04 30	05 21	06 10
20	05	19	05	44	06 06	03 23	04 22	05 17	06 11
30	05	18	05	46	06 09	03 08	04 12	05 13	06 13
35	05	16	05	46	06 11	02 59	04 06	05 11	06 13
40	05	14	05	46	06 13	02 49	04 00	05 08	06 14
45	05	12	05	46	06 15	02 37	03 52	05 05	06 15
S 50	05	08	05	45	06 17	02 22	03 43	05 01	06 16
52	05	06	05	45	06 18	02 16	03 39	04 59	06 17
54	05	03	05	44	06 20	02 08	03 34	04 57	06 17
56	05	01	05	44	06 21	01 59	03 29	04 55	06 18
58	04	58	05	43	06 22	01 50	03 23	04 52	06 19
S 60	04	54	05	43	06 24	01 38	03 16	04 50	06 20

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 29	30	31	1
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	19	05	20	19	22 17	12 32	15 09	17 22	19 28
N 70	18	58	20	04	21 38	13 05	15 22	17 24	19 21
68	18	53	19	52	21 12	13 29	15 33	17 27	19 16
66	18	49	19	42	20 53	13 48	15 42	17 29	19 12
64	18	45	19	34	20 37	14 03	15 49	17 30	19 08
62	18	42	19	27	20 25	14 15	15 56	17 32	19 05
60	18	39	19	22	20 15	14 25	16 01	17 33	19 02
N 58	18	36	19	16	20 06	14 34	16 06	17 34	19 00
56	18	34	19	12	19 58	14 42	16 10	17 35	18 57
54	18	32	19	08	19 52	14 49	16 14	17 36	18 55
52	18	30	19	04	19 46	14 55	16 17	17 36	18 54
50	18	29	19	01	19 41	15 01	16 20	17 37	18 52
45	18	25	18	55	19 30	15 13	16 27	17 39	18 48
N 40	18	22	18	49	19 22	15 23	16 33	17 40	18 45
35	18	20	18	45	19 15	15 31	16 37	17 41	18 43
30	18	17	18	41	19 10	15 39	16 41	17 42	18 41
20	18	14	18	36	19 02	15 51	16 49	17 43	18 37
N 10	18	11	18	32	18 56	16 02	16 55	17 45	18 34
0	18	08	18	28	18 52	16 13	17 01	17 46	18 30
S 10	18	05	18	26	18 50	16 23	17 06	17 47	18 27
20	18	02	18	24	18 50	16 34	17 12	17 49	18 24
30	17	59	18	23	18 51	16 46	17 19	17 50	18 20
35	17	57	18	23	18 52	16 53	17 23	17 51	18 18
40	17	55	18	22	18 54	17 01	17 27	17 52	18 15
45	17	53	18	22	18 56	17 10	17 33	17 53	18 12
S 50	17	51	18	23	19 00	17 21	17 39	17 54	18 09
52	17	49	18	23	19 02	17 26	17 41	17 55	18 08
54	17	48	18	23	19 04	17 31	17 44	17 55	18 06
56	17	47	18	24	19 07	17 37	17 48	17 56	18 04
58	17	45	18	24	19 10	17 44	17 51	17 57	18 02
S 60	17	44	18	25	19 13	17 52	17 55	17 58	18 00

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
29	04 55	04 46	12 05	10 01	22 25	27 9	
30	04 37	04 28	12 04	10 49	23 13	28 4	
31	04 19	04 10	12 04	11 35	23 58	29 1	●

UT (HmGr)		ARIES	VENUS −4·3		MARTE +1·1		JÚPITER −2·0		SATURNO +0·7		ESTRELLAS		
		AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec	Nombre	AHS	Dec
	d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′		° ′	° ′
	1 00	189 20.1	222 16.6	S12 20.6	227 11.6	S16 10.6	196 55.8	S 4 22.6	224 36.9	S15 03.4	Acamar	315 13.9	S40 13.2
	01	204 22.5	237 16.4	20.0	242 12.2	10.0	211 57.7	22.4	239 39.1	03.3	Achernar	335 22.5	S57 07.6
	02	219 25.0	252 16.3	19.3	257 12.8	09.5	226 59.6	22.1	254 41.3	03.2	Acrux	173 01.9	S63 13.3
	03	234 27.5	267 16.1	18.6	272 13.4	08.9	242 01.5	21.9	269 43.6	03.1	Adhara	255 07.7	S29 00.4
	04	249 29.9	282 16.0	18.0	287 14.0	08.3	257 03.4	21.7	284 45.8	03.1	Aldebaran	290 42.4	N16 33.1
	05	264 32.4	297 15.8	17.3	302 14.6	07.8	272 05.4	21.5	299 48.1	03.0			
	06	279 34.9	312 15.6	S12 16.7	317 15.2	S16 07.2	287 07.3	S 4 21.2	314 50.3	S15 02.9	Alioth	166 14.5	N55 50.4
	07	294 37.3	327 15.5	16.0	332 15.8	06.6	302 09.2	21.0	329 52.5	02.9	Alkaid	152 53.4	N49 12.1
	08	309 39.8	342 15.3	15.3	347 16.4	06.1	317 11.1	20.8	344 54.8	02.8	Alnair	27 36.2	S46 51.2
V	09	324 42.3	357 15.2	14.7	2 16.9	05.5	332 13.1	20.5	359 57.0	02.7	Alnilam	275 40.2	S 1 11.4
I	10	339 44.7	12 15.0	14.0	17 17.5	04.9	347 15.0	20.3	14 59.2	02.7	Alphard	217 49.8	S 8 45.4
E	11	354 47.2	27 14.9	13.4	32 18.1	04.4	2 16.9	20.1	30 01.5	02.6			
R	12	9 49.6	42 14.7	S12 12.7	47 18.7	S16 03.8	17 18.8	S 4 19.9	45 03.7	S15 02.5	Alphecca	126 05.4	N26 38.2
N	13	24 52.1	57 14.6	12.0	62 19.3	03.2	32 20.8	19.6	60 06.0	02.5	Alpheratz	357 37.5	N29 12.6
E	14	39 54.6	72 14.4	11.4	77 19.9	02.7	47 22.7	19.4	75 08.2	02.4	Altair	62 02.3	N 8 55.4
S	15	54 57.0	87 14.2	10.7	92 20.5	02.1	62 24.6	19.2	90 10.4	02.3	Ankaa	353 09.8	S42 11.3
	16	69 59.5	102 14.1	10.0	107 21.1	01.5	77 26.5	19.0	105 12.7	02.3	Antares	112 18.4	S26 28.8
	17	85 02.0	117 13.9	09.4	122 21.7	01.0	92 28.4	18.7	120 14.9	02.2			
	18	100 04.4	132 13.8	S12 08.7	137 22.3	S16 00.4	107 30.4	S 4 18.5	135 17.2	S15 02.1	Arcturus	145 49.7	N19 03.9
	19	115 06.9	147 13.6	08.0	152 22.9	15 59.8	122 32.3	18.3	150 19.4	02.0	Atria	107 14.5	S69 03.8
	20	130 09.4	162 13.4	07.4	167 23.5	59.3	137 34.2	18.0	165 21.6	02.0	Avior	234 15.4	S59 35.1
	21	145 11.8	177 13.3	06.7	182 24.1	58.7	152 36.1	17.8	180 23.9	01.9	Bellatrix	278 25.5	N 6 22.1
	22	160 14.3	192 13.1	06.0	197 24.6	58.1	167 38.1	17.6	195 26.1	01.8	Betelgeuse	270 54.6	N 7 24.6
	23	175 16.8	207 13.0	05.3	212 25.2	57.5	182 40.0	17.4	210 28.4	01.8			
	2 00	190 19.2	222 12.8	S12 04.7	227 25.8	S15 57.0	197 41.9	S 4 17.1	225 30.6	S15 01.7	Canopus	263 53.5	S52 42.7
	01	205 21.7	237 12.7	04.0	242 26.4	56.4	212 43.8	16.9	240 32.8	01.6	Capella	280 25.5	N46 01.3
	02	220 24.1	252 12.5	03.3	257 27.0	55.8	227 45.8	16.7	255 35.1	01.6	Deneb	49 27.6	N45 21.2
	03	235 26.6	267 12.3	02.6	272 27.6	55.3	242 47.7	16.5	270 37.3	01.5	Denebola	182 27.0	N14 26.8
	04	250 29.1	282 12.2	02.0	287 28.2	54.7	257 49.6	16.2	285 39.6	01.4	Diphda	348 49.9	S17 52.1
	05	265 31.5	297 12.0	01.3	302 28.8	54.1	272 51.5	16.0	300 41.8	01.4			
	06	280 34.0	312 11.9	S12 00.6	317 29.4	S15 53.5	287 53.5	S 4 15.8	315 44.0	S15 01.3	Dubhe	193 43.3	N61 38.0
	07	295 36.5	327 11.7	11 59.9	332 30.0	53.0	302 55.4	15.5	330 46.3	01.2	Elnath	278 04.9	N28 37.6
S	08	310 38.9	342 11.5	59.3	347 30.6	52.4	317 57.3	15.3	345 48.5	01.2	Eltanin	90 43.1	N51 28.8
Á	09	325 41.4	357 11.4	58.6	2 31.2	51.8	332 59.2	15.1	0 50.8	01.1	Enif	33 41.3	N 9 58.4
B	10	340 43.9	12 11.2	57.9	17 31.8	51.3	348 01.1	14.9	15 53.0	01.0	Fomalhaut	15 17.4	S29 30.4
A	11	355 46.3	27 11.1	57.2	32 32.4	50.7	3 03.1	14.6	30 55.2	01.0			
D	12	10 48.8	42 10.9	S11 56.5	47 33.0	S15 50.1	18 05.0	S 4 14.4	45 57.5	S15 00.9	Gacrux	171 53.6	S57 14.3
O	13	25 51.3	57 10.7	55.9	62 33.6	49.5	33 06.9	14.2	60 59.7	00.8	Gienah	175 45.6	S17 40.0
	14	40 53.7	72 10.6	55.2	77 34.2	49.0	48 08.8	14.0	76 02.0	00.7	Hadar	148 38.6	S60 28.7
	15	55 56.2	87 10.4	54.5	92 34.8	48.4	63 10.8	13.7	91 04.2	00.7	Hamal	327 54.1	N23 33.9
	16	70 58.6	102 10.3	53.8	107 35.4	47.8	78 12.7	13.5	106 06.4	00.6	Kaus Aust.	83 35.5	S34 22.4
	17	86 01.1	117 10.1	53.1	122 35.9	47.2	93 14.6	13.3	121 08.7	00.5			
	18	101 03.6	132 09.9	S11 52.4	137 36.5	S15 46.7	108 16.5	S 4 13.1	136 10.9	S15 00.5	Kochab	137 18.8	N74 03.7
	19	116 06.0	147 09.8	51.8	152 37.1	46.1	123 18.5	12.8	151 13.2	00.4	Markab	13 32.5	N15 19.2
	20	131 08.5	162 09.6	51.1	167 37.7	45.5	138 20.4	12.6	166 15.4	00.3	Menkar	314 08.8	N 4 10.4
	21	146 11.0	177 09.4	50.4	182 38.3	44.9	153 22.3	12.4	181 17.7	00.3	Menkent	148 00.0	S36 28.7
	22	161 13.4	192 09.3	49.7	197 38.9	44.3	168 24.2	12.1	196 19.9	00.2	Miaplacidus	221 38.2	S69 48.7
	23	176 15.9	207 09.1	49.0	212 39.5	43.8	183 26.2	11.9	211 22.1	00.1			
	3 00	191 18.4	222 09.0	S11 48.3	227 40.1	S15 43.2	198 28.1	S 4 11.7	226 24.4	S15 00.1	Mirfak	308 31.9	N49 56.4
	01	206 20.8	237 08.8	47.6	242 40.7	42.6	213 30.0	11.5	241 26.6	15 00.0	Nunki	75 50.6	S26 16.1
	02	221 23.3	252 08.6	46.9	257 41.3	42.0	228 31.9	11.2	256 28.9	14 59.9	Peacock	53 09.6	S56 39.7
	03	236 25.7	267 08.5	46.2	272 41.9	41.5	243 33.9	11.0	271 31.1	59.9	Pollux	243 20.0	N27 58.4
	04	251 28.2	282 08.3	45.5	287 42.5	40.9	258 35.8	10.8	286 33.4	59.8	Procyon	244 53.2	N 5 10.0
	05	266 30.7	297 08.1	44.9	302 43.1	40.3	273 37.7	10.6	301 35.6	59.7			
	06	281 33.1	312 08.0	S11 44.2	317 43.7	S15 39.7	288 39.6	S 4 10.3	316 37.8	S14 59.7	Rasalhague	96 00.6	N12 32.4
	07	296 35.6	327 07.8	43.5	332 44.3	39.1	303 41.6	10.1	331 40.1	59.6	Regulus	207 36.6	N11 51.5
D	08	311 38.1	342 07.7	42.8	347 44.9	38.6	318 43.5	09.9	346 42.3	59.5	Rigel	281 06.2	S 8 10.7
O	09	326 40.5	357 07.5	42.1	2 45.5	38.0	333 45.4	09.7	1 44.6	59.5	Rigil Kent.	139 42.9	S60 55.5
M	10	341 43.0	12 07.3	41.4	17 46.1	37.4	348 47.3	09.4	16 46.8	59.4	Sabik	102 05.3	S15 45.2
I	11	356 45.5	27 07.2	40.7	32 46.7	36.8	3 49.3	09.2	31 49.1	59.3			
N	12	11 47.9	42 07.0	S11 40.0	47 47.3	S15 36.2	18 51.2	S 4 09.0	46 51.3	S14 59.3	Schedar	349 34.2	N56 39.4
G	13	26 50.4	57 06.8	39.3	62 47.9	35.7	33 53.1	08.7	61 53.5	59.2	Shaula	96 13.4	S37 07.1
O	14	41 52.9	72 06.7	38.6	77 48.5	35.1	48 55.0	08.5	76 55.8	59.1	Sirius	258 28.3	S16 45.0
	15	56 55.3	87 06.5	37.9	92 49.1	34.5	63 57.0	08.3	91 58.0	59.1	Spica	158 24.4	S11 16.7
	16	71 57.8	102 06.3	37.2	107 49.7	33.9	78 58.9	08.1	107 00.3	59.0	Suhail	222 47.7	S43 31.5
	17	87 00.2	117 06.2	36.5	122 50.3	33.3	94 00.8	07.8	122 02.5	58.9			
	18	102 02.7	132 06.0	S11 35.8	137 50.9	S15 32.8	109 02.7	S 4 07.6	137 04.8	S14 58.9	Vega	80 34.7	N38 47.9
	19	117 05.2	147 05.9	35.1	152 51.5	32.2	124 04.7	07.4	152 07.0	58.8	Zuben'ubi	136 58.3	S16 08.1
	20	132 07.6	162 05.7	34.4	167 52.1	31.6	139 06.6	07.2	167 09.3	58.7			
	21	147 10.1	177 05.5	33.7	182 52.7	31.0	154 08.5	06.9	182 11.5	58.7		AHS	Paso Mer.
	22	162 12.6	192 05.4	33.0	197 53.3	30.4	169 10.5	06.7	197 13.7	58.6		° ′	h m
	23	177 15.0	207 05.2	32.3	212 53.9	29.9	184 12.4	06.5	212 16.0	58.5	Venus	31 53.6	9 11
		h m									Marte	37 06.6	8 50
Paso Mer.		11 16.9	*v* −0.2	*d* 0.7	*v* 0.6	*d* 0.6	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1	Júpiter	7 22.7	10 48
											Saturno	35 11.4	8 57

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v		Dec	d		Ph
d h	°	′	°	′	°	′	′	°	′	′	′
1 00	178	59.9	N 4	26.9	180	32.6	14.1	S 0	11.0	14.9	56.9
01	194	00.1		27.9	195	05.7	14.2	N 0	03.9	14.8	56.9
02	209	00.2		28.8	209	38.9	14.1	0	18.7	14.8	56.9
03	224	00.4	. .	29.8	224	12.0	14.2	0	33.5	14.9	56.9
04	239	00.6		30.8	238	45.2	14.1	0	48.4	14.8	56.8
05	254	00.8		31.7	253	18.3	14.2	1	03.2	14.7	56.8
06	269	01.0	N 4	32.7	267	51.5	14.3	N 1	17.9	14.8	56.8
07	284	01.2		33.7	282	24.8	14.2	1	32.7	14.8	56.8
08	299	01.3		34.6	296	58.0	14.3	1	47.5	14.7	56.7
09	314	01.5	. .	35.6	311	31.3	14.2	2	02.2	14.7	56.7
10	329	01.7		36.6	326	04.5	14.3	2	16.9	14.7	56.7
11	344	01.9		37.5	340	37.8	14.3	2	31.6	14.6	56.7
12	359	02.1	N 4	38.5	355	11.1	14.3	N 2	46.2	14.7	56.6
13	14	02.3		39.5	9	44.4	14.3	3	00.9	14.6	56.6
14	29	02.5		40.4	24	17.7	14.4	3	15.5	14.6	56.6
15	44	02.6	. .	41.4	38	51.1	14.3	3	30.1	14.5	56.6
16	59	02.8		42.4	53	24.4	14.4	3	44.6	14.6	56.5
17	74	03.0		43.3	67	57.8	14.3	3	59.2	14.5	56.5
18	89	03.2	N 4	44.3	82	31.1	14.4	N 4	13.7	14.4	56.5
19	104	03.4		45.2	97	04.5	14.4	4	28.1	14.5	56.5
20	119	03.6		46.2	111	37.9	14.4	4	42.6	14.4	56.5
21	134	03.7	. .	47.2	126	11.3	14.3	4	57.0	14.4	56.4
22	149	03.9		48.1	140	44.6	14.4	5	11.4	14.3	56.4
23	164	04.1		49.1	155	18.0	14.4	5	25.7	14.3	56.4
2 00	179	04.3	N 4	50.1	169	51.4	14.4	N 5	40.0	14.3	56.4
01	194	04.5		51.0	184	24.8	14.4	5	54.3	14.2	56.3
02	209	04.7		52.0	198	58.2	14.4	6	08.5	14.2	56.3
03	224	04.8	. .	53.0	213	31.6	14.4	6	22.7	14.2	56.3
04	239	05.0		53.9	228	05.0	14.3	6	36.9	14.1	56.3
05	254	05.2		54.9	242	38.3	14.4	6	51.0	14.1	56.2
06	269	05.4	N 4	55.8	257	11.7	14.4	N 7	05.1	14.0	56.2
07	284	05.6		56.8	271	45.1	14.4	7	19.1	14.0	56.2
08	299	05.8		57.8	286	18.5	14.3	7	33.1	13.9	56.2
09	314	05.9	. .	58.7	300	51.8	14.4	7	47.0	13.9	56.1
10	329	06.1	4	59.7	315	25.2	14.4	8	00.9	13.9	56.1
11	344	06.3	5	00.6	329	58.6	14.3	8	14.8	13.8	56.1
12	359	06.5	N 5	01.6	344	31.9	14.3	N 8	28.6	13.7	56.1
13	14	06.7		02.6	359	05.2	14.4	8	42.3	13.8	56.1
14	29	06.9		03.5	13	38.6	14.3	8	56.1	13.6	56.0
15	44	07.0	. .	04.5	28	11.9	14.3	9	09.7	13.6	56.0
16	59	07.2		05.4	42	45.2	14.3	9	23.3	13.6	56.0
17	74	07.4		06.4	57	18.5	14.3	9	36.9	13.5	56.0
18	89	07.6	N 5	07.4	71	51.8	14.2	N 9	50.4	13.4	55.9
19	104	07.8		08.3	86	25.0	14.3	10	03.8	13.4	55.9
20	119	08.0		09.3	100	58.3	14.2	10	17.2	13.4	55.9
21	134	08.1	. .	10.2	115	31.5	14.2	10	30.6	13.3	55.9
22	149	08.3		11.2	130	04.7	14.2	10	43.9	13.2	55.8
23	164	08.5		12.2	144	37.9	14.2	10	57.1	13.2	55.8
3 00	179	08.7	N 5	13.1	159	11.1	14.2	N11	10.3	13.1	55.8
01	194	08.9		14.1	173	44.3	14.1	11	23.4	13.0	55.8
02	209	09.0		15.0	188	17.4	14.1	11	36.4	13.0	55.7
03	224	09.2	. .	16.0	202	50.5	14.1	11	49.4	13.0	55.7
04	239	09.4		17.0	217	23.6	14.1	12	02.4	12.8	55.7
05	254	09.6		17.9	231	56.7	14.1	12	15.2	12.8	55.7
06	269	09.8	N 5	18.9	246	29.8	14.0	N12	28.0	12.8	55.7
07	284	10.0		19.8	261	02.8	14.0	12	40.8	12.7	55.6
08	299	10.1		20.8	275	35.8	14.0	12	53.5	12.6	55.6
09	314	10.3	. .	21.8	290	08.8	14.0	13	06.1	12.5	55.6
10	329	10.5		22.7	304	41.8	13.9	13	18.6	12.5	55.6
11	344	10.7		23.7	319	14.7	14.0	13	31.1	12.4	55.5
12	359	10.9	N 5	24.6	333	47.7	13.8	N13	43.5	12.4	55.5
13	14	11.0		25.6	348	20.5	13.9	13	55.9	12.2	55.5
14	29	11.2		26.5	2	53.4	13.8	14	08.1	12.2	55.5
15	44	11.4	. .	27.5	17	26.2	13.9	14	20.3	12.2	55.5
16	59	11.6		28.4	31	59.1	13.7	14	32.5	12.0	55.4
17	74	11.8		29.4	46	31.8	13.8	14	44.5	12.0	55.4
18	89	12.0	N 5	30.4	61	04.6	13.7	N14	56.5	11.9	55.4
19	104	12.1		31.3	75	37.3	13.7	15	08.4	11.9	55.4
20	119	12.3		32.3	90	10.0	13.6	15	20.3	11.7	55.4
21	134	12.5	. .	33.2	104	42.6	13.7	15	32.0	11.7	55.3
22	149	12.7		34.2	119	15.3	13.6	15	43.7	11.6	55.3
23	164	12.9		35.1	133	47.9	13.5	N15	55.3	11.5	55.3
	S/D	16.0	d	1.0	S/D		15.4		15.3		15.1

VIERNES — SÁBADO — DOMINGO

Lat.	Aurora		Orto	Orto Luna			
	Náut.	Civil	Sol	1	2	3	4
°	h m	h m	h m	h m	h m	h m	h m
N 72	01 26	03 35	04 51	05 54	05 24	04 47	03 43
N 70	02 13	03 52	04 59	05 56	05 33	05 07	04 29
68	02 43	04 06	05 05	05 57	05 41	05 23	05 00
66	03 04	04 17	05 11	05 58	05 48	05 36	05 23
64	03 21	04 26	05 15	05 59	05 53	05 47	05 41
62	03 35	04 33	05 19	06 00	05 58	05 57	05 56
60	03 46	04 40	05 23	06 01	06 02	06 05	06 09
N 58	03 55	04 45	05 26	06 01	06 06	06 12	06 20
56	04 04	04 50	05 28	06 02	06 10	06 18	06 29
54	04 11	04 55	05 31	06 02	06 13	06 24	06 38
52	04 17	04 59	05 33	06 03	06 15	06 29	06 45
50	04 23	05 02	05 35	06 03	06 18	06 34	06 52
45	04 34	05 09	05 39	06 04	06 24	06 44	07 07
N 40	04 43	05 15	05 43	06 05	06 28	06 53	07 19
35	04 50	05 20	05 46	06 06	06 32	07 00	07 30
30	04 56	05 24	05 48	06 06	06 36	07 07	07 39
20	05 05	05 31	05 53	06 07	06 42	07 18	07 55
N 10	05 11	05 36	05 57	06 08	06 48	07 28	08 09
0	05 15	05 40	06 00	06 09	06 53	07 37	08 22
S 10	05 18	05 43	06 04	06 10	06 59	07 47	08 36
20	05 20	05 45	06 07	06 11	07 04	07 57	08 50
30	05 20	05 47	06 11	06 13	07 11	08 09	09 07
35	05 19	05 48	06 13	06 13	07 15	08 16	09 16
40	05 17	05 49	06 16	06 14	07 19	08 23	09 27
45	05 15	05 49	06 19	06 15	07 24	08 33	09 40
S 50	05 12	05 50	06 22	06 16	07 30	08 44	09 57
52	05 11	05 50	06 24	06 17	07 33	08 49	10 04
54	05 09	05 50	06 25	06 17	07 36	08 55	10 13
56	05 07	05 50	06 27	06 18	07 40	09 01	10 22
58	05 04	05 50	06 29	06 19	07 44	09 08	10 33
S 60	05 01	05 50	06 31	06 20	07 48	09 16	10 45

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	1	2	3	4
°	h m	h m	h m	h m	h m	h m	h m
N 72	19 19	20 36	22 55	19 28	21 39	24 17	00 17
N 70	19 11	20 18	22 01	19 21	21 21	23 32	▭
68	19 04	20 04	21 29	19 16	21 06	23 03	25 22
66	18 59	19 53	21 07	19 12	20 55	22 41	24 37
64	18 54	19 44	20 49	19 08	20 45	22 24	24 08
62	18 50	19 36	20 35	19 05	20 37	22 10	23 46
60	18 46	19 29	20 24	19 02	20 30	21 59	23 28
N 58	18 43	19 24	20 14	19 00	20 24	21 49	23 13
56	18 40	19 18	20 05	18 57	20 19	21 40	23 00
54	18 38	19 14	19 58	18 55	20 14	21 32	22 49
52	18 35	19 10	19 52	18 54	20 10	21 25	22 40
50	18 33	19 06	19 46	18 52	20 06	21 19	22 31
45	18 29	18 59	19 34	18 48	19 57	21 05	22 13
N 40	18 25	18 53	19 25	18 45	19 50	20 54	21 58
35	18 22	18 48	19 18	18 43	19 44	20 45	21 45
30	18 19	18 43	19 12	18 41	19 39	20 37	21 35
20	18 15	18 37	19 03	18 37	19 30	20 23	21 16
N 10	18 11	18 32	18 56	18 34	19 22	20 10	21 00
0	18 07	18 28	18 52	18 30	19 14	19 59	20 45
S 10	18 03	18 24	18 49	18 27	19 07	19 47	20 30
20	18 00	18 22	18 47	18 24	18 59	19 35	20 14
30	17 56	18 19	18 47	18 20	18 50	19 22	19 55
35	17 53	18 18	18 48	18 18	18 45	19 14	19 45
40	17 51	18 18	18 49	18 15	18 39	19 05	19 33
45	17 48	18 17	18 51	18 12	18 32	18 54	19 19
S 50	17 44	18 16	18 54	18 09	18 24	18 41	19 01
52	17 43	18 16	18 55	18 08	18 21	18 35	18 53
54	17 41	18 16	18 57	18 06	18 17	18 29	18 44
56	17 39	18 16	18 59	18 04	18 12	18 22	18 34
58	17 37	18 16	19 01	18 02	18 07	18 14	18 23
S 60	17 35	18 16	19 04	18 00	18 02	18 05	18 09

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
1	04 01	03 52	12 04	12 20	24 42	00 0	
2	03 43	03 34	12 04	13 04	00 42	01 2	
3	03 26	03 17	12 03	13 48	01 26	02 5	●

UT (HmGr)	ARIES	VENUS −4·3		MARTE +1·0		JÚPITER −2·1		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
4 00	192 17.5	222 05.0	S11 31.6	227 54.5	S15 29.3	199 14.3	S 4 06.3	227 18.2	S14 58.5
01	207 20.0	237 04.9	30.8	242 55.1	28.7	214 16.2	06.0	242 20.5	58.4
02	222 22.4	252 04.7	30.1	257 55.7	28.1	229 18.2	05.8	257 22.7	58.3
03	237 24.9	267 04.5 . .	29.4	272 56.3 . .	27.5	244 20.1 . .	05.6	272 25.0 . .	58.3
04	252 27.3	282 04.4	28.7	287 56.9	26.9	259 22.0	05.4	287 27.2	58.2
05	267 29.8	297 04.2	28.0	302 57.5	26.3	274 23.9	05.1	302 29.5	58.1
06	282 32.3	312 04.0	S11 27.3	317 58.1	S15 25.8	289 25.9	S 4 04.9	317 31.7	S14 58.1
07	297 34.7	327 03.9	26.6	332 58.7	25.2	304 27.8	04.7	332 34.0	58.0
08	312 37.2	342 03.7	25.9	347 59.3	24.6	319 29.7	04.5	347 36.2	57.9
L 09	327 39.7	357 03.5 . .	25.2	2 59.9 . .	24.0	334 31.6 . .	04.2	2 38.4 . .	57.9
U 10	342 42.1	12 03.4	24.5	18 00.5	23.4	349 33.6	04.0	17 40.7	57.8
N 11	357 44.6	27 03.2	23.7	33 01.1	22.8	4 35.5	03.8	32 42.9	57.7
E 12	12 47.1	42 03.0	S11 23.0	48 01.7	S15 22.3	19 37.4	S 4 03.5	47 45.2	S14 57.7
S 13	27 49.5	57 02.9	22.3	63 02.3	21.7	34 39.4	03.3	62 47.4	57.6
14	42 52.0	72 02.7	21.6	78 02.9	21.1	49 41.3	03.1	77 49.7	57.5
15	57 54.5	87 02.5 . .	20.9	93 03.5 . .	20.5	64 43.2 . .	02.9	92 51.9 . .	57.5
16	72 56.9	102 02.4	20.2	108 04.2	19.9	79 45.1	02.6	107 54.2	57.4
17	87 59.4	117 02.2	19.4	123 04.8	19.3	94 47.1	02.4	122 56.4	57.3
18	103 01.8	132 02.0	S11 18.7	138 05.4	S15 18.7	109 49.0	S 4 02.2	137 58.7	S14 57.3
19	118 04.3	147 01.9	18.0	153 06.0	18.1	124 50.9	02.0	153 00.9	57.2
20	133 06.8	162 01.7	17.3	168 06.6	17.6	139 52.8	01.7	168 03.2	57.1
21	148 09.2	177 01.5 . .	16.6	183 07.2 . .	17.0	154 54.8 . .	01.5	183 05.4 . .	57.1
22	163 11.7	192 01.4	15.8	198 07.8	16.4	169 56.7	01.3	198 07.7	57.0
23	178 14.2	207 01.2	15.1	213 08.4	15.8	184 58.6	01.1	213 09.9	56.9
5 00	193 16.6	222 01.0	S11 14.4	228 09.0	S15 15.2	200 00.6	S 4 00.8	228 12.2	S14 56.9
01	208 19.1	237 00.9	13.7	243 09.6	14.6	215 02.5	00.6	243 14.4	56.8
02	223 21.6	252 00.7	13.0	258 10.2	14.0	230 04.4	00.4	258 16.6	56.7
03	238 24.0	267 00.5 . .	12.2	273 10.8 . .	13.4	245 06.3	4 00.2	273 18.9 . .	56.7
04	253 26.5	282 00.4	11.5	288 11.4	12.8	260 08.3	3 59.9	288 21.1	56.6
05	268 29.0	297 00.2	10.8	303 12.0	12.2	275 10.2	59.7	303 23.4	56.5
06	283 31.4	312 00.0	S11 10.1	318 12.6	S15 11.7	290 12.1	S 3 59.5	318 25.6	S14 56.5
07	298 33.9	326 59.9	09.3	333 13.2	11.1	305 14.1	59.3	333 27.9	56.4
M 08	313 36.3	341 59.7	08.6	348 13.8	10.5	320 16.0	59.0	348 30.1	56.3
A 09	328 38.8	356 59.5 . .	07.9	3 14.4 . .	09.9	335 17.9 . .	58.8	3 32.4 . .	56.3
R 10	343 41.3	11 59.4	07.1	18 15.0	09.3	350 19.8	58.6	18 34.6	56.2
T 11	358 43.7	26 59.2	06.4	33 15.7	08.7	5 21.8	58.4	33 36.9	56.1
E 12	13 46.2	41 59.0	S11 05.7	48 16.3	S15 08.1	20 23.7	S 3 58.1	48 39.1	S14 56.1
S 13	28 48.7	56 58.9	04.9	63 16.9	07.5	35 25.6	57.9	63 41.4	56.0
14	43 51.1	71 58.7	04.2	78 17.5	06.9	50 27.6	57.7	78 43.6	55.9
15	58 53.6	86 58.5 . .	03.5	93 18.1 . .	06.3	65 29.5 . .	57.5	93 45.9 . .	55.9
16	73 56.1	101 58.3	02.8	108 18.7	05.7	80 31.4	57.2	108 48.1	55.8
17	88 58.5	116 58.2	02.0	123 19.3	05.1	95 33.3	57.0	123 50.4	55.8
18	104 01.0	131 58.0	S11 01.3	138 19.9	S15 04.6	110 35.3	S 3 56.8	138 52.6	S14 55.7
19	119 03.4	146 57.8	11 00.5	153 20.5	04.0	125 37.2	56.6	153 54.9	55.6
20	134 05.9	161 57.7	10 59.8	168 21.1	03.4	140 39.1	56.3	168 57.1	55.6
21	149 08.4	176 57.5 . .	59.1	183 21.7 . .	02.8	155 41.1 . .	56.1	183 59.4 . .	55.5
22	164 10.8	191 57.3	58.3	198 22.3	02.2	170 43.0	55.9	199 01.6	55.4
23	179 13.3	206 57.2	57.6	213 22.9	01.6	185 44.9	55.7	214 03.9	55.4
6 00	194 15.8	221 57.0	S10 56.9	228 23.6	S15 01.0	200 46.9	S 3 55.4	229 06.1	S14 55.3
01	209 18.2	236 56.8	56.1	243 24.2	15 00.4	215 48.8	55.2	244 08.4	55.2
02	224 20.7	251 56.7	55.4	258 24.8	14 59.8	230 50.7	55.0	259 10.6	55.2
03	239 23.2	266 56.5 . .	54.6	273 25.4 . .	59.2	245 52.6 . .	54.8	274 12.9 . .	55.1
04	254 25.6	281 56.3	53.9	288 26.0	58.6	260 54.6	54.5	289 15.1	55.0
05	269 28.1	296 56.1	53.2	303 26.6	58.0	275 56.5	54.3	304 17.4	55.0
06	284 30.6	311 56.0	S10 52.4	318 27.2	S14 57.4	290 58.4	S 3 54.1	319 19.6	S14 54.9
07	299 33.0	326 55.8	51.7	333 27.8	56.8	306 00.4	53.9	334 21.9	54.8
M 08	314 35.5	341 55.6	50.9	348 28.4	56.2	321 02.3	53.6	349 24.1	54.8
I 09	329 37.9	356 55.5 . .	50.2	3 29.0 . .	55.6	336 04.2 . .	53.4	4 26.4 . .	54.7
É 10	344 40.4	11 55.3	49.4	18 29.7	55.0	351 06.2	53.2	19 28.6	54.6
R 11	359 42.9	26 55.1	48.7	33 30.3	54.4	6 08.1	53.0	34 30.9	54.6
C 12	14 45.3	41 54.9	S10 48.0	48 30.9	S14 53.8	21 10.0	S 3 52.7	49 33.1	S14 54.5
O 13	29 47.8	56 54.8	47.2	63 31.5	53.2	36 11.9	52.5	64 35.4	54.5
L 14	44 50.3	71 54.6	46.5	78 32.1	52.6	51 13.9	52.3	79 37.6	54.4
E 15	59 52.7	86 54.4 . .	45.7	93 32.7 . .	52.0	66 15.8 . .	52.1	94 39.9 . .	54.3
S 16	74 55.2	101 54.3	45.0	108 33.3	51.4	81 17.7	51.8	109 42.2	54.3
17	89 57.7	116 54.1	44.2	123 33.9	50.8	96 19.7	51.6	124 44.4	54.2
18	105 00.1	131 53.9	S10 43.5	138 34.5	S14 50.2	111 21.6	S 3 51.4	139 46.7	S14 54.1
19	120 02.6	146 53.8	42.7	153 35.2	49.6	126 23.5	51.2	154 48.9	54.1
20	135 05.1	161 53.6	42.0	168 35.8	49.0	141 25.5	50.9	169 51.2	54.0
21	150 07.5	176 53.4 . .	41.2	183 36.4 . .	48.4	156 27.4 . .	50.7	184 53.4 . .	53.9
22	165 10.0	191 53.2	40.5	198 37.0	47.8	171 29.3	50.5	199 55.7	53.9
23	180 12.4	206 53.1	39.7	213 37.6	47.2	186 31.3	50.3	214 57.9	53.8
	h m								
Paso Mer.	11 05.1	*v* −0.2	*d* 0.7	*v* 0.6	*d* 0.6	*v* 1.9	*d* 0.2	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 13.2
Achernar	335 22.5	S57 07.6
Acrux	173 01.9	S63 13.4
Adhara	255 07.7	S29 00.4
Aldebaran	290 42.4	N16 33.1
Alioth	166 14.5	N55 50.4
Alkaid	152 53.4	N49 12.1
Alnair	27 36.1	S46 51.2
Alnilam	275 40.2	S 1 11.4
Alphard	217 49.8	S 8 45.4
Alphecca	126 05.4	N26 38.2
Alpheratz	357 37.5	N29 12.6
Altair	62 02.2	N 8 55.4
Ankaa	353 09.8	S42 11.3
Antares	112 18.4	S26 28.8
Arcturus	145 49.7	N19 03.9
Atria	107 14.4	S69 03.8
Avior	234 15.4	S59 35.1
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.7	N 7 24.6
Canopus	263 53.5	S52 42.7
Capella	280 25.5	N46 01.3
Deneb	49 27.5	N45 21.2
Denebola	182 27.0	N14 26.9
Diphda	348 49.9	S17 52.1
Dubhe	193 43.3	N61 38.0
Elnath	278 04.9	N28 37.6
Eltanin	90 43.1	N51 28.8
Enif	33 41.2	N 9 58.4
Fomalhaut	15 17.4	S29 30.4
Gacrux	171 53.6	S57 14.3
Gienah	175 45.6	S17 40.0
Hadar	148 38.6	S60 28.7
Hamal	327 54.1	N23 33.9
Kaus Aust.	83 35.5	S34 22.4
Kochab	137 18.8	N74 03.7
Markab	13 32.5	N15 19.2
Menkar	314 08.8	N 4 10.4
Menkent	147 59.9	S36 28.7
Miaplacidus	221 38.2	S69 48.7
Mirfak	308 31.9	N49 56.4
Nunki	75 50.6	S26 16.1
Peacock	53 09.5	S56 39.7
Pollux	243 20.1	N27 58.4
Procyon	244 53.2	N 5 10.0
Rasalhague	96 00.6	N12 32.4
Regulus	207 36.7	N11 51.5
Rigel	281 06.2	S 8 10.7
Rigil Kent.	139 42.8	S60 55.5
Sabik	102 05.3	S15 45.2
Schedar	349 34.2	N56 39.4
Shaula	96 13.3	S37 07.1
Sirius	258 28.3	S16 45.0
Spica	158 24.4	S11 16.7
Suhail	222 47.8	S43 31.5
Vega	80 34.7	N38 47.9
Zuben'ubi	136 58.3	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	28 44.4	9 12
Marte	34 52.4	8 47
Júpiter	6 43.9	10 39
Saturno	34 55.5	8 46

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	′	°	′	′	′
4 00	179	13.0	N 5	36.1	148	20.4	13.5	N16	06.8	11.5	55.3
01	194	13.2		37.1	162	52.9	13.5	16	18.3	11.4	55.2
02	209	13.4		38.0	177	25.4	13.5	16	29.7	11.3	55.2
03	224	13.6		39.0	191	57.9	13.4	16	41.0	11.2	55.2
04	239	13.8		39.9	206	30.3	13.4	16	52.2	11.1	55.2
05	254	13.9		40.9	221	02.7	13.4	17	03.3	11.0	55.2
06	269	14.1	N 5	41.8	235	35.1	13.3	N17	14.3	11.0	55.1
07	284	14.3		42.8	250	07.4	13.3	17	25.3	10.9	55.1
08	299	14.5		43.7	264	39.7	13.2	17	36.2	10.8	55.1
09	314	14.7		44.7	279	11.9	13.2	17	47.0	10.7	55.1
10	329	14.8		45.6	293	44.1	13.2	17	57.7	10.6	55.1
11	344	15.0		46.6	308	16.3	13.1	18	08.3	10.5	55.1
12	359	15.2	N 5	47.5	322	48.4	13.1	N18	18.8	10.5	55.0
13	14	15.4		48.5	337	20.5	13.1	18	29.3	10.4	55.0
14	29	15.6		49.5	351	52.6	13.0	18	39.7	10.2	55.0
15	44	15.7		50.4	6	24.6	13.0	18	49.9	10.2	55.0
16	59	15.9		51.4	20	56.6	12.9	19	00.1	10.1	55.0
17	74	16.1		52.3	35	28.5	12.9	19	10.2	10.0	54.9
18	89	16.3	N 5	53.3	50	00.4	12.9	N19	20.2	9.9	54.9
19	104	16.5		54.2	64	32.3	12.8	19	30.1	9.8	54.9
20	119	16.6		55.2	79	04.1	12.8	19	39.9	9.7	54.9
21	134	16.8		56.1	93	35.9	12.7	19	49.6	9.7	54.9
22	149	17.0		57.1	108	07.6	12.7	19	59.3	9.5	54.9
23	164	17.2		58.0	122	39.3	12.7	20	08.8	9.4	54.8
5 00	179	17.4	N 5	59.0	137	11.0	12.6	N20	18.2	9.4	54.8
01	194	17.5	5	59.9	151	42.6	12.6	20	27.6	9.2	54.8
02	209	17.7	6	00.9	166	14.2	12.5	20	36.8	9.1	54.8
03	224	17.9		01.8	180	45.7	12.5	20	45.9	9.1	54.8
04	239	18.1		02.8	195	17.2	12.5	20	55.0	8.9	54.8
05	254	18.3		03.7	209	48.7	12.4	21	03.9	8.9	54.7
06	269	18.4	N 6	04.7	224	20.1	12.4	N21	12.8	8.7	54.7
07	284	18.6		05.6	238	51.5	12.3	21	21.5	8.7	54.7
08	299	18.8		06.6	253	22.8	12.3	21	30.2	8.5	54.7
09	314	19.0		07.5	267	54.1	12.2	21	38.7	8.5	54.7
10	329	19.1		08.5	282	25.3	12.3	21	47.2	8.3	54.7
11	344	19.3		09.4	296	56.6	12.1	21	55.5	8.2	54.6
12	359	19.5	N 6	10.4	311	27.7	12.2	N22	03.7	8.2	54.6
13	14	19.7		11.3	325	58.9	12.0	22	11.9	8.0	54.6
14	29	19.9		12.3	340	29.9	12.1	22	19.9	7.9	54.6
15	44	20.0		13.2	355	01.0	12.0	22	27.8	7.8	54.6
16	59	20.2		14.2	9	32.0	11.9	22	35.6	7.7	54.6
17	74	20.4		15.1	24	02.9	12.0	22	43.3	7.6	54.6
18	89	20.6	N 6	16.1	38	33.9	11.9	N22	50.9	7.5	54.6
19	104	20.8		17.0	53	04.8	11.8	22	58.4	7.4	54.5
20	119	20.9		17.9	67	35.6	11.8	23	05.8	7.3	54.5
21	134	21.1		18.9	82	06.4	11.8	23	13.1	7.2	54.5
22	149	21.3		19.8	96	37.2	11.7	23	20.3	7.0	54.5
23	164	21.5		20.8	111	07.9	11.7	23	27.3	7.0	54.5
6 00	179	21.6	N 6	21.7	125	38.6	11.6	N23	34.3	6.8	54.5
01	194	21.8		22.7	140	09.2	11.6	23	41.1	6.7	54.5
02	209	22.0		23.6	154	39.8	11.6	23	47.8	6.6	54.5
03	224	22.2		24.6	169	10.4	11.5	23	54.4	6.5	54.4
04	239	22.3		25.5	183	40.9	11.5	24	00.9	6.4	54.4
05	254	22.5		26.5	198	11.4	11.4	24	07.3	6.3	54.4
06	269	22.7	N 6	27.4	212	41.8	11.4	N24	13.6	6.2	54.4
07	284	22.9		28.4	227	12.2	11.4	24	19.8	6.0	54.4
08	299	23.1		29.3	241	42.6	11.3	24	25.8	5.9	54.4
09	314	23.2		30.2	256	12.9	11.4	24	31.7	5.8	54.4
10	329	23.4		31.2	270	43.3	11.2	24	37.5	5.7	54.4
11	344	23.6		32.1	285	13.5	11.2	24	43.2	5.6	54.4
12	359	23.8	N 6	33.1	299	43.7	11.2	N24	48.8	5.5	54.4
13	14	23.9		34.0	314	13.9	11.2	24	54.3	5.3	54.3
14	29	24.1		35.0	328	44.1	11.1	24	59.6	5.2	54.3
15	44	24.3		35.9	343	14.2	11.1	25	04.8	5.1	54.3
16	59	24.5		36.9	357	44.3	11.1	25	09.9	5.0	54.3
17	74	24.6		37.8	12	14.4	11.0	25	14.9	4.9	54.3
18	89	24.8	N 6	38.7	26	44.4	11.0	N25	19.8	4.7	54.3
19	104	25.0		39.7	41	14.4	11.0	25	24.5	4.7	54.3
20	119	25.2		40.6	55	44.4	10.9	25	29.2	4.5	54.3
21	134	25.3		41.6	70	14.3	10.9	25	33.7	4.4	54.3
22	149	25.5		42.5	84	44.2	10.9	25	38.1	4.2	54.3
23	164	25.7		43.4	99	14.1	10.8	N25	42.3	4.2	54.3
	S/D	16.0	d	0.9	S/D		15.0		14.9		14.8

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			4	5	6	7
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	00	12	03	16	04 35	03 43	▭	▭	▭
N 70	01	46	03	36	04 45	04 29	▭	▭	▭
68	02	23	03	51	04 53	05 00	04 17	▭	▭
66	02	48	04	04	04 59	05 23	05 03	04 04	▭
64	03	07	04	14	05 05	05 41	05 33	05 23	04 44
62	03	22	04	23	05 09	05 56	05 56	06 00	06 10
60	03	35	04	30	05 14	06 09	06 15	06 26	06 47
N 58	03	45	04	36	05 17	06 20	06 30	06 47	07 13
56	03	55	04	42	05 20	06 29	06 44	07 04	07 34
54	04	02	04	47	05 23	06 38	06 55	07 18	07 51
52	04	09	04	51	05 26	06 45	07 05	07 31	08 06
50	04	15	04	55	05 28	06 52	07 14	07 42	08 19
45	04	28	05	04	05 34	07 07	07 34	08 06	08 45
N 40	04	38	05	10	05 38	07 19	07 50	08 25	09 06
35	04	46	05	16	05 42	07 30	08 03	08 41	09 24
30	04	52	05	21	05 45	07 39	08 15	08 54	09 39
20	05	02	05	28	05 50	07 55	08 35	09 18	10 04
N 10	05	09	05	34	05 55	08 09	08 53	09 38	10 27
0	05	15	05	39	05 59	08 22	09 09	09 57	10 47
S 10	05	18	05	43	06 04	08 36	09 26	10 17	11 08
20	05	20	05	46	06 08	08 50	09 44	10 37	11 30
30	05	21	05	49	06 13	09 07	10 04	11 01	11 56
35	05	21	05	50	06 16	09 16	10 17	11 15	12 12
40	05	20	05	52	06 19	09 27	10 31	11 32	12 30
45	05	19	05	53	06 22	09 40	10 47	11 52	12 51
S 50	05	17	05	54	06 27	09 57	11 08	12 16	13 19
52	05	16	05	55	06 29	10 04	11 18	12 28	13 32
54	05	14	05	55	06 31	10 13	11 29	12 42	13 47
56	05	13	05	56	06 33	10 22	11 42	12 58	14 06
58	05	11	05	56	06 36	10 33	11 57	13 17	14 28
S 60	05	09	05	57	06 39	10 45	12 15	13 41	14 57

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 4	5	6	7
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	19	34	20	54	////	00 17	▭	▭	▭
N 70	19	23	20	33	22 28	▭	▭	▭	▭
68	19	15	20	17	21 48	25 22	01 22	▭	▭
66	19	08	20	04	21 22	24 37	00 37	03 16	▭
64	19	03	19	54	21 02	24 08	00 08	01 58	04 20
62	18	58	19	45	20 46	23 46	25 22	01 22	02 54
60	18	53	19	37	20 33	23 28	24 56	00 56	02 18
N 58	18	50	19	31	20 22	23 13	24 35	00 35	01 52
56	18	46	19	25	20 13	23 00	24 19	00 19	01 31
54	18	43	19	20	20 05	22 49	24 04	00 04	01 14
52	18	41	19	15	19 58	22 40	23 52	24 59	00 59
50	18	38	19	11	19 51	22 31	23 41	24 47	00 47
45	18	33	19	03	19 38	22 13	23 18	24 21	00 21
N 40	18	28	18	56	19 28	21 58	23 00	24 00	00 00
35	18	24	18	50	19 20	21 45	22 45	23 43	24 37
30	18	21	18	45	19 14	21 35	22 32	23 28	24 22
20	18	15	18	38	19 04	21 16	22 10	23 03	23 56
N 10	18	10	18	32	18 56	21 00	21 50	22 41	23 33
0	18	06	18	27	18 51	20 45	21 32	22 21	23 12
S 10	18	02	18	23	18 47	20 30	21 14	22 01	22 51
20	17	57	18	19	18 45	20 14	20 55	21 40	22 28
30	17	52	18	16	18 44	19 55	20 33	21 15	22 02
35	17	49	18	14	18 44	19 45	20 20	21 00	21 46
40	17	46	18	13	18 44	19 33	20 05	20 43	21 28
45	17	42	18	12	18 45	19 19	19 48	20 23	21 06
S 50	17	38	18	10	18 47	19 01	19 26	19 58	20 39
52	17	36	18	10	18 49	18 53	19 16	19 45	20 25
54	17	34	18	09	18 50	18 44	19 04	19 31	20 10
56	17	31	18	08	18 51	18 34	18 51	19 15	19 51
58	17	29	18	08	18 53	18 23	18 35	18 56	19 29
S 60	17	26	18	07	18 55	18 09	18 17	18 32	19 00

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		SOL Paso Mer.	LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		LUNA Edad	LUNA Fase
d	m	s	m	s	h m	h	m	h	m	d	%
4	03	08	03	00	12 03	14	34	02	11	03	10
5	02	51	02	42	12 03	15	21	02	57	04	17
6	02	34	02	25	12 02	16	09	03	45	05	25

UT (HmGr)	ARIES	VENUS −4·3		MARTE +1·0		JÚPITER −2·1		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
7 00	195 14.9	221 52.9	S10 38.9	228 38.2	S14 46.6	201 33.2	S 3 50.1	230 00.2	S14 53.7
01	210 17.4	236 52.7	38.2	243 38.8	46.0	216 35.1	49.8	245 02.4	53.7
02	225 19.8	251 52.6	37.4	258 39.4	45.4	231 37.0	49.6	260 04.7	53.6
03	240 22.3	266 52.4	. . 36.7	273 40.1	. . 44.8	246 39.0	. . 49.4	275 06.9	. . 53.6
04	255 24.8	281 52.2	35.9	288 40.7	44.2	261 40.9	49.2	290 09.2	53.5
05	270 27.2	296 52.0	35.2	303 41.3	43.6	276 42.8	48.9	305 11.4	53.4
06	285 29.7	311 51.9	S10 34.4	318 41.9	S14 43.0	291 44.8	S 3 48.7	320 13.7	S14 53.4
07	300 32.2	326 51.7	33.7	333 42.5	42.4	306 46.7	48.5	335 16.0	53.3
08	315 34.6	341 51.5	32.9	348 43.1	41.8	321 48.6	48.3	350 18.2	53.2
J 09	330 37.1	356 51.3	. . 32.1	3 43.7	. . 41.2	336 50.6	. . 48.0	5 20.5	. . 53.2
U 10	345 39.6	11 51.2	31.4	18 44.3	40.6	351 52.5	47.8	20 22.7	53.1
E 11	0 42.0	26 51.0	30.6	33 45.0	40.0	6 54.4	47.6	35 25.0	53.0
V 12	15 44.5	41 50.8	S10 29.8	48 45.6	S14 39.4	21 56.4	S 3 47.4	50 27.2	S14 53.0
E 13	30 46.9	56 50.7	29.1	63 46.2	38.8	36 58.3	47.1	65 29.5	52.9
S 14	45 49.4	71 50.5	28.3	78 46.8	38.2	52 00.2	46.9	80 31.7	52.9
15	60 51.9	86 50.3	. . 27.6	93 47.4	. . 37.6	67 02.2	. . 46.7	95 34.0	. . 52.8
16	75 54.3	101 50.1	26.8	108 48.0	37.0	82 04.1	46.5	110 36.2	52.7
17	90 56.8	116 50.0	26.0	123 48.6	36.4	97 06.0	46.2	125 38.5	52.7
18	105 59.3	131 49.8	S10 25.3	138 49.3	S14 35.8	112 08.0	S 3 46.0	140 40.8	S14 52.6
19	121 01.7	146 49.6	24.5	153 49.9	35.2	127 09.9	45.8	155 43.0	52.5
20	136 04.2	161 49.4	23.7	168 50.5	34.6	142 11.8	45.6	170 45.3	52.5
21	151 06.7	176 49.3	. . 23.0	183 51.1	. . 34.0	157 13.8	. . 45.4	185 47.5	. . 52.4
22	166 09.1	191 49.1	22.2	198 51.7	33.4	172 15.7	45.1	200 49.8	52.3
23	181 11.6	206 48.9	21.4	213 52.3	32.8	187 17.6	44.9	215 52.0	52.3
8 00	196 14.0	221 48.8	S10 20.7	228 53.0	S14 32.2	202 19.6	S 3 44.7	230 54.3	S14 52.2
01	211 16.5	236 48.6	19.9	243 53.6	31.6	217 21.5	44.5	245 56.5	52.2
02	226 19.0	251 48.4	19.1	258 54.2	30.9	232 23.4	44.2	260 58.8	52.1
03	241 21.4	266 48.2	. . 18.3	273 54.8	. . 30.3	247 25.4	. . 44.0	276 01.1	. . 52.0
04	256 23.9	281 48.1	17.6	288 55.4	29.7	262 27.3	43.8	291 03.3	52.0
05	271 26.4	296 47.9	16.8	303 56.0	29.1	277 29.2	43.6	306 05.6	51.9
06	286 28.8	311 47.7	S10 16.0	318 56.7	S14 28.5	292 31.2	S 3 43.3	321 07.8	S14 51.8
07	301 31.3	326 47.5	15.3	333 57.3	27.9	307 33.1	43.1	336 10.1	51.8
V 08	316 33.8	341 47.4	14.5	348 57.9	27.3	322 35.0	42.9	351 12.3	51.7
I 09	331 36.2	356 47.2	. . 13.7	3 58.5	. . 26.7	337 37.0	. . 42.7	6 14.6	. . 51.6
E 10	346 38.7	11 47.0	12.9	18 59.1	26.1	352 38.9	42.4	21 16.9	51.6
R 11	1 41.2	26 46.8	12.2	33 59.7	25.5	7 40.8	42.2	36 19.1	51.5
N 12	16 43.6	41 46.7	S10 11.4	49 00.4	S14 24.9	22 42.8	S 3 42.0	51 21.4	S14 51.5
E 13	31 46.1	56 46.5	10.6	64 01.0	24.3	37 44.7	41.8	66 23.6	51.4
S 14	46 48.5	71 46.3	09.8	79 01.6	23.7	52 46.6	41.6	81 25.9	51.3
15	61 51.0	86 46.2	. . 09.0	94 02.2	. . 23.0	67 48.6	. . 41.3	96 28.1	. . 51.3
16	76 53.5	101 46.0	08.3	109 02.8	22.4	82 50.5	41.1	111 30.4	51.2
17	91 55.9	116 45.8	07.5	124 03.5	21.8	97 52.4	40.9	126 32.7	51.1
18	106 58.4	131 45.6	S10 06.7	139 04.1	S14 21.2	112 54.4	S 3 40.7	141 34.9	S14 51.1
19	122 00.9	146 45.5	05.9	154 04.7	20.6	127 56.3	40.4	156 37.2	51.0
20	137 03.3	161 45.3	05.1	169 05.3	20.0	142 58.2	40.2	171 39.4	51.0
21	152 05.8	176 45.1	. . 04.4	184 05.9	. . 19.4	158 00.2	. . 40.0	186 41.7	. . 50.9
22	167 08.3	191 44.9	03.6	199 06.6	18.8	173 02.1	39.8	201 43.9	50.8
23	182 10.7	206 44.8	02.8	214 07.2	18.2	188 04.0	39.5	216 46.2	50.8
9 00	197 13.2	221 44.6	S10 02.0	229 07.8	S14 17.5	203 06.0	S 3 39.3	231 48.5	S14 50.7
01	212 15.7	236 44.4	01.2	244 08.4	16.9	218 07.9	39.1	246 50.7	50.6
02	227 18.1	251 44.2	10 00.4	259 09.0	16.3	233 09.8	38.9	261 53.0	50.6
03	242 20.6	266 44.1	9 59.7	274 09.7	. . 15.7	248 11.8	. . 38.7	276 55.2	. . 50.5
04	257 23.0	281 43.9	58.9	289 10.3	15.1	263 13.7	38.4	291 57.5	50.5
05	272 25.5	296 43.7	58.1	304 10.9	14.5	278 15.6	38.2	306 59.8	50.4
06	287 28.0	311 43.5	S 9 57.3	319 11.5	S14 13.9	293 17.6	S 3 38.0	322 02.0	S14 50.3
07	302 30.4	326 43.4	56.5	334 12.1	13.3	308 19.5	37.8	337 04.3	50.3
S 08	317 32.9	341 43.2	55.7	349 12.8	12.6	323 21.4	37.5	352 06.5	50.2
Á 09	332 35.4	356 43.0	. . 54.9	4 13.4	. . 12.0	338 23.4	. . 37.3	7 08.8	. . 50.1
B 10	347 37.8	11 42.8	54.1	19 14.0	11.4	353 25.3	37.1	22 11.1	50.1
A 11	2 40.3	26 42.7	53.3	34 14.6	10.8	8 27.3	36.9	37 13.3	50.0
D 12	17 42.8	41 42.5	S 9 52.6	49 15.2	S14 10.2	23 29.2	S 3 36.7	52 15.6	S14 50.0
O 13	32 45.2	56 42.3	51.8	64 15.9	09.6	38 31.1	36.4	67 17.8	49.9
14	47 47.7	71 42.1	51.0	79 16.5	09.0	53 33.1	36.2	82 20.1	49.8
15	62 50.2	86 42.0	. . 50.2	94 17.1	. . 08.4	68 35.0	. . 36.0	97 22.4	. . 49.8
16	77 52.6	101 41.8	49.4	109 17.7	07.7	83 36.9	35.8	112 24.6	49.7
17	92 55.1	116 41.6	48.6	124 18.4	07.1	98 38.9	35.5	127 26.9	49.7
18	107 57.5	131 41.4	S 9 47.8	139 19.0	S14 06.5	113 40.8	S 3 35.3	142 29.1	S14 49.6
19	123 00.0	146 41.3	47.0	154 19.6	05.9	128 42.7	35.1	157 31.4	49.5
20	138 02.5	161 41.1	46.2	169 20.2	05.3	143 44.7	34.9	172 33.7	49.5
21	153 04.9	176 40.9	. . 45.4	184 20.9	. . 04.7	158 46.6	. . 34.7	187 35.9	. . 49.4
22	168 07.4	191 40.7	44.6	199 21.5	04.0	173 48.5	34.4	202 38.2	49.3
23	183 09.9	206 40.6	43.8	214 22.1	03.4	188 50.5	34.2	217 40.4	49.3
	h m								
Paso Mer.	10 53.3	*v* −0.2	*d* 0.8	*v* 0.6	*d* 0.6	*v* 1.9	*d* 0.2	*v* 2.3	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 13.2
Achernar	335 22.5	S57 07.6
Acrux	173 01.9	S63 13.4
Adhara	255 07.7	S29 00.4
Aldebaran	290 42.5	N16 33.1
Alioth	166 14.4	N55 50.4
Alkaid	152 53.4	N49 12.1
Alnair	27 36.1	S46 51.2
Alnilam	275 40.2	S 1 11.4
Alphard	217 49.8	S 8 45.4
Alphecca	126 05.4	N26 38.2
Alpheratz	357 37.5	N29 12.5
Altair	62 02.2	N 8 55.4
Ankaa	353 09.8	S42 11.2
Antares	112 18.4	S26 28.8
Arcturus	145 49.7	N19 03.9
Atria	107 14.4	S69 03.8
Avior	234 15.5	S59 35.1
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.7	N 7 24.6
Canopus	263 53.5	S52 42.7
Capella	280 25.5	N46 01.3
Deneb	49 27.5	N45 21.2
Denebola	182 27.0	N14 26.9
Diphda	348 49.9	S17 52.1
Dubhe	193 43.3	N61 38.0
Elnath	278 04.9	N28 37.6
Eltanin	90 43.1	N51 28.8
Enif	33 41.2	N 9 58.4
Fomalhaut	15 17.3	S29 30.4
Gacrux	171 53.6	S57 14.3
Gienah	175 45.6	S17 40.0
Hadar	148 38.6	S60 28.7
Hamal	327 54.1	N23 33.9
Kaus Aust.	83 35.5	S34 22.4
Kochab	137 18.7	N74 03.7
Markab	13 32.4	N15 19.2
Menkar	314 08.8	N 4 10.4
Menkent	147 59.9	S36 28.7
Miaplacidus	221 38.3	S69 48.7
Mirfak	308 31.9	N49 56.4
Nunki	75 50.6	S26 16.1
Peacock	53 09.5	S56 39.7
Pollux	243 20.1	N27 58.4
Procyon	244 53.2	N 5 10.0
Rasalhague	96 00.5	N12 32.5
Regulus	207 36.7	N11 51.5
Rigel	281 06.2	S 8 10.7
Rigil Kent.	139 42.8	S60 55.5
Sabik	102 05.2	S15 45.2
Schedar	349 34.2	N56 39.4
Shaula	96 13.3	S37 07.1
Sirius	258 28.3	S16 45.0
Spica	158 24.4	S11 16.7
Suhail	222 47.8	S43 31.5
Vega	80 34.7	N38 47.9
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	25 34.7	9 13
Marte	32 38.9	8 44
Júpiter	6 05.5	10 29
Saturno	34 40.2	8 35

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph	
d h	°	′	°	′	°	′	°	′	′	
7 00	179	25.9	N 6	44.4	113	43.9	10.8	N25	46.5	4.0	54.3
01	194	26.0		45.3	128	13.7	10.8	25	50.5	3.9	54.3
02	209	26.2		46.3	142	43.5	10.8	25	54.4	3.8	54.3
03	224	26.4	. .	47.2	157	13.3	10.7	25	58.2	3.6	54.3
04	239	26.6		48.2	171	43.0	10.7	26	01.8	3.5	54.3
05	254	26.7		49.1	186	12.7	10.7	26	05.3	3.4	54.2
06	269	26.9	N 6	50.0	200	42.4	10.6	N26	08.7	3.3	54.2
07	284	27.1		51.0	215	12.0	10.7	26	12.0	3.2	54.2
08	299	27.3		51.9	229	41.7	10.6	26	15.2	3.0	54.2
09	314	27.4	. .	52.9	244	11.3	10.6	26	18.2	2.9	54.2
10	329	27.6		53.8	258	40.9	10.5	26	21.1	2.8	54.2
11	344	27.8		54.7	273	10.4	10.6	26	23.9	2.6	54.2
12	359	28.0	N 6	55.7	287	40.0	10.5	N26	26.5	2.6	54.2
13	14	28.1		56.6	302	09.5	10.5	26	29.1	2.4	54.2
14	29	28.3		57.6	316	39.0	10.5	26	31.5	2.2	54.2
15	44	28.5	. .	58.5	331	08.5	10.5	26	33.7	2.2	54.2
16	59	28.7	6	59.4	345	38.0	10.4	26	35.9	2.0	54.2
17	74	28.8	7	00.4	0	07.4	10.4	26	37.9	1.9	54.2
18	89	29.0	N 7	01.3	14	36.8	10.5	N26	39.8	1.7	54.2
19	104	29.2		02.2	29	06.3	10.4	26	41.5	1.7	54.2
20	119	29.4		03.2	43	35.7	10.3	26	43.2	1.5	54.2
21	134	29.5	. .	04.1	58	05.0	10.4	26	44.7	1.4	54.2
22	149	29.7		05.1	72	34.4	10.4	26	46.1	1.2	54.2
23	164	29.9		06.0	87	03.8	10.3	26	47.3	1.2	54.2
8 00	179	30.1	N 7	06.9	101	33.1	10.4	N26	48.5	1.0	54.2
01	194	30.2		07.9	116	02.5	10.3	26	49.5	0.8	54.2
02	209	30.4		08.8	130	31.8	10.3	26	50.3	0.8	54.2
03	224	30.6	. .	09.7	145	01.1	10.3	26	51.1	0.6	54.2
04	239	30.7		10.7	159	30.4	10.3	26	51.7	0.5	54.2
05	254	30.9		11.6	173	59.7	10.3	26	52.2	0.3	54.2
06	269	31.1	N 7	12.5	188	29.0	10.3	N26	52.5	0.2	54.2
07	284	31.3		13.5	202	58.3	10.3	26	52.7	0.1	54.2
08	299	31.4		14.4	217	27.6	10.3	26	52.8	0.0	54.2
09	314	31.6	. .	15.3	231	56.9	10.3	26	52.8	0.2	54.2
10	329	31.8		16.3	246	26.2	10.3	26	52.6	0.3	54.2
11	344	32.0		17.2	260	55.5	10.3	26	52.3	0.4	54.3
12	359	32.1	N 7	18.2	275	24.8	10.2	N26	51.9	0.5	54.3
13	14	32.3		19.1	289	54.0	10.3	26	51.4	0.7	54.3
14	29	32.5		20.0	304	23.3	10.3	26	50.7	0.8	54.3
15	44	32.6	. .	21.0	318	52.6	10.3	26	49.9	1.0	54.3
16	59	32.8		21.9	333	21.9	10.3	26	48.9	1.0	54.3
17	74	33.0		22.8	347	51.2	10.3	26	47.9	1.2	54.3
18	89	33.2	N 7	23.8	2	20.5	10.2	N26	46.7	1.3	54.3
19	104	33.3		24.7	16	49.7	10.3	26	45.4	1.5	54.3
20	119	33.5		25.6	31	19.0	10.3	26	43.9	1.6	54.3
21	134	33.7	. .	26.5	45	48.3	10.4	26	42.3	1.7	54.3
22	149	33.8		27.5	60	17.7	10.3	26	40.6	1.8	54.3
23	164	34.0		28.4	74	47.0	10.3	26	38.8	2.0	54.3
9 00	179	34.2	N 7	29.3	89	16.3	10.3	N26	36.8	2.1	54.3
01	194	34.4		30.3	103	45.6	10.4	26	34.7	2.2	54.3
02	209	34.5		31.2	118	15.0	10.3	26	32.5	2.4	54.4
03	224	34.7	. .	32.1	132	44.3	10.4	26	30.1	2.5	54.4
04	239	34.9		33.1	147	13.7	10.4	26	27.6	2.6	54.4
05	254	35.0		34.0	161	43.1	10.4	26	25.0	2.7	54.4
06	269	35.2	N 7	34.9	176	12.5	10.4	N26	22.3	2.9	54.4
07	284	35.4		35.9	190	41.9	10.4	26	19.4	3.0	54.4
08	299	35.5		36.8	205	11.3	10.5	26	16.4	3.1	54.4
09	314	35.7	. .	37.7	219	40.8	10.4	26	13.3	3.2	54.4
10	329	35.9		38.6	234	10.2	10.5	26	10.1	3.4	54.4
11	344	36.1		39.6	248	39.7	10.5	26	06.7	3.5	54.5
12	359	36.2	N 7	40.5	263	09.2	10.5	N26	03.2	3.6	54.5
13	14	36.4		41.4	277	38.7	10.5	25	59.6	3.8	54.5
14	29	36.6		42.4	292	08.2	10.6	25	55.8	3.9	54.5
15	44	36.7	. .	43.3	306	37.8	10.6	25	51.9	4.0	54.5
16	59	36.9		44.2	321	07.4	10.5	25	47.9	4.1	54.5
17	74	37.1		45.1	335	36.9	10.7	25	43.8	4.3	54.5
18	89	37.2	N 7	46.1	350	06.6	10.6	N25	39.5	4.3	54.5
19	104	37.4		47.0	4	36.2	10.6	25	35.2	4.5	54.6
20	119	37.6		47.9	19	05.8	10.7	25	30.7	4.7	54.6
21	134	37.7	. .	48.9	33	35.5	10.7	25	26.0	4.7	54.6
22	149	37.9		49.8	48	05.2	10.8	25	21.3	4.9	54.6
23	164	38.1		50.7	62	35.0	10.7	N25	16.4	5.0	54.6
	S/D	16.0	*d*	0.9	S/D		14.8		14.8		14.8

JUEVES — VIERNES — SÁBADO

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		7	8	9	10
°	h m	h m	h m	h m	h m	h m	h m
N 72	////	02 55	04 19	▭	▭	▭	▭
N 70	01 10	03 19	04 30	▭	▭	▭	▭
68	02 00	03 37	04 40	▭	▭	▭	▭
66	02 31	03 51	04 47	▭	▭	▭	▭
64	02 53	04 02	04 54	04 44	▭	▭	08 38
62	03 10	04 12	05 00	06 10	06 41	07 48	09 19
60	03 24	04 20	05 05	06 47	07 25	08 27	09 47
N 58	03 35	04 27	05 09	07 13	07 54	08 54	10 09
56	03 45	04 34	05 13	07 34	08 17	09 15	10 27
54	03 54	04 39	05 16	07 51	08 35	09 33	10 41
52	04 02	04 44	05 19	08 06	08 51	09 48	10 54
50	04 08	04 49	05 22	08 19	09 05	10 01	11 06
45	04 22	04 58	05 28	08 45	09 32	10 27	11 29
N 40	04 33	05 06	05 33	09 06	09 54	10 48	11 48
35	04 41	05 12	05 38	09 24	10 12	11 06	12 04
30	04 49	05 17	05 41	09 39	10 28	11 21	12 17
20	05 00	05 26	05 48	10 04	10 54	11 46	12 40
N 10	05 08	05 32	05 53	10 27	11 17	12 08	13 00
0	05 14	05 38	05 59	10 47	11 38	12 29	13 19
S 10	05 18	05 43	06 04	11 08	11 59	12 49	13 37
20	05 21	05 47	06 09	11 30	12 22	13 11	13 57
30	05 23	05 51	06 15	11 56	12 49	13 36	14 20
35	05 23	05 53	06 18	12 12	13 04	13 51	14 33
40	05 23	05 55	06 22	12 30	13 22	14 09	14 48
45	05 23	05 57	06 26	12 51	13 44	14 29	15 07
S 50	05 22	05 59	06 31	13 19	14 12	14 55	15 29
52	05 21	06 00	06 34	13 32	14 26	15 08	15 40
54	05 20	06 01	06 36	13 47	14 41	15 22	15 52
56	05 19	06 02	06 39	14 06	15 00	15 39	16 06
58	05 17	06 03	06 42	14 28	15 23	15 59	16 22
S 60	05 16	06 04	06 46	14 57	15 52	16 25	16 42

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	7	8	9	10
°	h m	h m	h m	h m	h m	h m	h m
N 72	19 48	21 14	////	▭	▭	▭	▭
N 70	19 36	20 49	23 09	▭	▭	▭	▭
68	19 27	20 31	22 10	▭	▭	▭	▭
66	19 18	20 16	21 38	▭	▭	▭	▭
64	19 12	20 04	21 15	04 20	▭	▭	05 42
62	19 06	19 54	20 57	02 54	04 09	04 47	05 00
60	19 01	19 45	20 43	02 18	03 24	04 08	04 32
N 58	18 56	19 38	20 31	01 52	02 55	03 41	04 10
56	18 52	19 32	20 20	01 31	02 32	03 19	03 52
54	18 49	19 26	20 11	01 14	02 14	03 01	03 37
52	18 46	19 21	20 04	00 59	01 58	02 46	03 23
50	18 43	19 16	19 57	00 47	01 45	02 33	03 12
45	18 36	19 07	19 43	00 21	01 17	02 06	02 48
N 40	18 31	18 59	19 32	00 00	00 56	01 45	02 28
35	18 27	18 53	19 23	24 37	00 37	01 27	02 12
30	18 23	18 47	19 16	24 22	00 22	01 12	01 58
20	18 16	18 38	19 05	23 56	24 46	00 46	01 34
N 10	18 10	18 32	18 56	23 33	24 24	00 24	01 13
0	18 05	18 26	18 50	23 12	24 03	00 03	00 53
S 10	18 00	18 21	18 46	22 51	23 42	24 33	00 33
20	17 55	18 17	18 42	22 28	23 19	24 12	00 12
30	17 49	18 13	18 40	22 02	22 53	23 48	24 45
35	17 45	18 10	18 40	21 46	22 37	23 33	24 32
40	17 41	18 08	18 40	21 28	22 19	23 16	24 18
45	17 37	18 06	18 40	21 06	21 57	22 56	24 00
S 50	17 32	18 04	18 41	20 39	21 30	22 31	23 39
52	17 29	18 03	18 42	20 25	21 16	22 18	23 28
54	17 26	18 02	18 43	20 10	21 01	22 04	23 17
56	17 24	18 01	18 44	19 51	20 42	21 47	23 03
58	17 20	18 00	18 45	19 29	20 19	21 28	22 47
S 60	17 17	17 59	18 47	19 00	19 50	21 02	22 28

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
7	02 17	02 08	12 02	16 59	04 34	06	34
8	02 00	01 52	12 02	17 50	05 25	07	43
9	01 44	01 35	12 02	18 41	06 16	08	52

UT (HmGr)	ARIES	VENUS −4·3		MARTE +1·0		JÚPITER −2·1		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
10 00	198 12.3	221 40.4	S 9 43.0	229 22.7	S14 02.8	203 52.4	S 3 34.0	232 42.7	S14 49.2
01	213 14.8	236 40.2	42.2	244 23.3	02.2	218 54.4	33.8	247 45.0	49.2
02	228 17.3	251 40.0	41.4	259 24.0	01.6	233 56.3	33.5	262 47.2	49.1
03	243 19.7	266 39.8	40.6	274 24.6	01.0	248 58.2	33.3	277 49.5	49.0
04	258 22.2	281 39.7	39.8	289 25.2	14 00.3	264 00.2	33.1	292 51.8	49.0
05	273 24.6	296 39.5	39.0	304 25.8	13 59.7	279 02.1	32.9	307 54.0	48.9
06	288 27.1	311 39.3	S 9 38.2	319 26.5	S13 59.1	294 04.0	S 3 32.7	322 56.3	S14 48.9
07	303 29.6	326 39.1	37.4	334 27.1	58.5	309 06.0	32.4	337 58.5	48.8
08	318 32.0	341 39.0	36.6	349 27.7	57.9	324 07.9	32.2	353 00.8	48.7
D 09	333 34.5	356 38.8	35.8	4 28.3	57.2	339 09.9	32.0	8 03.1	48.7
O 10	348 37.0	11 38.6	35.0	19 29.0	56.6	354 11.8	31.8	23 05.3	48.6
M 11	3 39.4	26 38.4	34.2	34 29.6	56.0	9 13.7	31.5	38 07.6	48.5
I 12	18 41.9	41 38.3	S 9 33.4	49 30.2	S13 55.4	24 15.7	S 3 31.3	53 09.9	S14 48.5
N 13	33 44.4	56 38.1	32.6	64 30.8	54.8	39 17.6	31.1	68 12.1	48.4
G 14	48 46.8	71 37.9	31.8	79 31.5	54.2	54 19.5	30.9	83 14.4	48.4
O 15	63 49.3	86 37.7	30.9	94 32.1	53.5	69 21.5	30.7	98 16.6	48.3
16	78 51.8	101 37.6	30.1	109 32.7	52.9	84 23.4	30.4	113 18.9	48.2
17	93 54.2	116 37.4	29.3	124 33.3	52.3	99 25.4	30.2	128 21.2	48.2
18	108 56.7	131 37.2	S 9 28.5	139 34.0	S13 51.7	114 27.3	S 3 30.0	143 23.4	S14 48.1
19	123 59.1	146 37.0	27.7	154 34.6	51.1	129 29.2	29.8	158 25.7	48.1
20	139 01.6	161 36.8	26.9	169 35.2	50.4	144 31.2	29.6	173 28.0	48.0
21	154 04.1	176 36.7	26.1	184 35.9	49.8	159 33.1	29.3	188 30.2	47.9
22	169 06.5	191 36.5	25.3	199 36.5	49.2	174 35.0	29.1	203 32.5	47.9
23	184 09.0	206 36.3	24.5	214 37.1	48.6	189 37.0	28.9	218 34.8	47.8
11 00	199 11.5	221 36.1	S 9 23.7	229 37.7	S13 47.9	204 38.9	S 3 28.7	233 37.0	S14 47.8
01	214 13.9	236 36.0	22.8	244 38.4	47.3	219 40.9	28.4	248 39.3	47.7
02	229 16.4	251 35.8	22.0	259 39.0	46.7	234 42.8	28.2	263 41.5	47.6
03	244 18.9	266 35.6	21.2	274 39.6	46.1	249 44.7	28.0	278 43.8	47.6
04	259 21.3	281 35.4	20.4	289 40.2	45.5	264 46.7	27.8	293 46.1	47.5
05	274 23.8	296 35.3	19.6	304 40.9	44.8	279 48.6	27.6	308 48.3	47.5
06	289 26.3	311 35.1	S 9 18.8	319 41.5	S13 44.2	294 50.5	S 3 27.3	323 50.6	S14 47.4
07	304 28.7	326 34.9	17.9	334 42.1	43.6	309 52.5	27.1	338 52.9	47.3
L 08	319 31.2	341 34.7	17.1	349 42.8	43.0	324 54.4	26.9	353 55.1	47.3
U 09	334 33.6	356 34.5	16.3	4 43.4	42.3	339 56.4	26.7	8 57.4	47.2
N 10	349 36.1	11 34.4	15.5	19 44.0	41.7	354 58.3	26.5	23 59.7	47.2
E 11	4 38.6	26 34.2	14.7	34 44.6	41.1	10 00.2	26.2	39 01.9	47.1
S 12	19 41.0	41 34.0	S 9 13.8	49 45.3	S13 40.5	25 02.2	S 3 26.0	54 04.2	S14 47.0
13	34 43.5	56 33.8	13.0	64 45.9	39.8	40 04.1	25.8	69 06.5	47.0
14	49 46.0	71 33.7	12.2	79 46.5	39.2	55 06.1	25.6	84 08.7	46.9
15	64 48.4	86 33.5	11.4	94 47.2	38.6	70 08.0	25.4	99 11.0	46.9
16	79 50.9	101 33.3	10.6	109 47.8	38.0	85 09.9	25.1	114 13.3	46.8
17	94 53.4	116 33.1	09.7	124 48.4	37.3	100 11.9	24.9	129 15.5	46.7
18	109 55.8	131 32.9	S 9 08.9	139 49.1	S13 36.7	115 13.8	S 3 24.7	144 17.8	S14 46.7
19	124 58.3	146 32.8	08.1	154 49.7	36.1	130 15.8	24.5	159 20.1	46.6
20	140 00.7	161 32.6	07.3	169 50.3	35.5	145 17.7	24.3	174 22.3	46.6
21	155 03.2	176 32.4	06.4	184 50.9	34.8	160 19.6	24.0	189 24.6	46.5
22	170 05.7	191 32.2	05.6	199 51.6	34.2	175 21.6	23.8	204 26.9	46.4
23	185 08.1	206 32.1	04.8	214 52.2	33.6	190 23.5	23.6	219 29.1	46.4
12 00	200 10.6	221 31.9	S 9 04.0	229 52.8	S13 33.0	205 25.5	S 3 23.4	234 31.4	S14 46.3
01	215 13.1	236 31.7	03.1	244 53.5	32.3	220 27.4	23.1	249 33.7	46.3
02	230 15.5	251 31.5	02.3	259 54.1	31.7	235 29.3	22.9	264 35.9	46.2
03	245 18.0	266 31.3	01.5	274 54.7	31.1	250 31.3	22.7	279 38.2	46.1
04	260 20.5	281 31.2	9 00.6	289 55.4	30.4	265 33.2	22.5	294 40.5	46.1
05	275 22.9	296 31.0	8 59.8	304 56.0	29.8	280 35.2	22.3	309 42.7	46.0
06	290 25.4	311 30.8	S 8 59.0	319 56.6	S13 29.2	295 37.1	S 3 22.0	324 45.0	S14 46.0
07	305 27.9	326 30.6	58.2	334 57.3	28.6	310 39.0	21.8	339 47.3	45.9
M 08	320 30.3	341 30.5	57.3	349 57.9	27.9	325 41.0	21.6	354 49.5	45.8
A 09	335 32.8	356 30.3	56.5	4 58.5	27.3	340 42.9	21.4	9 51.8	45.8
R 10	350 35.2	11 30.1	55.7	19 59.2	26.7	355 44.9	21.2	24 54.1	45.7
T 11	5 37.7	26 29.9	54.8	34 59.8	26.0	10 46.8	20.9	39 56.3	45.7
E 12	20 40.2	41 29.7	S 8 54.0	50 00.4	S13 25.4	25 48.7	S 3 20.7	54 58.6	S14 45.6
S 13	35 42.6	56 29.6	53.2	65 01.1	24.8	40 50.7	20.5	70 00.9	45.5
14	50 45.1	71 29.4	52.3	80 01.7	24.2	55 52.6	20.3	85 03.1	45.5
15	65 47.6	86 29.2	51.5	95 02.3	23.5	70 54.6	20.1	100 05.4	45.4
16	80 50.0	101 29.0	50.7	110 03.0	22.9	85 56.5	19.8	115 07.7	45.4
17	95 52.5	116 28.9	49.8	125 03.6	22.3	100 58.5	19.6	130 10.0	45.3
18	110 55.0	131 28.7	S 8 49.0	140 04.2	S13 21.6	116 00.4	S 3 19.4	145 12.2	S14 45.3
19	125 57.4	146 28.5	48.1	155 04.9	21.0	131 02.3	19.2	160 14.5	45.2
20	140 59.9	161 28.3	47.3	170 05.5	20.4	146 04.3	19.0	175 16.8	45.1
21	156 02.4	176 28.1	46.5	185 06.1	19.7	161 06.2	18.7	190 19.0	45.1
22	171 04.8	191 28.0	45.6	200 06.8	19.1	176 08.2	18.5	205 21.3	45.0
23	186 07.3	206 27.8	44.8	215 07.4	18.5	191 10.1	18.3	220 23.6	45.0
	h m								
Paso Mer.	10 41.5	*v* −0.2	*d* 0.8	*v* 0.6	*d* 0.6	*v* 1.9	*d* 0.2	*v* 2.3	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 13.2
Achernar	335 22.5	S57 07.6
Acrux	173 01.9	S63 13.4
Adhara	255 07.7	S29 00.4
Aldebaran	290 42.5	N16 33.1
Alioth	166 14.4	N55 50.4
Alkaid	152 53.3	N49 12.1
Alnair	27 36.1	S46 51.2
Alnilam	275 40.2	S 1 11.4
Alphard	217 49.8	S 8 45.4
Alphecca	126 05.4	N26 38.2
Alpheratz	357 37.5	N29 12.5
Altair	62 02.2	N 8 55.4
Ankaa	353 09.8	S42 11.2
Antares	112 18.4	S26 28.8
Arcturus	145 49.7	N19 03.9
Atria	107 14.3	S69 03.8
Avior	234 15.5	S59 35.1
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.7	N 7 24.6
Canopus	263 53.6	S52 42.7
Capella	280 25.5	N46 01.3
Deneb	49 27.5	N45 21.2
Denebola	182 27.0	N14 26.9
Diphda	348 49.9	S17 52.1
Dubhe	193 43.3	N61 38.0
Elnath	278 04.9	N28 37.6
Eltanin	90 43.0	N51 28.8
Enif	33 41.2	N 9 58.4
Fomalhaut	15 17.3	S29 30.4
Gacrux	171 53.6	S57 14.3
Gienah	175 45.6	S17 40.0
Hadar	148 38.6	S60 28.7
Hamal	327 54.1	N23 33.9
Kaus Aust.	83 35.4	S34 22.4
Kochab	137 18.7	N74 03.7
Markab	13 32.4	N15 19.2
Menkar	314 08.8	N 4 10.4
Menkent	147 59.9	S36 28.8
Miaplacidus	221 38.3	S69 48.7
Mirfak	308 31.9	N49 56.4
Nunki	75 50.5	S26 16.1
Peacock	53 09.5	S56 39.6
Pollux	243 20.1	N27 58.4
Procyon	244 53.2	N 5 10.0
Rasalhague	96 00.5	N12 32.5
Regulus	207 36.7	N11 51.5
Rigel	281 06.2	S 8 10.7
Rigil Kent.	139 42.8	S60 55.5
Sabik	102 05.2	S15 45.2
Schedar	349 34.2	N56 39.3
Shaula	96 13.3	S37 07.1
Sirius	258 28.3	S16 45.0
Spica	158 24.4	S11 16.7
Suhail	222 47.8	S43 31.6
Vega	80 34.7	N38 47.9
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	22 24.7	9 14
Marte	30 26.3	8 41
Júpiter	5 27.4	10 20
Saturno	34 25.5	8 24

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	°	′	′	′
10 00	179	38.3	N 7	51.6	77	04.7	10.8	N25	11.4	5.1	54.6
01	194	38.4		52.6	91	34.5	10.8	25	06.3	5.3	54.6
02	209	38.6		53.5	106	04.3	10.8	25	01.0	5.3	54.7
03	224	38.8	. .	54.4	120	34.1	10.9	24	55.7	5.5	54.7
04	239	38.9		55.3	135	04.0	10.9	24	50.2	5.6	54.7
05	254	39.1		56.3	149	33.9	10.9	24	44.6	5.7	54.7
06	269	39.3	N 7	57.2	164	03.8	10.9	N24	38.9	5.9	54.7
07	284	39.4		58.1	178	33.7	11.0	24	33.0	6.0	54.8
D 08	299	39.6	7	59.0	193	03.7	11.0	24	27.0	6.1	54.8
O 09	314	39.8	8	00.0	207	33.7	11.0	24	20.9	6.2	54.8
M 10	329	39.9		00.9	222	03.7	11.1	24	14.7	6.3	54.8
I 11	344	40.1		01.8	236	33.8	11.1	24	08.4	6.4	54.8
N 12	359	40.3	N 8	02.7	251	03.9	11.1	N24	02.0	6.6	54.8
G 13	14	40.4		03.6	265	34.0	11.2	23	55.4	6.7	54.9
O 14	29	40.6		04.6	280	04.2	11.1	23	48.7	6.8	54.9
15	44	40.8	. .	05.5	294	34.3	11.3	23	41.9	6.9	54.9
16	59	40.9		06.4	309	04.6	11.2	23	35.0	7.1	54.9
17	74	41.1		07.3	323	34.8	11.3	23	27.9	7.1	54.9
18	89	41.3	N 8	08.3	338	05.1	11.3	N23	20.8	7.3	55.0
19	104	41.4		09.2	352	35.4	11.4	23	13.5	7.3	55.0
20	119	41.6		10.1	7	05.8	11.3	23	06.2	7.5	55.0
21	134	41.8	. .	11.0	21	36.1	11.4	22	58.7	7.7	55.0
22	149	41.9		11.9	36	06.5	11.5	22	51.0	7.7	55.0
23	164	42.1		12.9	50	37.0	11.5	22	43.3	7.8	55.1
11 00	179	42.3	N 8	13.8	65	07.5	11.5	N22	35.5	8.0	55.1
01	194	42.4		14.7	79	38.0	11.5	22	27.5	8.0	55.1
02	209	42.6		15.6	94	08.5	11.6	22	19.5	8.2	55.1
03	224	42.8	. .	16.5	108	39.1	11.6	22	11.3	8.3	55.2
04	239	42.9		17.5	123	09.7	11.7	22	03.0	8.4	55.2
05	254	43.1		18.4	137	40.4	11.6	21	54.6	8.5	55.2
06	269	43.2	N 8	19.3	152	11.0	11.8	N21	46.1	8.6	55.2
07	284	43.4		20.2	166	41.8	11.7	21	37.5	8.7	55.3
L 08	299	43.6		21.1	181	12.5	11.8	21	28.8	8.8	55.3
U 09	314	43.7	. .	22.1	195	43.3	11.8	21	20.0	8.9	55.3
N 10	329	43.9		23.0	210	14.1	11.8	21	11.1	9.1	55.3
E 11	344	44.1		23.9	224	44.9	11.9	21	02.0	9.1	55.4
S 12	359	44.2	N 8	24.8	239	15.8	11.9	N20	52.9	9.3	55.4
13	14	44.4		25.7	253	46.7	12.0	20	43.6	9.3	55.4
14	29	44.6		26.6	268	17.7	12.0	20	34.3	9.5	55.4
15	44	44.7	. .	27.6	282	48.7	12.0	20	24.8	9.6	55.5
16	59	44.9		28.5	297	19.7	12.1	20	15.2	9.6	55.5
17	74	45.1		29.4	311	50.8	12.0	20	05.6	9.8	55.5
18	89	45.2	N 8	30.3	326	21.8	12.1	N19	55.8	9.9	55.5
19	104	45.4		31.2	340	52.9	12.2	19	45.9	10.0	55.6
20	119	45.5		32.1	355	24.1	12.2	19	35.9	10.0	55.6
21	134	45.7	. .	33.1	9	55.3	12.2	19	25.9	10.2	55.6
22	149	45.9		34.0	24	26.5	12.2	19	15.7	10.3	55.6
23	164	46.0		34.9	38	57.7	12.3	19	05.4	10.4	55.7
12 00	179	46.2	N 8	35.8	53	29.0	12.3	N18	55.0	10.4	55.7
01	194	46.4		36.7	68	00.3	12.4	18	44.6	10.6	55.7
02	209	46.5		37.6	82	31.7	12.3	18	34.0	10.7	55.8
03	224	46.7	. .	38.5	97	03.0	12.4	18	23.3	10.7	55.8
04	239	46.8		39.5	111	34.4	12.5	18	12.6	10.9	55.8
05	254	47.0		40.4	126	05.9	12.4	18	01.7	10.9	55.8
06	269	47.2	N 8	41.3	140	37.3	12.5	N17	50.8	11.1	55.9
07	284	47.3		42.2	155	08.8	12.5	17	39.7	11.1	55.9
M 08	299	47.5		43.1	169	40.3	12.6	17	28.6	11.2	55.9
A 09	314	47.7	. .	44.0	184	11.9	12.6	17	17.4	11.4	56.0
R 10	329	47.8		44.9	198	43.5	12.6	17	06.0	11.4	56.0
T 11	344	48.0		45.8	213	15.1	12.6	16	54.6	11.5	56.0
E 12	359	48.1	N 8	46.8	227	46.7	12.6	N16	43.1	11.6	56.0
S 13	14	48.3		47.7	242	18.3	12.7	16	31.5	11.7	56.1
14	29	48.5		48.6	256	50.0	12.7	16	19.8	11.7	56.1
15	44	48.6	. .	49.5	271	21.7	12.8	16	08.1	11.9	56.1
16	59	48.8		50.4	285	53.5	12.7	15	56.2	11.9	56.2
17	74	48.9		51.3	300	25.2	12.8	15	44.3	12.0	56.2
18	89	49.1	N 8	52.2	314	57.0	12.8	N15	32.3	12.2	56.2
19	104	49.3		53.1	329	28.8	12.9	15	20.1	12.2	56.3
20	119	49.4		54.0	344	00.7	12.8	15	07.9	12.2	56.3
21	134	49.6	. .	54.9	358	32.5	12.9	14	55.7	12.4	56.3
22	149	49.7		55.8	13	04.4	12.9	14	43.3	12.5	56.4
23	164	49.9		56.8	27	36.3	12.9	N14	30.8	12.5	56.4
	S/D	16.0	d	0.9	S/D	14.9		15.1			15.3

Lat.	Aurora		Orto	Orto Luna			
	Náut.	Civil	Sol	10	11	12	13
°	h m	h m	h m	h m	h m	h m	h m
N 72	////	02 33	04 02	▭	▭	10 06	13 03
N 70	////	03 01	04 16	▭	▭	11 03	13 24
68	01 34	03 21	04 27	▭	09 01	11 37	13 40
66	02 11	03 37	04 36	▭	09 59	12 01	13 52
64	02 37	03 51	04 43	08 38	10 33	12 20	14 03
62	02 57	04 01	04 50	09 19	10 57	12 35	14 12
60	03 12	04 11	04 56	09 47	11 16	12 47	14 19
N 58	03 25	04 19	05 01	10 09	11 32	12 58	14 26
56	03 36	04 26	05 05	10 27	11 45	13 08	14 32
54	03 45	04 32	05 09	10 41	11 57	13 16	14 37
52	03 54	04 37	05 12	10 54	12 07	13 24	14 42
50	04 01	04 42	05 16	11 06	12 16	13 30	14 46
45	04 16	04 52	05 23	11 29	12 36	13 44	14 55
N 40	04 28	05 01	05 29	11 48	12 51	13 56	15 03
35	04 37	05 08	05 33	12 04	13 04	14 06	15 09
30	04 45	05 14	05 38	12 17	13 16	14 15	15 15
20	04 57	05 23	05 45	12 40	13 35	14 30	15 25
N 10	05 06	05 31	05 52	13 00	13 52	14 43	15 33
0	05 13	05 37	05 58	13 19	14 08	14 55	15 41
S 10	05 18	05 42	06 04	13 37	14 23	15 07	15 49
20	05 22	05 48	06 10	13 57	14 40	15 20	15 58
30	05 25	05 53	06 17	14 20	14 59	15 34	16 07
35	05 26	05 55	06 21	14 33	15 10	15 43	16 13
40	05 26	05 58	06 25	14 48	15 23	15 52	16 19
45	05 26	06 00	06 30	15 07	15 38	16 04	16 26
S 50	05 26	06 03	06 36	15 29	15 56	16 17	16 35
52	05 26	06 05	06 39	15 40	16 04	16 23	16 39
54	05 25	06 06	06 42	15 52	16 14	16 30	16 43
56	05 25	06 08	06 45	16 06	16 25	16 38	16 48
58	05 24	06 09	06 49	16 22	16 37	16 46	16 54
S 60	05 23	06 11	06 53	16 42	16 51	16 56	17 00

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	10	11	12	13
°	h m	h m	h m	h m	h m	h m	h m
N 72	20 04	21 36	////	▭	▭	07 41	06 21
N 70	19 49	21 06	////	▭	▭	06 42	05 59
68	19 38	20 44	22 38	▭	07 03	06 07	05 41
66	19 29	20 28	21 56	▭	06 04	05 41	05 27
64	19 21	20 14	21 29	05 42	05 30	05 22	05 15
62	19 14	20 03	21 09	05 00	05 04	05 05	05 05
60	19 08	19 53	20 53	04 32	04 45	04 52	04 56
N 58	19 03	19 45	20 39	04 10	04 28	04 40	04 48
56	18 59	19 38	20 28	03 52	04 14	04 30	04 41
54	18 54	19 32	20 18	03 37	04 02	04 21	04 35
52	18 51	19 26	20 10	03 23	03 51	04 13	04 30
50	18 47	19 21	20 03	03 12	03 42	04 05	04 25
45	18 40	19 11	19 47	02 48	03 21	03 50	04 14
N 40	18 34	19 02	19 35	02 28	03 05	03 37	04 05
35	18 29	18 55	19 26	02 12	02 51	03 26	03 57
30	18 25	18 49	19 18	01 58	02 39	03 16	03 50
20	18 17	18 39	19 06	01 34	02 18	02 59	03 38
N 10	18 10	18 32	18 57	01 13	02 00	02 44	03 27
0	18 04	18 25	18 50	00 53	01 42	02 30	03 17
S 10	17 58	18 20	18 44	00 33	01 25	02 16	03 07
20	17 52	18 14	18 40	00 12	01 07	02 01	02 56
30	17 45	18 09	18 37	24 45	00 45	01 44	02 44
35	17 41	18 07	18 36	24 32	00 32	01 34	02 36
40	17 37	18 04	18 35	24 18	00 18	01 22	02 28
45	17 31	18 01	18 35	24 00	00 00	01 08	02 18
S 50	17 25	17 58	18 35	23 39	24 51	00 51	02 06
52	17 22	17 56	18 35	23 28	24 43	00 43	02 01
54	17 19	17 55	18 36	23 17	24 34	00 34	01 54
56	17 16	17 54	18 36	23 03	24 24	00 24	01 48
58	17 12	17 52	18 37	22 47	24 13	00 13	01 40
S 60	17 08	17 50	18 38	22 28	23 59	25 31	01 31

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
10	01 27	01 19	12 01	19 31	07 06	09	62
11	01 11	01 03	12 01	20 19	07 55	10	71
12	00 56	00 48	12 01	21 06	08 43	11	80

UT (HmGr)	ARIES	VENUS −4·2		MARTE +1·0		JÚPITER −2·1		SATURNO +0·7	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
13 00	201 09.7	221 27.6	S 8 43.9	230 08.0	S13 17.8	206 12.0	S 3 18.1	235 25.8	S14 44.9
01	216 12.2	236 27.4	43.1	245 08.7	17.2	221 14.0	17.9	250 28.1	44.8
02	231 14.7	251 27.2	42.3	260 09.3	16.6	236 15.9	17.6	265 30.4	44.8
03	246 17.1	266 27.1	41.4	275 09.9	15.9	251 17.9	17.4	280 32.7	44.7
04	261 19.6	281 26.9	40.6	290 10.6	15.3	266 19.8	17.2	295 34.9	44.7
05	276 22.1	296 26.7	39.7	305 11.2	14.7	281 21.8	17.0	310 37.2	44.6
06	291 24.5	311 26.5	S 8 38.9	320 11.8	S13 14.1	296 23.7	S 3 16.8	325 39.5	S14 44.5
07	306 27.0	326 26.4	38.0	335 12.5	13.4	311 25.6	16.6	340 41.7	44.5
08	321 29.5	341 26.2	37.2	350 13.1	12.8	326 27.6	16.3	355 44.0	44.4
M 09	336 31.9	356 26.0	36.3	5 13.7	12.2	341 29.5	16.1	10 46.3	44.4
I 10	351 34.4	11 25.8	35.5	20 14.4	11.5	356 31.5	15.9	25 48.6	44.3
É 11	6 36.8	26 25.6	34.7	35 15.0	10.9	11 33.4	15.7	40 50.8	44.3
R 12	21 39.3	41 25.5	S 8 33.8	50 15.6	S13 10.2	26 35.4	S 3 15.5	55 53.1	S14 44.2
C 13	36 41.8	56 25.3	33.0	65 16.3	09.6	41 37.3	15.2	70 55.4	44.1
O 14	51 44.2	71 25.1	32.1	80 16.9	09.0	56 39.2	15.0	85 57.6	44.1
L 15	66 46.7	86 24.9	31.3	95 17.6	08.3	71 41.2	14.8	100 59.9	44.0
E 16	81 49.2	101 24.7	30.4	110 18.2	07.7	86 43.1	14.6	116 02.2	44.0
S 17	96 51.6	116 24.6	29.6	125 18.8	07.1	101 45.1	14.4	131 04.5	43.9
18	111 54.1	131 24.4	S 8 28.7	140 19.5	S13 06.4	116 47.0	S 3 14.1	146 06.7	S14 43.8
19	126 56.6	146 24.2	27.9	155 20.1	05.8	131 49.0	13.9	161 09.0	43.8
20	141 59.0	161 24.0	27.0	170 20.7	05.2	146 50.9	13.7	176 11.3	43.7
21	157 01.5	176 23.8	26.2	185 21.4	04.5	161 52.8	13.5	191 13.5	43.7
22	172 04.0	191 23.7	25.3	200 22.0	03.9	176 54.8	13.3	206 15.8	43.6
23	187 06.4	206 23.5	24.5	215 22.7	03.3	191 56.7	13.0	221 18.1	43.6
14 00	202 08.9	221 23.3	S 8 23.6	230 23.3	S13 02.6	206 58.7	S 3 12.8	236 20.4	S14 43.5
01	217 11.3	236 23.1	22.7	245 23.9	02.0	222 00.6	12.6	251 22.6	43.4
02	232 13.8	251 22.9	21.9	260 24.6	01.3	237 02.6	12.4	266 24.9	43.4
03	247 16.3	266 22.8	21.0	275 25.2	00.7	252 04.5	12.2	281 27.2	43.3
04	262 18.7	281 22.6	20.2	290 25.8	13 00.1	267 06.5	12.0	296 29.5	43.3
05	277 21.2	296 22.4	19.3	305 26.5	12 59.4	282 08.4	11.7	311 31.7	43.2
06	292 23.7	311 22.2	S 8 18.5	320 27.1	S12 58.8	297 10.3	S 3 11.5	326 34.0	S14 43.2
07	307 26.1	326 22.0	17.6	335 27.8	58.2	312 12.3	11.3	341 36.3	43.1
08	322 28.6	341 21.9	16.7	350 28.4	57.5	327 14.2	11.1	356 38.6	43.0
J 09	337 31.1	356 21.7	15.9	5 29.0	56.9	342 16.2	10.9	11 40.8	43.0
U 10	352 33.5	11 21.5	15.0	20 29.7	56.2	357 18.1	10.6	26 43.1	42.9
E 11	7 36.0	26 21.3	14.2	35 30.3	55.6	12 20.1	10.4	41 45.4	42.9
V 12	22 38.4	41 21.2	S 8 13.3	50 31.0	S12 55.0	27 22.0	S 3 10.2	56 47.6	S14 42.8
E 13	37 40.9	56 21.0	12.4	65 31.6	54.3	42 24.0	10.0	71 49.9	42.8
S 14	52 43.4	71 20.8	11.6	80 32.2	53.7	57 25.9	09.8	86 52.2	42.7
15	67 45.8	86 20.6	10.7	95 32.9	53.0	72 27.8	09.5	101 54.5	42.6
16	82 48.3	101 20.4	09.9	110 33.5	52.4	87 29.8	09.3	116 56.7	42.6
17	97 50.8	116 20.3	09.0	125 34.2	51.8	102 31.7	09.1	131 59.0	42.5
18	112 53.2	131 20.1	S 8 08.1	140 34.8	S12 51.1	117 33.7	S 3 08.9	147 01.3	S14 42.5
19	127 55.7	146 19.9	07.3	155 35.4	50.5	132 35.6	08.7	162 03.6	42.4
20	142 58.2	161 19.7	06.4	170 36.1	49.8	147 37.6	08.5	177 05.8	42.4
21	158 00.6	176 19.5	05.5	185 36.7	49.2	162 39.5	08.2	192 08.1	42.3
22	173 03.1	191 19.4	04.7	200 37.4	48.6	177 41.5	08.0	207 10.4	42.2
23	188 05.6	206 19.2	03.8	215 38.0	47.9	192 43.4	07.8	222 12.7	42.2
15 00	203 08.0	221 19.0	S 8 02.9	230 38.7	S12 47.3	207 45.4	S 3 07.6	237 15.0	S14 42.1
01	218 10.5	236 18.8	02.1	245 39.3	46.6	222 47.3	07.4	252 17.2	42.1
02	233 12.9	251 18.6	01.2	260 39.9	46.0	237 49.2	07.2	267 19.5	42.0
03	248 15.4	266 18.5	8 00.3	275 40.6	45.4	252 51.2	06.9	282 21.8	42.0
04	263 17.9	281 18.3	7 59.5	290 41.2	44.7	267 53.1	06.7	297 24.1	41.9
05	278 20.3	296 18.1	58.6	305 41.9	44.1	282 55.1	06.5	312 26.3	41.8
06	293 22.8	311 17.9	S 7 57.7	320 42.5	S12 43.4	297 57.0	S 3 06.3	327 28.6	S14 41.8
07	308 25.3	326 17.7	56.9	335 43.1	42.8	312 59.0	06.1	342 30.9	41.7
V 08	323 27.7	341 17.6	56.0	350 43.8	42.1	328 00.9	05.8	357 33.2	41.7
I 09	338 30.2	356 17.4	55.1	5 44.4	41.5	343 02.9	05.6	12 35.4	41.6
E 10	353 32.7	11 17.2	54.2	20 45.1	40.9	358 04.8	05.4	27 37.7	41.6
R 11	8 35.1	26 17.0	53.4	35 45.7	40.2	13 06.8	05.2	42 40.0	41.5
N 12	23 37.6	41 16.8	S 7 52.5	50 46.4	S12 39.6	28 08.7	S 3 05.0	57 42.3	S14 41.5
E 13	38 40.1	56 16.6	51.6	65 47.0	38.9	43 10.7	04.8	72 44.6	41.4
S 14	53 42.5	71 16.5	50.8	80 47.6	38.3	58 12.6	04.5	87 46.8	41.3
15	68 45.0	86 16.3	49.9	95 48.3	37.6	73 14.6	04.3	102 49.1	41.3
16	83 47.4	101 16.1	49.0	110 48.9	37.0	88 16.5	04.1	117 51.4	41.2
17	98 49.9	116 15.9	48.1	125 49.6	36.3	103 18.4	03.9	132 53.7	41.2
18	113 52.4	131 15.7	S 7 47.2	140 50.2	S12 35.7	118 20.4	S 3 03.7	147 55.9	S14 41.1
19	128 54.8	146 15.6	46.4	155 50.9	35.1	133 22.3	03.5	162 58.2	41.1
20	143 57.3	161 15.4	45.5	170 51.5	34.4	148 24.3	03.2	178 00.5	41.0
21	158 59.8	176 15.2	44.6	185 52.2	33.8	163 26.2	03.0	193 02.8	41.0
22	174 02.2	191 15.0	43.7	200 52.8	33.1	178 28.2	02.8	208 05.1	40.9
23	189 04.7	206 14.8	42.9	215 53.4	32.5	193 30.1	02.6	223 07.3	40.8
	h m								
Paso Mer.	10 29.7	*v* −0.2	*d* 0.9	*v* 0.6	*d* 0.6	*v* 1.9	*d* 0.2	*v* 2.3	*d* 0.1

ESTRELLAS		
Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 13.1
Achernar	335 22.5	S57 07.6
Acrux	173 01.9	S63 13.4
Adhara	255 07.7	S29 00.4
Aldebaran	290 42.5	N16 33.1
Alioth	166 14.4	N55 50.4
Alkaid	152 53.3	N49 12.1
Alnair	27 36.1	S46 51.2
Alnilam	275 40.2	S 1 11.4
Alphard	217 49.8	S 8 45.4
Alphecca	126 05.4	N26 38.3
Alpheratz	357 37.4	N29 12.5
Altair	62 02.2	N 8 55.4
Ankaa	353 09.8	S42 11.2
Antares	112 18.4	S26 28.8
Arcturus	145 49.7	N19 03.9
Atria	107 14.3	S69 03.8
Avior	234 15.5	S59 35.1
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.7	N 7 24.6
Canopus	263 53.6	S52 42.7
Capella	280 25.5	N46 01.3
Deneb	49 27.4	N45 21.2
Denebola	182 27.0	N14 26.9
Diphda	348 49.9	S17 52.0
Dubhe	193 43.3	N61 38.1
Elnath	278 04.9	N28 37.6
Eltanin	90 43.0	N51 28.8
Enif	33 41.2	N 9 58.4
Fomalhaut	15 17.3	S29 30.3
Gacrux	171 53.6	S57 14.3
Gienah	175 45.6	S17 40.0
Hadar	148 38.6	S60 28.8
Hamal	327 54.1	N23 33.9
Kaus Aust.	83 35.4	S34 22.4
Kochab	137 18.7	N74 03.7
Markab	13 32.4	N15 19.2
Menkar	314 08.8	N 4 10.4
Menkent	147 59.9	S36 28.8
Miaplacidus	221 38.4	S69 48.7
Mirfak	308 31.9	N49 56.4
Nunki	75 50.5	S26 16.1
Peacock	53 09.4	S56 39.6
Pollux	243 20.1	N27 58.4
Procyon	244 53.2	N 5 10.0
Rasalhague	96 00.5	N12 32.5
Regulus	207 36.7	N11 51.5
Rigel	281 06.2	S 8 10.7
Rigil Kent.	139 42.8	S60 55.5
Sabik	102 05.2	S15 45.2
Schedar	349 34.2	N56 39.3
Shaula	96 13.2	S37 07.1
Sirius	258 28.3	S16 45.0
Spica	158 24.4	S11 16.7
Suhail	222 47.8	S43 31.6
Vega	80 34.6	N38 47.9
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	19 14.4	9 15
Marte	28 14.4	8 38
Júpiter	4 49.8	10 11
Saturno	34 11.5	8 13

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	° ′		° ′		° ′	′	° ′	′	′	
13 00	179 50.1	N	8 57.7		42 08.2	12.9	N14 18.3	12.6	56.4	
01	194 50.2		58.6		56 40.1	13.0	14 05.7	12.7	56.4	
02	209 50.4		8 59.5		71 12.1	13.0	13 53.0	12.7	56.5	
03	224 50.5		9 00.4		85 44.1	13.0	13 40.3	12.9	56.5	
04	239 50.7		01.3		100 16.1	13.0	13 27.4	12.9	56.5	
05	254 50.9		02.2		114 48.1	13.0	13 14.5	13.0	56.6	
06	269 51.0	N	9 03.1		129 20.1	13.1	N13 01.5	13.1	56.6	
07	284 51.2		04.0		143 52.2	13.0	12 48.4	13.1	56.6	
M 08	299 51.3		04.9		158 24.2	13.1	12 35.3	13.2	56.7	
I 09	314 51.5	. .	05.8		172 56.3	13.1	12 22.1	13.3	56.7	
É 10	329 51.7		06.7		187 28.4	13.1	12 08.8	13.4	56.7	
R 11	344 51.8		07.6		202 00.5	13.1	11 55.4	13.4	56.8	
C 12	359 52.0	N	9 08.5		216 32.6	13.1	N11 42.0	13.5	56.8	
O 13	14 52.1		09.4		231 04.7	13.2	11 28.5	13.6	56.8	
L 14	29 52.3		10.4		245 36.9	13.1	11 14.9	13.6	56.9	
E 15	44 52.4	. .	11.3		260 09.0	13.2	11 01.3	13.7	56.9	
S 16	59 52.6		12.2		274 41.2	13.2	10 47.6	13.8	56.9	
17	74 52.8		13.1		289 13.4	13.1	10 33.8	13.9	57.0	
18	89 52.9	N	9 14.0		303 45.5	13.2	N10 19.9	13.9	57.0	
19	104 53.1		14.9		318 17.7	13.2	10 06.0	13.9	57.0	
20	119 53.2		15.8		332 49.9	13.2	9 52.1	14.1	57.1	
21	134 53.4	. .	16.7		347 22.1	13.2	9 38.0	14.1	57.1	
22	149 53.5		17.6		1 54.3	13.2	9 23.9	14.1	57.1	
23	164 53.7		18.5		16 26.5	13.2	9 09.8	14.2	57.2	
14 00	179 53.9	N	9 19.4		30 58.7	13.2	N 8 55.6	14.3	57.2	
01	194 54.0		20.3		45 30.9	13.2	8 41.3	14.3	57.2	
02	209 54.2		21.2		60 03.1	13.2	8 27.0	14.4	57.3	
03	224 54.3	. .	22.1		74 35.3	13.3	8 12.6	14.4	57.3	
04	239 54.5		23.0		89 07.6	13.2	7 58.2	14.5	57.3	
05	254 54.6		23.9		103 39.8	13.2	7 43.7	14.6	57.4	
06	269 54.8	N	9 24.8		118 12.0	13.2	N 7 29.1	14.6	57.4	
07	284 54.9		25.7		132 44.2	13.2	7 14.5	14.6	57.4	
J 08	299 55.1		26.6		147 16.4	13.2	6 59.9	14.7	57.5	
U 09	314 55.3	. .	27.5		161 48.6	13.1	6 45.2	14.8	57.5	
E 10	329 55.4		28.4		176 20.7	13.2	6 30.4	14.8	57.5	
V 11	344 55.6		29.3		190 52.9	13.2	6 15.6	14.8	57.6	
E 12	359 55.7	N	9 30.2		205 25.1	13.1	N 6 00.8	14.9	57.6	
S 13	14 55.9		31.1		219 57.2	13.2	5 45.9	15.0	57.6	
14	29 56.0		32.0		234 29.4	13.1	5 30.9	15.0	57.7	
15	44 56.2	. .	32.9		249 01.5	13.2	5 15.9	15.0	57.7	
16	59 56.3		33.8		263 33.7	13.1	5 00.9	15.1	57.7	
17	74 56.5		34.7		278 05.8	13.1	4 45.8	15.1	57.8	
18	89 56.6	N	9 35.6		292 37.9	13.1	N 4 30.7	15.1	57.8	
19	104 56.8		36.5		307 10.0	13.0	4 15.6	15.2	57.8	
20	119 56.9		37.4		321 42.0	13.1	4 00.4	15.2	57.9	
21	134 57.1	. .	38.3		336 14.1	13.0	3 45.2	15.3	57.9	
22	149 57.3		39.2		350 46.1	13.0	3 29.9	15.3	57.9	
23	164 57.4		40.0		5 18.1	13.0	3 14.6	15.3	58.0	
15 00	179 57.6	N	9 40.9		19 50.1	13.0	N 2 59.3	15.4	58.0	
01	194 57.7		41.8		34 22.1	13.0	2 43.9	15.3	58.0	
02	209 57.9		42.7		48 54.1	12.9	2 28.6	15.5	58.1	
03	224 58.0	. .	43.6		63 26.0	12.9	2 13.1	15.4	58.1	
04	239 58.2		44.5		77 57.9	12.9	1 57.7	15.5	58.1	
05	254 58.3		45.4		92 29.8	12.8	1 42.2	15.5	58.2	
06	269 58.5	N	9 46.3		107 01.6	12.8	N 1 26.7	15.5	58.2	
07	284 58.6		47.2		121 33.4	12.8	1 11.2	15.6	58.2	
V 08	299 58.8		48.1		136 05.2	12.8	0 55.6	15.5	58.2	
I 09	314 58.9	. .	49.0		150 37.0	12.7	0 40.1	15.6	58.3	
E 10	329 59.1		49.9		165 08.7	12.7	0 24.5	15.6	58.3	
R 11	344 59.2		50.8		179 40.4	12.7	N 0 08.9	15.7	58.3	
N 12	359 59.4	N	9 51.7		194 12.1	12.6	S 0 06.8	15.6	58.4	
E 13	14 59.5		52.6		208 43.7	12.6	0 22.4	15.7	58.4	
S 14	29 59.7		53.4		223 15.3	12.6	0 38.1	15.6	58.4	
15	44 59.8	. .	54.3		237 46.9	12.5	0 53.7	15.7	58.5	
16	60 00.0		55.2		252 18.4	12.5	1 09.4	15.7	58.5	
17	75 00.1		56.1		266 49.9	12.5	1 25.1	15.7	58.5	
18	90 00.3	N	9 57.0		281 21.4	12.4	S 1 40.8	15.7	58.6	
19	105 00.4		57.9		295 52.8	12.3	1 56.5	15.8	58.6	
20	120 00.6		58.8		310 24.1	12.3	2 12.3	15.7	58.6	
21	135 00.7		9 59.7		324 55.4	12.3	2 28.0	15.7	58.6	
22	150 00.9		10 00.6		339 26.7	12.3	2 43.7	15.8	58.7	
23	165 01.0	N	10 01.4		353 58.0	12.1	S 2 59.5	15.7	58.7	
	S/D 16.0		d 0.9		S/D	15.5		15.7		15.9

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			13	14	15	16
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	////		02	08	03 45	13 03	15 22	17 35	19 56
N 70	////		02	42	04 01	13 24	15 29	17 33	19 42
68	00	57	03	05	04 14	13 40	15 35	17 31	19 31
66	01	50	03	24	04 24	13 52	15 40	17 29	19 22
64	02	21	03	38	04 33	14 03	15 45	17 27	19 15
62	02	43	03	51	04 40	14 12	15 48	17 26	19 08
60	03	00	04	01	04 47	14 19	15 51	17 25	19 03
N 58	03	15	04	10	04 52	14 26	15 54	17 24	18 58
56	03	27	04	17	04 57	14 32	15 57	17 23	18 53
54	03	37	04	24	05 02	14 37	15 59	17 23	18 49
52	03	46	04	30	05 06	14 42	16 01	17 22	18 46
50	03	54	04	35	05 09	14 46	16 03	17 21	18 43
45	04	10	04	47	05 17	14 55	16 07	17 20	18 36
N 40	04	23	04	56	05 24	15 03	16 10	17 19	18 30
35	04	33	05	04	05 30	15 09	16 13	17 18	18 26
30	04	41	05	10	05 34	15 15	16 15	17 17	18 21
20	04	54	05	21	05 43	15 25	16 20	17 16	18 14
N 10	05	04	05	29	05 50	15 33	16 24	17 15	18 08
0	05	12	05	36	05 57	15 41	16 27	17 14	18 02
S 10	05	18	05	42	06 04	15 49	16 31	17 13	17 56
20	05	23	05	48	06 11	15 58	16 35	17 12	17 50
30	05	26	05	54	06 18	16 07	16 39	17 10	17 43
35	05	28	05	57	06 23	16 13	16 41	17 10	17 39
40	05	29	06	01	06 28	16 19	16 44	17 09	17 35
45	05	30	06	04	06 34	16 26	16 47	17 08	17 30
S 50	05	30	06	08	06 41	16 35	16 51	17 07	17 23
52	05	30	06	10	06 44	16 39	16 53	17 06	17 21
54	05	30	06	11	06 47	16 43	16 55	17 06	17 18
56	05	30	06	13	06 51	16 48	16 57	17 05	17 14
58	05	30	06	15	06 55	16 54	16 59	17 05	17 11
S 60	05	29	06	18	07 00	17 00	17 02	17 04	17 06

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 13	Ocaso Luna 14	Ocaso Luna 15	Ocaso Luna 16
°	h m	h m	h m	h m	h m	h m	h m
N 72	20 19	22 00	////	06 21	05 41	05 09	04 37
N 70	20 03	21 24	////	05 59	05 31	05 07	04 44
68	19 49	20 59	23 20	05 41	05 22	05 05	04 49
66	19 39	20 40	22 17	05 27	05 15	05 04	04 53
64	19 30	20 25	21 44	05 15	05 09	05 03	04 57
62	19 22	20 12	21 21	05 05	05 03	05 02	05 00
60	19 16	20 02	21 03	04 56	04 59	05 01	05 03
N 58	19 10	19 53	20 48	04 48	04 54	05 00	05 05
56	19 05	19 45	20 36	04 41	04 51	04 59	05 07
54	19 00	19 38	20 25	04 35	04 47	04 58	05 10
52	18 56	19 32	20 16	04 30	04 44	04 58	05 11
50	18 52	19 26	20 08	04 25	04 42	04 57	05 13
45	18 44	19 15	19 52	04 14	04 35	04 56	05 17
N 40	18 37	19 05	19 39	04 05	04 30	04 55	05 20
35	18 32	18 58	19 29	03 57	04 26	04 54	05 23
30	18 27	18 51	19 20	03 50	04 22	04 53	05 25
20	18 18	18 40	19 07	03 38	04 15	04 52	05 29
N 10	18 10	18 32	18 57	03 27	04 09	04 50	05 33
0	18 04	18 25	18 49	03 17	04 03	04 49	05 36
S 10	17 57	18 18	18 43	03 07	03 57	04 48	05 40
20	17 50	18 12	18 38	02 56	03 51	04 46	05 43
30	17 42	18 06	18 34	02 44	03 44	04 45	05 48
35	17 37	18 03	18 32	02 36	03 39	04 44	05 50
40	17 32	17 59	18 31	02 28	03 35	04 43	05 53
45	17 26	17 56	18 30	02 18	03 29	04 42	05 56
S 50	17 19	17 52	18 29	02 06	03 22	04 40	06 00
52	17 16	17 50	18 29	02 01	03 19	04 39	06 02
54	17 12	17 48	18 29	01 54	03 16	04 39	06 04
56	17 08	17 46	18 29	01 48	03 12	04 38	06 06
58	17 04	17 44	18 29	01 40	03 08	04 37	06 08
S 60	16 59	17 42	18 30	01 31	03 03	04 36	06 11

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
13	00 40	00 32	12 01	21 52	09 29	12 87	
14	00 25	00 17	12 00	22 38	10 15	13 93	
15	00 10	00 03	12 00	23 25	11 01	14 98	◯

UT (HmGr)	ARIES	VENUS −4·2		MARTE +1·0		JÚPITER −2·1		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
16 00	204 07.2	221 14.7	S 7 42.0	230 54.1	S12 31.8	208 32.1	S 3 02.4	238 09.6	S14 40.8
01	219 09.6	236 14.5	41.1	245 54.7	31.2	223 34.0	02.1	253 11.9	40.7
02	234 12.1	251 14.3	40.2	260 55.4	30.5	238 36.0	01.9	268 14.2	40.7
03	249 14.5	266 14.1 . .	39.3	275 56.0 . .	29.9	253 37.9 . .	01.7	283 16.5 . .	40.6
04	264 17.0	281 13.9	38.5	290 56.7	29.2	268 39.9	01.5	298 18.7	40.6
05	279 19.5	296 13.8	37.6	305 57.3	28.6	283 41.8	01.3	313 21.0	40.5
06	294 21.9	311 13.6	S 7 36.7	320 58.0	S12 27.9	298 43.8	S 3 01.1	328 23.3	S14 40.5
07	309 24.4	326 13.4	35.8	335 58.6	27.3	313 45.7	00.8	343 25.6	40.4
08	324 26.9	341 13.2	34.9	350 59.3	26.7	328 47.7	00.6	358 27.8	40.3
S 09	339 29.3	356 13.0 . .	34.0	5 59.9 . .	26.0	343 49.6 . .	00.4	13 30.1 . .	40.3
Á 10	354 31.8	11 12.9	33.2	21 00.5	25.4	358 51.6	00.2	28 32.4	40.2
B 11	9 34.3	26 12.7	32.3	36 01.2	24.7	13 53.5	3 00.0	43 34.7	40.2
A 12	24 36.7	41 12.5	S 7 31.4	51 01.8	S12 24.1	28 55.5	S 2 59.8	58 37.0	S14 40.1
D 13	39 39.2	56 12.3	30.5	66 02.5	23.4	43 57.4	59.5	73 39.3	40.1
O 14	54 41.7	71 12.1	29.6	81 03.1	22.8	58 59.4	59.3	88 41.5	40.0
15	69 44.1	86 11.9 . .	28.7	96 03.8 . .	22.1	74 01.3 . .	59.1	103 43.8 . .	40.0
16	84 46.6	101 11.8	27.8	111 04.4	21.5	89 03.3	58.9	118 46.1	39.9
17	99 49.0	116 11.6	27.0	126 05.1	20.8	104 05.2	58.7	133 48.4	39.8
18	114 51.5	131 11.4	S 7 26.1	141 05.7	S12 20.2	119 07.2	S 2 58.5	148 50.7	S14 39.8
19	129 54.0	146 11.2	25.2	156 06.4	19.5	134 09.1	58.2	163 52.9	39.7
20	144 56.4	161 11.0	24.3	171 07.0	18.9	149 11.1	58.0	178 55.2	39.7
21	159 58.9	176 10.9 . .	23.4	186 07.7 . .	18.2	164 13.0 . .	57.8	193 57.5 . .	39.6
22	175 01.4	191 10.7	22.5	201 08.3	17.6	179 15.0	57.6	208 59.8	39.6
23	190 03.8	206 10.5	21.6	216 09.0	16.9	194 16.9	57.4	224 02.1	39.5
17 00	205 06.3	221 10.3	S 7 20.7	231 09.6	S12 16.3	209 18.9	S 2 57.2	239 04.3	S14 39.5
01	220 08.8	236 10.1	19.8	246 10.3	15.6	224 20.8	57.0	254 06.6	39.4
02	235 11.2	251 10.0	18.9	261 10.9	15.0	239 22.8	56.7	269 08.9	39.3
03	250 13.7	266 09.8 . .	18.0	276 11.6 . .	14.3	254 24.7 . .	56.5	284 11.2 . .	39.3
04	265 16.1	281 09.6	17.2	291 12.2	13.7	269 26.7	56.3	299 13.5	39.2
05	280 18.6	296 09.4	16.3	306 12.9	13.0	284 28.6	56.1	314 15.8	39.2
06	295 21.1	311 09.2	S 7 15.4	321 13.5	S12 12.4	299 30.6	S 2 55.9	329 18.0	S14 39.1
07	310 23.5	326 09.0	14.5	336 14.1	11.7	314 32.5	55.7	344 20.3	39.1
D 08	325 26.0	341 08.9	13.6	351 14.8	11.1	329 34.5	55.4	359 22.6	39.0
O 09	340 28.5	356 08.7 . .	12.7	6 15.4 . .	10.4	344 36.4 . .	55.2	14 24.9 . .	39.0
M 10	355 30.9	11 08.5	11.8	21 16.1	09.7	359 38.4	55.0	29 27.2	38.9
I 11	10 33.4	26 08.3	10.9	36 16.7	09.1	14 40.3	54.8	44 29.5	38.9
N 12	25 35.9	41 08.1	S 7 10.0	51 17.4	S12 08.4	29 42.3	S 2 54.6	59 31.7	S14 38.8
G 13	40 38.3	56 08.0	09.1	66 18.0	07.8	44 44.2	54.4	74 34.0	38.8
O 14	55 40.8	71 07.8	08.2	81 18.7	07.1	59 46.2	54.1	89 36.3	38.7
15	70 43.3	86 07.6 . .	07.3	96 19.3 . .	06.5	74 48.1 . .	53.9	104 38.6 . .	38.6
16	85 45.7	101 07.4	06.4	111 20.0	05.8	89 50.1	53.7	119 40.9	38.6
17	100 48.2	116 07.2	05.5	126 20.6	05.2	104 52.0	53.5	134 43.2	38.5
18	115 50.6	131 07.1	S 7 04.6	141 21.3	S12 04.5	119 54.0	S 2 53.3	149 45.4	S14 38.5
19	130 53.1	146 06.9	03.7	156 22.0	03.9	134 55.9	53.1	164 47.7	38.4
20	145 55.6	161 06.7	02.8	171 22.6	03.2	149 57.9	52.9	179 50.0	38.4
21	160 58.0	176 06.5 . .	01.9	186 23.3 . .	02.6	164 59.8 . .	52.6	194 52.3 . .	38.3
22	176 00.5	191 06.3	01.0	201 23.9	01.9	180 01.8	52.4	209 54.6	38.3
23	191 03.0	206 06.1	7 00.1	216 24.6	01.3	195 03.7	52.2	224 56.9	38.2
18 00	206 05.4	221 06.0	S 6 59.2	231 25.2	S12 00.6	210 05.7	S 2 52.0	239 59.2	S14 38.2
01	221 07.9	236 05.8	58.3	246 25.9	11 59.9	225 07.6	51.8	255 01.4	38.1
02	236 10.4	251 05.6	57.4	261 26.5	59.3	240 09.6	51.6	270 03.7	38.1
03	251 12.8	266 05.4 . .	56.5	276 27.2 . .	58.6	255 11.5 . .	51.3	285 06.0 . .	38.0
04	266 15.3	281 05.2	55.6	291 27.8	58.0	270 13.5	51.1	300 08.3	37.9
05	281 17.8	296 05.1	54.7	306 28.5	57.3	285 15.4	50.9	315 10.6	37.9
06	296 20.2	311 04.9	S 6 53.7	321 29.1	S11 56.7	300 17.4	S 2 50.7	330 12.9	S14 37.8
07	311 22.7	326 04.7	52.8	336 29.8	56.0	315 19.4	50.5	345 15.2	37.8
L 08	326 25.1	341 04.5	51.9	351 30.4	55.3	330 21.3	50.3	0 17.4	37.7
U 09	341 27.6	356 04.3 . .	51.0	6 31.1 . .	54.7	345 23.3 . .	50.1	15 19.7 . .	37.7
N 10	356 30.1	11 04.1	50.1	21 31.7	54.0	0 25.2	49.8	30 22.0	37.6
E 11	11 32.5	26 04.0	49.2	36 32.4	53.4	15 27.2	49.6	45 24.3	37.6
S 12	26 35.0	41 03.8	S 6 48.3	51 33.0	S11 52.7	30 29.1	S 2 49.4	60 26.6	S14 37.5
13	41 37.5	56 03.6	47.4	66 33.7	52.1	45 31.1	49.2	75 28.9	37.5
14	56 39.9	71 03.4	46.5	81 34.3	51.4	60 33.0	49.0	90 31.2	37.4
15	71 42.4	86 03.2 . .	45.6	96 35.0 . .	50.7	75 35.0 . .	48.8	105 33.4 . .	37.4
16	86 44.9	101 03.0	44.7	111 35.7	50.1	90 36.9	48.6	120 35.7	37.3
17	101 47.3	116 02.9	43.7	126 36.3	49.4	105 38.9	48.3	135 38.0	37.3
18	116 49.8	131 02.7	S 6 42.8	141 37.0	S11 48.8	120 40.8	S 2 48.1	150 40.3	S14 37.2
19	131 52.2	146 02.5	41.9	156 37.6	48.1	135 42.8	47.9	165 42.6	37.1
20	146 54.7	161 02.3	41.0	171 38.3	47.5	150 44.7	47.7	180 44.9	37.1
21	161 57.2	176 02.1 . .	40.1	186 38.9 . .	46.8	165 46.7 . .	47.5	195 47.2 . .	37.0
22	176 59.6	191 02.0	39.2	201 39.6	46.1	180 48.7	47.3	210 49.5	37.0
23	192 02.1	206 01.8	38.3	216 40.2	45.5	195 50.6	47.0	225 51.7	36.9
	h m								
Paso Mer.	10 17.9	*v* −0.2	*d* 0.9	*v* 0.6	*d* 0.7	*v* 2.0	*d* 0.2	*v* 2.3	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 13.1
Achernar	335 22.5	S57 07.5
Acrux	173 01.9	S63 13.4
Adhara	255 07.7	S29 00.4
Aldebaran	290 42.5	N16 33.1
Alioth	166 14.5	N55 50.4
Alkaid	152 53.3	N49 12.1
Alnair	27 36.0	S46 51.1
Alnilam	275 40.2	S 1 11.4
Alphard	217 49.9	S 8 45.4
Alphecca	126 05.4	N26 38.3
Alpheratz	357 37.4	N29 12.5
Altair	62 02.2	N 8 55.4
Ankaa	353 09.8	S42 11.2
Antares	112 18.3	S26 28.8
Arcturus	145 49.7	N19 03.9
Atria	107 14.2	S69 03.8
Avior	234 15.6	S59 35.1
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.7	N 7 24.6
Canopus	263 53.6	S52 42.7
Capella	280 25.5	N46 01.3
Deneb	49 27.4	N45 21.2
Denebola	182 27.0	N14 26.9
Diphda	348 49.9	S17 52.0
Dubhe	193 43.3	N61 38.1
Elnath	278 05.0	N28 37.5
Eltanin	90 43.0	N51 28.8
Enif	33 41.2	N 9 58.4
Fomalhaut	15 17.3	S29 30.3
Gacrux	171 53.6	S57 14.3
Gienah	175 45.6	S17 40.0
Hadar	148 38.6	S60 28.8
Hamal	327 54.1	N23 33.9
Kaus Aust.	83 35.4	S34 22.4
Kochab	137 18.7	N74 03.8
Markab	13 32.4	N15 19.2
Menkar	314 08.8	N 4 10.4
Menkent	147 59.9	S36 28.8
Miaplacidus	221 38.4	S69 48.7
Mirfak	308 32.0	N49 56.3
Nunki	75 50.5	S26 16.1
Peacock	53 09.4	S56 39.6
Pollux	243 20.1	N27 58.4
Procyon	244 53.2	N 5 10.0
Rasalhague	96 00.5	N12 32.5
Regulus	207 36.7	N11 51.5
Rigel	281 06.3	S 8 10.7
Rigil Kent.	139 42.8	S60 55.5
Sabik	102 05.2	S15 45.2
Schedar	349 34.2	N56 39.3
Shaula	96 13.2	S37 07.1
Sirius	258 28.3	S16 45.0
Spica	158 24.4	S11 16.7
Suhail	222 47.8	S43 31.6
Vega	80 34.6	N38 47.9
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	16 04.0	9 15
Marte	26 03.3	8 35
Júpiter	4 12.6	10 01
Saturno	33 58.1	8 02

UT (HmGr)	SOL				LUNA							
	AHGr		Dec		AHGr	v		Dec		d	Ph	
d h	°	′	°	′	°	′	′	°	′	′	′	
16 00	180	01.2	N10	02.3	8	29.1	12.2	S 3	15.2	15.7	58.7	
01	195	01.3		03.2	23	00.3	12.1	3	30.9	15.8	58.8	
02	210	01.5		04.1	37	31.4	12.0	3	46.7	15.7	58.8	
03	225	01.6	. .	05.0	52	02.4	12.0	4	02.4	15.7	58.8	
04	240	01.8		05.9	66	33.4	11.9	4	18.1	15.8	58.8	
05	255	01.9		06.8	81	04.3	11.9	4	33.9	15.7	58.9	
06	270	02.1	N10	07.7	95	35.2	11.9	S 4	49.6	15.7	58.9	
07	285	02.2		08.5	110	06.1	11.7	5	05.3	15.7	58.9	
S 08	300	02.4		09.4	124	36.8	11.8	5	21.0	15.6	58.9	
Á 09	315	02.5	. .	10.3	139	07.6	11.6	5	36.6	15.7	59.0	
B 10	330	02.7		11.2	153	38.2	11.6	5	52.3	15.7	59.0	
A 11	345	02.8		12.1	168	08.8	11.6	6	08.0	15.6	59.0	
D 12	0	03.0	N10	13.0	182	39.4	11.4	S 6	23.6	15.6	59.1	
O 13	15	03.1		13.9	197	09.8	11.5	6	39.2	15.6	59.1	
14	30	03.3		14.7	211	40.3	11.3	6	54.8	15.6	59.1	
15	45	03.4	. .	15.6	226	10.6	11.3	7	10.4	15.5	59.1	
16	60	03.6		16.5	240	40.9	11.3	7	25.9	15.5	59.2	
17	75	03.7		17.4	255	11.2	11.1	7	41.4	15.5	59.2	
18	90	03.8	N10	18.3	269	41.3	11.1	S 7	56.9	15.5	59.2	
19	105	04.0		19.2	284	11.4	11.1	8	12.4	15.4	59.2	
20	120	04.1		20.0	298	41.5	10.9	8	27.8	15.4	59.2	
21	135	04.3	. .	20.9	313	11.4	10.9	8	43.2	15.4	59.3	
22	150	04.4		21.8	327	41.3	10.8	8	58.6	15.3	59.3	
23	165	04.6		22.7	342	11.1	10.8	9	13.9	15.3	59.3	
17 00	180	04.7	N10	23.6	356	40.9	10.7	S 9	29.2	15.3	59.3	
01	195	04.9		24.4	11	10.6	10.6	9	44.5	15.2	59.4	
02	210	05.0		25.3	25	40.2	10.5	9	59.7	15.2	59.4	
03	225	05.2	. .	26.2	40	09.7	10.5	10	14.9	15.1	59.4	
04	240	05.3		27.1	54	39.2	10.3	10	30.0	15.1	59.4	
05	255	05.4		28.0	69	08.5	10.3	10	45.1	15.0	59.4	
06	270	05.6	N10	28.8	83	37.8	10.2	S11	00.1	15.0	59.5	
07	285	05.7		29.7	98	07.0	10.2	11	15.1	14.9	59.5	
D 08	300	05.9		30.6	112	36.2	10.1	11	30.0	14.9	59.5	
O 09	315	06.0	. .	31.5	127	05.3	9.9	11	44.9	14.8	59.5	
M 10	330	06.2		32.4	141	34.2	9.9	11	59.7	14.8	59.5	
I 11	345	06.3		33.2	156	03.1	9.8	12	14.5	14.7	59.6	
N 12	0	06.5	N10	34.1	170	31.9	9.8	S12	29.2	14.7	59.6	
G 13	15	06.6		35.0	185	00.7	9.6	12	43.9	14.5	59.6	
O 14	30	06.7		35.9	199	29.3	9.6	12	58.4	14.6	59.6	
15	45	06.9	. .	36.8	213	57.9	9.5	13	13.0	14.4	59.6	
16	60	07.0		37.6	228	26.4	9.4	13	27.4	14.4	59.7	
17	75	07.2		38.5	242	54.8	9.3	13	41.8	14.3	59.7	
18	90	07.3	N10	39.4	257	23.1	9.2	S13	56.1	14.3	59.7	
19	105	07.5		40.3	271	51.3	9.1	14	10.4	14.1	59.7	
20	120	07.6		41.1	286	19.4	9.0	14	24.5	14.1	59.7	
21	135	07.7	. .	42.0	300	47.4	9.0	14	38.6	14.0	59.7	
22	150	07.9		42.9	315	15.4	8.8	14	52.6	14.0	59.7	
23	165	08.0		43.8	329	43.2	8.8	15	06.6	13.8	59.8	
18 00	180	08.2	N10	44.6	344	11.0	8.7	S15	20.4	13.8	59.8	
01	195	08.3		45.5	358	38.7	8.6	15	34.2	13.7	59.8	
02	210	08.4		46.4	13	06.3	8.4	15	47.9	13.6	59.8	
03	225	08.6	. .	47.2	27	33.7	8.4	16	01.5	13.5	59.8	
04	240	08.7		48.1	42	01.1	8.3	16	15.0	13.4	59.8	
05	255	08.9		49.0	56	28.4	8.2	16	28.4	13.3	59.8	
06	270	09.0	N10	49.9	70	55.6	8.2	S16	41.7	13.3	59.9	
07	285	09.1		50.7	85	22.8	8.0	16	55.0	13.1	59.9	
L 08	300	09.3		51.6	99	49.8	7.9	17	08.1	13.0	59.9	
U 09	315	09.4	. .	52.5	114	16.7	7.8	17	21.1	13.0	59.9	
N 10	330	09.6		53.4	128	43.5	7.8	17	34.1	12.8	59.9	
E 11	345	09.7		54.2	143	10.3	7.6	17	46.9	12.7	59.9	
S 12	0	09.8	N10	55.1	157	36.9	7.5	S17	59.6	12.6	59.9	
13	15	10.0		56.0	172	03.4	7.5	18	12.2	12.5	59.9	
14	30	10.1		56.8	186	29.9	7.3	18	24.7	12.5	59.9	
15	45	10.3	. .	57.7	200	56.2	7.3	18	37.2	12.2	59.9	
16	60	10.4		58.6	215	22.5	7.2	18	49.4	12.2	60.0	
17	75	10.5	10	59.4	229	48.7	7.0	19	01.6	12.1	60.0	
18	90	10.7	N11	00.3	244	14.7	7.0	S19	13.7	11.9	60.0	
19	105	10.8		01.2	258	40.7	6.9	19	25.6	11.8	60.0	
20	120	10.9		02.0	273	06.6	6.7	19	37.4	11.7	60.0	
21	135	11.1	. .	02.9	287	32.3	6.7	19	49.1	11.6	60.0	
22	150	11.2		03.8	301	58.0	6.6	20	00.7	11.5	60.0	
23	165	11.4		04.6	316	23.6	6.5	S20	12.2	11.3	60.0	
	S/D	16.0	d	0.9	S/D		16.1		16.2		16.3	

Lat.	Aurora				Orto Sol		Orto Luna							
	Náut.		Civil				16		17		18		19	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	////		01	38	03	28	19	56	22	48	▬		▬	
N 70	////		02	21	03	46	19	42	22	10	▬		▬	
68	////		02	49	04	01	19	31	21	44	24	34	00	34
66	01	24	03	10	04	12	19	22	21	25	23	45	▬	
64	02	03	03	26	04	22	19	15	21	09	23	14	25	36
62	02	28	03	40	04	31	19	08	20	56	22	51	24	52
60	02	48	03	51	04	38	19	03	20	45	22	33	24	22
N 58	03	04	04	01	04	44	18	58	20	35	22	17	24	00
56	03	17	04	09	04	50	18	53	20	27	22	05	23	42
54	03	28	04	17	04	55	18	49	20	20	21	53	23	26
52	03	38	04	23	04	59	18	46	20	13	21	44	23	13
50	03	47	04	29	05	03	18	43	20	07	21	35	23	01
45	04	04	04	41	05	12	18	36	19	55	21	16	22	37
N 40	04	18	04	51	05	19	18	30	19	45	21	01	22	18
35	04	28	05	00	05	26	18	26	19	36	20	49	22	02
30	04	38	05	07	05	31	18	21	19	28	20	38	21	49
20	04	52	05	18	05	41	18	14	19	15	20	19	21	25
N 10	05	02	05	27	05	49	18	08	19	04	20	03	21	05
0	05	11	05	35	05	56	18	02	18	53	19	48	20	47
S 10	05	18	05	42	06	04	17	56	18	42	19	33	20	28
20	05	23	05	49	06	11	17	50	18	31	19	17	20	08
30	05	28	05	56	06	20	17	43	18	19	18	59	19	46
35	05	30	06	00	06	25	17	39	18	12	18	49	19	33
40	05	32	06	03	06	31	17	35	18	03	18	37	19	17
45	05	33	06	08	06	37	17	30	17	54	18	23	18	59
S 50	05	35	06	12	06	45	17	23	17	42	18	06	18	37
52	05	35	06	14	06	49	17	21	17	37	17	58	18	27
54	05	35	06	17	06	53	17	18	17	31	17	49	18	15
56	05	36	06	19	06	57	17	14	17	25	17	40	18	01
58	05	36	06	22	07	02	17	11	17	18	17	29	17	46
S 60	05	36	06	24	07	07	17	06	17	10	17	16	17	27

Lat.	Ocaso Sol		Crepúsculo				Ocaso Luna							
			Civil		Náut.		16		17		18		19	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	20	35	22	31	////		04	37	04	00	02	57	▬	
N 70	20	16	21	44	////		04	44	04	16	03	37	▬	
68	20	01	21	14	////		04	49	04	30	04	05	03	11
66	19	49	20	53	22	44	04	53	04	41	04	26	04	02
64	19	39	20	36	22	02	04	57	04	50	04	43	04	34
62	19	30	20	22	21	34	05	00	04	58	04	57	04	57
60	19	23	20	10	21	14	05	03	05	05	05	09	05	17
N 58	19	16	20	00	20	58	05	05	05	11	05	20	05	33
56	19	11	19	52	20	44	05	07	05	17	05	29	05	46
54	19	06	19	44	20	33	05	10	05	22	05	37	05	58
52	19	01	19	37	20	23	05	11	05	26	05	45	06	09
50	18	57	19	31	20	14	05	13	05	30	05	51	06	18
45	18	48	19	19	19	56	05	17	05	39	06	06	06	38
N 40	18	40	19	09	19	43	05	20	05	47	06	17	06	54
35	18	34	19	00	19	31	05	23	05	53	06	28	07	08
30	18	28	18	53	19	22	05	25	05	59	06	37	07	20
20	18	19	18	41	19	08	05	29	06	09	06	52	07	40
N 10	18	11	18	32	18	57	05	33	06	18	07	06	07	58
0	18	03	18	24	18	48	05	36	06	26	07	18	08	15
S 10	17	55	18	17	18	41	05	40	06	34	07	31	08	32
20	17	47	18	10	18	36	05	43	06	43	07	45	08	50
30	17	39	18	03	18	31	05	48	06	53	08	01	09	11
35	17	33	17	59	18	29	05	50	06	59	08	10	09	24
40	17	28	17	55	18	27	05	53	07	05	08	21	09	38
45	17	21	17	51	18	25	05	56	07	13	08	33	09	55
S 50	17	13	17	46	18	24	06	00	07	23	08	49	10	16
52	17	10	17	44	18	23	06	02	07	27	08	56	10	26
54	17	06	17	42	18	23	06	04	07	32	09	04	10	37
56	17	01	17	39	18	22	06	06	07	37	09	13	10	50
58	16	56	17	37	18	22	06	08	07	43	09	23	11	05
S 60	16	51	17	34	18	22	06	11	07	50	09	35	11	23

Día	SOL						LUNA					
	Ec. Tiempo				Paso Mer.		Paso Mer.				Edad	Fase
	00^h		12^h				Sup.		Inf.			
d	m	s	m	s	h	m	h	m	h	m	d	%
16	00	04	00	12	12	00	24	14	11	49	15	100
17	00	19	00	26	12	00	00	14	12	39	16	99
18	00	32	00	39	11	59	01	06	13	33	17	96

UT (HmGr)	ARIES	VENUS −4·2		MARTE +0·9		JÚPITER −2·1		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
19 00	207 04.6	221 01.6	S 6 37.4	231 40.9	S11 44.8	210 52.6	S 2 46.8	240 54.0	S14 36.9
01	222 07.0	236 01.4	36.4	246 41.5	44.2	225 54.5	46.6	255 56.3	36.8
02	237 09.5	251 01.2	35.5	261 42.2	43.5	240 56.5	46.4	270 58.6	36.8
03	252 12.0	266 01.0	34.6	276 42.9	42.8	255 58.4	46.2	286 00.9	36.7
04	267 14.4	281 00.9	33.7	291 43.5	42.2	271 00.4	46.0	301 03.2	36.7
05	282 16.9	296 00.7	32.8	306 44.2	41.5	286 02.3	45.8	316 05.5	36.6
06	297 19.4	311 00.5	S 6 31.9	321 44.8	S11 40.9	301 04.3	S 2 45.5	331 07.8	S14 36.6
07	312 21.8	326 00.3	30.9	336 45.5	40.2	316 06.2	45.3	346 10.1	36.5
08	327 24.3	341 00.1	30.0	351 46.1	39.5	331 08.2	45.1	1 12.3	36.5
M 09	342 26.7	355 59.9	29.1	6 46.8	38.9	346 10.2	44.9	16 14.6	36.4
A 10	357 29.2	10 59.8	28.2	21 47.4	38.2	1 12.1	44.7	31 16.9	36.4
R 11	12 31.7	25 59.6	27.3	36 48.1	37.6	16 14.1	44.5	46 19.2	36.3
T 12	27 34.1	40 59.4	S 6 26.3	51 48.8	S11 36.9	31 16.0	S 2 44.3	61 21.5	S14 36.3
E 13	42 36.6	55 59.2	25.4	66 49.4	36.2	46 18.0	44.1	76 23.8	36.2
S 14	57 39.1	70 59.0	24.5	81 50.1	35.6	61 19.9	43.8	91 26.1	36.1
15	72 41.5	85 58.8	23.6	96 50.7	34.9	76 21.9	43.6	106 28.4	36.1
16	87 44.0	100 58.7	22.7	111 51.4	34.2	91 23.8	43.4	121 30.7	36.0
17	102 46.5	115 58.5	21.7	126 52.0	33.6	106 25.8	43.2	136 33.0	36.0
18	117 48.9	130 58.3	S 6 20.8	141 52.7	S11 32.9	121 27.8	S 2 43.0	151 35.2	S14 35.9
19	132 51.4	145 58.1	19.9	156 53.4	32.3	136 29.7	42.8	166 37.5	35.9
20	147 53.9	160 57.9	19.0	171 54.0	31.6	151 31.7	42.6	181 39.8	35.8
21	162 56.3	175 57.8	18.0	186 54.7	30.9	166 33.6	42.3	196 42.1	35.8
22	177 58.8	190 57.6	17.1	201 55.3	30.3	181 35.6	42.1	211 44.4	35.7
23	193 01.2	205 57.4	16.2	216 56.0	29.6	196 37.5	41.9	226 46.7	35.7
20 00	208 03.7	220 57.2	S 6 15.3	231 56.6	S11 28.9	211 39.5	S 2 41.7	241 49.0	S14 35.6
01	223 06.2	235 57.0	14.3	246 57.3	28.3	226 41.4	41.5	256 51.3	35.6
02	238 08.6	250 56.8	13.4	261 58.0	27.6	241 43.4	41.3	271 53.6	35.5
03	253 11.1	265 56.7	12.5	276 58.6	27.0	256 45.4	41.1	286 55.9	35.5
04	268 13.6	280 56.5	11.5	291 59.3	26.3	271 47.3	40.8	301 58.2	35.4
05	283 16.0	295 56.3	10.6	306 59.9	25.6	286 49.3	40.6	317 00.4	35.4
06	298 18.5	310 56.1	S 6 09.7	322 00.6	S11 25.0	301 51.2	S 2 40.4	332 02.7	S14 35.3
07	313 21.0	325 55.9	08.8	337 01.3	24.3	316 53.2	40.2	347 05.0	35.3
M 08	328 23.4	340 55.7	07.8	352 01.9	23.6	331 55.1	40.0	2 07.3	35.2
I 09	343 25.9	355 55.6	06.9	7 02.6	23.0	346 57.1	39.8	17 09.6	35.2
É 10	358 28.4	10 55.4	06.0	22 03.2	22.3	1 59.1	39.6	32 11.9	35.1
R 11	13 30.8	25 55.2	05.0	37 03.9	21.6	17 01.0	39.4	47 14.2	35.1
C 12	28 33.3	40 55.0	S 6 04.1	52 04.6	S11 21.0	32 03.0	S 2 39.1	62 16.5	S14 35.0
O 13	43 35.7	55 54.8	03.2	67 05.2	20.3	47 04.9	38.9	77 18.8	35.0
L 14	58 38.2	70 54.6	02.2	82 05.9	19.6	62 06.9	38.7	92 21.1	34.9
E 15	73 40.7	85 54.5	01.3	97 06.5	19.0	77 08.8	38.5	107 23.4	34.9
S 16	88 43.1	100 54.3	6 00.4	112 07.2	18.3	92 10.8	38.3	122 25.7	34.8
17	103 45.6	115 54.1	5 59.4	127 07.9	17.6	107 12.8	38.1	137 28.0	34.8
18	118 48.1	130 53.9	S 5 58.5	142 08.5	S11 17.0	122 14.7	S 2 37.9	152 30.3	S14 34.7
19	133 50.5	145 53.7	57.6	157 09.2	16.3	137 16.7	37.7	167 32.5	34.7
20	148 53.0	160 53.5	56.6	172 09.8	15.6	152 18.6	37.4	182 34.8	34.6
21	163 55.5	175 53.4	55.7	187 10.5	15.0	167 20.6	37.2	197 37.1	34.6
22	178 57.9	190 53.2	54.8	202 11.2	14.3	182 22.6	37.0	212 39.4	34.5
23	194 00.4	205 53.0	53.8	217 11.8	13.6	197 24.5	36.8	227 41.7	34.5
21 00	209 02.8	220 52.8	S 5 52.9	232 12.5	S11 13.0	212 26.5	S 2 36.6	242 44.0	S14 34.4
01	224 05.3	235 52.6	52.0	247 13.1	12.3	227 28.4	36.4	257 46.3	34.4
02	239 07.8	250 52.4	51.0	262 13.8	11.6	242 30.4	36.2	272 48.6	34.3
03	254 10.2	265 52.3	50.1	277 14.5	11.0	257 32.3	36.0	287 50.9	34.3
04	269 12.7	280 52.1	49.2	292 15.1	10.3	272 34.3	35.7	302 53.2	34.2
05	284 15.2	295 51.9	48.2	307 15.8	09.6	287 36.3	35.5	317 55.5	34.2
06	299 17.6	310 51.7	S 5 47.3	322 16.4	S11 09.0	302 38.2	S 2 35.3	332 57.8	S14 34.1
07	314 20.1	325 51.5	46.3	337 17.1	08.3	317 40.2	35.1	348 00.1	34.0
J 08	329 22.6	340 51.3	45.4	352 17.8	07.6	332 42.1	34.9	3 02.4	34.0
U 09	344 25.0	355 51.2	44.5	7 18.4	07.0	347 44.1	34.7	18 04.7	33.9
E 10	359 27.5	10 51.0	43.5	22 19.1	06.3	2 46.1	34.5	33 07.0	33.9
V 11	14 30.0	25 50.8	42.6	37 19.8	05.6	17 48.0	34.3	48 09.3	33.8
E 12	29 32.4	40 50.6	S 5 41.6	52 20.4	S11 05.0	32 50.0	S 2 34.0	63 11.6	S14 33.8
S 13	44 34.9	55 50.4	40.7	67 21.1	04.3	47 51.9	33.8	78 13.9	33.7
14	59 37.3	70 50.2	39.7	82 21.7	03.6	62 53.9	33.6	93 16.2	33.7
15	74 39.8	85 50.0	38.8	97 22.4	02.9	77 55.9	33.4	108 18.5	33.6
16	89 42.3	100 49.9	37.9	112 23.1	02.3	92 57.8	33.2	123 20.7	33.6
17	104 44.7	115 49.7	36.9	127 23.7	01.6	107 59.8	33.0	138 23.0	33.5
18	119 47.2	130 49.5	S 5 36.0	142 24.4	S11 00.9	123 01.7	S 2 32.8	153 25.3	S14 33.5
19	134 49.7	145 49.3	35.0	157 25.1	11 00.3	138 03.7	32.6	168 27.6	33.5
20	149 52.1	160 49.1	34.1	172 25.7	10 59.6	153 05.7	32.3	183 29.9	33.4
21	164 54.6	175 48.9	33.1	187 26.4	58.9	168 07.6	32.1	198 32.2	33.4
22	179 57.1	190 48.8	32.2	202 27.1	58.2	183 09.6	31.9	213 34.5	33.3
23	194 59.5	205 48.6	31.2	217 27.7	57.6	198 11.5	31.7	228 36.8	33.3
	h m								
Paso Mer.	10 06.1	*v* −0.2	*d* 0.9	*v* 0.7	*d* 0.7	*v* 2.0	*d* 0.2	*v* 2.3	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 13.1
Achernar	335 22.5	S57 07.5
Acrux	173 01.9	S63 13.4
Adhara	255 07.8	S29 00.4
Aldebaran	290 42.5	N16 33.1
Alioth	166 14.5	N55 50.4
Alkaid	152 53.3	N49 12.1
Alnair	27 36.0	S46 51.1
Alnilam	275 40.2	S 1 11.4
Alphard	217 49.9	S 8 45.4
Alphecca	126 05.3	N26 38.3
Alpheratz	357 37.4	N29 12.5
Altair	62 02.1	N 8 55.4
Ankaa	353 09.8	S42 11.2
Antares	112 18.3	S26 28.8
Arcturus	145 49.7	N19 03.9
Atria	107 14.2	S69 03.8
Avior	234 15.6	S59 35.1
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.7	N 7 24.6
Canopus	263 53.6	S52 42.7
Capella	280 25.5	N46 01.3
Deneb	49 27.4	N45 21.2
Denebola	182 27.0	N14 26.9
Diphda	348 49.9	S17 52.0
Dubhe	193 43.4	N61 38.1
Elnath	278 05.0	N28 37.5
Eltanin	90 43.0	N51 28.8
Enif	33 41.1	N 9 58.4
Fomalhaut	15 17.3	S29 30.3
Gacrux	171 53.6	S57 14.4
Gienah	175 45.6	S17 40.0
Hadar	148 38.6	S60 28.8
Hamal	327 54.1	N23 33.9
Kaus Aust.	83 35.4	S34 22.4
Kochab	137 18.7	N74 03.8
Markab	13 32.4	N15 19.2
Menkar	314 08.8	N 4 10.4
Menkent	147 59.9	S36 28.8
Miaplacidus	221 38.4	S69 48.7
Mirfak	308 32.0	N49 56.3
Nunki	75 50.5	S26 16.1
Peacock	53 09.4	S56 39.6
Pollux	243 20.1	N27 58.4
Procyon	244 53.3	N 5 10.0
Rasalhague	96 00.4	N12 32.5
Regulus	207 36.7	N11 51.5
Rigel	281 06.3	S 8 10.7
Rigil Kent.	139 42.7	S60 55.5
Sabik	102 05.1	S15 45.2
Schedar	349 34.1	N56 39.3
Shaula	96 13.2	S37 07.1
Sirius	258 28.4	S16 45.0
Spica	158 24.4	S11 16.7
Suhail	222 47.8	S43 31.6
Vega	80 34.6	N38 48.0
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	12 53.5	9 16
Marte	23 52.9	8 32
Júpiter	3 35.8	9 52
Saturno	33 45.3	7 52

UT (HmGr)	SOL AHGr	SOL Dec	LUNA AHGr	LUNA v	LUNA Dec	LUNA d	LUNA Ph
d h	° ′	° ′	° ′	′	° ′	′	′
19 00	180 11.5	N11 05.5	330 49.1	6.4	S20 23.5	11.2	60.0
01	195 11.6	06.4	345 14.5	6.3	20 34.7	11.1	60.0
02	210 11.8	07.2	359 39.8	6.2	20 45.8	10.9	60.0
03	225 11.9	08.1	14 05.0	6.1	20 56.7	10.8	60.0
04	240 12.0	09.0	28 30.1	6.0	21 07.5	10.7	60.0
05	255 12.2	09.8	42 55.1	6.0	21 18.2	10.5	60.0
06	270 12.3	N11 10.7	57 20.1	5.8	S21 28.7	10.4	60.0
07	285 12.5	11.6	71 44.9	5.7	21 39.1	10.2	60.0
M 08	300 12.6	12.4	86 09.6	5.7	21 49.3	10.1	60.0
A 09	315 12.7	13.3	100 34.3	5.6	21 59.4	10.0	60.0
R 10	330 12.9	14.2	114 58.9	5.5	22 09.4	9.8	60.0
11	345 13.0	15.0	129 23.4	5.3	22 19.2	9.7	60.0
T 12	0 13.1	N11 15.9	143 47.7	5.4	S22 28.9	9.5	60.1
E 13	15 13.3	16.7	158 12.1	5.2	22 38.4	9.4	60.1
S 14	30 13.4	17.6	172 36.3	5.1	22 47.8	9.2	60.1
15	45 13.5	18.5	187 00.4	5.1	22 57.0	9.0	60.1
16	60 13.7	19.3	201 24.5	4.9	23 06.0	8.9	60.1
17	75 13.8	20.2	215 48.4	4.9	23 14.9	8.8	60.1
18	90 13.9	N11 21.1	230 12.3	4.8	S23 23.7	8.6	60.1
19	105 14.1	21.9	244 36.1	4.7	23 32.3	8.4	60.0
20	120 14.2	22.8	258 59.8	4.7	23 40.7	8.3	60.0
21	135 14.3	23.6	273 23.5	4.6	23 49.0	8.1	60.0
22	150 14.5	24.5	287 47.1	4.5	23 57.1	7.9	60.0
23	165 14.6	25.4	302 10.6	4.4	24 05.0	7.8	60.0
20 00	180 14.7	N11 26.2	316 34.0	4.3	S24 12.8	7.6	60.0
01	195 14.9	27.1	330 57.3	4.3	24 20.4	7.4	60.0
02	210 15.0	27.9	345 20.6	4.2	24 27.8	7.3	60.0
03	225 15.1	28.8	359 43.8	4.2	24 35.1	7.1	60.0
04	240 15.3	29.6	14 07.0	4.1	24 42.2	6.9	60.0
05	255 15.4	30.5	28 30.1	4.0	24 49.1	6.7	60.0
06	270 15.5	N11 31.4	42 53.1	3.9	S24 55.8	6.6	60.0
07	285 15.7	32.2	57 16.0	3.9	25 02.4	6.4	60.0
M 08	300 15.8	33.1	71 38.9	3.9	25 08.8	6.2	60.0
I 09	315 15.9	33.9	86 01.8	3.8	25 15.0	6.1	60.0
É 10	330 16.0	34.8	100 24.6	3.7	25 21.1	5.8	60.0
R 11	345 16.2	35.6	114 47.3	3.7	25 26.9	5.7	60.0
C 12	0 16.3	N11 36.5	129 10.0	3.6	S25 32.6	5.5	60.0
O 13	15 16.4	37.3	143 32.6	3.6	25 38.1	5.3	60.0
L 14	30 16.6	38.2	157 55.2	3.5	25 43.4	5.2	60.0
E 15	45 16.7	39.1	172 17.7	3.5	25 48.6	4.9	60.0
S 16	60 16.8	39.9	186 40.2	3.4	25 53.5	4.8	60.0
17	75 17.0	40.8	201 02.6	3.4	25 58.3	4.6	59.9
18	90 17.1	N11 41.6	215 25.0	3.4	S26 02.9	4.4	59.9
19	105 17.2	42.5	229 47.4	3.3	26 07.3	4.2	59.9
20	120 17.3	43.3	244 09.7	3.3	26 11.5	4.0	59.9
21	135 17.5	44.2	258 32.0	3.3	26 15.5	3.8	59.9
22	150 17.6	45.0	272 54.3	3.2	26 19.3	3.7	59.9
23	165 17.7	45.9	287 16.5	3.2	26 23.0	3.5	59.9
21 00	180 17.9	N11 46.7	301 38.7	3.2	S26 26.5	3.2	59.9
01	195 18.0	47.6	316 00.9	3.2	26 29.7	3.1	59.9
02	210 18.1	48.4	330 23.1	3.2	26 32.8	2.9	59.9
03	225 18.2	49.3	344 45.3	3.1	26 35.7	2.7	59.8
04	240 18.4	50.1	359 07.4	3.1	26 38.4	2.5	59.8
05	255 18.5	51.0	13 29.5	3.1	26 40.9	2.3	59.8
06	270 18.6	N11 51.8	27 51.6	3.2	S26 43.2	2.2	59.8
07	285 18.7	52.7	42 13.8	3.1	26 45.4	1.9	59.8
J 08	300 18.9	53.5	56 35.9	3.1	26 47.3	1.7	59.8
U 09	315 19.0	54.4	70 58.0	3.0	26 49.0	1.6	59.8
E 10	330 19.1	55.2	85 20.0	3.1	26 50.6	1.4	59.8
V 11	345 19.3	56.1	99 42.1	3.2	26 52.0	1.1	59.8
E 12	0 19.4	N11 56.9	114 04.3	3.1	S26 53.1	1.0	59.7
S 13	15 19.5	57.8	128 26.4	3.1	26 54.1	0.8	59.7
14	30 19.6	58.6	142 48.5	3.1	26 54.9	0.6	59.7
15	45 19.8	11 59.5	157 10.6	3.2	26 55.5	0.4	59.7
16	60 19.9	12 00.3	171 32.8	3.1	26 55.9	0.2	59.7
17	75 20.0	01.1	185 54.9	3.2	26 56.1	0.0	59.7
18	90 20.1	N12 02.0	200 17.1	3.2	S26 56.1	0.1	59.7
19	105 20.3	02.8	214 39.3	3.2	26 56.0	0.4	59.6
20	120 20.4	03.7	229 01.5	3.3	26 55.6	0.5	59.6
21	135 20.5	04.5	243 23.8	3.3	26 55.1	0.8	59.6
22	150 20.6	05.4	257 46.1	3.3	26 54.3	0.9	59.6
23	165 20.7	06.2	272 08.4	3.3	S26 53.4	1.1	59.6
	S/D 15.9	*d* 0.9	S/D	16.4	16.3		16.3

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 19	Orto Luna 20	Orto Luna 21	Orto Luna 22
°	h m	h m	h m	h m	h m	h m	h m
N 72	////	00 57	03 10	▬	▬	▬	▬
N 70	////	01 58	03 31	▬	▬	▬	▬
68	////	02 31	03 47	00 34	▬	▬	▬
66	00 49	02 55	04 01	▬	▬	▬	▬
64	01 43	03 14	04 12	25 36	01 36	▬	▬
62	02 13	03 29	04 21	24 52	00 52	02 46	03 55
60	02 35	03 41	04 29	24 22	00 22	02 01	03 09
N 58	02 53	03 52	04 36	24 00	00 00	01 32	02 39
56	03 07	04 01	04 42	23 42	25 09	01 09	02 16
54	03 20	04 09	04 48	23 26	24 50	00 50	01 57
52	03 30	04 16	04 53	23 13	24 35	00 35	01 41
50	03 39	04 23	04 57	23 01	24 21	00 21	01 27
45	03 58	04 36	05 07	22 37	23 54	24 59	00 59
N 40	04 13	04 47	05 15	22 18	23 32	24 37	00 37
35	04 24	04 56	05 22	22 02	23 14	24 19	00 19
30	04 34	05 03	05 28	21 49	22 58	24 03	00 03
20	04 49	05 16	05 38	21 25	22 32	23 36	24 35
N 10	05 01	05 26	05 47	21 05	22 10	23 13	24 14
0	05 10	05 34	05 56	20 47	21 49	22 52	23 54
S 10	05 18	05 42	06 04	20 28	21 28	22 30	23 33
20	05 24	05 50	06 12	20 08	21 05	22 07	23 12
30	05 30	05 58	06 22	19 46	20 40	21 41	22 47
35	05 32	06 02	06 28	19 33	20 25	21 25	22 32
40	05 35	06 06	06 34	19 17	20 07	21 07	22 15
45	05 37	06 11	06 41	18 59	19 46	20 45	21 54
S 50	05 39	06 17	06 50	18 37	19 20	20 17	21 28
52	05 40	06 19	06 54	18 27	19 07	20 03	21 15
54	05 41	06 22	06 58	18 15	18 52	19 48	21 01
56	05 41	06 25	07 03	18 01	18 35	19 29	20 44
58	05 42	06 28	07 08	17 46	18 15	19 06	20 23
S 60	05 43	06 31	07 15	17 27	17 49	18 37	19 57

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 19	Ocaso Luna 20	Ocaso Luna 21	Ocaso Luna 22
°	h m	h m	h m	h m	h m	h m	h m
N 72	20 53	23 22	////	▬	▬	▬	▬
N 70	20 30	22 07	////	▬	▬	▬	▬
68	20 13	21 31	////	03 11	▬	▬	▬
66	20 00	21 06	23 27	04 02	▬	▬	▬
64	19 48	20 47	22 21	04 34	04 16	▬	▬
62	19 39	20 31	21 49	04 57	05 01	05 18	06 22
60	19 30	20 19	21 26	05 17	05 31	06 03	07 07
N 58	19 23	20 08	21 07	05 33	05 54	06 33	07 37
56	19 17	19 58	20 53	05 46	06 13	06 56	08 00
54	19 11	19 50	20 40	05 58	06 28	07 14	08 19
52	19 06	19 43	20 29	06 09	06 42	07 30	08 35
50	19 02	19 36	20 20	06 18	06 54	07 44	08 48
45	18 52	19 23	20 01	06 38	07 19	08 12	09 16
N 40	18 43	19 12	19 46	06 54	07 39	08 34	09 38
35	18 36	19 03	19 34	07 08	07 56	08 52	09 56
30	18 30	18 55	19 24	07 20	08 10	09 08	10 12
20	18 20	18 42	19 09	07 40	08 35	09 34	10 38
N 10	18 11	18 32	18 57	07 58	08 56	09 57	11 01
0	18 02	18 23	18 48	08 15	09 16	10 19	11 22
S 10	17 54	18 15	18 40	08 32	09 36	10 40	11 43
20	17 45	18 08	18 33	08 50	09 57	11 03	12 05
30	17 35	18 00	18 28	09 11	10 22	11 30	12 31
35	17 30	17 56	18 25	09 24	10 37	11 45	12 46
40	17 23	17 51	18 23	09 38	10 54	12 04	13 04
45	17 16	17 46	18 20	09 55	11 14	12 26	13 25
S 50	17 07	17 40	18 18	10 16	11 40	12 53	13 51
52	17 03	17 38	18 17	10 26	11 52	13 07	14 04
54	16 59	17 35	18 16	10 37	12 07	13 23	14 19
56	16 54	17 32	18 16	10 50	12 23	13 41	14 36
58	16 48	17 29	18 15	11 05	12 43	14 04	14 57
S 60	16 42	17 26	18 14	11 23	13 09	14 34	15 23

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
19	00 46	00 52	11 59	02 01	14 31	18 90	
20	00 59	01 05	11 59	03 01	15 32	19 82	
21	01 11	01 17	11 59	04 04	16 35	20 72	

UT (HmGr)	ARIES	VENUS −4·2		MARTE +0·9		JÚPITER −2·1		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
22 00	210 02.0	220 48.4	S 5 30.3	232 28.4	S10 56.9	213 13.5	S 2 31.5	243 39.1	S14 33.2
01	225 04.5	235 48.2	29.4	247 29.1	56.2	228 15.5	31.3	258 41.4	33.2
02	240 06.9	250 48.0	28.4	262 29.7	55.6	243 17.4	31.1	273 43.7	33.1
03	255 09.4	265 47.8	27.5	277 30.4	54.9	258 19.4	30.9	288 46.0	33.1
04	270 11.8	280 47.7	26.5	292 31.0	54.2	273 21.4	30.7	303 48.3	33.0
05	285 14.3	295 47.5	25.6	307 31.7	53.5	288 23.3	30.4	318 50.6	33.0
06	300 16.8	310 47.3	S 5 24.6	322 32.4	S10 52.9	303 25.3	S 2 30.2	333 52.9	S14 32.9
07	315 19.2	325 47.1	23.7	337 33.0	52.2	318 27.2	30.0	348 55.2	32.9
08	330 21.7	340 46.9	22.7	352 33.7	51.5	333 29.2	29.8	3 57.5	32.8
09	345 24.2	355 46.7	21.8	7 34.4	50.9	348 31.2	29.6	18 59.8	32.8
10	0 26.6	10 46.5	20.8	22 35.0	50.2	3 33.1	29.4	34 02.1	32.7
11	15 29.1	25 46.4	19.9	37 35.7	49.5	18 35.1	29.2	49 04.4	32.7
12	30 31.6	40 46.2	S 5 18.9	52 36.4	S10 48.8	33 37.0	S 2 29.0	64 06.7	S14 32.6
13	45 34.0	55 46.0	18.0	67 37.0	48.2	48 39.0	28.8	79 09.0	32.6
14	60 36.5	70 45.8	17.0	82 37.7	47.5	63 41.0	28.5	94 11.3	32.5
15	75 39.0	85 45.6	16.0	97 38.4	46.8	78 42.9	28.3	109 13.6	32.5
16	90 41.4	100 45.4	15.1	112 39.0	46.1	93 44.9	28.1	124 15.9	32.4
17	105 43.9	115 45.3	14.1	127 39.7	45.5	108 46.9	27.9	139 18.2	32.4
18	120 46.3	130 45.1	S 5 13.2	142 40.4	S10 44.8	123 48.8	S 2 27.7	154 20.5	S14 32.3
19	135 48.8	145 44.9	12.2	157 41.0	44.1	138 50.8	27.5	169 22.8	32.3
20	150 51.3	160 44.7	11.3	172 41.7	43.4	153 52.7	27.3	184 25.1	32.2
21	165 53.7	175 44.5	10.3	187 42.4	42.8	168 54.7	27.1	199 27.4	32.2
22	180 56.2	190 44.3	09.4	202 43.0	42.1	183 56.7	26.9	214 29.7	32.1
23	195 58.7	205 44.1	08.4	217 43.7	41.4	198 58.6	26.7	229 32.0	32.1
23 00	211 01.1	220 44.0	S 5 07.5	232 44.4	S10 40.7	214 00.6	S 2 26.4	244 34.3	S14 32.0
01	226 03.6	235 43.8	06.5	247 45.0	40.1	229 02.6	26.2	259 36.6	32.0
02	241 06.1	250 43.6	05.5	262 45.7	39.4	244 04.5	26.0	274 38.9	31.9
03	256 08.5	265 43.4	04.6	277 46.4	38.7	259 06.5	25.8	289 41.2	31.9
04	271 11.0	280 43.2	03.6	292 47.0	38.0	274 08.5	25.6	304 43.5	31.8
05	286 13.5	295 43.0	02.7	307 47.7	37.4	289 10.4	25.4	319 45.8	31.8
06	301 15.9	310 42.9	S 5 01.7	322 48.4	S10 36.7	304 12.4	S 2 25.2	334 48.1	S14 31.7
07	316 18.4	325 42.7	5 00.7	337 49.1	36.0	319 14.3	25.0	349 50.4	31.7
08	331 20.8	340 42.5	4 59.8	352 49.7	35.3	334 16.3	24.8	4 52.7	31.6
09	346 23.3	355 42.3	58.8	7 50.4	34.7	349 18.3	24.5	19 55.0	31.6
10	1 25.8	10 42.1	57.9	22 51.1	34.0	4 20.2	24.3	34 57.3	31.5
11	16 28.2	25 41.9	56.9	37 51.7	33.3	19 22.2	24.1	49 59.6	31.5
12	31 30.7	40 41.7	S 4 55.9	52 52.4	S10 32.6	34 24.2	S 2 23.9	65 01.9	S14 31.5
13	46 33.2	55 41.6	55.0	67 53.1	32.0	49 26.1	23.7	80 04.2	31.4
14	61 35.6	70 41.4	54.0	82 53.7	31.3	64 28.1	23.5	95 06.5	31.4
15	76 38.1	85 41.2	53.1	97 54.4	30.6	79 30.1	23.3	110 08.8	31.3
16	91 40.6	100 41.0	52.1	112 55.1	29.9	94 32.0	23.1	125 11.1	31.3
17	106 43.0	115 40.8	51.1	127 55.7	29.2	109 34.0	22.9	140 13.4	31.2
18	121 45.5	130 40.6	S 4 50.2	142 56.4	S10 28.6	124 36.0	S 2 22.7	155 15.7	S14 31.2
19	136 48.0	145 40.4	49.2	157 57.1	27.9	139 37.9	22.5	170 18.1	31.1
20	151 50.4	160 40.3	48.2	172 57.8	27.2	154 39.9	22.2	185 20.4	31.1
21	166 52.9	175 40.1	47.3	187 58.4	26.5	169 41.8	22.0	200 22.7	31.0
22	181 55.3	190 39.9	46.3	202 59.1	25.9	184 43.8	21.8	215 25.0	31.0
23	196 57.8	205 39.7	45.3	217 59.8	25.2	199 45.8	21.6	230 27.3	30.9
24 00	212 00.3	220 39.5	S 4 44.4	233 00.4	S10 24.5	214 47.7	S 2 21.4	245 29.6	S14 30.9
01	227 02.7	235 39.3	43.4	248 01.1	23.8	229 49.7	21.2	260 31.9	30.8
02	242 05.2	250 39.1	42.4	263 01.8	23.1	244 51.7	21.0	275 34.2	30.8
03	257 07.7	265 39.0	41.5	278 02.4	22.5	259 53.6	20.8	290 36.5	30.7
04	272 10.1	280 38.8	40.5	293 03.1	21.8	274 55.6	20.6	305 38.8	30.7
05	287 12.6	295 38.6	39.5	308 03.8	21.1	289 57.6	20.4	320 41.1	30.6
06	302 15.1	310 38.4	S 4 38.6	323 04.5	S10 20.4	304 59.5	S 2 20.1	335 43.4	S14 30.6
07	317 17.5	325 38.2	37.6	338 05.1	19.7	320 01.5	19.9	350 45.7	30.6
08	332 20.0	340 38.0	36.6	353 05.8	19.1	335 03.5	19.7	5 48.0	30.5
09	347 22.4	355 37.8	35.7	8 06.5	18.4	350 05.4	19.5	20 50.3	30.5
10	2 24.9	10 37.7	34.7	23 07.2	17.7	5 07.4	19.3	35 52.6	30.4
11	17 27.4	25 37.5	33.7	38 07.8	17.0	20 09.4	19.1	50 54.9	30.4
12	32 29.8	40 37.3	S 4 32.8	53 08.5	S10 16.3	35 11.3	S 2 18.9	65 57.2	S14 30.3
13	47 32.3	55 37.1	31.8	68 09.2	15.7	50 13.3	18.7	80 59.5	30.3
14	62 34.8	70 36.9	30.8	83 09.8	15.0	65 15.3	18.5	96 01.8	30.2
15	77 37.2	85 36.7	29.8	98 10.5	14.3	80 17.2	18.3	111 04.1	30.2
16	92 39.7	100 36.5	28.9	113 11.2	13.6	95 19.2	18.1	126 06.5	30.1
17	107 42.2	115 36.4	27.9	128 11.9	12.9	110 21.2	17.9	141 08.8	30.1
18	122 44.6	130 36.2	S 4 26.9	143 12.5	S10 12.3	125 23.1	S 2 17.6	156 11.1	S14 30.0
19	137 47.1	145 36.0	26.0	158 13.2	11.6	140 25.1	17.4	171 13.4	30.0
20	152 49.6	160 35.8	25.0	173 13.9	10.9	155 27.1	17.2	186 15.7	29.9
21	167 52.0	175 35.6	24.0	188 14.6	10.2	170 29.0	17.0	201 18.0	29.9
22	182 54.5	190 35.4	23.0	203 15.2	09.5	185 31.0	16.8	216 20.3	29.9
23	197 56.9	205 35.2	22.1	218 15.9	08.8	200 33.0	16.6	231 22.6	29.8
	h m								
Paso Mer.	9 54.3	*v* −0.2	*d* 1.0	*v* 0.7	*d* 0.7	*v* 2.0	*d* 0.2	*v* 2.3	*d* 0.0

VIERNES SÁBADO DOMINGO

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 13.1
Achernar	335 22.5	S57 07.5
Acrux	173 01.9	S63 13.5
Adhara	255 07.8	S29 00.4
Aldebaran	290 42.5	N16 33.1
Alioth	166 14.5	N55 50.4
Alkaid	152 53.3	N49 12.2
Alnair	27 36.0	S46 51.1
Alnilam	275 40.2	S 1 11.4
Alphard	217 49.9	S 8 45.4
Alphecca	126 05.3	N26 38.3
Alpheratz	357 37.4	N29 12.5
Altair	62 02.1	N 8 55.4
Ankaa	353 09.8	S42 11.2
Antares	112 18.3	S26 28.9
Arcturus	145 49.6	N19 03.9
Atria	107 14.1	S69 03.8
Avior	234 15.6	S59 35.1
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.7	N 7 24.6
Canopus	263 53.6	S52 42.7
Capella	280 25.5	N46 01.3
Deneb	49 27.4	N45 21.2
Denebola	182 27.0	N14 26.9
Diphda	348 49.9	S17 52.0
Dubhe	193 43.4	N61 38.1
Elnath	278 05.0	N28 37.5
Eltanin	90 42.9	N51 28.9
Enif	33 41.1	N 9 58.4
Fomalhaut	15 17.2	S29 30.3
Gacrux	171 53.6	S57 14.4
Gienah	175 45.6	S17 40.0
Hadar	148 38.5	S60 28.8
Hamal	327 54.1	N23 33.9
Kaus Aust.	83 35.3	S34 22.4
Kochab	137 18.7	N74 03.8
Markab	13 32.4	N15 19.3
Menkar	314 08.8	N 4 10.4
Menkent	147 59.9	S36 28.8
Miaplacidus	221 38.5	S69 48.8
Mirfak	308 31.9	N49 56.3
Nunki	75 50.4	S26 16.1
Peacock	53 09.3	S56 39.6
Pollux	243 20.1	N27 58.4
Procyon	244 53.3	N 5 10.0
Rasalhague	96 00.4	N12 32.5
Regulus	207 36.7	N11 51.5
Rigel	281 06.3	S 8 10.7
Rigil Kent.	139 42.7	S60 55.6
Sabik	102 05.1	S15 45.2
Schedar	349 34.1	N56 39.3
Shaula	96 13.2	S37 07.1
Sirius	258 28.4	S16 45.0
Spica	158 24.4	S11 16.7
Suhail	222 47.9	S43 31.6
Vega	80 34.6	N38 48.0
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	9 42.8	9 17
Marte	21 43.2	8 29
Júpiter	2 59.5	9 43
Saturno	33 33.2	7 41

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	′	°	′	′	′
22 00	180	20.9	N12	07.1	286	30.7	3.4	S26	52.3	1.3	59.6
01	195	21.0		07.9	300	53.1	3.5	26	51.0	1.5	59.6
02	210	21.1		08.7	315	15.6	3.4	26	49.5	1.7	59.5
03	225	21.2	. .	09.6	329	38.0	3.5	26	47.8	1.8	59.5
04	240	21.4		10.4	344	00.5	3.6	26	46.0	2.1	59.5
05	255	21.5		11.3	358	23.1	3.6	26	43.9	2.2	59.5
06	270	21.6	N12	12.1	12	45.7	3.7	S26	41.7	2.4	59.5
07	285	21.7		12.9	27	08.4	3.7	26	39.3	2.6	59.5
V 08	300	21.9		13.8	41	31.1	3.7	26	36.7	2.8	59.4
I 09	315	22.0	. .	14.6	55	53.8	3.8	26	33.9	3.0	59.4
E 10	330	22.1		15.5	70	16.6	3.9	26	30.9	3.1	59.4
R 11	345	22.2		16.3	84	39.5	4.0	26	27.8	3.3	59.4
N 12	0	22.3	N12	17.1	99	02.5	4.0	S26	24.5	3.5	59.4
E 13	15	22.5		18.0	113	25.5	4.0	26	21.0	3.7	59.4
S 14	30	22.6		18.8	127	48.5	4.2	26	17.3	3.8	59.3
15	45	22.7	. .	19.7	142	11.7	4.2	26	13.5	4.1	59.3
16	60	22.8		20.5	156	34.9	4.3	26	09.4	4.2	59.3
17	75	22.9		21.3	170	58.2	4.3	26	05.2	4.4	59.3
18	90	23.1	N12	22.2	185	21.5	4.4	S26	00.8	4.5	59.3
19	105	23.2		23.0	199	44.9	4.5	25	56.3	4.7	59.3
20	120	23.3		23.8	214	08.4	4.6	25	51.6	4.9	59.2
21	135	23.4	. .	24.7	228	32.0	4.6	25	46.7	5.1	59.2
22	150	23.5		25.5	242	55.6	4.8	25	41.6	5.2	59.2
23	165	23.7		26.3	257	19.4	4.8	25	36.4	5.4	59.2
23 00	180	23.8	N12	27.2	271	43.2	4.9	S25	31.0	5.5	59.2
01	195	23.9		28.0	286	07.1	5.0	25	25.5	5.8	59.1
02	210	24.0		28.8	300	31.1	5.1	25	19.7	5.9	59.1
03	225	24.1	. .	29.7	314	55.2	5.1	25	13.8	6.0	59.1
04	240	24.2		30.5	329	19.3	5.3	25	07.8	6.2	59.1
05	255	24.4		31.3	343	43.6	5.3	25	01.6	6.4	59.1
06	270	24.5	N12	32.2	358	07.9	5.4	S24	55.2	6.5	59.0
07	285	24.6		33.0	12	32.3	5.6	24	48.7	6.7	59.0
S 08	300	24.7		33.8	26	56.9	5.6	24	42.0	6.8	59.0
Á 09	315	24.8	. .	34.7	41	21.5	5.7	24	35.2	7.0	59.0
B 10	330	24.9		35.5	55	46.2	5.8	24	28.2	7.1	59.0
A 11	345	25.1		36.3	70	11.0	5.9	24	21.1	7.3	59.0
D 12	0	25.2	N12	37.2	84	35.9	6.0	S24	13.8	7.4	58.9
O 13	15	25.3		38.0	99	00.9	6.1	24	06.4	7.6	58.9
14	30	25.4		38.8	113	26.0	6.2	23	58.8	7.7	58.9
15	45	25.5	. .	39.7	127	51.2	6.3	23	51.1	7.9	58.9
16	60	25.6		40.5	142	16.5	6.4	23	43.2	8.0	58.9
17	75	25.8		41.3	156	41.9	6.5	23	35.2	8.1	58.8
18	90	25.9	N12	42.1	171	07.4	6.6	S23	27.1	8.3	58.8
19	105	26.0		43.0	185	33.0	6.7	23	18.8	8.5	58.8
20	120	26.1		43.8	199	58.7	6.8	23	10.3	8.5	58.8
21	135	26.2	. .	44.6	214	24.5	6.9	23	01.8	8.7	58.8
22	150	26.3		45.4	228	50.4	7.0	22	53.1	8.8	58.7
23	165	26.4		46.3	243	16.4	7.2	22	44.3	9.0	58.7
24 00	180	26.5	N12	47.1	257	42.6	7.2	S22	35.3	9.1	58.7
01	195	26.7		47.9	272	08.8	7.3	22	26.2	9.2	58.7
02	210	26.8		48.8	286	35.1	7.4	22	17.0	9.4	58.6
03	225	26.9	. .	49.6	301	01.5	7.6	22	07.6	9.4	58.6
04	240	27.0		50.4	315	28.1	7.6	21	58.2	9.6	58.6
05	255	27.1		51.2	329	54.7	7.8	21	48.6	9.7	58.6
06	270	27.2	N12	52.0	344	21.5	7.8	S21	38.9	9.9	58.6
07	285	27.3		52.9	358	48.3	8.0	21	29.0	9.9	58.5
D 08	300	27.4		53.7	13	15.3	8.0	21	19.1	10.1	58.5
O 09	315	27.6	. .	54.5	27	42.3	8.2	21	09.0	10.2	58.5
M 10	330	27.7		55.3	42	09.5	8.3	20	58.8	10.3	58.5
I 11	345	27.8		56.2	56	36.8	8.3	20	48.5	10.4	58.5
N 12	0	27.9	N12	57.0	71	04.1	8.5	S20	38.1	10.5	58.4
G 13	15	28.0		57.8	85	31.6	8.6	20	27.6	10.7	58.4
O 14	30	28.1		58.6	99	59.2	8.7	20	16.9	10.7	58.4
15	45	28.2	12	59.4	114	26.9	8.8	20	06.2	10.8	58.4
16	60	28.3	13	00.3	128	54.7	8.9	19	55.4	11.0	58.4
17	75	28.4		01.1	143	22.6	9.0	19	44.4	11.0	58.3
18	90	28.6	N13	01.9	157	50.6	9.1	S19	33.4	11.2	58.3
19	105	28.7		02.7	172	18.7	9.2	19	22.2	11.2	58.3
20	120	28.8		03.5	186	46.9	9.3	19	11.0	11.4	58.3
21	135	28.9	. .	04.4	201	15.2	9.4	18	59.6	11.4	58.2
22	150	29.0		05.2	215	43.6	9.5	18	48.2	11.6	58.2
23	165	29.1		06.0	230	12.1	9.6	S18	36.6	11.6	58.2
	S/D	15.9	d	0.8	S/D		16.2		16.1		15.9

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		22	23	24	25
°	h m	h m	h m	h m	h m	h m	h m
N 72	////	////	02 51	▬	▬	▬	06 45
N 70	////	01 30	03 15	▬	▬	▬	05 51
68	////	02 12	03 34	▬	▬	06 25	05 18
66	////	02 40	03 49	▬	▬	05 19	04 53
64	01 19	03 01	04 01	▬	05 03	04 43	04 34
62	01 57	03 18	04 12	03 55	04 13	04 18	04 18
60	02 22	03 31	04 21	03 09	03 42	03 57	04 05
N 58	02 42	03 43	04 28	02 39	03 18	03 40	03 53
56	02 58	03 53	04 35	02 16	02 59	03 26	03 43
54	03 11	04 02	04 41	01 57	02 43	03 14	03 34
52	03 22	04 09	04 47	01 41	02 29	03 03	03 26
50	03 32	04 16	04 51	01 27	02 17	02 53	03 19
45	03 52	04 31	05 02	00 59	01 52	02 32	03 03
N 40	04 08	04 42	05 11	00 37	01 32	02 15	02 51
35	04 20	04 52	05 18	00 19	01 15	02 01	02 40
30	04 31	05 00	05 25	00 03	01 00	01 49	02 30
20	04 47	05 13	05 36	24 35	00 35	01 28	02 14
N 10	04 59	05 24	05 46	24 14	00 14	01 09	01 59
0	05 09	05 34	05 55	23 54	24 52	00 52	01 46
S 10	05 18	05 42	06 04	23 33	24 34	00 34	01 32
20	05 25	05 51	06 13	23 12	24 16	00 16	01 17
30	05 31	05 59	06 24	22 47	23 54	25 00	01 00
35	05 34	06 04	06 30	22 32	23 41	24 50	00 50
40	05 37	06 09	06 37	22 15	23 27	24 39	00 39
45	05 40	06 15	06 45	21 54	23 09	24 26	00 26
S 50	05 43	06 21	06 54	21 28	22 48	24 09	00 09
52	05 44	06 24	06 59	21 15	22 37	24 02	00 02
54	05 45	06 27	07 04	21 01	22 25	23 53	25 19
56	05 47	06 30	07 09	20 44	22 12	23 43	25 12
58	05 48	06 34	07 15	20 23	21 56	23 32	25 05
S 60	05 49	06 38	07 22	19 57	21 37	23 19	24 57

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	22	23	24	25
°	h m	h m	h m	h m	h m	h m	h m
N 72	21 11	////	////	▬	▬	▬	09 34
N 70	20 45	22 36	////	▬	▬	▬	10 26
68	20 26	21 50	////	▬	▬	08 01	10 58
66	20 10	21 20	////	▬	▬	09 05	11 21
64	19 58	20 59	22 46	▬	07 22	09 40	11 39
62	19 47	20 41	22 05	06 22	08 11	10 05	11 54
60	19 38	20 27	21 38	07 07	08 42	10 25	12 06
N 58	19 30	20 16	21 18	07 37	09 05	10 41	12 17
56	19 23	20 05	21 01	08 00	09 23	10 55	12 26
54	19 17	19 56	20 48	08 19	09 39	11 07	12 34
52	19 11	19 49	20 36	08 35	09 53	11 17	12 41
50	19 06	19 42	20 26	08 48	10 05	11 26	12 48
45	18 55	19 27	20 06	09 16	10 29	11 46	13 02
N 40	18 46	19 15	19 50	09 38	10 49	12 01	13 13
35	18 39	19 05	19 37	09 56	11 05	12 14	13 23
30	18 32	18 57	19 27	10 12	11 19	12 26	13 31
20	18 21	18 44	19 10	10 38	11 42	12 45	13 45
N 10	18 11	18 32	18 58	11 01	12 03	13 02	13 58
0	18 02	18 23	18 47	11 22	12 22	13 18	14 10
S 10	17 53	18 14	18 39	11 43	12 41	13 33	14 21
20	17 43	18 06	18 32	12 05	13 01	13 50	14 33
30	17 32	17 57	18 25	12 31	13 24	14 09	14 47
35	17 26	17 52	18 22	12 46	13 37	14 20	14 55
40	17 19	17 47	18 19	13 04	13 53	14 32	15 04
45	17 11	17 41	18 16	13 25	14 11	14 47	15 15
S 50	17 02	17 35	18 13	13 51	14 34	15 05	15 28
52	16 57	17 32	18 11	14 04	14 45	15 13	15 34
54	16 52	17 29	18 10	14 19	14 57	15 22	15 40
56	16 47	17 26	18 09	14 36	15 11	15 33	15 47
58	16 41	17 22	18 08	14 57	15 27	15 45	15 55
S 60	16 34	17 18	18 06	15 23	15 47	15 58	16 04

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00^h	12^h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
22	01 23	01 29	11 59	05 07	17 38	21	61
23	01 35	01 40	11 58	06 08	18 37	22	50
24	01 46	01 51	11 58	07 05	19 32	23	39

UT (HmGr)		ARIES	VENUS −4·1		MARTE +0·9		JÚPITER −2·1		SATURNO +0·7	
	d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
		° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	25 00	212 59.4	220 35.1	S 4 21.1	233 16.6	S10 08.2	215 34.9	S 2 16.4	246 24.9	S14 29.8
	01	228 01.9	235 34.9	20.1	248 17.2	07.5	230 36.9	16.2	261 27.2	29.7
	02	243 04.3	250 34.7	19.1	263 17.9	06.8	245 38.9	16.0	276 29.5	29.7
	03	258 06.8	265 34.5	18.2	278 18.6	06.1	260 40.9	15.8	291 31.8	29.6
	04	273 09.3	280 34.3	17.2	293 19.3	05.4	275 42.8	15.6	306 34.1	29.6
	05	288 11.7	295 34.1	16.2	308 19.9	04.7	290 44.8	15.4	321 36.4	29.5
	06	303 14.2	310 33.9	S 4 15.2	323 20.6	S10 04.1	305 46.8	S 2 15.1	336 38.8	S14 29.5
	07	318 16.7	325 33.8	14.3	338 21.3	03.4	320 48.7	14.9	351 41.1	29.4
	08	333 19.1	340 33.6	13.3	353 22.0	02.7	335 50.7	14.7	6 43.4	29.4
L	09	348 21.6	355 33.4	12.3	8 22.6	02.0	350 52.7	14.5	21 45.7	29.3
U	10	3 24.1	10 33.2	11.3	23 23.3	01.3	5 54.6	14.3	36 48.0	29.3
N	11	18 26.5	25 33.0	10.3	38 24.0	00.6	20 56.6	14.1	51 50.3	29.3
E	12	33 29.0	40 32.8	S 4 09.4	53 24.7	S10 00.0	35 58.6	S 2 13.9	66 52.6	S14 29.2
S	13	48 31.4	55 32.6	08.4	68 25.3	9 59.3	51 00.5	13.7	81 54.9	29.2
	14	63 33.9	70 32.5	07.4	83 26.0	58.6	66 02.5	13.5	96 57.2	29.1
	15	78 36.4	85 32.3	06.4	98 26.7	57.9	81 04.5	13.3	111 59.5	29.1
	16	93 38.8	100 32.1	05.4	113 27.4	57.2	96 06.4	13.1	127 01.8	29.0
	17	108 41.3	115 31.9	04.5	128 28.1	56.5	111 08.4	12.9	142 04.2	29.0
	18	123 43.8	130 31.7	S 4 03.5	143 28.7	S 9 55.9	126 10.4	S 2 12.7	157 06.5	S14 28.9
	19	138 46.2	145 31.5	02.5	158 29.4	55.2	141 12.4	12.4	172 08.8	28.9
	20	153 48.7	160 31.3	01.5	173 30.1	54.5	156 14.3	12.2	187 11.1	28.8
	21	168 51.2	175 31.1	4 00.5	188 30.8	53.8	171 16.3	12.0	202 13.4	28.8
	22	183 53.6	190 31.0	3 59.6	203 31.4	53.1	186 18.3	11.8	217 15.7	28.8
	23	198 56.1	205 30.8	58.6	218 32.1	52.4	201 20.2	11.6	232 18.0	28.7
	26 00	213 58.5	220 30.6	S 3 57.6	233 32.8	S 9 51.7	216 22.2	S 2 11.4	247 20.3	S14 28.7
	01	229 01.0	235 30.4	56.6	248 33.5	51.1	231 24.2	11.2	262 22.6	28.6
	02	244 03.5	250 30.2	55.6	263 34.1	50.4	246 26.2	11.0	277 25.0	28.6
	03	259 05.9	265 30.0	54.6	278 34.8	49.7	261 28.1	10.8	292 27.3	28.5
	04	274 08.4	280 29.8	53.6	293 35.5	49.0	276 30.1	10.6	307 29.6	28.5
	05	289 10.9	295 29.7	52.7	308 36.2	48.3	291 32.1	10.4	322 31.9	28.4
	06	304 13.3	310 29.5	S 3 51.7	323 36.9	S 9 47.6	306 34.0	S 2 10.2	337 34.2	S14 28.4
	07	319 15.8	325 29.3	50.7	338 37.5	46.9	321 36.0	10.0	352 36.5	28.4
M	08	334 18.3	340 29.1	49.7	353 38.2	46.3	336 38.0	09.8	7 38.8	28.3
A	09	349 20.7	355 28.9	48.7	8 38.9	45.6	351 39.9	09.5	22 41.1	28.3
R	10	4 23.2	10 28.7	47.7	23 39.6	44.9	6 41.9	09.3	37 43.4	28.2
T	11	19 25.7	25 28.5	46.7	38 40.2	44.2	21 43.9	09.1	52 45.8	28.2
E	12	34 28.1	40 28.3	S 3 45.8	53 40.9	S 9 43.5	36 45.9	S 2 08.9	67 48.1	S14 28.1
S	13	49 30.6	55 28.2	44.8	68 41.6	42.8	51 47.8	08.7	82 50.4	28.1
	14	64 33.0	70 28.0	43.8	83 42.3	42.1	66 49.8	08.5	97 52.7	28.0
	15	79 35.5	85 27.8	42.8	98 43.0	41.4	81 51.8	08.3	112 55.0	28.0
	16	94 38.0	100 27.6	41.8	113 43.6	40.8	96 53.8	08.1	127 57.3	28.0
	17	109 40.4	115 27.4	40.8	128 44.3	40.1	111 55.7	07.9	142 59.6	27.9
	18	124 42.9	130 27.2	S 3 39.8	143 45.0	S 9 39.4	126 57.7	S 2 07.7	158 01.9	S14 27.9
	19	139 45.4	145 27.0	38.8	158 45.7	38.7	141 59.7	07.5	173 04.3	27.8
	20	154 47.8	160 26.8	37.8	173 46.4	38.0	157 01.6	07.3	188 06.6	27.8
	21	169 50.3	175 26.7	36.9	188 47.0	37.3	172 03.6	07.1	203 08.9	27.7
	22	184 52.8	190 26.5	35.9	203 47.7	36.6	187 05.6	06.9	218 11.2	27.7
	23	199 55.2	205 26.3	34.9	218 48.4	35.9	202 07.6	06.7	233 13.5	27.6
	27 00	214 57.7	220 26.1	S 3 33.9	233 49.1	S 9 35.3	217 09.5	S 2 06.5	248 15.8	S14 27.6
	01	230 00.1	235 25.9	32.9	248 49.8	34.6	232 11.5	06.2	263 18.1	27.6
	02	245 02.6	250 25.7	31.9	263 50.4	33.9	247 13.5	06.0	278 20.5	27.5
	03	260 05.1	265 25.5	30.9	278 51.1	33.2	262 15.5	05.8	293 22.8	27.5
	04	275 07.5	280 25.3	29.9	293 51.8	32.5	277 17.4	05.6	308 25.1	27.4
	05	290 10.0	295 25.2	28.9	308 52.5	31.8	292 19.4	05.4	323 27.4	27.4
	06	305 12.5	310 25.0	S 3 27.9	323 53.2	S 9 31.1	307 21.4	S 2 05.2	338 29.7	S14 27.3
	07	320 14.9	325 24.8	26.9	338 53.8	30.4	322 23.3	05.0	353 32.0	27.3
M	08	335 17.4	340 24.6	25.9	353 54.5	29.7	337 25.3	04.8	8 34.3	27.3
I	09	350 19.9	355 24.4	24.9	8 55.2	29.0	352 27.3	04.6	23 36.7	27.2
É	10	5 22.3	10 24.2	24.0	23 55.9	28.4	7 29.3	04.4	38 39.0	27.2
R	11	20 24.8	25 24.0	23.0	38 56.6	27.7	22 31.2	04.2	53 41.3	27.1
C	12	35 27.3	40 23.8	S 3 22.0	53 57.2	S 9 27.0	37 33.2	S 2 04.0	68 43.6	S14 27.1
O	13	50 29.7	55 23.6	21.0	68 57.9	26.3	52 35.2	03.8	83 45.9	27.0
L	14	65 32.2	70 23.5	20.0	83 58.6	25.6	67 37.2	03.6	98 48.2	27.0
E	15	80 34.6	85 23.3	19.0	98 59.3	24.9	82 39.1	03.4	113 50.6	26.9
S	16	95 37.1	100 23.1	18.0	114 00.0	24.2	97 41.1	03.2	128 52.9	26.9
	17	110 39.6	115 22.9	17.0	129 00.7	23.5	112 43.1	03.0	143 55.2	26.9
	18	125 42.0	130 22.7	S 3 16.0	144 01.3	S 9 22.8	127 45.1	S 2 02.8	158 57.5	S14 26.8
	19	140 44.5	145 22.5	15.0	159 02.0	22.1	142 47.0	02.5	173 59.8	26.8
	20	155 47.0	160 22.3	14.0	174 02.7	21.4	157 49.0	02.3	189 02.1	26.7
	21	170 49.4	175 22.1	13.0	189 03.4	20.8	172 51.0	02.1	204 04.5	26.7
	22	185 51.9	190 22.0	12.0	204 04.1	20.1	187 53.0	01.9	219 06.8	26.6
	23	200 54.4	205 21.8	11.0	219 04.8	19.4	202 54.9	01.7	234 09.1	26.6
		h m								
	Paso Mer.	9 42.5	*v* −0.2	*d* 1.0	*v* 0.7	*d* 0.7	*v* 2.0	*d* 0.2	*v* 2.3	*d* 0.0

ESTRELLAS		
Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 13.1
Achernar	335 22.5	S57 07.5
Acrux	173 01.9	S63 13.5
Adhara	255 07.8	S29 00.3
Aldebaran	290 42.5	N16 33.1
Alioth	166 14.5	N55 50.5
Alkaid	152 53.3	N49 12.2
Alnair	27 35.9	S46 51.1
Alnilam	275 40.2	S 1 11.4
Alphard	217 49.9	S 8 45.4
Alphecca	126 05.3	N26 38.3
Alpheratz	357 37.4	N29 12.5
Altair	62 02.1	N 8 55.4
Ankaa	353 09.8	S42 11.1
Antares	112 18.3	S26 28.9
Arcturus	145 49.6	N19 04.0
Atria	107 14.1	S69 03.9
Avior	234 15.7	S59 35.1
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.7	N 7 24.6
Canopus	263 53.7	S52 42.7
Capella	280 25.6	N46 01.2
Deneb	49 27.3	N45 21.2
Denebola	182 27.0	N14 26.9
Diphda	348 49.9	S17 52.0
Dubhe	193 43.4	N61 38.1
Elnath	278 05.0	N28 37.5
Eltanin	90 42.9	N51 28.9
Enif	33 41.1	N 9 58.4
Fomalhaut	15 17.2	S29 30.3
Gacrux	171 53.6	S57 14.4
Gienah	175 45.6	S17 40.0
Hadar	148 38.5	S60 28.8
Hamal	327 54.1	N23 33.9
Kaus Aust.	83 35.3	S34 22.4
Kochab	137 18.6	N74 03.8
Markab	13 32.3	N15 19.3
Menkar	314 08.8	N 4 10.5
Menkent	147 59.9	S36 28.8
Miaplacidus	221 38.5	S69 48.8
Mirfak	308 31.9	N49 56.3
Nunki	75 50.4	S26 16.1
Peacock	53 09.3	S56 39.6
Pollux	243 20.1	N27 58.4
Procyon	244 53.3	N 5 10.0
Rasalhague	96 00.4	N12 32.5
Regulus	207 36.7	N11 51.5
Rigel	281 06.3	S 8 10.7
Rigil Kent.	139 42.7	S60 55.6
Sabik	102 05.1	S15 45.2
Schedar	349 34.1	N56 39.3
Shaula	96 13.1	S37 07.1
Sirius	258 28.4	S16 45.0
Spica	158 24.4	S11 16.7
Suhail	222 47.9	S43 31.6
Vega	80 34.5	N38 48.0
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	6 32.0	9 18
Marte	19 34.2	8 25
Júpiter	2 23.7	9 33
Saturno	33 21.8	7 29

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	*v*		Dec	*d*		Ph
d h	°	′	°	′	°	′	′	°	′	′	′
25 00	180	29.2	N13	06.8	244	40.7	9.7	S18	25.0	11.7	58.2
01	195	29.3		07.6	259	09.4	9.8	18	13.3	11.9	58.2
02	210	29.4		08.4	273	38.2	9.9	18	01.4	11.9	58.1
03	225	29.5	. .	09.3	288	07.1	10.0	17	49.5	12.0	58.1
04	240	29.6		10.1	302	36.1	10.1	17	37.5	12.0	58.1
05	255	29.7		10.9	317	05.2	10.2	17	25.5	12.2	58.1
06	270	29.9	N13	11.7	331	34.4	10.3	S17	13.3	12.2	58.1
07	285	30.0		12.5	346	03.7	10.4	17	01.1	12.4	58.0
L 08	300	30.1		13.3	0	33.1	10.5	16	48.7	12.4	58.0
U 09	315	30.2	. .	14.2	15	02.6	10.6	16	36.3	12.5	58.0
N 10	330	30.3		15.0	29	32.2	10.7	16	23.8	12.5	58.0
E 11	345	30.4		15.8	44	01.9	10.7	16	11.3	12.6	57.9
S 12	0	30.5	N13	16.6	58	31.6	10.9	S15	58.7	12.8	57.9
13	15	30.6		17.4	73	01.5	10.9	15	45.9	12.7	57.9
14	30	30.7		18.2	87	31.4	11.0	15	33.2	12.9	57.9
15	45	30.8	. .	19.0	102	01.4	11.2	15	20.3	12.9	57.9
16	60	30.9		19.8	116	31.6	11.2	15	07.4	13.0	57.8
17	75	31.0		20.7	131	01.8	11.3	14	54.4	13.0	57.8
18	90	31.1	N13	21.5	145	32.1	11.4	S14	41.4	13.2	57.8
19	105	31.2		22.3	160	02.5	11.4	14	28.2	13.1	57.8
20	120	31.3		23.1	174	32.9	11.6	14	15.1	13.3	57.8
21	135	31.4	. .	23.9	189	03.5	11.6	14	01.8	13.3	57.7
22	150	31.5		24.7	203	34.1	11.7	13	48.5	13.3	57.7
23	165	31.6		25.5	218	04.8	11.8	13	35.2	13.5	57.7
26 00	180	31.7	N13	26.3	232	35.6	11.9	S13	21.7	13.4	57.7
01	195	31.8		27.1	247	06.5	12.0	13	08.3	13.6	57.6
02	210	31.9		27.9	261	37.5	12.0	12	54.7	13.6	57.6
03	225	32.0	. .	28.7	276	08.5	12.1	12	41.1	13.6	57.6
04	240	32.1		29.5	290	39.6	12.2	12	27.5	13.7	57.6
05	255	32.2		30.4	305	10.8	12.3	12	13.8	13.7	57.6
06	270	32.4	N13	31.2	319	42.1	12.3	S12	00.1	13.8	57.5
07	285	32.5		32.0	334	13.4	12.4	11	46.3	13.8	57.5
M 08	300	32.6		32.8	348	44.8	12.5	11	32.5	13.9	57.5
A 09	315	32.7	. .	33.6	3	16.3	12.5	11	18.6	13.9	57.5
R 10	330	32.8		34.4	17	47.8	12.7	11	04.7	14.0	57.5
T 11	345	32.9		35.2	32	19.5	12.7	10	50.7	14.0	57.4
E 12	0	33.0	N13	36.0	46	51.2	12.7	S10	36.7	14.1	57.4
S 13	15	33.1		36.8	61	22.9	12.9	10	22.6	14.1	57.4
14	30	33.2		37.6	75	54.8	12.8	10	08.5	14.1	57.4
15	45	33.3	. .	38.4	90	26.6	13.0	9	54.4	14.1	57.3
16	60	33.4		39.2	104	58.6	13.0	9	40.3	14.2	57.3
17	75	33.5		40.0	119	30.6	13.1	9	26.1	14.3	57.3
18	90	33.6	N13	40.8	134	02.7	13.1	S 9	11.8	14.2	57.3
19	105	33.7		41.6	148	34.8	13.2	8	57.6	14.3	57.3
20	120	33.8		42.4	163	07.0	13.3	8	43.3	14.4	57.2
21	135	33.8	. .	43.2	177	39.3	13.3	8	28.9	14.3	57.2
22	150	33.9		44.0	192	11.6	13.4	8	14.6	14.4	57.2
23	165	34.0		44.8	206	44.0	13.4	8	00.2	14.4	57.2
27 00	180	34.1	N13	45.6	221	16.4	13.5	S 7	45.8	14.4	57.2
01	195	34.2		46.4	235	48.9	13.6	7	31.4	14.5	57.1
02	210	34.3		47.2	250	21.5	13.6	7	16.9	14.5	57.1
03	225	34.4	. .	48.0	264	54.1	13.6	7	02.4	14.5	57.1
04	240	34.5		48.8	279	26.7	13.7	6	47.9	14.5	57.1
05	255	34.6		49.6	293	59.4	13.7	6	33.4	14.6	57.0
06	270	34.7	N13	50.4	308	32.1	13.8	S 6	18.8	14.5	57.0
07	285	34.8		51.2	323	04.9	13.9	6	04.3	14.6	57.0
M 08	300	34.9		52.0	337	37.8	13.8	5	49.7	14.6	57.0
I 09	315	35.0	. .	52.8	352	10.6	14.0	5	35.1	14.6	57.0
É 10	330	35.1		53.6	6	43.6	13.9	5	20.5	14.6	56.9
R 11	345	35.2		54.4	21	16.5	14.0	5	05.9	14.7	56.9
C 12	0	35.3	N13	55.2	35	49.5	14.1	S 4	51.2	14.6	56.9
O 13	15	35.4		55.9	50	22.6	14.1	4	36.6	14.7	56.9
L 14	30	35.5		56.7	64	55.7	14.1	4	21.9	14.7	56.9
E 15	45	35.6	. .	57.5	79	28.8	14.2	4	07.2	14.6	56.8
S 16	60	35.7		58.3	94	02.0	14.2	3	52.6	14.7	56.8
17	75	35.8		59.1	108	35.2	14.2	3	37.9	14.7	56.8
18	90	35.9	N13	59.9	123	08.4	14.3	S 3	23.2	14.7	56.8
19	105	36.0	14	00.7	137	41.7	14.3	3	08.5	14.7	56.8
20	120	36.0		01.5	152	15.0	14.3	2	53.8	14.7	56.7
21	135	36.1	. .	02.3	166	48.3	14.4	2	39.1	14.7	56.7
22	150	36.2		03.1	181	21.7	14.4	2	24.4	14.7	56.7
23	165	36.3		03.9	195	55.1	14.4	S 2	09.7	14.7	56.7
	S/D	15.9	*d*	0.8	S/D		15.8		15.6		15.5

Lat.	Aurora				Orto Sol		Orto Luna							
	Náut.		Civil				25		26		27		28	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	////		////		02	31	06	45	05	28	04	49	04	18
N 70	////		00	53	02	59	05	51	05	07	04	40	04	17
68	////		01	52	03	21	05	18	04	51	04	32	04	16
66	////		02	24	03	37	04	53	04	38	04	25	04	15
64	00	46	02	48	03	51	04	34	04	26	04	20	04	14
62	01	38	03	07	04	02	04	18	04	17	04	15	04	13
60	02	08	03	22	04	12	04	05	04	09	04	11	04	13
N 58	02	30	03	34	04	20	03	53	04	01	04	07	04	12
56	02	48	03	45	04	28	03	43	03	55	04	04	04	12
54	03	02	03	54	04	34	03	34	03	49	04	01	04	11
52	03	14	04	03	04	40	03	26	03	44	03	58	04	11
50	03	25	04	10	04	46	03	19	03	39	03	56	04	10
45	03	47	04	26	04	57	03	03	03	29	03	50	04	10
N 40	04	03	04	38	05	07	02	51	03	20	03	46	04	09
35	04	16	04	48	05	15	02	40	03	13	03	42	04	09
30	04	27	04	57	05	22	02	30	03	06	03	38	04	08
20	04	44	05	11	05	34	02	14	02	55	03	32	04	07
N 10	04	58	05	23	05	45	01	59	02	45	03	27	04	06
0	05	08	05	33	05	54	01	46	02	35	03	22	04	06
S 10	05	18	05	43	06	04	01	32	02	26	03	16	04	05
20	05	26	05	52	06	14	01	17	02	16	03	11	04	04
30	05	33	06	01	06	26	01	00	02	04	03	05	04	04
35	05	37	06	06	06	32	00	50	01	57	03	01	04	03
40	05	40	06	12	06	40	00	39	01	49	02	57	04	03
45	05	44	06	18	06	49	00	26	01	40	02	52	04	02
S 50	05	47	06	25	06	59	00	09	01	29	02	47	04	02
52	05	49	06	28	07	04	00	02	01	24	02	44	04	01
54	05	50	06	32	07	09	25	19	01	19	02	41	04	01
56	05	52	06	36	07	15	25	12	01	12	02	38	04	00
58	05	54	06	40	07	22	25	05	01	05	02	34	04	00
S 60	05	55	06	44	07	29	24	57	00	57	02	30	04	00

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.		Ocaso Luna 25				26				27				28	
°	h	m	h	m	h	m	h	m			h	m			h	m			h	m
N 72	21	30	////		////		09	34			12	33			14	48			16	54
N 70	21	00	23	21	////		10	26			12	51			14	55			16	51
68	20	38	22	10	////		10	58			13	06			15	00			16	48
66	20	21	21	35	////		11	21			13	17			15	04			16	46
64	20	07	21	11	23	25	11	39			13	27			15	07			16	44
62	19	55	20	52	22	23	11	54			13	35			15	11			16	43
60	19	45	20	36	21	51	12	06			13	42			15	13			16	41
N 58	19	37	20	23	21	28	12	17			13	48			15	16			16	40
56	19	29	20	12	21	10	12	26			13	53			15	18			16	39
54	19	22	20	03	20	55	12	34			13	58			15	19			16	38
52	19	16	19	54	20	43	12	41			14	03			15	21			16	38
50	19	11	19	47	20	32	12	48			14	07			15	23			16	37
45	18	59	19	31	20	10	13	02			14	15			15	26			16	35
N 40	18	50	19	18	19	54	13	13			14	22			15	29			16	34
35	18	41	19	08	19	40	13	23			14	28			15	31			16	33
30	18	34	18	59	19	29	13	31			14	33			15	33			16	32
20	18	22	18	45	19	12	13	45			14	42			15	37			16	30
N 10	18	11	18	33	18	58	13	58			14	50			15	40			16	28
0	18	01	18	22	18	47	14	10			14	58			15	43			16	27
S 10	17	51	18	13	18	38	14	21			15	05			15	46			16	25
20	17	41	18	04	18	30	14	33			15	13			15	49			16	23
30	17	29	17	54	18	22	14	47			15	21			15	52			16	22
35	17	23	17	49	18	19	14	55			15	26			15	54			16	20
40	17	15	17	43	18	15	15	04			15	32			15	56			16	19
45	17	06	17	37	18	11	15	15			15	38			15	59			16	18
S 50	16	56	17	30	18	08	15	28			15	46			16	02			16	16
52	16	51	17	26	18	06	15	34			15	50			16	03			16	15
54	16	46	17	23	18	04	15	40			15	53			16	04			16	15
56	16	40	17	19	18	03	15	47			15	58			16	06			16	14
58	16	33	17	15	18	01	15	55			16	02			16	08			16	13
S 60	16	26	17	10	17	59	16	04			16	08			16	10			16	12

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		SOL Paso Mer.		LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		LUNA Edad		LUNA Fase
d	m	s	m	s	h	m	h	m	h	m	d	%	
25	01	57	02	02	11	58	07	58	20	23	24	28	
26	02	07	02	12	11	58	08	46	21	10	25	19	
27	02	16	02	21	11	58	09	32	21	54	26	12	

UT (HmGr)	ARIES	VENUS −4·1		MARTE +0·9		JÚPITER −2·1		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
28 00	215 56.8	220 21.6	S 3 10.0	234 05.4	S 9 18.7	217 56.9	S 2 01.5	249 11.4	S14 26.6
01	230 59.3	235 21.4	09.0	249 06.1	18.0	232 58.9	01.3	264 13.7	26.5
02	246 01.8	250 21.2	08.0	264 06.8	17.3	248 00.9	01.1	279 16.0	26.5
03	261 04.2	265 21.0	07.0	279 07.5	16.6	263 02.8	00.9	294 18.4	26.4
04	276 06.7	280 20.8	06.0	294 08.2	15.9	278 04.8	00.7	309 20.7	26.4
05	291 09.1	295 20.6	05.0	309 08.9	15.2	293 06.8	00.5	324 23.0	26.3
06	306 11.6	310 20.4	S 3 04.0	324 09.5	S 9 14.5	308 08.8	S 2 00.3	339 25.3	S14 26.3
07	321 14.1	325 20.3	03.0	339 10.2	13.8	323 10.8	2 00.1	354 27.6	26.3
08	336 16.5	340 20.1	02.0	354 10.9	13.1	338 12.7	1 59.9	9 30.0	26.2
J 09	351 19.0	355 19.9	01.0	9 11.6	12.4	353 14.7	59.7	24 32.3	26.2
U 10	6 21.5	10 19.7	3 00.0	24 12.3	11.8	8 16.7	59.5	39 34.6	26.1
E 11	21 23.9	25 19.5	2 59.0	39 13.0	11.1	23 18.7	59.3	54 36.9	26.1
V 12	36 26.4	40 19.3	S 2 58.0	54 13.6	S 9 10.4	38 20.6	S 1 59.1	69 39.2	S14 26.1
E 13	51 28.9	55 19.1	57.0	69 14.3	09.7	53 22.6	58.9	84 41.6	26.0
S 14	66 31.3	70 18.9	56.0	84 15.0	09.0	68 24.6	58.7	99 43.9	26.0
15	81 33.8	85 18.7	55.0	99 15.7	08.3	83 26.6	58.5	114 46.2	25.9
16	96 36.2	100 18.6	54.0	114 16.4	07.6	98 28.5	58.3	129 48.5	25.9
17	111 38.7	115 18.4	53.0	129 17.1	06.9	113 30.5	58.1	144 50.8	25.8
18	126 41.2	130 18.2	S 2 52.0	144 17.8	S 9 06.2	128 32.5	S 1 57.8	159 53.2	S14 25.8
19	141 43.6	145 18.0	51.0	159 18.4	05.5	143 34.5	57.6	174 55.5	25.8
20	156 46.1	160 17.8	50.0	174 19.1	04.8	158 36.5	57.4	189 57.8	25.7
21	171 48.6	175 17.6	49.0	189 19.8	04.1	173 38.4	57.2	205 00.1	25.7
22	186 51.0	190 17.4	47.9	204 20.5	03.4	188 40.4	57.0	220 02.4	25.6
23	201 53.5	205 17.2	46.9	219 21.2	02.7	203 42.4	56.8	235 04.8	25.6
29 00	216 56.0	220 17.0	S 2 45.9	234 21.9	S 9 02.0	218 44.4	S 1 56.6	250 07.1	S14 25.6
01	231 58.4	235 16.9	44.9	249 22.6	01.3	233 46.3	56.4	265 09.4	25.5
02	247 00.9	250 16.7	43.9	264 23.2	00.6	248 48.3	56.2	280 11.7	25.5
03	262 03.4	265 16.5	42.9	279 23.9	9 00.0	263 50.3	56.0	295 14.0	25.4
04	277 05.8	280 16.3	41.9	294 24.6	8 59.3	278 52.3	55.8	310 16.4	25.4
05	292 08.3	295 16.1	40.9	309 25.3	58.6	293 54.3	55.6	325 18.7	25.3
06	307 10.7	310 15.9	S 2 39.9	324 26.0	S 8 57.9	308 56.2	S 1 55.4	340 21.0	S14 25.3
07	322 13.2	325 15.7	38.9	339 26.7	57.2	323 58.2	55.2	355 23.3	25.3
V 08	337 15.7	340 15.5	37.9	354 27.4	56.5	339 00.2	55.0	10 25.6	25.2
I 09	352 18.1	355 15.3	36.9	9 28.1	55.8	354 02.2	54.8	25 28.0	25.2
E 10	7 20.6	10 15.1	35.9	24 28.7	55.1	9 04.2	54.6	40 30.3	25.1
R 11	22 23.1	25 15.0	34.8	39 29.4	54.4	24 06.1	54.4	55 32.6	25.1
N 12	37 25.5	40 14.8	S 2 33.8	54 30.1	S 8 53.7	39 08.1	S 1 54.2	70 34.9	S14 25.1
E 13	52 28.0	55 14.6	32.8	69 30.8	53.0	54 10.1	54.0	85 37.3	25.0
S 14	67 30.5	70 14.4	31.8	84 31.5	52.3	69 12.1	53.8	100 39.6	25.0
15	82 32.9	85 14.2	30.8	99 32.2	51.6	84 14.1	53.6	115 41.9	24.9
16	97 35.4	100 14.0	29.8	114 32.9	50.9	99 16.0	53.4	130 44.2	24.9
17	112 37.8	115 13.8	28.8	129 33.6	50.2	114 18.0	53.2	145 46.6	24.9
18	127 40.3	130 13.6	S 2 27.8	144 34.2	S 8 49.5	129 20.0	S 1 53.0	160 48.9	S14 24.8
19	142 42.8	145 13.4	26.8	159 34.9	48.8	144 22.0	52.8	175 51.2	24.8
20	157 45.2	160 13.2	25.8	174 35.6	48.1	159 24.0	52.6	190 53.5	24.7
21	172 47.7	175 13.1	24.7	189 36.3	47.4	174 25.9	52.4	205 55.8	24.7
22	187 50.2	190 12.9	23.7	204 37.0	46.7	189 27.9	52.2	220 58.2	24.6
23	202 52.6	205 12.7	22.7	219 37.7	46.0	204 29.9	52.0	236 00.5	24.6
30 00	217 55.1	220 12.5	S 2 21.7	234 38.4	S 8 45.3	219 31.9	S 1 51.8	251 02.8	S14 24.6
01	232 57.6	235 12.3	20.7	249 39.1	44.6	234 33.9	51.6	266 05.1	24.5
02	248 00.0	250 12.1	19.7	264 39.8	43.9	249 35.8	51.3	281 07.5	24.5
03	263 02.5	265 11.9	18.7	279 40.5	43.2	264 37.8	51.1	296 09.8	24.4
04	278 05.0	280 11.7	17.7	294 41.1	42.5	279 39.8	50.9	311 12.1	24.4
05	293 07.4	295 11.5	16.6	309 41.8	41.8	294 41.8	50.7	326 14.4	24.4
06	308 09.9	310 11.3	S 2 15.6	324 42.5	S 8 41.1	309 43.8	S 1 50.5	341 16.8	S14 24.3
07	323 12.3	325 11.2	14.6	339 43.2	40.4	324 45.7	50.3	356 19.1	24.3
S 08	338 14.8	340 11.0	13.6	354 43.9	39.7	339 47.7	50.1	11 21.4	24.2
Á 09	353 17.3	355 10.8	12.6	9 44.6	39.0	354 49.7	49.9	26 23.7	24.2
B 10	8 19.7	10 10.6	11.6	24 45.3	38.3	9 51.7	49.7	41 26.1	24.2
A 11	23 22.2	25 10.4	10.5	39 46.0	37.6	24 53.7	49.5	56 28.4	24.1
D 12	38 24.7	40 10.2	S 2 09.5	54 46.7	S 8 36.9	39 55.7	S 1 49.3	71 30.7	S14 24.1
O 13	53 27.1	55 10.0	08.5	69 47.4	36.2	54 57.6	49.1	86 33.1	24.0
14	68 29.6	70 09.8	07.5	84 48.0	35.5	69 59.6	48.9	101 35.4	24.0
15	83 32.1	85 09.6	06.5	99 48.7	34.8	85 01.6	48.7	116 37.7	24.0
16	98 34.5	100 09.4	05.5	114 49.4	34.1	100 03.6	48.5	131 40.0	23.9
17	113 37.0	115 09.2	04.4	129 50.1	33.4	115 05.6	48.3	146 42.4	23.9
18	128 39.5	130 09.0	S 2 03.4	144 50.8	S 8 32.7	130 07.6	S 1 48.1	161 44.7	S14 23.8
19	143 41.9	145 08.9	02.4	159 51.5	32.0	145 09.5	47.9	176 47.0	23.8
20	158 44.4	160 08.7	01.4	174 52.2	31.3	160 11.5	47.7	191 49.3	23.8
21	173 46.8	175 08.5	2 00.4	189 52.9	30.6	175 13.5	47.5	206 51.7	23.7
22	188 49.3	190 08.3	1 59.4	204 53.6	29.9	190 15.5	47.3	221 54.0	23.7
23	203 51.8	205 08.1	S 1 58.3	219 54.3	29.2	205 17.5	47.1	236 56.3	23.7
	h m								
Paso Mer.	9 30.7	*v* −0.2	*d* 1.0	*v* 0.7	*d* 0.7	*v* 2.0	*d* 0.2	*v* 2.3	*d* 0.0

ESTRELLAS		
Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 13.1
Achernar	335 22.5	S57 07.5
Acrux	173 01.9	S63 13.5
Adhara	255 07.8	S29 00.3
Aldebaran	290 42.5	N16 33.1
Alioth	166 14.5	N55 50.5
Alkaid	152 53.3	N49 12.2
Alnair	27 35.9	S46 51.1
Alnilam	275 40.2	S 1 11.4
Alphard	217 49.9	S 8 45.4
Alphecca	126 05.3	N26 38.3
Alpheratz	357 37.4	N29 12.5
Altair	62 02.1	N 8 55.4
Ankaa	353 09.7	S42 11.1
Antares	112 18.3	S26 28.9
Arcturus	145 49.6	N19 04.0
Atria	107 14.1	S69 03.9
Avior	234 15.7	S59 35.1
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.7	N 7 24.6
Canopus	263 53.7	S52 42.7
Capella	280 25.6	N46 01.2
Deneb	49 27.3	N45 21.2
Denebola	182 27.0	N14 26.9
Diphda	348 49.9	S17 52.0
Dubhe	193 43.4	N61 38.1
Elnath	278 05.0	N28 37.5
Eltanin	90 42.9	N51 28.9
Enif	33 41.1	N 9 58.4
Fomalhaut	15 17.2	S29 30.3
Gacrux	171 53.6	S57 14.4
Gienah	175 45.6	S17 40.0
Hadar	148 38.5	S60 28.8
Hamal	327 54.1	N23 33.9
Kaus Aust.	83 35.3	S34 22.4
Kochab	137 18.6	N74 03.8
Markab	13 32.3	N15 19.3
Menkar	314 08.8	N 4 10.5
Menkent	147 59.9	S36 28.8
Miaplacidus	221 38.6	S69 48.8
Mirfak	308 32.0	N49 56.3
Nunki	75 50.4	S26 16.1
Peacock	53 09.2	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.3	N 5 10.0
Rasalhague	96 00.4	N12 32.5
Regulus	207 36.7	N11 51.5
Rigel	281 06.3	S 8 10.7
Rigil Kent.	139 42.7	S60 55.6
Sabik	102 05.1	S15 45.2
Schedar	349 34.1	N56 39.3
Shaula	96 13.1	S37 07.1
Sirius	258 28.4	S16 45.0
Spica	158 24.4	S11 16.7
Suhail	222 47.9	S43 31.6
Vega	80 34.5	N38 48.0
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	3 21.1	9 19
Marte	17 25.9	8 22
Júpiter	1 48.4	9 24
Saturno	33 11.1	7 18

UT (HmGr)	SOL				LUNA							
	AHGr		Dec		AHGr	v		Dec		d	Ph	
d h	°	′	°	′	°	′	′	°	′	′	′	
28 00	180	36.4	N14	04.7	210	28.5	14.5	S 1	55.0	14.7	56.6	
01	195	36.5		05.4	225	02.0	14.5	1	40.3	14.7	56.6	
02	210	36.6		06.2	239	35.5	14.5	1	25.6	14.7	56.6	
03	225	36.7	. .	07.0	254	09.0	14.5	1	10.9	14.7	56.6	
04	240	36.8		07.8	268	42.5	14.6	0	56.2	14.7	56.6	
05	255	36.9		08.6	283	16.1	14.5	0	41.5	14.7	56.5	
06	270	37.0	N14	09.4	297	49.6	14.6	S 0	26.8	14.7	56.5	
07	285	37.1		10.2	312	23.2	14.6	S 0	12.1	14.6	56.5	
J 08	300	37.1		11.0	326	56.8	14.7	N 0	02.5	14.7	56.5	
U 09	315	37.2	. .	11.7	341	30.5	14.6	0	17.2	14.6	56.5	
E 10	330	37.3		12.5	356	04.1	14.7	0	31.8	14.7	56.4	
V 11	345	37.4		13.3	10	37.8	14.7	0	46.5	14.6	56.4	
E 12	0	37.5	N14	14.1	25	11.5	14.7	N 1	01.1	14.6	56.4	
S 13	15	37.6		14.9	39	45.2	14.7	1	15.7	14.6	56.4	
14	30	37.7		15.7	54	18.9	14.7	1	30.3	14.6	56.4	
15	45	37.8	. .	16.4	68	52.6	14.8	1	44.9	14.5	56.3	
16	60	37.9		17.2	83	26.4	14.7	1	59.4	14.6	56.3	
17	75	38.0		18.0	98	00.1	14.8	2	14.0	14.5	56.3	
18	90	38.0	N14	18.8	112	33.9	14.8	N 2	28.5	14.5	56.3	
19	105	38.1		19.6	127	07.7	14.7	2	43.0	14.5	56.3	
20	120	38.2		20.4	141	41.4	14.8	2	57.5	14.4	56.2	
21	135	38.3	. .	21.1	156	15.2	14.8	3	11.9	14.5	56.2	
22	150	38.4		21.9	170	49.0	14.8	3	26.4	14.4	56.2	
23	165	38.5		22.7	185	22.8	14.8	3	40.8	14.3	56.2	
29 00	180	38.6	N14	23.5	199	56.6	14.8	N 3	55.1	14.4	56.2	
01	195	38.7		24.3	214	30.4	14.8	4	09.5	14.3	56.1	
02	210	38.7		25.0	229	04.2	14.8	4	23.8	14.4	56.1	
03	225	38.8	. .	25.8	243	38.0	14.8	4	38.2	14.2	56.1	
04	240	38.9		26.6	258	11.8	14.8	4	52.4	14.3	56.1	
05	255	39.0		27.4	272	45.6	14.8	5	06.7	14.2	56.1	
06	270	39.1	N14	28.1	287	19.4	14.8	N 5	20.9	14.2	56.0	
07	285	39.2		28.9	301	53.2	14.8	5	35.1	14.1	56.0	
V 08	300	39.3		29.7	316	27.0	14.8	5	49.2	14.2	56.0	
I 09	315	39.3	. .	30.5	331	00.8	14.7	6	03.4	14.0	56.0	
E 10	330	39.4		31.2	345	34.5	14.8	6	17.4	14.1	56.0	
R 11	345	39.5		32.0	0	08.3	14.8	6	31.5	14.0	55.9	
N 12	0	39.6	N14	32.8	14	42.1	14.7	N 6	45.5	14.0	55.9	
E 13	15	39.7		33.6	29	15.8	14.8	6	59.5	13.9	55.9	
S 14	30	39.8		34.3	43	49.6	14.7	7	13.4	13.9	55.9	
15	45	39.8	. .	35.1	58	23.3	14.7	7	27.3	13.9	55.9	
16	60	39.9		35.9	72	57.0	14.8	7	41.2	13.8	55.8	
17	75	40.0		36.7	87	30.8	14.7	7	55.0	13.8	55.8	
18	90	40.1	N14	37.4	102	04.5	14.6	N 8	08.8	13.7	55.8	
19	105	40.2		38.2	116	38.1	14.7	8	22.5	13.7	55.8	
20	120	40.3		39.0	131	11.8	14.7	8	36.2	13.7	55.8	
21	135	40.3	. .	39.8	145	45.5	14.6	8	49.9	13.6	55.7	
22	150	40.4		40.5	160	19.1	14.6	9	03.5	13.5	55.7	
23	165	40.5		41.3	174	52.7	14.6	9	17.0	13.5	55.7	
30 00	180	40.6	N14	42.1	189	26.3	14.6	N 9	30.5	13.5	55.7	
01	195	40.7		42.8	203	59.9	14.6	9	44.0	13.4	55.7	
02	210	40.7		43.6	218	33.5	14.5	9	57.4	13.3	55.6	
03	225	40.8	. .	44.4	233	07.0	14.6	10	10.7	13.4	55.6	
04	240	40.9		45.1	247	40.6	14.5	10	24.1	13.2	55.6	
05	255	41.0		45.9	262	14.1	14.4	10	37.3	13.2	55.6	
06	270	41.1	N14	46.7	276	47.5	14.5	N10	50.5	13.2	55.6	
07	285	41.1		47.4	291	21.0	14.4	11	03.7	13.1	55.5	
S 08	300	41.2		48.2	305	54.4	14.4	11	16.8	13.0	55.5	
Á 09	315	41.3	. .	49.0	320	27.8	14.4	11	29.8	13.0	55.5	
B 10	330	41.4		49.7	335	01.2	14.4	11	42.8	12.9	55.5	
A 11	345	41.5		50.5	349	34.6	14.3	11	55.7	12.9	55.5	
D 12	0	41.5	N14	51.3	4	07.9	14.3	N12	08.6	12.8	55.5	
O 13	15	41.6		52.0	18	41.2	14.3	12	21.4	12.7	55.4	
14	30	41.7		52.8	33	14.5	14.2	12	34.1	12.7	55.4	
15	45	41.8	. .	53.6	47	47.7	14.2	12	46.8	12.6	55.4	
16	60	41.8		54.3	62	20.9	14.2	12	59.4	12.6	55.4	
17	75	41.9		55.1	76	54.1	14.2	N13	12.0	12.5	55.4	
18	90	42.0	N14	55.8								
19	105	42.1		56.6								
20	120	42.2		57.4								
21	135	42.2	. .	58.1								
22	150	42.3		58.9								
23	165	42.4		59.6								
	S/D	15.9	d	0.8	S/D	15.4		15.2		15.1		

Un eclipse parcial de Sol se produce en esta fecha. Ver página 5.

Lat.	Aurora		Orto	Orto Luna			
	Náut.	Civil	Sol	28	29	30	1
°	h m	h m	h m	h m	h m	h m	h m
N 72	////	////	02 09	04 18	03 48	03 15	02 27
N 70	////	////	02 43	04 17	03 54	03 30	02 59
68	////	01 27	03 07	04 16	04 00	03 43	03 22
66	////	02 08	03 26	04 15	04 04	03 53	03 40
64	////	02 35	03 41	04 14	04 08	04 02	03 56
62	01 17	02 55	03 53	04 13	04 11	04 09	04 08
60	01 53	03 12	04 04	04 13	04 14	04 16	04 19
N 58	02 18	03 25	04 13	04 12	04 17	04 22	04 28
56	02 38	03 37	04 21	04 12	04 19	04 27	04 37
54	02 53	03 47	04 28	04 11	04 21	04 32	04 44
52	03 07	03 56	04 34	04 11	04 23	04 36	04 51
50	03 18	04 04	04 40	04 10	04 25	04 40	04 57
45	03 41	04 21	04 53	04 10	04 29	04 48	05 10
N 40	03 58	04 34	05 03	04 09	04 32	04 55	05 21
35	04 12	04 45	05 12	04 09	04 35	05 01	05 30
30	04 24	04 54	05 19	04 08	04 37	05 07	05 38
20	04 42	05 09	05 32	04 07	04 42	05 16	05 52
N 10	04 56	05 22	05 43	04 06	04 45	05 25	06 05
0	05 08	05 33	05 54	04 06	04 49	05 32	06 17
S 10	05 18	05 43	06 04	04 05	04 53	05 40	06 29
20	05 26	05 53	06 15	04 04	04 57	05 49	06 41
30	05 35	06 03	06 28	04 04	05 01	05 59	06 56
35	05 39	06 09	06 35	04 03	05 04	06 04	07 05
40	05 43	06 15	06 43	04 03	05 07	06 11	07 15
45	05 47	06 22	06 52	04 02	05 11	06 18	07 26
S 50	05 51	06 30	07 03	04 02	05 15	06 28	07 40
52	05 53	06 33	07 09	04 01	05 17	06 32	07 47
54	05 55	06 37	07 14	04 01	05 19	06 37	07 54
56	05 57	06 41	07 21	04 00	05 21	06 42	08 03
58	05 59	06 46	07 28	04 00	05 24	06 48	08 12
S 60	06 01	06 51	07 36	04 00	05 27	06 54	08 23

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	28	29	30	1
°	h m	h m	h m	h m	h m	h m	h m
N 72	21 52	////	////	16 54	19 00	21 20	▭
N 70	21 16	////	////	16 51	18 46	20 50	23 29
68	20 51	22 36	////	16 48	18 36	20 29	22 35
66	20 32	21 52	////	16 46	18 27	20 11	22 03
64	20 16	21 24	////	16 44	18 20	19 58	21 39
62	20 04	21 02	22 45	16 43	18 14	19 46	21 20
60	19 53	20 45	22 06	16 41	18 09	19 36	21 05
N 58	19 43	20 31	21 39	16 40	18 04	19 28	20 52
56	19 35	20 19	21 20	16 39	18 00	19 20	20 41
54	19 28	20 09	21 03	16 38	17 56	19 14	20 31
52	19 21	20 00	20 50	16 38	17 53	19 08	20 23
50	19 16	19 52	20 38	16 37	17 50	19 03	20 15
45	19 03	19 35	20 15	16 35	17 43	18 51	19 59
N 40	18 53	19 22	19 57	16 34	17 38	18 42	19 45
35	18 44	19 11	19 43	16 33	17 33	18 33	19 34
30	18 36	19 01	19 31	16 32	17 29	18 26	19 24
20	18 23	18 46	19 13	16 30	17 22	18 14	19 07
N 10	18 11	18 33	18 59	16 28	17 16	18 03	18 52
0	18 01	18 22	18 47	16 27	17 10	17 54	18 39
S 10	17 50	18 12	18 37	16 25	17 04	17 44	18 25
20	17 39	18 02	18 28	16 23	16 58	17 33	18 10
30	17 27	17 51	18 20	16 22	16 51	17 21	17 54
35	17 20	17 46	18 16	16 20	16 47	17 14	17 44
40	17 11	17 39	18 11	16 19	16 42	17 07	17 33
45	17 02	17 33	18 07	16 18	16 37	16 57	17 20
S 50	16 51	17 25	18 03	16 16	16 31	16 47	17 05
52	16 45	17 21	18 01	16 15	16 28	16 42	16 58
54	16 40	17 17	17 59	16 15	16 25	16 36	16 50
56	16 33	17 13	17 57	16 14	16 21	16 30	16 41
58	16 26	17 08	17 55	16 13	16 18	16 23	16 31
S 60	16 18	17 03	17 52	16 12	16 13	16 15	16 19

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00^h	12^h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
28	02 25	02 30	11 58	10 16	22 38	27 6	
29	02 34	02 38	11 57	10 59	23 21	28 2	
30	02 42	02 46	11 57	11 43	24 05	29 0	●

UT (HmGr)		ARIES	VENUS −4·1		MARTE +0·9		JÚPITER −2·1		SATURNO +0·7	
		AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	1 00	218 54.2	220 07.9	S 1 57.3	234 55.0	S 8 28.5	220 19.5	S 1 46.9	251 58.7	S14 23.6
	01	233 56.7	235 07.7	56.3	249 55.7	27.8	235 21.4	46.7	267 01.0	23.6
	02	248 59.2	250 07.5	55.3	264 56.4	27.1	250 23.4	46.5	282 03.3	23.5
	03	264 01.6	265 07.3	54.3	279 57.0	26.4	265 25.4	46.3	297 05.6	23.5
	04	279 04.1	280 07.1	53.2	294 57.7	25.7	280 27.4	46.1	312 08.0	23.5
	05	294 06.6	295 06.9	52.2	309 58.4	25.0	295 29.4	45.9	327 10.3	23.4
	06	309 09.0	310 06.7	S 1 51.2	324 59.1	S 8 24.3	310 31.4	S 1 45.7	342 12.6	S14 23.4
	07	324 11.5	325 06.6	50.2	339 59.8	23.6	325 33.3	45.5	357 15.0	23.3
	08	339 13.9	340 06.4	49.2	355 00.5	22.9	340 35.3	45.3	12 17.3	23.3
D	09	354 16.4	355 06.2	48.1	10 01.2	22.2	355 37.3	45.1	27 19.6	23.3
O	10	9 18.9	10 06.0	47.1	25 01.9	21.5	10 39.3	44.9	42 21.9	23.2
M	11	24 21.3	25 05.8	46.1	40 02.6	20.8	25 41.3	44.7	57 24.3	23.2
I	12	39 23.8	40 05.6	S 1 45.1	55 03.3	S 8 20.1	40 43.3	S 1 44.5	72 26.6	S14 23.1
N	13	54 26.3	55 05.4	44.0	70 04.0	19.4	55 45.3	44.3	87 28.9	23.1
G	14	69 28.7	70 05.2	43.0	85 04.7	18.7	70 47.2	44.1	102 31.3	23.1
O	15	84 31.2	85 05.0	42.0	100 05.4	18.0	85 49.2	43.9	117 33.6	23.0
	16	99 33.7	100 04.8	41.0	115 06.1	17.3	100 51.2	43.7	132 35.9	23.0
	17	114 36.1	115 04.6	40.0	130 06.8	16.6	115 53.2	43.5	147 38.2	23.0
	18	129 38.6	130 04.4	S 1 38.9	145 07.4	S 8 15.9	130 55.2	S 1 43.3	162 40.6	S14 22.9
	19	144 41.1	145 04.2	37.9	160 08.1	15.2	145 57.2	43.1	177 42.9	22.9
	20	159 43.5	160 04.1	36.9	175 08.8	14.5	160 59.2	42.9	192 45.2	22.8
	21	174 46.0	175 03.9	35.9	190 09.5	13.8	176 01.1	42.7	207 47.6	22.8
	22	189 48.4	190 03.7	34.8	205 10.2	13.1	191 03.1	42.5	222 49.9	22.8
	23	204 50.9	205 03.5	33.8	220 10.9	12.4	206 05.1	42.3	237 52.2	22.7
	2 00	219 53.4	220 03.3	S 1 32.8	235 11.6	S 8 11.7	221 07.1	S 1 42.1	252 54.6	S14 22.7
	01	234 55.8	235 03.1	31.8	250 12.3	11.0	236 09.1	41.9	267 56.9	22.7
	02	249 58.3	250 02.9	30.7	265 13.0	10.3	251 11.1	41.7	282 59.2	22.6
	03	265 00.8	265 02.7	29.7	280 13.7	09.6	266 13.1	41.5	298 01.6	22.6
	04	280 03.2	280 02.5	28.7	295 14.4	08.9	281 15.1	41.3	313 03.9	22.5
	05	295 05.7	295 02.3	27.7	310 15.1	08.2	296 17.0	41.1	328 06.2	22.5
	06	310 08.2	310 02.1	S 1 26.6	325 15.8	S 8 07.5	311 19.0	S 1 40.9	343 08.6	S14 22.5
	07	325 10.6	325 01.9	25.6	340 16.5	06.8	326 21.0	40.7	358 10.9	22.4
L	08	340 13.1	340 01.7	24.6	355 17.2	06.1	341 23.0	40.5	13 13.2	22.4
U	09	355 15.6	355 01.5	23.6	10 17.9	05.4	356 25.0	40.3	28 15.6	22.3
N	10	10 18.0	10 01.4	22.5	25 18.6	04.7	11 27.0	40.1	43 17.9	22.3
E	11	25 20.5	25 01.2	21.5	40 19.3	04.0	26 29.0	39.9	58 20.2	22.3
S	12	40 22.9	40 01.0	S 1 20.5	55 20.0	S 8 03.3	41 31.0	S 1 39.7	73 22.6	S14 22.2
	13	55 25.4	55 00.8	19.4	70 20.7	02.6	56 32.9	39.5	88 24.9	22.2
	14	70 27.9	70 00.6	18.4	85 21.4	01.9	71 34.9	39.3	103 27.2	22.2
	15	85 30.3	85 00.4	17.4	100 22.1	01.1	86 36.9	39.1	118 29.6	22.1
	16	100 32.8	100 00.2	16.4	115 22.8	8 00.4	101 38.9	38.9	133 31.9	22.1
	17	115 35.3	115 00.0	15.3	130 23.5	7 59.7	116 40.9	38.7	148 34.2	22.1
	18	130 37.7	129 59.8	S 1 14.3	145 24.2	S 7 59.0	131 42.9	S 1 38.5	163 36.6	S14 22.0
	19	145 40.2	144 59.6	13.3	160 24.9	58.3	146 44.9	38.3	178 38.9	22.0
	20	160 42.7	159 59.4	12.2	175 25.6	57.6	161 46.9	38.1	193 41.2	21.9
	21	175 45.1	174 59.2	11.2	190 26.2	56.9	176 48.8	37.9	208 43.6	21.9
	22	190 47.6	189 59.0	10.2	205 26.9	56.2	191 50.8	37.7	223 45.9	21.9
	23	205 50.0	204 58.8	09.2	220 27.6	55.5	206 52.8	37.5	238 48.2	21.8
	3 00	220 52.5	219 58.6	S 1 08.1	235 28.3	S 7 54.8	221 54.8	S 1 37.3	253 50.6	S14 21.8
	01	235 55.0	234 58.4	07.1	250 29.0	54.1	236 56.8	37.1	268 52.9	21.8
	02	250 57.4	249 58.2	06.1	265 29.7	53.4	251 58.8	36.9	283 55.2	21.7
	03	265 59.9	264 58.0	05.0	280 30.4	52.7	267 00.8	36.7	298 57.6	21.7
	04	281 02.4	279 57.9	04.0	295 31.1	52.0	282 02.8	36.5	313 59.9	21.6
	05	296 04.8	294 57.7	03.0	310 31.8	51.3	297 04.8	36.3	329 02.2	21.6
	06	311 07.3	309 57.5	S 1 01.9	325 32.5	S 7 50.6	312 06.8	S 1 36.1	344 04.6	S14 21.6
	07	326 09.8	324 57.3	1 00.9	340 33.2	49.9	327 08.7	35.9	359 06.9	21.5
M	08	341 12.2	339 57.1	0 59.9	355 33.9	49.2	342 10.7	35.7	14 09.2	21.5
A	09	356 14.7	354 56.9	58.8	10 34.6	48.5	357 12.7	35.5	29 11.6	21.5
R	10	11 17.2	9 56.7	57.8	25 35.3	47.7	12 14.7	35.3	44 13.9	21.4
T	11	26 19.6	24 56.5	56.8	40 36.0	47.0	27 16.7	35.1	59 16.3	21.4
E	12	41 22.1	39 56.3	S 0 55.7	55 36.7	S 7 46.3	42 18.7	S 1 34.9	74 18.6	S14 21.4
S	13	56 24.5	54 56.1	54.7	70 37.4	45.6	57 20.7	34.7	89 20.9	21.3
	14	71 27.0	69 55.9	53.7	85 38.1	44.9	72 22.7	34.6	104 23.3	21.3
	15	86 29.5	84 55.7	52.6	100 38.8	44.2	87 24.7	34.4	119 25.6	21.2
	16	101 31.9	99 55.5	51.6	115 39.5	43.5	102 26.7	34.2	134 27.9	21.2
	17	116 34.4	114 55.3	50.6	130 40.2	42.8	117 28.7	34.0	149 30.3	21.2
	18	131 36.9	129 55.1	S 0 49.5	145 40.9	S 7 42.1	132 30.6	S 1 33.8	164 32.6	S14 21.1
	19	146 39.3	144 54.9	48.5	160 41.6	41.4	147 32.6	33.6	179 35.0	21.1
	20	161 41.8	159 54.7	47.5	175 42.3	40.7	162 34.6	33.4	194 37.3	21.1
	21	176 44.3	174 54.5	46.4	190 43.0	40.0	177 36.6	33.2	209 39.6	21.0
	22	191 46.7	189 54.3	45.4	205 43.7	39.3	192 38.6	33.0	224 42.0	21.0
	23	206 49.2	204 54.1	44.4	220 44.4	38.6	207 40.6	32.8	239 44.3	21.0
		h m								
Paso Mer.		9 18.9	*v* −0.2	*d* 1.0	*v* 0.7	*d* 0.7	*v* 2.0	*d* 0.2	*v* 2.3	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 13.1
Achernar	335 22.5	S57 07.5
Acrux	173 01.9	S63 13.5
Adhara	255 07.8	S29 00.3
Aldebaran	290 42.5	N16 33.1
Alioth	166 14.5	N55 50.5
Alkaid	152 53.3	N49 12.2
Alnair	27 35.9	S46 51.1
Alnilam	275 40.3	S 1 11.4
Alphard	217 49.9	S 8 45.4
Alphecca	126 05.3	N26 38.3
Alpheratz	357 37.4	N29 12.5
Altair	62 02.0	N 8 55.4
Ankaa	353 09.7	S42 11.1
Antares	112 18.3	S26 28.9
Arcturus	145 49.6	N19 04.0
Atria	107 14.0	S69 03.9
Avior	234 15.7	S59 35.1
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.7	N 7 24.6
Canopus	263 53.7	S52 42.7
Capella	280 25.6	N46 01.2
Deneb	49 27.3	N45 21.2
Denebola	182 27.0	N14 26.9
Diphda	348 49.8	S17 52.0
Dubhe	193 43.4	N61 38.1
Elnath	278 05.0	N28 37.5
Eltanin	90 42.9	N51 28.9
Enif	33 41.1	N 9 58.4
Fomalhaut	15 17.2	S29 30.3
Gacrux	171 53.6	S57 14.4
Gienah	175 45.6	S17 40.0
Hadar	148 38.5	S60 28.8
Hamal	327 54.1	N23 33.9
Kaus Aust.	83 35.2	S34 22.4
Kochab	137 18.6	N74 03.8
Markab	13 32.3	N15 19.3
Menkar	314 08.8	N 4 10.5
Menkent	147 59.9	S36 28.8
Miaplacidus	221 38.6	S69 48.8
Mirfak	308 32.0	N49 56.3
Nunki	75 50.4	S26 16.1
Peacock	53 09.2	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.3	N 5 10.0
Rasalhague	96 00.4	N12 32.5
Regulus	207 36.7	N11 51.5
Rigel	281 06.3	S 8 10.7
Rigil Kent.	139 42.7	S60 55.6
Sabik	102 05.1	S15 45.2
Schedar	349 34.1	N56 39.3
Shaula	96 13.1	S37 07.1
Sirius	258 28.4	S16 45.0
Spica	158 24.4	S11 16.7
Suhail	222 47.9	S43 31.6
Vega	80 34.5	N38 48.0
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	0 09.9	9 20
Marte	15 18.2	8 19
Júpiter	1 13.7	9 14
Saturno	33 01.2	7 07

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph	
d h	°	′	°	′	°	′	°	′	′	
1 00	180	42.5	N15	00.4	178	45.5	13.9	N14	38.1	12.0	55.2	
01	195	42.5		01.2	193	18.4	13.9	14	50.1	12.0	55.2	
02	210	42.6		01.9	207	51.3	13.9	15	02.1	11.9	55.2	
03	225	42.7		02.7	222	24.2	13.8	15	14.0	11.8	55.2	
04	240	42.8		03.4	236	57.0	13.7	15	25.8	11.7	55.2	
05	255	42.8		04.2	251	29.7	13.8	15	37.5	11.7	55.1	
06	270	42.9	N15	05.0	266	02.5	13.7	N15	49.2	11.6	55.1	
07	285	43.0		05.7	280	35.2	13.6	16	00.8	11.5	55.1	
08	300	43.1		06.5	295	07.8	13.7	16	12.3	11.5	55.1	
09	315	43.1		07.2	309	40.5	13.5	16	23.8	11.3	55.1	
10	330	43.2		08.0	324	13.0	13.6	16	35.1	11.3	55.1	
11	345	43.3		08.7	338	45.6	13.5	16	46.4	11.2	55.0	
12	0	43.4	N15	09.5	353	18.1	13.4	N16	57.6	11.2	55.0	
13	15	43.4		10.2	7	50.5	13.5	17	08.8	11.0	55.0	
14	30	43.5		11.0	22	23.0	13.3	17	19.8	11.0	55.0	
15	45	43.6		11.7	36	55.3	13.4	17	30.8	10.8	55.0	
16	60	43.6		12.5	51	27.7	13.3	17	41.6	10.8	55.0	
17	75	43.7		13.3	66	00.0	13.2	17	52.4	10.8	54.9	
18	90	43.8	N15	14.0	80	32.2	13.2	N18	03.2	10.6	54.9	
19	105	43.9		14.8	95	04.4	13.2	18	13.8	10.5	54.9	
20	120	43.9		15.5	109	36.6	13.1	18	24.3	10.5	54.9	
21	135	44.0		16.3	124	08.7	13.1	18	34.8	10.4	54.9	
22	150	44.1		17.0	138	40.8	13.0	18	45.2	10.2	54.9	
23	165	44.1		17.8	153	12.8	13.0	18	55.4	10.2	54.9	
2 00	180	44.2	N15	18.5	167	44.8	13.0	N19	05.6	10.1	54.8	
01	195	44.3		19.3	182	16.8	12.9	19	15.7	10.1	54.8	
02	210	44.4		20.0	196	48.7	12.8	19	25.8	9.9	54.8	
03	225	44.4		20.7	211	20.5	12.9	19	35.7	9.8	54.8	
04	240	44.5		21.5	225	52.4	12.7	19	45.5	9.8	54.8	
05	255	44.6		22.2	240	24.1	12.8	19	55.3	9.6	54.8	
06	270	44.6	N15	23.0	254	55.9	12.6	N20	04.9	9.5	54.7	
07	285	44.7		23.7	269	27.5	12.7	20	14.4	9.5	54.7	
08	300	44.8		24.5	283	59.2	12.6	20	23.9	9.4	54.7	
09	315	44.8		25.2	298	30.8	12.5	20	33.3	9.2	54.7	
10	330	44.9		26.0	313	02.3	12.5	20	42.5	9.2	54.7	
11	345	45.0		26.7	327	33.8	12.5	20	51.7	9.1	54.7	
12	0	45.0	N15	27.5	342	05.3	12.4	N21	00.8	8.9	54.7	
13	15	45.1		28.2	356	36.7	12.3	21	09.7	8.9	54.6	
14	30	45.2		28.9	11	08.0	12.4	21	18.6	8.8	54.6	
15	45	45.2		29.7	25	39.4	12.2	21	27.4	8.6	54.6	
16	60	45.3		30.4	40	10.6	12.3	21	36.0	8.6	54.6	
17	75	45.4		31.2	54	41.9	12.2	21	44.6	8.5	54.6	
18	90	45.4	N15	31.9	69	13.1	12.1	N21	53.1	8.3	54.6	
19	105	45.5		32.6	83	44.2	12.1	22	01.4	8.3	54.6	
20	120	45.6		33.4	98	15.3	12.0	22	09.7	8.1	54.6	
21	135	45.6		34.1	112	46.3	12.1	22	17.8	8.1	54.5	
22	150	45.7		34.9	127	17.4	11.9	22	25.9	7.9	54.5	
23	165	45.8		35.6	141	48.3	11.9	22	33.8	7.9	54.5	
3 00	180	45.8	N15	36.3	156	19.2	11.9	N22	41.7	7.7	54.5	
01	195	45.9		37.1	170	50.1	11.9	22	49.4	7.6	54.5	
02	210	46.0		37.8	185	21.0	11.7	22	57.0	7.5	54.5	
03	225	46.0		38.6	199	51.7	11.8	23	04.5	7.4	54.5	
04	240	46.1		39.3	214	22.5	11.7	23	11.9	7.3	54.5	
05	255	46.1		40.0	228	53.2	11.7	23	19.2	7.2	54.4	
06	270	46.2	N15	40.8	243	23.9	11.6	N23	26.4	7.1	54.4	
07	285	46.3		41.5	257	54.5	11.6	23	33.5	7.0	54.4	
08	300	46.3		42.2	272	25.1	11.5	23	40.5	6.8	54.4	
09	315	46.4		43.0	286	55.6	11.5	23	47.3	6.7	54.4	
10	330	46.5		43.7	301	26.1	11.5	23	54.0	6.7	54.4	
11	345	46.5		44.4	315	56.6	11.4	24	00.7	6.5	54.4	
12	0	46.6	N15	45.2	330	27.0	11.4	N24	07.2	6.4	54.4	
13	15	46.6		45.9	344	57.4	11.3	24	13.6	6.2	54.4	
14	30	46.7		46.6	359	27.7	11.3	24	19.8	6.2	54.3	
15	45	46.8		47.4	13	58.0	11.3	24	26.0	6.1	54.3	
16	60	46.8		48.1	28	28.3	11.2	24	32.1	5.9	54.3	
17	75	46.9		48.8	42	58.5	11.2	24	38.0	5.8	54.3	
18	90	46.9	N15	49.6	57	28.7	11.1	N24	43.8	5.7	54.3	
19	105	47.0		50.3	71	58.8	11.1	24	49.5	5.6	54.3	
20	120	47.1		51.0	86	28.9	11.1	24	55.1	5.4	54.3	
21	135	47.1		51.7	100	59.0	11.1	25	00.5	5.4	54.3	
22	150	47.2		52.5	115	29.1	11.0	25	05.9	5.2	54.3	
23	165	47.2		53.2	129	59.1	11.0	N25	11.1	5.1	54.3	
	S/D	15.9	*d*	0.7	S/D	15.0		14.9			14.8	

DOMINGO LUNES MARTES

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		1	2	3	4
°	h m	h m	h m	h m	h m	h m	h m
N 72	////	////	01 44	02 27	▭	▭	▭
N 70	////	////	02 25	02 59	01 55	▭	▭
68	////	00 56	02 53	03 22	02 50	▭	▭
66	////	01 49	03 14	03 40	03 24	02 52	▭
64	////	02 21	03 30	03 56	03 48	03 39	03 19
62	00 49	02 44	03 44	04 08	04 08	04 09	04 15
60	01 37	03 02	03 55	04 19	04 24	04 32	04 48
N 58	02 06	03 17	04 05	04 28	04 37	04 51	05 12
56	02 27	03 29	04 14	04 37	04 49	05 07	05 32
54	02 45	03 40	04 22	04 44	05 00	05 20	05 48
52	02 59	03 50	04 29	04 51	05 09	05 32	06 03
50	03 11	03 58	04 35	04 57	05 17	05 42	06 15
45	03 35	04 16	04 48	05 10	05 35	06 04	06 41
N 40	03 54	04 30	04 59	05 21	05 49	06 22	07 01
35	04 09	04 41	05 08	05 30	06 02	06 37	07 18
30	04 21	04 51	05 16	05 38	06 12	06 50	07 33
20	04 40	05 07	05 30	05 52	06 31	07 13	07 58
N 10	04 55	05 21	05 42	06 05	06 47	07 32	08 20
0	05 07	05 32	05 54	06 17	07 03	07 50	08 40
S 10	05 18	05 43	06 05	06 29	07 18	08 09	09 00
20	05 27	05 54	06 16	06 41	07 35	08 29	09 22
30	05 36	06 05	06 30	06 56	07 54	08 51	09 48
35	05 41	06 11	06 37	07 05	08 05	09 05	10 03
40	05 45	06 18	06 46	07 15	08 18	09 21	10 20
45	05 50	06 25	06 56	07 26	08 33	09 39	10 41
S 50	05 55	06 34	07 08	07 40	08 52	10 03	11 08
52	05 57	06 38	07 14	07 47	09 02	10 14	11 21
54	06 00	06 42	07 20	07 54	09 12	10 27	11 36
56	06 02	06 47	07 27	08 03	09 23	10 42	11 54
58	06 05	06 52	07 34	08 12	09 36	10 59	12 15
S 60	06 07	06 57	07 43	08 23	09 52	11 21	12 43

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	1	2	3	4
°	h m	h m	h m	h m	h m	h m	h m
N 72	22 17	////	////	▭	▭	▭	▭
N 70	21 33	////	////	23 29	▭	▭	▭
68	21 04	23 12	////	22 35	▭	▭	▭
66	20 43	22 10	////	22 03	24 13	00 13	▭
64	20 26	21 37	////	21 39	23 27	25 28	01 28
62	20 12	21 13	23 17	21 20	22 57	24 33	00 33
60	20 00	20 55	22 22	21 05	22 34	24 00	00 00
N 58	19 50	20 39	21 51	20 52	22 16	23 36	24 46
56	19 41	20 26	21 29	20 41	22 01	23 17	24 23
54	19 33	20 15	21 12	20 31	21 48	23 01	24 05
52	19 26	20 06	20 57	20 23	21 37	22 47	23 50
50	19 20	19 57	20 45	20 15	21 26	22 35	23 36
45	19 07	19 39	20 20	19 59	21 05	22 10	23 09
N 40	18 56	19 25	20 01	19 45	20 48	21 50	22 47
35	18 46	19 13	19 46	19 34	20 34	21 33	22 29
30	18 38	19 03	19 34	19 24	20 22	21 19	22 14
20	18 24	18 47	19 14	19 07	20 01	20 55	21 48
N 10	18 12	18 34	18 59	18 52	19 42	20 34	21 25
0	18 00	18 22	18 47	18 39	19 25	20 14	21 04
S 10	17 49	18 11	18 36	18 25	19 09	19 55	20 43
20	17 37	18 00	18 26	18 10	18 50	19 34	20 21
30	17 24	17 49	18 17	17 54	18 30	19 10	19 55
35	17 16	17 43	18 13	17 44	18 18	18 56	19 39
40	17 08	17 36	18 08	17 33	18 04	18 40	19 22
45	16 58	17 28	18 03	17 20	17 48	18 20	19 00
S 50	16 45	17 20	17 58	17 05	17 27	17 56	18 33
52	16 40	17 16	17 56	16 58	17 18	17 44	18 20
54	16 33	17 11	17 53	16 50	17 07	17 31	18 05
56	16 27	17 07	17 51	16 41	16 55	17 16	17 47
58	16 19	17 02	17 48	16 31	16 41	16 58	17 25
S 60	16 10	16 56	17 46	16 19	16 25	16 36	16 58

Día	SOL		Paso Mer.	LUNA			
	Ec. Tiempo			Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
1	02 50	02 53	11 57	12 28	00 05	01 0	
2	02 57	03 00	11 57	13 14	00 51	02 3	
3	03 03	03 06	11 57	14 02	01 38	03 7	●

UT (HmGr)	ARIES	VENUS −4·1		MARTE +0·8		JÚPITER −2·1		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
4 00	221 51.7	219 53.9	S 0 43.3	235 45.1	S 7 37.8	222 42.6	S 1 32.6	254 46.6	S14 20.9
01	236 54.1	234 53.7	42.3	250 45.8	37.1	237 44.6	32.4	269 49.0	20.9
02	251 56.6	249 53.6	41.3	265 46.5	36.4	252 46.6	32.2	284 51.3	20.9
03	266 59.0	264 53.4	40.2	280 47.2	35.7	267 48.6	32.0	299 53.7	20.8
04	282 01.5	279 53.2	39.2	295 47.9	35.0	282 50.6	31.8	314 56.0	20.8
05	297 04.0	294 53.0	38.2	310 48.6	34.3	297 52.6	31.6	329 58.3	20.7
06	312 06.4	309 52.8	S 0 37.1	325 49.3	S 7 33.6	312 54.6	S 1 31.4	345 00.7	S14 20.7
07	327 08.9	324 52.6	36.1	340 50.1	32.9	327 56.6	31.2	0 03.0	20.7
08	342 11.4	339 52.4	35.1	355 50.8	32.2	342 58.5	31.0	15 05.4	20.6
M 09	357 13.8	354 52.2	34.0	10 51.5	31.5	358 00.5	30.8	30 07.7	20.6
I 10	12 16.3	9 52.0	33.0	25 52.2	30.8	13 02.5	30.6	45 10.0	20.6
É 11	27 18.8	24 51.8	31.9	40 52.9	30.1	28 04.5	30.4	60 12.4	20.5
R 12	42 21.2	39 51.6	S 0 30.9	55 53.6	S 7 29.3	43 06.5	S 1 30.2	75 14.7	S14 20.5
C 13	57 23.7	54 51.4	29.9	70 54.3	28.6	58 08.5	30.0	90 17.1	20.5
O 14	72 26.2	69 51.2	28.8	85 55.0	27.9	73 10.5	29.8	105 19.4	20.4
L 15	87 28.6	84 51.0	27.8	100 55.7	27.2	88 12.5	29.6	120 21.7	20.4
E 16	102 31.1	99 50.8	26.7	115 56.4	26.5	103 14.5	29.4	135 24.1	20.4
S 17	117 33.5	114 50.6	25.7	130 57.1	25.8	118 16.5	29.2	150 26.4	20.3
18	132 36.0	129 50.4	S 0 24.7	145 57.8	S 7 25.1	133 18.5	S 1 29.0	165 28.8	S14 20.3
19	147 38.5	144 50.2	23.6	160 58.5	24.4	148 20.5	28.8	180 31.1	20.3
20	162 40.9	159 50.0	22.6	175 59.2	23.7	163 22.5	28.6	195 33.5	20.2
21	177 43.4	174 49.8	21.6	190 59.9	23.0	178 24.5	28.4	210 35.8	20.2
22	192 45.9	189 49.6	20.5	206 00.6	22.3	193 26.5	28.3	225 38.1	20.2
23	207 48.3	204 49.4	19.5	221 01.3	21.5	208 28.5	28.1	240 40.5	20.1
5 00	222 50.8	219 49.2	S 0 18.4	236 02.0	S 7 20.8	223 30.5	S 1 27.9	255 42.8	S14 20.1
01	237 53.3	234 49.0	17.4	251 02.7	20.1	238 32.5	27.7	270 45.2	20.1
02	252 55.7	249 48.8	16.4	266 03.4	19.4	253 34.4	27.5	285 47.5	20.0
03	267 58.2	264 48.6	15.3	281 04.1	18.7	268 36.4	27.3	300 49.8	20.0
04	283 00.6	279 48.4	14.3	296 04.8	18.0	283 38.4	27.1	315 52.2	20.0
05	298 03.1	294 48.2	13.2	311 05.5	17.3	298 40.4	26.9	330 54.5	19.9
06	313 05.6	309 48.0	S 0 12.2	326 06.2	S 7 16.6	313 42.4	S 1 26.7	345 56.9	S14 19.9
07	328 08.0	324 47.8	11.2	341 06.9	15.9	328 44.4	26.5	0 59.2	19.8
08	343 10.5	339 47.6	10.1	356 07.6	15.2	343 46.4	26.3	16 01.6	19.8
J 09	358 13.0	354 47.4	09.1	11 08.3	14.4	358 48.4	26.1	31 03.9	19.8
U 10	13 15.4	9 47.2	08.0	26 09.0	13.7	13 50.4	25.9	46 06.2	19.7
E 11	28 17.9	24 47.0	07.0	41 09.8	13.0	28 52.4	25.7	61 08.6	19.7
V 12	43 20.4	39 46.8	S 0 05.9	56 10.5	S 7 12.3	43 54.4	S 1 25.5	76 10.9	S14 19.7
E 13	58 22.8	54 46.6	04.9	71 11.2	11.6	58 56.4	25.3	91 13.3	19.6
S 14	73 25.3	69 46.4	03.9	86 11.9	10.9	73 58.4	25.1	106 15.6	19.6
15	88 27.8	84 46.2	02.8	101 12.6	10.2	89 00.4	24.9	121 18.0	19.6
16	103 30.2	99 46.0	01.8	116 13.3	09.5	104 02.4	24.7	136 20.3	19.5
17	118 32.7	114 45.8	S 00.7	131 14.0	08.8	119 04.4	24.5	151 22.7	19.5
18	133 35.1	129 45.6	N 0 00.3	146 14.7	S 7 08.0	134 06.4	S 1 24.3	166 25.0	S14 19.5
19	148 37.6	144 45.4	01.3	161 15.4	07.3	149 08.4	24.2	181 27.3	19.4
20	163 40.1	159 45.2	02.4	176 16.1	06.6	164 10.4	24.0	196 29.7	19.4
21	178 42.5	174 45.0	03.4	191 16.8	05.9	179 12.4	23.8	211 32.0	19.4
22	193 45.0	189 44.8	04.5	206 17.5	05.2	194 14.4	23.6	226 34.4	19.3
23	208 47.5	204 44.6	05.5	221 18.2	04.5	209 16.4	23.4	241 36.7	19.3
6 00	223 49.9	219 44.4	N 0 06.6	236 18.9	S 7 03.8	224 18.4	S 1 23.2	256 39.1	S14 19.3
01	238 52.4	234 44.2	07.6	251 19.6	03.1	239 20.4	23.0	271 41.4	19.2
02	253 54.9	249 44.0	08.7	266 20.3	02.4	254 22.4	22.8	286 43.8	19.2
03	268 57.3	264 43.8	09.7	281 21.1	01.6	269 24.4	22.6	301 46.1	19.2
04	283 59.8	279 43.6	10.7	296 21.8	00.9	284 26.4	22.4	316 48.5	19.1
05	299 02.3	294 43.4	11.8	311 22.5	7 00.2	299 28.4	22.2	331 50.8	19.1
06	314 04.7	309 43.2	N 0 12.8	326 23.2	S 6 59.5	314 30.4	S 1 22.0	346 53.2	S14 19.1
07	329 07.2	324 43.0	13.9	341 23.9	58.8	329 32.4	21.8	1 55.5	19.1
V 08	344 09.6	339 42.8	14.9	356 24.6	58.1	344 34.4	21.6	16 57.8	19.0
I 09	359 12.1	354 42.6	16.0	11 25.3	57.4	359 36.4	21.4	32 00.2	19.0
E 10	14 14.6	9 42.4	17.0	26 26.0	56.7	14 38.4	21.2	47 02.5	19.0
R 11	29 17.0	24 42.2	18.1	41 26.7	55.9	29 40.4	21.0	62 04.9	18.9
N 12	44 19.5	39 42.0	N 0 19.1	56 27.4	S 6 55.2	44 42.4	S 1 20.9	77 07.2	S14 18.9
E 13	59 22.0	54 41.8	20.1	71 28.1	54.5	59 44.4	20.7	92 09.6	18.9
S 14	74 24.4	69 41.6	21.2	86 28.8	53.8	74 46.4	20.5	107 11.9	18.8
15	89 26.9	84 41.4	22.2	101 29.5	53.1	89 48.4	20.3	122 14.3	18.8
16	104 29.4	99 41.2	23.3	116 30.3	52.4	104 50.4	20.1	137 16.6	18.8
17	119 31.8	114 41.0	24.3	131 31.0	51.7	119 52.4	19.9	152 19.0	18.7
18	134 34.3	129 40.8	N 0 25.4	146 31.7	S 6 50.9	134 54.4	S 1 19.7	167 21.3	S14 18.7
19	149 36.8	144 40.6	26.4	161 32.4	50.2	149 56.4	19.5	182 23.7	18.7
20	164 39.2	159 40.4	27.5	176 33.1	49.5	164 58.4	19.3	197 26.0	18.6
21	179 41.7	174 40.2	28.5	191 33.8	48.8	180 00.4	19.1	212 28.4	18.6
22	194 44.1	189 40.0	29.6	206 34.5	48.1	195 02.4	18.9	227 30.7	18.6
23	209 46.6	204 39.8	30.6	221 35.2	47.4	210 04.4	18.7	242 33.1	18.5
	h m								
Paso Mer.	9 07.1	*v* −0.2	*d* 1.0	*v* 0.7	*d* 0.7	*v* 2.0	*d* 0.2	*v* 2.3	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 13.0
Achernar	335 22.4	S57 07.4
Acrux	173 02.0	S63 13.5
Adhara	255 07.8	S29 00.3
Aldebaran	290 42.5	N16 33.1
Alioth	166 14.5	N55 50.5
Alkaid	152 53.3	N49 12.2
Alnair	27 35.9	S46 51.1
Alnilam	275 40.3	S 1 11.4
Alphard	217 49.9	S 8 45.4
Alphecca	126 05.3	N26 38.3
Alpheratz	357 37.3	N29 12.5
Altair	62 02.0	N 8 55.5
Ankaa	353 09.7	S42 11.1
Antares	112 18.2	S26 28.9
Arcturus	145 49.6	N19 04.0
Atria	107 14.0	S69 03.9
Avior	234 15.7	S59 35.1
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.7	N 7 24.6
Canopus	263 53.7	S52 42.7
Capella	280 25.6	N46 01.2
Deneb	49 27.2	N45 21.2
Denebola	182 27.0	N14 26.9
Diphda	348 49.8	S17 52.0
Dubhe	193 43.5	N61 38.1
Elnath	278 05.0	N28 37.5
Eltanin	90 42.8	N51 28.9
Enif	33 41.0	N 9 58.4
Fomalhaut	15 17.2	S29 30.3
Gacrux	171 53.6	S57 14.4
Gienah	175 45.6	S17 40.0
Hadar	148 38.5	S60 28.9
Hamal	327 54.1	N23 33.9
Kaus Aust.	83 35.2	S34 22.4
Kochab	137 18.6	N74 03.9
Markab	13 32.3	N15 19.3
Menkar	314 08.8	N 4 10.5
Menkent	147 59.9	S36 28.8
Miaplacidus	221 38.7	S69 48.8
Mirfak	308 31.9	N49 56.3
Nunki	75 50.3	S26 16.1
Peacock	53 09.1	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.3	N 5 10.0
Rasalhague	96 00.4	N12 32.5
Regulus	207 36.7	N11 51.5
Rigel	281 06.3	S 8 10.7
Rigil Kent.	139 42.7	S60 55.6
Sabik	102 05.1	S15 45.2
Schedar	349 34.0	N56 39.3
Shaula	96 13.1	S37 07.1
Sirius	258 28.4	S16 45.0
Spica	158 24.4	S11 16.7
Suhail	222 47.9	S43 31.6
Vega	80 34.5	N38 48.0
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	356 58.4	9 21
Marte	13 11.2	8 15
Júpiter	0 39.7	9 05
Saturno	32 52.0	6 56

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph	
d h	°	′	°	′	°	′	°	′	′	
4 00	180	47.3	N15	53.9	144	29.1	10.9	N25	16.2	5.0	54.3
01	195	47.4		54.7	158	59.0	10.9	25	21.2	4.9	54.3
02	210	47.4		55.4	173	28.9	10.9	25	26.1	4.7	54.2
03	225	47.5	. .	56.1	187	58.8	10.9	25	30.8	4.6	54.2
04	240	47.5		56.8	202	28.7	10.8	25	35.4	4.5	54.2
05	255	47.6		57.6	216	58.5	10.8	25	39.9	4.4	54.2
06	270	47.7	N15	58.3	231	28.3	10.8	N25	44.3	4.2	54.2
07	285	47.7		59.0	245	58.1	10.7	25	48.5	4.2	54.2
M 08	300	47.8	15	59.7	260	27.8	10.7	25	52.7	4.0	54.2
I 09	315	47.8	16	00.5	274	57.5	10.7	25	56.7	3.8	54.2
É 10	330	47.9		01.2	289	27.2	10.7	26	00.5	3.8	54.2
R 11	345	47.9		01.9	303	56.9	10.6	26	04.3	3.6	54.2
C 12	0	48.0	N16	02.6	318	26.5	10.6	N26	07.9	3.5	54.2
O 13	15	48.0		03.3	332	56.1	10.6	26	11.4	3.4	54.2
L 14	30	48.1		04.1	347	25.7	10.6	26	14.8	3.3	54.2
E 15	45	48.2	. .	04.8	1	55.3	10.5	26	18.1	3.1	54.2
S 16	60	48.2		05.5	16	24.8	10.5	26	21.2	3.0	54.2
17	75	48.3		06.2	30	54.3	10.5	26	24.2	2.9	54.1
18	90	48.3	N16	06.9	45	23.8	10.5	N26	27.1	2.7	54.1
19	105	48.4		07.7	59	53.3	10.5	26	29.8	2.6	54.1
20	120	48.4		08.4	74	22.8	10.5	26	32.4	2.5	54.1
21	135	48.5	. .	09.1	88	52.3	10.4	26	34.9	2.4	54.1
22	150	48.5		09.8	103	21.7	10.4	26	37.3	2.2	54.1
23	165	48.6		10.5	117	51.1	10.4	26	39.5	2.2	54.1
5 00	180	48.6	N16	11.2	132	20.5	10.4	N26	41.7	1.9	54.1
01	195	48.7		12.0	146	49.9	10.4	26	43.6	1.9	54.1
02	210	48.8		12.7	161	19.3	10.4	26	45.5	1.7	54.1
03	225	48.8	. .	13.4	175	48.7	10.3	26	47.2	1.6	54.1
04	240	48.9		14.1	190	18.0	10.4	26	48.8	1.5	54.1
05	255	48.9		14.8	204	47.4	10.3	26	50.3	1.3	54.1
06	270	49.0	N16	15.5	219	16.7	10.4	N26	51.6	1.2	54.1
07	285	49.0		16.2	233	46.1	10.3	26	52.8	1.1	54.1
J 08	300	49.1		17.0	248	15.4	10.3	26	53.9	1.0	54.1
U 09	315	49.1	. .	17.7	262	44.7	10.3	26	54.9	0.8	54.1
E 10	330	49.2		18.4	277	14.0	10.4	26	55.7	0.7	54.1
V 11	345	49.2		19.1	291	43.4	10.3	26	56.4	0.6	54.1
E 12	0	49.3	N16	19.8	306	12.7	10.3	N26	57.0	0.4	54.1
S 13	15	49.3		20.5	320	42.0	10.3	26	57.4	0.3	54.1
14	30	49.4		21.2	335	11.3	10.3	26	57.7	0.2	54.1
15	45	49.4	. .	21.9	349	40.6	10.3	26	57.9	0.1	54.1
16	60	49.5		22.6	4	09.9	10.3	26	58.0	0.1	54.1
17	75	49.5		23.4	18	39.2	10.3	26	57.9	0.2	54.1
18	90	49.6	N16	24.1	33	08.5	10.4	N26	57.7	0.4	54.1
19	105	49.6		24.8	47	37.9	10.3	26	57.3	0.4	54.1
20	120	49.7		25.5	62	07.2	10.3	26	56.9	0.6	54.1
21	135	49.7	. .	26.2	76	36.5	10.4	26	56.3	0.8	54.1
22	150	49.8		26.9	91	05.9	10.3	26	55.5	0.8	54.1
23	165	49.8		27.6	105	35.2	10.4	26	54.7	1.0	54.1
6 00	180	49.9	N16	28.3	120	04.6	10.3	N26	53.7	1.1	54.1
01	195	49.9		29.0	134	33.9	10.4	26	52.6	1.2	54.1
02	210	49.9		29.7	149	03.3	10.4	26	51.4	1.4	54.1
03	225	50.0	. .	30.4	163	32.7	10.4	26	50.0	1.5	54.1
04	240	50.0		31.1	178	02.1	10.4	26	48.5	1.6	54.1
05	255	50.1		31.8	192	31.5	10.4	26	46.9	1.8	54.1
06	270	50.1	N16	32.5	207	00.9	10.4	N26	45.1	1.9	54.1
07	285	50.2		33.2	221	30.3	10.5	26	43.2	2.0	54.1
V 08	300	50.2		33.9	235	59.8	10.5	26	41.2	2.1	54.2
I 09	315	50.3	. .	34.6	250	29.3	10.4	26	39.1	2.3	54.2
E 10	330	50.3		35.3	264	58.7	10.5	26	36.8	2.3	54.2
R 11	345	50.4		36.0	279	28.2	10.6	26	34.5	2.6	54.2
N 12	0	50.4	N16	36.7	293	57.8	10.5	N26	31.9	2.6	54.2
E 13	15	50.4		37.4	308	27.3	10.6	26	29.3	2.8	54.2
S 14	30	50.5		38.1	322	56.9	10.6	26	26.5	2.9	54.2
15	45	50.5	. .	38.8	337	26.5	10.6	26	23.6	3.0	54.2
16	60	50.6		39.5	351	56.1	10.6	26	20.6	3.1	54.2
17	75	50.6		40.2	6	25.7	10.6	26	17.5	3.3	54.2
18	90	50.7	N16	40.9	20	55.3	10.7	N26	14.2	3.4	54.2
19	105	50.7		41.6	35	25.0	10.7	26	10.8	3.5	54.2
20	120	50.8		42.3	49	54.7	10.7	26	07.3	3.6	54.2
21	135	50.8	. .	43.0	64	24.4	10.8	26	03.7	3.8	54.2
22	150	50.8		43.7	78	54.2	10.8	25	59.9	3.9	54.2
23	165	50.9		44.4	93	24.0	10.8	N25	56.0	4.0	54.3
	S/D	15.9	*d*	0.7	S/D	14.8		14.7			14.8

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		4	5	6	7
°	h m	h m	h m	h m	h m	h m	h m
N 72	////	////	01 14	▭	▭	▭	▭
N 70	////	////	02 07	▭	▭	▭	▭
68	////	////	02 39	▭	▭	▭	▭
66	////	01 29	03 02	▭	▭	▭	▭
64	////	02 06	03 20	03 19	▭	▭	05 56
62	////	02 32	03 35	04 15	04 35	05 27	06 52
60	01 19	02 52	03 47	04 48	05 18	06 11	07 25
N 58	01 53	03 08	03 58	05 12	05 47	06 40	07 49
56	02 17	03 22	04 07	05 32	06 10	07 02	08 08
54	02 36	03 33	04 16	05 48	06 28	07 20	08 25
52	02 51	03 43	04 23	06 03	06 43	07 36	08 38
50	03 04	03 52	04 30	06 15	06 57	07 49	08 51
45	03 30	04 11	04 44	06 41	07 25	08 17	09 16
N 40	03 50	04 26	04 55	07 01	07 46	08 38	09 36
35	04 05	04 38	05 05	07 18	08 04	08 56	09 52
30	04 18	04 48	05 14	07 33	08 20	09 12	10 06
20	04 38	05 05	05 29	07 58	08 46	09 38	10 31
N 10	04 54	05 19	05 41	08 20	09 09	10 00	10 52
0	05 07	05 32	05 53	08 40	09 30	10 21	11 11
S 10	05 18	05 43	06 05	09 00	09 52	10 42	11 31
20	05 28	05 55	06 17	09 22	10 15	11 05	11 52
30	05 38	06 07	06 31	09 48	10 41	11 31	12 16
35	05 43	06 13	06 40	10 03	10 57	11 46	12 30
40	05 48	06 20	06 49	10 20	11 15	12 04	12 46
45	05 53	06 28	06 59	10 41	11 37	12 25	13 05
S 50	05 59	06 38	07 12	11 08	12 05	12 52	13 30
52	06 02	06 42	07 18	11 21	12 19	13 06	13 41
54	06 04	06 47	07 25	11 36	12 35	13 21	13 54
56	06 07	06 52	07 32	11 54	12 54	13 39	14 10
58	06 10	06 57	07 41	12 15	13 17	14 00	14 28
S 60	06 13	07 04	07 50	12 43	13 48	14 28	14 50

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	4	5	6	7
°	h m	h m	h m	h m	h m	h m	h m
N 72	22 50	////	////	▭	▭	▭	▭
N 70	21 52	////	////	▭	▭	▭	▭
68	21 18	////	////	▭	▭	▭	▭
66	20 54	22 31	////	▭	▭	▭	▭
64	20 36	21 51	////	01 28	▭	▭	04 07
62	20 20	21 24	////	00 33	01 58	02 51	03 11
60	20 08	21 04	22 40	00 00	01 15	02 07	02 38
N 58	19 57	20 47	22 04	24 46	00 46	01 38	02 13
56	19 47	20 34	21 39	24 23	00 23	01 16	01 54
54	19 39	20 22	21 20	24 05	00 05	00 58	01 37
52	19 31	20 11	21 04	23 50	24 42	00 42	01 23
50	19 25	20 02	20 51	23 36	24 29	00 29	01 11
45	19 10	19 43	20 25	23 09	24 01	00 01	00 45
N 40	18 59	19 28	20 05	22 47	23 39	24 25	00 25
35	18 49	19 16	19 49	22 29	23 21	24 07	00 07
30	18 40	19 06	19 36	22 14	23 06	23 53	24 35
20	18 25	18 48	19 16	21 48	22 39	23 28	24 13
N 10	18 12	18 34	19 00	21 25	22 16	23 06	23 53
0	18 00	18 22	18 47	21 04	21 55	22 46	23 35
S 10	17 48	18 10	18 35	20 43	21 34	22 25	23 16
20	17 36	17 59	18 25	20 21	21 11	22 03	22 57
30	17 22	17 47	18 15	19 55	20 44	21 38	22 34
35	17 13	17 40	18 10	19 39	20 29	21 23	22 20
40	17 04	17 33	18 05	19 22	20 10	21 05	22 04
45	16 53	17 24	17 59	19 00	19 48	20 44	21 46
S 50	16 40	17 15	17 54	18 33	19 20	20 17	21 22
52	16 34	17 11	17 51	18 20	19 06	20 04	21 11
54	16 28	17 06	17 48	18 05	18 50	19 49	20 58
56	16 20	17 01	17 46	17 47	18 32	19 31	20 43
58	16 12	16 55	17 42	17 25	18 08	19 10	20 25
S 60	16 02	16 49	17 39	16 58	17 38	18 42	20 04

Día	SOL			LUNA				
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
4	03 09	03 12	11 57	14 52	02 27	04	12
5	03 14	03 17	11 57	15 43	03 17	05	19
6	03 19	03 22	11 57	16 33	04 08	06	27

UT (HmGr)	ARIES	VENUS −4·1		MARTE +0·8		JÚPITER −2·1		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
7 00	224 49.1	219 39.6	N 0 31.7	236 35.9	S 6 46.7	225 06.4	S 1 18.5	257 35.4	S14 18.5
01	239 51.5	234 39.4	32.7	251 36.6	46.0	240 08.4	18.3	272 37.8	18.5
02	254 54.0	249 39.2	33.8	266 37.4	45.2	255 10.4	18.1	287 40.1	18.4
03	269 56.5	264 39.0	34.8	281 38.1	44.5	270 12.4	18.0	302 42.5	18.4
04	284 58.9	279 38.8	35.8	296 38.8	43.8	285 14.4	17.8	317 44.8	18.4
05	300 01.4	294 38.6	36.9	311 39.5	43.1	300 16.4	17.6	332 47.2	18.3
06	315 03.9	309 38.4	N 0 37.9	326 40.2	S 6 42.4	315 18.4	S 1 17.4	347 49.5	S14 18.3
07	330 06.3	324 38.2	39.0	341 40.9	41.7	330 20.4	17.2	2 51.9	18.3
08	345 08.8	339 38.0	40.0	356 41.6	41.0	345 22.4	17.0	17 54.2	18.3
S 09	0 11.3	354 37.8	41.1	11 42.3	40.2	0 24.4	16.8	32 56.6	18.2
Á 10	15 13.7	9 37.6	42.1	26 43.0	39.5	15 26.4	16.6	47 58.9	18.2
B 11	30 16.2	24 37.4	43.2	41 43.7	38.8	30 28.4	16.4	63 01.3	18.2
A 12	45 18.6	39 37.2	N 0 44.2	56 44.5	S 6 38.1	45 30.4	S 1 16.2	78 03.6	S14 18.1
D 13	60 21.1	54 37.0	45.3	71 45.2	37.4	60 32.4	16.0	93 06.0	18.1
O 14	75 23.6	69 36.8	46.3	86 45.9	36.7	75 34.4	15.8	108 08.3	18.1
15	90 26.0	84 36.5	47.4	101 46.6	36.0	90 36.4	15.6	123 10.7	18.0
16	105 28.5	99 36.3	48.4	116 47.3	35.2	105 38.4	15.5	138 13.0	18.0
17	120 31.0	114 36.1	49.5	131 48.0	34.5	120 40.4	15.3	153 15.4	18.0
18	135 33.4	129 35.9	N 0 50.5	146 48.7	S 6 33.8	135 42.4	S 1 15.1	168 17.7	S14 17.9
19	150 35.9	144 35.7	51.6	161 49.4	33.1	150 44.4	14.9	183 20.1	17.9
20	165 38.4	159 35.5	52.6	176 50.1	32.4	165 46.4	14.7	198 22.4	17.9
21	180 40.8	174 35.3	53.7	191 50.9	31.7	180 48.4	14.5	213 24.8	17.8
22	195 43.3	189 35.1	54.7	206 51.6	30.9	195 50.5	14.3	228 27.1	17.8
23	210 45.7	204 34.9	55.8	221 52.3	30.2	210 52.5	14.1	243 29.5	17.8
8 00	225 48.2	219 34.7	N 0 56.8	236 53.0	S 6 29.5	225 54.5	S 1 13.9	258 31.9	S14 17.8
01	240 50.7	234 34.5	57.9	251 53.7	28.8	240 56.5	13.7	273 34.2	17.7
02	255 53.1	249 34.3	0 58.9	266 54.4	28.1	255 58.5	13.5	288 36.6	17.7
03	270 55.6	264 34.1	1 00.0	281 55.1	27.4	271 00.5	13.3	303 38.9	17.7
04	285 58.1	279 33.9	01.0	296 55.8	26.7	286 02.5	13.2	318 41.3	17.6
05	301 00.5	294 33.7	02.1	311 56.6	25.9	301 04.5	13.0	333 43.6	17.6
06	316 03.0	309 33.5	N 1 03.1	326 57.3	S 6 25.2	316 06.5	S 1 12.8	348 46.0	S14 17.6
07	331 05.5	324 33.3	04.2	341 58.0	24.5	331 08.5	12.6	3 48.3	17.5
D 08	346 07.9	339 33.1	05.2	356 58.7	23.8	346 10.5	12.4	18 50.7	17.5
O 09	1 10.4	354 32.9	06.3	11 59.4	23.1	1 12.5	12.2	33 53.0	17.5
M 10	16 12.9	9 32.6	07.3	27 00.1	22.4	16 14.5	12.0	48 55.4	17.5
I 11	31 15.3	24 32.4	08.4	42 00.8	21.6	31 16.5	11.8	63 57.7	17.4
N 12	46 17.8	39 32.2	N 1 09.4	57 01.5	S 6 20.9	46 18.5	S 1 11.6	79 00.1	S14 17.4
G 13	61 20.2	54 32.0	10.5	72 02.3	20.2	61 20.5	11.4	94 02.5	17.4
O 14	76 22.7	69 31.8	11.5	87 03.0	19.5	76 22.5	11.2	109 04.8	17.3
15	91 25.2	84 31.6	12.6	102 03.7	18.8	91 24.5	11.1	124 07.2	17.3
16	106 27.6	99 31.4	13.7	117 04.4	18.1	106 26.6	10.9	139 09.5	17.3
17	121 30.1	114 31.2	14.7	132 05.1	17.3	121 28.6	10.7	154 11.9	17.2
18	136 32.6	129 31.0	N 1 15.8	147 05.8	S 6 16.6	136 30.6	S 1 10.5	169 14.2	S14 17.2
19	151 35.0	144 30.8	16.8	162 06.5	15.9	151 32.6	10.3	184 16.6	17.2
20	166 37.5	159 30.6	17.9	177 07.3	15.2	166 34.6	10.1	199 18.9	17.2
21	181 40.0	174 30.4	18.9	192 08.0	14.5	181 36.6	09.9	214 21.3	17.1
22	196 42.4	189 30.2	20.0	207 08.7	13.8	196 38.6	09.7	229 23.7	17.1
23	211 44.9	204 30.0	21.0	222 09.4	13.0	211 40.6	09.5	244 26.0	17.1
9 00	226 47.4	219 29.7	N 1 22.1	237 10.1	S 6 12.3	226 42.6	S 1 09.3	259 28.4	S14 17.0
01	241 49.8	234 29.5	23.1	252 10.8	11.6	241 44.6	09.2	274 30.7	17.0
02	256 52.3	249 29.3	24.2	267 11.5	10.9	256 46.6	09.0	289 33.1	17.0
03	271 54.7	264 29.1	25.2	282 12.3	10.2	271 48.6	08.8	304 35.4	17.0
04	286 57.2	279 28.9	26.3	297 13.0	09.5	286 50.6	08.6	319 37.8	16.9
05	301 59.7	294 28.7	27.3	312 13.7	08.7	301 52.7	08.4	334 40.2	16.9
06	317 02.1	309 28.5	N 1 28.4	327 14.4	S 6 08.0	316 54.7	S 1 08.2	349 42.5	S14 16.9
07	332 04.6	324 28.3	29.4	342 15.1	07.3	331 56.7	08.0	4 44.9	16.8
L 08	347 07.1	339 28.1	30.5	357 15.8	06.6	346 58.7	07.8	19 47.2	16.8
U 09	2 09.5	354 27.9	31.6	12 16.6	05.9	2 00.7	07.6	34 49.6	16.8
N 10	17 12.0	9 27.7	32.6	27 17.3	05.1	17 02.7	07.4	49 51.9	16.8
E 11	32 14.5	24 27.5	33.7	42 18.0	04.4	32 04.7	07.3	64 54.3	16.7
S 12	47 16.9	39 27.2	N 1 34.7	57 18.7	S 6 03.7	47 06.7	S 1 07.1	79 56.7	S14 16.7
13	62 19.4	54 27.0	35.8	72 19.4	03.0	62 08.7	06.9	94 59.0	16.7
14	77 21.8	69 26.8	36.8	87 20.1	02.3	77 10.7	06.7	110 01.4	16.6
15	92 24.3	84 26.6	37.9	102 20.9	01.6	92 12.7	06.5	125 03.7	16.6
16	107 26.8	99 26.4	38.9	117 21.6	00.8	107 14.8	06.3	140 06.1	16.6
17	122 29.2	114 26.2	40.0	132 22.3	6 00.1	122 16.8	06.1	155 08.5	16.6
18	137 31.7	129 26.0	N 1 41.0	147 23.0	S 5 59.4	137 18.8	S 1 05.9	170 10.8	S14 16.5
19	152 34.2	144 25.8	42.1	162 23.7	58.7	152 20.8	05.7	185 13.2	16.5
20	167 36.6	159 25.6	43.2	177 24.4	58.0	167 22.8	05.6	200 15.5	16.5
21	182 39.1	174 25.4	44.2	192 25.2	57.2	182 24.8	05.4	215 17.9	16.4
22	197 41.6	189 25.1	45.3	207 25.9	56.5	197 26.8	05.2	230 20.3	16.4
23	212 44.0	204 24.9	46.3	222 26.6	55.8	212 28.8	05.0	245 22.6	16.4
	h m								
Paso Mer.	8 55.3	*v* −0.2	*d* 1.1	*v* 0.7	*d* 0.7	*v* 2.0	*d* 0.2	*v* 2.4	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 13.0
Achernar	335 22.4	S57 07.4
Acrux	173 02.0	S63 13.5
Adhara	255 07.8	S29 00.3
Aldebaran	290 42.5	N16 33.1
Alioth	166 14.5	N55 50.5
Alkaid	152 53.3	N49 12.2
Alnair	27 35.8	S46 51.1
Alnilam	275 40.3	S 1 11.4
Alphard	217 49.9	S 8 45.4
Alphecca	126 05.3	N26 38.3
Alpheratz	357 37.3	N29 12.5
Altair	62 02.0	N 8 55.5
Ankaa	353 09.7	S42 11.1
Antares	112 18.2	S26 28.9
Arcturus	145 49.6	N19 04.0
Atria	107 13.9	S69 03.9
Avior	234 15.8	S59 35.1
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.7	N 7 24.6
Canopus	263 53.8	S52 42.7
Capella	280 25.6	N46 01.2
Deneb	49 27.2	N45 21.2
Denebola	182 27.0	N14 26.9
Diphda	348 49.8	S17 52.0
Dubhe	193 43.5	N61 38.1
Elnath	278 05.0	N28 37.5
Eltanin	90 42.8	N51 28.9
Enif	33 41.0	N 9 58.4
Fomalhaut	15 17.1	S29 30.3
Gacrux	171 53.6	S57 14.4
Gienah	175 45.6	S17 40.0
Hadar	148 38.5	S60 28.9
Hamal	327 54.0	N23 33.9
Kaus Aust.	83 35.2	S34 22.4
Kochab	137 18.6	N74 03.9
Markab	13 32.3	N15 19.3
Menkar	314 08.8	N 4 10.5
Menkent	147 59.8	S36 28.8
Miaplacidus	221 38.7	S69 48.8
Mirfak	308 31.9	N49 56.3
Nunki	75 50.3	S26 16.1
Peacock	53 09.1	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.3	N 5 10.0
Rasalhague	96 00.3	N12 32.5
Regulus	207 36.7	N11 51.5
Rigel	281 06.3	S 8 10.7
Rigil Kent.	139 42.7	S60 55.6
Sabik	102 05.0	S15 45.2
Schedar	349 34.0	N56 39.3
Shaula	96 13.0	S37 07.1
Sirius	258 28.4	S16 44.9
Spica	158 24.4	S11 16.7
Suhail	222 48.0	S43 31.6
Vega	80 34.4	N38 48.0
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	353 46.5	9 22
Marte	11 04.8	8 12
Júpiter	0 06.2	8 55
Saturno	32 43.6	6 45

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	°	′	′	′	
7 00	180	50.9	N16	45.1	107	53.8	10.8	N25	52.0	4.1	54.3
01	195	51.0		45.8	122	23.6	10.9	25	47.9	4.3	54.3
02	210	51.0		46.5	136	53.5	10.9	25	43.6	4.4	54.3
03	225	51.0	. .	47.1	151	23.4	10.9	25	39.2	4.5	54.3
04	240	51.1		47.8	165	53.3	11.0	25	34.7	4.6	54.3
05	255	51.1		48.5	180	23.3	10.9	25	30.1	4.8	54.3
06	270	51.2	N16	49.2	194	53.2	11.1	N25	25.3	4.8	54.3
07	285	51.2		49.9	209	23.3	11.0	25	20.5	5.0	54.3
S 08	300	51.2		50.6	223	53.3	11.1	25	15.5	5.1	54.3
Á 09	315	51.3	. .	51.3	238	23.4	11.1	25	10.4	5.2	54.4
B 10	330	51.3		52.0	252	53.5	11.2	25	05.2	5.4	54.4
A 11	345	51.4		52.7	267	23.7	11.1	24	59.8	5.4	54.4
D 12	0	51.4	N16	53.4	281	53.8	11.3	N24	54.4	5.6	54.4
O 13	15	51.4		54.0	296	24.1	11.2	24	48.8	5.7	54.4
14	30	51.5		54.7	310	54.3	11.3	24	43.1	5.8	54.4
15	45	51.5	. .	55.4	325	24.6	11.3	24	37.3	6.0	54.4
16	60	51.6		56.1	339	54.9	11.4	24	31.3	6.0	54.5
17	75	51.6		56.8	354	25.3	11.4	24	25.3	6.2	54.5
18	90	51.6	N16	57.5	8	55.7	11.4	N24	19.1	6.2	54.5
19	105	51.7		58.2	23	26.1	11.5	24	12.9	6.4	54.5
20	120	51.7		58.8	37	56.6	11.5	24	06.5	6.5	54.5
21	135	51.7	16	59.5	52	27.1	11.5	24	00.0	6.7	54.5
22	150	51.8	17	00.2	66	57.6	11.6	23	53.3	6.7	54.5
23	165	51.8		00.9	81	28.2	11.6	23	46.6	6.8	54.6
8 00	180	51.9	N17	01.6	95	58.8	11.7	N23	39.8	7.0	54.6
01	195	51.9		02.2	110	29.5	11.7	23	32.8	7.1	54.6
02	210	51.9		02.9	125	00.2	11.7	23	25.7	7.2	54.6
03	225	52.0	. .	03.6	139	30.9	11.8	23	18.5	7.2	54.6
04	240	52.0		04.3	154	01.7	11.8	23	11.3	7.4	54.6
05	255	52.0		05.0	168	32.5	11.8	23	03.9	7.6	54.7
06	270	52.1	N17	05.6	183	03.3	11.9	N22	56.3	7.6	54.7
07	285	52.1		06.3	197	34.2	11.9	22	48.7	7.7	54.7
D 08	300	52.1		07.0	212	05.1	12.0	22	41.0	7.8	54.7
O 09	315	52.2	. .	07.7	226	36.1	12.0	22	33.2	8.0	54.7
M 10	330	52.2		08.4	241	07.1	12.1	22	25.2	8.0	54.8
I 11	345	52.2		09.0	255	38.2	12.0	22	17.2	8.2	54.8
N 12	0	52.3	N17	09.7	270	09.2	12.2	N22	09.0	8.3	54.8
G 13	15	52.3		10.4	284	40.4	12.1	22	00.7	8.3	54.8
O 14	30	52.3		11.1	299	11.5	12.2	21	52.4	8.5	54.8
15	45	52.4	. .	11.7	313	42.7	12.2	21	43.9	8.6	54.9
16	60	52.4		12.4	328	13.9	12.3	21	35.3	8.7	54.9
17	75	52.4		13.1	342	45.2	12.3	21	26.6	8.7	54.9
18	90	52.5	N17	13.7	357	16.5	12.4	N21	17.9	8.9	54.9
19	105	52.5		14.4	11	47.9	12.4	21	09.0	9.0	54.9
20	120	52.5		15.1	26	19.3	12.4	21	00.0	9.1	55.0
21	135	52.6	. .	15.8	40	50.7	12.5	20	50.9	9.2	55.0
22	150	52.6		16.4	55	22.2	12.5	20	41.7	9.3	55.0
23	165	52.6		17.1	69	53.7	12.5	20	32.4	9.4	55.0
9 00	180	52.6	N17	17.8	84	25.2	12.6	N20	23.0	9.5	55.0
01	195	52.7		18.4	98	56.8	12.6	20	13.5	9.5	55.1
02	210	52.7		19.1	113	28.4	12.7	20	04.0	9.7	55.1
03	225	52.7	. .	19.8	128	00.1	12.7	19	54.3	9.8	55.1
04	240	52.8		20.4	142	31.8	12.7	19	44.5	9.9	55.1
05	255	52.8		21.1	157	03.5	12.7	19	34.6	9.9	55.2
06	270	52.8	N17	21.8	171	35.2	12.8	N19	24.7	10.1	55.2
07	285	52.9		22.4	186	07.0	12.9	19	14.6	10.2	55.2
L 08	300	52.9		23.1	200	38.9	12.8	19	04.4	10.2	55.2
U 09	315	52.9	. .	23.8	215	10.7	12.9	18	54.2	10.4	55.3
N 10	330	52.9		24.4	229	42.6	13.0	18	43.8	10.4	55.3
E 11	345	53.0		25.1	244	14.6	12.9	18	33.4	10.5	55.3
S 12	0	53.0	N17	25.8	258	46.5	13.0	N18	22.9	10.7	55.3
13	15	53.0		26.4	273	18.5	13.0	18	12.2	10.7	55.4
14	30	53.0		27.1	287	50.5	13.1	18	01.5	10.8	55.4
15	45	53.1	. .	27.8	302	22.6	13.1	17	50.7	10.9	55.4
16	60	53.1		28.4	316	54.7	13.1	17	39.8	10.9	55.5
17	75	53.1		29.1	331	26.8	13.2	17	28.9	11.1	55.5
18	90	53.2	N17	29.7	345	59.0	13.2	N17	17.8	11.2	55.5
19	105	53.2		30.4	0	31.2	13.2	17	06.6	11.2	55.5
20	120	53.2		31.1	15	03.4	13.2	16	55.4	11.3	55.6
21	135	53.2	. .	31.7	29	35.6	13.3	16	44.1	11.4	55.6
22	150	53.3		32.4	44	07.9	13.3	16	32.7	11.5	55.6
23	165	53.3		33.0	58	40.2	13.3	N16	21.2	11.6	55.7
	S/D	15.9	d	0.7	S/D	14.8		14.9			15.1

Lat.	Aurora		Orto	Orto Luna			
	Náut.	Civil	Sol	7	8	9	10
°	h m	h m	h m	h m	h m	h m	h m
N 72	////	////	00 26	▭	▭	▭	10 05
N 70	////	////	01 47	▭	▭	07 53	10 35
68	////	////	02 24	▭	▭	08 49	10 57
66	////	01 04	02 50	▭	07 10	09 22	11 14
64	////	01 51	03 10	05 56	07 57	09 45	11 28
62	////	02 20	03 26	06 52	08 28	10 04	11 40
60	00 57	02 42	03 40	07 25	08 50	10 20	11 49
N 58	01 39	03 00	03 51	07 49	09 09	10 33	11 58
56	02 06	03 14	04 01	08 08	09 24	10 44	12 05
54	02 27	03 27	04 10	08 25	09 37	10 53	12 12
52	02 44	03 37	04 18	08 38	09 48	11 02	12 18
50	02 58	03 47	04 25	08 51	09 58	11 10	12 23
45	03 25	04 07	04 40	09 16	10 20	11 26	12 35
N 40	03 45	04 22	04 52	09 36	10 37	11 40	12 44
35	04 02	04 35	05 02	09 52	10 51	11 51	12 52
30	04 15	04 46	05 12	10 06	11 03	12 01	13 00
20	04 36	05 04	05 27	10 31	11 24	12 18	13 12
N 10	04 53	05 18	05 41	10 52	11 43	12 33	13 23
0	05 06	05 31	05 53	11 11	12 00	12 47	13 32
S 10	05 18	05 44	06 05	11 31	12 17	13 01	13 42
20	05 29	05 56	06 19	11 52	12 35	13 15	13 53
30	05 40	06 08	06 33	12 16	12 56	13 32	14 05
35	05 45	06 15	06 42	12 30	13 08	13 41	14 12
40	05 51	06 23	06 52	12 46	13 22	13 52	14 20
45	05 57	06 32	07 03	13 05	13 38	14 05	14 29
S 50	06 03	06 42	07 17	13 30	13 58	14 21	14 40
52	06 06	06 46	07 23	13 41	14 08	14 28	14 45
54	06 09	06 51	07 30	13 54	14 19	14 36	14 50
56	06 12	06 57	07 38	14 10	14 31	14 45	14 56
58	06 15	07 03	07 47	14 28	14 45	14 55	15 03
S 60	06 19	07 10	07 57	14 50	15 01	15 07	15 11

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	7	8	9	10
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	▭	▭	▭	05 00
N 70	22 13	////	////	▭	▭	05 33	04 28
68	21 33	////	////	▭	▭	04 37	04 04
66	21 06	22 58	////	▭	04 35	04 03	03 46
64	20 45	22 07	////	04 07	03 48	03 38	03 31
62	20 29	21 36	////	03 11	03 17	03 18	03 18
60	20 15	21 13	23 05	02 38	02 54	03 02	03 07
N 58	20 03	20 55	22 18	02 13	02 35	02 49	02 58
56	19 53	20 41	21 49	01 54	02 19	02 37	02 49
54	19 44	20 28	21 28	01 37	02 06	02 26	02 42
52	19 36	20 17	21 11	01 23	01 54	02 17	02 35
50	19 29	20 07	20 57	01 11	01 43	02 09	02 29
45	19 14	19 47	20 29	00 45	01 21	01 51	02 16
N 40	19 02	19 32	20 09	00 25	01 03	01 36	02 05
35	18 51	19 19	19 52	00 07	00 48	01 24	01 56
30	18 42	19 08	19 39	24 35	00 35	01 13	01 48
20	18 26	18 50	19 17	24 13	00 13	00 54	01 33
N 10	18 13	18 35	19 01	23 53	24 38	00 38	01 21
0	18 00	18 22	18 47	23 35	24 23	00 23	01 09
S 10	17 48	18 09	18 35	23 16	24 07	00 07	00 57
20	17 34	17 57	18 24	22 57	23 50	24 44	00 44
30	17 19	17 44	18 13	22 34	23 31	24 29	00 29
35	17 11	17 37	18 08	22 20	23 20	24 21	00 21
40	17 01	17 30	18 02	22 04	23 07	24 11	00 11
45	16 49	17 21	17 56	21 46	22 51	23 59	25 08
S 50	16 36	17 11	17 49	21 22	22 32	23 45	24 59
52	16 29	17 06	17 47	21 11	22 23	23 38	24 55
54	16 22	17 01	17 44	20 58	22 13	23 31	24 50
56	16 14	16 55	17 40	20 43	22 01	23 22	24 45
58	16 05	16 49	17 37	20 25	21 48	23 13	24 39
S 60	15 55	16 42	17 33	20 04	21 32	23 02	24 32

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00^h	12^h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
7	03 24	03 26	11 57	17 23	04 58	07 36	
8	03 27	03 29	11 57	18 11	05 47	08 45	
9	03 31	03 32	11 56	18 58	06 35	09 55	

UT (HmGr)	ARIES	VENUS −4·0		MARTE +0·8		JÚPITER −2·1		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
10 00	227 46.5	219 24.7	N 1 47.4	237 27.3	S 5 55.1	227 30.8	S 1 04.8	260 25.0	S14 16.4
01	242 49.0	234 24.5	48.4	252 28.0	54.4	242 32.9	04.6	275 27.3	16.3
02	257 51.4	249 24.3	49.5	267 28.7	53.7	257 34.9	04.4	290 29.7	16.3
03	272 53.9	264 24.1	50.5	282 29.5	52.9	272 36.9	04.2	305 32.1	16.3
04	287 56.3	279 23.9	51.6	297 30.2	52.2	287 38.9	04.0	320 34.4	16.2
05	302 58.8	294 23.7	52.7	312 30.9	51.5	302 40.9	03.9	335 36.8	16.2
06	318 01.3	309 23.5	N 1 53.7	327 31.6	S 5 50.8	317 42.9	S 1 03.7	350 39.1	S14 16.2
07	333 03.7	324 23.2	54.8	342 32.3	50.1	332 44.9	03.5	5 41.5	16.2
08	348 06.2	339 23.0	55.8	357 33.0	49.3	347 46.9	03.3	20 43.9	16.1
M 09	3 08.7	354 22.8	56.9	12 33.8	48.6	2 48.9	03.1	35 46.2	16.1
A 10	18 11.1	9 22.6	57.9	27 34.5	47.9	17 51.0	02.9	50 48.6	16.1
R 11	33 13.6	24 22.4	1 59.0	42 35.2	47.2	32 53.0	02.7	65 51.0	16.1
T 12	48 16.1	39 22.2	N 2 00.0	57 35.9	S 5 46.5	47 55.0	S 1 02.5	80 53.3	S14 16.0
E 13	63 18.5	54 22.0	01.1	72 36.6	45.7	62 57.0	02.4	95 55.7	16.0
S 14	78 21.0	69 21.8	02.2	87 37.4	45.0	77 59.0	02.2	110 58.0	16.0
15	93 23.5	84 21.5	03.2	102 38.1	44.3	93 01.0	02.0	126 00.4	15.9
16	108 25.9	99 21.3	04.3	117 38.8	43.6	108 03.0	01.8	141 02.8	15.9
17	123 28.4	114 21.1	05.3	132 39.5	42.9	123 05.1	01.6	156 05.1	15.9
18	138 30.8	129 20.9	N 2 06.4	147 40.2	S 5 42.1	138 07.1	S 1 01.4	171 07.5	S14 15.9
19	153 33.3	144 20.7	07.4	162 41.0	41.4	153 09.1	01.2	186 09.9	15.8
20	168 35.8	159 20.5	08.5	177 41.7	40.7	168 11.1	01.0	201 12.2	15.8
21	183 38.2	174 20.3	09.6	192 42.4	40.0	183 13.1	00.9	216 14.6	15.8
22	198 40.7	189 20.0	10.6	207 43.1	39.3	198 15.1	00.7	231 16.9	15.8
23	213 43.2	204 19.8	11.7	222 43.8	38.5	213 17.1	00.5	246 19.3	15.7
11 00	228 45.6	219 19.6	N 2 12.7	237 44.6	S 5 37.8	228 19.2	S 1 00.3	261 21.7	S14 15.7
01	243 48.1	234 19.4	13.8	252 45.3	37.1	243 21.2	1 00.1	276 24.0	15.7
02	258 50.6	249 19.2	14.8	267 46.0	36.4	258 23.2	0 59.9	291 26.4	15.7
03	273 53.0	264 19.0	15.9	282 46.7	35.7	273 25.2	59.7	306 28.8	15.6
04	288 55.5	279 18.8	17.0	297 47.4	34.9	288 27.2	59.6	321 31.1	15.6
05	303 57.9	294 18.5	18.0	312 48.2	34.2	303 29.2	59.4	336 33.5	15.6
06	319 00.4	309 18.3	N 2 19.1	327 48.9	S 5 33.5	318 31.2	S 0 59.2	351 35.9	S14 15.5
07	334 02.9	324 18.1	20.1	342 49.6	32.8	333 33.3	59.0	6 38.2	15.5
M 08	349 05.3	339 17.9	21.2	357 50.3	32.1	348 35.3	58.8	21 40.6	15.5
I 09	4 07.8	354 17.7	22.2	12 51.0	31.3	3 37.3	58.6	36 43.0	15.5
É 10	19 10.3	9 17.5	23.3	27 51.8	30.6	18 39.3	58.4	51 45.3	15.4
R 11	34 12.7	24 17.3	24.4	42 52.5	29.9	33 41.3	58.2	66 47.7	15.4
C 12	49 15.2	39 17.0	N 2 25.4	57 53.2	S 5 29.2	48 43.3	S 0 58.1	81 50.1	S14 15.4
O 13	64 17.7	54 16.8	26.5	72 53.9	28.5	63 45.3	57.9	96 52.4	15.4
L 14	79 20.1	69 16.6	27.5	87 54.6	27.7	78 47.4	57.7	111 54.8	15.3
E 15	94 22.6	84 16.4	28.6	102 55.4	27.0	93 49.4	57.5	126 57.2	15.3
S 16	109 25.1	99 16.2	29.6	117 56.1	26.3	108 51.4	57.3	141 59.5	15.3
17	124 27.5	114 16.0	30.7	132 56.8	25.6	123 53.4	57.1	157 01.9	15.3
18	139 30.0	129 15.7	N 2 31.8	147 57.5	S 5 24.9	138 55.4	S 0 56.9	172 04.3	S14 15.2
19	154 32.4	144 15.5	32.8	162 58.3	24.1	153 57.4	56.8	187 06.6	15.2
20	169 34.9	159 15.3	33.9	177 59.0	23.4	168 59.5	56.6	202 09.0	15.2
21	184 37.4	174 15.1	34.9	192 59.7	22.7	184 01.5	56.4	217 11.4	15.2
22	199 39.8	189 14.9	36.0	208 00.4	22.0	199 03.5	56.2	232 13.7	15.1
23	214 42.3	204 14.7	37.1	223 01.1	21.2	214 05.5	56.0	247 16.1	15.1
12 00	229 44.8	219 14.4	N 2 38.1	238 01.9	S 5 20.5	229 07.5	S 0 55.8	262 18.5	S14 15.1
01	244 47.2	234 14.2	39.2	253 02.6	19.8	244 09.6	55.6	277 20.8	15.1
02	259 49.7	249 14.0	40.2	268 03.3	19.1	259 11.6	55.5	292 23.2	15.0
03	274 52.2	264 13.8	41.3	283 04.0	18.4	274 13.6	55.3	307 25.6	15.0
04	289 54.6	279 13.6	42.4	298 04.8	17.6	289 15.6	55.1	322 27.9	15.0
05	304 57.1	294 13.3	43.4	313 05.5	16.9	304 17.6	54.9	337 30.3	15.0
06	319 59.6	309 13.1	N 2 44.5	328 06.2	S 5 16.2	319 19.6	S 0 54.7	352 32.7	S14 14.9
07	335 02.0	324 12.9	45.5	343 06.9	15.5	334 21.7	54.5	7 35.0	14.9
J 08	350 04.5	339 12.7	46.6	358 07.6	14.8	349 23.7	54.3	22 37.4	14.9
U 09	5 06.9	354 12.5	47.6	13 08.4	14.0	4 25.7	54.2	37 39.8	14.9
E 10	20 09.4	9 12.3	48.7	28 09.1	13.3	19 27.7	54.0	52 42.2	14.8
V 11	35 11.9	24 12.0	49.8	43 09.8	12.6	34 29.7	53.8	67 44.5	14.8
E 12	50 14.3	39 11.8	N 2 50.8	58 10.5	S 5 11.9	49 31.8	S 0 53.6	82 46.9	S14 14.8
S 13	65 16.8	54 11.6	51.9	73 11.3	11.1	64 33.8	53.4	97 49.3	14.8
14	80 19.3	69 11.4	52.9	88 12.0	10.4	79 35.8	53.2	112 51.6	14.7
15	95 21.7	84 11.2	54.0	103 12.7	09.7	94 37.8	53.1	127 54.0	14.7
16	110 24.2	99 10.9	55.1	118 13.4	09.0	109 39.8	52.9	142 56.4	14.7
17	125 26.7	114 10.7	56.1	133 14.2	08.3	124 41.9	52.7	157 58.7	14.7
18	140 29.1	129 10.5	N 2 57.2	148 14.9	S 5 07.5	139 43.9	S 0 52.5	173 01.1	S14 14.6
19	155 31.6	144 10.3	58.2	163 15.6	06.8	154 45.9	52.3	188 03.5	14.6
20	170 34.0	159 10.0	2 59.3	178 16.3	06.1	169 47.9	52.1	203 05.9	14.6
21	185 36.5	174 09.8	3 00.4	193 17.0	05.4	184 49.9	52.0	218 08.2	14.6
22	200 39.0	189 09.6	01.4	208 17.8	04.6	199 52.0	51.8	233 10.6	14.5
23	215 41.4	204 09.4	02.5	223 18.5	03.9	214 54.0	51.6	248 13.0	14.5
	h m								
Paso Mer.	8 43.5	*v* −0.2	*d* 1.1	*v* 0.7	*d* 0.7	*v* 2.0	*d* 0.2	*v* 2.4	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 13.0
Achernar	335 22.4	S57 07.4
Acrux	173 02.0	S63 13.5
Adhara	255 07.8	S29 00.3
Aldebaran	290 42.5	N16 33.1
Alioth	166 14.5	N55 50.5
Alkaid	152 53.3	N49 12.2
Alnair	27 35.8	S46 51.1
Alnilam	275 40.3	S 1 11.4
Alphard	217 49.9	S 8 45.4
Alphecca	126 05.3	N26 38.3
Alpheratz	357 37.3	N29 12.5
Altair	62 02.0	N 8 55.5
Ankaa	353 09.7	S42 11.1
Antares	112 18.2	S26 28.9
Arcturus	145 49.6	N19 04.0
Atria	107 13.9	S69 03.9
Avior	234 15.8	S59 35.1
Bellatrix	278 25.6	N 6 22.1
Betelgeuse	270 54.8	N 7 24.6
Canopus	263 53.8	S52 42.6
Capella	280 25.6	N46 01.2
Deneb	49 27.2	N45 21.2
Denebola	182 27.0	N14 26.9
Diphda	348 49.8	S17 51.9
Dubhe	193 43.5	N61 38.1
Elnath	278 05.0	N28 37.5
Eltanin	90 42.8	N51 28.9
Enif	33 41.0	N 9 58.4
Fomalhaut	15 17.1	S29 30.2
Gacrux	171 53.7	S57 14.4
Gienah	175 45.6	S17 40.0
Hadar	148 38.5	S60 28.9
Hamal	327 54.0	N23 33.9
Kaus Aust.	83 35.2	S34 22.4
Kochab	137 18.6	N74 03.9
Markab	13 32.2	N15 19.3
Menkar	314 08.8	N 4 10.5
Menkent	147 59.8	S36 28.8
Miaplacidus	221 38.8	S69 48.8
Mirfak	308 31.9	N49 56.3
Nunki	75 50.3	S26 16.1
Peacock	53 09.1	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.3	N 5 10.0
Rasalhague	96 00.3	N12 32.5
Regulus	207 36.8	N11 51.5
Rigel	281 06.3	S 8 10.7
Rigil Kent.	139 42.7	S60 55.6
Sabik	102 05.0	S15 45.2
Schedar	349 34.0	N56 39.3
Shaula	96 13.0	S37 07.1
Sirius	258 28.4	S16 44.9
Spica	158 24.4	S11 16.7
Suhail	222 48.0	S43 31.6
Vega	80 34.4	N38 48.0
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	350 34.0	9 23
Marte	8 58.9	8 09
Júpiter	359 33.5	8 46
Saturno	32 36.0	6 34

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph	
d h	°	′	°	′	°	′	°	′	′	
10 00	180	53.3	N17	33.7	73	12.5	13.4	N16	09.6	11.7	55.7	
01	195	53.3		34.3	87	44.9	13.3	15	57.9	11.7	55.7	
02	210	53.4		35.0	102	17.2	13.4	15	46.2	11.9	55.7	
03	225	53.4	. .	35.7	116	49.6	13.5	15	34.3	11.9	55.8	
04	240	53.4		36.3	131	22.1	13.4	15	22.4	12.0	55.8	
05	255	53.4		37.0	145	54.5	13.5	15	10.4	12.0	55.8	
06	270	53.4	N17	37.6	160	27.0	13.5	N14	58.4	12.2	55.9	
07	285	53.5		38.3	174	59.5	13.5	14	46.2	12.2	55.9	
M 08	300	53.5		38.9	189	32.0	13.5	14	34.0	12.3	55.9	
A 09	315	53.5	. .	39.6	204	04.5	13.6	14	21.7	12.4	56.0	
R 10	330	53.5		40.2	218	37.1	13.6	14	09.3	12.5	56.0	
T 11	345	53.6		40.9	233	09.7	13.5	13	56.8	12.5	56.0	
E 12	0	53.6	N17	41.5	247	42.2	13.7	N13	44.3	12.6	56.1	
S 13	15	53.6		42.2	262	14.9	13.6	13	31.7	12.7	56.1	
14	30	53.6		42.8	276	47.5	13.6	13	19.0	12.7	56.1	
15	45	53.6	. .	43.5	291	20.1	13.7	13	06.3	12.9	56.1	
16	60	53.7		44.1	305	52.8	13.7	12	53.4	12.9	56.2	
17	75	53.7		44.8	320	25.5	13.7	12	40.5	12.9	56.2	
18	90	53.7	N17	45.4	334	58.2	13.7	N12	27.6	13.1	56.2	
19	105	53.7		46.1	349	30.9	13.7	12	14.5	13.1	56.3	
20	120	53.7		46.7	4	03.6	13.7	12	01.4	13.2	56.3	
21	135	53.8	. .	47.4	18	36.3	13.7	11	48.2	13.2	56.3	
22	150	53.8		48.0	33	09.0	13.8	11	35.0	13.3	56.4	
23	165	53.8		48.7	47	41.8	13.7	11	21.7	13.4	56.4	
11 00	180	53.8	N17	49.3	62	14.5	13.8	N11	08.3	13.5	56.5	
01	195	53.8		49.9	76	47.3	13.8	10	54.8	13.5	56.5	
02	210	53.9		50.6	91	20.1	13.7	10	41.3	13.6	56.5	
03	225	53.9	. .	51.2	105	52.8	13.8	10	27.7	13.6	56.6	
04	240	53.9		51.9	120	25.6	13.8	10	14.1	13.7	56.6	
05	255	53.9		52.5	134	58.4	13.8	10	00.4	13.8	56.6	
06	270	53.9	N17	53.2	149	31.2	13.8	N 9	46.6	13.8	56.7	
07	285	53.9		53.8	164	04.0	13.7	9	32.8	13.9	56.7	
M 08	300	54.0		54.4	178	36.7	13.8	9	18.9	14.0	56.7	
I 09	315	54.0	. .	55.1	193	09.5	13.8	9	04.9	14.0	56.8	
É 10	330	54.0		55.7	207	42.3	13.8	8	50.9	14.0	56.8	
R 11	345	54.0		56.4	222	15.1	13.8	8	36.9	14.1	56.8	
C 12	0	54.0	N17	57.0	236	47.9	13.8	N 8	22.8	14.2	56.9	
O 13	15	54.0		57.6	251	20.7	13.7	8	08.6	14.3	56.9	
L 14	30	54.1		58.3	265	53.4	13.8	7	54.3	14.2	56.9	
E 15	45	54.1	. .	58.9	280	26.2	13.8	7	40.1	14.4	57.0	
S 16	60	54.1	17	59.6	294	59.0	13.7	7	25.7	14.4	57.0	
17	75	54.1	18	00.2	309	31.7	13.8	7	11.3	14.4	57.1	
18	90	54.1	N18	00.8	324	04.5	13.7	N 6	56.9	14.5	57.1	
19	105	54.1		01.5	338	37.2	13.7	6	42.4	14.6	57.1	
20	120	54.1		02.1	353	09.9	13.7	6	27.8	14.5	57.2	
21	135	54.2	. .	02.7	7	42.6	13.7	6	13.3	14.7	57.2	
22	150	54.2		03.4	22	15.3	13.7	5	58.6	14.7	57.2	
23	165	54.2		04.0	36	48.0	13.7	5	43.9	14.7	57.3	
12 00	180	54.2	N18	04.6	51	20.7	13.6	N 5	29.2	14.8	57.3	
01	195	54.2		05.3	65	53.3	13.6	5	14.4	14.8	57.4	
02	210	54.2		05.9	80	25.9	13.6	4	59.6	14.9	57.4	
03	225	54.2	. .	06.5	94	58.5	13.6	4	44.7	14.9	57.4	
04	240	54.2		07.1	109	31.1	13.6	4	29.8	14.9	57.5	
05	255	54.3		07.8	124	03.7	13.6	4	14.9	15.0	57.5	
06	270	54.3	N18	08.4	138	36.3	13.5	N 3	59.9	15.1	57.5	
07	285	54.3		09.0	153	08.8	13.5	3	44.8	15.0	57.6	
J 08	300	54.3		09.7	167	41.3	13.5	3	29.8	15.1	57.6	
U 09	315	54.3	. .	10.3	182	13.8	13.4	3	14.7	15.2	57.7	
E 10	330	54.3		10.9	196	46.2	13.4	2	59.5	15.1	57.7	
V 11	345	54.3		11.5	211	18.6	13.4	2	44.4	15.2	57.7	
E 12	0	54.3	N18	12.2	225	51.0	13.4	N 2	29.2	15.3	57.8	
S 13	15	54.3		12.8	240	23.4	13.3	2	13.9	15.3	57.8	
14	30	54.4		13.4	254	55.7	13.3	1	58.6	15.3	57.9	
15	45	54.4	. .	14.0	269	28.0	13.2	1	43.3	15.3	57.9	
16	60	54.4		14.7	284	00.2	13.3	1	28.0	15.4	57.9	
17	75	54.4		15.3	298	32.5	13.2	1	12.6	15.3	58.0	
18	90	54.4	N18	15.9	313	04.7	13.1	N 0	57.3	15.5	58.0	
19	105	54.4		16.5	327	36.8	13.1	0	41.8	15.4	58.0	
20	120	54.4		17.2	342	08.9	13.1	0	26.4	15.5	58.1	
21	135	54.4	. .	17.8	356	41.0	13.0	N 0	10.9	15.4	58.1	
22	150	54.4		18.4	11	13.0	13.0	S 0	04.5	15.5	58.2	
23	165	54.4		19.0	25	45.0	13.0	S 0	20.0	15.6	58.2	
	S/D	15.9	*d*	0.6	S/D	15.3		15.5			15.7	

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		10	11	12	13
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	10 05	12 29	14 41	16 56
N 70	////	////	01 23	10 35	12 42	14 43	16 48
68	////	////	02 09	10 57	12 53	14 45	16 42
66	////	00 25	02 38	11 14	13 01	14 47	16 36
64	////	01 34	03 00	11 28	13 08	14 48	16 32
62	////	02 08	03 18	11 40	13 14	14 50	16 28
60	00 22	02 32	03 32	11 49	13 19	14 51	16 25
N 58	01 24	02 51	03 44	11 58	13 24	14 52	16 22
56	01 56	03 07	03 55	12 05	13 28	14 52	16 20
54	02 18	03 20	04 04	12 12	13 32	14 53	16 18
52	02 36	03 32	04 13	12 18	13 35	14 54	16 16
50	02 51	03 42	04 20	12 23	13 38	14 54	16 14
45	03 20	04 02	04 36	12 35	13 45	14 56	16 10
N 40	03 41	04 19	04 49	12 44	13 50	14 57	16 06
35	03 58	04 32	05 00	12 52	13 55	14 58	16 04
30	04 12	04 43	05 09	13 00	13 59	14 59	16 01
20	04 35	05 02	05 26	13 12	14 06	15 00	15 57
N 10	04 52	05 18	05 40	13 23	14 12	15 02	15 53
0	05 06	05 31	05 53	13 32	14 17	15 03	15 50
S 10	05 18	05 44	06 06	13 42	14 23	15 04	15 46
20	05 30	05 57	06 20	13 53	14 29	15 05	15 42
30	05 41	06 10	06 35	14 05	14 36	15 07	15 38
35	05 47	06 18	06 44	14 12	14 40	15 08	15 36
40	05 53	06 26	06 55	14 20	14 45	15 09	15 34
45	06 00	06 35	07 07	14 29	14 50	15 10	15 31
S 50	06 07	06 46	07 21	14 40	14 56	15 11	15 27
52	06 10	06 51	07 28	14 45	14 59	15 12	15 25
54	06 13	06 56	07 35	14 50	15 02	15 13	15 24
56	06 17	07 02	07 44	14 56	15 05	15 13	15 22
58	06 20	07 09	07 53	15 03	15 09	15 14	15 20
S 60	06 24	07 16	08 04	15 11	15 13	15 15	15 17

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	10	11	12	13
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	05 00	04 11	03 37	03 06
N 70	22 37	////	////	04 28	03 56	03 31	03 08
68	21 48	////	////	04 04	03 43	03 26	03 09
66	21 18	////	////	03 46	03 33	03 22	03 11
64	20 55	22 24	////	03 31	03 24	03 18	03 12
62	20 37	21 48	////	03 18	03 17	03 15	03 13
60	20 22	21 23	////	03 07	03 10	03 12	03 14
N 58	20 10	21 04	22 33	02 58	03 04	03 10	03 15
56	19 59	20 48	22 00	02 49	02 59	03 07	03 15
54	19 50	20 34	21 37	02 42	02 54	03 05	03 16
52	19 41	20 23	21 19	02 35	02 50	03 04	03 17
50	19 34	20 12	21 03	02 29	02 46	03 02	03 17
45	19 18	19 51	20 34	02 16	02 38	02 58	03 18
N 40	19 05	19 35	20 12	02 05	02 31	02 55	03 19
35	18 53	19 21	19 55	01 56	02 25	02 53	03 20
30	18 44	19 10	19 41	01 48	02 20	02 50	03 21
20	18 27	18 51	19 19	01 33	02 10	02 46	03 22
N 10	18 13	18 35	19 01	01 21	02 02	02 42	03 24
0	18 00	18 22	18 47	01 09	01 54	02 39	03 25
S 10	17 47	18 09	18 34	00 57	01 46	02 35	03 26
20	17 33	17 56	18 23	00 44	01 38	02 32	03 27
30	17 17	17 42	18 11	00 29	01 28	02 27	03 28
35	17 08	17 35	18 05	00 21	01 22	02 25	03 29
40	16 58	17 27	17 59	00 11	01 16	02 22	03 30
45	16 46	17 17	17 53	25 08	01 08	02 18	03 31
S 50	16 31	17 06	17 46	24 59	00 59	02 14	03 32
52	16 24	17 01	17 42	24 55	00 55	02 12	03 32
54	16 17	16 56	17 39	24 50	00 50	02 10	03 33
56	16 08	16 50	17 36	24 45	00 45	02 08	03 34
58	15 59	16 44	17 32	24 39	00 39	02 05	03 34
S 60	15 48	16 36	17 27	24 32	00 32	02 03	03 35

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
10	03 33	03 34	11 56	19 43	07 21	10	65
11	03 35	03 36	11 56	20 28	08 06	11	74
12	03 37	03 37	11 56	21 14	08 51	12	83

UT (HmGr)	ARIES	VENUS −4·0		MARTE +0·8		JÚPITER −2·2		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
13 00	230 43.9	219 09.2	N 3 03.5	238 19.2	S 5 03.2	229 56.0	S 0 51.4	263 15.3	S14 14.5
01	245 46.4	234 08.9	04.6	253 19.9	02.5	244 58.0	51.2	278 17.7	14.5
02	260 48.8	249 08.7	05.7	268 20.7	01.8	260 00.0	51.0	293 20.1	14.4
03	275 51.3	264 08.5	06.7	283 21.4	01.0	275 02.1	50.8	308 22.5	14.4
04	290 53.8	279 08.3	07.8	298 22.1	5 00.3	290 04.1	50.7	323 24.8	14.4
05	305 56.2	294 08.1	08.8	313 22.8	4 59.6	305 06.1	50.5	338 27.2	14.4
06	320 58.7	309 07.8	N 3 09.9	328 23.6	S 4 58.9	320 08.1	S 0 50.3	353 29.6	S14 14.4
07	336 01.2	324 07.6	11.0	343 24.3	58.1	335 10.2	50.1	8 31.9	14.3
08	351 03.6	339 07.4	12.0	358 25.0	57.4	350 12.2	49.9	23 34.3	14.3
V 09	6 06.1	354 07.2	13.1	13 25.7	56.7	5 14.2	49.7	38 36.7	14.3
I 10	21 08.5	9 06.9	14.1	28 26.5	56.0	20 16.2	49.6	53 39.1	14.3
E 11	36 11.0	24 06.7	15.2	43 27.2	55.2	35 18.2	49.4	68 41.4	14.2
R 12	51 13.5	39 06.5	N 3 16.3	58 27.9	S 4 54.5	50 20.3	S 0 49.2	83 43.8	S14 14.2
N 13	66 15.9	54 06.3	17.3	73 28.7	53.8	65 22.3	49.0	98 46.2	14.2
E 14	81 18.4	69 06.0	18.4	88 29.4	53.1	80 24.3	48.8	113 48.6	14.2
S 15	96 20.9	84 05.8	19.4	103 30.1	52.4	95 26.3	48.7	128 50.9	14.1
16	111 23.3	99 05.6	20.5	118 30.8	51.6	110 28.4	48.5	143 53.3	14.1
17	126 25.8	114 05.4	21.5	133 31.6	50.9	125 30.4	48.3	158 55.7	14.1
18	141 28.3	129 05.1	N 3 22.6	148 32.3	S 4 50.2	140 32.4	S 0 48.1	173 58.1	S14 14.1
19	156 30.7	144 04.9	23.7	163 33.0	49.5	155 34.4	47.9	189 00.4	14.0
20	171 33.2	159 04.7	24.7	178 33.7	48.7	170 36.5	47.7	204 02.8	14.0
21	186 35.6	174 04.5	25.8	193 34.5	48.0	185 38.5	47.6	219 05.2	14.0
22	201 38.1	189 04.2	26.8	208 35.2	47.3	200 40.5	47.4	234 07.6	14.0
23	216 40.6	204 04.0	27.9	223 35.9	46.6	215 42.5	47.2	249 09.9	14.0
14 00	231 43.0	219 03.8	N 3 29.0	238 36.6	S 4 45.8	230 44.6	S 0 47.0	264 12.3	S14 13.9
01	246 45.5	234 03.6	30.0	253 37.4	45.1	245 46.6	46.8	279 14.7	13.9
02	261 48.0	249 03.3	31.1	268 38.1	44.4	260 48.6	46.6	294 17.1	13.9
03	276 50.4	264 03.1	32.1	283 38.8	43.7	275 50.6	46.5	309 19.4	13.9
04	291 52.9	279 02.9	33.2	298 39.5	42.9	290 52.7	46.3	324 21.8	13.8
05	306 55.4	294 02.7	34.3	313 40.3	42.2	305 54.7	46.1	339 24.2	13.8
06	321 57.8	309 02.4	N 3 35.3	328 41.0	S 4 41.5	320 56.7	S 0 45.9	354 26.6	S14 13.8
07	337 00.3	324 02.2	36.4	343 41.7	40.8	335 58.7	45.7	9 28.9	13.8
08	352 02.8	339 02.0	37.4	358 42.5	40.1	351 00.8	45.6	24 31.3	13.8
S 09	7 05.2	354 01.8	38.5	13 43.2	39.3	6 02.8	45.4	39 33.7	13.7
Á 10	22 07.7	9 01.5	39.6	28 43.9	38.6	21 04.8	45.2	54 36.1	13.7
B 11	37 10.1	24 01.3	40.6	43 44.6	37.9	36 06.8	45.0	69 38.4	13.7
A 12	52 12.6	39 01.1	N 3 41.7	58 45.4	S 4 37.2	51 08.9	S 0 44.8	84 40.8	S14 13.7
D 13	67 15.1	54 00.8	42.8	73 46.1	36.4	66 10.9	44.6	99 43.2	13.6
O 14	82 17.5	69 00.6	43.8	88 46.8	35.7	81 12.9	44.5	114 45.6	13.6
15	97 20.0	84 00.4	44.9	103 47.6	35.0	96 14.9	44.3	129 48.0	13.6
16	112 22.5	99 00.2	45.9	118 48.3	34.3	111 17.0	44.1	144 50.3	13.6
17	127 24.9	113 59.9	47.0	133 49.0	33.5	126 19.0	43.9	159 52.7	13.6
18	142 27.4	128 59.7	N 3 48.1	148 49.7	S 4 32.8	141 21.0	S 0 43.7	174 55.1	S14 13.5
19	157 29.9	143 59.5	49.1	163 50.5	32.1	156 23.0	43.6	189 57.5	13.5
20	172 32.3	158 59.2	50.2	178 51.2	31.4	171 25.1	43.4	204 59.8	13.5
21	187 34.8	173 59.0	51.2	193 51.9	30.6	186 27.1	43.2	220 02.2	13.5
22	202 37.3	188 58.8	52.3	208 52.7	29.9	201 29.1	43.0	235 04.6	13.4
23	217 39.7	203 58.5	53.4	223 53.4	29.2	216 31.2	42.8	250 07.0	13.4
15 00	232 42.2	218 58.3	N 3 54.4	238 54.1	S 4 28.5	231 33.2	S 0 42.7	265 09.4	S14 13.4
01	247 44.6	233 58.1	55.5	253 54.8	27.7	246 35.2	42.5	280 11.7	13.4
02	262 47.1	248 57.9	56.5	268 55.6	27.0	261 37.2	42.3	295 14.1	13.4
03	277 49.6	263 57.6	57.6	283 56.3	26.3	276 39.3	42.1	310 16.5	13.3
04	292 52.0	278 57.4	58.7	298 57.0	25.6	291 41.3	41.9	325 18.9	13.3
05	307 54.5	293 57.2	3 59.7	313 57.8	24.8	306 43.3	41.8	340 21.3	13.3
06	322 57.0	308 56.9	N 4 00.8	328 58.5	S 4 24.1	321 45.4	S 0 41.6	355 23.6	S14 13.3
07	337 59.4	323 56.7	01.8	343 59.2	23.4	336 47.4	41.4	10 26.0	13.3
D 08	353 01.9	338 56.5	02.9	358 59.9	22.7	351 49.4	41.2	25 28.4	13.2
O 09	8 04.4	353 56.2	04.0	14 00.7	21.9	6 51.4	41.0	40 30.8	13.2
M 10	23 06.8	8 56.0	05.0	29 01.4	21.2	21 53.5	40.9	55 33.2	13.2
I 11	38 09.3	23 55.8	06.1	44 02.1	20.5	36 55.5	40.7	70 35.5	13.2
N 12	53 11.7	38 55.5	N 4 07.1	59 02.9	S 4 19.8	51 57.5	S 0 40.5	85 37.9	S14 13.2
G 13	68 14.2	53 55.3	08.2	74 03.6	19.0	66 59.6	40.3	100 40.3	13.1
O 14	83 16.7	68 55.1	09.3	89 04.3	18.3	82 01.6	40.1	115 42.7	13.1
15	98 19.1	83 54.8	10.3	104 05.1	17.6	97 03.6	40.0	130 45.1	13.1
16	113 21.6	98 54.6	11.4	119 05.8	16.9	112 05.7	39.8	145 47.5	13.1
17	128 24.1	113 54.4	12.4	134 06.5	16.1	127 07.7	39.6	160 49.8	13.1
18	143 26.5	128 54.1	N 4 13.5	149 07.2	S 4 15.4	142 09.7	S 0 39.4	175 52.2	S14 13.0
19	158 29.0	143 53.9	14.6	164 08.0	14.7	157 11.7	39.2	190 54.6	13.0
20	173 31.5	158 53.7	15.6	179 08.7	14.0	172 13.8	39.1	205 57.0	13.0
21	188 33.9	173 53.4	16.7	194 09.4	13.2	187 15.8	38.9	220 59.4	13.0
22	203 36.4	188 53.2	17.7	209 10.2	12.5	202 17.8	38.7	236 01.7	12.9
23	218 38.9	203 53.0	18.8	224 10.9	11.8	217 19.9	38.5	251 04.1	12.9
	h m								
Paso Mer.	8 31.7	*v* −0.2	*d* 1.1	*v* 0.7	*d* 0.7	*v* 2.0	*d* 0.2	*v* 2.4	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 13.0
Achernar	335 22.4	S57 07.4
Acrux	173 02.0	S63 13.5
Adhara	255 07.9	S29 00.3
Aldebaran	290 42.5	N16 33.1
Alioth	166 14.5	N55 50.5
Alkaid	152 53.3	N49 12.2
Alnair	27 35.8	S46 51.1
Alnilam	275 40.3	S 1 11.4
Alphard	217 50.0	S 8 45.4
Alphecca	126 05.3	N26 38.4
Alpheratz	357 37.3	N29 12.5
Altair	62 02.0	N 8 55.5
Ankaa	353 09.6	S42 11.1
Antares	112 18.2	S26 28.9
Arcturus	145 49.6	N19 04.0
Atria	107 13.9	S69 03.9
Avior	234 15.8	S59 35.1
Bellatrix	278 25.6	N 6 22.1
Betelgeuse	270 54.8	N 7 24.6
Canopus	263 53.8	S52 42.6
Capella	280 25.6	N46 01.2
Deneb	49 27.2	N45 21.3
Denebola	182 27.0	N14 26.9
Diphda	348 49.8	S17 51.9
Dubhe	193 43.5	N61 38.1
Elnath	278 05.0	N28 37.5
Eltanin	90 42.8	N51 28.9
Enif	33 41.0	N 9 58.4
Fomalhaut	15 17.1	S29 30.2
Gacrux	171 53.7	S57 14.5
Gienah	175 45.6	S17 40.0
Hadar	148 38.5	S60 28.9
Hamal	327 54.0	N23 33.9
Kaus Aust.	83 35.2	S34 22.4
Kochab	137 18.6	N74 03.9
Markab	13 32.2	N15 19.3
Menkar	314 08.8	N 4 10.5
Menkent	147 59.9	S36 28.8
Miaplacidus	221 38.8	S69 48.8
Mirfak	308 31.9	N49 56.3
Nunki	75 50.3	S26 16.1
Peacock	53 09.0	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.3	N 5 10.0
Rasalhague	96 00.3	N12 32.5
Regulus	207 36.8	N11 51.5
Rigel	281 06.3	S 8 10.7
Rigil Kent.	139 42.7	S60 55.7
Sabik	102 05.0	S15 45.2
Schedar	349 34.0	N56 39.3
Shaula	96 13.0	S37 07.1
Sirius	258 28.4	S16 44.9
Spica	158 24.4	S11 16.7
Suhail	222 48.0	S43 31.6
Vega	80 34.4	N38 48.0
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	347 20.8	9 24
Marte	6 53.6	8 05
Júpiter	359 01.5	8 36
Saturno	32 29.3	6 22

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v		Dec	d		Ph
d h	°	′	°	′	°	′	′	°	′	′	′
13 00	180	54.4	N18	19.6	40	17.0	12.9	S 0	35.6	15.5	58.2
01	195	54.4		20.3	54	48.9	12.8	0	51.1	15.6	58.3
02	210	54.5		20.9	69	20.7	12.8	1	06.7	15.5	58.3
03	225	54.5	. .	21.5	83	52.5	12.8	1	22.2	15.6	58.4
04	240	54.5		22.1	98	24.3	12.7	1	37.8	15.6	58.4
05	255	54.5		22.7	112	56.0	12.6	1	53.4	15.7	58.4
06	270	54.5	N18	23.3	127	27.6	12.6	S 2	09.1	15.6	58.5
07	285	54.5		24.0	141	59.2	12.6	2	24.7	15.6	58.5
V 08	300	54.5		24.6	156	30.8	12.5	2	40.3	15.7	58.5
I 09	315	54.5	. .	25.2	171	02.3	12.4	2	56.0	15.6	58.6
E 10	330	54.5		25.8	185	33.7	12.4	3	11.6	15.7	58.6
R 11	345	54.5		26.4	200	05.1	12.3	3	27.3	15.7	58.7
N 12	0	54.5	N18	27.0	214	36.4	12.3	S 3	43.0	15.6	58.7
E 13	15	54.5		27.6	229	07.7	12.2	3	58.6	15.7	58.7
S 14	30	54.5		28.3	243	38.9	12.1	4	14.3	15.7	58.8
15	45	54.5	. .	28.9	258	10.0	12.1	4	30.0	15.6	58.8
16	60	54.5		29.5	272	41.1	12.0	4	45.6	15.7	58.8
17	75	54.5		30.1	287	12.1	11.9	5	01.3	15.6	58.9
18	90	54.5	N18	30.7	301	43.0	11.9	S 5	16.9	15.7	58.9
19	105	54.5		31.3	316	13.9	11.8	5	32.6	15.6	58.9
20	120	54.5		31.9	330	44.7	11.7	5	48.2	15.7	59.0
21	135	54.5	. .	32.5	345	15.4	11.7	6	03.9	15.6	59.0
22	150	54.5		33.1	359	46.1	11.6	6	19.5	15.6	59.1
23	165	54.5		33.7	14	16.7	11.5	6	35.1	15.6	59.1
14 00	180	54.5	N18	34.3	28	47.2	11.5	S 6	50.7	15.6	59.1
01	195	54.5		34.9	43	17.7	11.3	7	06.3	15.5	59.2
02	210	54.5		35.6	57	48.0	11.3	7	21.8	15.6	59.2
03	225	54.5	. .	36.2	72	18.3	11.2	7	37.4	15.5	59.2
04	240	54.5		36.8	86	48.5	11.2	7	52.9	15.5	59.3
05	255	54.5		37.4	101	18.7	11.0	8	08.4	15.5	59.3
06	270	54.5	N18	38.0	115	48.7	11.0	S 8	23.9	15.4	59.3
07	285	54.5		38.6	130	18.7	10.9	8	39.3	15.4	59.4
S 08	300	54.5		39.2	144	48.6	10.8	8	54.7	15.4	59.4
Á 09	315	54.5	. .	39.8	159	18.4	10.7	9	10.1	15.4	59.4
B 10	330	54.5		40.4	173	48.1	10.6	9	25.5	15.3	59.5
A 11	345	54.5		41.0	188	17.7	10.6	9	40.8	15.3	59.5
D 12	0	54.5	N18	41.6	202	47.3	10.4	S 9	56.1	15.3	59.5
O 13	15	54.5		42.2	217	16.7	10.4	10	11.4	15.2	59.6
14	30	54.5		42.8	231	46.1	10.3	10	26.6	15.2	59.6
15	45	54.5	. .	43.4	246	15.4	10.2	10	41.8	15.1	59.6
16	60	54.5		44.0	260	44.6	10.0	10	56.9	15.1	59.7
17	75	54.5		44.6	275	13.6	10.0	11	12.0	15.1	59.7
18	90	54.5	N18	45.2	289	42.6	9.9	S11	27.1	15.0	59.7
19	105	54.5		45.8	304	11.5	9.8	11	42.1	14.9	59.7
20	120	54.5		46.4	318	40.3	9.7	11	57.0	14.9	59.8
21	135	54.5	. .	46.9	333	09.0	9.7	12	11.9	14.9	59.8
22	150	54.5		47.5	347	37.7	9.5	12	26.8	14.8	59.8
23	165	54.5		48.1	2	06.2	9.4	12	41.6	14.7	59.9
15 00	180	54.5	N18	48.7	16	34.6	9.3	S12	56.3	14.7	59.9
01	195	54.5		49.3	31	02.9	9.2	13	11.0	14.6	59.9
02	210	54.5		49.9	45	31.1	9.1	13	25.6	14.5	60.0
03	225	54.5	. .	50.5	59	59.2	9.0	13	40.1	14.5	60.0
04	240	54.5		51.1	74	27.2	8.9	13	54.6	14.5	60.0
05	255	54.5		51.7	88	55.1	8.8	14	09.1	14.3	60.0
06	270	54.5	N18	52.3	103	22.9	8.6	S14	23.4	14.3	60.1
07	285	54.5		52.9	117	50.5	8.6	14	37.7	14.2	60.1
D 08	300	54.5		53.5	132	18.1	8.5	14	51.9	14.1	60.1
O 09	315	54.4	. .	54.0	146	45.6	8.3	15	06.0	14.1	60.1
M 10	330	54.4		54.6	161	12.9	8.3	15	20.1	13.9	60.2
I 11	345	54.4		55.2	175	40.2	8.1	15	34.0	13.9	60.2
N 12	0	54.4	N18	55.8	190	07.3	8.1	S15	47.9	13.8	60.2
G 13	15	54.4		56.4	204	34.4	7.9	16	01.7	13.8	60.2
O 14	30	54.4		57.0	219	01.3	7.8	16	15.5	13.6	60.3
15	45	54.4	. .	57.6	233	28.1	7.7	16	29.1	13.5	60.3
16	60	54.4		58.1	247	54.8	7.6	16	42.6	13.5	60.3
17	75	54.4		58.7	262	21.4	7.5	16	56.1	13.3	60.3
18	90	54.4	N18	59.3	276	47.9	7.3	S17	09.4	13.3	60.4
19	105	54.4	18	59.9	291	14.2	7.3	17	22.7	13.2	60.4
20	120	54.4	19	00.5	305	40.5	7.1	17	35.9	13.0	60.4
21	135	54.3	. .	01.1	320	06.6	7.0	17	48.9	13.0	60.4
22	150	54.3		01.6	334	32.6	6.9	18	01.9	12.8	60.4
23	165	54.3		02.2	348	58.5	6.8	S18	14.7	12.8	60.5
	S/D	15.9	d	0.6	S/D	16.0		16.2			16.4

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		13	14	15	16
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	16 56	19 27	▬	▬
N 70	////	////	00 54	16 48	19 05	22 00	▬
68	////	////	01 53	16 42	18 47	21 15	▬
66	////	////	02 26	16 36	18 34	20 46	23 33
64	////	01 16	02 50	16 32	18 23	20 24	22 40
62	////	01 56	03 09	16 28	18 13	20 06	22 08
60	////	02 23	03 25	16 25	18 05	19 52	21 44
N 58	01 08	02 43	03 38	16 22	17 58	19 39	21 25
56	01 44	03 00	03 49	16 20	17 52	19 29	21 09
54	02 09	03 14	03 59	16 18	17 46	19 20	20 56
52	02 29	03 26	04 08	16 16	17 41	19 11	20 44
50	02 45	03 37	04 16	16 14	17 37	19 04	20 34
45	03 15	03 58	04 32	16 10	17 27	18 48	20 12
N 40	03 38	04 15	04 46	16 06	17 19	18 36	19 55
35	03 55	04 29	04 57	16 04	17 12	18 25	19 40
30	04 10	04 41	05 07	16 01	17 06	18 15	19 28
20	04 33	05 01	05 24	15 57	16 56	17 59	19 06
N 10	04 51	05 17	05 39	15 53	16 47	17 45	18 48
0	05 06	05 31	05 53	15 50	16 39	17 32	18 31
S 10	05 19	05 44	06 06	15 46	16 31	17 20	18 14
20	05 31	05 58	06 21	15 42	16 22	17 06	17 56
30	05 43	06 12	06 37	15 38	16 12	16 51	17 35
35	05 49	06 20	06 47	15 36	16 07	16 42	17 23
40	05 56	06 28	06 57	15 34	16 01	16 32	17 09
45	06 03	06 38	07 10	15 31	15 53	16 20	16 53
S 50	06 10	06 50	07 25	15 27	15 45	16 06	16 33
52	06 14	06 55	07 32	15 25	15 41	15 59	16 24
54	06 17	07 01	07 40	15 24	15 36	15 52	16 14
56	06 21	07 07	07 49	15 22	15 31	15 44	16 02
58	06 25	07 14	07 59	15 20	15 26	15 35	15 48
S 60	06 30	07 22	08 11	15 17	15 20	15 25	15 33

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	13	14	15	16
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	03 06	02 32	01 46	▬
N 70	23 11	////	////	03 08	02 43	02 11	01 09
68	22 05	////	////	03 09	02 52	02 30	01 56
66	21 30	////	////	03 11	02 59	02 46	02 27
64	21 05	22 43	////	03 12	03 06	02 59	02 50
62	20 45	22 01	////	03 13	03 11	03 10	03 09
60	20 30	21 33	////	03 14	03 16	03 19	03 24
N 58	20 16	21 12	22 51	03 15	03 20	03 27	03 37
56	20 05	20 55	22 12	03 15	03 24	03 35	03 49
54	19 55	20 40	21 46	03 16	03 27	03 41	03 59
52	19 46	20 28	21 26	03 17	03 31	03 47	04 08
50	19 38	20 17	21 10	03 17	03 33	03 52	04 16
45	19 21	19 55	20 39	03 18	03 40	04 04	04 33
N 40	19 07	19 38	20 16	03 19	03 45	04 14	04 47
35	18 56	19 24	19 58	03 20	03 50	04 22	05 00
30	18 46	19 12	19 43	03 21	03 54	04 29	05 10
20	18 29	18 52	19 20	03 22	04 01	04 42	05 28
N 10	18 14	18 36	19 02	03 24	04 07	04 53	05 44
0	18 00	18 22	18 47	03 25	04 13	05 04	05 59
S 10	17 46	18 08	18 34	03 26	04 18	05 14	06 15
20	17 32	17 55	18 22	03 27	04 25	05 26	06 31
30	17 15	17 41	18 10	03 28	04 32	05 39	06 49
35	17 06	17 33	18 03	03 29	04 36	05 46	07 00
40	16 55	17 24	17 57	03 30	04 41	05 55	07 13
45	16 42	17 14	17 50	03 31	04 46	06 05	07 28
S 50	16 27	17 03	17 42	03 32	04 53	06 18	07 46
52	16 20	16 57	17 39	03 32	04 56	06 23	07 55
54	16 12	16 52	17 35	03 33	04 59	06 30	08 05
56	16 03	16 45	17 31	03 34	05 03	06 37	08 16
58	15 53	16 38	17 27	03 34	05 07	06 45	08 28
S 60	15 41	16 30	17 22	03 35	05 12	06 54	08 43

Día	SOL		Paso Mer.	LUNA			
	Ec. Tiempo			Paso Mer.		Edad	Fase
	00^h	12^h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
13	03 38	03 38	11 56	22 01	09 37	13 90	
14	03 38	03 38	11 56	22 51	10 26	14 96	
15	03 38	03 38	11 56	23 46	11 18	15 99	◯

UT (HmGr)	ARIES	VENUS −4·0		MARTE +0·7		JÚPITER −2·2		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
16 00	233 41.3	218 52.7	N 4 19.9	239 11.6	S 4 11.1	232 21.9	S 0 38.3	266 06.5	S14 12.9
01	248 43.8	233 52.5	20.9	254 12.4	10.3	247 23.9	38.2	281 08.9	12.9
02	263 46.2	248 52.3	22.0	269 13.1	09.6	262 26.0	38.0	296 11.3	12.9
03	278 48.7	263 52.0	23.0	284 13.8	08.9	277 28.0	37.8	311 13.7	12.8
04	293 51.2	278 51.8	24.1	299 14.6	08.2	292 30.0	37.6	326 16.0	12.8
05	308 53.6	293 51.6	25.2	314 15.3	07.4	307 32.1	37.4	341 18.4	12.8
06	323 56.1	308 51.3	N 4 26.2	329 16.0	S 4 06.7	322 34.1	S 0 37.3	356 20.8	S14 12.8
07	338 58.6	323 51.1	27.3	344 16.8	06.0	337 36.1	37.1	11 23.2	12.8
08	354 01.0	338 50.8	28.3	359 17.5	05.3	352 38.2	36.9	26 25.6	12.7
L 09	9 03.5	353 50.6	29.4	14 18.2	04.5	7 40.2	36.7	41 28.0	12.7
U 10	24 06.0	8 50.4	30.4	29 18.9	03.8	22 42.2	36.6	56 30.3	12.7
N 11	39 08.4	23 50.1	31.5	44 19.7	03.1	37 44.3	36.4	71 32.7	12.7
E 12	54 10.9	38 49.9	N 4 32.6	59 20.4	S 4 02.3	52 46.3	S 0 36.2	86 35.1	S14 12.7
S 13	69 13.4	53 49.7	33.6	74 21.1	01.6	67 48.3	36.0	101 37.5	12.7
14	84 15.8	68 49.4	34.7	89 21.9	00.9	82 50.4	35.8	116 39.9	12.6
15	99 18.3	83 49.2	35.7	104 22.6	4 00.2	97 52.4	35.7	131 42.3	12.6
16	114 20.7	98 48.9	36.8	119 23.3	3 59.4	112 54.4	35.5	146 44.7	12.6
17	129 23.2	113 48.7	37.9	134 24.1	58.7	127 56.5	35.3	161 47.0	12.6
18	144 25.7	128 48.5	N 4 38.9	149 24.8	S 3 58.0	142 58.5	S 0 35.1	176 49.4	S14 12.6
19	159 28.1	143 48.2	40.0	164 25.5	57.3	158 00.5	35.0	191 51.8	12.5
20	174 30.6	158 48.0	41.0	179 26.3	56.5	173 02.6	34.8	206 54.2	12.5
21	189 33.1	173 47.8	42.1	194 27.0	55.8	188 04.6	34.6	221 56.6	12.5
22	204 35.5	188 47.5	43.2	209 27.7	55.1	203 06.6	34.4	236 59.0	12.5
23	219 38.0	203 47.3	44.2	224 28.5	54.4	218 08.7	34.2	252 01.4	12.5
17 00	234 40.5	218 47.0	N 4 45.3	239 29.2	S 3 53.6	233 10.7	S 0 34.1	267 03.7	S14 12.4
01	249 42.9	233 46.8	46.3	254 29.9	52.9	248 12.7	33.9	282 06.1	12.4
02	264 45.4	248 46.6	47.4	269 30.7	52.2	263 14.8	33.7	297 08.5	12.4
03	279 47.9	263 46.3	48.5	284 31.4	51.5	278 16.8	33.5	312 10.9	12.4
04	294 50.3	278 46.1	49.5	299 32.1	50.7	293 18.8	33.4	327 13.3	12.4
05	309 52.8	293 45.8	50.6	314 32.9	50.0	308 20.9	33.2	342 15.7	12.3
06	324 55.2	308 45.6	N 4 51.6	329 33.6	S 3 49.3	323 22.9	S 0 33.0	357 18.1	S14 12.3
07	339 57.7	323 45.3	52.7	344 34.3	48.6	338 25.0	32.8	12 20.5	12.3
M 08	355 00.2	338 45.1	53.7	359 35.1	47.8	353 27.0	32.6	27 22.8	12.3
A 09	10 02.6	353 44.9	54.8	14 35.8	47.1	8 29.0	32.5	42 25.2	12.3
R 10	25 05.1	8 44.6	55.9	29 36.5	46.4	23 31.1	32.3	57 27.6	12.3
T 11	40 07.6	23 44.4	56.9	44 37.3	45.6	38 33.1	32.1	72 30.0	12.2
E 12	55 10.0	38 44.1	N 4 58.0	59 38.0	S 3 44.9	53 35.1	S 0 31.9	87 32.4	S14 12.2
S 13	70 12.5	53 43.9	4 59.0	74 38.7	44.2	68 37.2	31.8	102 34.8	12.2
14	85 15.0	68 43.6	5 00.1	89 39.5	43.5	83 39.2	31.6	117 37.2	12.2
15	100 17.4	83 43.4	01.2	104 40.2	42.7	98 41.2	31.4	132 39.6	12.2
16	115 19.9	98 43.2	02.2	119 40.9	42.0	113 43.3	31.2	147 42.0	12.1
17	130 22.4	113 42.9	03.3	134 41.7	41.3	128 45.3	31.1	162 44.3	12.1
18	145 24.8	128 42.7	N 5 04.3	149 42.4	S 3 40.6	143 47.4	S 0 30.9	177 46.7	S14 12.1
19	160 27.3	143 42.4	05.4	164 43.1	39.8	158 49.4	30.7	192 49.1	12.1
20	175 29.7	158 42.2	06.5	179 43.9	39.1	173 51.4	30.5	207 51.5	12.1
21	190 32.2	173 41.9	07.5	194 44.6	38.4	188 53.5	30.4	222 53.9	12.1
22	205 34.7	188 41.7	08.6	209 45.4	37.6	203 55.5	30.2	237 56.3	12.0
23	220 37.1	203 41.4	09.6	224 46.1	36.9	218 57.6	30.0	252 58.7	12.0
18 00	235 39.6	218 41.2	N 5 10.7	239 46.8	S 3 36.2	233 59.6	S 0 29.8	268 01.1	S14 12.0
01	250 42.1	233 41.0	11.7	254 47.6	35.5	249 01.6	29.7	283 03.5	12.0
02	265 44.5	248 40.7	12.8	269 48.3	34.7	264 03.7	29.5	298 05.9	12.0
03	280 47.0	263 40.5	13.9	284 49.0	34.0	279 05.7	29.3	313 08.3	12.0
04	295 49.5	278 40.2	14.9	299 49.8	33.3	294 07.7	29.1	328 10.6	11.9
05	310 51.9	293 40.0	16.0	314 50.5	32.6	309 09.8	29.0	343 13.0	11.9
06	325 54.4	308 39.7	N 5 17.0	329 51.2	S 3 31.8	324 11.8	S 0 28.8	358 15.4	S14 11.9
07	340 56.9	323 39.5	18.1	344 52.0	31.1	339 13.9	28.6	13 17.8	11.9
M 08	355 59.3	338 39.2	19.1	359 52.7	30.4	354 15.9	28.4	28 20.2	11.9
I 09	11 01.8	353 39.0	20.2	14 53.4	29.7	9 17.9	28.2	43 22.6	11.9
É 10	26 04.2	8 38.7	21.3	29 54.2	28.9	24 20.0	28.1	58 25.0	11.8
R 11	41 06.7	23 38.5	22.3	44 54.9	28.2	39 22.0	27.9	73 27.4	11.8
C 12	56 09.2	38 38.2	N 5 23.4	59 55.6	S 3 27.5	54 24.1	S 0 27.7	88 29.8	S14 11.8
O 13	71 11.6	53 38.0	24.4	74 56.4	26.7	69 26.1	27.6	103 32.2	11.8
L 14	86 14.1	68 37.7	25.5	89 57.1	26.0	84 28.1	27.4	118 34.6	11.8
E 15	101 16.6	83 37.5	26.5	104 57.9	25.3	99 30.2	27.2	133 37.0	11.8
S 16	116 19.0	98 37.2	27.6	119 58.6	24.6	114 32.2	27.0	148 39.4	11.7
17	131 21.5	113 37.0	28.7	134 59.3	23.8	129 34.3	26.9	163 41.7	11.7
18	146 24.0	128 36.7	N 5 29.7	150 00.1	S 3 23.1	144 36.3	S 0 26.7	178 44.1	S14 11.7
19	161 26.4	143 36.5	30.8	165 00.8	22.4	159 38.4	26.5	193 46.5	11.7
20	176 28.9	158 36.2	31.8	180 01.5	21.7	174 40.4	26.3	208 48.9	11.7
21	191 31.3	173 36.0	32.9	195 02.3	20.9	189 42.4	26.2	223 51.3	11.7
22	206 33.8	188 35.7	33.9	210 03.0	20.2	204 44.5	26.0	238 53.7	11.6
23	221 36.3	203 35.5	35.0	225 03.8	19.5	219 46.5	25.8	253 56.1	11.6
	h m								
Paso Mer.	8 19.9	*v* −0.2	*d* 1.1	*v* 0.7	*d* 0.7	*v* 2.0	*d* 0.2	*v* 2.4	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 13.0
Achernar	335 22.4	S57 07.4
Acrux	173 02.0	S63 13.6
Adhara	255 07.9	S29 00.3
Aldebaran	290 42.5	N16 33.1
Alioth	166 14.5	N55 50.5
Alkaid	152 53.3	N49 12.3
Alnair	27 35.7	S46 51.0
Alnilam	275 40.3	S 1 11.4
Alphard	217 50.0	S 8 45.4
Alphecca	126 05.3	N26 38.4
Alpheratz	357 37.3	N29 12.5
Altair	62 01.9	N 8 55.5
Ankaa	353 09.6	S42 11.0
Antares	112 18.2	S26 28.9
Arcturus	145 49.6	N19 04.0
Atria	107 13.8	S69 03.9
Avior	234 15.9	S59 35.1
Bellatrix	278 25.6	N 6 22.1
Betelgeuse	270 54.8	N 7 24.6
Canopus	263 53.8	S52 42.6
Capella	280 25.6	N46 01.2
Deneb	49 27.1	N45 21.3
Denebola	182 27.0	N14 26.9
Diphda	348 49.8	S17 51.9
Dubhe	193 43.6	N61 38.1
Elnath	278 05.0	N28 37.5
Eltanin	90 42.8	N51 29.0
Enif	33 40.9	N 9 58.4
Fomalhaut	15 17.1	S29 30.2
Gacrux	171 53.7	S57 14.5
Gienah	175 45.7	S17 40.0
Hadar	148 38.5	S60 28.9
Hamal	327 54.0	N23 33.9
Kaus Aust.	83 35.1	S34 22.4
Kochab	137 18.7	N74 03.9
Markab	13 32.2	N15 19.3
Menkar	314 08.8	N 4 10.5
Menkent	147 59.8	S36 28.9
Miaplacidus	221 38.8	S69 48.8
Mirfak	308 31.9	N49 56.3
Nunki	75 50.2	S26 16.1
Peacock	53 09.0	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.3	N 5 10.0
Rasalhague	96 00.3	N12 32.5
Regulus	207 36.8	N11 51.5
Rigel	281 06.3	S 8 10.7
Rigil Kent.	139 42.7	S60 55.7
Sabik	102 05.0	S15 45.2
Schedar	349 33.9	N56 39.3
Shaula	96 13.0	S37 07.1
Sirius	258 28.4	S16 44.9
Spica	158 24.4	S11 16.7
Suhail	222 48.0	S43 31.6
Vega	80 34.4	N38 48.0
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	344 06.6	9 25
Marte	4 48.7	8 02
Júpiter	358 30.2	8 26
Saturno	32 23.3	6 11

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	° ′		° ′		° ′	′	° ′	′	′	
16 00	180 54.3		N19 02.8		3 24.3	6.7	S18 27.5	12.6	60.5	
01	195 54.3		03.4		17 50.0	6.6	18 40.1	12.5	60.5	
02	210 54.3		04.0		32 15.6	6.4	18 52.6	12.4	60.5	
03	225 54.3	. .	04.5		46 41.0	6.4	19 05.0	12.3	60.5	
04	240 54.3		05.1		61 06.4	6.2	19 17.3	12.2	60.5	
05	255 54.3		05.7		75 31.6	6.1	19 29.5	12.0	60.6	
06	270 54.2		N19 06.3		89 56.7	6.0	S19 41.5	12.0	60.6	
07	285 54.2		06.8		104 21.7	5.9	19 53.5	11.8	60.6	
08	300 54.2		07.4		118 46.6	5.8	20 05.3	11.7	60.6	
09	315 54.2	. .	08.0		133 11.4	5.6	20 17.0	11.5	60.6	
10	330 54.2		08.6		147 36.0	5.6	20 28.5	11.4	60.6	
11	345 54.2		09.1		162 00.6	5.4	20 39.9	11.3	60.7	
12	0 54.2		N19 09.7		176 25.0	5.3	S20 51.2	11.2	60.7	
13	15 54.2		10.3		190 49.3	5.2	21 02.4	11.0	60.7	
14	30 54.1		10.9		205 13.5	5.1	21 13.4	10.8	60.7	
15	45 54.1	. .	11.4		219 37.6	5.0	21 24.2	10.8	60.7	
16	60 54.1		12.0		234 01.6	4.9	21 35.0	10.6	60.7	
17	75 54.1		12.6		248 25.5	4.8	21 45.6	10.4	60.7	
18	90 54.1		N19 13.1		262 49.3	4.7	S21 56.0	10.3	60.7	
19	105 54.1		13.7		277 13.0	4.5	22 06.3	10.1	60.8	
20	120 54.1		14.3		291 36.5	4.5	22 16.4	10.0	60.8	
21	135 54.0	. .	14.8		306 00.0	4.3	22 26.4	9.9	60.8	
22	150 54.0		15.4		320 23.3	4.3	22 36.3	9.6	60.8	
23	165 54.0		16.0		334 46.6	4.1	22 45.9	9.6	60.8	
17 00	180 54.0		N19 16.5		349 09.7	4.1	S22 55.5	9.3	60.8	
01	195 54.0		17.1		3 32.8	3.9	23 04.8	9.2	60.8	
02	210 54.0		17.7		17 55.7	3.9	23 14.0	9.1	60.8	
03	225 53.9	. .	18.2		32 18.6	3.7	23 23.1	8.8	60.8	
04	240 53.9		18.8		46 41.3	3.7	23 31.9	8.7	60.8	
05	255 53.9		19.4		61 04.0	3.6	23 40.6	8.6	60.8	
06	270 53.9		N19 19.9		75 26.6	3.4	S23 49.2	8.3	60.8	
07	285 53.9		20.5		89 49.0	3.4	23 57.5	8.2	60.8	
08	300 53.9		21.1		104 11.4	3.3	24 05.7	8.1	60.8	
09	315 53.8	. .	21.6		118 33.7	3.2	24 13.8	7.8	60.8	
10	330 53.8		22.2		132 55.9	3.2	24 21.6	7.7	60.9	
11	345 53.8		22.7		147 18.1	3.0	24 29.3	7.5	60.9	
12	0 53.8		N19 23.3		161 40.1	3.0	S24 36.8	7.3	60.9	
13	15 53.8		23.9		176 02.1	2.9	24 44.1	7.1	60.9	
14	30 53.7		24.4		190 24.0	2.8	24 51.2	6.9	60.9	
15	45 53.7	. .	25.0		204 45.8	2.7	24 58.1	6.8	60.9	
16	60 53.7		25.5		219 07.5	2.7	25 04.9	6.6	60.9	
17	75 53.7		26.1		233 29.2	2.6	25 11.5	6.4	60.9	
18	90 53.7		N19 26.6		247 50.8	2.5	S25 17.9	6.2	60.9	
19	105 53.6		27.2		262 12.3	2.4	25 24.1	6.0	60.9	
20	120 53.6		27.8		276 33.7	2.5	25 30.1	5.8	60.9	
21	135 53.6	. .	28.3		290 55.2	2.3	25 35.9	5.6	60.9	
22	150 53.6		28.9		305 16.5	2.3	25 41.5	5.4	60.8	
23	165 53.6		29.4		319 37.8	2.2	25 46.9	5.3	60.8	
18 00	180 53.5		N19 30.0		333 59.0	2.2	S25 52.2	5.0	60.8	
01	195 53.5		30.5		348 20.2	2.1	25 57.2	4.9	60.8	
02	210 53.5		31.1		2 41.3	2.1	26 02.1	4.6	60.8	
03	225 53.5	. .	31.6		17 02.4	2.0	26 06.7	4.5	60.8	
04	240 53.4		32.2		31 23.4	2.0	26 11.2	4.2	60.8	
05	255 53.4		32.7		45 44.4	2.0	26 15.4	4.1	60.8	
06	270 53.4		N19 33.3		60 05.4	1.9	S26 19.5	3.8	60.8	
07	285 53.4		33.8		74 26.3	1.9	26 23.3	3.7	60.8	
08	300 53.3		34.4		88 47.2	1.9	26 27.0	3.4	60.8	
09	315 53.3	. .	34.9		103 08.1	1.8	26 30.4	3.2	60.8	
10	330 53.3		35.5		117 28.9	1.8	26 33.6	3.1	60.8	
11	345 53.3		36.0		131 49.7	1.8	26 36.7	2.8	60.8	
12	0 53.3		N19 36.6		146 10.5	1.8	S26 39.5	2.7	60.8	
13	15 53.2		37.1		160 31.3	1.7	26 42.2	2.4	60.7	
14	30 53.2		37.6		174 52.0	1.8	26 44.6	2.2	60.7	
15	45 53.2	. .	38.2		189 12.8	1.7	26 46.8	2.0	60.7	
16	60 53.1		38.7		203 33.5	1.7	26 48.8	1.9	60.7	
17	75 53.1		39.3		217 54.2	1.8	26 50.7	1.6	60.7	
18	90 53.1		N19 39.8		232 15.0	1.7	S26 52.3	1.4	60.7	
19	105 53.1		40.4		246 35.7	1.7	26 53.7	1.2	60.7	
20	120 53.0		40.9		260 56.4	1.8	26 54.9	1.0	60.7	
21	135 53.0	. .	41.4		275 17.2	1.8	26 55.9	0.8	60.7	
22	150 53.0		42.0		289 38.0	1.7	26 56.7	0.6	60.6	
23	165 53.0		42.5		303 58.7	1.8	S26 57.3	0.3	60.6	
	S/D 15.8		d 0.6		S/D	16.5		16.6		16.6

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		16	17	18	19
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	■	■	■	■
N 70	▭	▭	▭	■	■	■	■
68	////	////	01 36	■	■	■	■
66	////	////	02 14	23 33	■	■	■
64	////	00 53	02 41	22 40	■	■	■
62	////	01 43	03 01	22 08	24 12	00 12	01 50
60	////	02 13	03 18	21 44	23 34	25 00	01 00
N 58	00 47	02 35	03 32	21 25	23 07	24 28	00 28
56	01 33	02 53	03 44	21 09	22 46	24 05	00 05
54	02 01	03 08	03 54	20 56	22 28	23 46	24 41
52	02 22	03 21	04 03	20 44	22 13	23 29	24 26
50	02 39	03 32	04 12	20 34	22 00	23 15	24 13
45	03 11	03 55	04 29	20 12	21 34	22 47	23 47
N 40	03 34	04 12	04 43	19 55	21 13	22 25	23 26
35	03 53	04 27	04 55	19 40	20 55	22 06	23 08
30	04 08	04 39	05 06	19 28	20 41	21 50	22 53
20	04 32	05 00	05 23	19 06	20 15	21 23	22 27
N 10	04 50	05 16	05 39	18 48	19 54	21 00	22 04
0	05 05	05 31	05 53	18 31	19 33	20 39	21 44
S 10	05 19	05 45	06 07	18 14	19 13	20 17	21 23
20	05 32	05 59	06 22	17 56	18 52	19 54	21 00
30	05 45	06 14	06 39	17 35	18 27	19 28	20 34
35	05 51	06 22	06 49	17 23	18 13	19 12	20 19
40	05 58	06 31	07 00	17 09	17 56	18 54	20 01
45	06 05	06 41	07 13	16 53	17 36	18 32	19 40
S 50	06 14	06 53	07 29	16 33	17 11	18 04	19 12
52	06 17	06 59	07 37	16 24	17 00	17 50	18 59
54	06 21	07 05	07 45	16 14	16 46	17 35	18 44
56	06 25	07 12	07 55	16 02	16 30	17 17	18 26
58	06 30	07 19	08 05	15 48	16 12	16 54	18 04
S 60	06 35	07 27	08 18	15 33	15 49	16 25	17 36

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	16	17	18	19
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	■	■	■	■
N 70	▭	▭	▭	01 09	■	■	■
68	22 22	////	////	01 56	■	■	■
66	21 42	////	////	02 27	01 44	■	■
64	21 14	23 09	////	02 50	02 37	■	■
62	20 53	22 14	////	03 09	03 10	03 19	03 59
60	20 37	21 43	////	03 24	03 35	03 58	04 49
N 58	20 22	21 20	23 14	03 37	03 54	04 25	05 21
56	20 10	21 01	22 24	03 49	04 11	04 47	05 44
54	20 00	20 46	21 55	03 59	04 25	05 04	06 03
52	19 50	20 33	21 33	04 08	04 37	05 20	06 19
50	19 42	20 22	21 16	04 16	04 48	05 33	06 33
45	19 25	19 59	20 43	04 33	05 11	06 00	07 02
N 40	19 10	19 41	20 19	04 47	05 29	06 21	07 24
35	18 58	19 26	20 01	05 00	05 45	06 39	07 43
30	18 48	19 14	19 46	05 10	05 58	06 55	07 59
20	18 30	18 54	19 22	05 28	06 21	07 21	08 25
N 10	18 14	18 37	19 03	05 44	06 41	07 43	08 48
0	18 00	18 22	18 47	05 59	07 00	08 04	09 10
S 10	17 46	18 08	18 34	06 15	07 19	08 25	09 31
20	17 31	17 54	18 21	06 31	07 39	08 48	09 54
30	17 14	17 39	18 08	06 49	08 02	09 14	10 21
35	17 04	17 31	18 01	07 00	08 16	09 30	10 36
40	16 52	17 22	17 55	07 13	08 32	09 48	10 54
45	16 39	17 11	17 47	07 28	08 51	10 09	11 16
S 50	16 23	16 59	17 39	07 46	09 15	10 37	11 44
52	16 15	16 53	17 35	07 55	09 27	10 50	11 57
54	16 07	16 47	17 31	08 05	09 40	11 06	12 13
56	15 58	16 41	17 27	08 16	09 55	11 24	12 31
58	15 47	16 33	17 22	08 28	10 13	11 46	12 53
S 60	15 35	16 25	17 17	08 43	10 35	12 15	13 21

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00^h	12^h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
16	03 37	03 37	11 56	24 45	12 15	16 100	○
17	03 36	03 35	11 56	00 45	13 17	17 97	
18	03 34	03 33	11 56	01 49	14 21	18 92	

LUNES MARTES MIÉRCOLES

UT (HmGr)	ARIES	VENUS −4·0		MARTE +0·7		JÚPITER −2·2		SATURNO +0·6	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
19 00	236 38.7	218 35.2	N 5 36.1	240 04.5	S 3 18.7	234 48.6	S 0 25.6	268 58.5	S14 11.6
01	251 41.2	233 35.0	37.1	255 05.2	18.0	249 50.6	25.5	284 00.9	11.6
02	266 43.7	248 34.7	38.2	270 06.0	17.3	264 52.7	25.3	299 03.3	11.6
03	281 46.1	263 34.5	39.2	285 06.7	16.6	279 54.7	25.1	314 05.7	11.6
04	296 48.6	278 34.2	40.3	300 07.4	15.8	294 56.7	24.9	329 08.1	11.5
05	311 51.1	293 34.0	41.3	315 08.2	15.1	309 58.8	24.8	344 10.5	11.5
06	326 53.5	308 33.7	N 5 42.4	330 08.9	S 3 14.4	325 00.8	S 0 24.6	359 12.9	S14 11.5
07	341 56.0	323 33.5	43.4	345 09.6	13.6	340 02.9	24.4	14 15.3	11.5
08	356 58.5	338 33.2	44.5	0 10.4	12.9	355 04.9	24.2	29 17.7	11.5
J 09	12 00.9	353 33.0	45.6	15 11.1	12.2	10 07.0	24.1	44 20.1	11.5
U 10	27 03.4	8 32.7	46.6	30 11.9	11.5	25 09.0	23.9	59 22.5	11.4
E 11	42 05.8	23 32.5	47.7	45 12.6	10.7	40 11.0	23.7	74 24.9	11.4
V 12	57 08.3	38 32.2	N 5 48.7	60 13.3	S 3 10.0	55 13.1	S 0 23.5	89 27.2	S14 11.4
E 13	72 10.8	53 32.0	49.8	75 14.1	09.3	70 15.1	23.4	104 29.6	11.4
S 14	87 13.2	68 31.7	50.8	90 14.8	08.6	85 17.2	23.2	119 32.0	11.4
15	102 15.7	83 31.5	51.9	105 15.6	07.8	100 19.2	23.0	134 34.4	11.4
16	117 18.2	98 31.2	52.9	120 16.3	07.1	115 21.3	22.9	149 36.8	11.4
17	132 20.6	113 30.9	54.0	135 17.0	06.4	130 23.3	22.7	164 39.2	11.3
18	147 23.1	128 30.7	N 5 55.0	150 17.8	S 3 05.6	145 25.4	S 0 22.5	179 41.6	S14 11.3
19	162 25.6	143 30.4	56.1	165 18.5	04.9	160 27.4	22.3	194 44.0	11.3
20	177 28.0	158 30.2	57.2	180 19.2	04.2	175 29.4	22.2	209 46.4	11.3
21	192 30.5	173 29.9	58.2	195 20.0	03.5	190 31.5	22.0	224 48.8	11.3
22	207 33.0	188 29.7	5 59.3	210 20.7	02.7	205 33.5	21.8	239 51.2	11.3
23	222 35.4	203 29.4	6 00.3	225 21.5	02.0	220 35.6	21.6	254 53.6	11.3
20 00	237 37.9	218 29.1	N 6 01.4	240 22.2	S 3 01.3	235 37.6	S 0 21.5	269 56.0	S14 11.2
01	252 40.3	233 28.9	02.4	255 22.9	3 00.5	250 39.7	21.3	284 58.4	11.2
02	267 42.8	248 28.6	03.5	270 23.7	2 59.8	265 41.7	21.1	300 00.8	11.2
03	282 45.3	263 28.4	04.5	285 24.4	59.1	280 43.8	21.0	315 03.2	11.2
04	297 47.7	278 28.1	05.6	300 25.2	58.4	295 45.8	20.8	330 05.6	11.2
05	312 50.2	293 27.9	06.6	315 25.9	57.6	310 47.9	20.6	345 08.0	11.2
06	327 52.7	308 27.6	N 6 07.7	330 26.6	S 2 56.9	325 49.9	S 0 20.4	0 10.4	S14 11.2
07	342 55.1	323 27.3	08.7	345 27.4	56.2	340 52.0	20.3	15 12.8	11.1
V 08	357 57.6	338 27.1	09.8	0 28.1	55.5	355 54.0	20.1	30 15.2	11.1
I 09	13 00.1	353 26.8	10.9	15 28.9	54.7	10 56.1	19.9	45 17.6	11.1
E 10	28 02.5	8 26.6	11.9	30 29.6	54.0	25 58.1	19.8	60 20.0	11.1
R 11	43 05.0	23 26.3	13.0	45 30.3	53.3	41 00.1	19.6	75 22.4	11.1
N 12	58 07.5	38 26.0	N 6 14.0	60 31.1	S 2 52.5	56 02.2	S 0 19.4	90 24.8	S14 11.1
E 13	73 09.9	53 25.8	15.1	75 31.8	51.8	71 04.2	19.2	105 27.2	11.1
S 14	88 12.4	68 25.5	16.1	90 32.6	51.1	86 06.3	19.1	120 29.6	11.0
15	103 14.8	83 25.3	17.2	105 33.3	50.4	101 08.3	18.9	135 32.0	11.0
16	118 17.3	98 25.0	18.2	120 34.0	49.6	116 10.4	18.7	150 34.4	11.0
17	133 19.8	113 24.7	19.3	135 34.8	48.9	131 12.4	18.6	165 36.8	11.0
18	148 22.2	128 24.5	N 6 20.3	150 35.5	S 2 48.2	146 14.5	S 0 18.4	180 39.2	S14 11.0
19	163 24.7	143 24.2	21.4	165 36.3	47.4	161 16.5	18.2	195 41.6	11.0
20	178 27.2	158 24.0	22.4	180 37.0	46.7	176 18.6	18.0	210 44.0	11.0
21	193 29.6	173 23.7	23.5	195 37.7	46.0	191 20.6	17.9	225 46.4	10.9
22	208 32.1	188 23.4	24.5	210 38.5	45.3	206 22.7	17.7	240 48.8	10.9
23	223 34.6	203 23.2	25.6	225 39.2	44.5	221 24.7	17.5	255 51.2	10.9
21 00	238 37.0	218 22.9	N 6 26.6	240 40.0	S 2 43.8	236 26.8	S 0 17.4	270 53.6	S14 10.9
01	253 39.5	233 22.6	27.7	255 40.7	43.1	251 28.8	17.2	285 56.0	10.9
02	268 42.0	248 22.4	28.7	270 41.4	42.3	266 30.9	17.0	300 58.4	10.9
03	283 44.4	263 22.1	29.8	285 42.2	41.6	281 32.9	16.9	316 00.8	10.9
04	298 46.9	278 21.8	30.8	300 42.9	40.9	296 35.0	16.7	331 03.2	10.8
05	313 49.3	293 21.6	31.9	315 43.7	40.2	311 37.0	16.5	346 05.6	10.8
06	328 51.8	308 21.3	N 6 32.9	330 44.4	S 2 39.4	326 39.1	S 0 16.3	1 08.0	S14 10.8
07	343 54.3	323 21.1	34.0	345 45.1	38.7	341 41.1	16.2	16 10.4	10.8
S 08	358 56.7	338 20.8	35.0	0 45.9	38.0	356 43.2	16.0	31 12.8	10.8
Á 09	13 59.2	353 20.5	36.1	15 46.6	37.3	11 45.2	15.8	46 15.3	10.8
B 10	29 01.7	8 20.3	37.1	30 47.4	36.5	26 47.3	15.7	61 17.7	10.8
A 11	44 04.1	23 20.0	38.2	45 48.1	35.8	41 49.3	15.5	76 20.1	10.8
D 12	59 06.6	38 19.7	N 6 39.2	60 48.8	S 2 35.1	56 51.4	S 0 15.3	91 22.5	S14 10.7
O 13	74 09.1	53 19.5	40.3	75 49.6	34.3	71 53.4	15.2	106 24.9	10.7
14	89 11.5	68 19.2	41.3	90 50.3	33.6	86 55.5	15.0	121 27.3	10.7
15	104 14.0	83 18.9	42.4	105 51.1	32.9	101 57.6	14.8	136 29.7	10.7
16	119 16.5	98 18.7	43.4	120 51.8	32.2	116 59.6	14.6	151 32.1	10.7
17	134 18.9	113 18.4	44.5	135 52.6	31.4	132 01.7	14.5	166 34.5	10.7
18	149 21.4	128 18.1	N 6 45.5	150 53.3	S 2 30.7	147 03.7	S 0 14.3	181 36.9	S14 10.7
19	164 23.8	143 17.9	46.6	165 54.0	30.0	162 05.8	14.1	196 39.3	10.7
20	179 26.3	158 17.6	47.6	180 54.8	29.2	177 07.8	14.0	211 41.7	10.6
21	194 28.8	173 17.3	48.7	195 55.5	28.5	192 09.9	13.8	226 44.1	10.6
22	209 31.2	188 17.0	49.7	210 56.3	27.8	207 11.9	13.6	241 46.5	10.6
23	224 33.7	203 16.8	50.8	225 57.0	27.1	222 14.0	13.5	256 48.9	10.6
	h m								
Paso Mer.	8 08.1	*v* −0.3	*d* 1.1	*v* 0.7	*d* 0.7	*v* 2.0	*d* 0.2	*v* 2.4	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 13.0
Achernar	335 22.4	S57 07.3
Acrux	173 02.0	S63 13.6
Adhara	255 07.9	S29 00.3
Aldebaran	290 42.5	N16 33.1
Alioth	166 14.5	N55 50.6
Alkaid	152 53.3	N49 12.3
Alnair	27 35.7	S46 51.0
Alnilam	275 40.3	S 1 11.4
Alphard	217 50.0	S 8 45.4
Alphecca	126 05.2	N26 38.4
Alpheratz	357 37.2	N29 12.5
Altair	62 01.9	N 8 55.5
Ankaa	353 09.6	S42 11.0
Antares	112 18.2	S26 28.9
Arcturus	145 49.6	N19 04.0
Atria	107 13.8	S69 03.9
Avior	234 15.9	S59 35.1
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.8	N 7 24.6
Canopus	263 53.8	S52 42.6
Capella	280 25.6	N46 01.2
Deneb	49 27.1	N45 21.3
Denebola	182 27.0	N14 26.9
Diphda	348 49.7	S17 51.9
Dubhe	193 43.6	N61 38.2
Elnath	278 05.0	N28 37.5
Eltanin	90 42.7	N51 29.0
Enif	33 40.9	N 9 58.5
Fomalhaut	15 17.0	S29 30.2
Gacrux	171 53.7	S57 14.5
Gienah	175 45.7	S17 40.0
Hadar	148 38.5	S60 28.9
Hamal	327 54.0	N23 33.9
Kaus Aust.	83 35.1	S34 22.4
Kochab	137 18.7	N74 03.9
Markab	13 32.2	N15 19.3
Menkar	314 08.8	N 4 10.5
Menkent	147 59.8	S36 28.9
Miaplacidus	221 38.9	S69 48.8
Mirfak	308 31.9	N49 56.3
Nunki	75 50.2	S26 16.1
Peacock	53 08.9	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.3	N 5 10.0
Rasalhague	96 00.3	N12 32.5
Regulus	207 36.8	N11 51.5
Rigel	281 06.3	S 8 10.7
Rigil Kent.	139 42.7	S60 55.7
Sabik	102 05.0	S15 45.2
Schedar	349 33.9	N56 39.3
Shaula	96 13.0	S37 07.1
Sirius	258 28.4	S16 44.9
Spica	158 24.4	S11 16.7
Suhail	222 48.0	S43 31.6
Vega	80 34.4	N38 48.1
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	340 51.3	9 26
Marte	2 44.3	7 58
Júpiter	357 59.7	8 16
Saturno	32 18.1	5 59

UT (HmGr)	SOL AHGr	SOL Dec	LUNA AHGr	LUNA *v*	LUNA Dec	LUNA *d*	LUNA Ph
d h	° ′	° ′	° ′	′	° ′	′	′
19 00	180 52.9	N19 43.1	318 19.5	1.8	S26 57.6	0.2	60.6
01	195 52.9	43.6	332 40.3	1.8	26 57.8	0.0	60.6
02	210 52.9	44.1	347 01.1	1.9	26 57.8	0.2	60.6
03	225 52.8	44.7	1 22.0	1.9	26 57.6	0.5	60.6
04	240 52.8	45.2	15 42.9	1.9	26 57.1	0.6	60.5
05	255 52.8	45.7	30 03.8	1.9	26 56.5	0.8	60.5
06	270 52.8	N19 46.3	44 24.7	2.0	S26 55.7	1.1	60.5
07	285 52.7	46.8	58 45.7	2.1	26 54.6	1.2	60.5
J 08	300 52.7	47.4	73 06.8	2.0	26 53.4	1.5	60.5
U 09	315 52.7	47.9	87 27.8	2.1	26 51.9	1.6	60.5
E 10	330 52.6	48.4	101 48.9	2.2	26 50.3	1.8	60.4
V 11	345 52.6	49.0	116 10.1	2.2	26 48.5	2.1	60.4
E 12	0 52.6	N19 49.5	130 31.3	2.3	S26 46.4	2.2	60.4
S 13	15 52.5	50.0	144 52.6	2.3	26 44.2	2.4	60.4
14	30 52.5	50.5	159 13.9	2.4	26 41.8	2.7	60.4
15	45 52.5	51.1	173 35.3	2.5	26 39.1	2.8	60.3
16	60 52.5	51.6	187 56.8	2.5	26 36.3	3.0	60.3
17	75 52.4	52.1	202 18.3	2.6	26 33.3	3.2	60.3
18	90 52.4	N19 52.7	216 39.9	2.6	S26 30.1	3.4	60.3
19	105 52.4	53.2	231 01.5	2.8	26 26.7	3.6	60.3
20	120 52.3	53.7	245 23.3	2.8	26 23.1	3.8	60.2
21	135 52.3	54.2	259 45.1	2.9	26 19.3	3.9	60.2
22	150 52.3	54.8	274 07.0	2.9	26 15.4	4.2	60.2
23	165 52.2	55.3	288 28.9	3.1	26 11.2	4.3	60.2
20 00	180 52.2	N19 55.8	302 51.0	3.1	S26 06.9	4.5	60.2
01	195 52.2	56.3	317 13.1	3.2	26 02.4	4.7	60.1
02	210 52.1	56.9	331 35.3	3.3	25 57.7	4.9	60.1
03	225 52.1	57.4	345 57.6	3.4	25 52.8	5.1	60.1
04	240 52.1	57.9	0 20.0	3.5	25 47.7	5.2	60.1
05	255 52.0	58.4	14 42.5	3.6	25 42.5	5.4	60.0
06	270 52.0	N19 59.0	29 05.1	3.7	S25 37.1	5.6	60.0
07	285 51.9	19 59.5	43 27.8	3.8	25 31.5	5.8	60.0
V 08	300 51.9	20 00.0	57 50.6	3.9	25 25.7	5.9	60.0
I 09	315 51.9	00.5	72 13.5	3.9	25 19.8	6.1	59.9
E 10	330 51.8	01.0	86 36.4	4.1	25 13.7	6.3	59.9
R 11	345 51.8	01.6	100 59.5	4.2	25 07.4	6.5	59.9
N 12	0 51.8	N20 02.1	115 22.7	4.3	S25 00.9	6.6	59.9
E 13	15 51.7	02.6	129 46.0	4.4	24 54.3	6.7	59.8
S 14	30 51.7	03.1	144 09.4	4.5	24 47.6	7.0	59.8
15	45 51.7	03.6	158 32.9	4.6	24 40.6	7.1	59.8
16	60 51.6	04.1	172 56.5	4.8	24 33.5	7.2	59.8
17	75 51.6	04.7	187 20.3	4.8	24 26.3	7.4	59.7
18	90 51.5	N20 05.2	201 44.1	5.0	S24 18.9	7.6	59.7
19	105 51.5	05.7	216 08.1	5.0	24 11.3	7.7	59.7
20	120 51.5	06.2	230 32.1	5.2	24 03.6	7.9	59.6
21	135 51.4	06.7	244 56.3	5.3	23 55.7	8.0	59.6
22	150 51.4	07.2	259 20.6	5.4	23 47.7	8.2	59.6
23	165 51.3	07.7	273 45.0	5.6	23 39.5	8.3	59.6
21 00	180 51.3	N20 08.2	288 09.6	5.6	S23 31.2	8.5	59.5
01	195 51.3	08.7	302 34.2	5.8	23 22.7	8.6	59.5
02	210 51.2	09.3	316 59.0	5.9	23 14.1	8.7	59.5
03	225 51.2	09.8	331 23.9	6.0	23 05.4	8.9	59.4
04	240 51.1	10.3	345 48.9	6.1	22 56.5	9.0	59.4
05	255 51.1	10.8	0 14.0	6.3	22 47.5	9.2	59.4
06	270 51.1	N20 11.3	14 39.3	6.4	S22 38.3	9.2	59.4
07	285 51.0	11.8	29 04.7	6.5	22 29.1	9.5	59.3
S 08	300 51.0	12.3	43 30.2	6.6	22 19.6	9.5	59.3
Á 09	315 50.9	12.8	57 55.8	6.7	22 10.1	9.7	59.3
B 10	330 50.9	13.3	72 21.5	6.9	22 00.4	9.8	59.2
A 11	345 50.9	13.8	86 47.4	7.0	21 50.6	9.9	59.2
D 12	0 50.8	N20 14.3	101 13.4	7.1	S21 40.7	10.1	59.2
O 13	15 50.8	14.8	115 39.5	7.2	21 30.6	10.1	59.2
14	30 50.7	15.3	130 05.7	7.4	21 20.5	10.3	59.1
15	45 50.7	15.8	144 32.1	7.4	21 10.2	10.4	59.1
16	60 50.6	16.3	158 58.5	7.6	20 59.8	10.5	59.1
17	75 50.6	16.8	173 25.1	7.7	20 49.3	10.7	59.0
18	90 50.6	N20 17.3	187 51.8	7.9	S20 38.6	10.7	59.0
19	105 50.5	17.8	202 18.7	7.9	20 27.9	10.8	59.0
20	120 50.5	18.3	216 45.6	8.1	20 17.1	11.0	58.9
21	135 50.4	18.8	231 12.7	8.2	20 06.1	11.1	58.9
22	150 50.4	19.3	245 39.9	8.3	19 55.0	11.1	58.9
23	165 50.3	19.8	260 07.2	8.5	S19 43.9	11.3	58.9
	S/D 15.8	*d* 0.5	S/D	16.5		16.3	16.1

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 19	Orto Luna 20	Orto Luna 21	Orto Luna 22
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	▬	▬	▬	▬
N 70	▭	▭	▭	▬	▬	▬	04 29
68	////	////	01 17	▬	▬	▬	03 43
66	////	////	02 02	▬	▬	03 50	03 12
64	////	00 14	02 32	▬	03 47	03 01	02 49
62	////	01 29	02 54	01 50	02 23	02 30	02 31
60	////	02 03	03 11	01 00	01 46	02 06	02 16
N 58	00 12	02 27	03 26	00 28	01 20	01 47	02 03
56	01 21	02 47	03 39	00 05	00 59	01 31	01 51
54	01 52	03 02	03 50	24 41	00 41	01 18	01 41
52	02 15	03 16	03 59	24 26	00 26	01 06	01 32
50	02 33	03 27	04 08	24 13	00 13	00 55	01 24
45	03 06	03 51	04 26	23 47	24 32	00 32	01 07
N 40	03 31	04 10	04 41	23 26	24 14	00 14	00 53
35	03 50	04 25	04 53	23 08	23 59	24 41	00 41
30	04 06	04 37	05 04	22 53	23 46	24 31	00 31
20	04 30	04 58	05 22	22 27	23 23	24 12	00 12
N 10	04 49	05 16	05 38	22 04	23 04	23 57	24 44
0	05 05	05 31	05 53	21 44	22 45	23 42	24 33
S 10	05 20	05 45	06 08	21 23	22 27	23 27	24 22
20	05 33	06 00	06 23	21 00	22 07	23 11	24 11
30	05 46	06 15	06 41	20 34	21 44	22 52	23 57
35	05 53	06 24	06 51	20 19	21 30	22 41	23 50
40	06 00	06 33	07 03	20 01	21 14	22 29	23 41
45	06 08	06 44	07 17	19 40	20 56	22 14	23 30
S 50	06 17	06 57	07 33	19 12	20 32	21 56	23 18
52	06 21	07 03	07 41	18 59	20 21	21 47	23 12
54	06 25	07 09	07 50	18 44	20 08	21 38	23 05
56	06 30	07 16	08 00	18 26	19 53	21 27	22 58
58	06 34	07 24	08 11	18 04	19 36	21 14	22 50
S 60	06 40	07 33	08 24	17 36	19 14	20 59	22 40

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 19	Ocaso Luna 20	Ocaso Luna 21	Ocaso Luna 22
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	▬	▬	▬	▬
N 70	▭	▭	▭	▬	▬	▬	07 40
68	22 43	////	////	▬	▬	▬	08 25
66	21 54	////	////	▬	▬	▬	08 54
64	21 24	////	////	▬	04 18	07 09	09 16
62	21 01	22 28	////	03 59	05 41	07 40	09 33
60	20 43	21 53	////	04 49	06 18	08 03	09 48
N 58	20 28	21 28	////	05 21	06 44	08 21	10 00
56	20 16	21 08	22 36	05 44	07 04	08 37	10 10
54	20 05	20 52	22 04	06 03	07 21	08 50	10 20
52	19 55	20 39	21 40	06 19	07 36	09 01	10 28
50	19 46	20 27	21 22	06 33	07 49	09 12	10 35
45	19 28	20 03	20 48	07 02	08 15	09 33	10 51
N 40	19 13	19 44	20 23	07 24	08 35	09 50	11 04
35	19 00	19 29	20 04	07 43	08 52	10 04	11 14
30	18 50	19 16	19 48	07 59	09 07	10 17	11 24
20	18 31	18 55	19 23	08 25	09 32	10 38	11 40
N 10	18 15	18 37	19 04	08 48	09 54	10 56	11 54
0	18 00	18 22	18 48	09 10	10 13	11 13	12 07
S 10	17 45	18 08	18 33	09 31	10 33	11 29	12 20
20	17 30	17 53	18 20	09 54	10 54	11 47	12 33
30	17 12	17 38	18 07	10 21	11 19	12 08	12 49
35	17 02	17 29	18 00	10 36	11 33	12 19	12 58
40	16 50	17 19	17 52	10 54	11 49	12 33	13 08
45	16 36	17 09	17 45	11 16	12 09	12 49	13 20
S 50	16 19	16 56	17 36	11 44	12 33	13 08	13 34
52	16 12	16 50	17 32	11 57	12 45	13 18	13 41
54	16 03	16 43	17 27	12 13	12 58	13 28	13 48
56	15 53	16 36	17 23	12 31	13 14	13 40	13 56
58	15 42	16 29	17 18	12 53	13 32	13 53	14 05
S 60	15 29	16 20	17 13	13 21	13 54	14 08	14 16

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d	%
19	03 32	03 30	11 56	02 54	15 27	19	84
20	03 29	03 27	11 57	03 59	16 29	20	75
21	03 25	03 23	11 57	04 59	17 27	21	64

UT (HmGr)	ARIES	VENUS −4·0		MARTE +0·7		JÚPITER −2·2		SATURNO +0·6	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
22 00	239 36.2	218 16.5	N 6 51.8	240 57.8	S 2 26.3	237 16.0	S 0 13.3	271 51.3	S14 10.6
01	254 38.6	233 16.2	52.9	255 58.5	25.6	252 18.1	13.1	286 53.7	10.6
02	269 41.1	248 16.0	53.9	270 59.2	24.9	267 20.1	13.0	301 56.1	10.6
03	284 43.6	263 15.7	55.0	286 00.0	24.1	282 22.2	12.8	316 58.5	10.6
04	299 46.0	278 15.4	56.0	301 00.7	23.4	297 24.2	12.6	332 01.0	10.6
05	314 48.5	293 15.2	57.1	316 01.5	22.7	312 26.3	12.5	347 03.4	10.5
06	329 50.9	308 14.9	N 6 58.1	331 02.2	S 2 22.0	327 28.4	S 0 12.3	2 05.8	S14 10.5
07	344 53.4	323 14.6	6 59.2	346 03.0	21.2	342 30.4	12.1	17 08.2	10.5
08	359 55.9	338 14.3	7 00.2	1 03.7	20.5	357 32.5	11.9	32 10.6	10.5
D 09	14 58.3	353 14.1	01.3	16 04.4	19.8	12 34.5	11.8	47 13.0	10.5
O 10	30 00.8	8 13.8	02.3	31 05.2	19.0	27 36.6	11.6	62 15.4	10.5
M 11	45 03.3	23 13.5	03.4	46 05.9	18.3	42 38.6	11.4	77 17.8	10.5
I 12	60 05.7	38 13.3	N 7 04.4	61 06.7	S 2 17.6	57 40.7	S 0 11.3	92 20.2	S14 10.5
N 13	75 08.2	53 13.0	05.5	76 07.4	16.9	72 42.7	11.1	107 22.6	10.4
G 14	90 10.7	68 12.7	06.5	91 08.2	16.1	87 44.8	10.9	122 25.0	10.4
O 15	105 13.1	83 12.4	07.5	106 08.9	15.4	102 46.9	10.8	137 27.4	10.4
16	120 15.6	98 12.2	08.6	121 09.6	14.7	117 48.9	10.6	152 29.8	10.4
17	135 18.1	113 11.9	09.6	136 10.4	13.9	132 51.0	10.4	167 32.3	10.4
18	150 20.5	128 11.6	N 7 10.7	151 11.1	S 2 13.2	147 53.0	S 0 10.3	182 34.7	S14 10.4
19	165 23.0	143 11.3	11.7	166 11.9	12.5	162 55.1	10.1	197 37.1	10.4
20	180 25.4	158 11.1	12.8	181 12.6	11.8	177 57.1	09.9	212 39.5	10.4
21	195 27.9	173 10.8	13.8	196 13.4	11.0	192 59.2	09.8	227 41.9	10.4
22	210 30.4	188 10.5	14.9	211 14.1	10.3	208 01.3	09.6	242 44.3	10.4
23	225 32.8	203 10.2	15.9	226 14.9	09.6	223 03.3	09.4	257 46.7	10.3
23 00	240 35.3	218 10.0	N 7 17.0	241 15.6	S 2 08.9	238 05.4	S 0 09.3	272 49.1	S14 10.3
01	255 37.8	233 09.7	18.0	256 16.3	08.1	253 07.4	09.1	287 51.5	10.3
02	270 40.2	248 09.4	19.0	271 17.1	07.4	268 09.5	08.9	302 53.9	10.3
03	285 42.7	263 09.1	20.1	286 17.8	06.7	283 11.5	08.8	317 56.4	10.3
04	300 45.2	278 08.9	21.1	301 18.6	05.9	298 13.6	08.6	332 58.8	10.3
05	315 47.6	293 08.6	22.2	316 19.3	05.2	313 15.7	08.4	348 01.2	10.3
06	330 50.1	308 08.3	N 7 23.2	331 20.1	S 2 04.5	328 17.7	S 0 08.3	3 03.6	S14 10.3
07	345 52.6	323 08.0	24.3	346 20.8	03.8	343 19.8	08.1	18 06.0	10.3
L 08	0 55.0	338 07.7	25.3	1 21.6	03.0	358 21.8	07.9	33 08.4	10.2
U 09	15 57.5	353 07.5	26.3	16 22.3	02.3	13 23.9	07.8	48 10.8	10.2
N 10	30 59.9	8 07.2	27.4	31 23.0	01.6	28 26.0	07.6	63 13.2	10.2
E 11	46 02.4	23 06.9	28.4	46 23.8	00.8	43 28.0	07.4	78 15.6	10.2
S 12	61 04.9	38 06.6	N 7 29.5	61 24.5	S 2 00.1	58 30.1	S 0 07.3	93 18.1	S14 10.2
13	76 07.3	53 06.3	30.5	76 25.3	1 59.4	73 32.1	07.1	108 20.5	10.2
14	91 09.8	68 06.1	31.6	91 26.0	58.7	88 34.2	06.9	123 22.9	10.2
15	106 12.3	83 05.8	32.6	106 26.8	57.9	103 36.3	06.8	138 25.3	10.2
16	121 14.7	98 05.5	33.6	121 27.5	57.2	118 38.3	06.6	153 27.7	10.2
17	136 17.2	113 05.2	34.7	136 28.3	56.5	133 40.4	06.4	168 30.1	10.2
18	151 19.7	128 04.9	N 7 35.7	151 29.0	S 1 55.7	148 42.4	S 0 06.3	183 32.5	S14 10.1
19	166 22.1	143 04.7	36.8	166 29.8	55.0	163 44.5	06.1	198 34.9	10.1
20	181 24.6	158 04.4	37.8	181 30.5	54.3	178 46.6	06.0	213 37.4	10.1
21	196 27.0	173 04.1	38.9	196 31.2	53.6	193 48.6	05.8	228 39.8	10.1
22	211 29.5	188 03.8	39.9	211 32.0	52.8	208 50.7	05.6	243 42.2	10.1
23	226 32.0	203 03.5	40.9	226 32.7	52.1	223 52.7	05.5	258 44.6	10.1
24 00	241 34.4	218 03.2	N 7 42.0	241 33.5	S 1 51.4	238 54.8	S 0 05.3	273 47.0	S14 10.1
01	256 36.9	233 03.0	43.0	256 34.2	50.6	253 56.9	05.1	288 49.4	10.1
02	271 39.4	248 02.7	44.1	271 35.0	49.9	268 58.9	05.0	303 51.8	10.1
03	286 41.8	263 02.4	45.1	286 35.7	49.2	284 01.0	04.8	318 54.3	10.1
04	301 44.3	278 02.1	46.1	301 36.5	48.5	299 03.1	04.6	333 56.7	10.1
05	316 46.8	293 01.8	47.2	316 37.2	47.7	314 05.1	04.5	348 59.1	10.0
06	331 49.2	308 01.5	N 7 48.2	331 38.0	S 1 47.0	329 07.2	S 0 04.3	4 01.5	S14 10.0
07	346 51.7	323 01.3	49.3	346 38.7	46.3	344 09.2	04.1	19 03.9	10.0
M 08	1 54.2	338 01.0	50.3	1 39.5	45.6	359 11.3	04.0	34 06.3	10.0
A 09	16 56.6	353 00.7	51.3	16 40.2	44.8	14 13.4	03.8	49 08.7	10.0
R 10	31 59.1	8 00.4	52.4	31 41.0	44.1	29 15.4	03.6	64 11.2	10.0
T 11	47 01.5	23 00.1	53.4	46 41.7	43.4	44 17.5	03.5	79 13.6	10.0
E 12	62 04.0	37 59.8	N 7 54.5	61 42.4	S 1 42.6	59 19.6	S 0 03.3	94 16.0	S14 10.0
S 13	77 06.5	52 59.5	55.5	76 43.2	41.9	74 21.6	03.2	109 18.4	10.0
14	92 08.9	67 59.2	56.5	91 43.9	41.2	89 23.7	03.0	124 20.8	10.0
15	107 11.4	82 59.0	57.6	106 44.7	40.5	104 25.8	02.8	139 23.2	10.0
16	122 13.9	97 58.7	58.6	121 45.4	39.7	119 27.8	02.7	154 25.7	10.0
17	137 16.3	112 58.4	7 59.6	136 46.2	39.0	134 29.9	02.5	169 28.1	09.9
18	152 18.8	127 58.1	N 8 00.7	151 46.9	S 1 38.3	149 31.9	S 0 02.3	184 30.5	S14 09.9
19	167 21.3	142 57.8	01.7	166 47.7	37.5	164 34.0	02.2	199 32.9	09.9
20	182 23.7	157 57.5	02.8	181 48.4	36.8	179 36.1	02.0	214 35.3	09.9
21	197 26.2	172 57.2	03.8	196 49.2	36.1	194 38.1	01.8	229 37.7	09.9
22	212 28.7	187 56.9	04.8	211 49.9	35.4	209 40.2	01.7	244 40.2	09.9
23	227 31.1	202 56.6	05.9	226 50.7	34.6	224 42.3	01.5	259 42.6	09.9
	h m								
Paso Mer.	7 56.3	*v* −0.3	*d* 1.0	*v* 0.7	*d* 0.7	*v* 2.1	*d* 0.2	*v* 2.4	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 12.9
Achernar	335 22.3	S57 07.3
Acrux	173 02.1	S63 13.6
Adhara	255 07.9	S29 00.3
Aldebaran	290 42.5	N16 33.1
Alioth	166 14.6	N55 50.6
Alkaid	152 53.4	N49 12.3
Alnair	27 35.7	S46 51.0
Alnilam	275 40.3	S 1 11.3
Alphard	217 50.0	S 8 45.4
Alphecca	126 05.2	N26 38.4
Alpheratz	357 37.2	N29 12.6
Altair	62 01.9	N 8 55.5
Ankaa	353 09.6	S42 11.0
Antares	112 18.1	S26 28.9
Arcturus	145 49.6	N19 04.0
Atria	107 13.8	S69 04.0
Avior	234 15.9	S59 35.1
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.8	N 7 24.6
Canopus	263 53.8	S52 42.6
Capella	280 25.6	N46 01.2
Deneb	49 27.1	N45 21.3
Denebola	182 27.1	N14 26.9
Diphda	348 49.7	S17 51.9
Dubhe	193 43.6	N61 38.2
Elnath	278 05.0	N28 37.5
Eltanin	90 42.7	N51 29.0
Enif	33 40.9	N 9 58.5
Fomalhaut	15 17.0	S29 30.2
Gacrux	171 53.7	S57 14.5
Gienah	175 45.7	S17 40.0
Hadar	148 38.5	S60 28.9
Hamal	327 54.0	N23 33.9
Kaus Aust.	83 35.1	S34 22.4
Kochab	137 18.7	N74 03.9
Markab	13 32.1	N15 19.3
Menkar	314 08.8	N 4 10.5
Menkent	147 59.8	S36 28.9
Miaplacidus	221 38.9	S69 48.8
Mirfak	308 31.9	N49 56.3
Nunki	75 50.2	S26 16.1
Peacock	53 08.9	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.3	N 5 10.0
Rasalhague	96 00.3	N12 32.6
Regulus	207 36.8	N11 51.5
Rigel	281 06.3	S 8 10.6
Rigil Kent.	139 42.7	S60 55.7
Sabik	102 05.0	S15 45.2
Schedar	349 33.9	N56 39.3
Shaula	96 12.9	S37 07.1
Sirius	258 28.4	S16 44.9
Spica	158 24.4	S11 16.7
Suhail	222 48.0	S43 31.6
Vega	80 34.3	N38 48.1
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	337 34.7	9 28
Marte	0 40.3	7 55
Júpiter	357 30.1	8 07
Saturno	32 13.8	5 48

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph	
d h	°	′	°	′	°	′	°	′	′	
22 00	180	50.3	N20	20.3	274	34.7	8.5	S19	32.6	11.4	58.8	
01	195	50.2		20.8	289	02.2	8.7	19	21.2	11.4	58.8	
02	210	50.2		21.3	303	29.9	8.8	19	09.8	11.6	58.8	
03	225	50.1		21.8	317	57.7	8.9	18	58.2	11.7	58.7	
04	240	50.1		22.3	332	25.6	9.0	18	46.5	11.7	58.7	
05	255	50.1		22.8	346	53.6	9.2	18	34.8	11.8	58.7	
06	270	50.0	N20	23.3	1	21.8	9.2	S18	23.0	12.0	58.6	
07	285	50.0		23.8	15	50.0	9.4	18	11.0	12.0	58.6	
08	300	49.9		24.3	30	18.4	9.5	17	59.0	12.1	58.6	
09	315	49.9		24.8	44	46.9	9.6	17	46.9	12.2	58.5	
10	330	49.8		25.2	59	15.5	9.7	17	34.7	12.3	58.5	
11	345	49.8		25.7	73	44.2	9.8	17	22.4	12.3	58.5	
12	0	49.7	N20	26.2	88	13.0	9.9	S17	10.1	12.4	58.5	
13	15	49.7		26.7	102	41.9	10.1	16	57.7	12.6	58.4	
14	30	49.6		27.2	117	11.0	10.1	16	45.1	12.5	58.4	
15	45	49.6		27.7	131	40.1	10.3	16	32.6	12.7	58.4	
16	60	49.5		28.2	146	09.4	10.4	16	19.9	12.7	58.3	
17	75	49.5		28.7	160	38.8	10.4	16	07.2	12.8	58.3	
18	90	49.4	N20	29.1	175	08.2	10.6	S15	54.4	12.9	58.3	
19	105	49.4		29.6	189	37.8	10.7	15	41.5	13.0	58.2	
20	120	49.3		30.1	204	07.5	10.8	15	28.5	13.0	58.2	
21	135	49.3		30.6	218	37.3	10.9	15	15.5	13.0	58.2	
22	150	49.2		31.1	233	07.2	10.9	15	02.5	13.2	58.1	
23	165	49.2		31.6	247	37.1	11.1	14	49.3	13.2	58.1	
23 00	180	49.1	N20	32.0	262	07.2	11.2	S14	36.1	13.2	58.1	
01	195	49.1		32.5	276	37.4	11.3	14	22.9	13.4	58.1	
02	210	49.0		33.0	291	07.7	11.4	14	09.5	13.3	58.0	
03	225	49.0		33.5	305	38.1	11.4	13	56.2	13.5	58.0	
04	240	48.9		34.0	320	08.5	11.6	13	42.7	13.5	58.0	
05	255	48.9		34.4	334	39.1	11.7	13	29.2	13.5	57.9	
06	270	48.8	N20	34.9	349	09.8	11.7	S13	15.7	13.6	57.9	
07	285	48.8		35.4	3	40.5	11.9	13	02.1	13.6	57.9	
08	300	48.7		35.9	18	11.4	11.9	12	48.5	13.7	57.8	
09	315	48.7		36.4	32	42.3	12.0	12	34.8	13.7	57.8	
10	330	48.6		36.8	47	13.3	12.1	12	21.1	13.8	57.8	
11	345	48.6		37.3	61	44.4	12.2	12	07.3	13.9	57.8	
12	0	48.5	N20	37.8	76	15.6	12.3	S11	53.4	13.8	57.7	
13	15	48.4		38.3	90	46.9	12.4	11	39.6	13.9	57.7	
14	30	48.4		38.7	105	18.3	12.4	11	25.7	14.0	57.7	
15	45	48.3		39.2	119	49.7	12.5	11	11.7	14.0	57.6	
16	60	48.3		39.7	134	21.2	12.6	10	57.7	14.0	57.6	
17	75	48.2		40.1	148	52.8	12.7	10	43.7	14.1	57.6	
18	90	48.2	N20	40.6	163	24.5	12.8	S10	29.6	14.1	57.5	
19	105	48.1		41.1	177	56.3	12.8	10	15.5	14.1	57.5	
20	120	48.1		41.6	192	28.1	12.9	10	01.4	14.2	57.5	
21	135	48.0		42.0	207	00.0	13.0	9	47.2	14.2	57.5	
22	150	48.0		42.5	221	32.0	13.1	9	33.0	14.2	57.4	
23	165	47.9		43.0	236	04.1	13.1	9	18.8	14.3	57.4	
24 00	180	47.8	N20	43.4	250	36.2	13.2	S 9	04.5	14.2	57.4	
01	195	47.8		43.9	265	08.4	13.3	8	50.3	14.4	57.3	
02	210	47.7		44.4	279	40.7	13.3	8	35.9	14.3	57.3	
03	225	47.7		44.8	294	13.0	13.4	8	21.6	14.4	57.3	
04	240	47.6		45.3	308	45.4	13.5	8	07.2	14.3	57.3	
05	255	47.6		45.8	323	17.9	13.5	7	52.9	14.4	57.2	
06	270	47.5	N20	46.2	337	50.4	13.6	S 7	38.5	14.5	57.2	
07	285	47.4		46.7	352	23.0	13.6	7	24.0	14.4	57.2	
08	300	47.4		47.1	6	55.6	13.7	7	09.6	14.5	57.1	
09	315	47.3		47.6	21	28.3	13.8	6	55.1	14.5	57.1	
10	330	47.3		48.1	36	01.1	13.8	6	40.6	14.5	57.1	
11	345	47.2		48.5	50	33.9	13.9	6	26.1	14.5	57.1	
12	0	47.1	N20	49.0	65	06.8	13.9	S 6	11.6	14.5	57.0	
13	15	47.1		49.4	79	39.7	14.0	5	57.1	14.5	57.0	
14	30	47.0		49.9	94	12.7	14.1	5	42.6	14.6	57.0	
15	45	47.0		50.4	108	45.8	14.1	5	28.0	14.6	56.9	
16	60	46.9		50.8	123	18.9	14.1	5	13.4	14.5	56.9	
17	75	46.8		51.3	137	52.0	14.2	4	58.9	14.6	56.9	
18	90	46.8	N20	51.7	152	25.2	14.2	S 4	44.3	14.6	56.9	
19	105	46.7		52.2	166	58.4	14.3	4	29.7	14.6	56.8	
20	120	46.7		52.6	181	31.7	14.3	4	15.1	14.6	56.8	
21	135	46.6		53.1	196	05.0	14.4	4	00.5	14.6	56.8	
22	150	46.5		53.5	210	38.4	14.4	3	45.9	14.6	56.8	
23	165	46.5		54.0	225	11.8	14.5	S 3	31.3	14.6	56.7	
	S/D	15.8	*d*	0.5	S/D		15.9		15.7		15.5	

DOMINGO — LUNES — MARTES

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		22	23	24	25
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	■	03 57	03 12	02 40
N 70	▭	▭	▭	04 29	03 31	03 00	02 36
68	////	////	00 54	03 43	03 11	02 50	02 33
66	////	////	01 50	03 12	02 55	02 42	02 31
64	////	////	02 23	02 49	02 41	02 35	02 28
62	////	01 15	02 46	02 31	02 30	02 28	02 27
60	////	01 54	03 05	02 16	02 20	02 23	02 25
N 58	////	02 20	03 21	02 03	02 12	02 18	02 23
56	01 08	02 40	03 34	01 51	02 04	02 14	02 22
54	01 43	02 57	03 45	01 41	01 58	02 10	02 21
52	02 08	03 11	03 55	01 32	01 52	02 07	02 20
50	02 27	03 23	04 04	01 24	01 46	02 04	02 19
45	03 03	03 48	04 23	01 07	01 34	01 57	02 17
N 40	03 28	04 07	04 38	00 53	01 24	01 51	02 15
35	03 48	04 23	04 51	00 41	01 16	01 46	02 13
30	04 04	04 36	05 02	00 31	01 08	01 42	02 12
20	04 29	04 58	05 21	00 12	00 55	01 34	02 09
N 10	04 49	05 15	05 38	24 44	00 44	01 27	02 07
0	05 05	05 31	05 53	24 33	00 33	01 21	02 05
S 10	05 20	05 46	06 08	24 22	00 22	01 14	02 03
20	05 34	06 01	06 24	24 11	00 11	01 07	02 01
30	05 48	06 17	06 43	23 57	24 59	00 59	01 59
35	05 55	06 26	06 53	23 50	24 55	00 55	01 57
40	06 03	06 36	07 05	23 41	24 50	00 50	01 56
45	06 11	06 47	07 20	23 30	24 44	00 44	01 54
S 50	06 20	07 00	07 37	23 18	24 36	00 36	01 52
52	06 24	07 06	07 45	23 12	24 33	00 33	01 51
54	06 29	07 13	07 54	23 05	24 29	00 29	01 49
56	06 34	07 21	08 05	22 58	24 25	00 25	01 48
58	06 39	07 29	08 16	22 50	24 21	00 21	01 47
S 60	06 44	07 38	08 30	22 40	24 15	00 15	01 45

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 22	23	24	25
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	■	09 59	12 22	14 28
N 70	▭	▭	▭	07 40	10 23	12 31	14 28
68	23 08	////	////	08 25	10 41	12 39	14 27
66	22 07	////	////	08 54	10 56	12 45	14 27
64	21 33	////	////	09 16	11 08	12 50	14 27
62	21 09	22 43	////	09 33	11 18	12 55	14 27
60	20 50	22 03	////	09 48	11 26	12 59	14 27
N 58	20 34	21 35	////	10 00	11 34	13 02	14 27
56	20 21	21 15	22 50	10 10	11 40	13 05	14 27
54	20 09	20 58	22 13	10 20	11 46	13 08	14 27
52	19 59	20 44	21 47	10 28	11 51	13 10	14 27
50	19 50	20 31	21 28	10 35	11 56	13 13	14 27
45	19 31	20 06	20 52	10 51	12 06	13 18	14 27
N 40	19 16	19 47	20 26	11 04	12 14	13 22	14 26
35	19 03	19 31	20 06	11 14	12 21	13 25	14 26
30	18 51	19 18	19 50	11 24	12 28	13 28	14 26
20	18 32	18 56	19 25	11 40	12 38	13 33	14 26
N 10	18 16	18 38	19 05	11 54	12 48	13 38	14 26
0	18 00	18 22	18 48	12 07	12 56	13 42	14 26
S 10	17 45	18 08	18 33	12 20	13 05	13 46	14 26
20	17 29	17 53	18 20	12 33	13 14	13 51	14 25
30	17 11	17 36	18 06	12 49	13 24	13 56	14 25
35	17 00	17 27	17 58	12 58	13 30	13 59	14 25
40	16 48	17 17	17 51	13 08	13 37	14 02	14 25
45	16 34	17 06	17 42	13 20	13 44	14 05	14 25
S 50	16 16	16 53	17 33	13 34	13 54	14 10	14 24
52	16 08	16 47	17 29	13 41	13 58	14 12	14 24
54	15 59	16 40	17 24	13 48	14 02	14 14	14 24
56	15 48	16 33	17 19	13 56	14 08	14 16	14 24
58	15 37	16 24	17 14	14 05	14 13	14 19	14 24
S 60	15 23	16 15	17 09	14 16	14 20	14 22	14 24

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
22	03 21	03 19	11 57	05 54	18 20	22 53	
23	03 17	03 14	11 57	06 45	19 09	23 42	
24	03 11	03 09	11 57	07 31	19 54	24 32	◑

UT (HmGr)	ARIES	VENUS −4·0		MARTE +0·7		JÚPITER −2·2		SATURNO +0·6	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
25 00	242 33.6	217 56.4	N 8 06.9	241 51.4	S 1 33.9	239 44.3	S 0 01.4	274 45.0	S14 09.9
01	257 36.0	232 56.1	07.9	256 52.2	33.2	254 46.4	01.2	289 47.4	09.9
02	272 38.5	247 55.8	09.0	271 52.9	32.5	269 48.5	01.0	304 49.8	09.9
03	287 41.0	262 55.5	10.0	286 53.7	31.7	284 50.5	00.9	319 52.2	09.9
04	302 43.4	277 55.2	11.0	301 54.4	31.0	299 52.6	00.7	334 54.7	09.9
05	317 45.9	292 54.9	12.1	316 55.2	30.3	314 54.7	00.5	349 57.1	09.9
06	332 48.4	307 54.6	N 8 13.1	331 55.9	S 1 29.5	329 56.7	S 0 00.4	4 59.5	S14 09.8
07	347 50.8	322 54.3	14.1	346 56.7	28.8	344 58.8	00.2	20 01.9	09.8
08	2 53.3	337 54.0	15.2	1 57.4	28.1	0 00.9	S 00.1	35 04.3	09.8
M 09	17 55.8	352 53.7	16.2	16 58.1	27.4	15 02.9	N 00.1	50 06.8	09.8
I 10	32 58.2	7 53.4	17.2	31 58.9	26.6	30 05.0	00.3	65 09.2	09.8
É 11	48 00.7	22 53.1	18.3	46 59.6	25.9	45 07.1	00.4	80 11.6	09.8
R 12	63 03.1	37 52.9	N 8 19.3	62 00.4	S 1 25.2	60 09.1	N 0 00.6	95 14.0	S14 09.8
C 13	78 05.6	52 52.6	20.4	77 01.1	24.4	75 11.2	00.8	110 16.4	09.8
O 14	93 08.1	67 52.3	21.4	92 01.9	23.7	90 13.3	00.9	125 18.9	09.8
L 15	108 10.5	82 52.0	22.4	107 02.6	23.0	105 15.3	01.1	140 21.3	09.8
E 16	123 13.0	97 51.7	23.4	122 03.4	22.3	120 17.4	01.2	155 23.7	09.8
S 17	138 15.5	112 51.4	24.5	137 04.1	21.5	135 19.5	01.4	170 26.1	09.8
18	153 17.9	127 51.1	N 8 25.5	152 04.9	S 1 20.8	150 21.6	N 0 01.6	185 28.5	S14 09.8
19	168 20.4	142 50.8	26.5	167 05.6	20.1	165 23.6	01.7	200 31.0	09.8
20	183 22.9	157 50.5	27.6	182 06.4	19.4	180 25.7	01.9	215 33.4	09.7
21	198 25.3	172 50.2	28.6	197 07.1	18.6	195 27.8	02.1	230 35.8	09.7
22	213 27.8	187 49.9	29.6	212 07.9	17.9	210 29.8	02.2	245 38.2	09.7
23	228 30.3	202 49.6	30.7	227 08.6	17.2	225 31.9	02.4	260 40.7	09.7
26 00	243 32.7	217 49.3	N 8 31.7	242 09.4	S 1 16.4	240 34.0	N 0 02.5	275 43.1	S14 09.7
01	258 35.2	232 49.0	32.7	257 10.1	15.7	255 36.0	02.7	290 45.5	09.7
02	273 37.6	247 48.7	33.8	272 10.9	15.0	270 38.1	02.9	305 47.9	09.7
03	288 40.1	262 48.4	34.8	287 11.6	14.3	285 40.2	03.0	320 50.3	09.7
04	303 42.6	277 48.1	35.8	302 12.4	13.5	300 42.2	03.2	335 52.8	09.7
05	318 45.0	292 47.8	36.9	317 13.1	12.8	315 44.3	03.3	350 55.2	09.7
06	333 47.5	307 47.5	N 8 37.9	332 13.9	S 1 12.1	330 46.4	N 0 03.5	5 57.6	S14 09.7
07	348 50.0	322 47.2	38.9	347 14.6	11.4	345 48.5	03.7	21 00.0	09.7
J 08	3 52.4	337 46.9	39.9	2 15.4	10.6	0 50.5	03.8	36 02.5	09.7
U 09	18 54.9	352 46.6	41.0	17 16.1	09.9	15 52.6	04.0	51 04.9	09.7
E 10	33 57.4	7 46.3	42.0	32 16.9	09.2	30 54.7	04.1	66 07.3	09.7
V 11	48 59.8	22 46.0	43.0	47 17.6	08.4	45 56.7	04.3	81 09.7	09.7
E 12	64 02.3	37 45.7	N 8 44.1	62 18.4	S 1 07.7	60 58.8	N 0 04.5	96 12.1	S14 09.6
S 13	79 04.7	52 45.4	45.1	77 19.1	07.0	76 00.9	04.6	111 14.6	09.6
14	94 07.2	67 45.1	46.1	92 19.9	06.3	91 03.0	04.8	126 17.0	09.6
15	109 09.7	82 44.8	47.1	107 20.6	05.5	106 05.0	04.9	141 19.4	09.6
16	124 12.1	97 44.5	48.2	122 21.4	04.8	121 07.1	05.1	156 21.8	09.6
17	139 14.6	112 44.2	49.2	137 22.1	04.1	136 09.2	05.3	171 24.3	09.6
18	154 17.1	127 43.9	N 8 50.2	152 22.9	S 1 03.4	151 11.3	N 0 05.4	186 26.7	S14 09.6
19	169 19.5	142 43.6	51.3	167 23.6	02.6	166 13.3	05.6	201 29.1	09.6
20	184 22.0	157 43.3	52.3	182 24.4	01.9	181 15.4	05.7	216 31.5	09.6
21	199 24.5	172 43.0	53.3	197 25.1	01.2	196 17.5	05.9	231 34.0	09.6
22	214 26.9	187 42.7	54.3	212 25.9	1 00.4	211 19.5	06.1	246 36.4	09.6
23	229 29.4	202 42.4	55.4	227 26.6	0 59.7	226 21.6	06.2	261 38.8	09.6
27 00	244 31.9	217 42.1	N 8 56.4	242 27.4	S 0 59.0	241 23.7	N 0 06.4	276 41.2	S14 09.6
01	259 34.3	232 41.8	57.4	257 28.2	58.3	256 25.8	06.5	291 43.7	09.6
02	274 36.8	247 41.4	58.4	272 28.9	57.5	271 27.8	06.7	306 46.1	09.6
03	289 39.2	262 41.1	8 59.5	287 29.7	56.8	286 29.9	06.9	321 48.5	09.6
04	304 41.7	277 40.8	9 00.5	302 30.4	56.1	301 32.0	07.0	336 51.0	09.6
05	319 44.2	292 40.5	01.5	317 31.2	55.4	316 34.1	07.2	351 53.4	09.6
06	334 46.6	307 40.2	N 9 02.5	332 31.9	S 0 54.6	331 36.1	N 0 07.3	6 55.8	S14 09.6
07	349 49.1	322 39.9	03.6	347 32.7	53.9	346 38.2	07.5	21 58.2	09.5
V 08	4 51.6	337 39.6	04.6	2 33.4	53.2	1 40.3	07.7	37 00.7	09.5
I 09	19 54.0	352 39.3	05.6	17 34.2	52.5	16 42.4	07.8	52 03.1	09.5
E 10	34 56.5	7 39.0	06.6	32 34.9	51.7	31 44.4	08.0	67 05.5	09.5
R 11	49 59.0	22 38.7	07.7	47 35.7	51.0	46 46.5	08.1	82 07.9	09.5
N 12	65 01.4	37 38.4	N 9 08.7	62 36.4	S 0 50.3	61 48.6	N 0 08.3	97 10.4	S14 09.5
E 13	80 03.9	52 38.1	09.7	77 37.2	49.5	76 50.7	08.4	112 12.8	09.5
S 14	95 06.4	67 37.7	10.7	92 37.9	48.8	91 52.8	08.6	127 15.2	09.5
15	110 08.8	82 37.4	11.7	107 38.7	48.1	106 54.8	08.8	142 17.7	09.5
16	125 11.3	97 37.1	12.8	122 39.4	47.4	121 56.9	08.9	157 20.1	09.5
17	140 13.7	112 36.8	13.8	137 40.2	46.6	136 59.0	09.1	172 22.5	09.5
18	155 16.2	127 36.5	N 9 14.8	152 40.9	S 0 45.9	152 01.1	N 0 09.2	187 24.9	S14 09.5
19	170 18.7	142 36.2	15.8	167 41.7	45.2	167 03.1	09.4	202 27.4	09.5
20	185 21.1	157 35.9	16.8	182 42.4	44.5	182 05.2	09.5	217 29.8	09.5
21	200 23.6	172 35.6	17.9	197 43.2	43.7	197 07.3	09.7	232 32.2	09.5
22	215 26.1	187 35.3	18.9	212 43.9	43.0	212 09.4	09.9	247 34.7	09.5
23	230 28.5	202 34.9	19.9	227 44.7	42.3	227 11.5	10.0	262 37.1	09.5
	h m								
Paso Mer.	7 44.5	*v* −0.3	*d* 1.0	*v* 0.8	*d* 0.7	*v* 2.1	*d* 0.2	*v* 2.4	*d* 0.0

ESTRELLAS		
Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.9	S40 12.9
Achernar	335 22.3	S57 07.3
Acrux	173 02.1	S63 13.6
Adhara	255 07.9	S29 00.3
Aldebaran	290 42.5	N16 33.2
Alioth	166 14.6	N55 50.6
Alkaid	152 53.4	N49 12.3
Alnair	27 35.6	S46 51.0
Alnilam	275 40.3	S 1 11.3
Alphard	217 50.0	S 8 45.4
Alphecca	126 05.2	N26 38.4
Alpheratz	357 37.2	N29 12.6
Altair	62 01.9	N 8 55.5
Ankaa	353 09.5	S42 11.0
Antares	112 18.1	S26 28.9
Arcturus	145 49.6	N19 04.0
Atria	107 13.8	S69 04.0
Avior	234 15.9	S59 35.1
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.8	N 7 24.6
Canopus	263 53.8	S52 42.6
Capella	280 25.6	N46 01.2
Deneb	49 27.1	N45 21.3
Denebola	182 27.1	N14 26.9
Diphda	348 49.7	S17 51.9
Dubhe	193 43.6	N61 38.2
Elnath	278 05.0	N28 37.5
Eltanin	90 42.7	N51 29.0
Enif	33 40.9	N 9 58.5
Fomalhaut	15 17.0	S29 30.2
Gacrux	171 53.7	S57 14.5
Gienah	175 45.7	S17 40.0
Hadar	148 38.5	S60 29.0
Hamal	327 54.0	N23 33.9
Kaus Aust.	83 35.1	S34 22.4
Kochab	137 18.7	N74 04.0
Markab	13 32.1	N15 19.3
Menkar	314 08.7	N 4 10.5
Menkent	147 59.8	S36 28.9
Miaplacidus	221 39.0	S69 48.8
Mirfak	308 31.9	N49 56.2
Nunki	75 50.2	S26 16.1
Peacock	53 08.9	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.4	N 5 10.0
Rasalhague	96 00.2	N12 32.6
Regulus	207 36.8	N11 51.6
Rigel	281 06.3	S 8 10.6
Rigil Kent.	139 42.7	S60 55.7
Sabik	102 04.9	S15 45.2
Schedar	349 33.8	N56 39.3
Shaula	96 12.9	S37 07.1
Sirius	258 28.5	S16 44.9
Spica	158 24.4	S11 16.7
Suhail	222 48.1	S43 31.6
Vega	80 34.3	N38 48.1
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	334 16.6	9 29
Marte	358 36.7	7 51
Júpiter	357 01.3	7 57
Saturno	32 10.4	5 36

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v		Dec		d	Ph
d h	°	′	°	′	°	′	′	°	′	′	′
25 00	180	46.4	N20	54.4	239	45.3	14.4	S 3	16.7	14.6	56.7
01	195	46.4		54.9	254	18.7	14.6	3	02.1	14.6	56.7
02	210	46.3		55.4	268	52.3	14.5	2	47.5	14.6	56.6
03	225	46.2	. .	55.8	283	25.8	14.6	2	32.9	14.6	56.6
04	240	46.2		56.3	297	59.4	14.7	2	18.3	14.6	56.6
05	255	46.1		56.7	312	33.1	14.6	2	03.7	14.6	56.6
06	270	46.0	N20	57.1	327	06.7	14.7	S 1	49.1	14.6	56.5
07	285	46.0		57.6	341	40.4	14.8	1	34.5	14.6	56.5
M 08	300	45.9		58.0	356	14.2	14.7	1	19.9	14.6	56.5
I 09	315	45.9	. .	58.5	10	47.9	14.8	1	05.3	14.6	56.5
É 10	330	45.8		58.9	25	21.7	14.8	0	50.7	14.5	56.4
R 11	345	45.7		59.4	39	55.5	14.9	0	36.2	14.6	56.4
C 12	0	45.7	N20	59.8	54	29.4	14.8	S 0	21.6	14.5	56.4
O 13	15	45.6	21	00.3	69	03.2	14.9	S 0	07.1	14.6	56.4
L 14	30	45.5		00.7	83	37.1	14.9	N 0	07.5	14.5	56.3
E 15	45	45.5	. .	01.2	98	11.0	15.0	0	22.0	14.5	56.3
S 16	60	45.4		01.6	112	45.0	14.9	0	36.5	14.5	56.3
17	75	45.3		02.0	127	18.9	15.0	0	51.0	14.5	56.3
18	90	45.3	N21	02.5	141	52.9	15.0	N 1	05.5	14.5	56.2
19	105	45.2		02.9	156	26.9	15.0	1	20.0	14.4	56.2
20	120	45.1		03.4	171	00.9	15.0	1	34.4	14.4	56.2
21	135	45.1	. .	03.8	185	34.9	15.0	1	48.8	14.4	56.2
22	150	45.0		04.2	200	08.9	15.1	2	03.2	14.4	56.1
23	165	44.9		04.7	214	43.0	15.1	2	17.6	14.4	56.1
26 00	180	44.9	N21	05.1	229	17.1	15.0	N 2	32.0	14.4	56.1
01	195	44.8		05.5	243	51.1	15.1	2	46.4	14.3	56.1
02	210	44.7		06.0	258	25.2	15.1	3	00.7	14.3	56.1
03	225	44.7	. .	06.4	272	59.3	15.1	3	15.0	14.3	56.0
04	240	44.6		06.9	287	33.4	15.1	3	29.3	14.2	56.0
05	255	44.5		07.3	302	07.5	15.1	3	43.5	14.3	56.0
06	270	44.5	N21	07.7	316	41.6	15.1	N 3	57.8	14.2	56.0
07	285	44.4		08.2	331	15.7	15.2	4	12.0	14.1	55.9
J 08	300	44.3		08.6	345	49.9	15.1	4	26.1	14.2	55.9
U 09	315	44.3	. .	09.0	0	24.0	15.1	4	40.3	14.1	55.9
E 10	330	44.2		09.4	14	58.1	15.1	4	54.4	14.1	55.9
V 11	345	44.1		09.9	29	32.2	15.1	5	08.5	14.1	55.8
E 12	0	44.0	N21	10.3	44	06.3	15.2	N 5	22.6	14.0	55.8
S 13	15	44.0		10.7	58	40.5	15.1	5	36.6	14.0	55.8
14	30	43.9		11.2	73	14.6	15.1	5	50.6	13.9	55.8
15	45	43.8	. .	11.6	87	48.7	15.1	6	04.5	14.0	55.8
16	60	43.8		12.0	102	22.8	15.1	6	18.5	13.9	55.7
17	75	43.7		12.4	116	56.9	15.1	6	32.4	13.8	55.7
18	90	43.6	N21	12.9	131	31.0	15.1	N 6	46.2	13.8	55.7
19	105	43.5		13.3	146	05.1	15.1	7	00.0	13.8	55.7
20	120	43.5		13.7	160	39.2	15.1	7	13.8	13.8	55.7
21	135	43.4	. .	14.1	175	13.3	15.0	7	27.6	13.7	55.6
22	150	43.3		14.6	189	47.3	15.1	7	41.3	13.6	55.6
23	165	43.3		15.0	204	21.4	15.0	7	54.9	13.6	55.6
27 00	180	43.2	N21	15.4	218	55.4	15.0	N 8	08.5	13.6	55.6
01	195	43.1		15.8	233	29.4	15.0	8	22.1	13.5	55.6
02	210	43.0		16.3	248	03.4	15.0	8	35.6	13.5	55.5
03	225	43.0	. .	16.7	262	37.4	15.0	8	49.1	13.5	55.5
04	240	42.9		17.1	277	11.4	15.0	9	02.6	13.4	55.5
05	255	42.8		17.5	291	45.4	14.9	9	16.0	13.3	55.5
06	270	42.8	N21	17.9	306	19.3	14.9	N 9	29.3	13.4	55.5
07	285	42.7		18.3	320	53.2	14.9	9	42.7	13.2	55.4
V 08	300	42.6		18.8	335	27.1	14.9	9	55.9	13.2	55.4
I 09	315	42.5	. .	19.2	350	01.0	14.9	10	09.1	13.2	55.4
E 10	330	42.5		19.6	4	34.9	14.8	10	22.3	13.1	55.4
R 11	345	42.4		20.0	19	08.7	14.8	10	35.4	13.1	55.4
N 12	0	42.3	N21	20.4	33	42.5	14.8	N10	48.5	13.0	55.3
E 13	15	42.2		20.8	48	16.3	14.8	11	01.5	12.9	55.3
S 14	30	42.2		21.3	62	50.1	14.7	11	14.4	12.9	55.3
15	45	42.1	. .	21.7	77	23.8	14.7	11	27.3	12.9	55.3
16	60	42.0		22.1	91	57.5	14.7	11	40.2	12.8	55.3
17	75	41.9		22.5	106	31.2	14.7	11	53.0	12.7	55.2
18	90	41.9	N21	22.9	121	04.9	14.6	N12	05.7	12.7	55.2
19	105	41.8		23.3	135	38.5	14.6	12	18.4	12.6	55.2
20	120	41.7		23.7	150	12.1	14.5	12	31.0	12.6	55.2
21	135	41.6	. .	24.1	164	45.6	14.6	12	43.6	12.5	55.2
22	150	41.5		24.5	179	19.2	14.5	12	56.1	12.4	55.2
23	165	41.5		24.9	193	52.7	14.5	N13	08.5	12.4	55.1
	S/D	15.8	d	0.4	S/D		15.4		15.2		15.1

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			25	26	27	28
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	▭		▭		▭	02 40	02 10	01 39	(00 58 / 23 27)
N 70	▭		▭		▭	02 36	02 14	01 51	01 23
68	////		////		00 17	02 33	02 17	02 01	01 42
66	////		////		01 38	02 31	02 20	02 09	01 58
64	////		////		02 14	02 28	02 22	02 17	02 10
62	////		00	59	02 39	02 27	02 25	02 23	02 21
60	////		01	44	02 59	02 25	02 26	02 28	02 30
N 58	////		02	13	03 16	02 23	02 28	02 33	02 39
56	00	53	02	35	03 29	02 22	02 29	02 37	02 46
54	01	35	02	52	03 41	02 21	02 31	02 41	02 52
52	02	02	03	07	03 52	02 20	02 32	02 44	02 58
50	02	22	03	20	04 01	02 19	02 33	02 47	03 03
45	02	59	03	45	04 21	02 17	02 35	02 54	03 15
N 40	03	25	04	05	04 36	02 15	02 37	03 00	03 24
35	03	46	04	21	04 50	02 13	02 39	03 05	03 33
30	04	02	04	34	05 01	02 12	02 41	03 10	03 40
20	04	28	04	57	05 21	02 09	02 43	03 17	03 53
N 10	04	49	05	15	05 38	02 07	02 46	03 24	04 04
0	05	06	05	31	05 53	02 05	02 48	03 31	04 14
S 10	05	21	05	47	06 09	02 03	02 50	03 37	04 25
20	05	35	06	02	06 26	02 01	02 53	03 44	04 36
30	05	49	06	19	06 44	01 59	02 56	03 53	04 49
35	05	57	06	28	06 55	01 57	02 58	03 57	04 57
40	06	05	06	38	07 08	01 56	03 00	04 03	05 06
45	06	13	06	50	07 23	01 54	03 02	04 09	05 16
S 50	06	23	07	04	07 41	01 52	03 04	04 16	05 28
52	06	28	07	10	07 49	01 51	03 06	04 20	05 34
54	06	32	07	17	07 59	01 49	03 07	04 24	05 41
56	06	37	07	25	08 09	01 48	03 09	04 28	05 48
58	06	43	07	33	08 22	01 47	03 10	04 33	05 56
S 60	06	49	07	43	08 36	01 45	03 12	04 38	06 05

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 25	26	27	28
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	▭		▭		▭	14 28	16 31	18 43	21 48
N 70	▭		▭		▭	14 28	16 21	18 20	20 38
68	▭		▭		▭	14 27	16 14	18 03	20 01
66	22	20	////		////	14 27	16 07	17 49	19 36
64	21	43	////		////	14 27	16 02	17 37	19 16
62	21	16	23	01	////	14 27	15 57	17 28	19 00
60	20	56	22	13	////	14 27	15 53	17 20	18 47
N 58	20	40	21	43	////	14 27	15 50	17 12	18 36
56	20	26	21	21	23 06	14 27	15 47	17 06	18 26
54	20	14	21	03	22 22	14 27	15 44	17 01	18 17
52	20	03	20	48	21 54	14 27	15 41	16 55	18 10
50	19	54	20	36	21 34	14 27	15 39	16 51	18 03
45	19	34	20	10	20 56	14 27	15 34	16 41	17 48
N 40	19	18	19	50	20 30	14 26	15 30	16 33	17 36
35	19	05	19	34	20 09	14 26	15 26	16 26	17 26
30	18	53	19	20	19 52	14 26	15 23	16 20	17 17
20	18	33	18	58	19 26	14 26	15 18	16 09	17 01
N 10	18	16	18	39	19 06	14 26	15 13	16 00	16 48
0	18	01	18	23	18 49	14 26	15 09	15 51	16 36
S 10	17	45	18	08	18 33	14 26	15 04	15 43	16 23
20	17	28	17	52	18 19	14 25	14 59	15 34	16 10
30	17	10	17	35	18 05	14 25	14 54	15 24	15 55
35	16	59	17	26	17 57	14 25	14 51	15 18	15 46
40	16	46	17	16	17 49	14 25	14 47	15 11	15 36
45	16	31	17	04	17 40	14 25	14 43	15 03	15 25
S 50	16	13	16	50	17 31	14 24	14 39	14 54	15 11
52	16	05	16	44	17 26	14 24	14 37	14 49	15 04
54	15	55	16	37	17 21	14 24	14 34	14 45	14 57
56	15	44	16	29	17 16	14 24	14 31	14 40	14 49
58	15	32	16	20	17 11	14 24	14 29	14 34	14 40
S 60	15	18	16	11	17 05	14 24	14 25	14 27	14 30

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		SOL Paso Mer.	LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		LUNA Edad	LUNA Fase
d	m	s	m	s	h m	h	m	h	m	d	%
25	03	06	03	03	11 57	08	16	20	37	25	23
26	03	00	02	56	11 57	08	58	21	20	26	15
27	02	53	02	49	11 57	09	41	22	03	27	8

UT (HmGr)	ARIES	VENUS −4·0		MARTE +0·7		JÚPITER −2·2		SATURNO +0·6	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
28 00	245 31.0	217 34.6	N 9 20.9	242 45.5	S 0 41.6	242 13.5	N 0 10.2	277 39.5	S14 09.5
01	260 33.5	232 34.3	21.9	257 46.2	40.8	257 15.6	10.3	292 41.9	09.5
02	275 35.9	247 34.0	23.0	272 47.0	40.1	272 17.7	10.5	307 44.4	09.5
03	290 38.4	262 33.7	24.0	287 47.7	39.4	287 19.8	10.6	322 46.8	09.5
04	305 40.8	277 33.4	25.0	302 48.5	38.7	302 21.8	10.8	337 49.2	09.5
05	320 43.3	292 33.1	26.0	317 49.2	37.9	317 23.9	11.0	352 51.7	09.5
06	335 45.8	307 32.7	N 9 27.0	332 50.0	S 0 37.2	332 26.0	N 0 11.1	7 54.1	S14 09.5
07	350 48.2	322 32.4	28.1	347 50.7	36.5	347 28.1	11.3	22 56.5	09.5
08	5 50.7	337 32.1	29.1	2 51.5	35.8	2 30.2	11.4	37 59.0	09.4
S 09	20 53.2	352 31.8	30.1	17 52.2	35.0	17 32.2	11.6	53 01.4	09.4
Á 10	35 55.6	7 31.5	31.1	32 53.0	34.3	32 34.3	11.7	68 03.8	09.4
B 11	50 58.1	22 31.2	32.1	47 53.7	33.6	47 36.4	11.9	83 06.3	09.4
A 12	66 00.6	37 30.8	N 9 33.1	62 54.5	S 0 32.8	62 38.5	N 0 12.1	98 08.7	S14 09.4
D 13	81 03.0	52 30.5	34.2	77 55.3	32.1	77 40.6	12.2	113 11.1	09.4
O 14	96 05.5	67 30.2	35.2	92 56.0	31.4	92 42.6	12.4	128 13.6	09.4
15	111 08.0	82 29.9	36.2	107 56.8	30.7	107 44.7	12.5	143 16.0	09.4
16	126 10.4	97 29.6	37.2	122 57.5	29.9	122 46.8	12.7	158 18.4	09.4
17	141 12.9	112 29.3	38.2	137 58.3	29.2	137 48.9	12.8	173 20.8	09.4
18	156 15.3	127 28.9	N 9 39.2	152 59.0	S 0 28.5	152 51.0	N 0 13.0	188 23.3	S14 09.4
19	171 17.8	142 28.6	40.3	167 59.8	27.8	167 53.1	13.2	203 25.7	09.4
20	186 20.3	157 28.3	41.3	183 00.5	27.0	182 55.1	13.3	218 28.1	09.4
21	201 22.7	172 28.0	42.3	198 01.3	26.3	197 57.2	13.5	233 30.6	09.4
22	216 25.2	187 27.7	43.3	213 02.0	25.6	212 59.3	13.6	248 33.0	09.4
23	231 27.7	202 27.3	44.3	228 02.8	24.9	228 01.4	13.8	263 35.4	09.4
29 00	246 30.1	217 27.0	N 9 45.3	243 03.6	S 0 24.1	243 03.5	N 0 13.9	278 37.9	S14 09.4
01	261 32.6	232 26.7	46.3	258 04.3	23.4	258 05.5	14.1	293 40.3	09.4
02	276 35.1	247 26.4	47.3	273 05.1	22.7	273 07.6	14.2	308 42.7	09.4
03	291 37.5	262 26.0	48.4	288 05.8	22.0	288 09.7	14.4	323 45.2	09.4
04	306 40.0	277 25.7	49.4	303 06.6	21.2	303 11.8	14.5	338 47.6	09.4
05	321 42.5	292 25.4	50.4	318 07.3	20.5	318 13.9	14.7	353 50.1	09.4
06	336 44.9	307 25.1	N 9 51.4	333 08.1	S 0 19.8	333 16.0	N 0 14.9	8 52.5	S14 09.4
07	351 47.4	322 24.8	52.4	348 08.8	19.1	348 18.0	15.0	23 54.9	09.4
D 08	6 49.8	337 24.4	53.4	3 09.6	18.3	3 20.1	15.2	38 57.4	09.4
O 09	21 52.3	352 24.1	54.4	18 10.3	17.6	18 22.2	15.3	53 59.8	09.4
M 10	36 54.8	7 23.8	55.4	33 11.1	16.9	33 24.3	15.5	69 02.2	09.4
I 11	51 57.2	22 23.5	56.5	48 11.9	16.2	48 26.4	15.6	84 04.7	09.4
N 12	66 59.7	37 23.1	N 9 57.5	63 12.6	S 0 15.4	63 28.5	N 0 15.8	99 07.1	S14 09.4
G 13	82 02.2	52 22.8	58.5	78 13.4	14.7	78 30.6	15.9	114 09.5	09.4
O 14	97 04.6	67 22.5	9 59.5	93 14.1	14.0	93 32.6	16.1	129 12.0	09.4
15	112 07.1	82 22.1	10 00.5	108 14.9	13.3	108 34.7	16.2	144 14.4	09.4
16	127 09.6	97 21.8	01.5	123 15.6	12.5	123 36.8	16.4	159 16.8	09.4
17	142 12.0	112 21.5	02.5	138 16.4	11.8	138 38.9	16.6	174 19.3	09.4
18	157 14.5	127 21.2	N10 03.5	153 17.1	S 0 11.1	153 41.0	N 0 16.7	189 21.7	S14 09.4
19	172 17.0	142 20.8	04.5	168 17.9	10.4	168 43.1	16.9	204 24.2	09.4
20	187 19.4	157 20.5	05.5	183 18.7	09.6	183 45.2	17.0	219 26.6	09.4
21	202 21.9	172 20.2	06.5	198 19.4	08.9	198 47.2	17.2	234 29.0	09.4
22	217 24.3	187 19.9	07.5	213 20.2	08.2	213 49.3	17.3	249 31.5	09.4
23	232 26.8	202 19.5	08.5	228 20.9	07.5	228 51.4	17.5	264 33.9	09.4
30 00	247 29.3	217 19.2	N10 09.6	243 21.7	S 0 06.7	243 53.5	N 0 17.6	279 36.3	S14 09.4
01	262 31.7	232 18.9	10.6	258 22.4	06.0	258 55.6	17.8	294 38.8	09.4
02	277 34.2	247 18.5	11.6	273 23.2	05.3	273 57.7	17.9	309 41.2	09.4
03	292 36.7	262 18.2	12.6	288 24.0	04.6	288 59.8	18.1	324 43.7	09.4
04	307 39.1	277 17.9	13.6	303 24.7	03.8	304 01.9	18.2	339 46.1	09.4
05	322 41.6	292 17.5	14.6	318 25.5	03.1	319 03.9	18.4	354 48.5	09.4
06	337 44.1	307 17.2	N10 15.6	333 26.2	S 0 02.4	334 06.0	N 0 18.5	9 51.0	S14 09.4
07	352 46.5	322 16.9	16.6	348 27.0	01.7	349 08.1	18.7	24 53.4	09.4
L 08	7 49.0	337 16.5	17.6	3 27.7	01.0	4 10.2	18.9	39 55.9	09.4
U 09	22 51.4	352 16.2	18.6	18 28.5	S 00.2	19 12.3	19.0	54 58.3	09.4
N 10	37 53.9	7 15.9	19.6	33 29.3	N 00.5	34 14.4	19.2	70 00.7	09.4
E 11	52 56.4	22 15.5	20.6	48 30.0	01.2	49 16.5	19.3	85 03.2	09.4
S 12	67 58.8	37 15.2	N10 21.6	63 30.8	N 0 01.9	64 18.6	N 0 19.5	100 05.6	S14 09.4
13	83 01.3	52 14.9	22.6	78 31.5	02.7	79 20.7	19.6	115 08.0	09.4
14	98 03.8	67 14.5	23.6	93 32.3	03.4	94 22.7	19.8	130 10.5	09.4
15	113 06.2	82 14.2	24.6	108 33.0	04.1	109 24.8	19.9	145 12.9	09.4
16	128 08.7	97 13.9	25.6	123 33.8	04.8	124 26.9	20.1	160 15.4	09.4
17	143 11.2	112 13.5	26.6	138 34.6	05.6	139 29.0	20.2	175 17.8	09.4
18	158 13.6	127 13.2	N10 27.6	153 35.3	N 0 06.3	154 31.1	N 0 20.4	190 20.3	S14 09.4
19	173 16.1	142 12.9	28.6	168 36.1	07.0	169 33.2	20.5	205 22.7	09.4
20	188 18.6	157 12.5	29.6	183 36.8	07.7	184 35.3	20.7	220 25.1	09.4
21	203 21.0	172 12.2	30.6	198 37.6	08.5	199 37.4	20.8	235 27.6	09.4
22	218 23.5	187 11.8	31.6	213 38.3	09.2	214 39.5	21.0	250 30.0	09.4
23	233 25.9	202 11.5	32.6	228 39.1	09.9	229 41.6	21.1	265 32.5	09.4
	h m								
Paso Mer.	7 32.8	*v* −0.3	*d* 1.0	*v* 0.8	*d* 0.7	*v* 2.1	*d* 0.2	*v* 2.4	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.8	S40 12.9
Achernar	335 22.3	S57 07.3
Acrux	173 02.1	S63 13.6
Adhara	255 07.9	S29 00.3
Aldebaran	290 42.5	N16 33.2
Alioth	166 14.6	N55 50.6
Alkaid	152 53.4	N49 12.3
Alnair	27 35.6	S46 51.0
Alnilam	275 40.3	S 1 11.3
Alphard	217 50.0	S 8 45.4
Alphecca	126 05.2	N26 38.4
Alpheratz	357 37.2	N29 12.6
Altair	62 01.8	N 8 55.5
Ankaa	353 09.5	S42 11.0
Antares	112 18.1	S26 28.9
Arcturus	145 49.6	N19 04.0
Atria	107 13.7	S69 04.0
Avior	234 16.0	S59 35.1
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.8	N 7 24.6
Canopus	263 53.9	S52 42.6
Capella	280 25.6	N46 01.2
Deneb	49 27.0	N45 21.3
Denebola	182 27.1	N14 26.9
Diphda	348 49.7	S17 51.9
Dubhe	193 43.6	N61 38.2
Elnath	278 05.0	N28 37.5
Eltanin	90 42.7	N51 29.0
Enif	33 40.8	N 9 58.5
Fomalhaut	15 17.0	S29 30.2
Gacrux	171 53.7	S57 14.5
Gienah	175 45.7	S17 40.0
Hadar	148 38.5	S60 29.0
Hamal	327 53.9	N23 33.9
Kaus Aust.	83 35.0	S34 22.4
Kochab	137 18.7	N74 04.0
Markab	13 32.1	N15 19.3
Menkar	314 08.7	N 4 10.5
Menkent	147 59.8	S36 28.9
Miaplacidus	221 39.0	S69 48.8
Mirfak	308 31.8	N49 56.2
Nunki	75 50.1	S26 16.1
Peacock	53 08.8	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.4	N 5 10.0
Rasalhague	96 00.2	N12 32.6
Regulus	207 36.8	N11 51.6
Rigel	281 06.3	S 8 10.6
Rigil Kent.	139 42.7	S60 55.7
Sabik	102 04.9	S15 45.1
Schedar	349 33.8	N56 39.2
Shaula	96 12.9	S37 07.1
Sirius	258 28.5	S16 44.9
Spica	158 24.4	S11 16.7
Suhail	222 48.1	S43 31.6
Vega	80 34.3	N38 48.1
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	330 56.9	9 30
Marte	356 33.4	7 47
Júpiter	356 33.3	7 47
Saturno	32 07.7	5 25

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	°	′	′	
28 00	180	41.4	N21	25.3	208	26.2	14.4	N13	20.9	12.3	55.1
01	195	41.3		25.8	222	59.6	14.4	13	33.2	12.3	55.1
02	210	41.2		26.2	237	33.0	14.4	13	45.5	12.2	55.1
03	225	41.2	. .	26.6	252	06.4	14.3	13	57.7	12.1	55.1
04	240	41.1		27.0	266	39.7	14.3	14	09.8	12.1	55.0
05	255	41.0		27.4	281	13.0	14.3	14	21.9	12.0	55.0
06	270	40.9	N21	27.8	295	46.3	14.2	N14	33.9	11.9	55.0
07	285	40.8		28.2	310	19.5	14.2	14	45.8	11.9	55.0
S 08	300	40.8		28.6	324	52.7	14.1	14	57.7	11.8	55.0
Á 09	315	40.7	. .	29.0	339	25.8	14.2	15	09.5	11.7	55.0
B 10	330	40.6		29.4	353	59.0	14.0	15	21.2	11.6	54.9
A 11	345	40.5		29.8	8	32.0	14.1	15	32.8	11.6	54.9
D 12	0	40.5	N21	30.2	23	05.1	14.0	N15	44.4	11.5	54.9
O 13	15	40.4		30.6	37	38.1	13.9	15	55.9	11.5	54.9
14	30	40.3		31.0	52	11.0	13.9	16	07.4	11.3	54.9
15	45	40.2	. .	31.4	66	43.9	13.9	16	18.7	11.3	54.9
16	60	40.1		31.8	81	16.8	13.8	16	30.0	11.2	54.9
17	75	40.0		32.2	95	49.6	13.8	16	41.2	11.2	54.8
18	90	40.0	N21	32.6	110	22.4	13.7	N16	52.4	11.0	54.8
19	105	39.9		32.9	124	55.1	13.7	17	03.4	11.0	54.8
20	120	39.8		33.3	139	27.8	13.7	17	14.4	10.9	54.8
21	135	39.7	. .	33.7	154	00.5	13.6	17	25.3	10.8	54.8
22	150	39.6		34.1	168	33.1	13.6	17	36.1	10.8	54.8
23	165	39.6		34.5	183	05.7	13.5	17	46.9	10.7	54.7
29 00	180	39.5	N21	34.9	197	38.2	13.4	N17	57.6	10.5	54.7
01	195	39.4		35.3	212	10.6	13.5	18	08.1	10.5	54.7
02	210	39.3		35.7	226	43.1	13.3	18	18.6	10.5	54.7
03	225	39.2	. .	36.1	241	15.4	13.4	18	29.1	10.3	54.7
04	240	39.1		36.5	255	47.8	13.3	18	39.4	10.2	54.7
05	255	39.1		36.9	270	20.1	13.2	18	49.6	10.2	54.7
06	270	39.0	N21	37.2	284	52.3	13.2	N18	59.8	10.1	54.7
07	285	38.9		37.6	299	24.5	13.1	19	09.9	10.0	54.6
D 08	300	38.8		38.0	313	56.6	13.1	19	19.9	9.9	54.6
O 09	315	38.7	. .	38.4	328	28.7	13.1	19	29.8	9.8	54.6
M 10	330	38.6		38.8	343	00.8	13.0	19	39.6	9.7	54.6
I 11	345	38.6		39.2	357	32.8	12.9	19	49.3	9.6	54.6
N 12	0	38.5	N21	39.5	12	04.7	12.9	N19	58.9	9.5	54.6
G 13	15	38.4		39.9	26	36.6	12.9	20	08.4	9.5	54.6
O 14	30	38.3		40.3	41	08.5	12.8	20	17.9	9.3	54.5
15	45	38.2	. .	40.7	55	40.3	12.7	20	27.2	9.3	54.5
16	60	38.1		41.1	70	12.0	12.8	20	36.5	9.2	54.5
17	75	38.1		41.5	84	43.8	12.6	20	45.7	9.0	54.5
18	90	38.0	N21	41.8	99	15.4	12.6	N20	54.7	9.0	54.5
19	105	37.9		42.2	113	47.0	12.6	21	03.7	8.9	54.5
20	120	37.8		42.6	128	18.6	12.5	21	12.6	8.8	54.5
21	135	37.7	. .	43.0	142	50.1	12.5	21	21.4	8.6	54.5
22	150	37.6		43.3	157	21.6	12.4	21	30.0	8.6	54.4
23	165	37.5		43.7	171	53.0	12.3	21	38.6	8.5	54.4
30 00	180	37.5	N21	44.1	186	24.3	12.4	N21	47.1	8.4	54.4
01	195	37.4		44.5	200	55.7	12.2	21	55.5	8.3	54.4
02	210	37.3		44.8	215	26.9	12.3	22	03.8	8.1	54.4
03	225	37.2	. .	45.2	229	58.2	12.1	22	11.9	8.1	54.4
04	240	37.1		45.6	244	29.3	12.2	22	20.0	8.0	54.4
05	255	37.0		46.0	259	00.5	12.0	22	28.0	7.8	54.4
06	270	36.9	N21	46.3	273	31.5	12.1	N22	35.8	7.8	54.4
07	285	36.8		46.7	288	02.6	11.9	22	43.6	7.7	54.3
L 08	300	36.8		47.1	302	33.5	12.0	22	51.3	7.5	54.3
U 09	315	36.7	. .	47.4	317	04.5	11.9	22	58.8	7.4	54.3
N 10	330	36.6		47.8	331	35.4	11.8	23	06.2	7.4	54.3
E 11	345	36.5		48.2	346	06.2	11.8	23	13.6	7.2	54.3
S 12	0	36.4	N21	48.5	0	37.0	11.8	N23	20.8	7.1	54.3
13	15	36.3		48.9	15	07.8	11.7	23	27.9	7.0	54.3
14	30	36.2		49.3	29	38.5	11.6	23	34.9	6.9	54.3
15	45	36.1	. .	49.6	44	09.1	11.6	23	41.8	6.8	54.3
16	60	36.0		50.0	58	39.7	11.6	23	48.6	6.7	54.3
17	75	35.9		50.4	73	10.3	11.5	23	55.3	6.6	54.3
18	90	35.9	N21	50.7	87	40.8	11.5	N24	01.9	6.4	54.2
19	105	35.8		51.1	102	11.3	11.5	24	08.3	6.3	54.2
20	120	35.7		51.5	116	41.8	11.4	24	14.6	6.3	54.2
21	135	35.6	. .	51.8	131	12.2	11.3	24	20.9	6.1	54.2
22	150	35.5		52.2	145	42.5	11.4	24	27.0	6.0	54.2
23	165	35.4		52.5	160	12.9	11.2	N24	33.0	5.8	54.2
	S/D	15.8	d	0.4	S/D		15.0		14.9		14.8

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		28	29	30	31
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	{ 00 58 / 23 27 }	▭	▭	▭
N 70	▭	▭	▭	01 23	00 38	▭	▭
68	▭	▭	▭	01 42	01 16	00 13	▭
66	////	////	01 25	01 58	01 43	01 19	▭
64	////	////	02 06	02 10	02 03	01 55	01 42
62	////	00 39	02 33	02 21	02 20	02 21	02 25
60	////	01 35	02 54	02 30	02 34	02 41	02 54
N 58	////	02 06	03 11	02 39	02 46	02 58	03 16
56	00 35	02 29	03 26	02 46	02 57	03 12	03 34
54	01 27	02 48	03 38	02 52	03 06	03 25	03 50
52	01 56	03 03	03 49	02 58	03 15	03 36	04 03
50	02 17	03 16	03 58	03 03	03 22	03 45	04 15
45	02 56	03 43	04 18	03 15	03 38	04 06	04 39
N 40	03 23	04 03	04 35	03 24	03 51	04 22	04 59
35	03 44	04 19	04 48	03 33	04 03	04 37	05 15
30	04 01	04 33	05 00	03 40	04 13	04 49	05 30
20	04 28	04 56	05 20	03 53	04 30	05 10	05 54
N 10	04 48	05 15	05 38	04 04	04 45	05 29	06 15
0	05 06	05 32	05 54	04 14	04 59	05 46	06 35
S 10	05 21	05 47	06 10	04 25	05 13	06 03	06 54
20	05 36	06 03	06 27	04 36	05 29	06 22	07 16
30	05 51	06 20	06 46	04 49	05 46	06 44	07 40
35	05 58	06 30	06 57	04 57	05 57	06 56	07 55
40	06 07	06 40	07 10	05 06	06 09	07 11	08 12
45	06 16	06 52	07 25	05 16	06 23	07 29	08 32
S 50	06 26	07 07	07 44	05 28	06 40	07 51	08 58
52	06 31	07 13	07 53	05 34	06 48	08 01	09 10
54	06 35	07 20	08 03	05 41	06 57	08 13	09 25
56	06 41	07 28	08 14	05 48	07 08	08 27	09 41
58	06 46	07 37	08 26	05 56	07 20	08 43	10 02
S 60	06 53	07 47	08 41	06 05	07 33	09 02	10 27

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	28	29	30	31
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	21 48	▭	▭	▭
N 70	▭	▭	▭	20 38	▭	▭	▭
68	▭	▭	▭	20 01	22 41	▭	▭
66	22 33	////	////	19 36	21 35	▭	▭
64	21 51	////	////	19 16	21 00	22 54	▭
62	21 23	23 24	////	19 00	20 35	22 11	23 42
60	21 02	22 22	////	18 47	20 15	21 43	23 02
N 58	20 45	21 50	////	18 36	19 59	21 21	22 35
56	20 30	21 27	23 27	18 26	19 46	21 03	22 13
54	20 18	21 08	22 31	18 17	19 34	20 48	21 56
52	20 07	20 53	22 01	18 10	19 23	20 35	21 41
50	19 57	20 40	21 39	18 03	19 14	20 23	21 28
45	19 37	20 13	21 00	17 48	18 55	20 00	21 01
N 40	19 21	19 52	20 33	17 36	18 39	19 41	20 40
35	19 07	19 36	20 11	17 26	18 26	19 25	20 22
30	18 55	19 22	19 54	17 17	18 14	19 11	20 07
20	18 35	18 59	19 28	17 01	17 54	18 48	19 41
N 10	18 17	18 40	19 07	16 48	17 37	18 28	19 19
0	18 01	18 23	18 49	16 36	17 21	18 09	18 59
S 10	17 45	18 08	18 34	16 23	17 06	17 51	18 38
20	17 28	17 52	18 19	16 10	16 49	17 31	18 16
30	17 09	17 35	18 04	15 55	16 29	17 08	17 51
35	16 57	17 25	17 56	15 46	16 18	16 54	17 36
40	16 44	17 14	17 48	15 36	16 05	16 39	17 18
45	16 29	17 02	17 39	15 25	15 50	16 20	16 58
S 50	16 11	16 48	17 29	15 11	15 32	15 58	16 31
52	16 02	16 41	17 24	15 04	15 23	15 47	16 19
54	15 52	16 34	17 19	14 57	15 13	15 34	16 04
56	15 41	16 26	17 14	14 49	15 02	15 20	15 47
58	15 28	16 17	17 08	14 40	14 50	15 04	15 27
S 60	15 13	16 07	17 02	14 30	14 35	14 44	15 01

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
28	02 46	02 42	11 57	10 25	22 47	28	4
29	02 38	02 34	11 57	11 10	23 34	29	1
30	02 30	02 26	11 58	11 57	24 22	00	0

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·6		JÚPITER −2·2		SATURNO +0·6	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
31 00	248 28.4	217 11.2	N10 33.6	243 39.9	N 0 10.6	244 43.6	N 0 21.3	280 34.9	S14 09.4
01	263 30.9	232 10.8	34.6	258 40.6	11.3	259 45.7	21.4	295 37.3	09.4
02	278 33.3	247 10.5	35.6	273 41.4	12.1	274 47.8	21.6	310 39.8	09.4
03	293 35.8	262 10.2	36.6	288 42.1	12.8	289 49.9	21.7	325 42.2	09.4
04	308 38.3	277 09.8	37.6	303 42.9	13.5	304 52.0	21.9	340 44.7	09.4
05	323 40.7	292 09.5	38.6	318 43.7	14.2	319 54.1	22.0	355 47.1	09.4
06	338 43.2	307 09.1	N10 39.6	333 44.4	N 0 15.0	334 56.2	N 0 22.2	10 49.6	S14 09.4
07	353 45.7	322 08.8	40.6	348 45.2	15.7	349 58.3	22.3	25 52.0	09.4
08	8 48.1	337 08.5	41.6	3 45.9	16.4	5 00.4	22.5	40 54.4	09.4
M 09	23 50.6	352 08.1	42.6	18 46.7	17.1	20 02.5	22.6	55 56.9	09.4
A 10	38 53.1	7 07.8	43.6	33 47.4	17.9	35 04.6	22.8	70 59.3	09.4
R 11	53 55.5	22 07.4	44.6	48 48.2	18.6	50 06.7	22.9	86 01.8	09.4
T 12	68 58.0	37 07.1	N10 45.6	63 49.0	N 0 19.3	65 08.8	N 0 23.1	101 04.2	S14 09.4
E 13	84 00.4	52 06.7	46.6	78 49.7	20.0	80 10.9	23.2	116 06.7	09.4
S 14	99 02.9	67 06.4	47.6	93 50.5	20.7	95 13.0	23.4	131 09.1	09.4
15	114 05.4	82 06.1	48.6	108 51.2	21.5	110 15.0	23.5	146 11.5	09.4
16	129 07.8	97 05.7	49.6	123 52.0	22.2	125 17.1	23.7	161 14.0	09.4
17	144 10.3	112 05.4	50.5	138 52.8	22.9	140 19.2	23.8	176 16.4	09.4
18	159 12.8	127 05.0	N10 51.5	153 53.5	N 0 23.6	155 21.3	N 0 24.0	191 18.9	S14 09.4
19	174 15.2	142 04.7	52.5	168 54.3	24.4	170 23.4	24.1	206 21.3	09.4
20	189 17.7	157 04.3	53.5	183 55.0	25.1	185 25.5	24.3	221 23.8	09.4
21	204 20.2	172 04.0	54.5	198 55.8	25.8	200 27.6	24.4	236 26.2	09.4
22	219 22.6	187 03.6	55.5	213 56.6	26.5	215 29.7	24.6	251 28.7	09.4
23	234 25.1	202 03.3	56.5	228 57.3	27.2	230 31.8	24.7	266 31.1	09.4
1 00	249 27.6	217 02.9	N10 57.5	243 58.1	N 0 28.0	245 33.9	N 0 24.9	281 33.6	S14 09.4
01	264 30.0	232 02.6	58.5	258 58.8	28.7	260 36.0	25.0	296 36.0	09.4
02	279 32.5	247 02.2	10 59.5	273 59.6	29.4	275 38.1	25.2	311 38.4	09.4
03	294 34.9	262 01.9	11 00.5	289 00.4	30.1	290 40.2	25.3	326 40.9	09.4
04	309 37.4	277 01.6	01.5	304 01.1	30.9	305 42.3	25.5	341 43.3	09.4
05	324 39.9	292 01.2	02.4	319 01.9	31.6	320 44.4	25.6	356 45.8	09.4
06	339 42.3	307 00.9	N11 03.4	334 02.6	N 0 32.3	335 46.5	N 0 25.8	11 48.2	S14 09.4
07	354 44.8	322 00.5	04.4	349 03.4	33.0	350 48.6	25.9	26 50.7	09.4
M 08	9 47.3	337 00.2	05.4	4 04.2	33.7	5 50.7	26.1	41 53.1	09.4
I 09	24 49.7	351 59.8	06.4	19 04.9	34.5	20 52.8	26.2	56 55.6	09.4
É 10	39 52.2	6 59.5	07.4	34 05.7	35.2	35 54.9	26.4	71 58.0	09.4
R 11	54 54.7	21 59.1	08.4	49 06.4	35.9	50 57.0	26.5	87 00.5	09.4
C 12	69 57.1	36 58.7	N11 09.4	64 07.2	N 0 36.6	65 59.1	N 0 26.7	102 02.9	S14 09.4
O 13	84 59.6	51 58.4	10.3	79 08.0	37.4	81 01.2	26.8	117 05.4	09.4
L 14	100 02.1	66 58.0	11.3	94 08.7	38.1	96 03.3	27.0	132 07.8	09.4
E 15	115 04.5	81 57.7	12.3	109 09.5	38.8	111 05.4	27.1	147 10.3	09.4
S 16	130 07.0	96 57.3	13.3	124 10.2	39.5	126 07.5	27.3	162 12.7	09.4
17	145 09.4	111 57.0	14.3	139 11.0	40.2	141 09.6	27.4	177 15.2	09.4
18	160 11.9	126 56.6	N11 15.3	154 11.8	N 0 41.0	156 11.7	N 0 27.6	192 17.6	S14 09.4
19	175 14.4	141 56.3	16.3	169 12.5	41.7	171 13.8	27.7	207 20.1	09.4
20	190 16.8	156 55.9	17.2	184 13.3	42.4	186 15.9	27.8	222 22.5	09.4
21	205 19.3	171 55.6	18.2	199 14.0	43.1	201 18.0	28.0	237 25.0	09.4
22	220 21.8	186 55.2	19.2	214 14.8	43.8	216 20.1	28.1	252 27.4	09.4
23	235 24.2	201 54.9	20.2	229 15.6	44.6	231 22.2	28.3	267 29.9	09.4
2 00	250 26.7	216 54.5	N11 21.2	244 16.3	N 0 45.3	246 24.3	N 0 28.4	282 32.3	S14 09.4
01	265 29.2	231 54.1	22.2	259 17.1	46.0	261 26.4	28.6	297 34.8	09.5
02	280 31.6	246 53.8	23.1	274 17.9	46.7	276 28.5	28.7	312 37.2	09.5
03	295 34.1	261 53.4	24.1	289 18.6	47.4	291 30.6	28.9	327 39.7	09.5
04	310 36.6	276 53.1	25.1	304 19.4	48.2	306 32.7	29.0	342 42.1	09.5
05	325 39.0	291 52.7	26.1	319 20.1	48.9	321 34.8	29.2	357 44.6	09.5
06	340 41.5	306 52.4	N11 27.1	334 20.9	N 0 49.6	336 36.9	N 0 29.3	12 47.0	S14 09.5
07	355 43.9	321 52.0	28.0	349 21.7	50.3	351 39.0	29.5	27 49.5	09.5
J 08	10 46.4	336 51.6	29.0	4 22.4	51.1	6 41.1	29.6	42 51.9	09.5
U 09	25 48.9	351 51.3	30.0	19 23.2	51.8	21 43.2	29.8	57 54.4	09.5
E 10	40 51.3	6 50.9	31.0	34 23.9	52.5	36 45.3	29.9	72 56.8	09.5
V 11	55 53.8	21 50.6	32.0	49 24.7	53.2	51 47.4	30.0	87 59.3	09.5
E 12	70 56.3	36 50.2	N11 32.9	64 25.5	N 0 53.9	66 49.5	N 0 30.2	103 01.7	S14 09.5
S 13	85 58.7	51 49.8	33.9	79 26.2	54.7	81 51.6	30.3	118 04.2	09.5
14	101 01.2	66 49.5	34.9	94 27.0	55.4	96 53.7	30.5	133 06.6	09.5
15	116 03.7	81 49.1	35.9	109 27.8	56.1	111 55.8	30.6	148 09.1	09.5
16	131 06.1	96 48.7	36.8	124 28.5	56.8	126 57.9	30.8	163 11.5	09.5
17	146 08.6	111 48.4	37.8	139 29.3	57.5	142 00.0	30.9	178 14.0	09.5
18	161 11.0	126 48.0	N11 38.8	154 30.0	N 0 58.3	157 02.1	N 0 31.1	193 16.4	S14 09.5
19	176 13.5	141 47.7	39.8	169 30.8	59.0	172 04.2	31.2	208 18.9	09.5
20	191 16.0	156 47.3	40.7	184 31.6	0 59.7	187 06.3	31.4	223 21.3	09.5
21	206 18.4	171 46.9	41.7	199 32.3	1 00.4	202 08.4	31.5	238 23.8	09.5
22	221 20.9	186 46.6	42.7	214 33.1	01.1	217 10.5	31.6	253 26.2	09.5
23	236 23.4	201 46.2	43.7	229 33.9	01.8	232 12.6	31.8	268 28.7	09.5
	h m								
Paso Mer.	7 21.0	*v* −0.4	*d* 1.0	*v* 0.8	*d* 0.7	*v* 2.1	*d* 0.1	*v* 2.4	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.8	S40 12.9
Achernar	335 22.3	S57 07.3
Acrux	173 02.1	S63 13.6
Adhara	255 07.9	S29 00.3
Aldebaran	290 42.5	N16 33.2
Alioth	166 14.6	N55 50.6
Alkaid	152 53.4	N49 12.3
Alnair	27 35.6	S46 51.0
Alnilam	275 40.3	S 1 11.3
Alphard	217 50.0	S 8 45.4
Alphecca	126 05.2	N26 38.4
Alpheratz	357 37.1	N29 12.6
Altair	62 01.8	N 8 55.5
Ankaa	353 09.5	S42 11.0
Antares	112 18.1	S26 28.9
Arcturus	145 49.6	N19 04.0
Atria	107 13.7	S69 04.0
Avior	234 16.0	S59 35.1
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.8	N 7 24.6
Canopus	263 53.9	S52 42.6
Capella	280 25.6	N46 01.2
Deneb	49 27.0	N45 21.3
Denebola	182 27.1	N14 26.9
Diphda	348 49.6	S17 51.9
Dubhe	193 43.7	N61 38.2
Elnath	278 05.0	N28 37.5
Eltanin	90 42.7	N51 29.0
Enif	33 40.8	N 9 58.5
Fomalhaut	15 16.9	S29 30.2
Gacrux	171 53.8	S57 14.5
Gienah	175 45.7	S17 40.0
Hadar	148 38.5	S60 29.0
Hamal	327 53.9	N23 33.9
Kaus Aust.	83 35.0	S34 22.4
Kochab	137 18.8	N74 04.0
Markab	13 32.1	N15 19.3
Menkar	314 08.7	N 4 10.5
Menkent	147 59.8	S36 28.9
Miaplacidus	221 39.1	S69 48.8
Mirfak	308 31.8	N49 56.2
Nunki	75 50.1	S26 16.1
Peacock	53 08.8	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.4	N 5 10.0
Rasalhague	96 00.2	N12 32.6
Regulus	207 36.8	N11 51.6
Rigel	281 06.3	S 8 10.6
Rigil Kent.	139 42.7	S60 55.7
Sabik	102 04.9	S15 45.1
Schedar	349 33.8	N56 39.2
Shaula	96 12.9	S37 07.1
Sirius	258 28.5	S16 44.9
Spica	158 24.4	S11 16.7
Suhail	222 48.1	S43 31.5
Vega	80 34.3	N38 48.1
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	327 35.4	9 32
Marte	354 30.5	7 44
Júpiter	356 06.4	7 37
Saturno	32 06.0	5 13

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph		
d h	°	′	°	′	°	′	′	°	′	′	′
31 00	180	35.3	N21	52.9	174	43.1	11.3	N24	38.8	5.8	54.2
01	195	35.2		53.3	189	13.4	11.2	24	44.6	5.6	54.2
02	210	35.1		53.6	203	43.6	11.1	24	50.2	5.6	54.2
03	225	35.0	. .	54.0	218	13.7	11.2	24	55.8	5.4	54.2
04	240	34.9		54.3	232	43.9	11.0	25	01.2	5.3	54.2
05	255	34.9		54.7	247	13.9	11.1	25	06.5	5.1	54.2
06	270	34.8	N21	55.0	261	44.0	11.0	N25	11.6	5.1	54.1
07	285	34.7		55.4	276	14.0	11.0	25	16.7	4.9	54.1
M 08	300	34.6		55.8	290	44.0	10.9	25	21.6	4.8	54.1
A 09	315	34.5	. .	56.1	305	13.9	10.9	25	26.4	4.7	54.1
R 10	330	34.4		56.5	319	43.8	10.9	25	31.1	4.6	54.1
11	345	34.3		56.8	334	13.7	10.9	25	35.7	4.4	54.1
T 12	0	34.2	N21	57.2	348	43.6	10.8	N25	40.1	4.3	54.1
E 13	15	34.1		57.5	3	13.4	10.8	25	44.4	4.2	54.1
S 14	30	34.0		57.9	17	43.2	10.7	25	48.6	4.1	54.1
15	45	33.9	. .	58.2	32	12.9	10.7	25	52.7	4.0	54.1
16	60	33.8		58.6	46	42.6	10.7	25	56.7	3.8	54.1
17	75	33.7		58.9	61	12.3	10.7	26	00.5	3.7	54.1
18	90	33.6	N21	59.3	75	42.0	10.6	N26	04.2	3.6	54.1
19	105	33.6	21	59.6	90	11.6	10.7	26	07.8	3.5	54.1
20	120	33.5	22	00.0	104	41.3	10.5	26	11.3	3.3	54.1
21	135	33.4	. .	00.3	119	10.8	10.6	26	14.6	3.2	54.1
22	150	33.3		00.6	133	40.4	10.6	26	17.8	3.1	54.0
23	165	33.2		01.0	148	10.0	10.5	26	20.9	2.9	54.0
1 00	180	33.1	N22	01.3	162	39.5	10.5	N26	23.8	2.9	54.0
01	195	33.0		01.7	177	09.0	10.5	26	26.7	2.7	54.0
02	210	32.9		02.0	191	38.5	10.4	26	29.4	2.5	54.0
03	225	32.8	. .	02.4	206	07.9	10.5	26	31.9	2.5	54.0
04	240	32.7		02.7	220	37.4	10.4	26	34.4	2.3	54.0
05	255	32.6		03.0	235	06.8	10.4	26	36.7	2.2	54.0
06	270	32.5	N22	03.4	249	36.2	10.5	N26	38.9	2.0	54.0
07	285	32.4		03.7	264	05.7	10.3	26	40.9	2.0	54.0
M 08	300	32.3		04.1	278	35.0	10.4	26	42.9	1.8	54.0
I 09	315	32.2	. .	04.4	293	04.4	10.4	26	44.7	1.7	54.0
É 10	330	32.1		04.7	307	33.8	10.3	26	46.4	1.5	54.0
R 11	345	32.0		05.1	322	03.1	10.4	26	47.9	1.4	54.0
C 12	0	31.9	N22	05.4	336	32.5	10.3	N26	49.3	1.3	54.0
O 13	15	31.8		05.7	351	01.8	10.4	26	50.6	1.2	54.0
L 14	30	31.7		06.1	5	31.2	10.3	26	51.8	1.0	54.0
E 15	45	31.6	. .	06.4	20	00.5	10.3	26	52.8	0.9	54.0
S 16	60	31.5		06.7	34	29.8	10.3	26	53.7	0.8	54.0
17	75	31.4		07.1	48	59.1	10.3	26	54.5	0.7	54.0
18	90	31.3	N22	07.4	63	28.4	10.3	N26	55.2	0.5	54.0
19	105	31.2		07.7	77	57.7	10.3	26	55.7	0.4	54.0
20	120	31.1		08.1	92	27.0	10.4	26	56.1	0.2	54.0
21	135	31.0	. .	08.4	106	56.4	10.3	26	56.3	0.1	54.0
22	150	30.9		08.7	121	25.7	10.3	26	56.4	0.0	54.0
23	165	30.8		09.1	135	55.0	10.3	26	56.4	0.1	54.0
2 00	180	30.7	N22	09.4	150	24.3	10.3	N26	56.3	0.2	54.0
01	195	30.6		09.7	164	53.6	10.3	26	56.1	0.4	54.0
02	210	30.5		10.0	179	22.9	10.4	26	55.7	0.5	54.0
03	225	30.4	. .	10.4	193	52.3	10.3	26	55.2	0.7	54.0
04	240	30.3		10.7	208	21.6	10.4	26	54.5	0.8	54.0
05	255	30.2		11.0	222	51.0	10.3	26	53.7	0.9	54.0
06	270	30.1	N22	11.3	237	20.3	10.4	N26	52.8	1.0	54.0
07	285	30.0		11.7	251	49.7	10.4	26	51.8	1.2	54.0
J 08	300	29.9		12.0	266	19.1	10.4	26	50.6	1.2	54.0
U 09	315	29.8	. .	12.3	280	48.5	10.4	26	49.4	1.5	54.0
E 10	330	29.7		12.6	295	17.9	10.4	26	47.9	1.5	54.0
V 11	345	29.6		12.9	309	47.3	10.5	26	46.4	1.7	54.0
E 12	0	29.5	N22	13.3	324	16.8	10.4	N26	44.7	1.8	54.0
S 13	15	29.4		13.6	338	46.2	10.5	26	42.9	1.9	54.0
14	30	29.3		13.9	353	15.7	10.5	26	41.0	2.1	54.0
15	45	29.2	. .	14.2	7	45.2	10.5	26	38.9	2.1	54.0
16	60	29.1		14.5	22	14.7	10.5	26	36.8	2.4	54.0
17	75	29.0		14.8	36	44.2	10.6	26	34.4	2.4	54.0
18	90	28.9	N22	15.2	51	13.8	10.6	N26	32.0	2.5	54.0
19	105	28.8		15.5	65	43.4	10.6	26	29.5	2.7	54.0
20	120	28.7		15.8	80	13.0	10.6	26	26.8	2.8	54.0
21	135	28.6	. .	16.1	94	42.6	10.6	26	24.0	3.0	54.0
22	150	28.5		16.4	109	12.2	10.7	26	21.0	3.0	54.0
23	165	28.4		16.7	123	41.9	10.7	N26	18.0	3.2	54.0
	S/D	15.8	*d*	0.3	S/D	14.7		14.7		14.7	

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 31	Orto Luna 1	Orto Luna 2	Orto Luna 3
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	▭	▭	▭	▭
N 70	▭	▭	▭	▭	▭	▭	▭
68	▭	▭	▭	▭	▭	▭	▭
66	////	////	01 12	▭	▭	▭	▭
64	////	////	01 58	01 42	▭	▭	03 02
62	////	////	02 27	02 25	02 38	03 17	04 33
60	////	01 26	02 49	02 54	03 18	04 02	05 09
N 58	////	02 00	03 07	03 16	03 46	04 32	05 36
56	////	02 25	03 22	03 34	04 07	04 54	05 56
54	01 19	02 44	03 35	03 50	04 25	05 13	06 13
52	01 50	03 00	03 46	04 03	04 40	05 29	06 28
50	02 13	03 13	03 56	04 15	04 53	05 42	06 40
45	02 53	03 40	04 17	04 39	05 21	06 10	07 06
N 40	03 21	04 01	04 33	04 59	05 42	06 32	07 27
35	03 42	04 18	04 47	05 15	06 00	06 50	07 44
30	04 00	04 32	04 59	05 30	06 15	07 05	07 59
20	04 27	04 56	05 20	05 54	06 41	07 32	08 24
N 10	04 48	05 15	05 38	06 15	07 04	07 54	08 46
0	05 06	05 32	05 54	06 35	07 25	08 16	09 06
S 10	05 22	05 48	06 11	06 54	07 46	08 37	09 26
20	05 37	06 04	06 28	07 16	08 09	09 00	09 48
30	05 52	06 22	06 48	07 40	08 35	09 26	10 12
35	06 00	06 31	06 59	07 55	08 51	09 42	10 27
40	06 09	06 42	07 12	08 12	09 09	10 00	10 44
45	06 18	06 55	07 28	08 32	09 31	10 21	11 04
S 50	06 29	07 09	07 47	08 58	09 58	10 49	11 30
52	06 33	07 16	07 56	09 10	10 12	11 03	11 42
54	06 38	07 24	08 06	09 25	10 28	11 18	11 56
56	06 44	07 32	08 18	09 41	10 46	11 37	12 12
58	06 50	07 41	08 31	10 02	11 09	11 59	12 31
S 60	06 57	07 52	08 46	10 27	11 39	12 28	12 56

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 31	Ocaso Luna 1	Ocaso Luna 2	Ocaso Luna 3
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	▭	▭	▭	▭
N 70	▭	▭	▭	▭	▭	▭	▭
68	▭	▭	▭	▭	▭	▭	▭
66	22 47	////	////	▭	▭	▭	▭
64	22 00	////	////	▭	▭	▭	02 49
62	21 30	////	////	23 42	24 49	00 49	01 18
60	21 08	22 32	////	23 02	24 04	00 04	00 41
N 58	20 50	21 57	////	22 35	23 34	24 15	00 15
56	20 34	21 32	////	22 13	23 11	23 54	24 23
54	20 22	21 13	22 40	21 56	22 53	23 37	24 09
52	20 10	20 57	22 07	21 41	22 37	23 22	23 56
50	20 00	20 43	21 44	21 28	22 23	23 09	23 45
45	19 40	20 16	21 04	21 01	21 56	22 43	23 21
N 40	19 23	19 55	20 35	20 40	21 34	22 21	23 02
35	19 09	19 38	20 14	20 22	21 16	22 04	22 47
30	18 57	19 24	19 56	20 07	21 00	21 49	22 33
20	18 36	19 00	19 29	19 41	20 34	21 23	22 09
N 10	18 18	18 41	19 08	19 19	20 11	21 01	21 49
0	18 02	18 24	18 50	18 59	19 49	20 40	21 30
S 10	17 45	18 08	18 34	18 38	19 28	20 19	21 11
20	17 28	17 52	18 19	18 16	19 05	19 57	20 50
30	17 08	17 34	18 04	17 51	18 39	19 31	20 26
35	16 56	17 24	17 55	17 36	18 23	19 15	20 12
40	16 43	17 13	17 47	17 18	18 05	18 58	19 55
45	16 28	17 01	17 37	16 58	17 43	18 36	19 36
S 50	16 08	16 46	17 27	16 31	17 15	18 09	19 11
52	15 59	16 39	17 22	16 19	17 01	17 55	18 59
54	15 49	16 32	17 17	16 04	16 45	17 40	18 45
56	15 38	16 23	17 11	15 47	16 27	17 21	18 29
58	15 24	16 14	17 05	15 27	16 04	16 59	18 10
S 60	15 09	16 04	16 59	15 01	15 34	16 30	17 46

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d	%
31	02 21	02 17	11 58	12 47	00 22	01	1
1	02 12	02 08	11 58	13 37	01 12	02	4
2	02 03	01 58	11 58	14 28	02 03	03	8

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·6		JÚPITER −2·3		SATURNO +0·6		ESTRELLAS		
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec	Nombre	AHS	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′		° ′	° ′
3 00	251 25.8	216 45.8	N11 44.6	244 34.6	N 1 02.6	247 14.7	N 0 31.9	283 31.1	S14 09.5	Acamar	315 13.8	S40 12.9
01	266 28.3	231 45.5	45.6	259 35.4	03.3	262 16.8	32.1	298 33.6	09.5	Achernar	335 22.2	S57 07.3
02	281 30.8	246 45.1	46.6	274 36.1	04.0	277 19.0	32.2	313 36.1	09.6	Acrux	173 02.1	S63 13.6
03	296 33.2	261 44.7	47.6	289 36.9	04.7	292 21.1	32.4	328 38.5	09.6	Adhara	255 07.9	S29 00.2
04	311 35.7	276 44.4	48.5	304 37.7	05.4	307 23.2	32.5	343 41.0	09.6	Aldebaran	290 42.4	N16 33.2
05	326 38.2	291 44.0	49.5	319 38.4	06.2	322 25.3	32.7	358 43.4	09.6			
06	341 40.6	306 43.6	N11 50.5	334 39.2	N 1 06.9	337 27.4	N 0 32.8	13 45.9	S14 09.6	Alioth	166 14.6	N55 50.6
07	356 43.1	321 43.3	51.4	349 40.0	07.6	352 29.5	33.0	28 48.3	09.6	Alkaid	152 53.4	N49 12.3
08	11 45.5	336 42.9	52.4	4 40.7	08.3	7 31.6	33.1	43 50.8	09.6	Alnair	27 35.5	S46 51.0
V 09	26 48.0	351 42.5	53.4	19 41.5	09.0	22 33.7	33.2	58 53.2	09.6	Alnilam	275 40.3	S 1 11.3
I 10	41 50.5	6 42.2	54.4	34 42.3	09.8	37 35.8	33.4	73 55.7	09.6	Alphard	217 50.0	S 8 45.4
E 11	56 52.9	21 41.8	55.3	49 43.0	10.5	52 37.9	33.5	88 58.1	09.6			
R 12	71 55.4	36 41.4	N11 56.3	64 43.8	N 1 11.2	67 40.0	N 0 33.7	104 00.6	S14 09.6	Alphecca	126 05.2	N26 38.4
N 13	86 57.9	51 41.1	57.3	79 44.5	11.9	82 42.1	33.8	119 03.1	09.6	Alpheratz	357 37.1	N29 12.6
E 14	102 00.3	66 40.7	58.2	94 45.3	12.6	97 44.2	34.0	134 05.5	09.6	Altair	62 01.8	N 8 55.5
S 15	117 02.8	81 40.3	11 59.2	109 46.1	13.4	112 46.3	34.1	149 08.0	09.6	Ankaa	353 09.5	S42 11.0
16	132 05.3	96 39.9	12 00.2	124 46.8	14.1	127 48.5	34.2	164 10.4	09.6	Antares	112 18.1	S26 28.9
17	147 07.7	111 39.6	01.1	139 47.6	14.8	142 50.6	34.4	179 12.9	09.6			
18	162 10.2	126 39.2	N12 02.1	154 48.4	N 1 15.5	157 52.7	N 0 34.5	194 15.3	S14 09.6	Arcturus	145 49.6	N19 04.1
19	177 12.7	141 38.8	03.1	169 49.1	16.2	172 54.8	34.7	209 17.8	09.6	Atria	107 13.7	S69 04.0
20	192 15.1	156 38.4	04.0	184 49.9	16.9	187 56.9	34.8	224 20.3	09.6	Avior	234 16.0	S59 35.0
21	207 17.6	171 38.1	05.0	199 50.7	17.7	202 59.0	35.0	239 22.7	09.7	Bellatrix	278 25.5	N 6 22.1
22	222 20.0	186 37.7	06.0	214 51.4	18.4	218 01.1	35.1	254 25.2	09.7	Betelgeuse	270 54.7	N 7 24.6
23	237 22.5	201 37.3	06.9	229 52.2	19.1	233 03.2	35.2	269 27.6	09.7			
4 00	252 25.0	216 36.9	N12 07.9	244 52.9	N 1 19.8	248 05.3	N 0 35.4	284 30.1	S14 09.7	Canopus	263 53.9	S52 42.5
01	267 27.4	231 36.6	08.9	259 53.7	20.5	263 07.4	35.5	299 32.5	09.7	Capella	280 25.6	N46 01.2
02	282 29.9	246 36.2	09.8	274 54.5	21.2	278 09.5	35.7	314 35.0	09.7	Deneb	49 27.0	N45 21.3
03	297 32.4	261 35.8	10.8	289 55.2	22.0	293 11.7	35.8	329 37.5	09.7	Denebola	182 27.1	N14 26.9
04	312 34.8	276 35.4	11.8	304 56.0	22.7	308 13.8	36.0	344 39.9	09.7	Diphda	348 49.6	S17 51.8
05	327 37.3	291 35.1	12.7	319 56.8	23.4	323 15.9	36.1	359 42.4	09.7			
06	342 39.8	306 34.7	N12 13.7	334 57.5	N 1 24.1	338 18.0	N 0 36.2	14 44.8	S14 09.7	Dubhe	193 43.7	N61 38.2
07	357 42.2	321 34.3	14.6	349 58.3	24.8	353 20.1	36.4	29 47.3	09.7	Elnath	278 05.0	N28 37.5
S 08	12 44.7	336 33.9	15.6	4 59.1	25.6	8 22.2	36.5	44 49.8	09.7	Eltanin	90 42.7	N51 29.0
Á 09	27 47.2	351 33.6	16.6	19 59.8	26.3	23 24.3	36.7	59 52.2	09.7	Enif	33 40.8	N 9 58.5
B 10	42 49.6	6 33.2	17.5	35 00.6	27.0	38 26.4	36.8	74 54.7	09.7	Fomalhaut	15 16.9	S29 30.2
A 11	57 52.1	21 32.8	18.5	50 01.4	27.7	53 28.6	37.0	89 57.1	09.7			
D 12	72 54.5	36 32.4	N12 19.4	65 02.1	N 1 28.4	68 30.7	N 0 37.1	104 59.6	S14 09.8	Gacrux	171 53.8	S57 14.5
O 13	87 57.0	51 32.0	20.4	80 02.9	29.1	83 32.8	37.2	120 02.1	09.8	Gienah	175 45.7	S17 40.0
14	102 59.5	66 31.7	21.4	95 03.7	29.9	98 34.9	37.4	135 04.5	09.8	Hadar	148 38.5	S60 29.0
15	118 01.9	81 31.3	22.3	110 04.4	30.6	113 37.0	37.5	150 07.0	09.8	Hamal	327 53.9	N23 33.9
16	133 04.4	96 30.9	23.3	125 05.2	31.3	128 39.1	37.7	165 09.4	09.8	Kaus Aust.	83 35.0	S34 22.4
17	148 06.9	111 30.5	24.2	140 06.0	32.0	143 41.2	37.8	180 11.9	09.8			
18	163 09.3	126 30.1	N12 25.2	155 06.7	N 1 32.7	158 43.3	N 0 37.9	195 14.4	S14 09.8	Kochab	137 18.8	N74 04.0
19	178 11.8	141 29.7	26.1	170 07.5	33.4	173 45.5	38.1	210 16.8	09.8	Markab	13 32.0	N15 19.3
20	193 14.3	156 29.4	27.1	185 08.2	34.2	188 47.6	38.2	225 19.3	09.8	Menkar	314 08.7	N 4 10.5
21	208 16.7	171 29.0	28.1	200 09.0	34.9	203 49.7	38.4	240 21.7	09.8	Menkent	147 59.8	S36 28.9
22	223 19.2	186 28.6	29.0	215 09.8	35.6	218 51.8	38.5	255 24.2	09.8	Miaplacidus	221 39.1	S69 48.8
23	238 21.6	201 28.2	30.0	230 10.5	36.3	233 53.9	38.6	270 26.7	09.8			
5 00	253 24.1	216 27.8	N12 30.9	245 11.3	N 1 37.0	248 56.0	N 0 38.8	285 29.1	S14 09.8	Mirfak	308 31.8	N49 56.2
01	268 26.6	231 27.4	31.9	260 12.1	37.7	263 58.1	38.9	300 31.6	09.8	Nunki	75 50.1	S26 16.1
02	283 29.0	246 27.1	32.8	275 12.8	38.5	279 00.3	39.1	315 34.0	09.9	Peacock	53 08.8	S56 39.6
03	298 31.5	261 26.7	33.8	290 13.6	39.2	294 02.4	39.2	330 36.5	09.9	Pollux	243 20.2	N27 58.4
04	313 34.0	276 26.3	34.7	305 14.4	39.9	309 04.5	39.3	345 39.0	09.9	Procyon	244 53.4	N 5 10.1
05	328 36.4	291 25.9	35.7	320 15.1	40.6	324 06.6	39.5	0 41.4	09.9			
06	343 38.9	306 25.5	N12 36.6	335 15.9	N 1 41.3	339 08.7	N 0 39.6	15 43.9	S14 09.9	Rasalhague	96 00.2	N12 32.6
07	358 41.4	321 25.1	37.6	350 16.7	42.0	354 10.8	39.8	30 46.4	09.9	Regulus	207 36.8	N11 51.6
D 08	13 43.8	336 24.7	38.5	5 17.4	42.7	9 13.0	39.9	45 48.8	09.9	Rigel	281 06.3	S 8 10.6
O 09	28 46.3	351 24.4	39.5	20 18.2	43.5	24 15.1	40.0	60 51.3	09.9	Rigil Kent.	139 42.7	S60 55.7
M 10	43 48.8	6 24.0	40.4	35 19.0	44.2	39 17.2	40.2	75 53.7	09.9	Sabik	102 04.9	S15 45.1
I 11	58 51.2	21 23.6	41.4	50 19.7	44.9	54 19.3	40.3	90 56.2	09.9			
N 12	73 53.7	36 23.2	N12 42.3	65 20.5	N 1 45.6	69 21.4	N 0 40.5	105 58.7	S14 09.9	Schedar	349 33.7	N56 39.3
G 13	88 56.1	51 22.8	43.3	80 21.3	46.3	84 23.5	40.6	121 01.1	09.9	Shaula	96 12.9	S37 07.2
O 14	103 58.6	66 22.4	44.2	95 22.0	47.0	99 25.7	40.7	136 03.6	09.9	Sirius	258 28.5	S16 44.9
15	119 01.1	81 22.0	45.2	110 22.8	47.8	114 27.8	40.9	151 06.1	10.0	Spica	158 24.4	S11 16.7
16	134 03.5	96 21.6	46.1	125 23.6	48.5	129 29.9	41.0	166 08.5	10.0	Suhail	222 48.1	S43 31.5
17	149 06.0	111 21.2	47.1	140 24.3	49.2	144 32.0	41.2	181 11.0	10.0			
18	164 08.5	126 20.8	N12 48.0	155 25.1	N 1 49.9	159 34.1	N 0 41.3	196 13.5	S14 10.0	Vega	80 34.3	N38 48.1
19	179 10.9	141 20.4	49.0	170 25.9	50.6	174 36.2	41.4	211 15.9	10.0	Zuben'ubi	136 58.1	S16 08.1
20	194 13.4	156 20.1	49.9	185 26.6	51.3	189 38.4	41.6	226 18.4	10.0			
21	209 15.9	171 19.7	50.9	200 27.4	52.0	204 40.5	41.7	241 20.9	10.0		AHS	Paso Mer.
22	224 18.3	186 19.3	51.8	215 28.2	52.8	219 42.6	41.9	256 23.3	10.0		° ′	h m
23	239 20.8	201 18.9	52.8	230 28.9	53.5	234 44.7	42.0	271 25.8	10.0	Venus	324 12.0	9 34
	h m									Marte	352 28.0	7 40
Paso Mer.	7 09.2	*v* −0.4	*d* 1.0	*v* 0.8	*d* 0.7	*v* 2.1	*d* 0.1	*v* 2.5	*d* 0.0	Júpiter	355 40.4	7 27
										Saturno	32 05.1	5 01

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	°	′	′	′	
3 00	180	28.3	N22	17.0	138	11.6	10.8	N26	14.8	3.3	54.0
01	195	28.2		17.3	152	41.4	10.7	26	11.5	3.5	54.0
02	210	28.1		17.7	167	11.1	10.8	26	08.0	3.5	54.0
03	225	28.0		18.0	181	40.9	10.8	26	04.5	3.7	54.0
04	240	27.9		18.3	196	10.7	10.9	26	00.8	3.8	54.1
05	255	27.8		18.6	210	40.6	10.9	25	57.0	3.9	54.1
06	270	27.7	N22	18.9	225	10.5	10.9	N25	53.1	4.1	54.1
07	285	27.6		19.2	239	40.4	10.9	25	49.0	4.2	54.1
V 08	300	27.5		19.5	254	10.3	11.0	25	44.8	4.2	54.1
I 09	315	27.4		19.8	268	40.3	11.0	25	40.6	4.4	54.1
E 10	330	27.3		20.1	283	10.3	11.1	25	36.2	4.6	54.1
R 11	345	27.2		20.4	297	40.4	11.1	25	31.6	4.6	54.1
N 12	0	27.1	N22	20.7	312	10.5	11.1	N25	27.0	4.8	54.1
E 13	15	27.0		21.0	326	40.6	11.1	25	22.2	4.9	54.1
S 14	30	26.8		21.3	341	10.7	11.2	25	17.3	5.0	54.1
15	45	26.7		21.6	355	40.9	11.3	25	12.3	5.1	54.1
16	60	26.6		21.9	10	11.2	11.2	25	07.2	5.3	54.1
17	75	26.5		22.2	24	41.4	11.4	25	01.9	5.3	54.1
18	90	26.4	N22	22.5	39	11.8	11.3	N24	56.6	5.5	54.2
19	105	26.3		22.8	53	42.1	11.4	24	51.1	5.6	54.2
20	120	26.2		23.1	68	12.5	11.4	24	45.5	5.7	54.2
21	135	26.1		23.4	82	42.9	11.5	24	39.8	5.8	54.2
22	150	26.0		23.7	97	13.4	11.5	24	34.0	5.9	54.2
23	165	25.9		24.0	111	43.9	11.6	24	28.1	6.1	54.2
4 00	180	25.8	N22	24.3	126	14.5	11.6	N24	22.0	6.1	54.2
01	195	25.7		24.6	140	45.1	11.6	24	15.9	6.3	54.2
02	210	25.6		24.9	155	15.7	11.7	24	09.6	6.4	54.2
03	225	25.5		25.2	169	46.4	11.7	24	03.2	6.5	54.2
04	240	25.4		25.5	184	17.1	11.8	23	56.7	6.6	54.3
05	255	25.3		25.8	198	47.9	11.8	23	50.1	6.7	54.3
06	270	25.1	N22	26.1	213	18.7	11.9	N23	43.4	6.8	54.3
07	285	25.0		26.4	227	49.6	11.9	23	36.6	7.0	54.3
S 08	300	24.9		26.6	242	20.5	11.9	23	29.6	7.0	54.3
Á 09	315	24.8		26.9	256	51.4	12.0	23	22.6	7.2	54.3
B 10	330	24.7		27.2	271	22.4	12.1	23	15.4	7.2	54.3
A 11	345	24.6		27.5	285	53.5	12.0	23	08.2	7.4	54.3
D 12	0	24.5	N22	27.8	300	24.5	12.2	N23	00.8	7.5	54.3
O 13	15	24.4		28.1	314	55.7	12.1	22	53.3	7.5	54.4
14	30	24.3		28.4	329	26.8	12.3	22	45.8	7.7	54.4
15	45	24.2		28.6	343	58.1	12.2	22	38.1	7.8	54.4
16	60	24.1		28.9	358	29.3	12.3	22	30.3	7.9	54.4
17	75	24.0		29.2	13	00.6	12.4	22	22.4	8.0	54.4
18	90	23.8	N22	29.5	27	32.0	12.4	N22	14.4	8.1	54.4
19	105	23.7		29.8	42	03.4	12.4	22	06.3	8.2	54.4
20	120	23.6		30.1	56	34.8	12.5	21	58.1	8.3	54.5
21	135	23.5		30.3	71	06.3	12.5	21	49.8	8.4	54.5
22	150	23.4		30.6	85	37.8	12.6	21	41.4	8.5	54.5
23	165	23.3		30.9	100	09.4	12.7	21	32.9	8.5	54.5
5 00	180	23.2	N22	31.2	114	41.1	12.6	N21	24.4	8.7	54.5
01	195	23.1		31.5	129	12.7	12.7	21	15.7	8.8	54.5
02	210	23.0		31.7	143	44.4	12.8	21	06.9	8.9	54.6
03	225	22.9		32.0	158	16.2	12.8	20	58.0	9.0	54.6
04	240	22.7		32.3	172	48.0	12.8	20	49.0	9.1	54.6
05	255	22.6		32.6	187	19.8	12.9	20	39.9	9.2	54.6
06	270	22.5	N22	32.8	201	51.7	13.0	N20	30.7	9.2	54.6
07	285	22.4		33.1	216	23.7	12.9	20	21.5	9.4	54.6
D 08	300	22.3		33.4	230	55.6	13.1	20	12.1	9.5	54.7
O 09	315	22.2		33.7	245	27.7	13.0	20	02.6	9.5	54.7
M 10	330	22.1		33.9	259	59.7	13.1	19	53.1	9.6	54.7
I 11	345	22.0		34.2	274	31.8	13.2	19	43.5	9.8	54.7
N 12	0	21.9	N22	34.5	289	04.0	13.2	N19	33.7	9.8	54.7
G 13	15	21.7		34.7	303	36.2	13.2	19	23.9	9.9	54.8
O 14	30	21.6		35.0	318	08.4	13.3	19	14.0	10.0	54.8
15	45	21.5		35.3	332	40.7	13.3	19	04.0	10.1	54.8
16	60	21.4		35.5	347	13.0	13.4	18	53.9	10.2	54.8
17	75	21.3		35.8	1	45.4	13.4	18	43.7	10.3	54.8
18	90	21.2	N22	36.1	16	17.8	13.4	N18	33.4	10.3	54.9
19	105	21.1		36.3	30	50.2	13.5	18	23.1	10.4	54.9
20	120	21.0		36.6	45	22.7	13.5	18	12.7	10.6	54.9
21	135	20.8		36.9	59	55.2	13.5	18	02.1	10.6	54.9
22	150	20.7		37.1	74	27.7	13.6	17	51.5	10.7	54.9
23	165	20.6		37.4	89	00.3	13.6	N17	40.8	10.7	55.0
	S/D	15.8	d	0.3	S/D		14.7		14.8		14.9

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 3	Orto Luna 4	Orto Luna 5	Orto Luna 6
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	▭	▭	▭	07 09
N 70	▭	▭	▭	▭	▭	▭	07 54
68	▭	▭	▭	▭	▭	▭	06 05 08 23
66	////	////	00 59	▭	04 12	06 50	08 44
64	////	////	01 51	03 02	05 29	07 19	09 01
62	////	////	02 22	04 33	06 06	07 41	09 15
60	////	01 18	02 45	05 09	06 32	07 59	09 27
N 58	////	01 55	03 04	05 36	06 52	08 14	09 37
56	////	02 20	03 19	05 56	07 09	08 26	09 46
54	01 11	02 40	03 32	06 13	07 23	08 37	09 54
52	01 45	02 57	03 44	06 28	07 35	08 47	10 01
50	02 09	03 11	03 54	06 40	07 46	08 56	10 07
45	02 51	03 39	04 15	07 06	08 09	09 14	10 20
N 40	03 19	04 00	04 32	07 27	08 27	09 29	10 32
35	03 41	04 17	04 47	07 44	08 42	09 41	10 41
30	03 59	04 32	04 59	07 59	08 55	09 52	10 49
20	04 27	04 56	05 20	08 24	09 17	10 11	11 03
N 10	04 48	05 15	05 38	08 46	09 37	10 27	11 16
0	05 06	05 32	05 55	09 06	09 55	10 42	11 27
S 10	05 23	05 49	06 11	09 26	10 13	10 57	11 38
20	05 38	06 05	06 29	09 48	10 32	11 13	11 51
30	05 53	06 23	06 49	10 12	10 54	11 31	12 04
35	06 02	06 33	07 01	10 27	11 07	11 41	12 12
40	06 10	06 44	07 14	10 44	11 22	11 54	12 21
45	06 20	06 57	07 30	11 04	11 39	12 08	12 32
S 50	06 31	07 12	07 50	11 30	12 01	12 25	12 45
52	06 36	07 19	07 59	11 42	12 11	12 33	12 50
54	06 41	07 27	08 10	11 56	12 23	12 42	12 57
56	06 47	07 35	08 21	12 12	12 36	12 52	13 04
58	06 53	07 45	08 35	12 31	12 51	13 04	13 12
S 60	07 00	07 56	08 51	12 56	13 10	13 17	13 21

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 3	Ocaso Luna 4	Ocaso Luna 5	Ocaso Luna 6
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	▭	▭	▭	03 43
N 70	▭	▭	▭	▭	▭	▭	02 57
68	▭	▭	▭	▭	▭	03 09	02 26
66	23 02	////	////	▭	03 22	02 23	02 03
64	22 08	////	////	02 49	02 04	01 53	01 45
62	21 36	////	////	01 18	01 27	01 30	01 30
60	21 13	22 42	////	00 41	01 01	01 12	01 17
N 58	20 54	22 03	////	00 15	00 40	00 56	01 06
56	20 38	21 37	////	24 23	00 23	00 43	00 57
54	20 25	21 17	22 48	24 09	00 09	00 31	00 48
52	20 13	21 01	22 13	23 56	24 21	00 21	00 41
50	20 03	20 47	21 49	23 45	24 12	00 12	00 34
45	19 42	20 19	21 07	23 21	23 53	24 19	00 19
N 40	19 25	19 57	20 38	23 02	23 37	24 07	00 07
35	19 10	19 40	20 16	22 47	23 24	23 56	24 26
30	18 58	19 25	19 58	22 33	23 12	23 47	24 19
20	18 37	19 01	19 30	22 09	22 52	23 31	24 08
N 10	18 19	18 42	19 09	21 49	22 34	23 17	23 58
0	18 02	18 24	18 50	21 30	22 18	23 04	23 48
S 10	17 45	18 08	18 34	21 11	22 01	22 50	23 39
20	17 28	17 51	18 19	20 50	21 43	22 36	23 28
30	17 07	17 34	18 03	20 26	21 22	22 20	23 17
35	16 56	17 23	17 55	20 12	21 10	22 10	23 10
40	16 42	17 12	17 46	19 55	20 56	21 59	23 02
45	16 26	17 00	17 36	19 36	20 40	21 46	22 53
S 50	16 07	16 44	17 25	19 11	20 19	21 30	22 42
52	15 57	16 37	17 21	18 59	20 09	21 22	22 36
54	15 47	16 30	17 15	18 45	19 58	21 14	22 31
56	15 35	16 21	17 10	18 29	19 45	21 04	22 24
58	15 21	16 12	17 03	18 10	19 30	20 53	22 17
S 60	15 05	16 01	16 56	17 46	19 13	20 41	22 09

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d	%
3	01 53	01 48	11 58	15 18	02 53	04	14
4	01 43	01 38	11 58	16 06	03 42	05	21
5	01 33	01 28	11 59	16 53	04 30	06	30

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·6		JÚPITER −2·3		SATURNO +0·6	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
6 00	254 23.3	216 18.5	N12 53.7	245 29.7	N 1 54.2	249 46.8	N 0 42.1	286 28.3	S14 10.0
01	269 25.7	231 18.1	54.6	260 30.5	54.9	264 49.0	42.3	301 30.7	10.0
02	284 28.2	246 17.7	55.6	275 31.2	55.6	279 51.1	42.4	316 33.2	10.0
03	299 30.6	261 17.3	56.5	290 32.0	56.3	294 53.2	42.5	331 35.7	10.1
04	314 33.1	276 16.9	57.5	305 32.8	57.0	309 55.3	42.7	346 38.1	10.1
05	329 35.6	291 16.5	58.4	320 33.5	57.8	324 57.4	42.8	1 40.6	10.1
06	344 38.0	306 16.1	N12 59.4	335 34.3	N 1 58.5	339 59.6	N 0 43.0	16 43.0	S14 10.1
07	359 40.5	321 15.7	13 00.3	350 35.1	59.2	355 01.7	43.1	31 45.5	10.1
08	14 43.0	336 15.3	01.2	5 35.8	1 59.9	10 03.8	43.2	46 48.0	10.1
L 09	29 45.4	351 14.9	02.2	20 36.6	2 00.6	25 05.9	43.4	61 50.5	10.1
U 10	44 47.9	6 14.5	03.1	35 37.4	01.3	40 08.1	43.5	76 52.9	10.1
N 11	59 50.4	21 14.1	04.1	50 38.1	02.0	55 10.2	43.6	91 55.4	10.1
E 12	74 52.8	36 13.7	N13 05.0	65 38.9	N 2 02.8	70 12.3	N 0 43.8	106 57.9	S14 10.1
S 13	89 55.3	51 13.3	05.9	80 39.7	03.5	85 14.4	43.9	122 00.3	10.2
14	104 57.8	66 12.9	06.9	95 40.5	04.2	100 16.5	44.1	137 02.8	10.2
15	120 00.2	81 12.5	07.8	110 41.2	04.9	115 18.7	44.2	152 05.3	10.2
16	135 02.7	96 12.1	08.7	125 42.0	05.6	130 20.8	44.3	167 07.7	10.2
17	150 05.1	111 11.7	09.7	140 42.8	06.3	145 22.9	44.5	182 10.2	10.2
18	165 07.6	126 11.3	N13 10.6	155 43.5	N 2 07.0	160 25.0	N 0 44.6	197 12.7	S14 10.2
19	180 10.1	141 10.9	11.6	170 44.3	07.7	175 27.2	44.7	212 15.1	10.2
20	195 12.5	156 10.5	12.5	185 45.1	08.5	190 29.3	44.9	227 17.6	10.2
21	210 15.0	171 10.1	13.4	200 45.8	09.2	205 31.4	45.0	242 20.1	10.2
22	225 17.5	186 09.7	14.4	215 46.6	09.9	220 33.5	45.1	257 22.5	10.2
23	240 19.9	201 09.3	15.3	230 47.4	10.6	235 35.7	45.3	272 25.0	10.3
7 00	255 22.4	216 08.9	N13 16.2	245 48.1	N 2 11.3	250 37.8	N 0 45.4	287 27.5	S14 10.3
01	270 24.9	231 08.5	17.2	260 48.9	12.0	265 39.9	45.6	302 29.9	10.3
02	285 27.3	246 08.1	18.1	275 49.7	12.7	280 42.0	45.7	317 32.4	10.3
03	300 29.8	261 07.7	19.0	290 50.4	13.4	295 44.2	45.8	332 34.9	10.3
04	315 32.2	276 07.3	20.0	305 51.2	14.2	310 46.3	46.0	347 37.4	10.3
05	330 34.7	291 06.9	20.9	320 52.0	14.9	325 48.4	46.1	2 39.8	10.3
06	345 37.2	306 06.4	N13 21.8	335 52.7	N 2 15.6	340 50.5	N 0 46.2	17 42.3	S14 10.3
07	0 39.6	321 06.0	22.7	350 53.5	16.3	355 52.7	46.4	32 44.8	10.3
M 08	15 42.1	336 05.6	23.7	5 54.3	17.0	10 54.8	46.5	47 47.2	10.3
A 09	30 44.6	351 05.2	24.6	20 55.1	17.7	25 56.9	46.6	62 49.7	10.4
R 10	45 47.0	6 04.8	25.5	35 55.8	18.4	40 59.0	46.8	77 52.2	10.4
T 11	60 49.5	21 04.4	26.5	50 56.6	19.1	56 01.2	46.9	92 54.7	10.4
E 12	75 52.0	36 04.0	N13 27.4	65 57.4	N 2 19.9	71 03.3	N 0 47.0	107 57.1	S14 10.4
S 13	90 54.4	51 03.6	28.3	80 58.1	20.6	86 05.4	47.2	122 59.6	10.4
14	105 56.9	66 03.2	29.2	95 58.9	21.3	101 07.5	47.3	138 02.1	10.4
15	120 59.4	81 02.8	30.2	110 59.7	22.0	116 09.7	47.4	153 04.5	10.4
16	136 01.8	96 02.3	31.1	126 00.4	22.7	131 11.8	47.6	168 07.0	10.4
17	151 04.3	111 01.9	32.0	141 01.2	23.4	146 13.9	47.7	183 09.5	10.4
18	166 06.7	126 01.5	N13 32.9	156 02.0	N 2 24.1	161 16.1	N 0 47.8	198 12.0	S14 10.5
19	181 09.2	141 01.1	33.9	171 02.8	24.8	176 18.2	48.0	213 14.4	10.5
20	196 11.7	156 00.7	34.8	186 03.5	25.5	191 20.3	48.1	228 16.9	10.5
21	211 14.1	171 00.3	35.7	201 04.3	26.3	206 22.4	48.3	243 19.4	10.5
22	226 16.6	185 59.9	36.6	216 05.1	27.0	221 24.6	48.4	258 21.9	10.5
23	241 19.1	200 59.5	37.6	231 05.8	27.7	236 26.7	48.5	273 24.3	10.5
8 00	256 21.5	215 59.0	N13 38.5	246 06.6	N 2 28.4	251 28.8	N 0 48.7	288 26.8	S14 10.5
01	271 24.0	230 58.6	39.4	261 07.4	29.1	266 31.0	48.8	303 29.3	10.5
02	286 26.5	245 58.2	40.3	276 08.1	29.8	281 33.1	48.9	318 31.7	10.5
03	301 28.9	260 57.8	41.2	291 08.9	30.5	296 35.2	49.1	333 34.2	10.6
04	316 31.4	275 57.4	42.2	306 09.7	31.2	311 37.3	49.2	348 36.7	10.6
05	331 33.9	290 57.0	43.1	321 10.5	31.9	326 39.5	49.3	3 39.2	10.6
06	346 36.3	305 56.5	N13 44.0	336 11.2	N 2 32.6	341 41.6	N 0 49.5	18 41.6	S14 10.6
07	1 38.8	320 56.1	44.9	351 12.0	33.4	356 43.7	49.6	33 44.1	10.6
M 08	16 41.2	335 55.7	45.8	6 12.8	34.1	11 45.9	49.7	48 46.6	10.6
I 09	31 43.7	350 55.3	46.8	21 13.5	34.8	26 48.0	49.9	63 49.1	10.6
É 10	46 46.2	5 54.9	47.7	36 14.3	35.5	41 50.1	50.0	78 51.5	10.6
R 11	61 48.6	20 54.4	48.6	51 15.1	36.2	56 52.3	50.1	93 54.0	10.7
C 12	76 51.1	35 54.0	N13 49.5	66 15.8	N 2 36.9	71 54.4	N 0 50.2	108 56.5	S14 10.7
O 13	91 53.6	50 53.6	50.4	81 16.6	37.6	86 56.5	50.4	123 59.0	10.7
L 14	106 56.0	65 53.2	51.3	96 17.4	38.3	101 58.7	50.5	139 01.4	10.7
E 15	121 58.5	80 52.8	52.3	111 18.2	39.0	117 00.8	50.6	154 03.9	10.7
S 16	137 01.0	95 52.3	53.2	126 18.9	39.7	132 02.9	50.8	169 06.4	10.7
17	152 03.4	110 51.9	54.1	141 19.7	40.4	147 05.1	50.9	184 08.9	10.7
18	167 05.9	125 51.5	N13 55.0	156 20.5	N 2 41.2	162 07.2	N 0 51.0	199 11.4	S14 10.7
19	182 08.3	140 51.1	55.9	171 21.2	41.9	177 09.3	51.2	214 13.8	10.8
20	197 10.8	155 50.7	56.8	186 22.0	42.6	192 11.5	51.3	229 16.3	10.8
21	212 13.3	170 50.2	57.7	201 22.8	43.3	207 13.6	51.4	244 18.8	10.8
22	227 15.7	185 49.8	58.6	216 23.6	44.0	222 15.7	51.6	259 21.3	10.8
23	242 18.2	200 49.4	59.6	231 24.3	44.7	237 17.9	51.7	274 23.7	10.8
	h m								
Paso Mer.	6 57.4	*v* −0.4	*d* 0.9	*v* 0.8	*d* 0.7	*v* 2.1	*d* 0.1	*v* 2.5	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.8	S40 12.9
Achernar	335 22.2	S57 07.2
Acrux	173 02.2	S63 13.6
Adhara	255 07.9	S29 00.2
Aldebaran	290 42.4	N16 33.2
Alioth	166 14.6	N55 50.6
Alkaid	152 53.4	N49 12.3
Alnair	27 35.5	S46 51.0
Alnilam	275 40.2	S 1 11.3
Alphard	217 50.0	S 8 45.4
Alphecca	126 05.2	N26 38.4
Alpheratz	357 37.1	N29 12.6
Altair	62 01.8	N 8 55.6
Ankaa	353 09.4	S42 10.9
Antares	112 18.1	S26 28.9
Arcturus	145 49.6	N19 04.1
Atria	107 13.7	S69 04.0
Avior	234 16.0	S59 35.0
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.7	N 7 24.6
Canopus	263 53.9	S52 42.5
Capella	280 25.5	N46 01.2
Deneb	49 27.0	N45 21.3
Denebola	182 27.1	N14 26.9
Diphda	348 49.6	S17 51.8
Dubhe	193 43.7	N61 38.2
Elnath	278 05.0	N28 37.5
Eltanin	90 42.6	N51 29.1
Enif	33 40.8	N 9 58.5
Fomalhaut	15 16.9	S29 30.1
Gacrux	171 53.8	S57 14.5
Gienah	175 45.7	S17 40.0
Hadar	148 38.6	S60 29.0
Hamal	327 53.9	N23 33.9
Kaus Aust.	83 35.0	S34 22.4
Kochab	137 18.8	N74 04.0
Markab	13 32.0	N15 19.4
Menkar	314 08.7	N 4 10.5
Menkent	147 59.9	S36 28.9
Miaplacidus	221 39.1	S69 48.7
Mirfak	308 31.8	N49 56.2
Nunki	75 50.1	S26 16.1
Peacock	53 08.7	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.4	N 5 10.1
Rasalhague	96 00.2	N12 32.6
Regulus	207 36.8	N11 51.6
Rigel	281 06.3	S 8 10.6
Rigil Kent.	139 42.7	S60 55.8
Sabik	102 04.9	S15 45.1
Schedar	349 33.7	N56 39.3
Shaula	96 12.9	S37 07.2
Sirius	258 28.5	S16 44.9
Spica	158 24.4	S11 16.7
Suhail	222 48.1	S43 31.5
Vega	80 34.3	N38 48.1
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	320 46.5	9 36
Marte	350 25.7	7 36
Júpiter	355 15.4	7 16
Saturno	32 05.1	4 49

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v		Dec	d		Ph
d h	°	′	°	′	°	′	′	°	′	′	′
LUNES 6 00	180	20.5	N22	37.7	103	32.9	13.7	N17	30.1	10.9	55.0
01	195	20.4		37.9	118	05.6	13.7	17	19.2	10.9	55.0
02	210	20.3		38.2	132	38.3	13.7	17	08.3	11.1	55.0
03	225	20.2	. .	38.4	147	11.0	13.8	16	57.2	11.1	55.0
04	240	20.0		38.7	161	43.8	13.8	16	46.1	11.1	55.1
05	255	19.9		39.0	176	16.6	13.8	16	35.0	11.3	55.1
06	270	19.8	N22	39.2	190	49.4	13.9	N16	23.7	11.3	55.1
07	285	19.7		39.5	205	22.3	13.9	16	12.4	11.5	55.1
08	300	19.6		39.7	219	55.2	13.9	16	00.9	11.5	55.2
09	315	19.5	. .	40.0	234	28.1	14.0	15	49.4	11.5	55.2
10	330	19.4		40.2	249	01.1	14.0	15	37.9	11.7	55.2
11	345	19.2		40.5	263	34.1	14.0	15	26.2	11.7	55.2
12	0	19.1	N22	40.8	278	07.1	14.1	N15	14.5	11.8	55.3
13	15	19.0		41.0	292	40.2	14.1	15	02.7	11.8	55.3
14	30	18.9		41.3	307	13.3	14.1	14	50.9	12.0	55.3
15	45	18.8	. .	41.5	321	46.4	14.1	14	38.9	12.0	55.3
16	60	18.7		41.8	336	19.5	14.2	14	26.9	12.1	55.4
17	75	18.6		42.0	350	52.7	14.1	14	14.8	12.1	55.4
18	90	18.4	N22	42.3	5	25.8	14.3	N14	02.7	12.3	55.4
19	105	18.3		42.5	19	59.1	14.2	13	50.4	12.3	55.5
20	120	18.2		42.8	34	32.3	14.2	13	38.1	12.3	55.5
21	135	18.1	. .	43.0	49	05.5	14.3	13	25.8	12.5	55.5
22	150	18.0		43.3	63	38.8	14.3	13	13.3	12.5	55.5
23	165	17.9		43.5	78	12.1	14.3	13	00.8	12.5	55.6
MARTES 7 00	180	17.7	N22	43.7	92	45.4	14.4	N12	48.3	12.7	55.6
01	195	17.6		44.0	107	18.8	14.3	12	35.6	12.7	55.6
02	210	17.5		44.2	121	52.1	14.4	12	22.9	12.7	55.6
03	225	17.4	. .	44.5	136	25.5	14.4	12	10.2	12.8	55.7
04	240	17.3		44.7	150	58.9	14.4	11	57.4	12.9	55.7
05	255	17.2		45.0	165	32.3	14.4	11	44.5	13.0	55.7
06	270	17.0	N22	45.2	180	05.7	14.5	N11	31.5	13.0	55.8
07	285	16.9		45.4	194	39.2	14.4	11	18.5	13.1	55.8
08	300	16.8		45.7	209	12.6	14.5	11	05.4	13.1	55.8
09	315	16.7	. .	45.9	223	46.1	14.4	10	52.3	13.2	55.9
10	330	16.6		46.2	238	19.5	14.5	10	39.1	13.3	55.9
11	345	16.5		46.4	252	53.0	14.5	10	25.8	13.3	55.9
12	0	16.3	N22	46.6	267	26.5	14.5	N10	12.5	13.3	55.9
13	15	16.2		46.9	282	00.0	14.5	9	59.2	13.5	56.0
14	30	16.1		47.1	296	33.5	14.5	9	45.7	13.5	56.0
15	45	16.0	. .	47.3	311	07.0	14.5	9	32.2	13.5	56.0
16	60	15.9		47.6	325	40.5	14.6	9	18.7	13.6	56.1
17	75	15.8		47.8	340	14.1	14.5	9	05.1	13.6	56.1
18	90	15.6	N22	48.0	354	47.6	14.5	N 8	51.5	13.7	56.1
19	105	15.5		48.3	9	21.1	14.5	8	37.8	13.8	56.2
20	120	15.4		48.5	23	54.6	14.6	8	24.0	13.8	56.2
21	135	15.3	. .	48.7	38	28.2	14.5	8	10.2	13.8	56.2
22	150	15.2		49.0	53	01.7	14.5	7	56.4	13.9	56.3
23	165	15.0		49.2	67	35.2	14.5	7	42.5	14.0	56.3
MIÉRCOLES 8 00	180	14.9	N22	49.4	82	08.7	14.5	N 7	28.5	14.0	56.3
01	195	14.8		49.7	96	42.2	14.5	7	14.5	14.1	56.4
02	210	14.7		49.9	111	15.7	14.5	7	00.4	14.0	56.4
03	225	14.6	. .	50.1	125	49.2	14.5	6	46.4	14.2	56.4
04	240	14.4		50.3	140	22.7	14.5	6	32.2	14.2	56.5
05	255	14.3		50.6	154	56.2	14.5	6	18.0	14.2	56.5
06	270	14.2	N22	50.8	169	29.7	14.5	N 6	03.8	14.3	56.6
07	285	14.1		51.0	184	03.2	14.4	5	49.5	14.3	56.6
08	300	14.0		51.2	198	36.6	14.5	5	35.2	14.4	56.6
09	315	13.9	. .	51.4	213	10.1	14.4	5	20.8	14.4	56.7
10	330	13.7		51.7	227	43.5	14.4	5	06.4	14.4	56.7
11	345	13.6		51.9	242	16.9	14.4	4	52.0	14.5	56.7
12	0	13.5	N22	52.1	256	50.3	14.4	N 4	37.5	14.5	56.8
13	15	13.4		52.3	271	23.7	14.3	4	23.0	14.6	56.8
14	30	13.2		52.6	285	57.0	14.3	4	08.4	14.6	56.8
15	45	13.1	. .	52.8	300	30.3	14.4	3	53.8	14.6	56.9
16	60	13.0		53.0	315	03.7	14.2	3	39.2	14.7	56.9
17	75	12.9		53.2	329	36.9	14.3	3	24.5	14.7	56.9
18	90	12.8	N22	53.4	344	10.2	14.3	N 3	09.8	14.7	57.0
19	105	12.6		53.6	358	43.5	14.2	2	55.1	14.8	57.0
20	120	12.5		53.9	13	16.7	14.1	2	40.3	14.8	57.1
21	135	12.4	. .	54.1	27	49.8	14.2	2	25.5	14.8	57.1
22	150	12.3		54.3	42	23.0	14.1	2	10.7	14.9	57.1
23	165	12.2		54.5	56	56.1	14.1	N 1	55.8	14.8	57.2
	S/D	15.8	d	0.2	S/D		15.1		15.2		15.5

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		6	7	8	9
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	07 09	09 46	11 56	14 04
N 70	▭	▭	▭	07 54	10 04	12 03	14 01
68	▭	▭	▭	08 23	10 18	12 08	13 59
66	////	////	00 45	08 44	10 30	12 13	13 57
64	////	////	01 45	09 01	10 40	12 17	13 55
62	////	////	02 18	09 15	10 48	12 20	13 54
60	////	01 10	02 42	09 27	10 55	12 23	13 53
N 58	////	01 50	03 01	09 37	11 01	12 25	13 52
56	////	02 17	03 17	09 46	11 06	12 27	13 51
54	01 04	02 38	03 30	09 54	11 11	12 29	13 50
52	01 41	02 54	03 42	10 01	11 15	12 31	13 49
50	02 06	03 09	03 52	10 07	11 19	12 33	13 48
45	02 49	03 37	04 14	10 20	11 28	12 36	13 47
N 40	03 18	03 59	04 31	10 32	11 35	12 39	13 46
35	03 40	04 16	04 46	10 41	11 41	12 42	13 45
30	03 58	04 31	04 58	10 49	11 46	12 44	13 44
20	04 26	04 55	05 20	11 03	11 56	12 48	13 42
N 10	04 48	05 15	05 38	11 16	12 04	12 52	13 41
0	05 07	05 33	05 55	11 27	12 11	12 55	13 39
S 10	05 23	05 49	06 12	11 38	12 18	12 58	13 38
20	05 39	06 06	06 30	11 51	12 26	13 01	13 37
30	05 55	06 24	06 51	12 04	12 35	13 05	13 35
35	06 03	06 35	07 03	12 12	12 41	13 07	13 34
40	06 12	06 46	07 16	12 21	12 46	13 10	13 34
45	06 22	06 59	07 32	12 32	12 53	13 13	13 32
S 50	06 33	07 14	07 52	12 45	13 01	13 16	13 31
52	06 38	07 22	08 02	12 50	13 05	13 18	13 31
54	06 44	07 29	08 13	12 57	13 09	13 20	13 30
56	06 49	07 38	08 25	13 04	13 13	13 22	13 29
58	06 56	07 48	08 39	13 12	13 18	13 24	13 29
S 60	07 03	07 59	08 55	13 21	13 24	13 26	13 28

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	6	7	8	9
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	03 43	02 39	02 02	01 31
N 70	▭	▭	▭	02 57	02 19	01 53	01 30
68	▭	▭	▭	02 26	02 03	01 45	01 28
66	23 18	////	////	02 03	01 50	01 38	01 27
64	22 15	////	////	01 45	01 38	01 32	01 26
62	21 41	////	////	01 30	01 29	01 27	01 26
60	21 17	22 50	////	01 17	01 21	01 23	01 25
N 58	20 58	22 09	////	01 06	01 14	01 19	01 24
56	20 42	21 42	////	00 57	01 07	01 16	01 24
54	20 28	21 21	22 56	00 48	01 02	01 13	01 23
52	20 16	21 04	22 18	00 41	00 56	01 10	01 23
50	20 06	20 50	21 53	00 34	00 52	01 07	01 22
45	19 44	20 21	21 10	00 19	00 41	01 02	01 21
N 40	19 27	19 59	20 40	00 07	00 33	00 57	01 20
35	19 12	19 42	20 18	24 26	00 26	00 53	01 20
30	18 59	19 27	20 00	24 19	00 19	00 49	01 19
20	18 38	19 03	19 32	24 08	00 08	00 43	01 18
N 10	18 20	18 43	19 10	23 58	24 37	00 37	01 17
0	18 03	18 25	18 51	23 48	24 32	00 32	01 16
S 10	17 46	18 08	18 35	23 39	24 26	00 26	01 15
20	17 28	17 52	18 19	23 28	24 21	00 21	01 14
30	17 07	17 33	18 03	23 17	24 14	00 14	01 12
35	16 55	17 23	17 55	23 10	24 10	00 10	01 12
40	16 41	17 12	17 46	23 02	24 06	00 06	01 11
45	16 25	16 59	17 36	22 53	24 01	00 01	01 10
S 50	16 05	16 43	17 24	22 42	23 54	25 09	01 09
52	15 56	16 36	17 19	22 36	23 52	25 08	01 08
54	15 45	16 28	17 14	22 31	23 48	25 07	01 07
56	15 33	16 20	17 08	22 24	23 45	25 07	01 07
58	15 19	16 10	17 02	22 17	23 41	25 06	01 06
S 60	15 02	15 59	16 55	22 09	23 37	25 05	01 05

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
6	01 22	01 17	11 59	17 38	05 15	07 39	
7	01 11	01 06	11 59	18 21	06 00	08 49	
8	01 00	00 54	11 59	19 05	06 43	09 59	

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·6		JÚPITER −2·3		SATURNO +0·6	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
9 00	257 20.7	215 49.0	N14 00.5	246 25.1	N 2 45.4	252 20.0	N 0 51.8	289 26.2	S14 10.8
01	272 23.1	230 48.5	01.4	261 25.9	46.1	267 22.1	52.0	304 28.7	10.8
02	287 25.6	245 48.1	02.3	276 26.6	46.8	282 24.3	52.1	319 31.2	10.8
03	302 28.1	260 47.7	03.2	291 27.4	47.5	297 26.4	52.2	334 33.6	10.9
04	317 30.5	275 47.2	04.1	306 28.2	48.2	312 28.5	52.4	349 36.1	10.9
05	332 33.0	290 46.8	05.0	321 29.0	48.9	327 30.7	52.5	4 38.6	10.9
06	347 35.5	305 46.4	N14 05.9	336 29.7	N 2 49.7	342 32.8	N 0 52.6	19 41.1	S14 10.9
07	2 37.9	320 46.0	06.8	351 30.5	50.4	357 34.9	52.8	34 43.6	10.9
08	17 40.4	335 45.5	07.7	6 31.3	51.1	12 37.1	52.9	49 46.0	10.9
J 09	32 42.8	350 45.1	08.6	21 32.0	51.8	27 39.2	53.0	64 48.5	10.9
U 10	47 45.3	5 44.7	09.5	36 32.8	52.5	42 41.4	53.1	79 51.0	10.9
E 11	62 47.8	20 44.2	10.4	51 33.6	53.2	57 43.5	53.3	94 53.5	11.0
V 12	77 50.2	35 43.8	N14 11.4	66 34.4	N 2 53.9	72 45.6	N 0 53.4	109 56.0	S14 11.0
E 13	92 52.7	50 43.4	12.3	81 35.1	54.6	87 47.8	53.5	124 58.4	11.0
S 14	107 55.2	65 43.0	13.2	96 35.9	55.3	102 49.9	53.7	140 00.9	11.0
15	122 57.6	80 42.5	14.1	111 36.7	56.0	117 52.0	53.8	155 03.4	11.0
16	138 00.1	95 42.1	15.0	126 37.4	56.7	132 54.2	53.9	170 05.9	11.0
17	153 02.6	110 41.7	15.9	141 38.2	57.4	147 56.3	54.1	185 08.4	11.0
18	168 05.0	125 41.2	N14 16.8	156 39.0	N 2 58.1	162 58.5	N 0 54.2	200 10.8	S14 11.1
19	183 07.5	140 40.8	17.7	171 39.8	58.9	178 00.6	54.3	215 13.3	11.1
20	198 09.9	155 40.4	18.6	186 40.5	2 59.6	193 02.7	54.4	230 15.8	11.1
21	213 12.4	170 39.9	19.5	201 41.3	3 00.3	208 04.9	54.6	245 18.3	11.1
22	228 14.9	185 39.5	20.4	216 42.1	01.0	223 07.0	54.7	260 20.8	11.1
23	243 17.3	200 39.0	21.3	231 42.8	01.7	238 09.2	54.8	275 23.2	11.1
10 00	258 19.8	215 38.6	N14 22.2	246 43.6	N 3 02.4	253 11.3	N 0 55.0	290 25.7	S14 11.1
01	273 22.3	230 38.2	23.1	261 44.4	03.1	268 13.4	55.1	305 28.2	11.2
02	288 24.7	245 37.7	24.0	276 45.2	03.8	283 15.6	55.2	320 30.7	11.2
03	303 27.2	260 37.3	24.9	291 45.9	04.5	298 17.7	55.3	335 33.2	11.2
04	318 29.7	275 36.9	25.7	306 46.7	05.2	313 19.9	55.5	350 35.7	11.2
05	333 32.1	290 36.4	26.6	321 47.5	05.9	328 22.0	55.6	5 38.1	11.2
06	348 34.6	305 36.0	N14 27.5	336 48.3	N 3 06.6	343 24.1	N 0 55.7	20 40.6	S14 11.2
07	3 37.1	320 35.5	28.4	351 49.0	07.3	358 26.3	55.9	35 43.1	11.2
V 08	18 39.5	335 35.1	29.3	6 49.8	08.0	13 28.4	56.0	50 45.6	11.3
I 09	33 42.0	350 34.7	30.2	21 50.6	08.7	28 30.6	56.1	65 48.1	11.3
E 10	48 44.4	5 34.2	31.1	36 51.3	09.4	43 32.7	56.2	80 50.6	11.3
R 11	63 46.9	20 33.8	32.0	51 52.1	10.1	58 34.8	56.4	95 53.0	11.3
N 12	78 49.4	35 33.3	N14 32.9	66 52.9	N 3 10.8	73 37.0	N 0 56.5	110 55.5	S14 11.3
E 13	93 51.8	50 32.9	33.8	81 53.7	11.6	88 39.1	56.6	125 58.0	11.3
S 14	108 54.3	65 32.5	34.7	96 54.4	12.3	103 41.3	56.8	141 00.5	11.3
15	123 56.8	80 32.0	35.6	111 55.2	13.0	118 43.4	56.9	156 03.0	11.4
16	138 59.2	95 31.6	36.5	126 56.0	13.7	133 45.6	57.0	171 05.5	11.4
17	154 01.7	110 31.1	37.3	141 56.8	14.4	148 47.7	57.1	186 07.9	11.4
18	169 04.2	125 30.7	N14 38.2	156 57.5	N 3 15.1	163 49.8	N 0 57.3	201 10.4	S14 11.4
19	184 06.6	140 30.2	39.1	171 58.3	15.8	178 52.0	57.4	216 12.9	11.4
20	199 09.1	155 29.8	40.0	186 59.1	16.5	193 54.1	57.5	231 15.4	11.4
21	214 11.6	170 29.3	40.9	201 59.9	17.2	208 56.3	57.6	246 17.9	11.5
22	229 14.0	185 28.9	41.8	217 00.6	17.9	223 58.4	57.8	261 20.4	11.5
23	244 16.5	200 28.5	42.7	232 01.4	18.6	239 00.6	57.9	276 22.8	11.5
11 00	259 18.9	215 28.0	N14 43.6	247 02.2	N 3 19.3	254 02.7	N 0 58.0	291 25.3	S14 11.5
01	274 21.4	230 27.6	44.4	262 02.9	20.0	269 04.8	58.2	306 27.8	11.5
02	289 23.9	245 27.1	45.3	277 03.7	20.7	284 07.0	58.3	321 30.3	11.5
03	304 26.3	260 26.7	46.2	292 04.5	21.4	299 09.1	58.4	336 32.8	11.5
04	319 28.8	275 26.2	47.1	307 05.3	22.1	314 11.3	58.5	351 35.3	11.6
05	334 31.3	290 25.8	48.0	322 06.0	22.8	329 13.4	58.7	6 37.8	11.6
06	349 33.7	305 25.3	N14 48.9	337 06.8	N 3 23.5	344 15.6	N 0 58.8	21 40.2	S14 11.6
07	4 36.2	320 24.9	49.7	352 07.6	24.2	359 17.7	58.9	36 42.7	11.6
S 08	19 38.7	335 24.4	50.6	7 08.4	24.9	14 19.9	59.0	51 45.2	11.6
Á 09	34 41.1	350 24.0	51.5	22 09.1	25.6	29 22.0	59.2	66 47.7	11.6
B 10	49 43.6	5 23.5	52.4	37 09.9	26.3	44 24.2	59.3	81 50.2	11.7
A 11	64 46.0	20 23.1	53.3	52 10.7	27.0	59 26.3	59.4	96 52.7	11.7
D 12	79 48.5	35 22.6	N14 54.1	67 11.5	N 3 27.7	74 28.5	N 0 59.5	111 55.2	S14 11.7
O 13	94 51.0	50 22.2	55.0	82 12.2	28.4	89 30.6	59.7	126 57.7	11.7
14	109 53.4	65 21.7	55.9	97 13.0	29.1	104 32.8	59.8	142 00.1	11.7
15	124 55.9	80 21.2	56.8	112 13.8	29.8	119 34.9	0 59.9	157 02.6	11.7
16	139 58.4	95 20.8	57.6	127 14.6	30.6	134 37.0	1 00.0	172 05.1	11.8
17	155 00.8	110 20.3	58.5	142 15.3	31.3	149 39.2	00.2	187 07.6	11.8
18	170 03.3	125 19.9	N14 59.4	157 16.1	N 3 32.0	164 41.3	N 1 00.3	202 10.1	S14 11.8
19	185 05.8	140 19.4	15 00.3	172 16.9	32.7	179 43.5	00.4	217 12.6	11.8
20	200 08.2	155 19.0	01.2	187 17.7	33.4	194 45.6	00.5	232 15.1	11.8
21	215 10.7	170 18.5	02.0	202 18.4	34.1	209 47.8	00.7	247 17.6	11.8
22	230 13.2	185 18.1	02.9	217 19.2	34.8	224 49.9	00.8	262 20.1	11.9
23	245 15.6	200 17.6	03.8	232 20.0	35.5	239 52.1	00.9	277 22.5	11.9
	h m								
Paso Mer.	6 45.6	*v* −0.4	*d* 0.9	*v* 0.8	*d* 0.7	*v* 2.1	*d* 0.1	*v* 2.5	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.8	S40 12.8
Achernar	335 22.2	S57 07.2
Acrux	173 02.2	S63 13.6
Adhara	255 07.9	S29 00.2
Aldebaran	290 42.4	N16 33.2
Alioth	166 14.7	N55 50.6
Alkaid	152 53.4	N49 12.3
Alnair	27 35.5	S46 51.0
Alnilam	275 40.2	S 1 11.3
Alphard	217 50.0	S 8 45.4
Alphecca	126 05.2	N26 38.4
Alpheratz	357 37.1	N29 12.6
Altair	62 01.8	N 8 55.6
Ankaa	353 09.4	S42 10.9
Antares	112 18.1	S26 28.9
Arcturus	145 49.6	N19 04.1
Atria	107 13.7	S69 04.0
Avior	234 16.0	S59 35.0
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.7	N 7 24.6
Canopus	263 53.9	S52 42.5
Capella	280 25.5	N46 01.2
Deneb	49 26.9	N45 21.4
Denebola	182 27.1	N14 26.9
Diphda	348 49.6	S17 51.8
Dubhe	193 43.7	N61 38.2
Elnath	278 05.0	N28 37.5
Eltanin	90 42.6	N51 29.1
Enif	33 40.8	N 9 58.5
Fomalhaut	15 16.9	S29 30.1
Gacrux	171 53.8	S57 14.5
Gienah	175 45.7	S17 40.0
Hadar	148 38.6	S60 29.0
Hamal	327 53.9	N23 33.9
Kaus Aust.	83 35.0	S34 22.4
Kochab	137 18.9	N74 04.0
Markab	13 32.0	N15 19.4
Menkar	314 08.7	N 4 10.5
Menkent	147 59.9	S36 28.9
Miaplacidus	221 39.2	S69 48.7
Mirfak	308 31.8	N49 56.2
Nunki	75 50.1	S26 16.1
Peacock	53 08.7	S56 39.6
Pollux	243 20.3	N27 58.4
Procyon	244 53.4	N 5 10.1
Rasalhague	96 00.2	N12 32.6
Regulus	207 36.8	N11 51.6
Rigel	281 06.3	S 8 10.6
Rigil Kent.	139 42.7	S60 55.8
Sabik	102 04.9	S15 45.1
Schedar	349 33.7	N56 39.3
Shaula	96 12.9	S37 07.2
Sirius	258 28.5	S16 44.9
Spica	158 24.4	S11 16.7
Suhail	222 48.1	S43 31.5
Vega	80 34.3	N38 48.2
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	317 18.8	9 38
Marte	348 23.8	7 33
Júpiter	354 51.5	7 06
Saturno	32 05.9	4 38

UT (HmGr)	SOL AHGr	SOL Dec	LUNA AHGr	LUNA v	LUNA Dec	LUNA d	LUNA Ph
d h	° ′	° ′	° ′	′	° ′	′	′
9 00	180 12.0	N22 54.7	71 29.2	14.1	N 1 41.0	15.0	57.2
01	195 11.9	54.9	86 02.3	14.0	1 26.0	14.9	57.3
02	210 11.8	55.1	100 35.3	14.0	1 11.1	15.0	57.3
03	225 11.7	55.3	115 08.3	13.9	0 56.1	15.0	57.3
04	240 11.6	55.5	129 41.2	14.0	0 41.1	15.0	57.4
05	255 11.4	55.8	144 14.2	13.8	0 26.1	15.0	57.4
06	270 11.3	N22 56.0	158 47.0	13.9	N 0 11.1	15.1	57.4
07	285 11.2	56.2	173 19.9	13.8	S 0 04.0	15.1	57.5
J 08	300 11.1	56.4	187 52.7	13.7	0 19.1	15.1	57.5
U 09	315 10.9	56.6	202 25.4	13.7	0 34.2	15.1	57.6
E 10	330 10.8	56.8	216 58.1	13.7	0 49.3	15.1	57.6
V 11	345 10.7	57.0	231 30.8	13.6	1 04.4	15.2	57.6
E 12	0 10.6	N22 57.2	246 03.4	13.6	S 1 19.6	15.2	57.7
S 13	15 10.5	57.4	260 36.0	13.5	1 34.8	15.2	57.7
14	30 10.3	57.6	275 08.5	13.4	1 50.0	15.2	57.8
15	45 10.2	57.8	289 40.9	13.4	2 05.2	15.2	57.8
16	60 10.1	58.0	304 13.3	13.4	2 20.4	15.2	57.8
17	75 10.0	58.2	318 45.7	13.3	2 35.6	15.2	57.9
18	90 09.8	N22 58.4	333 18.0	13.2	S 2 50.8	15.3	57.9
19	105 09.7	58.6	347 50.2	13.2	3 06.1	15.2	58.0
20	120 09.6	58.8	2 22.4	13.1	3 21.3	15.3	58.0
21	135 09.5	59.0	16 54.5	13.1	3 36.6	15.2	58.0
22	150 09.3	59.2	31 26.6	13.0	3 51.8	15.3	58.1
23	165 09.2	59.4	45 58.6	12.9	4 07.1	15.3	58.1
10 00	180 09.1	N22 59.6	60 30.5	12.9	S 4 22.4	15.2	58.2
01	195 09.0	22 59.8	75 02.4	12.8	4 37.6	15.3	58.2
02	210 08.9	23 00.0	89 34.2	12.8	4 52.9	15.3	58.2
03	225 08.7	00.2	104 06.0	12.6	5 08.2	15.2	58.3
04	240 08.6	00.3	118 37.6	12.6	5 23.4	15.3	58.3
05	255 08.5	00.5	133 09.2	12.6	5 38.7	15.2	58.4
06	270 08.4	N23 00.7	147 40.8	12.4	S 5 53.9	15.3	58.4
07	285 08.2	00.9	162 12.2	12.4	6 09.2	15.2	58.4
V 08	300 08.1	01.1	176 43.6	12.3	6 24.4	15.3	58.5
I 09	315 08.0	01.3	191 14.9	12.2	6 39.7	15.2	58.5
E 10	330 07.9	01.5	205 46.1	12.2	6 54.9	15.2	58.6
R 11	345 07.7	01.7	220 17.3	12.0	7 10.1	15.2	58.6
N 12	0 07.6	N23 01.9	234 48.3	12.0	S 7 25.3	15.2	58.6
E 13	15 07.5	02.0	249 19.3	11.9	7 40.5	15.1	58.7
S 14	30 07.4	02.2	263 50.2	11.9	7 55.6	15.2	58.7
15	45 07.2	02.4	278 21.1	11.7	8 10.8	15.1	58.8
16	60 07.1	02.6	292 51.8	11.6	8 25.9	15.1	58.8
17	75 07.0	02.8	307 22.4	11.6	8 41.0	15.1	58.8
18	90 06.9	N23 03.0	321 53.0	11.5	S 8 56.1	15.0	58.9
19	105 06.7	03.1	336 23.5	11.4	9 11.1	15.1	58.9
20	120 06.6	03.3	350 53.9	11.2	9 26.2	15.0	59.0
21	135 06.5	03.5	5 24.1	11.2	9 41.2	14.9	59.0
22	150 06.4	03.7	19 54.3	11.1	9 56.1	15.0	59.0
23	165 06.2	03.9	34 24.4	11.0	10 11.1	14.9	59.1
11 00	180 06.1	N23 04.0	48 54.4	11.0	S10 26.0	14.9	59.1
01	195 06.0	04.2	63 24.4	10.8	10 40.9	14.8	59.2
02	210 05.9	04.4	77 54.2	10.7	10 55.7	14.8	59.2
03	225 05.7	04.6	92 23.9	10.6	11 10.5	14.8	59.2
04	240 05.6	04.8	106 53.5	10.5	11 25.3	14.7	59.3
05	255 05.5	04.9	121 23.0	10.4	11 40.0	14.7	59.3
06	270 05.3	N23 05.1	135 52.4	10.3	S11 54.7	14.6	59.3
07	285 05.2	05.3	150 21.7	10.2	12 09.3	14.6	59.4
S 08	300 05.1	05.4	164 50.9	10.1	12 23.9	14.5	59.4
Á 09	315 05.0	05.6	179 20.0	9.9	12 38.4	14.5	59.5
B 10	330 04.8	05.8	193 48.9	9.9	12 52.9	14.4	59.5
A 11	345 04.7	06.0	208 17.8	9.8	13 07.3	14.4	59.5
D 12	0 04.6	N23 06.1	222 46.6	9.6	S13 21.7	14.4	59.6
O 13	15 04.5	06.3	237 15.2	9.6	13 36.1	14.2	59.6
14	30 04.3	06.5	251 43.8	9.4	13 50.3	14.2	59.6
15	45 04.2	06.6	266 12.2	9.3	14 04.5	14.2	59.7
16	60 04.1	06.8	280 40.5	9.2	14 18.7	14.1	59.7
17	75 04.0	07.0	295 08.7	9.1	14 32.8	14.0	59.8
18	90 03.8	N23 07.1	309 36.8	8.9	S14 46.8	13.9	59.8
19	105 03.7	07.3	324 04.7	8.8	15 00.7	13.9	59.8
20	120 03.6	07.5	338 32.5	8.8	15 14.6	13.8	59.9
21	135 03.4	07.6	353 00.3	8.6	15 28.4	13.8	59.9
22	150 03.3	07.8	7 27.9	8.4	15 42.2	13.6	59.9
23	165 03.2	07.9	21 55.3	8.4	S15 55.8	13.6	60.0
	S/D 15.8	*d* 0.2	S/D 15.7		16.0		16.2

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 9	Orto Luna 10	Orto Luna 11	Orto Luna 12
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	14 04	16 21	19 11	■
N 70	▭	▭	▭	14 01	16 07	18 34	■
68	▭	▭	▭	13 59	15 56	18 08	21 00
66	////	////	00 28	13 57	15 47	17 48	20 10
64	////	////	01 39	13 55	15 39	17 32	19 39
62	////	////	02 14	13 54	15 33	17 19	19 15
60	////	01 03	02 39	13 53	15 27	17 08	18 57
N 58	////	01 46	02 59	13 52	15 22	16 59	18 42
56	////	02 14	03 15	13 51	15 18	16 51	18 29
54	00 57	02 35	03 29	13 50	15 14	16 43	18 18
52	01 37	02 53	03 41	13 49	15 11	16 37	18 08
50	02 03	03 07	03 51	13 48	15 07	16 31	17 59
45	02 47	03 36	04 13	13 47	15 01	16 18	17 40
N 40	03 17	03 58	04 31	13 46	14 55	16 08	17 25
35	03 40	04 16	04 46	13 45	14 50	15 59	17 13
30	03 58	04 31	04 58	13 44	14 46	15 52	17 02
20	04 26	04 55	05 20	13 42	14 38	15 38	16 43
N 10	04 49	05 16	05 39	13 41	14 32	15 27	16 27
0	05 07	05 33	05 56	13 39	14 26	15 16	16 12
S 10	05 24	05 50	06 13	13 38	14 20	15 06	15 57
20	05 40	06 07	06 31	13 37	14 14	14 55	15 41
30	05 56	06 26	06 52	13 35	14 07	14 42	15 23
35	06 04	06 36	07 04	13 34	14 03	14 35	15 12
40	06 14	06 48	07 18	13 34	13 59	14 27	15 00
45	06 24	07 01	07 34	13 32	13 53	14 17	14 47
S 50	06 35	07 16	07 55	13 31	13 47	14 06	14 30
52	06 40	07 24	08 04	13 31	13 44	14 01	14 22
54	06 46	07 32	08 15	13 30	13 41	13 55	14 13
56	06 52	07 40	08 27	13 29	13 38	13 49	14 03
58	06 58	07 50	08 42	13 29	13 34	13 41	13 52
S 60	07 05	08 02	08 59	13 28	13 30	13 33	13 39

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 9	Ocaso Luna 10	Ocaso Luna 11	Ocaso Luna 12
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	01 31	01 00	{00 23 / 23 20}	■
N 70	▭	▭	▭	01 30	01 07	00 40	00 00
68	▭	▭	▭	01 28	01 12	00 53	{00 23 / 28 33}
66	23 37	////	////	01 27	01 16	01 04	00 49
64	22 21	////	////	01 26	01 20	01 14	01 06
62	21 46	////	////	01 26	01 24	01 22	01 21
60	21 21	22 59	////	01 25	01 26	01 29	01 33
N 58	21 01	22 14	////	01 24	01 29	01 35	01 43
56	20 45	21 46	////	01 24	01 31	01 41	01 52
54	20 31	21 24	23 04	01 23	01 34	01 46	02 01
52	20 19	21 07	22 23	01 23	01 35	01 50	02 08
50	20 08	20 52	21 56	01 22	01 37	01 54	02 15
45	19 46	20 23	21 12	01 21	01 41	02 03	02 29
N 40	19 28	20 01	20 42	01 20	01 44	02 10	02 41
35	19 14	19 43	20 20	01 20	01 47	02 17	02 51
30	19 01	19 28	20 01	01 19	01 50	02 23	03 00
20	18 39	19 04	19 33	01 18	01 54	02 32	03 16
N 10	18 20	18 43	19 10	01 17	01 58	02 41	03 29
0	18 03	18 26	18 52	01 16	02 01	02 49	03 42
S 10	17 46	18 09	18 35	01 15	02 05	02 58	03 55
20	17 28	17 52	18 19	01 14	02 09	03 06	04 09
30	17 07	17 33	18 03	01 12	02 13	03 17	04 24
35	16 55	17 23	17 54	01 12	02 15	03 22	04 34
40	16 41	17 11	17 45	01 11	02 18	03 29	04 44
45	16 24	16 58	17 35	01 10	02 22	03 37	04 57
S 50	16 04	16 42	17 24	01 09	02 26	03 46	05 12
52	15 55	16 35	17 19	01 08	02 27	03 51	05 19
54	15 44	16 27	17 13	01 07	02 29	03 56	05 27
56	15 31	16 18	17 07	01 07	02 32	04 01	05 36
58	15 17	16 08	17 01	01 06	02 34	04 07	05 46
S 60	15 00	15 57	16 53	01 05	02 37	04 14	05 58

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
9	00 48	00 43	11 59	19 50	07 27	10 69	
10	00 37	00 31	11 59	20 38	08 14	11 79	
11	00 25	00 19	12 00	21 29	09 03	12 87	

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·6		JÚPITER −2·3		SATURNO +0·5	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
12 00	260 18.1	215 17.1	N15 04.6	247 20.8	N 3 36.2	254 54.2	N 1 01.0	292 25.0	S14 11.9
01	275 20.5	230 16.7	05.5	262 21.5	36.9	269 56.4	01.2	307 27.5	11.9
02	290 23.0	245 16.2	06.4	277 22.3	37.6	284 58.5	01.3	322 30.0	11.9
03	305 25.5	260 15.8	07.3	292 23.1	38.3	300 00.7	01.4	337 32.5	11.9
04	320 27.9	275 15.3	08.1	307 23.9	39.0	315 02.8	01.5	352 35.0	12.0
05	335 30.4	290 14.8	09.0	322 24.6	39.7	330 05.0	01.7	7 37.5	12.0
06	350 32.9	305 14.4	N15 09.9	337 25.4	N 3 40.4	345 07.1	N 1 01.8	22 40.0	S14 12.0
07	5 35.3	320 13.9	10.7	352 26.2	41.1	0 09.3	01.9	37 42.5	12.0
08	20 37.8	335 13.5	11.6	7 27.0	41.8	15 11.4	02.0	52 45.0	12.0
D 09	35 40.3	350 13.0	12.5	22 27.7	42.5	30 13.6	02.2	67 47.4	12.0
O 10	50 42.7	5 12.5	13.3	37 28.5	43.2	45 15.8	02.3	82 49.9	12.1
M 11	65 45.2	20 12.1	14.2	52 29.3	43.9	60 17.9	02.4	97 52.4	12.1
I 12	80 47.7	35 11.6	N15 15.1	67 30.1	N 3 44.6	75 20.1	N 1 02.5	112 54.9	S14 12.1
N 13	95 50.1	50 11.1	15.9	82 30.8	45.3	90 22.2	02.6	127 57.4	12.1
G 14	110 52.6	65 10.7	16.8	97 31.6	46.0	105 24.4	02.8	142 59.9	12.1
O 15	125 55.0	80 10.2	17.7	112 32.4	46.7	120 26.5	02.9	158 02.4	12.2
16	140 57.5	95 09.7	18.5	127 33.2	47.4	135 28.7	03.0	173 04.9	12.2
17	156 00.0	110 09.3	19.4	142 33.9	48.1	150 30.8	03.1	188 07.4	12.2
18	171 02.4	125 08.8	N15 20.2	157 34.7	N 3 48.8	165 33.0	N 1 03.3	203 09.9	S14 12.2
19	186 04.9	140 08.3	21.1	172 35.5	49.5	180 35.1	03.4	218 12.4	12.2
20	201 07.4	155 07.9	22.0	187 36.3	50.2	195 37.3	03.5	233 14.9	12.2
21	216 09.8	170 07.4	22.8	202 37.0	50.9	210 39.4	03.6	248 17.3	12.3
22	231 12.3	185 06.9	23.7	217 37.8	51.6	225 41.6	03.8	263 19.8	12.3
23	246 14.8	200 06.5	24.5	232 38.6	52.3	240 43.7	03.9	278 22.3	12.3
13 00	261 17.2	215 06.0	N15 25.4	247 39.4	N 3 53.0	255 45.9	N 1 04.0	293 24.8	S14 12.3
01	276 19.7	230 05.5	26.3	262 40.1	53.7	270 48.1	04.1	308 27.3	12.3
02	291 22.2	245 05.1	27.1	277 40.9	54.4	285 50.2	04.2	323 29.8	12.4
03	306 24.6	260 04.6	28.0	292 41.7	55.1	300 52.4	04.4	338 32.3	12.4
04	321 27.1	275 04.1	28.8	307 42.5	55.8	315 54.5	04.5	353 34.8	12.4
05	336 29.5	290 03.7	29.7	322 43.2	56.5	330 56.7	04.6	8 37.3	12.4
06	351 32.0	305 03.2	N15 30.5	337 44.0	N 3 57.2	345 58.8	N 1 04.7	23 39.8	S14 12.4
07	6 34.5	320 02.7	31.4	352 44.8	57.9	1 01.0	04.8	38 42.3	12.4
L 08	21 36.9	335 02.2	32.3	7 45.6	58.6	16 03.1	05.0	53 44.8	12.5
U 09	36 39.4	350 01.8	33.1	22 46.3	3 59.3	31 05.3	05.1	68 47.3	12.5
N 10	51 41.9	5 01.3	34.0	37 47.1	4 00.0	46 07.5	05.2	83 49.8	12.5
E 11	66 44.3	20 00.8	34.8	52 47.9	00.7	61 09.6	05.3	98 52.3	12.5
S 12	81 46.8	35 00.3	N15 35.7	67 48.7	N 4 01.4	76 11.8	N 1 05.5	113 54.8	S14 12.5
13	96 49.3	49 59.9	36.5	82 49.4	02.1	91 13.9	05.6	128 57.2	12.6
14	111 51.7	64 59.4	37.4	97 50.2	02.8	106 16.1	05.7	143 59.7	12.6
15	126 54.2	79 58.9	38.2	112 51.0	03.4	121 18.3	05.8	159 02.2	12.6
16	141 56.7	94 58.4	39.1	127 51.8	04.1	136 20.4	05.9	174 04.7	12.6
17	156 59.1	109 58.0	39.9	142 52.6	04.8	151 22.6	06.1	189 07.2	12.6
18	172 01.6	124 57.5	N15 40.8	157 53.3	N 4 05.5	166 24.7	N 1 06.2	204 09.7	S14 12.7
19	187 04.0	139 57.0	41.6	172 54.1	06.2	181 26.9	06.3	219 12.2	12.7
20	202 06.5	154 56.5	42.5	187 54.9	06.9	196 29.0	06.4	234 14.7	12.7
21	217 09.0	169 56.0	43.3	202 55.7	07.6	211 31.2	06.5	249 17.2	12.7
22	232 11.4	184 55.6	44.1	217 56.4	08.3	226 33.4	06.7	264 19.7	12.7
23	247 13.9	199 55.1	45.0	232 57.2	09.0	241 35.5	06.8	279 22.2	12.7
14 00	262 16.4	214 54.6	N15 45.8	247 58.0	N 4 09.7	256 37.7	N 1 06.9	294 24.7	S14 12.8
01	277 18.8	229 54.1	46.7	262 58.8	10.4	271 39.8	07.0	309 27.2	12.8
02	292 21.3	244 53.6	47.5	277 59.5	11.1	286 42.0	07.1	324 29.7	12.8
03	307 23.8	259 53.2	48.4	293 00.3	11.8	301 44.2	07.3	339 32.2	12.8
04	322 26.2	274 52.7	49.2	308 01.1	12.5	316 46.3	07.4	354 34.7	12.8
05	337 28.7	289 52.2	50.1	323 01.9	13.2	331 48.5	07.5	9 37.2	12.9
06	352 31.2	304 51.7	N15 50.9	338 02.7	N 4 13.9	346 50.7	N 1 07.6	24 39.7	S14 12.9
07	7 33.6	319 51.2	51.7	353 03.4	14.6	1 52.8	07.7	39 42.2	12.9
M 08	22 36.1	334 50.7	52.6	8 04.2	15.3	16 55.0	07.9	54 44.7	12.9
A 09	37 38.5	349 50.3	53.4	23 05.0	16.0	31 57.1	08.0	69 47.2	12.9
R 10	52 41.0	4 49.8	54.3	38 05.8	16.7	46 59.3	08.1	84 49.7	13.0
T 11	67 43.5	19 49.3	55.1	53 06.5	17.4	62 01.5	08.2	99 52.2	13.0
E 12	82 45.9	34 48.8	N15 55.9	68 07.3	N 4 18.1	77 03.6	N 1 08.3	114 54.7	S14 13.0
S 13	97 48.4	49 48.3	56.8	83 08.1	18.8	92 05.8	08.4	129 57.2	13.0
14	112 50.9	64 47.8	57.6	98 08.9	19.5	107 08.0	08.6	144 59.7	13.0
15	127 53.3	79 47.3	58.4	113 09.6	20.2	122 10.1	08.7	160 02.2	13.1
16	142 55.8	94 46.8	15 59.3	128 10.4	20.9	137 12.3	08.8	175 04.7	13.1
17	157 58.3	109 46.4	16 00.1	143 11.2	21.5	152 14.4	08.9	190 07.2	13.1
18	173 00.7	124 45.9	N16 00.9	158 12.0	N 4 22.2	167 16.6	N 1 09.0	205 09.7	S14 13.1
19	188 03.2	139 45.4	01.8	173 12.8	22.9	182 18.8	09.2	220 12.2	13.2
20	203 05.6	154 44.9	02.6	188 13.5	23.6	197 20.9	09.3	235 14.7	13.2
21	218 08.1	169 44.4	03.4	203 14.3	24.3	212 23.1	09.4	250 17.2	13.2
22	233 10.6	184 43.9	04.3	218 15.1	25.0	227 25.3	09.5	265 19.7	13.2
23	248 13.0	199 43.4	05.1	233 15.9	25.7	242 27.4	09.6	280 22.2	13.2
	h m								
Paso Mer.	6 33.8	*v* −0.5	*d* 0.9	*v* 0.8	*d* 0.7	*v* 2.2	*d* 0.1	*v* 2.5	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.8	S40 12.8
Achernar	335 22.2	S57 07.2
Acrux	173 02.2	S63 13.6
Adhara	255 07.9	S29 00.2
Aldebaran	290 42.4	N16 33.2
Alioth	166 14.7	N55 50.6
Alkaid	152 53.4	N49 12.3
Alnair	27 35.4	S46 51.0
Alnilam	275 40.2	S 1 11.3
Alphard	217 50.0	S 8 45.4
Alphecca	126 05.2	N26 38.5
Alpheratz	357 37.0	N29 12.6
Altair	62 01.8	N 8 55.6
Ankaa	353 09.4	S42 10.9
Antares	112 18.1	S26 28.9
Arcturus	145 49.6	N19 04.1
Atria	107 13.7	S69 04.1
Avior	234 16.1	S59 35.0
Bellatrix	278 25.5	N 6 22.1
Betelgeuse	270 54.7	N 7 24.6
Canopus	263 53.9	S52 42.5
Capella	280 25.5	N46 01.1
Deneb	49 26.9	N45 21.4
Denebola	182 27.1	N14 27.0
Diphda	348 49.6	S17 51.8
Dubhe	193 43.8	N61 38.2
Elnath	278 05.0	N28 37.5
Eltanin	90 42.6	N51 29.1
Enif	33 40.7	N 9 58.5
Fomalhaut	15 16.8	S29 30.1
Gacrux	171 53.8	S57 14.5
Gienah	175 45.7	S17 40.0
Hadar	148 38.6	S60 29.0
Hamal	327 53.8	N23 33.9
Kaus Aust.	83 35.0	S34 22.4
Kochab	137 18.9	N74 04.0
Markab	13 32.0	N15 19.4
Menkar	314 08.7	N 4 10.6
Menkent	147 59.9	S36 28.9
Miaplacidus	221 39.2	S69 48.7
Mirfak	308 31.7	N49 56.2
Nunki	75 50.1	S26 16.1
Peacock	53 08.7	S56 39.6
Pollux	243 20.3	N27 58.4
Procyon	244 53.4	N 5 10.1
Rasalhague	96 00.2	N12 32.6
Regulus	207 36.8	N11 51.6
Rigel	281 06.3	S 8 10.6
Rigil Kent.	139 42.7	S60 55.8
Sabik	102 04.9	S15 45.1
Schedar	349 33.6	N56 39.3
Shaula	96 12.8	S37 07.2
Sirius	258 28.5	S16 44.8
Spica	158 24.4	S11 16.7
Suhail	222 48.1	S43 31.5
Vega	80 34.2	N38 48.2
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	313 48.8	9 40
Marte	346 22.1	7 29
Júpiter	354 28.7	6 56
Saturno	32 07.6	4 26

UT (HmGr)	SOL AHGr	SOL Dec	LUNA AHGr	LUNA v	LUNA Dec	LUNA d	LUNA Ph
d h	° ′	° ′	° ′	′	° ′	′	′
12 00	180 03.1	N23 08.1	36 22.7	8.2	S16 09.4	13.5	60.0
01	195 02.9	08.3	50 49.9	8.1	16 22.9	13.4	60.0
02	210 02.8	08.4	65 17.0	8.0	16 36.3	13.4	60.1
03	225 02.7	08.6	79 44.0	7.9	16 49.7	13.2	60.1
04	240 02.5	08.7	94 10.9	7.7	17 02.9	13.2	60.1
05	255 02.4	08.9	108 37.6	7.6	17 16.1	13.1	60.2
06	270 02.3	N23 09.1	123 04.2	7.5	S17 29.2	12.9	60.2
07	285 02.2	09.2	137 30.7	7.4	17 42.1	12.9	60.2
08	300 02.0	09.4	151 57.1	7.2	17 55.0	12.8	60.3
09	315 01.9	09.5	166 23.3	7.1	18 07.8	12.7	60.3
10	330 01.8	09.7	180 49.4	7.0	18 20.5	12.6	60.3
11	345 01.7	09.8	195 15.4	6.8	18 33.1	12.4	60.4
12	0 01.5	N23 10.0	209 41.2	6.7	S18 45.5	12.4	60.4
13	15 01.4	10.1	224 06.9	6.6	18 57.9	12.3	60.4
14	30 01.3	10.3	238 32.5	6.5	19 10.2	12.1	60.4
15	45 01.1	10.4	252 58.0	6.3	19 22.3	12.1	60.5
16	60 01.0	10.6	267 23.3	6.2	19 34.4	11.9	60.5
17	75 00.9	10.7	281 48.5	6.1	19 46.3	11.8	60.5
18	90 00.8	N23 10.9	296 13.6	5.9	S19 58.1	11.7	60.6
19	105 00.6	11.0	310 38.5	5.8	20 09.8	11.6	60.6
20	120 00.5	11.2	325 03.3	5.7	20 21.4	11.4	60.6
21	135 00.4	11.3	339 28.0	5.6	20 32.8	11.3	60.6
22	150 00.2	11.5	353 52.6	5.4	20 44.1	11.2	60.7
23	165 00.1	11.6	8 17.0	5.3	20 55.3	11.1	60.7
13 00	180 00.0	N23 11.8	22 41.3	5.2	S21 06.4	10.9	60.7
01	194 59.8	11.9	37 05.5	5.0	21 17.3	10.8	60.7
02	209 59.7	12.0	51 29.5	4.9	21 28.1	10.6	60.8
03	224 59.6	12.2	65 53.4	4.8	21 38.7	10.5	60.8
04	239 59.5	12.3	80 17.2	4.7	21 49.2	10.4	60.8
05	254 59.3	12.5	94 40.9	4.5	21 59.6	10.2	60.8
06	269 59.2	N23 12.6	109 04.4	4.4	S22 09.8	10.1	60.9
07	284 59.1	12.8	123 27.8	4.3	22 19.9	9.9	60.9
08	299 58.9	12.9	137 51.1	4.2	22 29.8	9.8	60.9
09	314 58.8	13.0	152 14.3	4.0	22 39.6	9.6	60.9
10	329 58.7	13.2	166 37.3	3.9	22 49.2	9.5	61.0
11	344 58.5	13.3	181 00.2	3.8	22 58.7	9.3	61.0
12	359 58.4	N23 13.4	195 23.0	3.7	S23 08.0	9.1	61.0
13	14 58.3	13.6	209 45.7	3.6	23 17.1	9.0	61.0
14	29 58.2	13.7	224 08.3	3.4	23 26.1	8.8	61.0
15	44 58.0	13.8	238 30.7	3.4	23 34.9	8.7	61.0
16	59 57.9	14.0	252 53.1	3.2	23 43.6	8.5	61.1
17	74 57.8	14.1	267 15.3	3.1	23 52.1	8.3	61.1
18	89 57.6	N23 14.2	281 37.4	3.0	S24 00.4	8.1	61.1
19	104 57.5	14.4	295 59.4	2.9	24 08.5	8.0	61.1
20	119 57.4	14.5	310 21.3	2.8	24 16.5	7.8	61.1
21	134 57.2	14.6	324 43.1	2.7	24 24.3	7.6	61.1
22	149 57.1	14.8	339 04.8	2.6	24 31.9	7.5	61.2
23	164 57.0	14.9	353 26.4	2.5	24 39.4	7.2	61.2
14 00	179 56.9	N23 15.0	7 47.9	2.4	S24 46.6	7.1	61.2
01	194 56.7	15.1	22 09.3	2.3	24 53.7	6.9	61.2
02	209 56.6	15.3	36 30.6	2.2	25 00.6	6.7	61.2
03	224 56.5	15.4	50 51.8	2.1	25 07.3	6.5	61.2
04	239 56.3	15.5	65 12.9	2.0	25 13.8	6.3	61.2
05	254 56.2	15.6	79 33.9	2.0	25 20.1	6.2	61.2
06	269 56.1	N23 15.8	93 54.9	1.8	S25 26.3	5.9	61.3
07	284 55.9	15.9	108 15.7	1.8	25 32.2	5.7	61.3
08	299 55.8	16.0	122 36.5	1.7	25 37.9	5.6	61.3
09	314 55.7	16.1	136 57.2	1.6	25 43.5	5.3	61.3
10	329 55.5	16.2	151 17.8	1.6	25 48.8	5.2	61.3
11	344 55.4	16.4	165 38.4	1.5	25 54.0	4.9	61.3
12	359 55.3	N23 16.5	179 58.9	1.4	S25 58.9	4.8	61.3
13	14 55.1	16.6	194 19.3	1.3	26 03.7	4.5	61.3
14	29 55.0	16.7	208 39.6	1.3	26 08.2	4.4	61.3
15	44 54.9	16.8	222 59.9	1.2	26 12.6	4.1	61.3
16	59 54.7	16.9	237 20.1	1.2	26 16.7	4.0	61.3
17	74 54.6	17.1	251 40.3	1.1	26 20.7	3.7	61.3
18	89 54.5	N23 17.2	266 00.4	1.1	S26 24.4	3.5	61.3
19	104 54.4	17.3	280 20.5	1.1	26 27.9	3.3	61.3
20	119 54.2	17.4	294 40.6	0.9	26 31.2	3.1	61.3
21	134 54.1	17.5	309 00.5	1.0	26 34.3	2.9	61.3
22	149 54.0	17.6	323 20.5	0.9	26 37.2	2.7	61.3
23	164 53.8	17.7	337 40.4	0.9	S26 39.9	2.4	61.3
	S/D 15.8	d 0.1	S/D 16.5		16.6		16.7

DOMINGO LUNES MARTES

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 12	Orto Luna 13	Orto Luna 14	Orto Luna 15
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	■	■	■	■
N 70	▭	▭	▭	■	■	■	■
68	▭	▭	▭	21 00	■	■	■
66	▭	▭	▭	20 10	■	■	■
64	////	////	01 35	19 39	22 07	■	■
62	////	////	02 12	19 15	21 20	23 19	24 24
60	////	00 57	02 37	18 57	20 50	22 33	23 40
N 58	////	01 43	02 57	18 42	20 27	22 03	23 10
56	////	02 12	03 14	18 29	20 09	21 40	22 48
54	00 52	02 34	03 28	18 18	19 53	21 21	22 29
52	01 35	02 51	03 40	18 08	19 40	21 05	22 13
50	02 02	03 06	03 51	17 59	19 28	20 51	22 00
45	02 46	03 36	04 13	17 40	19 04	20 23	21 32
N 40	03 16	03 58	04 31	17 25	18 45	20 01	21 10
35	03 39	04 16	04 45	17 13	18 29	19 43	20 52
30	03 58	04 31	04 58	17 02	18 15	19 28	20 36
20	04 27	04 56	05 20	16 43	17 51	19 01	20 09
N 10	04 49	05 16	05 39	16 27	17 31	18 39	19 46
0	05 08	05 34	05 56	16 12	17 12	18 18	19 25
S 10	05 25	05 51	06 14	15 57	16 54	17 57	19 03
20	05 41	06 08	06 32	15 41	16 34	17 34	18 40
30	05 57	06 27	06 53	15 23	16 11	17 08	18 14
35	06 06	06 37	07 05	15 12	15 58	16 53	17 58
40	06 15	06 49	07 19	15 00	15 42	16 35	17 40
45	06 25	07 02	07 36	14 47	15 24	16 14	17 18
S 50	06 37	07 18	07 57	14 30	15 02	15 48	16 50
52	06 42	07 25	08 06	14 22	14 51	15 35	16 36
54	06 47	07 34	08 17	14 13	14 39	15 20	16 21
56	06 54	07 43	08 30	14 03	14 26	15 03	16 02
58	07 00	07 53	08 44	13 52	14 10	14 42	15 40
S 60	07 08	08 04	09 01	13 39	13 51	14 16	15 10

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 12	Ocaso Luna 13	Ocaso Luna 14	Ocaso Luna 15
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	■	■	■	■
N 70	▭	▭	▭	00 00	■	■	■
68	▭	▭	▭	{00 28 / 23 33}	■	■	■
66	▭	▭	▭	00 49	00 25	■	■
64	22 26	////	////	01 06	00 57	00 38	■
62	21 49	////	////	01 21	01 21	01 25	01 45
60	21 24	23 05	////	01 33	01 40	01 56	02 31
N 58	21 03	22 18	////	01 43	01 56	02 19	03 02
56	20 47	21 49	////	01 52	02 10	02 38	03 25
54	20 33	21 27	23 10	02 01	02 22	02 54	03 44
52	20 21	21 09	22 26	02 08	02 32	03 08	04 00
50	20 10	20 54	21 59	02 15	02 42	03 20	04 13
45	19 48	20 25	21 14	02 29	03 02	03 45	04 42
N 40	19 30	20 03	20 44	02 41	03 18	04 05	05 04
35	19 15	19 44	20 21	02 51	03 32	04 22	05 22
30	19 02	19 29	20 03	03 00	03 44	04 36	05 38
20	18 40	19 05	19 34	03 16	04 05	05 01	06 05
N 10	18 21	18 44	19 11	03 29	04 23	05 23	06 28
0	18 04	18 26	18 52	03 42	04 40	05 43	06 50
S 10	17 46	18 09	18 36	03 55	04 57	06 03	07 11
20	17 28	17 52	18 20	04 09	05 15	06 25	07 34
30	17 07	17 33	18 03	04 24	05 36	06 50	08 01
35	16 55	17 23	17 55	04 34	05 49	07 04	08 16
40	16 41	17 11	17 45	04 44	06 03	07 21	08 35
45	16 24	16 58	17 35	04 57	06 20	07 42	08 57
S 50	16 04	16 42	17 23	05 12	06 41	08 08	09 25
52	15 54	16 35	17 18	05 19	06 51	08 21	09 38
54	15 43	16 26	17 13	05 27	07 03	08 35	09 54
56	15 30	16 17	17 07	05 36	07 16	08 52	10 13
58	15 16	16 07	17 00	05 46	07 31	09 12	10 35
S 60	14 59	15 56	16 52	05 58	07 49	09 38	11 05

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
12	00 12	00 06	12 00	22 26	09 57	13 94	
13	00 00	00 06	12 00	23 27	10 56	14 98	
14	00 12	00 19	12 00	24 33	12 00	15 100	○

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·5		JÚPITER −2·3		SATURNO +0·5	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
15 00	263 15.5	214 42.9	N16 05.9	248 16.6	N 4 26.4	257 29.6	N 1 09.7	295 24.7	S14 13.3
01	278 18.0	229 42.4	06.8	263 17.4	27.1	272 31.8	09.9	310 27.2	13.3
02	293 20.4	244 41.9	07.6	278 18.2	27.8	287 33.9	10.0	325 29.7	13.3
03	308 22.9	259 41.4	08.4	293 19.0	28.5	302 36.1	10.1	340 32.2	13.3
04	323 25.4	274 40.9	09.2	308 19.8	29.2	317 38.3	10.2	355 34.7	13.3
05	338 27.8	289 40.5	10.1	323 20.5	29.9	332 40.4	10.3	10 37.2	13.4
06	353 30.3	304 40.0	N16 10.9	338 21.3	N 4 30.6	347 42.6	N 1 10.4	25 39.7	S14 13.4
07	8 32.8	319 39.5	11.7	353 22.1	31.3	2 44.8	10.6	40 42.2	13.4
08	23 35.2	334 39.0	12.5	8 22.9	32.0	17 46.9	10.7	55 44.7	13.4
M 09	38 37.7	349 38.5	13.4	23 23.6	32.6	32 49.1	10.8	70 47.2	13.4
I 10	53 40.1	4 38.0	14.2	38 24.4	33.3	47 51.3	10.9	85 49.7	13.5
É 11	68 42.6	19 37.5	15.0	53 25.2	34.0	62 53.4	11.0	100 52.2	13.5
R 12	83 45.1	34 37.0	N16 15.8	68 26.0	N 4 34.7	77 55.6	N 1 11.1	115 54.7	S14 13.5
C 13	98 47.5	49 36.5	16.7	83 26.8	35.4	92 57.8	11.3	130 57.2	13.5
O 14	113 50.0	64 36.0	17.5	98 27.5	36.1	107 59.9	11.4	145 59.7	13.6
L 15	128 52.5	79 35.5	18.3	113 28.3	36.8	123 02.1	11.5	161 02.2	13.6
E 16	143 54.9	94 35.0	19.1	128 29.1	37.5	138 04.3	11.6	176 04.7	13.6
S 17	158 57.4	109 34.5	19.9	143 29.9	38.2	153 06.5	11.7	191 07.2	13.6
18	173 59.9	124 34.0	N16 20.8	158 30.6	N 4 38.9	168 08.6	N 1 11.8	206 09.7	S14 13.6
19	189 02.3	139 33.5	21.6	173 31.4	39.6	183 10.8	11.9	221 12.2	13.7
20	204 04.8	154 33.0	22.4	188 32.2	40.3	198 13.0	12.1	236 14.7	13.7
21	219 07.3	169 32.5	23.2	203 33.0	41.0	213 15.1	12.2	251 17.2	13.7
22	234 09.7	184 32.0	24.0	218 33.8	41.6	228 17.3	12.3	266 19.7	13.7
23	249 12.2	199 31.5	24.8	233 34.5	42.3	243 19.5	12.4	281 22.2	13.7
16 00	264 14.6	214 31.0	N16 25.7	248 35.3	N 4 43.0	258 21.6	N 1 12.5	296 24.8	S14 13.8
01	279 17.1	229 30.5	26.5	263 36.1	43.7	273 23.8	12.6	311 27.3	13.8
02	294 19.6	244 30.0	27.3	278 36.9	44.4	288 26.0	12.8	326 29.8	13.8
03	309 22.0	259 29.4	28.1	293 37.7	45.1	303 28.2	12.9	341 32.3	13.8
04	324 24.5	274 28.9	28.9	308 38.4	45.8	318 30.3	13.0	356 34.8	13.9
05	339 27.0	289 28.4	29.7	323 39.2	46.5	333 32.5	13.1	11 37.3	13.9
06	354 29.4	304 27.9	N16 30.5	338 40.0	N 4 47.2	348 34.7	N 1 13.2	26 39.8	S14 13.9
07	9 31.9	319 27.4	31.3	353 40.8	47.9	3 36.9	13.3	41 42.3	13.9
J 08	24 34.4	334 26.9	32.2	8 41.6	48.5	18 39.0	13.4	56 44.8	14.0
U 09	39 36.8	349 26.4	33.0	23 42.3	49.2	33 41.2	13.6	71 47.3	14.0
E 10	54 39.3	4 25.9	33.8	38 43.1	49.9	48 43.4	13.7	86 49.8	14.0
V 11	69 41.8	19 25.4	34.6	53 43.9	50.6	63 45.5	13.8	101 52.3	14.0
E 12	84 44.2	34 24.9	N16 35.4	68 44.7	N 4 51.3	78 47.7	N 1 13.9	116 54.8	S14 14.0
S 13	99 46.7	49 24.4	36.2	83 45.4	52.0	93 49.9	14.0	131 57.3	14.1
14	114 49.1	64 23.9	37.0	98 46.2	52.7	108 52.1	14.1	146 59.8	14.1
15	129 51.6	79 23.3	37.8	113 47.0	53.4	123 54.2	14.2	162 02.3	14.1
16	144 54.1	94 22.8	38.6	128 47.8	54.1	138 56.4	14.3	177 04.9	14.1
17	159 56.5	109 22.3	39.4	143 48.6	54.8	153 58.6	14.5	192 07.4	14.2
18	174 59.0	124 21.8	N16 40.2	158 49.3	N 4 55.4	169 00.8	N 1 14.6	207 09.9	S14 14.2
19	190 01.5	139 21.3	41.0	173 50.1	56.1	184 02.9	14.7	222 12.4	14.2
20	205 03.9	154 20.8	41.8	188 50.9	56.8	199 05.1	14.8	237 14.9	14.2
21	220 06.4	169 20.3	42.6	203 51.7	57.5	214 07.3	14.9	252 17.4	14.3
22	235 08.9	184 19.8	43.4	218 52.5	58.2	229 09.5	15.0	267 19.9	14.3
23	250 11.3	199 19.2	44.2	233 53.2	58.9	244 11.6	15.1	282 22.4	14.3
17 00	265 13.8	214 18.7	N16 45.0	248 54.0	N 4 59.6	259 13.8	N 1 15.2	297 24.9	S14 14.3
01	280 16.3	229 18.2	45.8	263 54.8	5 00.3	274 16.0	15.4	312 27.4	14.3
02	295 18.7	244 17.7	46.6	278 55.6	01.0	289 18.2	15.5	327 29.9	14.4
03	310 21.2	259 17.2	47.4	293 56.4	01.6	304 20.4	15.6	342 32.4	14.4
04	325 23.6	274 16.7	48.2	308 57.1	02.3	319 22.5	15.7	357 35.0	14.4
05	340 26.1	289 16.1	49.0	323 57.9	03.0	334 24.7	15.8	12 37.5	14.4
06	355 28.6	304 15.6	N16 49.8	338 58.7	N 5 03.7	349 26.9	N 1 15.9	27 40.0	S14 14.5
07	10 31.0	319 15.1	50.6	353 59.5	04.4	4 29.1	16.0	42 42.5	14.5
V 08	25 33.5	334 14.6	51.4	9 00.3	05.1	19 31.2	16.1	57 45.0	14.5
I 09	40 36.0	349 14.1	52.2	24 01.0	05.8	34 33.4	16.3	72 47.5	14.5
E 10	55 38.4	4 13.5	53.0	39 01.8	06.5	49 35.6	16.4	87 50.0	14.6
R 11	70 40.9	19 13.0	53.8	54 02.6	07.1	64 37.8	16.5	102 52.5	14.6
N 12	85 43.4	34 12.5	N16 54.6	69 03.4	N 5 07.8	79 40.0	N 1 16.6	117 55.0	S14 14.6
E 13	100 45.8	49 12.0	55.4	84 04.2	08.5	94 42.1	16.7	132 57.5	14.6
S 14	115 48.3	64 11.5	56.1	99 04.9	09.2	109 44.3	16.8	148 00.1	14.7
15	130 50.8	79 10.9	56.9	114 05.7	09.9	124 46.5	16.9	163 02.6	14.7
16	145 53.2	94 10.4	57.7	129 06.5	10.6	139 48.7	17.0	178 05.1	14.7
17	160 55.7	109 09.9	58.5	144 07.3	11.3	154 50.9	17.1	193 07.6	14.7
18	175 58.1	124 09.4	N16 59.3	159 08.1	N 5 11.9	169 53.0	N 1 17.3	208 10.1	S14 14.8
19	191 00.6	139 08.8	17 00.1	174 08.8	12.6	184 55.2	17.4	223 12.6	14.8
20	206 03.1	154 08.3	00.9	189 09.6	13.3	199 57.4	17.5	238 15.1	14.8
21	221 05.5	169 07.8	01.7	204 10.4	14.0	214 59.6	17.6	253 17.6	14.8
22	236 08.0	184 07.3	02.4	219 11.2	14.7	230 01.8	17.7	268 20.1	14.9
23	251 10.5	199 06.7	03.2	234 12.0	15.4	245 03.9	17.8	283 22.7	14.9
	h m								
Paso Mer.	6 22.0	*v* −0.5	*d* 0.8	*v* 0.8	*d* 0.7	*v* 2.2	*d* 0.1	*v* 2.5	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.7	S40 12.8
Achernar	335 22.1	S57 07.2
Acrux	173 02.2	S63 13.6
Adhara	255 07.9	S29 00.2
Aldebaran	290 42.4	N16 33.2
Alioth	166 14.7	N55 50.6
Alkaid	152 53.4	N49 12.4
Alnair	27 35.4	S46 51.0
Alnilam	275 40.2	S 1 11.3
Alphard	217 50.0	S 8 45.3
Alphecca	126 05.2	N26 38.5
Alpheratz	357 37.0	N29 12.6
Altair	62 01.7	N 8 55.6
Ankaa	353 09.4	S42 10.9
Antares	112 18.1	S26 28.9
Arcturus	145 49.6	N19 04.1
Atria	107 13.6	S69 04.1
Avior	234 16.1	S59 35.0
Bellatrix	278 25.5	N 6 22.2
Betelgeuse	270 54.7	N 7 24.6
Canopus	263 53.9	S52 42.5
Capella	280 25.5	N46 01.1
Deneb	49 26.9	N45 21.4
Denebola	182 27.1	N14 27.0
Diphda	348 49.5	S17 51.8
Dubhe	193 43.8	N61 38.2
Elnath	278 04.9	N28 37.5
Eltanin	90 42.6	N51 29.1
Enif	33 40.7	N 9 58.6
Fomalhaut	15 16.8	S29 30.1
Gacrux	171 53.8	S57 14.5
Gienah	175 45.7	S17 40.0
Hadar	148 38.6	S60 29.0
Hamal	327 53.8	N23 33.9
Kaus Aust.	83 34.9	S34 22.4
Kochab	137 18.9	N74 04.0
Markab	13 31.9	N15 19.4
Menkar	314 08.6	N 4 10.6
Menkent	147 59.9	S36 28.9
Miaplacidus	221 39.2	S69 48.7
Mirfak	308 31.7	N49 56.2
Nunki	75 50.0	S26 16.1
Peacock	53 08.6	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.4	N 5 10.1
Rasalhague	96 00.2	N12 32.6
Regulus	207 36.8	N11 51.6
Rigel	281 06.2	S 8 10.6
Rigil Kent.	139 42.7	S60 55.8
Sabik	102 04.9	S15 45.1
Schedar	349 33.6	N56 39.3
Shaula	96 12.8	S37 07.2
Sirius	258 28.4	S16 44.8
Spica	158 24.4	S11 16.7
Suhail	222 48.1	S43 31.5
Vega	80 34.2	N38 48.2
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	310 16.3	9 42
Marte	344 20.7	7 25
Júpiter	354 07.0	6 46
Saturno	32 10.1	4 14

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	′	°	′	′	′
15 00	179	53.7	N23	17.8	352	00.3	0.9	S26	42.3	2.3	61.3
01	194	53.6		18.0	6	20.2	0.8	26	44.6	2.0	61.3
02	209	53.4		18.1	20	40.0	0.8	26	46.6	1.9	61.3
03	224	53.3	. .	18.2	34	59.8	0.8	26	48.5	1.6	61.3
04	239	53.2		18.3	49	19.6	0.8	26	50.1	1.4	61.3
05	254	53.0		18.4	63	39.4	0.7	26	51.5	1.2	61.3
06	269	52.9	N23	18.5	77	59.1	0.8	S26	52.7	0.9	61.3
07	284	52.8		18.6	92	18.9	0.7	26	53.6	0.8	61.3
M 08	299	52.6		18.7	106	38.6	0.8	26	54.4	0.5	61.3
I 09	314	52.5	. .	18.8	120	58.4	0.8	26	54.9	0.4	61.3
É 10	329	52.4		18.9	135	18.2	0.7	26	55.3	0.1	61.3
É 11	344	52.2		19.0	149	37.9	0.8	26	55.4	0.1	61.3
R 12	359	52.1	N23	19.1	163	57.7	0.8	S26	55.3	0.3	61.3
C 13	14	52.0		19.2	178	17.5	0.8	26	55.0	0.5	61.3
O 14	29	51.8		19.3	192	37.3	0.8	26	54.5	0.8	61.3
L 15	44	51.7	. .	19.4	206	57.1	0.9	26	53.7	0.9	61.3
E 16	59	51.6		19.5	221	17.0	0.9	26	52.8	1.2	61.3
S 17	74	51.4		19.6	235	36.9	0.9	26	51.6	1.4	61.3
18	89	51.3	N23	19.7	249	56.8	0.9	S26	50.2	1.6	61.2
19	104	51.2		19.8	264	16.7	1.0	26	48.6	1.8	61.2
20	119	51.0		19.9	278	36.7	1.0	26	46.8	2.0	61.2
21	134	50.9	. .	20.0	292	56.7	1.1	26	44.8	2.2	61.2
22	149	50.8		20.1	307	16.8	1.1	26	42.6	2.4	61.2
23	164	50.6		20.2	321	36.9	1.2	26	40.2	2.7	61.2
16 00	179	50.5	N23	20.3	335	57.1	1.2	S26	37.5	2.8	61.2
01	194	50.4		20.4	350	17.3	1.3	26	34.7	3.1	61.2
02	209	50.2		20.5	4	37.6	1.4	26	31.6	3.2	61.1
03	224	50.1	. .	20.5	18	58.0	1.4	26	28.4	3.5	61.1
04	239	50.0		20.6	33	18.4	1.5	26	24.9	3.7	61.1
05	254	49.8		20.7	47	38.9	1.5	26	21.2	3.8	61.1
06	269	49.7	N23	20.8	61	59.4	1.6	S26	17.4	4.1	61.1
07	284	49.6		20.9	76	20.0	1.7	26	13.3	4.2	61.1
J 08	299	49.4		21.0	90	40.7	1.8	26	09.1	4.5	61.0
U 09	314	49.3	. .	21.1	105	01.5	1.9	26	04.6	4.7	61.0
E 10	329	49.2		21.2	119	22.4	1.9	25	59.9	4.8	61.0
V 11	344	49.0		21.2	133	43.3	2.0	25	55.1	5.1	61.0
E 12	359	48.9	N23	21.3	148	04.3	2.1	S25	50.0	5.2	61.0
S 13	14	48.8		21.4	162	25.4	2.2	25	44.8	5.4	61.0
14	29	48.6		21.5	176	46.6	2.3	25	39.4	5.7	60.9
15	44	48.5	. .	21.6	191	07.9	2.4	25	33.7	5.8	60.9
16	59	48.4		21.7	205	29.3	2.5	25	27.9	6.0	60.9
17	74	48.2		21.7	219	50.8	2.6	25	21.9	6.1	60.9
18	89	48.1	N23	21.8	234	12.4	2.7	S25	15.8	6.4	60.8
19	104	48.0		21.9	248	34.1	2.8	25	09.4	6.5	60.8
20	119	47.8		22.0	262	55.9	2.9	25	02.9	6.7	60.8
21	134	47.7	. .	22.1	277	17.8	3.1	24	56.2	6.9	60.8
22	149	47.6		22.1	291	39.9	3.1	24	49.3	7.1	60.8
23	164	47.4		22.2	306	02.0	3.2	24	42.2	7.2	60.7
17 00	179	47.3	N23	22.3	320	24.2	3.4	S24	35.0	7.5	60.7
01	194	47.2		22.4	334	46.6	3.5	24	27.5	7.5	60.7
02	209	47.0		22.4	349	09.1	3.5	24	20.0	7.8	60.7
03	224	46.9	. .	22.5	3	31.6	3.8	24	12.2	7.9	60.6
04	239	46.8		22.6	17	54.4	3.8	24	04.3	8.1	60.6
05	254	46.6		22.7	32	17.2	3.9	23	56.2	8.2	60.6
06	269	46.5	N23	22.7	46	40.1	4.1	S23	48.0	8.4	60.6
07	284	46.4		22.8	61	03.2	4.2	23	39.6	8.6	60.5
V 08	299	46.2		22.9	75	26.4	4.3	23	31.0	8.7	60.5
I 09	314	46.1	. .	22.9	89	49.7	4.5	23	22.3	8.9	60.5
E 10	329	45.9		23.0	104	13.2	4.5	23	13.4	9.0	60.4
R 11	344	45.8		23.1	118	36.7	4.7	23	04.4	9.1	60.4
N 12	359	45.7	N23	23.1	133	00.4	4.8	S22	55.3	9.4	60.4
E 13	14	45.5		23.2	147	24.2	5.0	22	45.9	9.4	60.4
S 14	29	45.4		23.3	161	48.2	5.1	22	36.5	9.6	60.3
15	44	45.3	. .	23.3	176	12.3	5.2	22	26.9	9.8	60.3
16	59	45.1		23.4	190	36.5	5.3	22	17.1	9.8	60.3
17	74	45.0		23.5	205	00.8	5.5	22	07.3	10.0	60.2
18	89	44.9	N23	23.5	219	25.3	5.6	S21	57.3	10.2	60.2
19	104	44.7		23.6	233	49.9	5.8	21	47.1	10.3	60.2
20	119	44.6		23.7	248	14.7	5.8	21	36.8	10.4	60.1
21	134	44.5	. .	23.7	262	39.5	6.0	21	26.4	10.5	60.1
22	149	44.3		23.8	277	04.5	6.2	21	15.9	10.7	60.1
23	164	44.2		23.8	291	29.7	6.2	S21	05.2	10.8	60.0
	S/D	15.8	d	0.1	S/D		16.7		16.6		16.5

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		15	16	17	18
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	▬	▬	▬	▬
N 70	▭	▭	▭	▬	▬	▬	▬
68	▭	▭	▭	▬	▬	▬	02 17
66	▭	▭	▭	▬	▬	▬	01 34
64	////	////	01 32	▬	▬	01 21	01 05
62	////	////	02 10	24 24	00 24	00 39	00 42
60	////	00 52	02 36	23 40	24 11	00 11	00 24
N 58	////	01 41	02 56	23 10	23 49	24 09	00 09
56	////	02 11	03 13	22 48	23 30	23 56	24 12
54	00 48	02 33	03 27	22 29	23 15	23 44	24 04
52	01 33	02 51	03 39	22 13	23 02	23 34	23 57
50	02 00	03 06	03 50	22 00	22 50	23 25	23 50
45	02 46	03 35	04 13	21 32	22 26	23 06	23 37
N 40	03 16	03 58	04 31	21 10	22 06	22 50	23 25
35	03 39	04 16	04 46	20 52	21 50	22 37	23 16
30	03 58	04 31	04 59	20 36	21 35	22 25	23 07
20	04 27	04 56	05 21	20 09	21 11	22 05	22 52
N 10	04 49	05 16	05 40	19 46	20 50	21 48	22 39
0	05 08	05 35	05 57	19 25	20 30	21 31	22 27
S 10	05 25	05 52	06 14	19 03	20 11	21 15	22 14
20	05 41	06 09	06 33	18 40	19 49	20 57	22 01
30	05 58	06 28	06 54	18 14	19 25	20 37	21 46
35	06 07	06 38	07 06	17 58	19 10	20 25	21 37
40	06 16	06 50	07 21	17 40	18 54	20 11	21 27
45	06 26	07 04	07 37	17 18	18 33	19 54	21 15
S 50	06 38	07 20	07 58	16 50	18 08	19 34	21 00
52	06 43	07 27	08 08	16 36	17 56	19 24	20 53
54	06 49	07 35	08 19	16 21	17 42	19 13	20 46
56	06 55	07 44	08 32	16 02	17 25	19 01	20 37
58	07 02	07 54	08 46	15 40	17 06	18 46	20 27
S 60	07 09	08 06	09 04	15 10	16 41	18 29	20 16

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	15	16	17	18
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	▬	▬	▬	▬
N 70	▭	▭	▭	▬	▬	▬	▬
68	▭	▭	▭	▬	▬	▬	05 31
66	▭	▭	▭	▬	▬	▬	06 13
64	22 30	////	////	▬	▬	04 21	06 41
62	21 52	////	////	01 45	03 02	05 02	07 02
60	21 26	23 11	////	02 31	03 45	05 30	07 20
N 58	21 05	22 21	////	03 02	04 15	05 51	07 34
56	20 49	21 51	////	03 25	04 37	06 09	07 46
54	20 35	21 29	23 15	03 44	04 55	06 24	07 57
52	20 22	21 11	22 29	04 00	05 11	06 37	08 07
50	20 11	20 56	22 01	04 13	05 24	06 48	08 15
45	19 49	20 26	21 16	04 42	05 52	07 11	08 33
N 40	19 31	20 04	20 45	05 04	06 14	07 30	08 47
35	19 16	19 46	20 22	05 22	06 32	07 46	08 59
30	19 03	19 30	20 04	05 38	06 47	07 59	09 10
20	18 41	19 05	19 35	06 05	07 13	08 22	09 28
N 10	18 22	18 45	19 12	06 28	07 36	08 42	09 44
0	18 04	18 27	18 53	06 50	07 56	09 00	09 58
S 10	17 47	18 10	18 36	07 11	08 17	09 18	10 13
20	17 29	17 53	18 20	07 34	08 39	09 37	10 28
30	17 07	17 34	18 04	08 01	09 05	10 00	10 45
35	16 55	17 23	17 55	08 16	09 20	10 13	10 55
40	16 41	17 11	17 45	08 35	09 37	10 27	11 07
45	16 24	16 58	17 35	08 57	09 58	10 45	11 20
S 50	16 03	16 42	17 23	09 25	10 24	11 06	11 37
52	15 54	16 34	17 18	09 38	10 37	11 17	11 44
54	15 42	16 26	17 12	09 54	10 51	11 28	11 52
56	15 30	16 17	17 06	10 13	11 08	11 41	12 02
58	15 15	16 07	17 00	10 35	11 28	11 56	12 12
S 60	14 58	15 55	16 52	11 05	11 53	12 14	12 25

Día	SOL			LUNA				
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
15	00 25	00 31	12 01	00 33	13 07	16 98	
16	00 38	00 44	12 01	01 41	14 13	17 94	
17	00 51	00 57	12 01	02 45	15 16	18 87	○

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·5		JÚPITER −2·3		SATURNO +0·5	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
18 00	266 12.9	214 06.2	N17 04.0	249 12.7	N 5 16.1	260 06.1	N 1 17.9	298 25.2	S14 14.9
01	281 15.4	229 05.7	04.8	264 13.5	16.7	275 08.3	18.0	313 27.7	14.9
02	296 17.9	244 05.1	05.6	279 14.3	17.4	290 10.5	18.1	328 30.2	15.0
03	311 20.3	259 04.6	06.4	294 15.1	18.1	305 12.7	18.2	343 32.7	15.0
04	326 22.8	274 04.1	07.1	309 15.9	18.8	320 14.9	18.4	358 35.2	15.0
05	341 25.3	289 03.6	07.9	324 16.6	19.5	335 17.0	18.5	13 37.7	15.0
06	356 27.7	304 03.0	N17 08.7	339 17.4	N 5 20.2	350 19.2	N 1 18.6	28 40.2	S14 15.1
07	11 30.2	319 02.5	09.5	354 18.2	20.8	5 21.4	18.7	43 42.8	15.1
08	26 32.6	334 02.0	10.3	9 19.0	21.5	20 23.6	18.8	58 45.3	15.1
S 09	41 35.1	349 01.4	11.0	24 19.8	22.2	35 25.8	18.9	73 47.8	15.1
Á 10	56 37.6	4 00.9	11.8	39 20.6	22.9	50 28.0	19.0	88 50.3	15.2
B 11	71 40.0	19 00.4	12.6	54 21.3	23.6	65 30.1	19.1	103 52.8	15.2
A 12	86 42.5	33 59.8	N17 13.4	69 22.1	N 5 24.3	80 32.3	N 1 19.2	118 55.3	S14 15.2
D 13	101 45.0	48 59.3	14.1	84 22.9	25.0	95 34.5	19.3	133 57.8	15.2
O 14	116 47.4	63 58.8	14.9	99 23.7	25.6	110 36.7	19.4	149 00.4	15.3
15	131 49.9	78 58.2	15.7	114 24.5	26.3	125 38.9	19.5	164 02.9	15.3
16	146 52.4	93 57.7	16.5	129 25.2	27.0	140 41.1	19.7	179 05.4	15.3
17	161 54.8	108 57.2	17.2	144 26.0	27.7	155 43.3	19.8	194 07.9	15.3
18	176 57.3	123 56.6	N17 18.0	159 26.8	N 5 28.4	170 45.4	N 1 19.9	209 10.4	S14 15.4
19	191 59.7	138 56.1	18.8	174 27.6	29.1	185 47.6	20.0	224 12.9	15.4
20	207 02.2	153 55.6	19.5	189 28.4	29.7	200 49.8	20.1	239 15.5	15.4
21	222 04.7	168 55.0	20.3	204 29.1	30.4	215 52.0	20.2	254 18.0	15.4
22	237 07.1	183 54.5	21.1	219 29.9	31.1	230 54.2	20.3	269 20.5	15.5
23	252 09.6	198 53.9	21.8	234 30.7	31.8	245 56.4	20.4	284 23.0	15.5
19 00	267 12.1	213 53.4	N17 22.6	249 31.5	N 5 32.5	260 58.6	N 1 20.5	299 25.5	S14 15.5
01	282 14.5	228 52.9	23.4	264 32.3	33.1	276 00.8	20.6	314 28.0	15.5
02	297 17.0	243 52.3	24.1	279 33.1	33.8	291 02.9	20.7	329 30.5	15.6
03	312 19.5	258 51.8	24.9	294 33.8	34.5	306 05.1	20.8	344 33.1	15.6
04	327 21.9	273 51.2	25.7	309 34.6	35.2	321 07.3	20.9	359 35.6	15.6
05	342 24.4	288 50.7	26.4	324 35.4	35.9	336 09.5	21.1	14 38.1	15.6
06	357 26.9	303 50.2	N17 27.2	339 36.2	N 5 36.6	351 11.7	N 1 21.2	29 40.6	S14 15.7
07	12 29.3	318 49.6	28.0	354 37.0	37.2	6 13.9	21.3	44 43.1	15.7
D 08	27 31.8	333 49.1	28.7	9 37.7	37.9	21 16.1	21.4	59 45.6	15.7
O 09	42 34.2	348 48.5	29.5	24 38.5	38.6	36 18.3	21.5	74 48.2	15.8
M 10	57 36.7	3 48.0	30.2	39 39.3	39.3	51 20.5	21.6	89 50.7	15.8
I 11	72 39.2	18 47.4	31.0	54 40.1	40.0	66 22.6	21.7	104 53.2	15.8
N 12	87 41.6	33 46.9	N17 31.8	69 40.9	N 5 40.6	81 24.8	N 1 21.8	119 55.7	S14 15.8
G 13	102 44.1	48 46.3	32.5	84 41.7	41.3	96 27.0	21.9	134 58.2	15.9
O 14	117 46.6	63 45.8	33.3	99 42.4	42.0	111 29.2	22.0	150 00.8	15.9
15	132 49.0	78 45.3	34.0	114 43.2	42.7	126 31.4	22.1	165 03.3	15.9
16	147 51.5	93 44.7	34.8	129 44.0	43.4	141 33.6	22.2	180 05.8	15.9
17	162 54.0	108 44.2	35.5	144 44.8	44.0	156 35.8	22.3	195 08.3	16.0
18	177 56.4	123 43.6	N17 36.3	159 45.6	N 5 44.7	171 38.0	N 1 22.4	210 10.8	S14 16.0
19	192 58.9	138 43.1	37.1	174 46.3	45.4	186 40.2	22.5	225 13.4	16.0
20	208 01.4	153 42.5	37.8	189 47.1	46.1	201 42.4	22.6	240 15.9	16.0
21	223 03.8	168 42.0	38.6	204 47.9	46.8	216 44.6	22.7	255 18.4	16.1
22	238 06.3	183 41.4	39.3	219 48.7	47.4	231 46.8	22.8	270 20.9	16.1
23	253 08.7	198 40.9	40.1	234 49.5	48.1	246 49.0	23.0	285 23.4	16.1
20 00	268 11.2	213 40.3	N17 40.8	249 50.3	N 5 48.8	261 51.1	N 1 23.1	300 26.0	S14 16.2
01	283 13.7	228 39.8	41.6	264 51.0	49.5	276 53.3	23.2	315 28.5	16.2
02	298 16.1	243 39.2	42.3	279 51.8	50.2	291 55.5	23.3	330 31.0	16.2
03	313 18.6	258 38.7	43.1	294 52.6	50.8	306 57.7	23.4	345 33.5	16.2
04	328 21.1	273 38.1	43.8	309 53.4	51.5	321 59.9	23.5	0 36.0	16.3
05	343 23.5	288 37.6	44.5	324 54.2	52.2	337 02.1	23.6	15 38.6	16.3
06	358 26.0	303 37.0	N17 45.3	339 55.0	N 5 52.9	352 04.3	N 1 23.7	30 41.1	S14 16.3
07	13 28.5	318 36.4	46.0	354 55.7	53.5	7 06.5	23.8	45 43.6	16.3
L 08	28 30.9	333 35.9	46.8	9 56.5	54.2	22 08.7	23.9	60 46.1	16.4
U 09	43 33.4	348 35.3	47.5	24 57.3	54.9	37 10.9	24.0	75 48.6	16.4
N 10	58 35.8	3 34.8	48.3	39 58.1	55.6	52 13.1	24.1	90 51.2	16.4
E 11	73 38.3	18 34.2	49.0	54 58.9	56.3	67 15.3	24.2	105 53.7	16.5
S 12	88 40.8	33 33.7	N17 49.8	69 59.7	N 5 56.9	82 17.5	N 1 24.3	120 56.2	S14 16.5
13	103 43.2	48 33.1	50.5	85 00.4	57.6	97 19.7	24.4	135 58.7	16.5
14	118 45.7	63 32.5	51.2	100 01.2	58.3	112 21.9	24.5	151 01.2	16.5
15	133 48.2	78 32.0	52.0	115 02.0	59.0	127 24.1	24.6	166 03.8	16.6
16	148 50.6	93 31.4	52.7	130 02.8	5 59.6	142 26.3	24.7	181 06.3	16.6
17	163 53.1	108 30.9	53.5	145 03.6	6 00.3	157 28.5	24.8	196 08.8	16.6
18	178 55.6	123 30.3	N17 54.2	160 04.4	N 6 01.0	172 30.7	N 1 24.9	211 11.3	S14 16.7
19	193 58.0	138 29.8	54.9	175 05.1	01.7	187 32.9	25.0	226 13.9	16.7
20	209 00.5	153 29.2	55.7	190 05.9	02.3	202 35.1	25.1	241 16.4	16.7
21	224 03.0	168 28.6	56.4	205 06.7	03.0	217 37.3	25.2	256 18.9	16.7
22	239 05.4	183 28.1	57.1	220 07.5	03.7	232 39.5	25.3	271 21.4	16.8
23	254 07.9	198 27.5	57.9	235 08.3	04.4	247 41.7	25.4	286 24.0	16.8
	h m								
Paso Mer.	6 10.2	*v* −0.5	*d* 0.8	*v* 0.8	*d* 0.7	*v* 2.2	*d* 0.1	*v* 2.5	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.7	S40 12.8
Achernar	335 22.1	S57 07.2
Acrux	173 02.3	S63 13.6
Adhara	255 07.9	S29 00.2
Aldebaran	290 42.4	N16 33.2
Alioth	166 14.7	N55 50.6
Alkaid	152 53.5	N49 12.4
Alnair	27 35.4	S46 51.0
Alnilam	275 40.2	S 1 11.3
Alphard	217 50.0	S 8 45.3
Alphecca	126 05.2	N26 38.5
Alpheratz	357 37.0	N29 12.6
Altair	62 01.7	N 8 55.6
Ankaa	353 09.3	S42 10.9
Antares	112 18.1	S26 28.9
Arcturus	145 49.6	N19 04.1
Atria	107 13.6	S69 04.1
Avior	234 16.1	S59 35.0
Bellatrix	278 25.5	N 6 22.2
Betelgeuse	270 54.7	N 7 24.6
Canopus	263 53.9	S52 42.5
Capella	280 25.5	N46 01.1
Deneb	49 26.9	N45 21.4
Denebola	182 27.1	N14 27.0
Diphda	348 49.5	S17 51.8
Dubhe	193 43.8	N61 38.2
Elnath	278 04.9	N28 37.5
Eltanin	90 42.6	N51 29.1
Enif	33 40.7	N 9 58.6
Fomalhaut	15 16.8	S29 30.1
Gacrux	171 53.9	S57 14.5
Gienah	175 45.7	S17 40.0
Hadar	148 38.6	S60 29.0
Hamal	327 53.8	N23 33.9
Kaus Aust.	83 34.9	S34 22.4
Kochab	137 19.0	N74 04.0
Markab	13 31.9	N15 19.4
Menkar	314 08.6	N 4 10.6
Menkent	147 59.9	S36 28.9
Miaplacidus	221 39.3	S69 48.7
Mirfak	308 31.7	N49 56.2
Nunki	75 50.0	S26 16.1
Peacock	53 08.6	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.4	N 5 10.1
Rasalhague	96 00.2	N12 32.6
Regulus	207 36.8	N11 51.6
Rigel	281 06.2	S 8 10.6
Rigil Kent.	139 42.7	S60 55.8
Sabik	102 04.9	S15 45.1
Schedar	349 33.5	N56 39.3
Shaula	96 12.8	S37 07.2
Sirius	258 28.4	S16 44.8
Spica	158 24.4	S11 16.7
Suhail	222 48.2	S43 31.5
Vega	80 34.2	N38 48.2
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	306 41.3	9 45
Marte	342 19.4	7 22
Júpiter	353 46.5	6 35
Saturno	32 13.4	4 02

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	°	′	′	
18 00	179	44.1	N23	23.9	305	54.9	6.4	S20	54.4	10.9	60.0
01	194	43.9		24.0	320	20.3	6.6	20	43.5	11.0	60.0
02	209	43.8		24.0	334	45.9	6.6	20	32.5	11.2	59.9
03	224	43.7	. .	24.1	349	11.5	6.8	20	21.3	11.2	59.9
04	239	43.5		24.1	3	37.3	7.0	20	10.1	11.4	59.9
05	254	43.4		24.2	18	03.3	7.0	19	58.7	11.5	59.8
06	269	43.2	N23	24.2	32	29.3	7.2	S19	47.2	11.6	59.8
07	284	43.1		24.3	46	55.5	7.4	19	35.6	11.7	59.8
S 08	299	43.0		24.3	61	21.9	7.4	19	23.9	11.8	59.7
Á 09	314	42.8	. .	24.4	75	48.3	7.6	19	12.1	11.9	59.7
B 10	329	42.7		24.4	90	14.9	7.7	19	00.2	12.0	59.7
A 11	344	42.6		24.5	104	41.6	7.9	18	48.2	12.1	59.6
D 12	359	42.4	N23	24.5	119	08.5	7.9	S18	36.1	12.2	59.6
O 13	14	42.3		24.6	133	35.4	8.1	18	23.9	12.3	59.6
14	29	42.2		24.6	148	02.5	8.3	18	11.6	12.4	59.5
15	44	42.0	. .	24.7	162	29.8	8.3	17	59.2	12.4	59.5
16	59	41.9		24.7	176	57.1	8.5	17	46.8	12.6	59.5
17	74	41.8		24.8	191	24.6	8.6	17	34.2	12.7	59.4
18	89	41.6	N23	24.8	205	52.2	8.8	S17	21.5	12.7	59.4
19	104	41.5		24.9	220	20.0	8.8	17	08.8	12.8	59.3
20	119	41.4		24.9	234	47.8	9.0	16	56.0	12.9	59.3
21	134	41.2	. .	25.0	249	15.8	9.1	16	43.1	13.0	59.3
22	149	41.1		25.0	263	43.9	9.2	16	30.1	13.0	59.2
23	164	40.9		25.0	278	12.1	9.4	16	17.1	13.2	59.2
19 00	179	40.8	N23	25.1	292	40.5	9.4	S16	03.9	13.2	59.2
01	194	40.7		25.1	307	08.9	9.6	15	50.7	13.2	59.1
02	209	40.5		25.2	321	37.5	9.7	15	37.5	13.4	59.1
03	224	40.4	. .	25.2	336	06.2	9.8	15	24.1	13.4	59.1
04	239	40.3		25.2	350	35.0	10.0	15	10.7	13.5	59.0
05	254	40.1		25.3	5	04.0	10.0	14	57.2	13.5	59.0
06	269	40.0	N23	25.3	19	33.0	10.2	S14	43.7	13.6	58.9
07	284	39.9		25.4	34	02.2	10.2	14	30.1	13.6	58.9
D 08	299	39.7		25.4	48	31.4	10.4	14	16.5	13.8	58.9
O 09	314	39.6	. .	25.4	63	00.8	10.5	14	02.7	13.7	58.8
M 10	329	39.4		25.5	77	30.3	10.6	13	49.0	13.9	58.8
I 11	344	39.3		25.5	91	59.9	10.7	13	35.1	13.8	58.8
N 12	359	39.2	N23	25.5	106	29.6	10.8	S13	21.3	14.0	58.7
G 13	14	39.0		25.6	120	59.4	11.0	13	07.3	14.0	58.7
O 14	29	38.9		25.6	135	29.4	11.0	12	53.3	14.0	58.6
15	44	38.8	. .	25.6	149	59.4	11.1	12	39.3	14.1	58.6
16	59	38.6		25.7	164	29.5	11.2	12	25.2	14.1	58.6
17	74	38.5		25.7	178	59.7	11.4	12	11.1	14.2	58.5
18	89	38.4	N23	25.7	193	30.1	11.4	S11	56.9	14.2	58.5
19	104	38.2		25.7	208	00.5	11.5	11	42.7	14.2	58.5
20	119	38.1		25.8	222	31.0	11.6	11	28.5	14.3	58.4
21	134	38.0	. .	25.8	237	01.6	11.8	11	14.2	14.3	58.4
22	149	37.8		25.8	251	32.4	11.8	10	59.9	14.4	58.3
23	164	37.7		25.8	266	03.2	11.9	10	45.5	14.4	58.3
20 00	179	37.5	N23	25.9	280	34.1	11.9	S10	31.1	14.4	58.3
01	194	37.4		25.9	295	05.0	12.1	10	16.7	14.5	58.2
02	209	37.3		25.9	309	36.1	12.2	10	02.2	14.5	58.2
03	224	37.1	. .	25.9	324	07.3	12.2	9	47.7	14.5	58.2
04	239	37.0		26.0	338	38.5	12.4	9	33.2	14.5	58.1
05	254	36.9		26.0	353	09.9	12.4	9	18.7	14.6	58.1
06	269	36.7	N23	26.0	7	41.3	12.5	S 9	04.1	14.6	58.0
07	284	36.6		26.0	22	12.8	12.6	8	49.5	14.6	58.0
L 08	299	36.5		26.0	36	44.4	12.7	8	34.9	14.6	58.0
U 09	314	36.3	. .	26.1	51	16.1	12.7	8	20.3	14.7	57.9
N 10	329	36.2		26.1	65	47.8	12.8	8	05.6	14.7	57.9
E 11	344	36.0		26.1	80	19.6	12.9	7	50.9	14.7	57.9
S 12	359	35.9	N23	26.1	94	51.5	13.0	S 7	36.2	14.7	57.8
13	14	35.8		26.1	109	23.5	13.1	7	21.5	14.7	57.8
14	29	35.6		26.1	123	55.6	13.1	7	06.8	14.8	57.8
15	44	35.5	. .	26.1	138	27.7	13.2	6	52.0	14.7	57.7
16	59	35.4		26.2	152	59.9	13.2	6	37.3	14.8	57.7
17	74	35.2		26.2	167	32.1	13.3	6	22.5	14.8	57.6
18	89	35.1	N23	26.2	182	04.4	13.4	S 6	07.7	14.8	57.6
19	104	35.0		26.2	196	36.8	13.5	5	52.9	14.8	57.6
20	119	34.8		26.2	211	09.3	13.5	5	38.1	14.8	57.5
21	134	34.7	. .	26.2	225	41.8	13.6	5	23.3	14.8	57.5
22	149	34.6		26.2	240	14.4	13.6	5	08.5	14.8	57.5
23	164	34.4		26.2	254	47.0	13.7	S 4	53.7	14.8	57.4
	S/D	15.8	d	0.0	S/D		16.2		16.0		15.8

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		18	19	20	21
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	■	02 33	01 36	01 01
N 70	▭	▭	▭	■	01 57	01 21	00 55
68	▭	▭	▭	02 17	01 32	01 08	00 50
66	▭	▭	▭	01 34	01 12	00 57	00 46
64	////	////	01 31	01 05	00 56	00 48	00 42
62	////	////	02 09	00 42	00 42	00 41	00 39
60	////	00 49	02 36	00 24	00 31	00 34	00 36
N 58	////	01 40	02 56	00 09	00 21	00 28	00 34
56	////	02 10	03 13	24 12	00 12	00 23	00 31
54	00 45	02 33	03 27	24 04	00 04	00 18	00 29
52	01 32	02 51	03 39	23 57	24 14	00 14	00 28
50	02 00	03 06	03 50	23 50	24 10	00 10	00 26
45	02 46	03 35	04 13	23 37	24 01	00 01	00 22
N 40	03 16	03 58	04 31	23 25	23 54	24 19	00 19
35	03 40	04 16	04 46	23 16	23 48	24 17	00 17
30	03 58	04 32	04 59	23 07	23 43	24 14	00 14
20	04 27	04 57	05 21	22 52	23 33	24 10	00 10
N 10	04 50	05 17	05 40	22 39	23 25	24 07	00 07
0	05 09	05 35	05 58	22 27	23 17	24 03	00 03
S 10	05 26	05 52	06 15	22 14	23 09	24 00	00 00
20	05 42	06 10	06 34	22 01	23 01	23 56	24 49
30	05 59	06 29	06 55	21 46	22 51	23 52	24 51
35	06 07	06 39	07 07	21 37	22 45	23 50	24 52
40	06 17	06 51	07 22	21 27	22 39	23 47	24 52
45	06 27	07 04	07 38	21 15	22 31	23 44	24 54
S 50	06 39	07 21	07 59	21 00	22 22	23 40	24 55
52	06 44	07 28	08 09	20 53	22 18	23 39	24 55
54	06 50	07 36	08 20	20 46	22 14	23 37	24 56
56	06 56	07 45	08 33	20 37	22 08	23 35	24 57
58	07 03	07 56	08 48	20 27	22 03	23 32	24 57
S 60	07 10	08 07	09 05	20 16	21 56	23 30	24 58

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	18	19	20	21
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	■	07 11	09 50	12 02
N 70	▭	▭	▭	■	07 45	10 03	12 05
68	▭	▭	▭	05 31	08 08	10 14	12 07
66	▭	▭	▭	06 13	08 27	10 22	12 08
64	22 32	////	////	06 41	08 42	10 30	12 10
62	21 54	////	////	07 02	08 54	10 36	12 11
60	21 27	23 14	////	07 20	09 04	10 41	12 12
N 58	21 07	22 23	////	07 34	09 13	10 46	12 13
56	20 50	21 53	////	07 46	09 21	10 50	12 14
54	20 36	21 30	23 18	07 57	09 28	10 54	12 15
52	20 23	21 12	22 31	08 07	09 34	10 57	12 16
50	20 12	20 57	22 03	08 15	09 40	11 00	12 16
45	19 50	20 27	21 17	08 33	09 52	11 07	12 18
N 40	19 32	20 05	20 46	08 47	10 02	11 12	12 19
35	19 17	19 47	20 23	08 59	10 10	11 17	12 20
30	19 04	19 31	20 05	09 10	10 17	11 21	12 21
20	18 42	19 06	19 35	09 28	10 30	11 28	12 22
N 10	18 23	18 46	19 13	09 44	10 41	11 34	12 23
0	18 05	18 28	18 54	09 58	10 51	11 39	12 24
S 10	17 48	18 10	18 37	10 13	11 01	11 45	12 26
20	17 29	17 53	18 21	10 28	11 12	11 51	12 27
30	17 08	17 34	18 04	10 45	11 24	11 58	12 28
35	16 55	17 24	17 55	10 55	11 31	12 01	12 29
40	16 41	17 12	17 46	11 07	11 39	12 06	12 30
45	16 24	16 58	17 36	11 20	11 48	12 11	12 31
S 50	16 04	16 42	17 24	11 37	11 59	12 17	12 32
52	15 54	16 35	17 18	11 44	12 04	12 19	12 32
54	15 43	16 26	17 13	11 52	12 09	12 22	12 33
56	15 30	16 17	17 07	12 02	12 15	12 25	12 34
58	15 15	16 07	17 00	12 12	12 22	12 29	12 34
S 60	14 58	15 55	16 52	12 25	12 30	12 33	12 35

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
18	01 03	01 10	12 01	03 45	16 13	19	78
19	01 16	01 23	12 01	04 39	17 04	20	68
20	01 30	01 36	12 02	05 28	17 51	21	57

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·5		JÚPITER −2·4		SATURNO +0·5	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
21 00	269 10.3	213 26.9	N17 58.6	250 09.1	N 6 05.0	262 43.9	N 1 25.5	301 26.5	S14 16.8
01	284 12.8	228 26.4	17 59.3	265 09.8	05.7	277 46.1	25.6	316 29.0	16.9
02	299 15.3	243 25.8	18 00.1	280 10.6	06.4	292 48.3	25.7	331 31.5	16.9
03	314 17.7	258 25.3	00.8	295 11.4	07.1	307 50.5	25.8	346 34.0	16.9
04	329 20.2	273 24.7	01.5	310 12.2	07.7	322 52.7	25.9	1 36.6	16.9
05	344 22.7	288 24.1	02.2	325 13.0	08.4	337 54.9	26.0	16 39.1	17.0
06	359 25.1	303 23.6	N18 03.0	340 13.8	N 6 09.1	352 57.1	N 1 26.1	31 41.6	S14 17.0
07	14 27.6	318 23.0	03.7	355 14.5	09.8	7 59.3	26.3	46 44.1	17.0
08	29 30.1	333 22.4	04.4	10 15.3	10.4	23 01.5	26.4	61 46.7	17.1
M 09	44 32.5	348 21.9	05.2	25 16.1	11.1	38 03.7	26.5	76 49.2	17.1
A 10	59 35.0	3 21.3	05.9	40 16.9	11.8	53 05.9	26.6	91 51.7	17.1
R 11	74 37.5	18 20.7	06.6	55 17.7	12.5	68 08.1	26.7	106 54.2	17.1
T 12	89 39.9	33 20.1	N18 07.3	70 18.5	N 6 13.1	83 10.3	N 1 26.8	121 56.8	S14 17.2
E 13	104 42.4	48 19.6	08.1	85 19.2	13.8	98 12.5	26.9	136 59.3	17.2
S 14	119 44.8	63 19.0	08.8	100 20.0	14.5	113 14.7	27.0	152 01.8	17.2
15	134 47.3	78 18.4	09.5	115 20.8	15.2	128 16.9	27.1	167 04.4	17.3
16	149 49.8	93 17.9	10.2	130 21.6	15.8	143 19.1	27.2	182 06.9	17.3
17	164 52.2	108 17.3	10.9	145 22.4	16.5	158 21.3	27.3	197 09.4	17.3
18	179 54.7	123 16.7	N18 11.7	160 23.2	N 6 17.2	173 23.5	N 1 27.4	212 11.9	S14 17.4
19	194 57.2	138 16.2	12.4	175 23.9	17.9	188 25.7	27.5	227 14.5	17.4
20	209 59.6	153 15.6	13.1	190 24.7	18.5	203 27.9	27.6	242 17.0	17.4
21	225 02.1	168 15.0	13.8	205 25.5	19.2	218 30.1	27.7	257 19.5	17.4
22	240 04.6	183 14.4	14.5	220 26.3	19.9	233 32.3	27.8	272 22.0	17.5
23	255 07.0	198 13.9	15.2	235 27.1	20.5	248 34.5	27.9	287 24.6	17.5
22 00	270 09.5	213 13.3	N18 16.0	250 27.9	N 6 21.2	263 36.7	N 1 28.0	302 27.1	S14 17.5
01	285 11.9	228 12.7	16.7	265 28.7	21.9	278 38.9	28.1	317 29.6	17.6
02	300 14.4	243 12.1	17.4	280 29.4	22.6	293 41.1	28.2	332 32.2	17.6
03	315 16.9	258 11.6	18.1	295 30.2	23.2	308 43.3	28.3	347 34.7	17.6
04	330 19.3	273 11.0	18.8	310 31.0	23.9	323 45.5	28.4	2 37.2	17.7
05	345 21.8	288 10.4	19.5	325 31.8	24.6	338 47.7	28.5	17 39.7	17.7
06	0 24.3	303 09.8	N18 20.2	340 32.6	N 6 25.2	353 49.9	N 1 28.6	32 42.3	S14 17.7
07	15 26.7	318 09.2	20.9	355 33.4	25.9	8 52.2	28.6	47 44.8	17.7
M 08	30 29.2	333 08.7	21.6	10 34.1	26.6	23 54.4	28.7	62 47.3	17.8
I 09	45 31.7	348 08.1	22.4	25 34.9	27.3	38 56.6	28.8	77 49.8	17.8
É 10	60 34.1	3 07.5	23.1	40 35.7	27.9	53 58.8	28.9	92 52.4	17.8
R 11	75 36.6	18 06.9	23.8	55 36.5	28.6	69 01.0	29.0	107 54.9	17.9
C 12	90 39.1	33 06.4	N18 24.5	70 37.3	N 6 29.3	84 03.2	N 1 29.1	122 57.4	S14 17.9
O 13	105 41.5	48 05.8	25.2	85 38.1	29.9	99 05.4	29.2	138 00.0	17.9
L 14	120 44.0	63 05.2	25.9	100 38.9	30.6	114 07.6	29.3	153 02.5	18.0
E 15	135 46.4	78 04.6	26.6	115 39.6	31.3	129 09.8	29.4	168 05.0	18.0
S 16	150 48.9	93 04.0	27.3	130 40.4	31.9	144 12.0	29.5	183 07.6	18.0
17	165 51.4	108 03.4	28.0	145 41.2	32.6	159 14.2	29.6	198 10.1	18.0
18	180 53.8	123 02.9	N18 28.7	160 42.0	N 6 33.3	174 16.4	N 1 29.7	213 12.6	S14 18.1
19	195 56.3	138 02.3	29.4	175 42.8	34.0	189 18.7	29.8	228 15.1	18.1
20	210 58.8	153 01.7	30.1	190 43.6	34.6	204 20.9	29.9	243 17.7	18.1
21	226 01.2	168 01.1	30.8	205 44.4	35.3	219 23.1	30.0	258 20.2	18.2
22	241 03.7	183 00.5	31.5	220 45.1	36.0	234 25.3	30.1	273 22.7	18.2
23	256 06.2	197 59.9	32.2	235 45.9	36.6	249 27.5	30.2	288 25.3	18.2
23 00	271 08.6	212 59.3	N18 32.9	250 46.7	N 6 37.3	264 29.7	N 1 30.3	303 27.8	S14 18.3
01	286 11.1	227 58.8	33.6	265 47.5	38.0	279 31.9	30.4	318 30.3	18.3
02	301 13.6	242 58.2	34.3	280 48.3	38.6	294 34.1	30.5	333 32.9	18.3
03	316 16.0	257 57.6	35.0	295 49.1	39.3	309 36.3	30.6	348 35.4	18.4
04	331 18.5	272 57.0	35.7	310 49.9	40.0	324 38.6	30.7	3 37.9	18.4
05	346 20.9	287 56.4	36.4	325 50.6	40.6	339 40.8	30.8	18 40.5	18.4
06	1 23.4	302 55.8	N18 37.0	340 51.4	N 6 41.3	354 43.0	N 1 30.9	33 43.0	S14 18.5
07	16 25.9	317 55.2	37.7	355 52.2	42.0	9 45.2	31.0	48 45.5	18.5
J 08	31 28.3	332 54.6	38.4	10 53.0	42.6	24 47.4	31.1	63 48.1	18.5
U 09	46 30.8	347 54.0	39.1	25 53.8	43.3	39 49.6	31.2	78 50.6	18.5
E 10	61 33.3	2 53.5	39.8	40 54.6	44.0	54 51.8	31.3	93 53.1	18.6
V 11	76 35.7	17 52.9	40.5	55 55.4	44.6	69 54.0	31.4	108 55.7	18.6
E 12	91 38.2	32 52.3	N18 41.2	70 56.1	N 6 45.3	84 56.3	N 1 31.5	123 58.2	S14 18.6
S 13	106 40.7	47 51.7	41.9	85 56.9	46.0	99 58.5	31.6	139 00.7	18.7
14	121 43.1	62 51.1	42.6	100 57.7	46.6	115 00.7	31.7	154 03.3	18.7
15	136 45.6	77 50.5	43.2	115 58.5	47.3	130 02.9	31.7	169 05.8	18.7
16	151 48.0	92 49.9	43.9	130 59.3	48.0	145 05.1	31.8	184 08.3	18.8
17	166 50.5	107 49.3	44.6	146 00.1	48.6	160 07.3	31.9	199 10.9	18.8
18	181 53.0	122 48.7	N18 45.3	161 00.9	N 6 49.3	175 09.5	N 1 32.0	214 13.4	S14 18.8
19	196 55.4	137 48.1	46.0	176 01.6	50.0	190 11.8	32.1	229 15.9	18.9
20	211 57.9	152 47.5	46.6	191 02.4	50.6	205 14.0	32.2	244 18.5	18.9
21	227 00.4	167 46.9	47.3	206 03.2	51.3	220 16.2	32.3	259 21.0	18.9
22	242 02.8	182 46.3	48.0	221 04.0	52.0	235 18.4	32.4	274 23.5	19.0
23	257 05.3	197 45.7	48.7	236 04.8	52.6	250 20.6	32.5	289 26.1	19.0
	h m								
Paso Mer.	5 58.4	*v* −0.6	*d* 0.7	*v* 0.8	*d* 0.7	*v* 2.2	*d* 0.1	*v* 2.5	*d* 0.0

ESTRELLAS		
Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.7	S40 12.8
Achernar	335 22.1	S57 07.2
Acrux	173 02.3	S63 13.6
Adhara	255 07.9	S29 00.2
Aldebaran	290 42.4	N16 33.2
Alioth	166 14.7	N55 50.6
Alkaid	152 53.5	N49 12.4
Alnair	27 35.3	S46 51.0
Alnilam	275 40.2	S 1 11.3
Alphard	217 50.0	S 8 45.3
Alphecca	126 05.2	N26 38.5
Alpheratz	357 36.9	N29 12.6
Altair	62 01.7	N 8 55.6
Ankaa	353 09.3	S42 10.9
Antares	112 18.1	S26 28.9
Arcturus	145 49.7	N19 04.1
Atria	107 13.6	S69 04.1
Avior	234 16.1	S59 35.0
Bellatrix	278 25.5	N 6 22.2
Betelgeuse	270 54.7	N 7 24.7
Canopus	263 53.9	S52 42.4
Capella	280 25.5	N46 01.1
Deneb	49 26.8	N45 21.4
Denebola	182 27.1	N14 27.0
Diphda	348 49.5	S17 51.8
Dubhe	193 43.8	N61 38.2
Elnath	278 04.9	N28 37.5
Eltanin	90 42.6	N51 29.1
Enif	33 40.7	N 9 58.6
Fomalhaut	15 16.7	S29 30.1
Gacrux	171 53.9	S57 14.5
Gienah	175 45.7	S17 40.0
Hadar	148 38.6	S60 29.0
Hamal	327 53.8	N23 33.9
Kaus Aust.	83 34.9	S34 22.4
Kochab	137 19.0	N74 04.1
Markab	13 31.9	N15 19.4
Menkar	314 08.6	N 4 10.6
Menkent	147 59.9	S36 28.9
Miaplacidus	221 39.3	S69 48.7
Mirfak	308 31.7	N49 56.2
Nunki	75 50.0	S26 16.1
Peacock	53 08.6	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.4	N 5 10.1
Rasalhague	96 00.2	N12 32.6
Regulus	207 36.9	N11 51.6
Rigel	281 06.2	S 8 10.6
Rigil Kent.	139 42.8	S60 55.8
Sabik	102 04.9	S15 45.1
Schedar	349 33.5	N56 39.3
Shaula	96 12.8	S37 07.2
Sirius	258 28.4	S16 44.8
Spica	158 24.4	S11 16.7
Suhail	222 48.2	S43 31.5
Vega	80 34.2	N38 48.2
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	303 03.8	9 47
Marte	340 18.4	7 18
Júpiter	353 27.2	6 25
Saturno	32 17.6	3 50

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v		Dec		d	Ph
d h	°	′	°	′	°	′	′	°	′	′	′
MARTES 21 00	179	34.3	N23	26.2	269	19.7	13.8	S 4	38.9	14.8	57.4
01	194	34.1		26.2	283	52.5	13.8	4	24.1	14.8	57.4
02	209	34.0		26.2	298	25.3	13.9	4	09.3	14.9	57.3
03	224	33.9	. .	26.3	312	58.2	13.9	3	54.4	14.8	57.3
04	239	33.7		26.3	327	31.1	14.0	3	39.6	14.8	57.2
05	254	33.6		26.3	342	04.1	14.0	3	24.8	14.8	57.2
06	269	33.5	N23	26.3	356	37.1	14.1	S 3	10.0	14.8	57.2
07	284	33.3		26.3	11	10.2	14.1	2	55.2	14.8	57.1
08	299	33.2		26.3	25	43.3	14.2	2	40.4	14.8	57.1
09	314	33.1	. .	26.3	40	16.5	14.2	2	25.6	14.8	57.1
10	329	32.9		26.3	54	49.7	14.2	2	10.8	14.8	57.0
11	344	32.8		26.3	69	22.9	14.3	1	56.0	14.8	57.0
12	359	32.6	N23	26.3	83	56.2	14.4	S 1	41.2	14.7	57.0
13	14	32.5		26.3	98	29.6	14.4	1	26.5	14.8	56.9
14	29	32.4		26.3	113	03.0	14.4	1	11.7	14.7	56.9
15	44	32.2	. .	26.3	127	36.4	14.5	0	57.0	14.8	56.9
16	59	32.1		26.3	142	09.9	14.5	0	42.2	14.7	56.8
17	74	32.0		26.2	156	43.4	14.5	0	27.5	14.7	56.8
18	89	31.8	N23	26.2	171	16.9	14.6	S 0	12.8	14.7	56.8
19	104	31.7		26.2	185	50.5	14.6	N 0	01.9	14.6	56.7
20	119	31.6		26.2	200	24.1	14.6	0	16.5	14.7	56.7
21	134	31.4	. .	26.2	214	57.7	14.7	0	31.2	14.6	56.7
22	149	31.3		26.2	229	31.4	14.6	0	45.8	14.6	56.6
23	164	31.2		26.2	244	05.0	14.8	1	00.4	14.6	56.6
22 00	179	31.0	N23	26.2	258	38.8	14.7	N 1	15.0	14.6	56.6
01	194	30.9		26.2	273	12.5	14.8	1	29.6	14.5	56.5
02	209	30.7		26.2	287	46.3	14.8	1	44.1	14.5	56.5
03	224	30.6	. .	26.2	302	20.1	14.8	1	58.6	14.5	56.5
04	239	30.5		26.1	316	53.9	14.8	2	13.1	14.5	56.5
05	254	30.3		26.1	331	27.7	14.9	2	27.6	14.5	56.4
06	269	30.2	N23	26.1	346	01.6	14.9	N 2	42.1	14.4	56.4
07	284	30.1		26.1	0	35.5	14.9	2	56.5	14.4	56.4
MIÉRCOLES 08	299	29.9		26.1	15	09.4	14.9	3	10.9	14.3	56.3
09	314	29.8	. .	26.1	29	43.3	14.9	3	25.2	14.4	56.3
10	329	29.7		26.0	44	17.2	14.9	3	39.6	14.3	56.3
11	344	29.5		26.0	58	51.1	15.0	3	53.9	14.3	56.2
12	359	29.4	N23	26.0	73	25.1	15.0	N 4	08.2	14.2	56.2
13	14	29.2		26.0	87	59.1	14.9	4	22.4	14.2	56.2
14	29	29.1		26.0	102	33.0	15.0	4	36.6	14.2	56.1
15	44	29.0	. .	26.0	117	07.0	15.0	4	50.8	14.1	56.1
16	59	28.8		25.9	131	41.0	15.0	5	04.9	14.2	56.1
17	74	28.7		25.9	146	15.0	15.0	5	19.1	14.0	56.1
18	89	28.6	N23	25.9	160	49.0	15.0	N 5	33.1	14.1	56.0
19	104	28.4		25.9	175	23.0	15.0	5	47.2	14.0	56.0
20	119	28.3		25.8	189	57.0	15.1	6	01.2	13.9	56.0
21	134	28.2	. .	25.8	204	31.1	15.0	6	15.1	14.0	55.9
22	149	28.0		25.8	219	05.1	15.0	6	29.1	13.9	55.9
23	164	27.9		25.8	233	39.1	15.0	6	43.0	13.8	55.9
23 00	179	27.8	N23	25.7	248	13.1	15.0	N 6	56.8	13.8	55.9
01	194	27.6		25.7	262	47.1	15.1	7	10.6	13.8	55.8
02	209	27.5		25.7	277	21.2	15.0	7	24.4	13.7	55.8
03	224	27.3	. .	25.6	291	55.2	15.0	7	38.1	13.7	55.8
04	239	27.2		25.6	306	29.2	15.0	7	51.8	13.6	55.8
05	254	27.1		25.6	321	03.2	15.0	8	05.4	13.6	55.7
06	269	26.9	N23	25.6	335	37.2	15.0	N 8	19.0	13.5	55.7
07	284	26.8		25.5	350	11.2	14.9	8	32.5	13.5	55.7
JUEVES 08	299	26.7		25.5	4	45.1	15.0	8	46.0	13.5	55.7
09	314	26.5	. .	25.5	19	19.1	15.0	8	59.5	13.4	55.6
10	329	26.4		25.4	33	53.1	14.9	9	12.9	13.3	55.6
11	344	26.3		25.4	48	27.0	14.9	9	26.2	13.3	55.6
12	359	26.1	N23	25.3	63	00.9	15.0	N 9	39.5	13.3	55.6
13	14	26.0		25.3	77	34.9	14.9	9	52.8	13.2	55.5
14	29	25.9		25.3	92	08.8	14.8	10	06.0	13.1	55.5
15	44	25.7	. .	25.2	106	42.6	14.9	10	19.1	13.1	55.5
16	59	25.6		25.2	121	16.5	14.9	10	32.2	13.0	55.5
17	74	25.5		25.2	135	50.4	14.8	10	45.2	13.0	55.4
18	89	25.3	N23	25.1	150	24.2	14.8	N10	58.2	13.0	55.4
19	104	25.2		25.1	164	58.0	14.8	11	11.2	12.8	55.4
20	119	25.1		25.0	179	31.8	14.8	11	24.0	12.9	55.4
21	134	24.9	. .	25.0	194	05.6	14.7	11	36.9	12.7	55.3
22	149	24.8		24.9	208	39.3	14.8	11	49.6	12.7	55.3
23	164	24.6		24.9	223	13.1	14.7	N12	02.3	12.7	55.3
	S/D	15.8	d	0.0	S/D	15.5		15.3			15.1

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		21	22	23	24
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	01 01	00 31	{00 01 / 23 24}	22 23
N 70	▭	▭	▭	00 55	00 33	{00 10 / 23 44}	23 07
68	▭	▭	▭	00 50	00 34	00 18	{00 00 / 23 37}
66	▭	▭	▭	00 46	00 35	00 25	00 13
64	////	////	01 31	00 42	00 36	00 30	00 24
62	////	////	02 10	00 39	00 37	00 35	00 33
60	////	00 49	02 36	00 36	00 38	00 39	00 42
N 58	////	01 41	02 57	00 34	00 38	00 43	00 49
56	////	02 11	03 13	00 31	00 39	00 47	00 55
54	00 45	02 33	03 28	00 29	00 40	00 50	01 01
52	01 33	02 51	03 40	00 28	00 40	00 52	01 06
50	02 01	03 06	03 51	00 26	00 41	00 55	01 10
45	02 46	03 36	04 13	00 22	00 42	01 01	01 20
N 40	03 17	03 59	04 32	00 19	00 43	01 05	01 29
35	03 40	04 17	04 47	00 17	00 43	01 09	01 36
30	03 59	04 32	05 00	00 14	00 44	01 13	01 43
20	04 28	04 57	05 22	00 10	00 45	01 19	01 54
N 10	04 51	05 18	05 41	00 07	00 46	01 25	02 04
0	05 10	05 36	05 58	00 03	00 47	01 30	02 13
S 10	05 27	05 53	06 16	00 00	00 48	01 36	02 23
20	05 43	06 10	06 34	24 49	00 49	01 41	02 33
30	05 59	06 29	06 56	24 51	00 51	01 48	02 44
35	06 08	06 40	07 08	24 52	00 52	01 52	02 51
40	06 18	06 52	07 22	24 52	00 52	01 56	02 59
45	06 28	07 05	07 39	24 54	00 54	02 01	03 08
S 50	06 40	07 21	08 00	24 55	00 55	02 07	03 19
52	06 45	07 29	08 10	24 55	00 55	02 10	03 24
54	06 51	07 37	08 21	24 56	00 56	02 13	03 30
56	06 57	07 46	08 34	24 57	00 57	02 17	03 36
58	07 04	07 56	08 48	24 57	00 57	02 21	03 43
S 60	07 11	08 08	09 06	24 58	00 58	02 25	03 51

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	21	22	23	24
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	12 02	14 06	16 14	18 47
N 70	▭	▭	▭	12 05	14 00	15 56	18 05
68	▭	▭	▭	12 07	13 54	15 42	17 36
66	▭	▭	▭	12 08	13 50	15 31	17 15
64	22 33	////	////	12 10	13 46	15 21	16 58
62	21 54	////	////	12 11	13 43	15 13	16 44
60	21 28	23 14	////	12 12	13 40	15 06	16 33
N 58	21 07	22 23	////	12 13	13 37	15 00	16 23
56	20 51	21 53	////	12 14	13 35	14 55	16 14
54	20 36	21 31	23 19	12 15	13 33	14 50	16 06
52	20 24	21 13	22 31	12 16	13 31	14 46	15 59
50	20 13	20 58	22 03	12 16	13 30	14 42	15 53
45	19 51	20 28	21 18	12 18	13 26	14 33	15 40
N 40	19 33	20 05	20 47	12 19	13 23	14 26	15 29
35	19 17	19 47	20 24	12 20	13 21	14 20	15 20
30	19 04	19 32	20 05	12 21	13 18	14 15	15 12
20	18 42	19 07	19 36	12 22	13 14	14 06	14 58
N 10	18 23	18 46	19 13	12 23	13 11	13 58	14 46
0	18 06	18 28	18 54	12 24	13 08	13 51	14 34
S 10	17 48	18 11	18 37	12 26	13 05	13 43	14 23
20	17 30	17 54	18 21	12 27	13 01	13 36	14 11
30	17 08	17 35	18 05	12 28	12 57	13 27	13 57
35	16 56	17 24	17 56	12 29	12 55	13 22	13 49
40	16 42	17 12	17 47	12 30	12 53	13 16	13 40
45	16 25	16 59	17 36	12 31	12 50	13 09	13 30
S 50	16 04	16 43	17 24	12 32	12 46	13 01	13 17
52	15 54	16 35	17 19	12 32	12 45	12 57	13 12
54	15 43	16 27	17 13	12 33	12 43	12 53	13 05
56	15 30	16 18	17 07	12 34	12 41	12 49	12 58
58	15 16	16 08	17 00	12 34	12 39	12 44	12 50
S 60	14 58	15 56	16 53	12 35	12 37	12 39	12 41

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
21	01 43	01 49	12 02	06 14	18 36	22	46
22	01 56	02 02	12 02	06 58	19 19	23	36
23	02 09	02 15	12 02	07 40	20 02	24	27

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·5		JÚPITER −2·4		SATURNO +0·5	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
24 00	272 07.8	212 45.1	N18 49.4	251 05.6	N 6 53.3	265 22.8	N 1 32.6	304 28.6	S14 19.0
01	287 10.2	227 44.5	50.0	266 06.4	54.0	280 25.1	32.7	319 31.1	19.1
02	302 12.7	242 43.9	50.7	281 07.1	54.6	295 27.3	32.8	334 33.7	19.1
03	317 15.2	257 43.3 . .	51.4	296 07.9 . .	55.3	310 29.5 . .	32.9	349 36.2 . .	19.1
04	332 17.6	272 42.7	52.1	311 08.7	56.0	325 31.7	33.0	4 38.7	19.2
05	347 20.1	287 42.1	52.7	326 09.5	56.6	340 33.9	33.1	19 41.3	19.2
06	2 22.5	302 41.5	N18 53.4	341 10.3	N 6 57.3	355 36.1	N 1 33.2	34 43.8	S14 19.2
07	17 25.0	317 40.9	54.1	356 11.1	57.9	10 38.4	33.3	49 46.3	19.3
08	32 27.5	332 40.3	54.8	11 11.9	58.6	25 40.6	33.4	64 48.9	19.3
V 09	47 29.9	347 39.7 . .	55.4	26 12.7 . .	59.3	40 42.8 . .	33.4	79 51.4 . .	19.3
I 10	62 32.4	2 39.1	56.1	41 13.4	6 59.9	55 45.0	33.5	94 54.0	19.4
E 11	77 34.9	17 38.5	56.8	56 14.2	7 00.6	70 47.2	33.6	109 56.5	19.4
R 12	92 37.3	32 37.9	N18 57.4	71 15.0	N 7 01.3	85 49.5	N 1 33.7	124 59.0	S14 19.4
N 13	107 39.8	47 37.3	58.1	86 15.8	01.9	100 51.7	33.8	140 01.6	19.5
E 14	122 42.3	62 36.7	58.8	101 16.6	02.6	115 53.9	33.9	155 04.1	19.5
S 15	137 44.7	77 36.1	18 59.4	116 17.4 . .	03.3	130 56.1 . .	34.0	170 06.6 . .	19.5
16	152 47.2	92 35.5	19 00.1	131 18.2	03.9	145 58.3	34.1	185 09.2	19.6
17	167 49.7	107 34.9	00.8	146 19.0	04.6	161 00.6	34.2	200 11.7	19.6
18	182 52.1	122 34.3	N19 01.4	161 19.7	N 7 05.2	176 02.8	N 1 34.3	215 14.3	S14 19.6
19	197 54.6	137 33.7	02.1	176 20.5	05.9	191 05.0	34.4	230 16.8	19.7
20	212 57.0	152 33.1	02.7	191 21.3	06.6	206 07.2	34.5	245 19.3	19.7
21	227 59.5	167 32.5 . .	03.4	206 22.1 . .	07.2	221 09.5 . .	34.6	260 21.9 . .	19.7
22	243 02.0	182 31.8	04.1	221 22.9	07.9	236 11.7	34.6	275 24.4	19.8
23	258 04.4	197 31.2	04.7	236 23.7	08.5	251 13.9	34.7	290 26.9	19.8
25 00	273 06.9	212 30.6	N19 05.4	251 24.5	N 7 09.2	266 16.1	N 1 34.8	305 29.5	S14 19.8
01	288 09.4	227 30.0	06.0	266 25.3	09.9	281 18.3	34.9	320 32.0	19.9
02	303 11.8	242 29.4	06.7	281 26.0	10.5	296 20.6	35.0	335 34.6	19.9
03	318 14.3	257 28.8 . .	07.4	296 26.8 . .	11.2	311 22.8 . .	35.1	350 37.1 . .	19.9
04	333 16.8	272 28.2	08.0	311 27.6	11.9	326 25.0	35.2	5 39.6	20.0
05	348 19.2	287 27.6	08.7	326 28.4	12.5	341 27.2	35.3	20 42.2	20.0
06	3 21.7	302 27.0	N19 09.3	341 29.2	N 7 13.2	356 29.5	N 1 35.4	35 44.7	S14 20.0
07	18 24.1	317 26.3	10.0	356 30.0	13.8	11 31.7	35.5	50 47.3	20.1
S 08	33 26.6	332 25.7	10.6	11 30.8	14.5	26 33.9	35.6	65 49.8	20.1
Á 09	48 29.1	347 25.1 . .	11.3	26 31.6 . .	15.2	41 36.1 . .	35.6	80 52.3 . .	20.1
B 10	63 31.5	2 24.5	11.9	41 32.3	15.8	56 38.4	35.7	95 54.9	20.2
A 11	78 34.0	17 23.9	12.6	56 33.1	16.5	71 40.6	35.8	110 57.4	20.2
D 12	93 36.5	32 23.3	N19 13.2	71 33.9	N 7 17.1	86 42.8	N 1 35.9	126 00.0	S14 20.2
O 13	108 38.9	47 22.7	13.9	86 34.7	17.8	101 45.0	36.0	141 02.5	20.3
14	123 41.4	62 22.0	14.5	101 35.5	18.4	116 47.3	36.1	156 05.0	20.3
15	138 43.9	77 21.4 . .	15.2	116 36.3 . .	19.1	131 49.5 . .	36.2	171 07.6 . .	20.3
16	153 46.3	92 20.8	15.8	131 37.1	19.8	146 51.7	36.3	186 10.1	20.4
17	168 48.8	107 20.2	16.5	146 37.9	20.4	161 54.0	36.4	201 12.7	20.4
18	183 51.3	122 19.6	N19 17.1	161 38.7	N 7 21.1	176 56.2	N 1 36.5	216 15.2	S14 20.4
19	198 53.7	137 19.0	17.7	176 39.4	21.7	191 58.4	36.5	231 17.7	20.5
20	213 56.2	152 18.3	18.4	191 40.2	22.4	207 00.6	36.6	246 20.3	20.5
21	228 58.6	167 17.7 . .	19.0	206 41.0 . .	23.1	222 02.9 . .	36.7	261 22.8 . .	20.5
22	244 01.1	182 17.1	19.7	221 41.8	23.7	237 05.1	36.8	276 25.4	20.6
23	259 03.6	197 16.5	20.3	236 42.6	24.4	252 07.3	36.9	291 27.9	20.6
26 00	274 06.0	212 15.9	N19 20.9	251 43.4	N 7 25.0	267 09.6	N 1 37.0	306 30.5	S14 20.6
01	289 08.5	227 15.2	21.6	266 44.2	25.7	282 11.8	37.1	321 33.0	20.7
02	304 11.0	242 14.6	22.2	281 45.0	26.3	297 14.0	37.2	336 35.5	20.7
03	319 13.4	257 14.0 . .	22.9	296 45.8 . .	27.0	312 16.2 . .	37.3	351 38.1 . .	20.7
04	334 15.9	272 13.4	23.5	311 46.5	27.7	327 18.5	37.3	6 40.6	20.8
05	349 18.4	287 12.7	24.1	326 47.3	28.3	342 20.7	37.4	21 43.2	20.8
06	4 20.8	302 12.1	N19 24.8	341 48.1	N 7 29.0	357 22.9	N 1 37.5	36 45.7	S14 20.8
07	19 23.3	317 11.5	25.4	356 48.9	29.6	12 25.2	37.6	51 48.3	20.9
D 08	34 25.8	332 10.9	26.0	11 49.7	30.3	27 27.4	37.7	66 50.8	20.9
O 09	49 28.2	347 10.2 . .	26.7	26 50.5 . .	30.9	42 29.6 . .	37.8	81 53.3 . .	21.0
M 10	64 30.7	2 09.6	27.3	41 51.3	31.6	57 31.9	37.9	96 55.9	21.0
I 11	79 33.1	17 09.0	27.9	56 52.1	32.2	72 34.1	38.0	111 58.4	21.0
N 12	94 35.6	32 08.4	N19 28.5	71 52.9	N 7 32.9	87 36.3	N 1 38.0	127 01.0	S14 21.1
G 13	109 38.1	47 07.7	29.2	86 53.6	33.6	102 38.6	38.1	142 03.5	21.1
O 14	124 40.5	62 07.1	29.8	101 54.4	34.2	117 40.8	38.2	157 06.1	21.1
15	139 43.0	77 06.5 . .	30.4	116 55.2 . .	34.9	132 43.0 . .	38.3	172 08.6 . .	21.2
16	154 45.5	92 05.9	31.0	131 56.0	35.5	147 45.3	38.4	187 11.1	21.2
17	169 47.9	107 05.2	31.7	146 56.8	36.2	162 47.5	38.5	202 13.7	21.2
18	184 50.4	122 04.6	N19 32.3	161 57.6	N 7 36.8	177 49.7	N 1 38.6	217 16.2	S14 21.3
19	199 52.9	137 04.0	32.9	176 58.4	37.5	192 52.0	38.7	232 18.8	21.3
20	214 55.3	152 03.3	33.5	191 59.2	38.1	207 54.2	38.7	247 21.3	21.3
21	229 57.8	167 02.7 . .	34.2	207 00.0 . .	38.8	222 56.4 . .	38.8	262 23.9 . .	21.4
22	245 00.3	182 02.1	34.8	222 00.8	39.4	237 58.7	38.9	277 26.4	21.4
23	260 02.7	197 01.4	35.4	237 01.5	40.1	253 00.9	39.0	292 29.0	21.5
	h m								
Paso Mer.	5 46.6	*v* −0.6	*d* 0.6	*v* 0.8	*d* 0.7	*v* 2.2	*d* 0.1	*v* 2.5	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.7	S40 12.8
Achernar	335 22.0	S57 07.2
Acrux	173 02.3	S63 13.6
Adhara	255 07.9	S29 00.2
Aldebaran	290 42.4	N16 33.2
Alioth	166 14.8	N55 50.6
Alkaid	152 53.5	N49 12.4
Alnair	27 35.3	S46 51.0
Alnilam	275 40.2	S 1 11.3
Alphard	217 50.0	S 8 45.3
Alphecca	126 05.2	N26 38.5
Alpheratz	357 36.9	N29 12.6
Altair	62 01.7	N 8 55.6
Ankaa	353 09.3	S42 10.9
Antares	112 18.1	S26 28.9
Arcturus	145 49.7	N19 04.1
Atria	107 13.6	S69 04.1
Avior	234 16.1	S59 35.0
Bellatrix	278 25.5	N 6 22.2
Betelgeuse	270 54.7	N 7 24.7
Canopus	263 53.9	S52 42.4
Capella	280 25.5	N46 01.1
Deneb	49 26.8	N45 21.4
Denebola	182 27.1	N14 27.0
Diphda	348 49.5	S17 51.8
Dubhe	193 43.8	N61 38.2
Elnath	278 04.9	N28 37.5
Eltanin	90 42.6	N51 29.2
Enif	33 40.6	N 9 58.6
Fomalhaut	15 16.7	S29 30.1
Gacrux	171 53.9	S57 14.5
Gienah	175 45.7	S17 40.0
Hadar	148 38.6	S60 29.0
Hamal	327 53.7	N23 33.9
Kaus Aust.	83 34.9	S34 22.4
Kochab	137 19.1	N74 04.1
Markab	13 31.9	N15 19.4
Menkar	314 08.6	N 4 10.6
Menkent	147 59.9	S36 28.9
Miaplacidus	221 39.3	S69 48.7
Mirfak	308 31.6	N49 56.2
Nunki	75 50.0	S26 16.1
Peacock	53 08.5	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.4	N 5 10.1
Rasalhague	96 00.2	N12 32.7
Regulus	207 36.9	N11 51.6
Rigel	281 06.2	S 8 10.5
Rigil Kent.	139 42.8	S60 55.8
Sabik	102 04.9	S15 45.1
Schedar	349 33.5	N56 39.3
Shaula	96 12.8	S37 07.2
Sirius	258 28.4	S16 44.8
Spica	158 24.4	S11 16.7
Suhail	222 48.2	S43 31.5
Vega	80 34.2	N38 48.2
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	299 23.7	9 50
Marte	338 17.6	7 14
Júpiter	353 09.2	6 14
Saturno	32 22.6	3 37

UT (HmGr)		SOL			LUNA					
		AHGr	Dec		AHGr	*v*	Dec	*d*	Ph	
	d h	° ′	° ′		° ′	′	° ′	′	′	
	24 00	179 24.5	N23 24.9		237 46.8	14.6	N12 15.0	12.6	55.3	
	01	194 24.4	24.8		252 20.4	14.7	12 27.6	12.5	55.2	
	02	209 24.2	24.8		266 54.1	14.6	12 40.1	12.5	55.2	
	03	224 24.1	24.7		281 27.7	14.6	12 52.6	12.4	55.2	
	04	239 24.0	24.7		296 01.3	14.6	13 05.0	12.3	55.2	
	05	254 23.8	24.6		310 34.9	14.5	13 17.3	12.3	55.2	
	06	269 23.7	N23 24.6		325 08.4	14.6	N13 29.6	12.2	55.1	
	07	284 23.6	24.5		339 42.0	14.4	13 41.8	12.2	55.1	
V	08	299 23.4	24.5		354 15.4	14.5	13 54.0	12.0	55.1	
I	09	314 23.3	24.4		8 48.9	14.4	14 06.0	12.1	55.1	
E	10	329 23.2	24.4		23 22.3	14.4	14 18.1	11.9	55.1	
R	11	344 23.0	24.3		37 55.7	14.3	14 30.0	11.9	55.0	
N	12	359 22.9	N23 24.3		52 29.0	14.4	N14 41.9	11.8	55.0	
E	13	14 22.8	24.2		67 02.4	14.3	14 53.7	11.8	55.0	
S	14	29 22.6	24.2		81 35.7	14.2	15 05.5	11.6	55.0	
	15	44 22.5	24.1		96 08.9	14.2	15 17.1	11.6	55.0	
	16	59 22.4	24.0		110 42.1	14.2	15 28.7	11.6	54.9	
	17	74 22.2	24.0		125 15.3	14.1	15 40.3	11.4	54.9	
	18	89 22.1	N23 23.9		139 48.4	14.1	N15 51.7	11.4	54.9	
	19	104 22.0	23.9		154 21.5	14.1	16 03.1	11.4	54.9	
	20	119 21.8	23.8		168 54.6	14.0	16 14.5	11.2	54.9	
	21	134 21.7	23.8		183 27.6	14.0	16 25.7	11.2	54.8	
	22	149 21.6	23.7		198 00.6	14.0	16 36.9	11.1	54.8	
	23	164 21.4	23.6		212 33.6	13.9	16 48.0	11.0	54.8	
	25 00	179 21.3	N23 23.6		227 06.5	13.8	N16 59.0	10.9	54.8	
	01	194 21.2	23.5		241 39.3	13.8	17 09.9	10.9	54.8	
	02	209 21.0	23.4		256 12.1	13.8	17 20.8	10.7	54.8	
	03	224 20.9	23.4		270 44.9	13.8	17 31.5	10.7	54.7	
	04	239 20.7	23.3		285 17.7	13.7	17 42.2	10.7	54.7	
	05	254 20.6	23.3		299 50.4	13.6	17 52.9	10.5	54.7	
	06	269 20.5	N23 23.2		314 23.0	13.6	N18 03.4	10.5	54.7	
	07	284 20.3	23.1		328 55.6	13.6	18 13.9	10.3	54.7	
S	08	299 20.2	23.1		343 28.2	13.5	18 24.2	10.3	54.7	
Á	09	314 20.1	23.0		358 00.7	13.5	18 34.5	10.2	54.6	
B	10	329 19.9	22.9		12 33.2	13.4	18 44.7	10.2	54.6	
A	11	344 19.8	22.8		27 05.6	13.4	18 54.9	10.0	54.6	
D	12	359 19.7	N23 22.8		41 38.0	13.3	N19 04.9	9.9	54.6	
O	13	14 19.5	22.7		56 10.3	13.3	19 14.8	9.9	54.6	
	14	29 19.4	22.6		70 42.6	13.2	19 24.7	9.8	54.6	
	15	44 19.3	22.6		85 14.8	13.2	19 34.5	9.7	54.5	
	16	59 19.1	22.5		99 47.0	13.2	19 44.2	9.6	54.5	
	17	74 19.0	22.4		114 19.2	13.1	19 53.8	9.5	54.5	
	18	89 18.9	N23 22.3		128 51.3	13.0	N20 03.3	9.4	54.5	
	19	104 18.7	22.3		143 23.3	13.0	20 12.7	9.3	54.5	
	20	119 18.6	22.2		157 55.3	13.0	20 22.0	9.2	54.5	
	21	134 18.5	22.1		172 27.3	12.9	20 31.2	9.2	54.5	
	22	149 18.4	22.0		186 59.2	12.8	20 40.4	9.0	54.4	
	23	164 18.2	22.0		201 31.0	12.8	20 49.4	9.0	54.4	
	26 00	179 18.1	N23 21.9		216 02.8	12.8	N20 58.4	8.8	54.4	
	01	194 18.0	21.8		230 34.6	12.7	21 07.2	8.8	54.4	
	02	209 17.8	21.7		245 06.3	12.7	21 16.0	8.6	54.4	
	03	224 17.7	21.6		259 38.0	12.6	21 24.6	8.6	54.4	
	04	239 17.6	21.6		274 09.6	12.5	21 33.2	8.5	54.4	
	05	254 17.4	21.5		288 41.1	12.5	21 41.7	8.3	54.4	
	06	269 17.3	N23 21.4		303 12.6	12.5	N21 50.0	8.3	54.3	
	07	284 17.2	21.3		317 44.1	12.4	21 58.3	8.2	54.3	
D	08	299 17.0	21.2		332 15.5	12.4	22 06.5	8.0	54.3	
O	09	314 16.9	21.1		346 46.9	12.3	22 14.5	8.0	54.3	
M	10	329 16.8	21.0		1 18.2	12.3	22 22.5	7.9	54.3	
I	11	344 16.6	21.0		15 49.5	12.2	22 30.4	7.7	54.3	
N	12	359 16.5	N23 20.9		30 20.7	12.2	N22 38.1	7.7	54.3	
G	13	14 16.4	20.8		44 51.9	12.1	22 45.8	7.5	54.3	
O	14	29 16.2	20.7		59 23.0	12.1	22 53.3	7.5	54.3	
	15	44 16.1	20.6		73 54.1	12.0	23 00.8	7.3	54.2	
	16	59 16.0	20.5		88 25.1	12.0	23 08.1	7.3	54.2	
	17	74 15.8	20.4		102 56.1	11.9	23 15.4	7.1	54.2	
	18	89 15.7	N23 20.3		117 27.0	11.9	N23 22.5	7.0	54.2	
	19	104 15.6	20.2		131 57.9	11.8	23 29.5	6.9	54.2	
	20	119 15.4	20.1		146 28.7	11.8	23 36.4	6.8	54.2	
	21	134 15.3	20.1		160 59.5	11.8	23 43.2	6.7	54.2	
	22	149 15.2	20.0		175 30.3	11.7	23 49.9	6.6	54.2	
	23	164 15.0	19.9		190 01.0	11.6	N23 56.5	6.5	54.2	
		S/D 15.8	*d* 0.1		S/D	15.0		14.9		14.8

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		24	25	26	27
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	22 23	▭	▭	▭
N 70	▭	▭	▭	23 07	▭	▭	▭
68	▭	▭	▭	(00 / 23) (00 / 37)	22 56	▭	▭
66	▭	▭	▭	00 13	(00 / 23) (00 / 40)	22 49	▭
64	////	////	01 33	00 24	00 18	(00 / 23) (10 / 59)	23 26
62	////	////	02 11	00 33	00 32	00 33	00 35
60	////	00 52	02 37	00 42	00 45	00 51	01 01
N 58	////	01 42	02 58	00 49	00 56	01 06	01 22
56	////	02 12	03 14	00 55	01 05	01 19	01 39
54	00 48	02 34	03 29	01 01	01 14	01 30	01 53
52	01 34	02 52	03 41	01 06	01 21	01 41	02 06
50	02 02	03 07	03 52	01 10	01 28	01 50	02 17
45	02 47	03 37	04 14	01 20	01 43	02 09	02 40
N 40	03 18	04 00	04 32	01 29	01 55	02 24	02 59
35	03 41	04 18	04 47	01 36	02 05	02 38	03 15
30	04 00	04 33	05 00	01 43	02 14	02 49	03 28
20	04 29	04 58	05 22	01 54	02 30	03 09	03 52
N 10	04 51	05 18	05 41	02 04	02 44	03 27	04 12
0	05 10	05 36	05 59	02 13	02 57	03 43	04 31
S 10	05 27	05 54	06 16	02 23	03 11	04 00	04 50
20	05 43	06 11	06 35	02 33	03 25	04 17	05 11
30	06 00	06 30	06 56	02 44	03 41	04 38	05 35
35	06 09	06 40	07 09	02 51	03 51	04 50	05 49
40	06 18	06 52	07 23	02 59	04 02	05 04	06 05
45	06 28	07 06	07 39	03 08	04 15	05 21	06 25
S 50	06 40	07 22	08 00	03 19	04 30	05 41	06 49
52	06 45	07 29	08 10	03 24	04 38	05 51	07 01
54	06 51	07 37	08 21	03 30	04 46	06 02	07 15
56	06 57	07 46	08 34	03 36	04 56	06 15	07 31
58	07 04	07 57	08 48	03 43	05 06	06 29	07 49
S 60	07 11	08 08	09 06	03 51	05 19	06 47	08 13

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	24	25	26	27
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	18 47	▭	▭	▭
N 70	▭	▭	▭	18 05	▭	▭	▭
68	▭	▭	▭	17 36	19 52	▭	▭
66	▭	▭	▭	17 15	19 08	21 39	▭
64	22 32	////	////	16 58	18 40	20 29	22 45
62	21 54	////	////	16 44	18 18	19 53	21 26
60	21 28	23 12	////	16 33	18 00	19 28	20 50
N 58	21 07	22 23	////	16 23	17 46	19 08	20 24
56	20 51	21 53	////	16 14	17 33	18 51	20 04
54	20 37	21 31	23 17	16 06	17 23	18 37	19 47
52	20 24	21 13	22 31	15 59	17 13	18 25	19 33
50	20 13	20 58	22 03	15 53	17 04	18 14	19 20
45	19 51	20 28	21 18	15 40	16 46	17 52	18 54
N 40	19 33	20 06	20 47	15 29	16 32	17 34	18 33
35	19 18	19 48	20 24	15 20	16 19	17 19	18 16
30	19 05	19 32	20 06	15 12	16 09	17 05	18 02
20	18 43	19 07	19 37	14 58	15 50	16 43	17 37
N 10	18 24	18 47	19 14	14 46	15 34	16 24	17 15
0	18 06	18 29	18 55	14 34	15 19	16 06	16 55
S 10	17 49	18 12	18 38	14 23	15 04	15 48	16 35
20	17 30	17 54	18 22	14 11	14 49	15 29	16 14
30	17 09	17 36	18 05	13 57	14 30	15 07	15 49
35	16 57	17 25	17 57	13 49	14 20	14 55	15 34
40	16 43	17 13	17 47	13 40	14 08	14 40	15 17
45	16 26	17 00	17 37	13 30	13 54	14 22	14 57
S 50	16 05	16 44	17 25	13 17	13 37	14 01	14 32
52	15 55	16 36	17 20	13 12	13 29	13 51	14 20
54	15 44	16 28	17 14	13 05	13 20	13 39	14 06
56	15 32	16 19	17 08	12 58	13 10	13 26	13 50
58	15 17	16 09	17 01	12 50	12 58	13 11	13 31
S 60	14 59	15 57	16 54	12 41	12 45	12 53	13 07

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer. Sup.	Paso Mer. Inf.	Edad	Fase
	00h	12h					
d	m s	m s	h m	h m	h m	d %	
24	02 22	02 28	12 02	08 24	20 46	25 18	
25	02 35	02 41	12 03	09 08	21 31	26 11	
26	02 47	02 54	12 03	09 55	22 19	27 6	

UT (HmGr)		ARIES	VENUS −3·9		MARTE +0·4		JÚPITER −2·4		SATURNO +0·5		ESTRELLAS		
	d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec	Nombre	AHS	Dec
		° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′		° ′	° ′
	27 00	275 05.2	212 00.8	N19 36.0	252 02.3	N 7 40.7	268 03.1	N 1 39.1	307 31.5	S14 21.5	Acamar	315 13.7	S40 12.7
	01	290 07.6	227 00.2	36.6	267 03.1	41.4	283 05.4	39.2	322 34.1	21.5	Achernar	335 22.0	S57 07.2
	02	305 10.1	241 59.5	37.3	282 03.9	42.1	298 07.6	39.3	337 36.6	21.6	Acrux	173 02.3	S63 13.6
	03	320 12.6	256 58.9	37.9	297 04.7	42.7	313 09.8	39.3	352 39.1	21.6	Adhara	255 07.9	S29 00.1
	04	335 15.0	271 58.3	38.5	312 05.5	43.4	328 12.1	39.4	7 41.7	21.6	Aldebaran	290 42.3	N16 33.2
	05	350 17.5	286 57.6	39.1	327 06.3	44.0	343 14.3	39.5	22 44.2	21.7			
	06	5 20.0	301 57.0	N19 39.7	342 07.1	N 7 44.7	358 16.5	N 1 39.6	37 46.8	S14 21.7	Alioth	166 14.8	N55 50.6
	07	20 22.4	316 56.4	40.3	357 07.9	45.3	13 18.8	39.7	52 49.3	21.7	Alkaid	152 53.5	N49 12.4
	08	35 24.9	331 55.7	40.9	12 08.7	46.0	28 21.0	39.8	67 51.9	21.8	Alnair	27 35.3	S46 51.0
L	09	50 27.4	346 55.1	41.6	27 09.4	46.6	43 23.3	39.9	82 54.4	21.8	Alnilam	275 40.2	S 1 11.3
U	10	65 29.8	1 54.5	42.2	42 10.2	47.3	58 25.5	39.9	97 57.0	21.8	Alphard	217 50.0	S 8 45.3
N	11	80 32.3	16 53.8	42.8	57 11.0	47.9	73 27.7	40.0	112 59.5	21.9			
E	12	95 34.8	31 53.2	N19 43.4	72 11.8	N 7 48.6	88 30.0	N 1 40.1	128 02.1	S14 21.9	Alphecca	126 05.2	N26 38.5
S	13	110 37.2	46 52.5	44.0	87 12.6	49.2	103 32.2	40.2	143 04.6	22.0	Alpheratz	357 36.9	N29 12.6
	14	125 39.7	61 51.9	44.6	102 13.4	49.9	118 34.4	40.3	158 07.2	22.0	Altair	62 01.7	N 8 55.6
	15	140 42.1	76 51.3	45.2	117 14.2	50.5	133 36.7	40.4	173 09.7	22.0	Ankaa	353 09.2	S42 10.9
	16	155 44.6	91 50.6	45.8	132 15.0	51.2	148 38.9	40.4	188 12.3	22.1	Antares	112 18.1	S26 28.9
	17	170 47.1	106 50.0	46.4	147 15.8	51.8	163 41.2	40.5	203 14.8	22.1			
	18	185 49.5	121 49.3	N19 47.0	162 16.6	N 7 52.5	178 43.4	N 1 40.6	218 17.4	S14 22.1	Arcturus	145 49.7	N19 04.1
	19	200 52.0	136 48.7	47.6	177 17.4	53.1	193 45.6	40.7	233 19.9	22.2	Atria	107 13.6	S69 04.1
	20	215 54.5	151 48.1	48.2	192 18.1	53.8	208 47.9	40.8	248 22.5	22.2	Avior	234 16.1	S59 35.0
	21	230 56.9	166 47.4	48.8	207 18.9	54.4	223 50.1	40.9	263 25.0	22.3	Bellatrix	278 25.5	N 6 22.2
	22	245 59.4	181 46.8	49.4	222 19.7	55.1	238 52.4	40.9	278 27.6	22.3	Betelgeuse	270 54.7	N 7 24.7
	23	261 01.9	196 46.1	50.0	237 20.5	55.7	253 54.6	41.0	293 30.1	22.3			
	28 00	276 04.3	211 45.5	N19 50.6	252 21.3	N 7 56.4	268 56.9	N 1 41.1	308 32.7	S14 22.4	Canopus	263 53.9	S52 42.4
	01	291 06.8	226 44.8	51.2	267 22.1	57.0	283 59.1	41.2	323 35.2	22.4	Capella	280 25.4	N46 01.1
	02	306 09.2	241 44.2	51.8	282 22.9	57.7	299 01.3	41.3	338 37.8	22.4	Deneb	49 26.8	N45 21.4
	03	321 11.7	256 43.6	52.4	297 23.7	58.3	314 03.6	41.4	353 40.3	22.5	Denebola	182 27.1	N14 27.0
	04	336 14.2	271 42.9	53.0	312 24.5	59.0	329 05.8	41.4	8 42.9	22.5	Diphda	348 49.4	S17 51.8
	05	351 16.6	286 42.3	53.6	327 25.3	7 59.6	344 08.1	41.5	23 45.4	22.6			
	06	6 19.1	301 41.6	N19 54.2	342 26.1	N 8 00.3	359 10.3	N 1 41.6	38 48.0	S14 22.6	Dubhe	193 43.9	N61 38.1
	07	21 21.6	316 41.0	54.8	357 26.9	00.9	14 12.5	41.7	53 50.5	22.6	Elnath	278 04.9	N28 37.5
M	08	36 24.0	331 40.3	55.4	12 27.6	01.6	29 14.8	41.8	68 53.1	22.7	Eltanin	90 42.6	N51 29.2
A	09	51 26.5	346 39.7	56.0	27 28.4	02.2	44 17.0	41.9	83 55.6	22.7	Enif	33 40.6	N 9 58.6
R	10	66 29.0	1 39.0	56.5	42 29.2	02.9	59 19.3	41.9	98 58.2	22.7	Fomalhaut	15 16.7	S29 30.1
T	11	81 31.4	16 38.4	57.1	57 30.0	03.5	74 21.5	42.0	114 00.7	22.8			
E	12	96 33.9	31 37.7	N19 57.7	72 30.8	N 8 04.1	89 23.8	N 1 42.1	129 03.3	S14 22.8	Gacrux	171 53.9	S57 14.5
S	13	111 36.4	46 37.1	58.3	87 31.6	04.8	104 26.0	42.2	144 05.8	22.9	Gienah	175 45.7	S17 40.0
	14	126 38.8	61 36.4	58.9	102 32.4	05.4	119 28.3	42.3	159 08.4	22.9	Hadar	148 38.7	S60 29.1
	15	141 41.3	76 35.8	19 59.5	117 33.2	06.1	134 30.5	42.3	174 10.9	22.9	Hamal	327 53.7	N23 33.9
	16	156 43.7	91 35.1	20 00.1	132 34.0	06.7	149 32.8	42.4	189 13.5	23.0	Kaus Aust.	83 34.9	S34 22.4
	17	171 46.2	106 34.5	00.6	147 34.8	07.4	164 35.0	42.5	204 16.0	23.0			
	18	186 48.7	121 33.8	N20 01.2	162 35.6	N 8 08.0	179 37.2	N 1 42.6	219 18.6	S14 23.0	Kochab	137 19.1	N74 04.1
	19	201 51.1	136 33.2	01.8	177 36.4	08.7	194 39.5	42.7	234 21.1	23.1	Markab	13 31.9	N15 19.4
	20	216 53.6	151 32.5	02.4	192 37.1	09.3	209 41.7	42.8	249 23.7	23.1	Menkar	314 08.6	N 4 10.6
	21	231 56.1	166 31.9	03.0	207 37.9	10.0	224 44.0	42.8	264 26.2	23.2	Menkent	147 59.9	S36 28.9
	22	246 58.5	181 31.2	03.5	222 38.7	10.6	239 46.2	42.9	279 28.8	23.2	Miaplacidus	221 39.4	S69 48.7
	23	262 01.0	196 30.6	04.1	237 39.5	11.2	254 48.5	43.0	294 31.3	23.2			
	29 00	277 03.5	211 29.9	N20 04.7	252 40.3	N 8 11.9	269 50.7	N 1 43.1	309 33.9	S14 23.3	Mirfak	308 31.6	N49 56.2
	01	292 05.9	226 29.3	05.3	267 41.1	12.5	284 53.0	43.2	324 36.4	23.3	Nunki	75 50.0	S26 16.1
	02	307 08.4	241 28.6	05.9	282 41.9	13.2	299 55.2	43.2	339 39.0	23.3	Peacock	53 08.5	S56 39.6
	03	322 10.9	256 27.9	06.4	297 42.7	13.8	314 57.5	43.3	354 41.5	23.4	Pollux	243 20.2	N27 58.4
	04	337 13.3	271 27.3	07.0	312 43.5	14.5	329 59.7	43.4	9 44.1	23.4	Procyon	244 53.4	N 5 10.1
	05	352 15.8	286 26.6	07.6	327 44.3	15.1	345 02.0	43.5	24 46.7	23.5			
	06	7 18.2	301 26.0	N20 08.1	342 45.1	N 8 15.8	0 04.2	N 1 43.6	39 49.2	S14 23.5	Rasalhague	96 00.2	N12 32.7
	07	22 20.7	316 25.3	08.7	357 45.9	16.4	15 06.5	43.6	54 51.8	23.5	Regulus	207 36.9	N11 51.6
M	08	37 23.2	331 24.7	09.3	12 46.7	17.0	30 08.7	43.7	69 54.3	23.6	Rigel	281 06.2	S 8 10.5
I	09	52 25.6	346 24.0	09.9	27 47.5	17.7	45 11.0	43.8	84 56.9	23.6	Rigil Kent.	139 42.8	S60 55.8
É	10	67 28.1	1 23.3	10.4	42 48.2	18.3	60 13.2	43.9	99 59.4	23.7	Sabik	102 04.8	S15 45.1
R	11	82 30.6	16 22.7	11.0	57 49.0	19.0	75 15.5	44.0	115 02.0	23.7			
C	12	97 33.0	31 22.0	N20 11.6	72 49.8	N 8 19.6	90 17.7	N 1 44.0	130 04.5	S14 23.7	Schedar	349 33.4	N56 39.3
O	13	112 35.5	46 21.4	12.1	87 50.6	20.3	105 20.0	44.1	145 07.1	23.8	Shaula	96 12.8	S37 07.2
L	14	127 38.0	61 20.7	12.7	102 51.4	20.9	120 22.2	44.2	160 09.6	23.8	Sirius	258 28.4	S16 44.8
E	15	142 40.4	76 20.0	13.2	117 52.2	21.5	135 24.5	44.3	175 12.2	23.8	Spica	158 24.4	S11 16.7
S	16	157 42.9	91 19.4	13.8	132 53.0	22.2	150 26.7	44.3	190 14.7	23.9	Suhail	222 48.2	S43 31.5
	17	172 45.4	106 18.7	14.4	147 53.8	22.8	165 29.0	44.4	205 17.3	23.9			
	18	187 47.8	121 18.1	N20 14.9	162 54.6	N 8 23.5	180 31.2	N 1 44.5	220 19.9	S14 24.0	Vega	80 34.2	N38 48.2
	19	202 50.3	136 17.4	15.5	177 55.4	24.1	195 33.5	44.6	235 22.4	24.0	Zuben'ubi	136 58.1	S16 08.1
	20	217 52.7	151 16.7	16.1	192 56.2	24.8	210 35.7	44.7	250 25.0	24.0			
	21	232 55.2	166 16.1	16.6	207 57.0	25.4	225 38.0	44.7	265 27.5	24.1		AHS	Paso Mer.
	22	247 57.7	181 15.4	17.2	222 57.8	26.0	240 40.2	44.8	280 30.1	24.1		° ′	h m
	23	263 00.1	196 14.7	17.7	237 58.6	26.7	255 42.5	44.9	295 32.6	24.2	Venus	295 41.2	9 53
		h m									Marte	336 17.0	7 10
Paso Mer.		5 34.8	*v* −0.6	*d* 0.6	*v* 0.8	*d* 0.6	*v* 2.2	*d* 0.1	*v* 2.6	*d* 0.0	Júpiter	352 52.5	6 03
											Saturno	32 28.3	3 25

LUNES MARTES MIÉRCOLES

UT (HmGr)	SOL AHGr	SOL Dec	LUNA AHGr	LUNA v	LUNA Dec	LUNA d	LUNA Ph
d h	° ′	° ′	° ′	′	° ′	′	′
27 00	179 14.9	N23 19.8	204 31.6	11.7	N24 03.0	6.3	54.2
01	194 14.8	19.7	219 02.3	11.5	24 09.3	6.3	54.2
02	209 14.7	19.6	233 32.8	11.6	24 15.6	6.1	54.1
03	224 14.5	19.5	248 03.4	11.4	24 21.7	6.0	54.1
04	239 14.4	19.4	262 33.8	11.5	24 27.7	5.9	54.1
05	254 14.3	19.3	277 04.3	11.4	24 33.6	5.8	54.1
06	269 14.1	N23 19.2	291 34.7	11.3	N24 39.4	5.7	54.1
07	284 14.0	19.1	306 05.0	11.3	24 45.1	5.5	54.1
L 08	299 13.9	19.0	320 35.3	11.3	24 50.6	5.5	54.1
U 09	314 13.7	18.9	335 05.6	11.2	24 56.1	5.3	54.1
N 10	329 13.6	18.8	349 35.8	11.2	25 01.4	5.2	54.1
E 11	344 13.5	18.7	4 06.0	11.2	25 06.6	5.1	54.1
S 12	359 13.3	N23 18.6	18 36.2	11.1	N25 11.7	5.0	54.1
13	14 13.2	18.5	33 06.3	11.1	25 16.7	4.8	54.1
14	29 13.1	18.3	47 36.4	11.0	25 21.5	4.8	54.1
15	44 13.0	18.2	62 06.4	11.0	25 26.3	4.6	54.1
16	59 12.8	18.1	76 36.4	11.0	25 30.9	4.5	54.0
17	74 12.7	18.0	91 06.4	10.9	25 35.4	4.4	54.0
18	89 12.6	N23 17.9	105 36.3	10.9	N25 39.8	4.2	54.0
19	104 12.4	17.8	120 06.2	10.9	25 44.0	4.1	54.0
20	119 12.3	17.7	134 36.1	10.8	25 48.1	4.0	54.0
21	134 12.2	17.6	149 05.9	10.8	25 52.1	3.9	54.0
22	149 12.0	17.5	163 35.7	10.8	25 56.0	3.8	54.0
23	164 11.9	17.4	178 05.5	10.8	25 59.8	3.6	54.0
28 00	179 11.8	N23 17.2	192 35.3	10.7	N26 03.4	3.5	54.0
01	194 11.7	17.1	207 05.0	10.7	26 06.9	3.4	54.0
02	209 11.5	17.0	221 34.7	10.6	26 10.3	3.3	54.0
03	224 11.4	16.9	236 04.3	10.7	26 13.6	3.1	54.0
04	239 11.3	16.8	250 34.0	10.6	26 16.7	3.1	54.0
05	254 11.1	16.7	265 03.6	10.6	26 19.8	2.9	54.0
06	269 11.0	N23 16.6	279 33.2	10.5	N26 22.7	2.7	54.0
07	284 10.9	16.4	294 02.7	10.6	26 25.4	2.7	54.0
M 08	299 10.8	16.3	308 32.3	10.5	26 28.1	2.5	54.0
A 09	314 10.6	16.2	323 01.8	10.5	26 30.6	2.4	54.0
R 10	329 10.5	16.1	337 31.3	10.5	26 33.0	2.2	54.0
T 11	344 10.4	16.0	352 00.8	10.4	26 35.2	2.2	54.0
E 12	359 10.2	N23 15.8	6 30.2	10.5	N26 37.4	2.0	54.0
S 13	14 10.1	15.7	20 59.7	10.4	26 39.4	1.8	54.0
14	29 10.0	15.6	35 29.1	10.4	26 41.2	1.8	54.0
15	44 09.9	15.5	49 58.5	10.4	26 43.0	1.6	53.9
16	59 09.7	15.3	64 27.9	10.4	26 44.6	1.5	53.9
17	74 09.6	15.2	78 57.3	10.4	26 46.1	1.4	53.9
18	89 09.5	N23 15.1	93 26.7	10.4	N26 47.5	1.2	53.9
19	104 09.3	15.0	107 56.1	10.3	26 48.7	1.1	53.9
20	119 09.2	14.8	122 25.4	10.4	26 49.8	1.0	53.9
21	134 09.1	14.7	136 54.8	10.3	26 50.8	0.8	53.9
22	149 09.0	14.6	151 24.1	10.3	26 51.6	0.7	53.9
23	164 08.8	14.5	165 53.4	10.4	26 52.3	0.6	53.9
29 00	179 08.7	N23 14.3	180 22.8	10.3	N26 52.9	0.5	53.9
01	194 08.6	14.2	194 52.1	10.3	26 53.4	0.3	53.9
02	209 08.5	14.1	209 21.4	10.3	26 53.7	0.2	53.9
03	224 08.3	13.9	223 50.7	10.3	26 53.9	0.1	53.9
04	239 08.2	13.8	238 20.0	10.4	26 54.0	0.1	53.9
05	254 08.1	13.7	252 49.4	10.3	26 53.9	0.1	53.9
06	269 07.9	N23 13.5	267 18.7	10.3	N26 53.8	0.3	53.9
07	284 07.8	13.4	281 48.0	10.3	26 53.5	0.5	53.9
M 08	299 07.7	13.3	296 17.3	10.4	26 53.0	0.6	53.9
I 09	314 07.6	13.1	310 46.7	10.3	26 52.4	0.7	53.9
É 10	329 07.4	13.0	325 16.0	10.3	26 51.7	0.8	53.9
R 11	344 07.3	12.8	339 45.3	10.4	26 50.9	1.0	53.9
C 12	359 07.2	N23 12.7	354 14.7	10.4	N26 49.9	1.0	53.9
O 13	14 07.1	12.6	8 44.1	10.3	26 48.9	1.3	53.9
L 14	29 06.9	12.4	23 13.4	10.4	26 47.6	1.3	53.9
E 15	44 06.8	12.3	37 42.8	10.4	26 46.3	1.5	53.9
S 16	59 06.7	12.1	52 12.2	10.4	26 44.8	1.6	53.9
17	74 06.6	12.0	66 41.6	10.5	26 43.2	1.7	53.9
18	89 06.4	N23 11.9	81 11.1	10.4	N26 41.5	1.9	53.9
19	104 06.3	11.7	95 40.5	10.5	26 39.6	2.0	53.9
20	119 06.2	11.6	110 10.0	10.4	26 37.6	2.1	53.9
21	134 06.1	11.4	124 39.4	10.5	26 35.5	2.2	53.9
22	149 05.9	11.3	139 08.9	10.5	26 33.3	2.4	54.0
23	164 05.8	11.1	153 38.4	10.6	N26 30.9	2.5	54.0
	S/D 15.8	d 0.1	S/D	14.7	14.7		14.7

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 27	Orto Luna 28	Orto Luna 29	Orto Luna 30
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	▭	▭	▭	▭
N 70	▭	▭	▭	▭	▭	▭	▭
68	▭	▭	▭	▭	▭	▭	▭
66	▭	▭	▭	▭	▭	▭	▭
64	////	////	01 36	23 26	▭	▭	▭
62	////	////	02 13	00 35	00 45	01 14	02 19
60	////	00 57	02 39	01 01	01 21	01 58	02 59
N 58	////	01 45	03 00	01 22	01 47	02 28	03 26
56	////	02 14	03 16	01 39	02 08	02 50	03 48
54	00 52	02 36	03 30	01 53	02 25	03 09	04 05
52	01 36	02 54	03 42	02 06	02 40	03 24	04 20
50	02 04	03 09	03 53	02 17	02 52	03 38	04 33
45	02 49	03 38	04 16	02 40	03 19	04 06	05 00
N 40	03 19	04 01	04 33	02 59	03 40	04 27	05 21
35	03 42	04 19	04 48	03 15	03 57	04 46	05 39
30	04 01	04 34	05 01	03 28	04 12	05 01	05 54
20	04 30	04 59	05 23	03 52	04 38	05 28	06 20
N 10	04 52	05 19	05 42	04 12	05 00	05 50	06 42
0	05 11	05 37	06 00	04 31	05 21	06 12	07 02
S 10	05 28	05 54	06 17	04 50	05 42	06 33	07 23
20	05 44	06 11	06 35	05 11	06 04	06 56	07 45
30	06 00	06 30	06 56	05 35	06 30	07 22	08 10
35	06 09	06 41	07 09	05 49	06 45	07 38	08 25
40	06 18	06 52	07 23	06 05	07 03	07 56	08 42
45	06 29	07 06	07 40	06 25	07 25	08 18	09 03
S 50	06 40	07 22	08 00	06 49	07 52	08 46	09 29
52	06 45	07 29	08 10	07 01	08 05	08 59	09 42
54	06 51	07 37	08 21	07 15	08 21	09 15	09 57
56	06 57	07 46	08 33	07 31	08 39	09 34	10 14
58	07 04	07 56	08 48	07 49	09 01	09 57	10 34
S 60	07 11	08 08	09 05	08 13	09 30	10 27	11 00

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 27	Ocaso Luna 28	Ocaso Luna 29	Ocaso Luna 30
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	▭	▭	▭	▭
N 70	▭	▭	▭	▭	▭	▭	▭
68	▭	▭	▭	▭	▭	▭	▭
66	▭	▭	▭	▭	▭	▭	▭
64	22 29	////	////	22 45	▭	▭	▭
62	21 53	////	////	21 26	22 42	23 23	23 36
60	21 27	23 08	////	20 50	21 58	22 43	23 07
N 58	21 07	22 21	////	20 24	21 29	22 15	22 45
56	20 50	21 52	////	20 04	21 06	21 53	22 27
54	20 36	21 30	23 13	19 47	20 48	21 36	22 11
52	20 24	21 12	22 29	19 33	20 32	21 21	21 58
50	20 13	20 58	22 02	19 20	20 18	21 07	21 46
45	19 51	20 28	21 18	18 54	19 51	20 40	21 21
N 40	19 33	20 06	20 47	18 33	19 29	20 19	21 02
35	19 18	19 48	20 24	18 16	19 11	20 01	20 45
30	19 05	19 33	20 06	18 02	18 55	19 46	20 31
20	18 43	19 08	19 37	17 37	18 29	19 20	20 07
N 10	18 24	18 47	19 15	17 15	18 06	18 57	19 46
0	18 07	18 29	18 56	16 55	17 45	18 36	19 26
S 10	17 50	18 12	18 39	16 35	17 24	18 15	19 06
20	17 31	17 55	18 23	16 14	17 01	17 52	18 45
30	17 10	17 37	18 06	15 49	16 35	17 26	18 20
35	16 58	17 26	17 58	15 34	16 20	17 11	18 06
40	16 44	17 14	17 48	15 17	16 02	16 52	17 49
45	16 27	17 01	17 38	14 57	15 40	16 31	17 29
S 50	16 07	16 45	17 27	14 32	15 12	16 03	17 03
52	15 57	16 38	17 21	14 20	14 59	15 49	16 50
54	15 46	16 30	17 16	14 06	14 43	15 34	16 36
56	15 33	16 21	17 10	13 50	14 25	15 15	16 19
58	15 19	16 10	17 03	13 31	14 03	14 52	15 59
S 60	15 01	15 59	16 56	13 07	13 34	14 22	15 34

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d	%
27	03 00	03 06	12 03	10 43	23 08	28	2
28	03 13	03 19	12 03	11 33	23 58	29	0
29	03 25	03 31	12 04	12 24	24 49	00	0

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·4		JÚPITER −2·4		SATURNO +0·5		ESTRELLAS		
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec	Nombre	AHS	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′		° ′	° ′
30 00	278 02.6	211 14.1	N20 18.3	252 59.4	N 8 27.3	270 44.8	N 1 45.0	310 35.2	S14 24.2	Acamar	315 13.6	S40 12.7
01	293 05.1	226 13.4	18.8	268 00.1	28.0	285 47.0	45.0	325 37.8	24.2	Achernar	335 21.9	S57 07.1
02	308 07.5	241 12.7	19.4	283 00.9	28.6	300 49.3	45.1	340 40.3	24.3	Acrux	173 02.4	S63 13.6
03	323 10.0	256 12.1 . .	19.9	298 01.7 . .	29.2	315 51.5 . .	45.2	355 42.9 . .	24.3	Adhara	255 07.9	S29 00.1
04	338 12.5	271 11.4	20.5	313 02.5	29.9	330 53.8	45.3	10 45.4	24.4	Aldebaran	290 42.3	N16 33.2
05	353 14.9	286 10.7	21.0	328 03.3	30.5	345 56.0	45.4	25 48.0	24.4			
06	8 17.4	301 10.1	N20 21.6	343 04.1	N 8 31.2	0 58.3	N 1 45.4	40 50.5	S14 24.4	Alioth	166 14.8	N55 50.6
07	23 19.9	316 09.4	22.1	358 04.9	31.8	16 00.5	45.5	55 53.1	24.5	Alkaid	152 53.5	N49 12.4
08	38 22.3	331 08.7	22.7	13 05.7	32.4	31 02.8	45.6	70 55.7	24.5	Alnair	27 35.3	S46 51.0
J 09	53 24.8	346 08.1 . .	23.2	28 06.5 . .	33.1	46 05.1 . .	45.7	85 58.2 . .	24.6	Alnilam	275 40.2	S 1 11.3
U 10	68 27.2	1 07.4	23.8	43 07.3	33.7	61 07.3	45.7	101 00.8	24.6	Alphard	217 50.0	S 8 45.3
E 11	83 29.7	16 06.7	24.3	58 08.1	34.3	76 09.6	45.8	116 03.3	24.6			
V 12	98 32.2	31 06.1	N20 24.9	73 08.9	N 8 35.0	91 11.8	N 1 45.9	131 05.9	S14 24.7	Alphecca	126 05.2	N26 38.5
E 13	113 34.6	46 05.4	25.4	88 09.7	35.6	106 14.1	46.0	146 08.4	24.7	Alpheratz	357 36.9	N29 12.7
S 14	128 37.1	61 04.7	26.0	103 10.5	36.3	121 16.3	46.0	161 11.0	24.8	Altair	62 01.7	N 8 55.6
15	143 39.6	76 04.0 . .	26.5	118 11.3 . .	36.9	136 18.6 . .	46.1	176 13.6 . .	24.8	Ankaa	353 09.2	S42 10.9
16	158 42.0	91 03.4	27.0	133 12.1	37.5	151 20.9	46.2	191 16.1	24.8	Antares	112 18.1	S26 28.9
17	173 44.5	106 02.7	27.6	148 12.9	38.2	166 23.1	46.3	206 18.7	24.9			
18	188 47.0	121 02.0	N20 28.1	163 13.7	N 8 38.8	181 25.4	N 1 46.3	221 21.2	S14 24.9	Arcturus	145 49.7	N19 04.1
19	203 49.4	136 01.3	28.7	178 14.4	39.5	196 27.6	46.4	236 23.8	25.0	Atria	107 13.6	S69 04.1
20	218 51.9	151 00.7	29.2	193 15.2	40.1	211 29.9	46.5	251 26.4	25.0	Avior	234 16.1	S59 34.9
21	233 54.4	166 00.0 . .	29.7	208 16.0 . .	40.7	226 32.2 . .	46.6	266 28.9 . .	25.0	Bellatrix	278 25.4	N 6 22.2
22	248 56.8	180 59.3	30.3	223 16.8	41.4	241 34.4	46.6	281 31.5	25.1	Betelgeuse	270 54.7	N 7 24.7
23	263 59.3	195 58.6	30.8	238 17.6	42.0	256 36.7	46.7	296 34.0	25.1			
1 00	279 01.7	210 58.0	N20 31.3	253 18.4	N 8 42.6	271 38.9	N 1 46.8	311 36.6	S14 25.2	Canopus	263 53.9	S52 42.4
01	294 04.2	225 57.3	31.9	268 19.2	43.3	286 41.2	46.9	326 39.2	25.2	Capella	280 25.4	N46 01.1
02	309 06.7	240 56.6	32.4	283 20.0	43.9	301 43.5	46.9	341 41.7	25.2	Deneb	49 26.8	N45 21.5
03	324 09.1	255 55.9 . .	32.9	298 20.8 . .	44.5	316 45.7 . .	47.0	356 44.3 . .	25.3	Denebola	182 27.2	N14 27.0
04	339 11.6	270 55.3	33.5	313 21.6	45.2	331 48.0	47.1	11 46.8	25.3	Diphda	348 49.4	S17 51.7
05	354 14.1	285 54.6	34.0	328 22.4	45.8	346 50.2	47.2	26 49.4	25.4			
06	9 16.5	300 53.9	N20 34.5	343 23.2	N 8 46.4	1 52.5	N 1 47.2	41 52.0	S14 25.4	Dubhe	193 43.9	N61 38.1
07	24 19.0	315 53.2	35.1	358 24.0	47.1	16 54.8	47.3	56 54.5	25.4	Elnath	278 04.9	N28 37.5
V 08	39 21.5	330 52.6	35.6	13 24.8	47.7	31 57.0	47.4	71 57.1	25.5	Eltanin	90 42.6	N51 29.2
I 09	54 23.9	345 51.9 . .	36.1	28 25.6 . .	48.3	46 59.3 . .	47.5	86 59.6 . .	25.5	Enif	33 40.6	N 9 58.6
E 10	69 26.4	0 51.2	36.6	43 26.4	49.0	62 01.6	47.5	102 02.2	25.6	Fomalhaut	15 16.7	S29 30.1
R 11	84 28.8	15 50.5	37.2	58 27.2	49.6	77 03.8	47.6	117 04.8	25.6			
N 12	99 31.3	30 49.8	N20 37.7	73 28.0	N 8 50.3	92 06.1	N 1 47.7	132 07.3	S14 25.7	Gacrux	171 53.9	S57 14.5
E 13	114 33.8	45 49.1	38.2	88 28.8	50.9	107 08.4	47.8	147 09.9	25.7	Gienah	175 45.8	S17 40.0
S 14	129 36.2	60 48.5	38.7	103 29.6	51.5	122 10.6	47.8	162 12.4	25.7	Hadar	148 38.7	S60 29.1
15	144 38.7	75 47.8 . .	39.2	118 30.4 . .	52.2	137 12.9 . .	47.9	177 15.0 . .	25.8	Hamal	327 53.7	N23 33.9
16	159 41.2	90 47.1	39.8	133 31.1	52.8	152 15.1	48.0	192 17.6	25.8	Kaus Aust.	83 34.9	S34 22.4
17	174 43.6	105 46.4	40.3	148 31.9	53.4	167 17.4	48.0	207 20.1	25.9			
18	189 46.1	120 45.7	N20 40.8	163 32.7	N 8 54.1	182 19.7	N 1 48.1	222 22.7	S14 25.9	Kochab	137 19.1	N74 04.1
19	204 48.6	135 45.1	41.3	178 33.5	54.7	197 21.9	48.2	237 25.3	25.9	Markab	13 31.8	N15 19.4
20	219 51.0	150 44.4	41.8	193 34.3	55.3	212 24.2	48.3	252 27.8	26.0	Menkar	314 08.5	N 4 10.6
21	234 53.5	165 43.7 . .	42.3	208 35.1 . .	55.9	227 26.5 . .	48.3	267 30.4 . .	26.0	Menkent	147 59.9	S36 28.9
22	249 56.0	180 43.0	42.9	223 35.9	56.6	242 28.7	48.4	282 32.9	26.1	Miaplacidus	221 39.4	S69 48.7
23	264 58.4	195 42.3	43.4	238 36.7	57.2	257 31.0	48.5	297 35.5	26.1			
2 00	280 00.9	210 41.6	N20 43.9	253 37.5	N 8 57.8	272 33.3	N 1 48.6	312 38.1	S14 26.1	Mirfak	308 31.6	N49 56.2
01	295 03.3	225 40.9	44.4	268 38.3	58.5	287 35.5	48.6	327 40.6	26.2	Nunki	75 50.0	S26 16.1
02	310 05.8	240 40.3	44.9	283 39.1	59.1	302 37.8	48.7	342 43.2	26.2	Peacock	53 08.5	S56 39.6
03	325 08.3	255 39.6 . .	45.4	298 39.9	8 59.7	317 40.1 . .	48.8	357 45.8 . .	26.3	Pollux	243 20.2	N27 58.4
04	340 10.7	270 38.9	45.9	313 40.7	9 00.4	332 42.3	48.8	12 48.3	26.3	Procyon	244 53.3	N 5 10.1
05	355 13.2	285 38.2	46.4	328 41.5	01.0	347 44.6	48.9	27 50.9	26.4			
06	10 15.7	300 37.5	N20 46.9	343 42.3	N 9 01.6	2 46.9	N 1 49.0	42 53.5	S14 26.4	Rasalhague	96 00.1	N12 32.7
07	25 18.1	315 36.8	47.4	358 43.1	02.3	17 49.2	49.1	57 56.0	26.4	Regulus	207 36.9	N11 51.6
S 08	40 20.6	330 36.1	47.9	13 43.9	02.9	32 51.4	49.1	72 58.6	26.5	Rigel	281 06.2	S 8 10.5
Á 09	55 23.1	345 35.4 . .	48.4	28 44.7 . .	03.5	47 53.7 . .	49.2	88 01.1 . .	26.5	Rigil Kent.	139 42.8	S60 55.8
B 10	70 25.5	0 34.7	48.9	43 45.5	04.1	62 56.0	49.3	103 03.7	26.6	Sabik	102 04.8	S15 45.1
A 11	85 28.0	15 34.1	49.4	58 46.3	04.8	77 58.2	49.3	118 06.3	26.6			
D 12	100 30.5	30 33.4	N20 49.9	73 47.1	N 9 05.4	93 00.5	N 1 49.4	133 08.8	S14 26.7	Schedar	349 33.4	N56 39.3
O 13	115 32.9	45 32.7	50.4	88 47.9	06.0	108 02.8	49.5	148 11.4	26.7	Shaula	96 12.8	S37 07.2
14	130 35.4	60 32.0	50.9	103 48.7	06.7	123 05.0	49.5	163 14.0	26.7	Sirius	258 28.4	S16 44.8
15	145 37.8	75 31.3 . .	51.4	118 49.5 . .	07.3	138 07.3 . .	49.6	178 16.5 . .	26.8	Spica	158 24.4	S11 16.7
16	160 40.3	90 30.6	51.9	133 50.3	07.9	153 09.6	49.7	193 19.1	26.8	Suhail	222 48.2	S43 31.5
17	175 42.8	105 29.9	52.4	148 51.1	08.5	168 11.9	49.8	208 21.7	26.9			
18	190 45.2	120 29.2	N20 52.9	163 51.9	N 9 09.2	183 14.1	N 1 49.8	223 24.2	S14 26.9	Vega	80 34.2	N38 48.3
19	205 47.7	135 28.5	53.4	178 52.7	09.8	198 16.4	49.9	238 26.8	26.9	Zuben'ubi	136 58.1	S16 08.1
20	220 50.2	150 27.8	53.9	193 53.5	10.4	213 18.7	50.0	253 29.4	27.0		AHS	Paso Mer.
21	235 52.6	165 27.1 . .	54.4	208 54.3 . .	11.1	228 20.9 . .	50.0	268 31.9 . .	27.0		° ′	h m
22	250 55.1	180 26.4	54.9	223 55.1	11.7	243 23.2	50.1	283 34.5	27.1	Venus	291 56.2	9 57
23	265 57.6	195 25.7	55.4	238 55.9	12.3	258 25.5	50.2	298 37.1	27.1	Marte	334 16.7	7 06
	h m									Júpiter	352 37.2	5 53
Paso Mer.	5 23.0	*v* −0.7	*d* 0.5	*v* 0.8	*d* 0.6	*v* 2.3	*d* 0.1	*v* 2.6	*d* 0.0	Saturno	32 34.8	3 13

UT (HmGr)	SOL				LUNA							Lat.	Aurora		Orto Sol	Orto Luna			
	AHGr		Dec		AHGr	v	Dec	d	Ph				Náut.	Civil		30	1	2	3
d h	°	′	°	′	°	′	′	°	′	′	′	°	h m	h m	h m	h m	h m	h m	h m
30 00	179	05.7	N23	11.0	168	08.0	10.5	N26	28.4	2.6	54.0	N 72	▭	▭	▭	▭	▭	▭	04 01
01	194	05.6		10.8	182	37.5	10.6	26	25.8	2.7	54.0	N 70	▭	▭	▭	▭	▭	▭	05 19
02	209	05.4		10.7	197	07.1	10.6	26	23.1	2.9	54.0	68	▭	▭	▭	▭	▭	03 15	05 56
03	224	05.3	. .	10.5	211	36.7	10.6	26	20.2	3.0	54.0	66	////	////	00 19	▭	▭	04 23	06 22
04	239	05.2		10.4	226	06.3	10.7	26	17.2	3.1	54.0	64	////	////	01 41	▭	03 06	04 59	06 42
05	254	05.1		10.2	240	36.0	10.7	26	14.1	3.3	54.0	62	////	////	02 17	02 19	03 49	05 24	06 58
06	269	04.9	N23	10.1	255	05.7	10.7	N26	10.8	3.3	54.0	60	////	01 03	02 42	02 59	04 18	05 44	07 12
07	284	04.8		09.9	269	35.4	10.7	26	07.5	3.5	54.0	N 58	////	01 48	03 02	03 26	04 40	06 00	07 23
J 08	299	04.7		09.8	284	05.1	10.8	26	04.0	3.6	54.0	56	////	02 17	03 18	03 48	04 57	06 14	07 33
U 09	314	04.6	. .	09.6	298	34.9	10.8	26	00.4	3.8	54.0	54	00 58	02 38	03 32	04 05	05 13	06 26	07 42
E 10	329	04.4		09.5	313	04.7	10.8	25	56.6	3.9	54.0	52	01 40	02 56	03 44	04 20	05 26	06 36	07 49
V 11	344	04.3		09.3	327	34.5	10.9	25	52.7	3.9	54.0	50	02 06	03 11	03 55	04 33	05 37	06 46	07 56
E 12	359	04.2	N23	09.2	342	04.4	10.9	N25	48.8	4.1	54.0	45	02 51	03 40	04 17	05 00	06 01	07 05	08 11
S 13	14	04.1		09.0	356	34.3	10.9	25	44.7	4.3	54.0	N 40	03 21	04 02	04 35	05 21	06 20	07 21	08 24
14	29	03.9		08.9	11	04.2	11.0	25	40.4	4.3	54.0	35	03 44	04 20	04 50	05 39	06 36	07 35	08 34
15	44	03.8	. .	08.7	25	34.2	11.0	25	36.1	4.5	54.0	30	04 02	04 35	05 02	05 54	06 49	07 46	08 43
16	59	03.7		08.5	40	04.2	11.0	25	31.6	4.6	54.0	20	04 31	05 00	05 24	06 20	07 13	08 06	08 58
17	74	03.6		08.4	54	34.2	11.1	25	27.0	4.7	54.0	N 10	04 53	05 20	05 43	06 42	07 33	08 23	09 12
18	89	03.4	N23	08.2	69	04.3	11.1	N25	22.3	4.8	54.0	0	05 12	05 38	06 00	07 02	07 51	08 39	09 24
19	104	03.3		08.1	83	34.4	11.1	25	17.5	5.0	54.0	S 10	05 28	05 55	06 17	07 23	08 10	08 55	09 37
20	119	03.2		07.9	98	04.5	11.2	25	12.5	5.0	54.0	20	05 44	06 12	06 36	07 45	08 30	09 12	09 50
21	134	03.1	. .	07.7	112	34.7	11.2	25	07.5	5.2	54.1	30	06 00	06 30	06 57	08 10	08 53	09 31	10 06
22	149	03.0		07.6	127	04.9	11.3	25	02.3	5.3	54.1	35	06 09	06 41	07 09	08 25	09 07	09 43	10 14
23	164	02.8		07.4	141	35.2	11.3	24	57.0	5.4	54.1	40	06 18	06 52	07 23	08 42	09 22	09 56	10 24
1 00	179	02.7	N23	07.2	156	05.5	11.3	N24	51.6	5.6	54.1	45	06 28	07 06	07 39	09 03	09 40	10 11	10 36
01	194	02.6		07.1	170	35.8	11.4	24	46.0	5.6	54.1	S 50	06 40	07 21	08 00	09 29	10 03	10 29	10 50
02	209	02.5		06.9	185	06.2	11.4	24	40.4	5.8	54.1	52	06 45	07 29	08 09	09 42	10 14	10 38	10 57
03	224	02.3	. .	06.7	199	36.6	11.5	24	34.6	5.9	54.1	54	06 51	07 37	08 20	09 57	10 27	10 48	11 04
04	239	02.2		06.6	214	07.1	11.5	24	28.7	6.0	54.1	56	06 57	07 46	08 33	10 14	10 41	10 59	11 12
05	254	02.1		06.4	228	37.6	11.6	24	22.7	6.1	54.1	58	07 03	07 56	08 47	10 34	10 57	11 12	11 21
06	269	02.0	N23	06.2	243	08.2	11.6	N24	16.6	6.2	54.1	S 60	07 11	08 07	09 04	11 00	11 17	11 26	11 31
07	284	01.9		06.1	257	38.8	11.6	24	10.4	6.3	54.1								
V 08	299	01.7		05.9	272	09.4	11.7	24	04.1	6.5	54.1								
I 09	314	01.6	. .	05.7	286	40.1	11.8	23	57.6	6.5	54.1								
E 10	329	01.5		05.6	301	10.9	11.7	23	51.1	6.7	54.1								
R 11	344	01.4		05.4	315	41.6	11.9	23	44.4	6.8	54.2								
N 12	359	01.2	N23	05.2	330	12.5	11.9	N23	37.6	6.8	54.2								
E 13	14	01.1		05.0	344	43.4	11.9	23	30.8	7.0	54.2								
S 14	29	01.0		04.9	359	14.3	12.0	23	23.8	7.1	54.2								
15	44	00.9	. .	04.7	13	45.3	12.0	23	16.7	7.2	54.2								
16	59	00.8		04.5	28	16.3	12.0	23	09.5	7.3	54.2								
17	74	00.6		04.3	42	47.3	12.2	23	02.2	7.4	54.2								
18	89	00.5	N23	04.2	57	18.5	12.1	N22	54.8	7.6	54.2								
19	104	00.4		04.0	71	49.6	12.2	22	47.2	7.6	54.2								
20	119	00.3		03.8	86	20.8	12.3	22	39.6	7.7	54.2								
21	134	00.2	. .	03.6	100	52.1	12.3	22	31.9	7.8	54.3								
22	149	00.0		03.5	115	23.4	12.4	22	24.1	8.0	54.3								
23	163	59.9		03.3	129	54.8	12.4	22	16.1	8.0	54.3								
2 00	178	59.8	N23	03.1	144	26.2	12.4	N22	08.1	8.1	54.3								
01	193	59.7		02.9	158	57.6	12.5	22	00.0	8.3	54.3								
02	208	59.6		02.7	173	29.1	12.6	21	51.7	8.3	54.3								
03	223	59.4	. .	02.5	188	00.7	12.6	21	43.4	8.4	54.3								
04	238	59.3		02.4	202	32.3	12.7	21	35.0	8.6	54.3								
05	253	59.2		02.2	217	04.0	12.7	21	26.4	8.6	54.3								
06	268	59.1	N23	02.0	231	35.7	12.7	N21	17.8	8.7	54.4								
07	283	59.0		01.8	246	07.4	12.8	21	09.1	8.8	54.4								
S 08	298	58.9		01.6	260	39.2	12.9	21	00.3	9.0	54.4								
Á 09	313	58.7	. .	01.4	275	11.1	12.9	20	51.3	9.0	54.4								
B 10	328	58.6		01.2	289	43.0	12.9	20	42.3	9.1	54.4								
A 11	343	58.5		01.1	304	14.9	13.0	20	33.2	9.2	54.4								
D 12	358	58.4	N23	00.9	318	46.9	13.1	N20	24.0	9.2	54.4								
O 13	13	58.3		00.7	333	19.0	13.1	20	14.8	9.4	54.4								
14	28	58.1		00.5	347	51.1	13.1	20	05.4	9.5	54.5								
15	43	58.0	. .	00.3	2	23.2	13.2	19	55.9	9.6	54.5								
16	58	57.9	23	00.1	16	55.4	13.2	19	46.3	9.6	54.5								
17	73	57.8	22	59.9	31	27.6	13.3	19	36.7	9.7	54.5								
18	88	57.7	N22	59.7	45	59.9	13.4	N19	27.0	9.9	54.5								
19	103	57.6		59.5	60	32.3	13.3	19	17.1	9.9	54.5								
20	118	57.4		59.3	75	04.6	13.5	19	07.2	10.0	54.5								
21	133	57.3	. .	59.1	89	37.1	13.4	18	57.2	10.1	54.6								
22	148	57.2		58.9	104	09.5	13.6	18	47.1	10.1	54.6								
23	163	57.1		58.7	118	42.1	13.5	N18	37.0	10.3	54.6								
	S/D	15.8	d	0.2	S/D	14.7		14.8			14.8								

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	30	1	2	3
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	▭	▭	▭	02 44
N 70	▭	▭	▭	▭	▭	▭	01 25
68	▭	▭	▭	▭	▭	01 52	00 47
66	▭	▭	▭	▭	▭	00 43	00 19
64	22 25	////	////	▭	00 20	{00 23 07 58}	23 52
62	21 50	////	////	23 36	23 41	23 41	23 41
60	21 25	23 03	////	23 07	23 20	23 27	23 31
N 58	21 05	22 18	////	22 45	23 03	23 15	23 23
56	20 49	21 50	////	22 27	22 49	23 04	23 15
54	20 35	21 29	23 08	22 11	22 36	22 55	23 09
52	20 23	21 11	22 27	21 58	22 25	22 46	23 03
50	20 13	20 57	22 01	21 46	22 16	22 39	22 58
45	19 50	20 28	21 17	21 21	21 55	22 23	22 46
N 40	19 33	20 05	20 47	21 02	21 38	22 09	22 36
35	19 18	19 48	20 24	20 45	21 24	21 58	22 28
30	19 05	19 33	20 06	20 31	21 12	21 48	22 21
20	18 44	19 08	19 37	20 07	20 51	21 31	22 08
N 10	18 25	18 48	19 15	19 46	20 32	21 15	21 56
0	18 08	18 30	18 56	19 26	20 15	21 01	21 46
S 10	17 50	18 13	18 39	19 06	19 57	20 47	21 35
20	17 32	17 56	18 24	18 45	19 38	20 31	21 23
30	17 11	17 38	18 07	18 20	19 17	20 14	21 10
35	16 59	17 27	17 59	18 06	19 04	20 03	21 02
40	16 45	17 16	17 50	17 49	18 49	19 51	20 54
45	16 29	17 02	17 40	17 29	18 31	19 37	20 43
S 50	16 08	16 47	17 28	17 03	18 09	19 19	20 31
52	15 59	16 39	17 23	16 50	17 59	19 11	20 25
54	15 48	16 31	17 17	16 36	17 47	19 02	20 18
56	15 35	16 22	17 11	16 19	17 33	18 52	20 11
58	15 21	16 12	17 05	15 59	17 17	18 40	20 03
S 60	15 04	16 01	16 58	15 34	16 58	18 26	19 53

Día	SOL			LUNA				
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
30	03 37	03 43	12 04	13 14	00 49	01	2
1	03 49	03 55	12 04	14 03	01 39	02	5
2	04 01	04 06	12 04	14 50	02 27	03	10

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·4		JÚPITER −2·4		SATURNO +0·4	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
3 00	281 00.0	210 25.0	N20 55.9	253 56.6	N 9 12.9	273 27.8	N 1 50.2	313 39.6	S14 27.2
01	296 02.5	225 24.3	56.4	268 57.4	13.6	288 30.0	50.3	328 42.2	27.2
02	311 05.0	240 23.6	56.9	283 58.2	14.2	303 32.3	50.4	343 44.8	27.2
03	326 07.4	255 22.9	57.3	298 59.0	14.8	318 34.6	50.4	358 47.3	27.3
04	341 09.9	270 22.2	57.8	313 59.8	15.4	333 36.9	50.5	13 49.9	27.3
05	356 12.3	285 21.6	58.3	329 00.6	16.1	348 39.1	50.6	28 52.5	27.4
06	11 14.8	300 20.9	N20 58.8	344 01.4	N 9 16.7	3 41.4	N 1 50.6	43 55.0	S14 27.4
07	26 17.3	315 20.2	59.3	359 02.2	17.3	18 43.7	50.7	58 57.6	27.5
08	41 19.7	330 19.5	20 59.8	14 03.0	18.0	33 46.0	50.8	74 00.2	27.5
D 09	56 22.2	345 18.8	21 00.2	29 03.8	18.6	48 48.2	50.9	89 02.7	27.5
O 10	71 24.7	0 18.1	00.7	44 04.6	19.2	63 50.5	50.9	104 05.3	27.6
M 11	86 27.1	15 17.4	01.2	59 05.4	19.8	78 52.8	51.0	119 07.9	27.6
I 12	101 29.6	30 16.7	N21 01.7	74 06.2	N 9 20.5	93 55.1	N 1 51.1	134 10.4	S14 27.7
N 13	116 32.1	45 16.0	02.1	89 07.0	21.1	108 57.4	51.1	149 13.0	27.7
G 14	131 34.5	60 15.2	02.6	104 07.8	21.7	123 59.6	51.2	164 15.6	27.8
O 15	146 37.0	75 14.5	03.1	119 08.6	22.3	139 01.9	51.3	179 18.1	27.8
16	161 39.4	90 13.8	03.6	134 09.4	22.9	154 04.2	51.3	194 20.7	27.9
17	176 41.9	105 13.1	04.0	149 10.2	23.6	169 06.5	51.4	209 23.3	27.9
18	191 44.4	120 12.4	N21 04.5	164 11.0	N 9 24.2	184 08.7	N 1 51.5	224 25.8	S14 27.9
19	206 46.8	135 11.7	05.0	179 11.8	24.8	199 11.0	51.5	239 28.4	28.0
20	221 49.3	150 11.0	05.5	194 12.6	25.4	214 13.3	51.6	254 31.0	28.0
21	236 51.8	165 10.3	05.9	209 13.4	26.1	229 15.6	51.7	269 33.6	28.1
22	251 54.2	180 09.6	06.4	224 14.2	26.7	244 17.9	51.7	284 36.1	28.1
23	266 56.7	195 08.9	06.9	239 15.0	27.3	259 20.1	51.8	299 38.7	28.2
4 00	281 59.2	210 08.2	N21 07.3	254 15.8	N 9 27.9	274 22.4	N 1 51.9	314 41.3	S14 28.2
01	297 01.6	225 07.5	07.8	269 16.6	28.6	289 24.7	51.9	329 43.8	28.2
02	312 04.1	240 06.8	08.3	284 17.4	29.2	304 27.0	52.0	344 46.4	28.3
03	327 06.6	255 06.1	08.7	299 18.2	29.8	319 29.3	52.1	359 49.0	28.3
04	342 09.0	270 05.4	09.2	314 19.0	30.4	334 31.5	52.1	14 51.5	28.4
05	357 11.5	285 04.7	09.6	329 19.8	31.0	349 33.8	52.2	29 54.1	28.4
06	12 13.9	300 04.0	N21 10.1	344 20.6	N 9 31.7	4 36.1	N 1 52.2	44 56.7	S14 28.5
07	27 16.4	315 03.3	10.6	359 21.4	32.3	19 38.4	52.3	59 59.3	28.5
L 08	42 18.9	330 02.5	11.0	14 22.2	32.9	34 40.7	52.4	75 01.8	28.6
U 09	57 21.3	345 01.8	11.5	29 23.0	33.5	49 43.0	52.4	90 04.4	28.6
N 10	72 23.8	0 01.1	11.9	44 23.8	34.1	64 45.2	52.5	105 07.0	28.6
E 11	87 26.3	15 00.4	12.4	59 24.6	34.8	79 47.5	52.6	120 09.5	28.7
S 12	102 28.7	29 59.7	N21 12.8	74 25.4	N 9 35.4	94 49.8	N 1 52.6	135 12.1	S14 28.7
13	117 31.2	44 59.0	13.3	89 26.2	36.0	109 52.1	52.7	150 14.7	28.8
14	132 33.7	59 58.3	13.7	104 27.0	36.6	124 54.4	52.8	165 17.3	28.8
15	147 36.1	74 57.6	14.2	119 27.8	37.2	139 56.7	52.8	180 19.8	28.9
16	162 38.6	89 56.9	14.6	134 28.6	37.9	154 58.9	52.9	195 22.4	28.9
17	177 41.1	104 56.1	15.1	149 29.4	38.5	170 01.2	53.0	210 25.0	29.0
18	192 43.5	119 55.4	N21 15.5	164 30.2	N 9 39.1	185 03.5	N 1 53.0	225 27.5	S14 29.0
19	207 46.0	134 54.7	16.0	179 31.0	39.7	200 05.8	53.1	240 30.1	29.0
20	222 48.4	149 54.0	16.4	194 31.8	40.3	215 08.1	53.1	255 32.7	29.1
21	237 50.9	164 53.3	16.9	209 32.6	41.0	230 10.4	53.2	270 35.3	29.1
22	252 53.4	179 52.6	17.3	224 33.4	41.6	245 12.7	53.3	285 37.8	29.2
23	267 55.8	194 51.9	17.8	239 34.2	42.2	260 14.9	53.3	300 40.4	29.2
5 00	282 58.3	209 51.2	N21 18.2	254 35.0	N 9 42.8	275 17.2	N 1 53.4	315 43.0	S14 29.3
01	298 00.8	224 50.4	18.7	269 35.8	43.4	290 19.5	53.5	330 45.6	29.3
02	313 03.2	239 49.7	19.1	284 36.6	44.0	305 21.8	53.5	345 48.1	29.4
03	328 05.7	254 49.0	19.5	299 37.4	44.7	320 24.1	53.6	0 50.7	29.4
04	343 08.2	269 48.3	20.0	314 38.2	45.3	335 26.4	53.7	15 53.3	29.4
05	358 10.6	284 47.6	20.4	329 39.0	45.9	350 28.7	53.7	30 55.8	29.5
06	13 13.1	299 46.9	N21 20.9	344 39.8	N 9 46.5	5 31.0	N 1 53.8	45 58.4	S14 29.5
07	28 15.5	314 46.1	21.3	359 40.6	47.1	20 33.2	53.8	61 01.0	29.6
M 08	43 18.0	329 45.4	21.7	14 41.4	47.7	35 35.5	53.9	76 03.6	29.6
A 09	58 20.5	344 44.7	22.2	29 42.2	48.4	50 37.8	54.0	91 06.1	29.7
R 10	73 22.9	359 44.0	22.6	44 43.0	49.0	65 40.1	54.0	106 08.7	29.7
T 11	88 25.4	14 43.3	23.0	59 43.8	49.6	80 42.4	54.1	121 11.3	29.8
E 12	103 27.9	29 42.5	N21 23.5	74 44.6	N 9 50.2	95 44.7	N 1 54.1	136 13.9	S14 29.8
S 13	118 30.3	44 41.8	23.9	89 45.4	50.8	110 47.0	54.2	151 16.4	29.9
14	133 32.8	59 41.1	24.3	104 46.2	51.4	125 49.3	54.3	166 19.0	29.9
15	148 35.3	74 40.4	24.7	119 47.0	52.0	140 51.6	54.3	181 21.6	29.9
16	163 37.7	89 39.7	25.2	134 47.8	52.7	155 53.9	54.4	196 24.2	30.0
17	178 40.2	104 38.9	25.6	149 48.6	53.3	170 56.2	54.5	211 26.7	30.0
18	193 42.7	119 38.2	N21 26.0	164 49.4	N 9 53.9	185 58.4	N 1 54.5	226 29.3	S14 30.1
19	208 45.1	134 37.5	26.4	179 50.2	54.5	201 00.7	54.6	241 31.9	30.1
20	223 47.6	149 36.8	26.9	194 51.0	55.1	216 03.0	54.6	256 34.5	30.2
21	238 50.0	164 36.0	27.3	209 51.8	55.7	231 05.3	54.7	271 37.0	30.2
22	253 52.5	179 35.3	27.7	224 52.6	56.3	246 07.6	54.8	286 39.6	30.3
23	268 55.0	194 34.6	28.1	239 53.4	57.0	261 09.9	54.8	301 42.2	30.3
	h m								
Paso Mer.	5 11.2	*v* −0.7	*d* 0.5	*v* 0.8	*d* 0.6	*v* 2.3	*d* 0.1	*v* 2.6	*d* 0.0

ESTRELLAS		
Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.6	S40 12.7
Achernar	335 21.9	S57 07.1
Acrux	173 02.4	S63 13.6
Adhara	255 07.9	S29 00.1
Aldebaran	290 42.3	N16 33.2
Alioth	166 14.8	N55 50.6
Alkaid	152 53.5	N49 12.4
Alnair	27 35.2	S46 51.0
Alnilam	275 40.2	S 1 11.2
Alphard	217 50.1	S 8 45.3
Alphecca	126 05.3	N26 38.5
Alpheratz	357 36.8	N29 12.7
Altair	62 01.6	N 8 55.6
Ankaa	353 09.2	S42 10.9
Antares	112 18.1	S26 28.9
Arcturus	145 49.7	N19 04.1
Atria	107 13.6	S69 04.1
Avior	234 16.2	S59 34.9
Bellatrix	278 25.4	N 6 22.2
Betelgeuse	270 54.7	N 7 24.7
Canopus	263 53.9	S52 42.4
Capella	280 25.4	N46 01.1
Deneb	49 26.8	N45 21.5
Denebola	182 27.2	N14 27.0
Diphda	348 49.4	S17 51.7
Dubhe	193 43.9	N61 38.1
Elnath	278 04.9	N28 37.5
Eltanin	90 42.6	N51 29.2
Enif	33 40.6	N 9 58.6
Fomalhaut	15 16.6	S29 30.1
Gacrux	171 54.0	S57 14.5
Gienah	175 45.8	S17 40.0
Hadar	148 38.7	S60 29.1
Hamal	327 53.7	N23 33.9
Kaus Aust.	83 34.9	S34 22.4
Kochab	137 19.2	N74 04.1
Markab	13 31.8	N15 19.5
Menkar	314 08.5	N 4 10.6
Menkent	147 59.9	S36 28.9
Miaplacidus	221 39.4	S69 48.7
Mirfak	308 31.5	N49 56.2
Nunki	75 50.0	S26 16.1
Peacock	53 08.5	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.3	N 5 10.1
Rasalhague	96 00.1	N12 32.7
Regulus	207 36.9	N11 51.6
Rigel	281 06.2	S 8 10.5
Rigil Kent.	139 42.8	S60 55.8
Sabik	102 04.8	S15 45.1
Schedar	349 33.4	N56 39.3
Shaula	96 12.8	S37 07.2
Sirius	258 28.4	S16 44.8
Spica	158 24.4	S11 16.7
Suhail	222 48.2	S43 31.4
Vega	80 34.2	N38 48.3
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	288 09.0	10 00
Marte	332 16.7	7 03
Júpiter	352 23.3	5 42
Saturno	32 42.1	3 01

UT (HmGr)	SOL AHGr	SOL Dec	LUNA AHGr	LUNA v	LUNA Dec	LUNA d	LUNA Ph
d h	° ′	° ′	° ′	′	° ′	′	′
3 00	178 57.0	N22 58.5	133 14.6	13.6	N18 26.7	10.3	54.6
01	193 56.9	58.3	147 47.2	13.7	18 16.4	10.4	54.6
02	208 56.7	58.1	162 19.9	13.7	18 06.0	10.5	54.6
03	223 56.6	57.9	176 52.6	13.7	17 55.5	10.6	54.7
04	238 56.5	57.7	191 25.3	13.8	17 44.9	10.7	54.7
05	253 56.4	57.5	205 58.1	13.8	17 34.2	10.7	54.7
06	268 56.3	N22 57.3	220 30.9	13.9	N17 23.5	10.8	54.7
07	283 56.2	57.1	235 03.8	13.9	17 12.7	10.9	54.7
D 08	298 56.0	56.9	249 36.7	14.0	17 01.8	11.0	54.7
O 09	313 55.9	56.7	264 09.7	14.0	16 50.8	11.0	54.8
M 10	328 55.8	56.5	278 42.7	14.0	16 39.8	11.2	54.8
I 11	343 55.7	56.3	293 15.7	14.1	16 28.6	11.2	54.8
N 12	358 55.6	N22 56.1	307 48.8	14.1	N16 17.4	11.2	54.8
G 13	13 55.5	55.9	322 21.9	14.1	16 06.2	11.4	54.8
O 14	28 55.4	55.7	336 55.0	14.2	15 54.8	11.4	54.8
15	43 55.2	55.5	351 28.2	14.3	15 43.4	11.5	54.9
16	58 55.1	55.3	6 01.5	14.2	15 31.9	11.6	54.9
17	73 55.0	55.1	20 34.7	14.3	15 20.3	11.6	54.9
18	88 54.9	N22 54.9	35 08.0	14.4	N15 08.7	11.7	54.9
19	103 54.8	54.7	49 41.4	14.3	14 57.0	11.8	54.9
20	118 54.7	54.4	64 14.7	14.4	14 45.2	11.8	55.0
21	133 54.6	54.2	78 48.1	14.5	14 33.4	11.9	55.0
22	148 54.4	54.0	93 21.6	14.4	14 21.5	12.0	55.0
23	163 54.3	53.8	107 55.0	14.5	14 09.5	12.1	55.0
4 00	178 54.2	N22 53.6	122 28.5	14.6	N13 57.4	12.1	55.0
01	193 54.1	53.4	137 02.1	14.5	13 45.3	12.1	55.1
02	208 54.0	53.2	151 35.6	14.6	13 33.2	12.3	55.1
03	223 53.9	52.9	166 09.2	14.7	13 20.9	12.3	55.1
04	238 53.8	52.7	180 42.9	14.6	13 08.6	12.3	55.1
05	253 53.7	52.5	195 16.5	14.7	12 56.3	12.5	55.1
06	268 53.5	N22 52.3	209 50.2	14.7	N12 43.8	12.5	55.2
07	283 53.4	52.1	224 23.9	14.7	12 31.3	12.5	55.2
L 08	298 53.3	51.9	238 57.6	14.8	12 18.8	12.6	55.2
U 09	313 53.2	51.6	253 31.4	14.8	12 06.2	12.7	55.2
N 10	328 53.1	51.4	268 05.2	14.8	11 53.5	12.7	55.3
E 11	343 53.0	51.2	282 39.0	14.8	11 40.8	12.8	55.3
S 12	358 52.9	N22 51.0	297 12.8	14.8	N11 28.0	12.8	55.3
13	13 52.8	50.7	311 46.6	14.9	11 15.2	12.9	55.3
14	28 52.6	50.5	326 20.5	14.9	11 02.3	12.9	55.4
15	43 52.5	50.3	340 54.4	14.9	10 49.4	13.0	55.4
16	58 52.4	50.1	355 28.3	14.9	10 36.4	13.1	55.4
17	73 52.3	49.8	10 02.2	15.0	10 23.3	13.1	55.4
18	88 52.2	N22 49.6	24 36.2	14.9	N10 10.2	13.2	55.4
19	103 52.1	49.4	39 10.1	15.0	9 57.0	13.2	55.5
20	118 52.0	49.2	53 44.1	15.0	9 43.8	13.2	55.5
21	133 51.9	48.9	68 18.1	15.0	9 30.6	13.3	55.5
22	148 51.8	48.7	82 52.1	15.0	9 17.3	13.4	55.5
23	163 51.7	48.5	97 26.1	15.0	9 03.9	13.4	55.6
5 00	178 51.5	N22 48.2	112 00.1	15.0	N 8 50.5	13.5	55.6
01	193 51.4	48.0	126 34.1	15.1	8 37.0	13.5	55.6
02	208 51.3	47.8	141 08.2	15.0	8 23.5	13.5	55.6
03	223 51.2	47.5	155 42.2	15.1	8 10.0	13.6	55.7
04	238 51.1	47.3	170 16.3	15.0	7 56.4	13.6	55.7
05	253 51.0	47.1	184 50.3	15.1	7 42.8	13.7	55.7
06	268 50.9	N22 46.8	199 24.4	15.0	N 7 29.1	13.8	55.8
07	283 50.8	46.6	213 58.4	15.1	7 15.3	13.7	55.8
M 08	298 50.7	46.4	228 32.5	15.1	7 01.6	13.8	55.8
A 09	313 50.6	46.1	243 06.6	15.1	6 47.8	13.9	55.8
R 10	328 50.5	45.9	257 40.7	15.0	6 33.9	13.9	55.9
T 11	343 50.3	45.7	272 14.7	15.1	6 20.0	13.9	55.9
E 12	358 50.2	N22 45.4	286 48.8	15.1	N 6 06.1	14.0	55.9
S 13	13 50.1	45.2	301 22.9	15.0	5 52.1	14.0	56.0
14	28 50.0	44.9	315 56.9	15.1	5 38.1	14.0	56.0
15	43 49.9	44.7	330 31.0	15.0	5 24.1	14.1	56.0
16	58 49.8	44.5	345 05.0	15.1	5 10.0	14.1	56.0
17	73 49.7	44.2	359 39.1	15.0	4 55.9	14.1	56.1
18	88 49.6	N22 44.0	14 13.1	15.1	N 4 41.8	14.2	56.1
19	103 49.5	43.7	28 47.2	15.0	4 27.6	14.2	56.1
20	118 49.4	43.5	43 21.2	15.0	4 13.4	14.3	56.2
21	133 49.3	43.2	57 55.2	15.0	3 59.1	14.2	56.2
22	148 49.2	43.0	72 29.2	15.0	3 44.9	14.3	56.2
23	163 49.1	42.7	87 03.2	14.9	N 3 30.6	14.4	56.2
	S/D 15.8	d 0.2	S/D	14.9	15.1		15.2

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 3	Orto Luna 4	Orto Luna 5	Orto Luna 6
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	04 01	07 13	09 25	11 29
N 70	▭	▭	▭	05 19	07 36	09 35	11 30
68	▭	▭	▭	05 56	07 54	09 43	11 30
66	////	////	00 41	06 22	08 08	09 50	11 30
64	////	////	01 47	06 42	08 20	09 55	11 31
62	////	////	02 21	06 58	08 30	10 00	11 31
60	////	01 11	02 46	07 12	08 38	10 04	11 31
N 58	////	01 53	03 05	07 23	08 46	10 08	11 31
56	////	02 21	03 21	07 33	08 52	10 11	11 32
54	01 05	02 42	03 35	07 42	08 58	10 14	11 32
52	01 44	02 59	03 47	07 49	09 03	10 17	11 32
50	02 10	03 13	03 57	07 56	09 08	10 19	11 32
45	02 53	03 42	04 19	08 11	09 18	10 25	11 32
N 40	03 23	04 04	04 36	08 24	09 26	10 29	11 33
35	03 45	04 22	04 51	08 34	09 33	10 33	11 33
30	04 03	04 36	05 04	08 43	09 39	10 36	11 33
20	04 32	05 01	05 25	08 58	09 50	10 42	11 34
N 10	04 54	05 21	05 44	09 12	10 00	10 47	11 34
0	05 12	05 38	06 01	09 24	10 08	10 51	11 34
S 10	05 29	05 55	06 18	09 37	10 17	10 56	11 35
20	05 45	06 12	06 36	09 50	10 26	11 01	11 35
30	06 01	06 30	06 57	10 06	10 37	11 06	11 35
35	06 09	06 41	07 09	10 14	10 43	11 10	11 36
40	06 18	06 52	07 22	10 24	10 50	11 13	11 36
45	06 28	07 05	07 39	10 36	10 58	11 17	11 36
S 50	06 39	07 21	07 59	10 50	11 07	11 22	11 37
52	06 44	07 28	08 08	10 57	11 12	11 25	11 37
54	06 50	07 36	08 19	11 04	11 16	11 27	11 37
56	06 56	07 44	08 31	11 12	11 22	11 30	11 37
58	07 02	07 54	08 45	11 21	11 28	11 33	11 38
S 60	07 09	08 05	09 02	11 31	11 34	11 36	11 38

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 3	Ocaso Luna 4	Ocaso Luna 5	Ocaso Luna 6
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	02 44	01 05	{00 24 / 23 53}	23 23
N 70	▭	▭	▭	01 25	00 40	{00 12 / 23 48}	23 26
68	▭	▭	▭	00 47	00 20	{00 01 / 23 45}	23 29
66	23 23	////	////	00 19	{00 05 / 23 53}	23 42	23 32
64	22 20	////	////	23 52	23 45	23 39	23 34
62	21 47	////	////	23 41	23 39	23 37	23 35
60	21 22	22 56	////	23 31	23 34	23 35	23 37
N 58	21 03	22 15	////	23 23	23 29	23 34	23 38
56	20 47	21 47	////	23 15	23 24	23 32	23 39
54	20 34	21 27	23 02	23 09	23 20	23 31	23 41
52	20 22	21 10	22 24	23 03	23 17	23 29	23 42
50	20 11	20 55	21 58	22 58	23 14	23 28	23 42
45	19 50	20 27	21 15	22 46	23 06	23 26	23 44
N 40	19 32	20 05	20 46	22 36	23 00	23 23	23 46
35	19 18	19 47	20 24	22 28	22 55	23 21	23 48
30	19 05	19 32	20 05	22 21	22 51	23 20	23 49
20	18 44	19 08	19 37	22 08	22 43	23 17	23 51
N 10	18 25	18 48	19 15	21 56	22 36	23 14	23 53
0	18 08	18 31	18 57	21 46	22 29	23 12	23 55
S 10	17 51	18 14	18 40	21 35	22 22	23 09	23 57
20	17 33	17 57	18 24	21 23	22 15	23 06	23 59
30	17 13	17 39	18 09	21 10	22 07	23 03	24 01
35	17 01	17 29	18 00	21 02	22 02	23 01	24 02
40	16 47	17 17	17 51	20 54	21 56	22 59	24 04
45	16 31	17 04	17 41	20 43	21 50	22 57	24 06
S 50	16 10	16 49	17 30	20 31	21 42	22 54	24 08
52	16 01	16 41	17 25	20 25	21 38	22 53	24 09
54	15 50	16 34	17 19	20 18	21 34	22 51	24 10
56	15 38	16 25	17 14	20 11	21 30	22 50	24 11
58	15 24	16 15	17 07	20 03	21 25	22 48	24 12
S 60	15 07	16 04	17 00	19 53	21 20	22 46	24 13

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d	%
3	04 12	04 17	12 04	15 35	03 13	04	17
4	04 23	04 28	12 04	16 19	03 57	05	25
5	04 34	04 39	12 05	17 01	04 40	06	34

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·4		JÚPITER −2·5		SATURNO +0·4	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
6 00	283 57.4	209 33.9	N21 28.5	254 54.2	N 9 57.6	276 12.2	N 1 54.9	316 44.8	S14 30.4
01	298 59.9	224 33.1	29.0	269 55.0	58.2	291 14.5	54.9	331 47.4	30.4
02	314 02.4	239 32.4	29.4	284 55.8	58.8	306 16.8	55.0	346 49.9	30.4
03	329 04.8	254 31.7	29.8	299 56.6	9 59.4	321 19.1	55.1	1 52.5	30.5
04	344 07.3	269 31.0	30.2	314 57.4	10 00.0	336 21.4	55.1	16 55.1	30.5
05	359 09.8	284 30.2	30.6	329 58.2	00.6	351 23.7	55.2	31 57.7	30.6
06	14 12.2	299 29.5	N21 31.0	344 59.0	N10 01.2	6 26.0	N 1 55.2	47 00.2	S14 30.6
07	29 14.7	314 28.8	31.5	359 59.9	01.8	21 28.3	55.3	62 02.8	30.7
08	44 17.1	329 28.1	31.9	15 00.7	02.5	36 30.6	55.4	77 05.4	30.7
M 09	59 19.6	344 27.3	32.3	30 01.5	03.1	51 32.9	55.4	92 08.0	30.8
I 10	74 22.1	359 26.6	32.7	45 02.3	03.7	66 35.2	55.5	107 10.5	30.8
É 11	89 24.5	14 25.9	33.1	60 03.1	04.3	81 37.5	55.5	122 13.1	30.9
R 12	104 27.0	29 25.1	N21 33.5	75 03.9	N10 04.9	96 39.8	N 1 55.6	137 15.7	S14 30.9
C 13	119 29.5	44 24.4	33.9	90 04.7	05.5	111 42.0	55.6	152 18.3	31.0
O 14	134 31.9	59 23.7	34.3	105 05.5	06.1	126 44.3	55.7	167 20.9	31.0
L 15	149 34.4	74 23.0	34.7	120 06.3	06.7	141 46.6	55.8	182 23.4	31.0
E 16	164 36.9	89 22.2	35.1	135 07.1	07.3	156 48.9	55.8	197 26.0	31.1
S 17	179 39.3	104 21.5	35.5	150 07.9	08.0	171 51.2	55.9	212 28.6	31.1
18	194 41.8	119 20.8	N21 35.9	165 08.7	N10 08.6	186 53.5	N 1 55.9	227 31.2	S14 31.2
19	209 44.3	134 20.0	36.3	180 09.5	09.2	201 55.8	56.0	242 33.7	31.2
20	224 46.7	149 19.3	36.7	195 10.3	09.8	216 58.1	56.1	257 36.3	31.3
21	239 49.2	164 18.6	37.1	210 11.1	10.4	232 00.4	56.1	272 38.9	31.3
22	254 51.6	179 17.8	37.5	225 11.9	11.0	247 02.7	56.2	287 41.5	31.4
23	269 54.1	194 17.1	37.9	240 12.7	11.6	262 05.0	56.2	302 44.1	31.4
7 00	284 56.6	209 16.4	N21 38.3	255 13.5	N10 12.2	277 07.3	N 1 56.3	317 46.6	S14 31.5
01	299 59.0	224 15.6	38.7	270 14.3	12.8	292 09.6	56.3	332 49.2	31.5
02	315 01.5	239 14.9	39.1	285 15.1	13.4	307 11.9	56.4	347 51.8	31.6
03	330 04.0	254 14.2	39.5	300 15.9	14.0	322 14.2	56.5	2 54.4	31.6
04	345 06.4	269 13.4	39.9	315 16.7	14.6	337 16.5	56.5	17 57.0	31.7
05	0 08.9	284 12.7	40.3	330 17.5	15.2	352 18.8	56.6	32 59.5	31.7
06	15 11.4	299 12.0	N21 40.7	345 18.3	N10 15.9	7 21.1	N 1 56.6	48 02.1	S14 31.7
07	30 13.8	314 11.2	41.0	0 19.1	16.5	22 23.4	56.7	63 04.7	31.8
J 08	45 16.3	329 10.5	41.4	15 19.9	17.1	37 25.8	56.7	78 07.3	31.8
U 09	60 18.8	344 09.8	41.8	30 20.7	17.7	52 28.1	56.8	93 09.9	31.9
E 10	75 21.2	359 09.0	42.2	45 21.5	18.3	67 30.4	56.8	108 12.4	31.9
V 11	90 23.7	14 08.3	42.6	60 22.3	18.9	82 32.7	56.9	123 15.0	32.0
E 12	105 26.1	29 07.5	N21 43.0	75 23.1	N10 19.5	97 35.0	N 1 57.0	138 17.6	S14 32.0
S 13	120 28.6	44 06.8	43.3	90 23.9	20.1	112 37.3	57.0	153 20.2	32.1
14	135 31.1	59 06.1	43.7	105 24.8	20.7	127 39.6	57.1	168 22.8	32.1
15	150 33.5	74 05.3	44.1	120 25.6	21.3	142 41.9	57.1	183 25.3	32.2
16	165 36.0	89 04.6	44.5	135 26.4	21.9	157 44.2	57.2	198 27.9	32.2
17	180 38.5	104 03.9	44.9	150 27.2	22.5	172 46.5	57.2	213 30.5	32.3
18	195 40.9	119 03.1	N21 45.2	165 28.0	N10 23.1	187 48.8	N 1 57.3	228 33.1	S14 32.3
19	210 43.4	134 02.4	45.6	180 28.8	23.7	202 51.1	57.3	243 35.7	32.4
20	225 45.9	149 01.6	46.0	195 29.6	24.3	217 53.4	57.4	258 38.3	32.4
21	240 48.3	164 00.9	46.4	210 30.4	24.9	232 55.7	57.5	273 40.8	32.5
22	255 50.8	179 00.1	46.7	225 31.2	25.5	247 58.0	57.5	288 43.4	32.5
23	270 53.2	193 59.4	47.1	240 32.0	26.1	263 00.3	57.6	303 46.0	32.6
8 00	285 55.7	208 58.7	N21 47.5	255 32.8	N10 26.7	278 02.6	N 1 57.6	318 48.6	S14 32.6
01	300 58.2	223 57.9	47.8	270 33.6	27.3	293 04.9	57.7	333 51.2	32.6
02	316 00.6	238 57.2	48.2	285 34.4	27.9	308 07.3	57.7	348 53.8	32.7
03	331 03.1	253 56.4	48.6	300 35.2	28.5	323 09.6	57.8	3 56.3	32.7
04	346 05.6	268 55.7	49.0	315 36.0	29.1	338 11.9	57.8	18 58.9	32.8
05	1 08.0	283 55.0	49.3	330 36.8	29.7	353 14.2	57.9	34 01.5	32.8
06	16 10.5	298 54.2	N21 49.7	345 37.6	N10 30.3	8 16.5	N 1 57.9	49 04.1	S14 32.9
07	31 13.0	313 53.5	50.0	0 38.4	30.9	23 18.8	58.0	64 06.7	32.9
V 08	46 15.4	328 52.7	50.4	15 39.2	31.5	38 21.1	58.0	79 09.3	33.0
I 09	61 17.9	343 52.0	50.8	30 40.0	32.1	53 23.4	58.1	94 11.8	33.0
E 10	76 20.4	358 51.2	51.1	45 40.8	32.8	68 25.7	58.1	109 14.4	33.1
R 11	91 22.8	13 50.5	51.5	60 41.7	33.4	83 28.0	58.2	124 17.0	33.1
N 12	106 25.3	28 49.7	N21 51.8	75 42.5	N10 34.0	98 30.3	N 1 58.3	139 19.6	S14 33.2
E 13	121 27.7	43 49.0	52.2	90 43.3	34.6	113 32.7	58.3	154 22.2	33.2
S 14	136 30.2	58 48.2	52.6	105 44.1	35.2	128 35.0	58.4	169 24.8	33.3
15	151 32.7	73 47.5	52.9	120 44.9	35.8	143 37.3	58.4	184 27.3	33.3
16	166 35.1	88 46.8	53.3	135 45.7	36.4	158 39.6	58.5	199 29.9	33.4
17	181 37.6	103 46.0	53.6	150 46.5	36.9	173 41.9	58.5	214 32.5	33.4
18	196 40.1	118 45.3	N21 54.0	165 47.3	N10 37.5	188 44.2	N 1 58.6	229 35.1	S14 33.5
19	211 42.5	133 44.5	54.3	180 48.1	38.1	203 46.5	58.6	244 37.7	33.5
20	226 45.0	148 43.8	54.7	195 48.9	38.7	218 48.8	58.7	259 40.3	33.6
21	241 47.5	163 43.0	55.0	210 49.7	39.3	233 51.2	58.7	274 42.8	33.6
22	256 49.9	178 42.3	55.4	225 50.5	39.9	248 53.5	58.8	289 45.4	33.7
23	271 52.4	193 41.5	55.7	240 51.3	40.5	263 55.8	58.8	304 48.0	33.7
	h m								
Paso Mer.	4 59.4	*v* −0.7	*d* 0.4	*v* 0.8	*d* 0.6	*v* 2.3	*d* 0.1	*v* 2.6	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.6	S40 12.7
Achernar	335 21.9	S57 07.1
Acrux	173 02.4	S63 13.6
Adhara	255 07.9	S29 00.1
Aldebaran	290 42.3	N16 33.2
Alioth	166 14.8	N55 50.6
Alkaid	152 53.6	N49 12.4
Alnair	27 35.2	S46 51.0
Alnilam	275 40.1	S 1 11.2
Alphard	217 50.1	S 8 45.3
Alphecca	126 05.3	N26 38.5
Alpheratz	357 36.8	N29 12.7
Altair	62 01.6	N 8 55.7
Ankaa	353 09.1	S42 10.8
Antares	112 18.1	S26 28.9
Arcturus	145 49.7	N19 04.1
Atria	107 13.6	S69 04.2
Avior	234 16.2	S59 34.9
Bellatrix	278 25.4	N 6 22.2
Betelgeuse	270 54.7	N 7 24.7
Canopus	263 53.9	S52 42.4
Capella	280 25.4	N46 01.1
Deneb	49 26.8	N45 21.5
Denebola	182 27.2	N14 27.0
Diphda	348 49.4	S17 51.7
Dubhe	193 43.9	N61 38.1
Elnath	278 04.8	N28 37.5
Eltanin	90 42.6	N51 29.2
Enif	33 40.6	N 9 58.6
Fomalhaut	15 16.6	S29 30.1
Gacrux	171 54.0	S57 14.5
Gienah	175 45.8	S17 40.0
Hadar	148 38.7	S60 29.1
Hamal	327 53.6	N23 34.0
Kaus Aust.	83 34.9	S34 22.4
Kochab	137 19.2	N74 04.1
Markab	13 31.8	N15 19.5
Menkar	314 08.5	N 4 10.6
Menkent	147 59.9	S36 28.9
Miaplacidus	221 39.5	S69 48.6
Mirfak	308 31.5	N49 56.2
Nunki	75 49.9	S26 16.1
Peacock	53 08.4	S56 39.6
Pollux	243 20.2	N27 58.4
Procyon	244 53.3	N 5 10.1
Rasalhague	96 00.1	N12 32.7
Regulus	207 36.9	N11 51.6
Rigel	281 06.2	S 8 10.5
Rigil Kent.	139 42.8	S60 55.8
Sabik	102 04.8	S15 45.1
Schedar	349 33.3	N56 39.3
Shaula	96 12.8	S37 07.2
Sirius	258 28.4	S16 44.8
Spica	158 24.4	S11 16.7
Suhail	222 48.2	S43 31.4
Vega	80 34.2	N38 48.3
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	284 19.8	10 03
Marte	330 16.9	6 59
Júpiter	352 10.8	5 31
Saturno	32 50.1	2 48

UT (HmGr)	SOL AHGr	SOL Dec	LUNA AHGr	LUNA v	LUNA Dec	LUNA d	LUNA Ph
d h	° ′	° ′	° ′	′	° ′	′	′
MIÉRCOLES 6 00	178 49.0	N22 42.5	101 37.1	15.0	N 3 16.2	14.3	56.3
01	193 48.9	42.3	116 11.1	14.9	3 01.9	14.4	56.3
02	208 48.7	42.0	130 45.0	14.9	2 47.5	14.5	56.3
03	223 48.6	41.8	145 18.9	14.9	2 33.0	14.4	56.4
04	238 48.5	41.5	159 52.8	14.9	2 18.6	14.5	56.4
05	253 48.4	41.3	174 26.7	14.8	2 04.1	14.5	56.4
06	268 48.3	N22 41.0	189 00.5	14.8	N 1 49.6	14.5	56.5
07	283 48.2	40.7	203 34.3	14.8	1 35.1	14.5	56.5
08	298 48.1	40.5	218 08.1	14.8	1 20.6	14.6	56.5
09	313 48.0	40.2	232 41.9	14.7	1 06.0	14.6	56.6
10	328 47.9	40.0	247 15.6	14.8	0 51.4	14.6	56.6
11	343 47.8	39.7	261 49.4	14.6	0 36.8	14.6	56.6
12	358 47.7	N22 39.5	276 23.0	14.7	N 0 22.2	14.6	56.7
13	13 47.6	39.2	290 56.7	14.6	N 0 07.6	14.7	56.7
14	28 47.5	39.0	305 30.3	14.6	S 0 07.1	14.7	56.7
15	43 47.4	38.7	320 03.9	14.6	0 21.8	14.7	56.8
16	58 47.3	38.4	334 37.5	14.5	0 36.5	14.7	56.8
17	73 47.2	38.2	349 11.0	14.4	0 51.2	14.7	56.8
18	88 47.1	N22 37.9	3 44.4	14.5	S 1 05.9	14.7	56.9
19	103 47.0	37.7	18 17.9	14.4	1 20.6	14.8	56.9
20	118 46.9	37.4	32 51.3	14.3	1 35.4	14.7	56.9
21	133 46.8	37.1	47 24.6	14.4	1 50.1	14.8	57.0
22	148 46.7	36.9	61 58.0	14.2	2 04.9	14.8	57.0
23	163 46.6	36.6	76 31.2	14.2	2 19.7	14.7	57.0
JUEVES 7 00	178 46.5	N22 36.4	91 04.4	14.2	S 2 34.4	14.8	57.1
01	193 46.4	36.1	105 37.6	14.2	2 49.2	14.8	57.1
02	208 46.3	35.8	120 10.8	14.0	3 04.0	14.8	57.1
03	223 46.2	35.6	134 43.8	14.1	3 18.8	14.8	57.2
04	238 46.1	35.3	149 16.9	13.9	3 33.6	14.8	57.2
05	253 46.0	35.0	163 49.8	14.0	3 48.4	14.8	57.2
06	268 45.9	N22 34.8	178 22.8	13.8	S 4 03.2	14.8	57.3
07	283 45.8	34.5	192 55.6	13.8	4 18.0	14.8	57.3
08	298 45.7	34.2	207 28.4	13.8	4 32.8	14.9	57.3
09	313 45.6	34.0	222 01.2	13.7	4 47.7	14.8	57.4
10	328 45.5	33.7	236 33.9	13.6	5 02.5	14.8	57.4
11	343 45.4	33.4	251 06.5	13.6	5 17.3	14.7	57.5
12	358 45.3	N22 33.1	265 39.1	13.5	S 5 32.0	14.8	57.5
13	13 45.2	32.9	280 11.6	13.4	5 46.8	14.8	57.5
14	28 45.1	32.6	294 44.0	13.4	6 01.6	14.8	57.6
15	43 45.0	32.3	309 16.4	13.3	6 16.4	14.8	57.6
16	58 44.9	32.0	323 48.7	13.3	6 31.2	14.7	57.6
17	73 44.8	31.8	338 21.0	13.1	6 45.9	14.7	57.7
18	88 44.7	N22 31.5	352 53.1	13.1	S 7 00.6	14.8	57.7
19	103 44.6	31.2	7 25.2	13.0	7 15.4	14.7	57.8
20	118 44.5	30.9	21 57.2	13.0	7 30.1	14.7	57.8
21	133 44.4	30.7	36 29.2	12.9	7 44.8	14.7	57.8
22	148 44.3	30.4	51 01.1	12.8	7 59.5	14.6	57.9
23	163 44.2	30.1	65 32.9	12.7	8 14.1	14.7	57.9
VIERNES 8 00	178 44.1	N22 29.8	80 04.6	12.6	S 8 28.8	14.6	57.9
01	193 44.0	29.5	94 36.2	12.6	8 43.4	14.6	58.0
02	208 43.9	29.3	109 07.8	12.5	8 58.0	14.6	58.0
03	223 43.8	29.0	123 39.3	12.4	9 12.6	14.5	58.1
04	238 43.7	28.7	138 10.7	12.3	9 27.1	14.5	58.1
05	253 43.6	28.4	152 42.0	12.2	9 41.6	14.5	58.1
06	268 43.5	N22 28.1	167 13.2	12.1	S 9 56.1	14.5	58.2
07	283 43.4	27.8	181 44.3	12.1	10 10.6	14.4	58.2
08	298 43.3	27.6	196 15.4	11.9	10 25.0	14.4	58.2
09	313 43.2	27.3	210 46.3	11.9	10 39.4	14.4	58.3
10	328 43.1	27.0	225 17.2	11.7	10 53.8	14.3	58.3
11	343 43.0	26.7	239 47.9	11.7	11 08.1	14.3	58.4
12	358 42.9	N22 26.4	254 18.6	11.6	S11 22.4	14.3	58.4
13	13 42.8	26.1	268 49.2	11.4	11 36.7	14.2	58.4
14	28 42.7	25.8	283 19.6	11.4	11 50.9	14.2	58.5
15	43 42.6	25.5	297 50.0	11.3	12 05.1	14.1	58.5
16	58 42.5	25.3	312 20.3	11.2	12 19.2	14.1	58.5
17	73 42.4	25.0	326 50.5	11.1	12 33.3	14.1	58.6
18	88 42.4	N22 24.7	341 20.6	10.9	S12 47.4	14.0	58.6
19	103 42.3	24.4	355 50.5	10.9	13 01.4	13.9	58.7
20	118 42.2	24.1	10 20.4	10.8	13 15.3	14.0	58.7
21	133 42.1	23.8	24 50.2	10.6	13 29.3	13.8	58.7
22	148 42.0	23.5	39 19.8	10.5	13 43.1	13.8	58.8
23	163 41.9	23.2	53 49.3	10.5	S13 56.9	13.7	58.8
	S/D 15.8	*d* 0.3	S/D	15.4		15.7	15.9

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 6	Orto Luna 7	Orto Luna 8	Orto Luna 9
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	11 29	13 37	16 02	▬
N 70	▭	▭	▭	11 30	13 28	15 38	18 29
68	▭	▭	▭	11 30	13 20	15 20	17 42
66	////	////	00 58	11 30	13 14	15 06	17 12
64	////	////	01 54	11 31	13 09	14 54	16 50
62	////	////	02 26	11 31	13 05	14 44	16 32
60	////	01 20	02 50	11 31	13 01	14 35	16 17
N 58	////	01 58	03 09	11 31	12 57	14 28	16 05
56	////	02 25	03 24	11 32	12 54	14 22	15 54
54	01 13	02 45	03 38	11 32	12 52	14 16	15 45
52	01 49	03 02	03 49	11 32	12 49	14 11	15 37
50	02 14	03 16	04 00	11 32	12 47	14 06	15 29
45	02 56	03 44	04 21	11 32	12 42	13 56	15 13
N 40	03 25	04 06	04 38	11 33	12 38	13 47	15 00
35	03 47	04 23	04 53	11 33	12 35	13 40	14 50
30	04 05	04 38	05 05	11 33	12 32	13 34	14 40
20	04 33	05 02	05 26	11 34	12 27	13 23	14 24
N 10	04 55	05 22	05 44	11 34	12 23	13 14	14 10
0	05 13	05 39	06 01	11 34	12 18	13 05	13 57
S 10	05 29	05 55	06 18	11 35	12 14	12 57	13 44
20	05 45	06 12	06 36	11 35	12 10	12 48	13 30
30	06 00	06 30	06 56	11 35	12 05	12 38	13 14
35	06 09	06 40	07 08	11 36	12 03	12 32	13 05
40	06 18	06 51	07 22	11 36	11 59	12 25	12 55
45	06 27	07 04	07 38	11 36	11 56	12 17	12 43
S 50	06 38	07 19	07 57	11 37	11 52	12 08	12 29
52	06 43	07 26	08 07	11 37	11 50	12 04	12 22
54	06 49	07 34	08 17	11 37	11 48	11 59	12 15
56	06 54	07 43	08 29	11 37	11 45	11 54	12 06
58	07 01	07 52	08 43	11 38	11 43	11 49	11 57
S 60	07 08	08 03	08 59	11 38	11 40	11 42	11 47

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 6	Ocaso Luna 7	Ocaso Luna 8	Ocaso Luna 9
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	23 23	22 50	22 05	▬
N 70	▭	▭	▭	23 26	23 02	22 31	21 29
68	▭	▭	▭	23 29	23 12	22 51	22 17
66	23 08	////	////	23 32	23 20	23 07	22 49
64	22 14	////	////	23 34	23 27	23 21	23 12
62	21 43	////	////	23 35	23 33	23 32	23 31
60	21 19	22 48	////	23 37	23 39	23 42	23 47
N 58	21 00	22 10	////	23 38	23 43	23 50	24 00
56	20 45	21 44	////	23 39	23 48	23 58	24 12
54	20 32	21 24	22 55	23 41	23 51	24 04	00 04
52	20 20	21 07	22 20	23 42	23 55	24 10	00 10
50	20 10	20 53	21 55	23 42	23 58	24 16	00 16
45	19 49	20 25	21 13	23 44	24 05	00 05	00 28
N 40	19 32	20 04	20 45	23 46	24 10	00 10	00 38
35	19 17	19 46	20 23	23 48	24 15	00 15	00 46
30	19 05	19 32	20 05	23 49	24 20	00 20	00 54
20	18 44	19 08	19 37	23 51	24 27	00 27	01 07
N 10	18 25	18 48	19 15	23 53	24 34	00 34	01 18
0	18 09	18 31	18 57	23 55	24 40	00 40	01 29
S 10	17 52	18 15	18 41	23 57	24 47	00 47	01 40
20	17 34	17 58	18 25	23 59	24 54	00 54	01 52
30	17 14	17 40	18 10	24 01	00 01	01 01	02 05
35	17 02	17 30	18 01	24 02	00 02	01 06	02 13
40	16 49	17 19	17 53	24 04	00 04	01 11	02 22
45	16 33	17 06	17 43	24 06	00 06	01 17	02 32
S 50	16 13	16 51	17 32	24 08	00 08	01 24	02 45
52	16 04	16 44	17 27	24 09	00 09	01 27	02 51
54	15 53	16 36	17 22	24 10	00 10	01 31	02 57
56	15 41	16 28	17 16	24 11	00 11	01 35	03 05
58	15 28	16 18	17 10	24 12	00 12	01 40	03 13
S 60	15 11	16 07	17 03	24 13	00 13	01 45	03 22

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
6	04 44	04 49	12 05	17 45	05 23	07 44	
7	04 54	04 59	12 05	18 29	06 07	08 54	
8	05 04	05 08	12 05	19 17	06 53	09 65	◑

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·3		JÚPITER −2·5		SATURNO +0·4	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
9 00	286 54.9	208 40.8	N21 56.1	255 52.1	N10 41.1	278 58.1	N 1 58.9	319 50.6	S14 33.8
01	301 57.3	223 40.0	56.4	270 52.9	41.7	294 00.4	58.9	334 53.2	33.8
02	316 59.8	238 39.3	56.8	285 53.7	42.3	309 02.7	59.0	349 55.8	33.9
03	332 02.2	253 38.5	57.1	300 54.5	42.9	324 05.0	59.0	4 58.4	33.9
04	347 04.7	268 37.8	57.4	315 55.4	43.5	339 07.4	59.1	20 00.9	34.0
05	2 07.2	283 37.0	57.8	330 56.2	44.1	354 09.7	59.1	35 03.5	34.0
06	17 09.6	298 36.3	N21 58.1	345 57.0	N10 44.7	9 12.0	N 1 59.2	50 06.1	S14 34.1
07	32 12.1	313 35.5	58.5	0 57.8	45.3	24 14.3	59.2	65 08.7	34.1
08	47 14.6	328 34.7	58.8	15 58.6	45.9	39 16.6	59.3	80 11.3	34.2
S 09	62 17.0	343 34.0	59.1	30 59.4	46.5	54 18.9	59.3	95 13.9	34.2
Á 10	77 19.5	358 33.2	59.5	46 00.2	47.1	69 21.3	59.4	110 16.5	34.2
B 11	92 22.0	13 32.5	21 59.8	61 01.0	47.7	84 23.6	59.4	125 19.1	34.3
A 12	107 24.4	28 31.7	N22 00.1	76 01.8	N10 48.3	99 25.9	N 1 59.5	140 21.6	S14 34.3
D 13	122 26.9	43 31.0	00.5	91 02.6	48.9	114 28.2	59.5	155 24.2	34.4
O 14	137 29.3	58 30.2	00.8	106 03.4	49.5	129 30.5	59.6	170 26.8	34.4
15	152 31.8	73 29.5	01.1	121 04.2	50.1	144 32.8	59.6	185 29.4	34.5
16	167 34.3	88 28.7	01.5	136 05.0	50.7	159 35.2	59.7	200 32.0	34.5
17	182 36.7	103 28.0	01.8	151 05.8	51.3	174 37.5	59.7	215 34.6	34.6
18	197 39.2	118 27.2	N22 02.1	166 06.7	N10 51.9	189 39.8	N 1 59.8	230 37.2	S14 34.6
19	212 41.7	133 26.5	02.4	181 07.5	52.5	204 42.1	59.8	245 39.7	34.7
20	227 44.1	148 25.7	02.8	196 08.3	53.0	219 44.4	59.9	260 42.3	34.7
21	242 46.6	163 24.9	03.1	211 09.1	53.6	234 46.8	1 59.9	275 44.9	34.8
22	257 49.1	178 24.2	03.4	226 09.9	54.2	249 49.1	2 00.0	290 47.5	34.8
23	272 51.5	193 23.4	03.7	241 10.7	54.8	264 51.4	00.0	305 50.1	34.9
10 00	287 54.0	208 22.7	N22 04.1	256 11.5	N10 55.4	279 53.7	N 2 00.1	320 52.7	S14 34.9
01	302 56.5	223 21.9	04.4	271 12.3	56.0	294 56.0	00.1	335 55.3	35.0
02	317 58.9	238 21.1	04.7	286 13.1	56.6	309 58.4	00.2	350 57.9	35.0
03	333 01.4	253 20.4	05.0	301 13.9	57.2	325 00.7	00.2	6 00.5	35.1
04	348 03.8	268 19.6	05.3	316 14.7	57.8	340 03.0	00.3	21 03.0	35.1
05	3 06.3	283 18.9	05.6	331 15.5	58.4	355 05.3	00.3	36 05.6	35.2
06	18 08.8	298 18.1	N22 06.0	346 16.3	N10 59.0	10 07.7	N 2 00.4	51 08.2	S14 35.2
07	33 11.2	313 17.4	06.3	1 17.2	10 59.6	25 10.0	00.4	66 10.8	35.3
D 08	48 13.7	328 16.6	06.6	16 18.0	11 00.2	40 12.3	00.4	81 13.4	35.3
O 09	63 16.2	343 15.8	06.9	31 18.8	00.7	55 14.6	00.5	96 16.0	35.4
M 10	78 18.6	358 15.1	07.2	46 19.6	01.3	70 16.9	00.5	111 18.6	35.4
I 11	93 21.1	13 14.3	07.5	61 20.4	01.9	85 19.3	00.6	126 21.2	35.5
N 12	108 23.6	28 13.5	N22 07.8	76 21.2	N11 02.5	100 21.6	N 2 00.6	141 23.8	S14 35.5
G 13	123 26.0	43 12.8	08.1	91 22.0	03.1	115 23.9	00.7	156 26.4	35.6
O 14	138 28.5	58 12.0	08.4	106 22.8	03.7	130 26.2	00.7	171 28.9	35.6
15	153 31.0	73 11.3	08.7	121 23.6	04.3	145 28.6	00.8	186 31.5	35.7
16	168 33.4	88 10.5	09.1	136 24.4	04.9	160 30.9	00.8	201 34.1	35.7
17	183 35.9	103 09.7	09.4	151 25.2	05.5	175 33.2	00.9	216 36.7	35.8
18	198 38.3	118 09.0	N22 09.7	166 26.0	N11 06.1	190 35.5	N 2 00.9	231 39.3	S14 35.8
19	213 40.8	133 08.2	10.0	181 26.9	06.6	205 37.9	01.0	246 41.9	35.9
20	228 43.3	148 07.4	10.3	196 27.7	07.2	220 40.2	01.0	261 44.5	35.9
21	243 45.7	163 06.7	10.6	211 28.5	07.8	235 42.5	01.0	276 47.1	36.0
22	258 48.2	178 05.9	10.9	226 29.3	08.4	250 44.9	01.1	291 49.7	36.0
23	273 50.7	193 05.2	11.2	241 30.1	09.0	265 47.2	01.1	306 52.3	36.1
11 00	288 53.1	208 04.4	N22 11.5	256 30.9	N11 09.6	280 49.5	N 2 01.2	321 54.8	S14 36.1
01	303 55.6	223 03.6	11.7	271 31.7	10.2	295 51.8	01.2	336 57.4	36.2
02	318 58.1	238 02.9	12.0	286 32.5	10.8	310 54.2	01.3	352 00.0	36.2
03	334 00.5	253 02.1	12.3	301 33.3	11.3	325 56.5	01.3	7 02.6	36.3
04	349 03.0	268 01.3	12.6	316 34.1	11.9	340 58.8	01.4	22 05.2	36.3
05	4 05.5	283 00.6	12.9	331 34.9	12.5	356 01.2	01.4	37 07.8	36.4
06	19 07.9	297 59.8	N22 13.2	346 35.8	N11 13.1	11 03.5	N 2 01.5	52 10.4	S14 36.4
07	34 10.4	312 59.0	13.5	1 36.6	13.7	26 05.8	01.5	67 13.0	36.5
L 08	49 12.8	327 58.3	13.8	16 37.4	14.3	41 08.1	01.5	82 15.6	36.5
U 09	64 15.3	342 57.5	14.1	31 38.2	14.9	56 10.5	01.6	97 18.2	36.6
N 10	79 17.8	357 56.7	14.4	46 39.0	15.4	71 12.8	01.6	112 20.8	36.6
E 11	94 20.2	12 55.9	14.6	61 39.8	16.0	86 15.1	01.7	127 23.4	36.7
S 12	109 22.7	27 55.2	N22 14.9	76 40.6	N11 16.6	101 17.5	N 2 01.7	142 26.0	S14 36.7
13	124 25.2	42 54.4	15.2	91 41.4	17.2	116 19.8	01.8	157 28.5	36.8
14	139 27.6	57 53.6	15.5	106 42.2	17.8	131 22.1	01.8	172 31.1	36.8
15	154 30.1	72 52.9	15.8	121 43.0	18.4	146 24.5	01.8	187 33.7	36.9
16	169 32.6	87 52.1	16.0	136 43.9	19.0	161 26.8	01.9	202 36.3	37.0
17	184 35.0	102 51.3	16.3	151 44.7	19.5	176 29.1	01.9	217 38.9	37.0
18	199 37.5	117 50.6	N22 16.6	166 45.5	N11 20.1	191 31.5	N 2 02.0	232 41.5	S14 37.1
19	214 40.0	132 49.8	16.9	181 46.3	20.7	206 33.8	02.0	247 44.1	37.1
20	229 42.4	147 49.0	17.1	196 47.1	21.3	221 36.1	02.1	262 46.7	37.2
21	244 44.9	162 48.2	17.4	211 47.9	21.9	236 38.5	02.1	277 49.3	37.2
22	259 47.3	177 47.5	17.7	226 48.7	22.5	251 40.8	02.1	292 51.9	37.3
23	274 49.8	192 46.7	18.0	241 49.5	23.0	266 43.1	02.2	307 54.5	37.3
	h m								
Paso Mer.	4 47.6	*v* −0.8	*d* 0.3	*v* 0.8	*d* 0.6	*v* 2.3	*d* 0.0	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.6	S40 12.7
Achernar	335 21.8	S57 07.1
Acrux	173 02.4	S63 13.6
Adhara	255 07.9	S29 00.1
Aldebaran	290 42.3	N16 33.2
Alioth	166 14.9	N55 50.6
Alkaid	152 53.6	N49 12.4
Alnair	27 35.2	S46 51.0
Alnilam	275 40.1	S 1 11.2
Alphard	217 50.1	S 8 45.3
Alphecca	126 05.3	N26 38.5
Alpheratz	357 36.8	N29 12.7
Altair	62 01.6	N 8 55.7
Ankaa	353 09.1	S42 10.8
Antares	112 18.1	S26 28.9
Arcturus	145 49.7	N19 04.1
Atria	107 13.7	S69 04.2
Avior	234 16.2	S59 34.9
Bellatrix	278 25.4	N 6 22.2
Betelgeuse	270 54.6	N 7 24.7
Canopus	263 53.9	S52 42.3
Capella	280 25.4	N46 01.1
Deneb	49 26.7	N45 21.5
Denebola	182 27.2	N14 27.0
Diphda	348 49.3	S17 51.7
Dubhe	193 43.9	N61 38.1
Elnath	278 04.8	N28 37.5
Eltanin	90 42.6	N51 29.2
Enif	33 40.6	N 9 58.6
Fomalhaut	15 16.6	S29 30.1
Gacrux	171 54.0	S57 14.5
Gienah	175 45.8	S17 40.0
Hadar	148 38.7	S60 29.1
Hamal	327 53.6	N23 34.0
Kaus Aust.	83 34.9	S34 22.4
Kochab	137 19.3	N74 04.1
Markab	13 31.8	N15 19.5
Menkar	314 08.5	N 4 10.6
Menkent	147 59.9	S36 28.9
Miaplacidus	221 39.5	S69 48.6
Mirfak	308 31.5	N49 56.2
Nunki	75 49.9	S26 16.1
Peacock	53 08.4	S56 39.7
Pollux	243 20.2	N27 58.4
Procyon	244 53.3	N 5 10.1
Rasalhague	96 00.1	N12 32.7
Regulus	207 36.9	N11 51.6
Rigel	281 06.2	S 8 10.5
Rigil Kent.	139 42.9	S60 55.8
Sabik	102 04.8	S15 45.1
Schedar	349 33.3	N56 39.3
Shaula	96 12.8	S37 07.2
Sirius	258 28.4	S16 44.8
Spica	158 24.4	S11 16.7
Suhail	222 48.2	S43 31.4
Vega	80 34.2	N38 48.3
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	280 28.7	10 07
Marte	328 17.5	6 55
Júpiter	351 59.7	5 20
Saturno	32 58.7	2 36

UT (HmGr)	SOL AHGr	SOL Dec	LUNA AHGr	LUNA v	LUNA Dec	LUNA d	LUNA Ph
d h	° ′	° ′	° ′	′	° ′	′	′
9 00	178 41.8	N22 22.9	68 18.8	10.3	S14 10.6	13.7	58.9
01	193 41.7	22.6	82 48.1	10.2	14 24.3	13.6	58.9
02	208 41.6	22.3	97 17.3	10.1	14 37.9	13.6	58.9
03	223 41.5	22.0	111 46.4	10.0	14 51.5	13.5	59.0
04	238 41.4	21.7	126 15.4	9.9	15 05.0	13.4	59.0
05	253 41.3	21.4	140 44.3	9.7	15 18.4	13.4	59.0
06	268 41.2	N22 21.1	155 13.0	9.6	S15 31.8	13.3	59.1
07	283 41.1	20.8	169 41.6	9.5	15 45.1	13.3	59.1
S 08	298 41.0	20.5	184 10.1	9.4	15 58.4	13.1	59.2
Á 09	313 41.0	20.2	198 38.5	9.3	16 11.5	13.1	59.2
B 10	328 40.9	19.9	213 06.8	9.2	16 24.6	13.0	59.2
A 11	343 40.8	19.6	227 35.0	9.0	16 37.6	12.9	59.3
D 12	358 40.7	N22 19.3	242 03.0	8.9	S16 50.5	12.9	59.3
O 13	13 40.6	19.0	256 30.9	8.8	17 03.4	12.8	59.3
14	28 40.5	18.7	270 58.7	8.6	17 16.2	12.7	59.4
15	43 40.4	18.4	285 26.3	8.6	17 28.9	12.6	59.4
16	58 40.3	18.1	299 53.9	8.4	17 41.5	12.5	59.4
17	73 40.2	17.8	314 21.3	8.2	17 54.0	12.4	59.5
18	88 40.1	N22 17.5	328 48.5	8.2	S18 06.4	12.3	59.5
19	103 40.1	17.2	343 15.7	8.0	18 18.7	12.3	59.6
20	118 40.0	16.8	357 42.7	7.9	18 31.0	12.1	59.6
21	133 39.9	16.5	12 09.6	7.7	18 43.1	12.1	59.6
22	148 39.8	16.2	26 36.3	7.7	18 55.2	11.9	59.7
23	163 39.7	15.9	41 03.0	7.5	19 07.1	11.9	59.7
10 00	178 39.6	N22 15.6	55 29.5	7.3	S19 19.0	11.7	59.7
01	193 39.5	15.3	69 55.8	7.3	19 30.7	11.7	59.8
02	208 39.4	15.0	84 22.1	7.1	19 42.4	11.5	59.8
03	223 39.3	14.7	98 48.2	6.9	19 53.9	11.4	59.8
04	238 39.3	14.3	113 14.1	6.9	20 05.3	11.4	59.9
05	253 39.2	14.0	127 40.0	6.7	20 16.7	11.2	59.9
06	268 39.1	N22 13.7	142 05.7	6.6	S20 27.9	11.0	59.9
07	283 39.0	13.4	156 31.3	6.4	20 38.9	11.0	60.0
D 08	298 38.9	13.1	170 56.7	6.3	20 49.9	10.8	60.0
O 09	313 38.8	12.8	185 22.0	6.2	21 00.7	10.8	60.0
M 10	328 38.7	12.4	199 47.2	6.0	21 11.5	10.6	60.1
I 11	343 38.6	12.1	214 12.2	5.9	21 22.1	10.4	60.1
N 12	358 38.6	N22 11.8	228 37.1	5.8	S21 32.5	10.4	60.1
G 13	13 38.5	11.5	243 01.9	5.6	21 42.9	10.2	60.2
O 14	28 38.4	11.2	257 26.5	5.5	21 53.1	10.1	60.2
15	43 38.3	10.8	271 51.0	5.4	22 03.2	9.9	60.2
16	58 38.2	10.5	286 15.4	5.2	22 13.1	9.8	60.3
17	73 38.1	10.2	300 39.6	5.2	22 22.9	9.7	60.3
18	88 38.0	N22 09.9	315 03.8	4.9	S22 32.6	9.5	60.3
19	103 38.0	09.5	329 27.7	4.9	22 42.1	9.4	60.4
20	118 37.9	09.2	343 51.6	4.7	22 51.5	9.2	60.4
21	133 37.8	08.9	358 15.3	4.6	23 00.7	9.1	60.4
22	148 37.7	08.6	12 38.9	4.5	23 09.8	8.9	60.4
23	163 37.6	08.2	27 02.4	4.3	23 18.7	8.8	60.5
11 00	178 37.5	N22 07.9	41 25.7	4.2	S23 27.5	8.6	60.5
01	193 37.5	07.6	55 48.9	4.1	23 36.1	8.5	60.5
02	208 37.4	07.2	70 12.0	4.0	23 44.6	8.3	60.6
03	223 37.3	06.9	84 35.0	3.8	23 52.9	8.1	60.6
04	238 37.2	06.6	98 57.8	3.8	24 01.0	8.0	60.6
05	253 37.1	06.3	113 20.6	3.6	24 09.0	7.8	60.6
06	268 37.0	N22 05.9	127 43.2	3.5	S24 16.8	7.7	60.7
07	283 37.0	05.6	142 05.7	3.3	24 24.5	7.5	60.7
L 08	298 36.9	05.3	156 28.0	3.3	24 32.0	7.3	60.7
U 09	313 36.8	04.9	170 50.3	3.1	24 39.3	7.1	60.7
N 10	328 36.7	04.6	185 12.4	3.0	24 46.4	7.0	60.8
E 11	343 36.6	04.3	199 34.4	3.0	24 53.4	6.8	60.8
S 12	358 36.5	N22 03.9	213 56.4	2.8	S25 00.2	6.6	60.8
13	13 36.5	03.6	228 18.2	2.7	25 06.8	6.4	60.8
14	28 36.4	03.2	242 39.9	2.6	25 13.2	6.3	60.9
15	43 36.3	02.9	257 01.5	2.5	25 19.5	6.0	60.9
16	58 36.2	02.6	271 23.0	2.4	25 25.5	5.9	60.9
17	73 36.1	02.2	285 44.4	2.3	25 31.4	5.7	60.9
18	88 36.1	N22 01.9	300 05.7	2.2	S25 37.1	5.5	60.9
19	103 36.0	01.6	314 26.9	2.1	25 42.6	5.3	61.0
20	118 35.9	01.2	328 48.0	2.0	25 47.9	5.2	61.0
21	133 35.8	00.9	343 09.0	2.0	25 53.1	4.9	61.0
22	148 35.7	00.5	357 30.0	1.8	25 58.0	4.7	61.0
23	163 35.7	00.2	11 50.8	1.8	S26 02.7	4.6	61.0
	S/D 15.8	d 0.3	S/D 16.2		16.4		16.6

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 9	Orto Luna 10	Orto Luna 11	Orto Luna 12
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	■	■	■	■
N 70	▭	▭	▭	18 29	■	■	■
68	▭	▭	▭	17 42	■	■	■
66	////	////	01 12	17 12	19 54	■	■
64	////	////	02 01	16 50	19 02	■	■
62	////	////	02 32	16 32	18 30	20 33	22 11
60	////	01 29	02 55	16 17	18 06	19 55	21 22
N 58	////	02 05	03 13	16 05	17 47	19 28	20 51
56	////	02 30	03 28	15 54	17 31	19 07	20 27
54	01 21	02 49	03 41	15 45	17 18	18 49	20 08
52	01 55	03 05	03 52	15 37	17 06	18 35	19 52
50	02 18	03 19	04 02	15 29	16 56	18 22	19 38
45	02 59	03 47	04 23	15 13	16 34	17 55	19 09
N 40	03 27	04 08	04 40	15 00	16 17	17 34	18 47
35	03 49	04 25	04 54	14 50	16 02	17 17	18 29
30	04 07	04 39	05 06	14 40	15 50	17 02	18 13
20	04 34	05 03	05 27	14 24	15 29	16 37	17 46
N 10	04 56	05 22	05 45	14 10	15 10	16 15	17 23
0	05 13	05 39	06 02	13 57	14 53	15 55	17 01
S 10	05 29	05 56	06 18	13 44	14 36	15 35	16 40
20	05 45	06 12	06 36	13 30	14 18	15 14	16 17
30	06 00	06 30	06 56	13 14	13 57	14 49	15 50
35	06 08	06 39	07 07	13 05	13 45	14 35	15 34
40	06 17	06 50	07 21	12 55	13 32	14 18	15 16
45	06 26	07 03	07 36	12 43	13 15	13 58	14 54
S 50	06 37	07 18	07 56	12 29	12 56	13 33	14 27
52	06 42	07 25	08 05	12 22	12 46	13 21	14 13
54	06 47	07 32	08 15	12 15	12 36	13 08	13 58
56	06 53	07 41	08 26	12 06	12 24	12 52	13 39
58	06 59	07 50	08 40	11 57	12 11	12 34	13 17
S 60	07 05	08 01	08 55	11 47	11 55	12 11	12 48

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 9	Ocaso Luna 10	Ocaso Luna 11	Ocaso Luna 12
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	■	■	■	■
N 70	▭	▭	▭	21 29	■	■	■
68	▭	▭	▭	22 17	■	■	■
66	22 54	////	////	22 49	22 07	■	■
64	22 07	////	////	23 12	23 00	■	■
62	21 38	////	////	23 31	23 33	23 42	24 24
60	21 15	22 39	////	23 47	23 57	24 20	00 20
N 58	20 57	22 05	////	24 00	00 00	00 17	00 47
56	20 42	21 40	////	24 12	00 12	00 33	01 09
54	20 29	21 21	22 47	00 04	00 22	00 47	01 26
52	20 18	21 05	22 15	00 10	00 31	00 59	01 42
50	20 08	20 51	21 52	00 16	00 39	01 10	01 55
45	19 47	20 24	21 11	00 28	00 56	01 33	02 22
N 40	19 30	20 03	20 43	00 38	01 10	01 51	02 43
35	19 16	19 46	20 21	00 46	01 23	02 07	03 01
30	19 04	19 31	20 04	00 54	01 33	02 20	03 16
20	18 43	19 08	19 37	01 07	01 52	02 43	03 43
N 10	18 26	18 48	19 15	01 18	02 08	03 03	04 05
0	18 09	18 31	18 57	01 29	02 23	03 22	04 26
S 10	17 53	18 15	18 41	01 40	02 38	03 41	04 47
20	17 35	17 59	18 26	01 52	02 54	04 01	05 10
30	17 15	17 41	18 11	02 05	03 13	04 24	05 36
35	17 04	17 32	18 03	02 13	03 24	04 38	05 51
40	16 50	17 21	17 54	02 22	03 36	04 54	06 09
45	16 35	17 08	17 45	02 32	03 51	05 13	06 31
S 50	16 16	16 53	17 34	02 45	04 10	05 37	06 58
52	16 06	16 46	17 29	02 51	04 19	05 48	07 12
54	15 56	16 39	17 24	02 57	04 28	06 01	07 27
56	15 45	16 31	17 19	03 05	04 39	06 16	07 45
58	15 31	16 21	17 13	03 13	04 52	06 34	08 07
S 60	15 16	16 11	17 06	03 22	05 07	06 56	08 36

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d	%
9	05 13	05 17	12 05	20 10	07 43	10	75
10	05 21	05 26	12 05	21 07	08 38	11	85
11	05 30	05 34	12 06	22 10	09 38	12	92

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·3		JÚPITER −2·5		SATURNO +0·4	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
12 00	289 52.3	207 45.9	N22 18.2	256 50.3	N11 23.6	281 45.5	N 2 02.2	322 57.1	S14 37.4
01	304 54.7	222 45.2	18.5	271 51.1	24.2	296 47.8	02.3	337 59.7	37.4
02	319 57.2	237 44.4	18.8	286 52.0	24.8	311 50.1	02.3	353 02.3	37.5
03	334 59.7	252 43.6	19.0	301 52.8	25.4	326 52.5	02.4	8 04.9	37.5
04	350 02.1	267 42.8	19.3	316 53.6	25.9	341 54.8	02.4	23 07.5	37.6
05	5 04.6	282 42.1	19.6	331 54.4	26.5	356 57.1	02.4	38 10.0	37.6
06	20 07.1	297 41.3	N22 19.8	346 55.2	N11 27.1	11 59.5	N 2 02.5	53 12.6	S14 37.7
07	35 09.5	312 40.5	20.1	1 56.0	27.7	27 01.8	02.5	68 15.2	37.7
08	50 12.0	327 39.7	20.4	16 56.8	28.3	42 04.2	02.6	83 17.8	37.8
M 09	65 14.5	342 39.0	20.6	31 57.6	28.8	57 06.5	02.6	98 20.4	37.8
A 10	80 16.9	357 38.2	20.9	46 58.4	29.4	72 08.8	02.6	113 23.0	37.9
R 11	95 19.4	12 37.4	21.1	61 59.3	30.0	87 11.2	02.7	128 25.6	37.9
T 12	110 21.8	27 36.6	N22 21.4	77 00.1	N11 30.6	102 13.5	N 2 02.7	143 28.2	S14 38.0
E 13	125 24.3	42 35.9	21.7	92 00.9	31.2	117 15.8	02.8	158 30.8	38.0
S 14	140 26.8	57 35.1	21.9	107 01.7	31.7	132 18.2	02.8	173 33.4	38.1
15	155 29.2	72 34.3	22.2	122 02.5	32.3	147 20.5	02.8	188 36.0	38.1
16	170 31.7	87 33.5	22.4	137 03.3	32.9	162 22.9	02.9	203 38.6	38.2
17	185 34.2	102 32.8	22.7	152 04.1	33.5	177 25.2	02.9	218 41.2	38.2
18	200 36.6	117 32.0	N22 22.9	167 04.9	N11 34.1	192 27.5	N 2 03.0	233 43.8	S14 38.3
19	215 39.1	132 31.2	23.2	182 05.8	34.6	207 29.9	03.0	248 46.4	38.3
20	230 41.6	147 30.4	23.4	197 06.6	35.2	222 32.2	03.0	263 49.0	38.4
21	245 44.0	162 29.7	23.7	212 07.4	35.8	237 34.6	03.1	278 51.6	38.4
22	260 46.5	177 28.9	23.9	227 08.2	36.4	252 36.9	03.1	293 54.2	38.5
23	275 49.0	192 28.1	24.2	242 09.0	37.0	267 39.3	03.2	308 56.8	38.6
13 00	290 51.4	207 27.3	N22 24.4	257 09.8	N11 37.5	282 41.6	N 2 03.2	323 59.4	S14 38.6
01	305 53.9	222 26.5	24.6	272 10.6	38.1	297 43.9	03.2	339 02.0	38.7
02	320 56.3	237 25.8	24.9	287 11.4	38.7	312 46.3	03.3	354 04.6	38.7
03	335 58.8	252 25.0	25.1	302 12.2	39.3	327 48.6	03.3	9 07.2	38.8
04	351 01.3	267 24.2	25.4	317 13.1	39.8	342 51.0	03.4	24 09.8	38.8
05	6 03.7	282 23.4	25.6	332 13.9	40.4	357 53.3	03.4	39 12.4	38.9
06	21 06.2	297 22.6	N22 25.9	347 14.7	N11 41.0	12 55.7	N 2 03.4	54 15.0	S14 38.9
07	36 08.7	312 21.9	26.1	2 15.5	41.6	27 58.0	03.5	69 17.6	39.0
M 08	51 11.1	327 21.1	26.3	17 16.3	42.1	43 00.3	03.5	84 20.1	39.0
I 09	66 13.6	342 20.3	26.6	32 17.1	42.7	58 02.7	03.6	99 22.7	39.1
É 10	81 16.1	357 19.5	26.8	47 17.9	43.3	73 05.0	03.6	114 25.3	39.1
R 11	96 18.5	12 18.7	27.0	62 18.7	43.9	88 07.4	03.6	129 27.9	39.2
C 12	111 21.0	27 18.0	N22 27.3	77 19.6	N11 44.4	103 09.7	N 2 03.7	144 30.5	S14 39.2
O 13	126 23.5	42 17.2	27.5	92 20.4	45.0	118 12.1	03.7	159 33.1	39.3
L 14	141 25.9	57 16.4	27.7	107 21.2	45.6	133 14.4	03.7	174 35.7	39.3
E 15	156 28.4	72 15.6	27.9	122 22.0	46.2	148 16.8	03.8	189 38.3	39.4
S 16	171 30.8	87 14.8	28.2	137 22.8	46.7	163 19.1	03.8	204 40.9	39.4
17	186 33.3	102 14.0	28.4	152 23.6	47.3	178 21.5	03.8	219 43.5	39.5
18	201 35.8	117 13.3	N22 28.6	167 24.4	N11 47.9	193 23.8	N 2 03.9	234 46.1	S14 39.5
19	216 38.2	132 12.5	28.9	182 25.3	48.5	208 26.1	03.9	249 48.7	39.6
20	231 40.7	147 11.7	29.1	197 26.1	49.0	223 28.5	04.0	264 51.3	39.7
21	246 43.2	162 10.9	29.3	212 26.9	49.6	238 30.8	04.0	279 53.9	39.7
22	261 45.6	177 10.1	29.5	227 27.7	50.2	253 33.2	04.0	294 56.5	39.8
23	276 48.1	192 09.3	29.7	242 28.5	50.7	268 35.5	04.1	309 59.1	39.8
14 00	291 50.6	207 08.5	N22 30.0	257 29.3	N11 51.3	283 37.9	N 2 04.1	325 01.7	S14 39.9
01	306 53.0	222 07.8	30.2	272 30.1	51.9	298 40.2	04.1	340 04.3	39.9
02	321 55.5	237 07.0	30.4	287 30.9	52.5	313 42.6	04.2	355 06.9	40.0
03	336 58.0	252 06.2	30.6	302 31.8	53.0	328 44.9	04.2	10 09.5	40.0
04	352 00.4	267 05.4	30.8	317 32.6	53.6	343 47.3	04.2	25 12.1	40.1
05	7 02.9	282 04.6	31.0	332 33.4	54.2	358 49.6	04.3	40 14.7	40.1
06	22 05.3	297 03.8	N22 31.2	347 34.2	N11 54.7	13 52.0	N 2 04.3	55 17.3	S14 40.2
07	37 07.8	312 03.0	31.5	2 35.0	55.3	28 54.3	04.4	70 19.9	40.2
J 08	52 10.3	327 02.3	31.7	17 35.8	55.9	43 56.7	04.4	85 22.5	40.3
U 09	67 12.7	342 01.5	31.9	32 36.6	56.4	58 59.0	04.4	100 25.1	40.3
E 10	82 15.2	357 00.7	32.1	47 37.5	57.0	74 01.4	04.5	115 27.7	40.4
V 11	97 17.7	11 59.9	32.3	62 38.3	57.6	89 03.7	04.5	130 30.3	40.5
E 12	112 20.1	26 59.1	N22 32.5	77 39.1	N11 58.2	104 06.1	N 2 04.5	145 32.9	S14 40.5
S 13	127 22.6	41 58.3	32.7	92 39.9	58.7	119 08.5	04.6	160 35.5	40.6
14	142 25.1	56 57.5	32.9	107 40.7	59.3	134 10.8	04.6	175 38.1	40.6
15	157 27.5	71 56.7	33.1	122 41.5	11 59.9	149 13.2	04.6	190 40.7	40.7
16	172 30.0	86 56.0	33.3	137 42.4	12 00.4	164 15.5	04.7	205 43.3	40.7
17	187 32.4	101 55.2	33.5	152 43.2	01.0	179 17.9	04.7	220 45.9	40.8
18	202 34.9	116 54.4	N22 33.7	167 44.0	N12 01.6	194 20.2	N 2 04.7	235 48.5	S14 40.8
19	217 37.4	131 53.6	33.9	182 44.8	02.1	209 22.6	04.8	250 51.1	40.9
20	232 39.8	146 52.8	34.1	197 45.6	02.7	224 24.9	04.8	265 53.7	40.9
21	247 42.3	161 52.0	34.3	212 46.4	03.3	239 27.3	04.8	280 56.3	41.0
22	262 44.8	176 51.2	34.5	227 47.2	03.8	254 29.6	04.9	295 58.9	41.0
23	277 47.2	191 50.4	34.7	242 48.1	04.4	269 32.0	04.9	311 01.6	41.1
	h m								
Paso Mer.	4 35.8	*v* −0.8	*d* 0.2	*v* 0.8	*d* 0.6	*v* 2.3	*d* 0.0	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.5	S40 12.7
Achernar	335 21.8	S57 07.1
Acrux	173 02.5	S63 13.6
Adhara	255 07.9	S29 00.1
Aldebaran	290 42.2	N16 33.2
Alioth	166 14.9	N55 50.6
Alkaid	152 53.6	N49 12.4
Alnair	27 35.1	S46 51.0
Alnilam	275 40.1	S 1 11.2
Alphard	217 50.1	S 8 45.3
Alphecca	126 05.3	N26 38.5
Alpheratz	357 36.8	N29 12.7
Altair	62 01.6	N 8 55.7
Ankaa	353 09.1	S42 10.8
Antares	112 18.1	S26 28.9
Arcturus	145 49.7	N19 04.1
Atria	107 13.7	S69 04.2
Avior	234 16.2	S59 34.9
Bellatrix	278 25.4	N 6 22.2
Betelgeuse	270 54.6	N 7 24.7
Canopus	263 53.8	S52 42.3
Capella	280 25.3	N46 01.1
Deneb	49 26.7	N45 21.5
Denebola	182 27.2	N14 27.0
Diphda	348 49.3	S17 51.7
Dubhe	193 44.0	N61 38.1
Elnath	278 04.8	N28 37.5
Eltanin	90 42.6	N51 29.3
Enif	33 40.5	N 9 58.7
Fomalhaut	15 16.6	S29 30.1
Gacrux	171 54.0	S57 14.5
Gienah	175 45.8	S17 40.0
Hadar	148 38.7	S60 29.1
Hamal	327 53.6	N23 34.0
Kaus Aust.	83 34.8	S34 22.4
Kochab	137 19.3	N74 04.1
Markab	13 31.7	N15 19.5
Menkar	314 08.4	N 4 10.6
Menkent	147 59.9	S36 28.9
Miaplacidus	221 39.5	S69 48.6
Mirfak	308 31.4	N49 56.2
Nunki	75 49.9	S26 16.1
Peacock	53 08.4	S56 39.7
Pollux	243 20.2	N27 58.4
Procyon	244 53.3	N 5 10.1
Rasalhague	96 00.1	N12 32.7
Regulus	207 36.9	N11 51.6
Rigel	281 06.1	S 8 10.5
Rigil Kent.	139 42.9	S60 55.8
Sabik	102 04.8	S15 45.1
Schedar	349 33.2	N56 39.3
Shaula	96 12.8	S37 07.2
Sirius	258 28.4	S16 44.7
Spica	158 24.4	S11 16.7
Suhail	222 48.2	S43 31.4
Vega	80 34.2	N38 48.3
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	276 35.9	10 11
Marte	326 18.4	6 51
Júpiter	351 50.2	5 08
Saturno	33 08.0	2 24

UT (HmGr)	SOL AHGr	SOL Dec	LUNA AHGr	LUNA v	LUNA Dec	LUNA d	LUNA Ph
d h	° ′	° ′	° ′	′	° ′	′	′
12 00	178 35.6	N21 59.8	26 11.6	1.7	S26 07.3	4.3	61.1
01	193 35.5	59.5	40 32.3	1.6	26 11.6	4.1	61.1
02	208 35.4	59.1	54 52.9	1.5	26 15.7	4.0	61.1
03	223 35.3	58.8	69 13.4	1.5	26 19.7	3.7	61.1
04	238 35.3	58.5	83 33.9	1.4	26 23.4	3.5	61.1
05	253 35.2	58.1	97 54.3	1.3	26 26.9	3.4	61.2
06	268 35.1	N21 57.8	112 14.6	1.3	S26 30.3	3.1	61.2
07	283 35.0	57.4	126 34.9	1.2	26 33.4	2.9	61.2
M 08	298 35.0	57.1	140 55.1	1.2	26 36.3	2.7	61.2
A 09	313 34.9	56.7	155 15.3	1.1	26 39.0	2.5	61.2
R 10	328 34.8	56.4	169 35.4	1.0	26 41.5	2.3	61.2
11	343 34.7	56.0	183 55.4	1.0	26 43.8	2.1	61.2
T 12	358 34.7	N21 55.7	198 15.4	1.0	S26 45.9	1.9	61.2
E 13	13 34.6	55.3	212 35.4	0.9	26 47.8	1.7	61.3
S 14	28 34.5	55.0	226 55.3	0.9	26 49.5	1.4	61.3
15	43 34.4	54.6	241 15.2	0.9	26 50.9	1.3	61.3
16	58 34.3	54.3	255 35.1	0.8	26 52.2	1.0	61.3
17	73 34.3	53.9	269 54.9	0.8	26 53.2	0.8	61.3
18	88 34.2	N21 53.5	284 14.7	0.8	S26 54.0	0.6	61.3
19	103 34.1	53.2	298 34.5	0.7	26 54.6	0.4	61.3
20	118 34.0	52.8	312 54.2	0.8	26 55.0	0.2	61.3
21	133 34.0	52.5	327 14.0	0.7	26 55.2	0.1	61.3
22	148 33.9	52.1	341 33.7	0.7	26 55.1	0.2	61.3
23	163 33.8	51.8	355 53.4	0.7	26 54.9	0.5	61.3
13 00	178 33.7	N21 51.4	10 13.1	0.8	S26 54.4	0.7	61.4
01	193 33.7	51.0	24 32.9	0.7	26 53.7	0.9	61.4
02	208 33.6	50.7	38 52.6	0.7	26 52.8	1.1	61.4
03	223 33.5	50.3	53 12.3	0.7	26 51.7	1.4	61.4
04	238 33.5	49.9	67 32.0	0.8	26 50.3	1.5	61.4
05	253 33.4	49.6	81 51.8	0.8	26 48.8	1.8	61.4
06	268 33.3	N21 49.2	96 11.6	0.7	S26 47.0	1.9	61.4
07	283 33.2	48.9	110 31.3	0.9	26 45.1	2.2	61.4
M 08	298 33.2	48.5	124 51.2	0.8	26 42.9	2.4	61.4
I 09	313 33.1	48.1	139 11.0	0.9	26 40.5	2.6	61.4
É 10	328 33.0	47.8	153 30.9	0.9	26 37.9	2.9	61.4
R 11	343 32.9	47.4	167 50.8	0.9	26 35.0	3.0	61.4
C 12	358 32.9	N21 47.0	182 10.7	1.0	S26 32.0	3.3	61.4
O 13	13 32.8	46.7	196 30.7	1.0	26 28.7	3.4	61.4
L 14	28 32.7	46.3	210 50.7	1.1	26 25.3	3.7	61.4
E 15	43 32.7	45.9	225 10.8	1.1	26 21.6	3.9	61.4
S 16	58 32.6	45.6	239 30.9	1.2	26 17.7	4.0	61.4
17	73 32.5	45.2	253 51.1	1.2	26 13.7	4.3	61.4
18	88 32.4	N21 44.8	268 11.3	1.3	S26 09.4	4.5	61.4
19	103 32.4	44.4	282 31.6	1.4	26 04.9	4.7	61.3
20	118 32.3	44.1	296 52.0	1.4	26 00.2	4.9	61.3
21	133 32.2	43.7	311 12.4	1.5	25 55.3	5.1	61.3
22	148 32.2	43.3	325 32.9	1.5	25 50.2	5.3	61.3
23	163 32.1	43.0	339 53.4	1.7	25 44.9	5.5	61.3
14 00	178 32.0	N21 42.6	354 14.1	1.7	S25 39.4	5.7	61.3
01	193 32.0	42.2	8 34.8	1.8	25 33.7	5.9	61.3
02	208 31.9	41.8	22 55.6	1.9	25 27.8	6.0	61.3
03	223 31.8	41.4	37 16.5	1.9	25 21.8	6.3	61.3
04	238 31.8	41.1	51 37.4	2.1	25 15.5	6.5	61.3
05	253 31.7	40.7	65 58.5	2.1	25 09.0	6.6	61.3
06	268 31.6	N21 40.3	80 19.6	2.3	S25 02.4	6.9	61.2
07	283 31.6	39.9	94 40.9	2.3	24 55.5	7.0	61.2
J 08	298 31.5	39.6	109 02.2	2.4	24 48.5	7.2	61.2
U 09	313 31.4	39.2	123 23.6	2.5	24 41.3	7.4	61.2
E 10	328 31.3	38.8	137 45.1	2.7	24 33.9	7.6	61.2
V 11	343 31.3	38.4	152 06.8	2.7	24 26.3	7.7	61.2
E 12	358 31.2	N21 38.0	166 28.5	2.8	S24 18.6	8.0	61.2
S 13	13 31.2	37.6	180 50.3	3.0	24 10.6	8.1	61.2
14	28 31.1	37.3	195 12.3	3.0	24 02.5	8.3	61.1
15	43 31.0	36.9	209 34.3	3.2	23 54.2	8.4	61.1
16	58 31.0	36.5	223 56.5	3.3	23 45.8	8.6	61.1
17	73 30.9	36.1	238 18.8	3.3	23 37.2	8.8	61.1
18	88 30.8	N21 35.7	252 41.1	3.6	S23 28.4	9.0	61.1
19	103 30.8	35.3	267 03.7	3.6	23 19.4	9.1	61.0
20	118 30.7	34.9	281 26.3	3.7	23 10.3	9.2	61.0
21	133 30.6	34.6	295 49.0	3.9	23 01.1	9.5	61.0
22	148 30.6	34.2	310 11.9	3.9	22 51.6	9.6	61.0
23	163 30.5	33.8	324 34.8	4.1	S22 42.0	9.7	61.0
	S/D 15.8	*d* 0.4	S/D	16.7		16.7	16.7

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 12	Orto Luna 13	Orto Luna 14	Orto Luna 15
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	■	■	■	■
N 70	▭	▭	▭	■	■	■	■
68	▭	▭	▭	■	■	■	23 57
66	////	////	01 26	■	■	■	(00 04 / 23 31)
64	////	////	02 10	■	23 56	23 21	23 10
62	////	00 31	02 38	22 11	22 45	22 52	22 53
60	////	01 38	03 00	21 22	22 09	22 29	22 39
N 58	////	02 11	03 17	20 51	21 43	22 11	22 26
56	00 28	02 35	03 32	20 27	21 22	21 56	22 16
54	01 30	02 54	03 44	20 08	21 05	21 42	22 06
52	02 01	03 09	03 56	19 52	20 50	21 31	21 58
50	02 23	03 23	04 05	19 38	20 37	21 20	21 51
45	03 02	03 50	04 26	19 09	20 11	20 58	21 34
N 40	03 30	04 10	04 42	18 47	19 50	20 41	21 21
35	03 51	04 27	04 56	18 29	19 32	20 26	21 10
30	04 08	04 41	05 08	18 13	19 17	20 13	20 59
20	04 35	05 04	05 28	17 46	18 51	19 51	20 42
N 10	04 56	05 23	05 46	17 23	18 29	19 31	20 27
0	05 14	05 40	06 02	17 01	18 08	19 13	20 13
S 10	05 30	05 56	06 18	16 40	17 48	18 55	19 58
20	05 45	06 12	06 35	16 17	17 25	18 35	19 43
30	05 59	06 29	06 55	15 50	16 59	18 13	19 25
35	06 07	06 39	07 06	15 34	16 44	17 59	19 15
40	06 16	06 49	07 19	15 16	16 26	17 44	19 03
45	06 25	07 02	07 35	14 54	16 05	17 26	18 49
S 50	06 35	07 16	07 53	14 27	15 38	17 03	18 32
52	06 40	07 23	08 02	14 13	15 25	16 52	18 24
54	06 45	07 30	08 12	13 58	15 10	16 39	18 15
56	06 50	07 38	08 23	13 39	14 52	16 25	18 04
58	06 56	07 47	08 36	13 17	14 30	16 08	17 52
S 60	07 03	07 57	08 51	12 48	14 02	15 47	17 39

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 12	Ocaso Luna 13	Ocaso Luna 14	Ocaso Luna 15
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	■	■	■	■
N 70	▭	▭	▭	■	■	■	■
68	▭	▭	▭	■	■	■	■
66	////	////	////	■	■	■	03 06
64	22 00	////	////	■	■	01 01	03 49
62	21 32	23 31	////	24 24	00 24	02 11	04 17
60	21 11	22 31	////	00 20	01 13	02 46	04 39
N 58	20 53	21 59	////	00 47	01 44	03 12	04 56
56	20 39	21 35	23 34	01 09	02 08	03 32	05 11
54	20 26	21 17	22 39	01 26	02 27	03 49	05 24
52	20 15	21 01	22 09	01 42	02 43	04 04	05 35
50	20 06	20 48	21 47	01 55	02 57	04 16	05 44
45	19 45	20 21	21 08	02 22	03 25	04 42	06 05
N 40	19 29	20 01	20 41	02 43	03 48	05 02	06 22
35	19 15	19 44	20 20	03 01	04 06	05 19	06 36
30	19 03	19 30	20 03	03 16	04 22	05 34	06 48
20	18 43	19 07	19 36	03 43	04 49	05 59	07 08
N 10	18 26	18 48	19 15	04 05	05 12	06 20	07 26
0	18 09	18 32	18 58	04 26	05 33	06 40	07 42
S 10	17 53	18 16	18 42	04 47	05 55	06 59	07 58
20	17 36	18 00	18 27	05 10	06 18	07 20	08 16
30	17 17	17 43	18 12	05 36	06 44	07 44	08 35
35	17 05	17 33	18 04	05 51	07 00	07 58	08 47
40	16 53	17 23	17 56	06 09	07 18	08 15	09 00
45	16 37	17 10	17 47	06 31	07 39	08 34	09 15
S 50	16 19	16 56	17 37	06 58	08 07	08 58	09 34
52	16 10	16 49	17 32	07 12	08 20	09 09	09 43
54	16 00	16 42	17 27	07 27	08 35	09 22	09 53
56	15 49	16 34	17 22	07 45	08 53	09 37	10 04
58	15 36	16 25	17 16	08 07	09 15	09 55	10 16
S 60	15 21	16 15	17 09	08 36	09 43	10 16	10 31

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
12	05 38	05 41	12 06	23 17	10 44	13 97	
13	05 45	05 48	12 06	24 24	11 51	14 100	○
14	05 52	05 55	12 06	00 24	12 56	15 99	

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·3		JÚPITER −2·5		SATURNO +0·4	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
15 00	292 49.7	206 49.6	N22 34.9	257 48.9	N12 05.0	284 34.4	N 2 04.9	326 04.2	S14 41.1
01	307 52.2	221 48.8	35.1	272 49.7	05.5	299 36.7	05.0	341 06.8	41.2
02	322 54.6	236 48.0	35.3	287 50.5	06.1	314 39.1	05.0	356 09.4	41.3
03	337 57.1	251 47.3	35.5	302 51.3	06.7	329 41.4	05.0	11 12.0	41.3
04	352 59.6	266 46.5	35.6	317 52.1	07.2	344 43.8	05.1	26 14.6	41.4
05	8 02.0	281 45.7	35.8	332 52.9	07.8	359 46.1	05.1	41 17.2	41.4
06	23 04.5	296 44.9	N22 36.0	347 53.8	N12 08.4	14 48.5	N 2 05.1	56 19.8	S14 41.5
07	38 06.9	311 44.1	36.2	2 54.6	08.9	29 50.9	05.2	71 22.4	41.5
08	53 09.4	326 43.3	36.4	17 55.4	09.5	44 53.2	05.2	86 25.0	41.6
V 09	68 11.9	341 42.5	36.6	32 56.2	10.1	59 55.6	05.2	101 27.6	41.6
I 10	83 14.3	356 41.7	36.8	47 57.0	10.6	74 57.9	05.3	116 30.2	41.7
E 11	98 16.8	11 40.9	36.9	62 57.8	11.2	90 00.3	05.3	131 32.8	41.7
R 12	113 19.3	26 40.1	N22 37.1	77 58.7	N12 11.7	105 02.7	N 2 05.3	146 35.4	S14 41.8
N 13	128 21.7	41 39.3	37.3	92 59.5	12.3	120 05.0	05.3	161 38.0	41.9
E 14	143 24.2	56 38.5	37.5	108 00.3	12.9	135 07.4	05.4	176 40.6	41.9
S 15	158 26.7	71 37.7	37.6	123 01.1	13.4	150 09.7	05.4	191 43.2	42.0
16	173 29.1	86 36.9	37.8	138 01.9	14.0	165 12.1	05.4	206 45.8	42.0
17	188 31.6	101 36.2	38.0	153 02.7	14.6	180 14.5	05.5	221 48.4	42.1
18	203 34.1	116 35.4	N22 38.2	168 03.6	N12 15.1	195 16.8	N 2 05.5	236 51.0	S14 42.1
19	218 36.5	131 34.6	38.3	183 04.4	15.7	210 19.2	05.5	251 53.6	42.2
20	233 39.0	146 33.8	38.5	198 05.2	16.2	225 21.5	05.6	266 56.2	42.2
21	248 41.4	161 33.0	38.7	213 06.0	16.8	240 23.9	05.6	281 58.8	42.3
22	263 43.9	176 32.2	38.8	228 06.8	17.4	255 26.3	05.6	297 01.4	42.3
23	278 46.4	191 31.4	39.0	243 07.6	17.9	270 28.6	05.7	312 04.0	42.4
16 00	293 48.8	206 30.6	N22 39.2	258 08.5	N12 18.5	285 31.0	N 2 05.7	327 06.6	S14 42.5
01	308 51.3	221 29.8	39.3	273 09.3	19.1	300 33.4	05.7	342 09.2	42.5
02	323 53.8	236 29.0	39.5	288 10.1	19.6	315 35.7	05.7	357 11.9	42.6
03	338 56.2	251 28.2	39.7	303 10.9	20.2	330 38.1	05.8	12 14.5	42.6
04	353 58.7	266 27.4	39.8	318 11.7	20.7	345 40.4	05.8	27 17.1	42.7
05	9 01.2	281 26.6	40.0	333 12.5	21.3	0 42.8	05.8	42 19.7	42.7
06	24 03.6	296 25.8	N22 40.2	348 13.4	N12 21.9	15 45.2	N 2 05.9	57 22.3	S14 42.8
07	39 06.1	311 25.0	40.3	3 14.2	22.4	30 47.5	05.9	72 24.9	42.8
S 08	54 08.6	326 24.2	40.5	18 15.0	23.0	45 49.9	05.9	87 27.5	42.9
Á 09	69 11.0	341 23.4	40.6	33 15.8	23.5	60 52.3	05.9	102 30.1	42.9
B 10	84 13.5	356 22.6	40.8	48 16.6	24.1	75 54.6	06.0	117 32.7	43.0
A 11	99 15.9	11 21.8	40.9	63 17.5	24.6	90 57.0	06.0	132 35.3	43.1
D 12	114 18.4	26 21.0	N22 41.1	78 18.3	N12 25.2	105 59.4	N 2 06.0	147 37.9	S14 43.1
O 13	129 20.9	41 20.2	41.2	93 19.1	25.8	121 01.7	06.1	162 40.5	43.2
14	144 23.3	56 19.4	41.4	108 19.9	26.3	136 04.1	06.1	177 43.1	43.2
15	159 25.8	71 18.6	41.5	123 20.7	26.9	151 06.5	06.1	192 45.7	43.3
16	174 28.3	86 17.8	41.7	138 21.5	27.4	166 08.8	06.1	207 48.3	43.3
17	189 30.7	101 17.0	41.8	153 22.4	28.0	181 11.2	06.2	222 50.9	43.4
18	204 33.2	116 16.2	N22 42.0	168 23.2	N12 28.5	196 13.6	N 2 06.2	237 53.5	S14 43.4
19	219 35.7	131 15.4	42.1	183 24.0	29.1	211 15.9	06.2	252 56.2	43.5
20	234 38.1	146 14.6	42.3	198 24.8	29.7	226 18.3	06.3	267 58.8	43.5
21	249 40.6	161 13.8	42.4	213 25.6	30.2	241 20.7	06.3	283 01.4	43.6
22	264 43.0	176 13.0	42.6	228 26.5	30.8	256 23.1	06.3	298 04.0	43.7
23	279 45.5	191 12.2	42.7	243 27.3	31.3	271 25.4	06.3	313 06.6	43.7
17 00	294 48.0	206 11.4	N22 42.8	258 28.1	N12 31.9	286 27.8	N 2 06.4	328 09.2	S14 43.8
01	309 50.4	221 10.6	43.0	273 28.9	32.4	301 30.2	06.4	343 11.8	43.8
02	324 52.9	236 09.8	43.1	288 29.7	33.0	316 32.5	06.4	358 14.4	43.9
03	339 55.4	251 09.0	43.3	303 30.5	33.6	331 34.9	06.4	13 17.0	43.9
04	354 57.8	266 08.2	43.4	318 31.4	34.1	346 37.3	06.5	28 19.6	44.0
05	10 00.3	281 07.4	43.5	333 32.2	34.7	1 39.7	06.5	43 22.2	44.0
06	25 02.8	296 06.6	N22 43.7	348 33.0	N12 35.2	16 42.0	N 2 06.5	58 24.8	S14 44.1
07	40 05.2	311 05.8	43.8	3 33.8	35.8	31 44.4	06.5	73 27.4	44.2
D 08	55 07.7	326 05.0	43.9	18 34.6	36.3	46 46.8	06.6	88 30.1	44.2
O 09	70 10.2	341 04.2	44.1	33 35.5	36.9	61 49.1	06.6	103 32.7	44.3
M 10	85 12.6	356 03.4	44.2	48 36.3	37.4	76 51.5	06.6	118 35.3	44.3
I 11	100 15.1	11 02.6	44.3	63 37.1	38.0	91 53.9	06.6	133 37.9	44.4
N 12	115 17.5	26 01.8	N22 44.4	78 37.9	N12 38.5	106 56.3	N 2 06.7	148 40.5	S14 44.4
G 13	130 20.0	41 01.0	44.6	93 38.7	39.1	121 58.6	06.7	163 43.1	44.5
O 14	145 22.5	56 00.2	44.7	108 39.6	39.6	137 01.0	06.7	178 45.7	44.5
15	160 24.9	70 59.4	44.8	123 40.4	40.2	152 03.4	06.7	193 48.3	44.6
16	175 27.4	85 58.6	44.9	138 41.2	40.7	167 05.8	06.8	208 50.9	44.7
17	190 29.9	100 57.8	45.0	153 42.0	41.3	182 08.1	06.8	223 53.5	44.7
18	205 32.3	115 57.0	N22 45.2	168 42.8	N12 41.8	197 10.5	N 2 06.8	238 56.1	S14 44.8
19	220 34.8	130 56.2	45.3	183 43.7	42.4	212 12.9	06.8	253 58.8	44.8
20	235 37.3	145 55.4	45.4	198 44.5	42.9	227 15.3	06.9	269 01.4	44.9
21	250 39.7	160 54.5	45.5	213 45.3	43.5	242 17.6	06.9	284 04.0	44.9
22	265 42.2	175 53.7	45.6	228 46.1	44.0	257 20.0	06.9	299 06.6	45.0
23	280 44.7	190 52.9	45.8	243 46.9	44.6	272 22.4	06.9	314 09.2	45.1
	h m								
Paso Mer.	4 24.0	*v* −0.8	*d* 0.2	*v* 0.8	*d* 0.6	*v* 2.4	*d* 0.0	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.5	S40 12.7
Achernar	335 21.8	S57 07.1
Acrux	173 02.5	S63 13.6
Adhara	255 07.8	S29 00.1
Aldebaran	290 42.2	N16 33.2
Alioth	166 14.9	N55 50.6
Alkaid	152 53.6	N49 12.4
Alnair	27 35.1	S46 51.0
Alnilam	275 40.1	S 1 11.2
Alphard	217 50.0	S 8 45.3
Alphecca	126 05.3	N26 38.5
Alpheratz	357 36.7	N29 12.7
Altair	62 01.6	N 8 55.7
Ankaa	353 09.1	S42 10.8
Antares	112 18.1	S26 28.9
Arcturus	145 49.7	N19 04.1
Atria	107 13.7	S69 04.2
Avior	234 16.2	S59 34.9
Bellatrix	278 25.4	N 6 22.2
Betelgeuse	270 54.6	N 7 24.7
Canopus	263 53.8	S52 42.3
Capella	280 25.3	N46 01.1
Deneb	49 26.7	N45 21.5
Denebola	182 27.2	N14 27.0
Diphda	348 49.3	S17 51.7
Dubhe	193 44.0	N61 38.1
Elnath	278 04.8	N28 37.5
Eltanin	90 42.6	N51 29.3
Enif	33 40.5	N 9 58.7
Fomalhaut	15 16.5	S29 30.1
Gacrux	171 54.0	S57 14.5
Gienah	175 45.8	S17 40.0
Hadar	148 38.8	S60 29.1
Hamal	327 53.6	N23 34.0
Kaus Aust.	83 34.8	S34 22.4
Kochab	137 19.4	N74 04.1
Markab	13 31.7	N15 19.5
Menkar	314 08.4	N 4 10.7
Menkent	147 59.9	S36 28.9
Miaplacidus	221 39.5	S69 48.6
Mirfak	308 31.4	N49 56.2
Nunki	75 49.9	S26 16.1
Peacock	53 08.4	S56 39.7
Pollux	243 20.2	N27 58.4
Procyon	244 53.3	N 5 10.1
Rasalhague	96 00.1	N12 32.7
Regulus	207 36.9	N11 51.6
Rigel	281 06.1	S 8 10.5
Rigil Kent.	139 42.9	S60 55.8
Sabik	102 04.8	S15 45.1
Schedar	349 33.2	N56 39.3
Shaula	96 12.8	S37 07.2
Sirius	258 28.4	S16 44.7
Spica	158 24.5	S11 16.7
Suhail	222 48.2	S43 31.4
Vega	80 34.2	N38 48.3
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	272 41.7	10 15
Marte	324 19.6	6 47
Júpiter	351 42.2	4 57
Saturno	33 17.8	2 11

UT (HmGr)		SOL				LUNA						
		AHGr		Dec		AHGr	v	Dec	d	Ph		
d	h	°	′	°	′	°	′	′	°	′	′	′
15	00	178	30.4	N21	33.4	338	57.9	4.3	S22	32.3	9.9	60.9
	01	193	30.4		33.0	353	21.2	4.3	22	22.4	10.1	60.9
	02	208	30.3		32.6	7	44.5	4.5	22	12.3	10.1	60.9
	03	223	30.2		32.2	22	08.0	4.6	22	02.2	10.4	60.9
	04	238	30.2		31.8	36	31.6	4.7	21	51.8	10.5	60.9
	05	253	30.1		31.4	50	55.3	4.8	21	41.3	10.6	60.8
	06	268	30.1	N21	31.0	65	19.1	5.0	S21	30.7	10.8	60.8
	07	283	30.0		30.6	79	43.1	5.1	21	19.9	10.9	60.8
V	08	298	29.9		30.2	94	07.2	5.2	21	09.0	11.0	60.8
I	09	313	29.9		29.9	108	31.4	5.4	20	58.0	11.2	60.7
E	10	328	29.8		29.5	122	55.8	5.5	20	46.8	11.2	60.7
R	11	343	29.7		29.1	137	20.3	5.6	20	35.6	11.5	60.7
N	12	358	29.7	N21	28.7	151	44.9	5.8	S20	24.1	11.5	60.7
E	13	13	29.6		28.3	166	09.7	5.8	20	12.6	11.7	60.6
S	14	28	29.6		27.9	180	34.5	6.0	20	00.9	11.8	60.6
	15	43	29.5		27.5	194	59.5	6.2	19	49.1	11.9	60.6
	16	58	29.4		27.1	209	24.7	6.2	19	37.2	12.0	60.5
	17	73	29.4		26.7	223	49.9	6.4	19	25.2	12.2	60.5
	18	88	29.3	N21	26.3	238	15.3	6.5	S19	13.0	12.2	60.5
	19	103	29.3		25.9	252	40.8	6.7	19	00.8	12.4	60.5
	20	118	29.2		25.5	267	06.5	6.8	18	48.4	12.4	60.4
	21	133	29.1		25.1	281	32.3	6.9	18	36.0	12.6	60.4
	22	148	29.1		24.6	295	58.2	7.0	18	23.4	12.7	60.4
	23	163	29.0		24.2	310	24.2	7.2	18	10.7	12.8	60.3
16	00	178	29.0	N21	23.8	324	50.4	7.3	S17	57.9	12.8	60.3
	01	193	28.9		23.4	339	16.7	7.4	17	45.1	13.0	60.3
	02	208	28.8		23.0	353	43.1	7.6	17	32.1	13.1	60.2
	03	223	28.8		22.6	8	09.7	7.7	17	19.0	13.1	60.2
	04	238	28.7		22.2	22	36.4	7.8	17	05.9	13.3	60.2
	05	253	28.7		21.8	37	03.2	7.9	16	52.6	13.3	60.1
	06	268	28.6	N21	21.4	51	30.1	8.0	S16	39.3	13.4	60.1
	07	283	28.6		21.0	65	57.1	8.2	16	25.9	13.5	60.1
S	08	298	28.5		20.6	80	24.3	8.3	16	12.4	13.6	60.0
Á	09	313	28.4		20.2	94	51.6	8.4	15	58.8	13.7	60.0
B	10	328	28.4		19.7	109	19.0	8.6	15	45.1	13.7	60.0
A	11	343	28.3		19.3	123	46.6	8.6	15	31.4	13.8	59.9
D	12	358	28.3	N21	18.9	138	14.2	8.8	S15	17.6	13.9	59.9
O	13	13	28.2		18.5	152	42.0	8.9	15	03.7	13.9	59.9
	14	28	28.2		18.1	167	09.9	9.0	14	49.8	14.1	59.8
	15	43	28.1		17.7	181	37.9	9.2	14	35.7	14.1	59.8
	16	58	28.0		17.3	196	06.1	9.2	14	21.6	14.1	59.8
	17	73	28.0		16.9	210	34.3	9.4	14	07.5	14.2	59.7
	18	88	27.9	N21	16.4	225	02.7	9.5	S13	53.3	14.3	59.7
	19	103	27.9		16.0	239	31.2	9.6	13	39.0	14.3	59.7
	20	118	27.8		15.6	253	59.8	9.7	13	24.7	14.4	59.6
	21	133	27.8		15.2	268	28.5	9.8	13	10.3	14.5	59.6
	22	148	27.7		14.8	282	57.3	9.9	12	55.8	14.5	59.5
	23	163	27.7		14.3	297	26.2	10.0	12	41.3	14.5	59.5
17	00	178	27.6	N21	13.9	311	55.2	10.2	S12	26.8	14.6	59.5
	01	193	27.6		13.5	326	24.4	10.2	12	12.2	14.7	59.4
	02	208	27.5		13.1	340	53.6	10.4	11	57.5	14.6	59.4
	03	223	27.5		12.7	355	23.0	10.4	11	42.9	14.8	59.4
	04	238	27.4		12.2	9	52.4	10.6	11	28.1	14.8	59.3
	05	253	27.3		11.8	24	22.0	10.7	11	13.3	14.8	59.3
	06	268	27.3	N21	11.4	38	51.7	10.7	S10	58.5	14.8	59.2
	07	283	27.2		11.0	53	21.4	10.9	10	43.7	14.9	59.2
D	08	298	27.2		10.5	67	51.3	10.9	10	28.8	14.9	59.2
O	09	313	27.1		10.1	82	21.2	11.1	10	13.9	15.0	59.1
M	10	328	27.1		09.7	96	51.3	11.1	9	58.9	15.0	59.1
I	11	343	27.0		09.3	111	21.4	11.3	9	43.9	15.0	59.0
N	12	358	27.0	N21	08.8	125	51.7	11.3	S 9	28.9	15.0	59.0
G	13	13	26.9		08.4	140	22.0	11.4	9	13.9	15.1	59.0
O	14	28	26.9		08.0	154	52.4	11.5	8	58.8	15.1	58.9
	15	43	26.8		07.5	169	22.9	11.6	8	43.7	15.1	58.9
	16	58	26.8		07.1	183	53.5	11.7	8	28.6	15.2	58.8
	17	73	26.7		06.7	198	24.2	11.8	8	13.4	15.1	58.8
	18	88	26.7	N21	06.2	212	55.0	11.9	S 7	58.3	15.2	58.8
	19	103	26.6		05.8	227	25.9	11.9	7	43.1	15.2	58.7
	20	118	26.6		05.4	241	56.8	12.0	7	27.9	15.2	58.7
	21	133	26.5		04.9	256	27.8	12.1	7	12.7	15.3	58.6
	22	148	26.5		04.5	270	58.9	12.2	6	57.4	15.2	58.6
	23	163	26.4		04.1	285	30.1	12.3	S 6	42.2	15.3	58.6
		S/D	15.8	d	0.4	S/D		16.5		16.3		16.1

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		15	16	17	18
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	■	01 45	{00 23 06 24}	22 52
N 70	▭	▭	▭	■	{00 23 35 44}	23 15	22 51
68	▭	▭	▭	23 57	23 27	23 07	22 50
66	////	////	01 40	{00 23 04 31}	23 13	23 01	22 50
64	////	////	02 18	23 10	23 02	22 55	22 49
62	////	00 57	02 45	22 53	22 52	22 50	22 48
60	////	01 48	03 05	22 39	22 43	22 46	22 48
N 58	////	02 18	03 22	22 26	22 36	22 42	22 48
56	00 52	02 41	03 36	22 16	22 29	22 39	22 47
54	01 39	02 59	03 48	22 06	22 23	22 36	22 47
52	02 07	03 14	03 59	21 58	22 18	22 33	22 47
50	02 28	03 27	04 09	21 51	22 13	22 31	22 46
45	03 06	03 53	04 28	21 34	22 02	22 25	22 46
N 40	03 33	04 13	04 44	21 21	21 53	22 21	22 45
35	03 54	04 29	04 58	21 10	21 46	22 17	22 45
30	04 10	04 43	05 10	20 59	21 39	22 13	22 44
20	04 37	05 05	05 30	20 42	21 27	22 07	22 44
N 10	04 57	05 24	05 47	20 27	21 17	22 02	22 43
0	05 14	05 40	06 03	20 13	21 07	21 57	22 43
S 10	05 30	05 56	06 18	19 58	20 57	21 51	22 42
20	05 44	06 11	06 35	19 43	20 47	21 46	22 42
30	05 59	06 28	06 54	19 25	20 35	21 40	22 41
35	06 06	06 38	07 05	19 15	20 28	21 36	22 41
40	06 14	06 48	07 18	19 03	20 20	21 32	22 41
45	06 23	07 00	07 33	18 49	20 10	21 27	22 40
S 50	06 33	07 14	07 51	18 32	19 59	21 22	22 40
52	06 38	07 20	07 59	18 24	19 54	21 19	22 39
54	06 43	07 27	08 09	18 15	19 48	21 16	22 39
56	06 48	07 35	08 20	18 04	19 41	21 13	22 39
58	06 53	07 44	08 32	17 52	19 34	21 09	22 39
S 60	06 59	07 54	08 47	17 39	19 26	21 05	22 38

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	15	16	17	18
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	■	03 32	07 02	09 26
N 70	▭	▭	▭	■	04 40	07 21	09 32
68	▭	▭	▭	■	05 16	07 36	09 37
66	22 29	////	////	03 06	05 41	07 48	09 41
64	21 52	////	////	03 49	06 01	07 58	09 44
62	21 26	23 10	////	04 17	06 17	08 06	09 47
60	21 05	22 22	////	04 39	06 30	08 13	09 50
N 58	20 49	21 52	////	04 56	06 41	08 20	09 52
56	20 35	21 30	23 15	05 11	06 51	08 25	09 54
54	20 23	21 12	22 31	05 24	06 59	08 30	09 56
52	20 12	20 58	22 03	05 35	07 07	08 35	09 58
50	20 03	20 45	21 43	05 44	07 14	08 39	09 59
45	19 43	20 19	21 05	06 05	07 28	08 47	10 02
N 40	19 27	19 59	20 39	06 22	07 40	08 55	10 05
35	19 14	19 43	20 18	06 36	07 50	09 01	10 08
30	19 02	19 29	20 01	06 48	07 59	09 06	10 10
20	18 43	19 07	19 35	07 08	08 14	09 15	10 13
N 10	18 26	18 48	19 15	07 26	08 27	09 24	10 16
0	18 10	18 32	18 58	07 42	08 39	09 31	10 19
S 10	17 54	18 17	18 42	07 58	08 51	09 38	10 22
20	17 37	18 01	18 28	08 16	09 04	09 46	10 25
30	17 18	17 44	18 14	08 35	09 18	09 55	10 28
35	17 07	17 35	18 06	08 47	09 27	10 00	10 30
40	16 55	17 25	17 58	09 00	09 36	10 06	10 32
45	16 40	17 13	17 49	09 15	09 47	10 12	10 34
S 50	16 22	16 59	17 39	09 34	10 00	10 20	10 37
52	16 13	16 52	17 35	09 43	10 06	10 24	10 38
54	16 04	16 45	17 30	09 53	10 13	10 28	10 40
56	15 53	16 38	17 25	10 04	10 20	10 32	10 41
58	15 40	16 29	17 19	10 16	10 29	10 37	10 43
S 60	15 26	16 19	17 13	10 31	10 38	10 42	10 45

Día	SOL			LUNA				
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
15	05 58	06 01	12 06	01 28	13 58	16	95
16	06 04	06 07	12 06	02 26	14 53	17	89
17	06 09	06 12	12 06	03 19	15 44	18	81

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·3		JÚPITER −2·6		SATURNO +0·4	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
18 00	295 47.1	205 52.1	N22 45.9	258 47.8	N12 45.1	287 24.8	N 2 07.0	329 11.8	S14 45.1
01	310 49.6	220 51.3	46.0	273 48.6	45.7	302 27.2	07.0	344 14.4	45.2
02	325 52.0	235 50.5	46.1	288 49.4	46.2	317 29.5	07.0	359 17.0	45.2
03	340 54.5	250 49.7	46.2	303 50.2	46.8	332 31.9	07.0	14 19.6	45.3
04	355 57.0	265 48.9	46.3	318 51.0	47.3	347 34.3	07.1	29 22.2	45.3
05	10 59.4	280 48.1	46.4	333 51.9	47.9	2 36.7	07.1	44 24.9	45.4
06	26 01.9	295 47.3	N22 46.5	348 52.7	N12 48.4	17 39.1	N 2 07.1	59 27.5	S14 45.4
07	41 04.4	310 46.5	46.6	3 53.5	49.0	32 41.4	07.1	74 30.1	45.5
08	56 06.8	325 45.7	46.7	18 54.3	49.5	47 43.8	07.1	89 32.7	45.6
L 09	71 09.3	340 44.9	46.8	33 55.2	50.1	62 46.2	07.2	104 35.3	45.6
U 10	86 11.8	355 44.1	46.9	48 56.0	50.6	77 48.6	07.2	119 37.9	45.7
N 11	101 14.2	10 43.3	47.0	63 56.8	51.2	92 51.0	07.2	134 40.5	45.7
E 12	116 16.7	25 42.5	N22 47.1	78 57.6	N12 51.7	107 53.3	N 2 07.2	149 43.1	S14 45.8
S 13	131 19.1	40 41.6	47.2	93 58.4	52.3	122 55.7	07.3	164 45.7	45.8
14	146 21.6	55 40.8	47.3	108 59.3	52.8	137 58.1	07.3	179 48.4	45.9
15	161 24.1	70 40.0	47.4	124 00.1	53.4	153 00.5	07.3	194 51.0	46.0
16	176 26.5	85 39.2	47.5	139 00.9	53.9	168 02.9	07.3	209 53.6	46.0
17	191 29.0	100 38.4	47.6	154 01.7	54.5	183 05.3	07.3	224 56.2	46.1
18	206 31.5	115 37.6	N22 47.7	169 02.5	N12 55.0	198 07.6	N 2 07.4	239 58.8	S14 46.1
19	221 33.9	130 36.8	47.8	184 03.4	55.5	213 10.0	07.4	255 01.4	46.2
20	236 36.4	145 36.0	47.9	199 04.2	56.1	228 12.4	07.4	270 04.0	46.2
21	251 38.9	160 35.2	48.0	214 05.0	56.6	243 14.8	07.4	285 06.6	46.3
22	266 41.3	175 34.4	48.1	229 05.8	57.2	258 17.2	07.4	300 09.2	46.3
23	281 43.8	190 33.6	48.2	244 06.7	57.7	273 19.6	07.5	315 11.9	46.4
19 00	296 46.3	205 32.8	N22 48.2	259 07.5	N12 58.3	288 21.9	N 2 07.5	330 14.5	S14 46.5
01	311 48.7	220 31.9	48.3	274 08.3	58.8	303 24.3	07.5	345 17.1	46.5
02	326 51.2	235 31.1	48.4	289 09.1	59.4	318 26.7	07.5	0 19.7	46.6
03	341 53.6	250 30.3	48.5	304 10.0	12 59.9	333 29.1	07.5	15 22.3	46.6
04	356 56.1	265 29.5	48.6	319 10.8	13 00.4	348 31.5	07.6	30 24.9	46.7
05	11 58.6	280 28.7	48.7	334 11.6	01.0	3 33.9	07.6	45 27.5	46.7
06	27 01.0	295 27.9	N22 48.7	349 12.4	N13 01.5	18 36.3	N 2 07.6	60 30.2	S14 46.8
07	42 03.5	310 27.1	48.8	4 13.2	02.1	33 38.6	07.6	75 32.8	46.9
M 08	57 06.0	325 26.3	48.9	19 14.1	02.6	48 41.0	07.6	90 35.4	46.9
A 09	72 08.4	340 25.5	49.0	34 14.9	03.1	63 43.4	07.7	105 38.0	47.0
R 10	87 10.9	355 24.6	49.0	49 15.7	03.7	78 45.8	07.7	120 40.6	47.0
T 11	102 13.4	10 23.8	49.1	64 16.5	04.2	93 48.2	07.7	135 43.2	47.1
E 12	117 15.8	25 23.0	N22 49.2	79 17.4	N13 04.8	108 50.6	N 2 07.7	150 45.8	S14 47.1
S 13	132 18.3	40 22.2	49.3	94 18.2	05.3	123 53.0	07.7	165 48.4	47.2
14	147 20.7	55 21.4	49.3	109 19.0	05.9	138 55.4	07.8	180 51.1	47.3
15	162 23.2	70 20.6	49.4	124 19.8	06.4	153 57.8	07.8	195 53.7	47.3
16	177 25.7	85 19.8	49.5	139 20.7	06.9	169 00.1	07.8	210 56.3	47.4
17	192 28.1	100 19.0	49.5	154 21.5	07.5	184 02.5	07.8	225 58.9	47.4
18	207 30.6	115 18.2	N22 49.6	169 22.3	N13 08.0	199 04.9	N 2 07.8	241 01.5	S14 47.5
19	222 33.1	130 17.3	49.7	184 23.1	08.6	214 07.3	07.8	256 04.1	47.5
20	237 35.5	145 16.5	49.7	199 24.0	09.1	229 09.7	07.9	271 06.7	47.6
21	252 38.0	160 15.7	49.8	214 24.8	09.6	244 12.1	07.9	286 09.4	47.7
22	267 40.5	175 14.9	49.9	229 25.6	10.2	259 14.5	07.9	301 12.0	47.7
23	282 42.9	190 14.1	49.9	244 26.4	10.7	274 16.9	07.9	316 14.6	47.8
20 00	297 45.4	205 13.3	N22 50.0	259 27.3	N13 11.2	289 19.3	N 2 07.9	331 17.2	S14 47.8
01	312 47.9	220 12.5	50.0	274 28.1	11.8	304 21.7	08.0	346 19.8	47.9
02	327 50.3	235 11.7	50.1	289 28.9	12.3	319 24.1	08.0	1 22.4	47.9
03	342 52.8	250 10.8	50.1	304 29.7	12.9	334 26.5	08.0	16 25.0	48.0
04	357 55.2	265 10.0	50.2	319 30.6	13.4	349 28.8	08.0	31 27.7	48.1
05	12 57.7	280 09.2	50.2	334 31.4	13.9	4 31.2	08.0	46 30.3	48.1
06	28 00.2	295 08.4	N22 50.3	349 32.2	N13 14.5	19 33.6	N 2 08.0	61 32.9	S14 48.2
07	43 02.6	310 07.6	50.4	4 33.0	15.0	34 36.0	08.1	76 35.5	48.2
M 08	58 05.1	325 06.8	50.4	19 33.9	15.5	49 38.4	08.1	91 38.1	48.3
I 09	73 07.6	340 06.0	50.5	34 34.7	16.1	64 40.8	08.1	106 40.7	48.4
É 10	88 10.0	355 05.2	50.5	49 35.5	16.6	79 43.2	08.1	121 43.4	48.4
R 11	103 12.5	10 04.3	50.5	64 36.3	17.2	94 45.6	08.1	136 46.0	48.5
C 12	118 15.0	25 03.5	N22 50.6	79 37.2	N13 17.7	109 48.0	N 2 08.1	151 48.6	S14 48.5
O 13	133 17.4	40 02.7	50.6	94 38.0	18.2	124 50.4	08.1	166 51.2	48.6
L 14	148 19.9	55 01.9	50.7	109 38.8	18.8	139 52.8	08.2	181 53.8	48.6
E 15	163 22.4	70 01.1	50.7	124 39.6	19.3	154 55.2	08.2	196 56.4	48.7
S 16	178 24.8	85 00.3	50.8	139 40.5	19.8	169 57.6	08.2	211 59.1	48.8
17	193 27.3	99 59.5	50.8	154 41.3	20.4	185 00.0	08.2	227 01.7	48.8
18	208 29.7	114 58.6	N22 50.8	169 42.1	N13 20.9	200 02.4	N 2 08.2	242 04.3	S14 48.9
19	223 32.2	129 57.8	50.9	184 42.9	21.4	215 04.8	08.2	257 06.9	48.9
20	238 34.7	144 57.0	50.9	199 43.8	22.0	230 07.2	08.3	272 09.5	49.0
21	253 37.1	159 56.2	51.0	214 44.6	22.5	245 09.6	08.3	287 12.1	49.0
22	268 39.6	174 55.4	51.0	229 45.4	23.0	260 12.0	08.3	302 14.8	49.1
23	283 42.1	189 54.6	51.0	244 46.2	23.6	275 14.4	08.3	317 17.4	49.2
	h m								
Paso Mer.	4 12.2	*v* −0.8	*d* 0.1	*v* 0.8	*d* 0.5	*v* 2.4	*d* 0.0	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.5	S40 12.7
Achernar	335 21.7	S57 07.1
Acrux	173 02.5	S63 13.6
Adhara	255 07.8	S29 00.0
Aldebaran	290 42.2	N16 33.2
Alioth	166 14.9	N55 50.6
Alkaid	152 53.6	N49 12.4
Alnair	27 35.1	S46 51.0
Alnilam	275 40.1	S 1 11.2
Alphard	217 50.1	S 8 45.3
Alphecca	126 05.3	N26 38.6
Alpheratz	357 36.7	N29 12.7
Altair	62 01.6	N 8 55.7
Ankaa	353 09.0	S42 10.8
Antares	112 18.1	S26 28.9
Arcturus	145 49.7	N19 04.1
Atria	107 13.7	S69 04.2
Avior	234 16.2	S59 34.9
Bellatrix	278 25.3	N 6 22.2
Betelgeuse	270 54.6	N 7 24.7
Canopus	263 53.8	S52 42.3
Capella	280 25.3	N46 01.1
Deneb	49 26.7	N45 21.6
Denebola	182 27.2	N14 27.0
Diphda	348 49.3	S17 51.7
Dubhe	193 44.0	N61 38.1
Elnath	278 04.8	N28 37.5
Eltanin	90 42.6	N51 29.3
Enif	33 40.5	N 9 58.7
Fomalhaut	15 16.5	S29 30.1
Gacrux	171 54.1	S57 14.5
Gienah	175 45.8	S17 40.0
Hadar	148 38.8	S60 29.1
Hamal	327 53.5	N23 34.0
Kaus Aust.	83 34.8	S34 22.4
Kochab	137 19.4	N74 04.1
Markab	13 31.7	N15 19.5
Menkar	314 08.4	N 4 10.7
Menkent	148 00.0	S36 28.9
Miaplacidus	221 39.5	S69 48.6
Mirfak	308 31.4	N49 56.2
Nunki	75 49.9	S26 16.1
Peacock	53 08.3	S56 39.7
Pollux	243 20.2	N27 58.4
Procyon	244 53.3	N 5 10.1
Rasalhague	96 00.1	N12 32.7
Regulus	207 36.9	N11 51.6
Rigel	281 06.1	S 8 10.5
Rigil Kent.	139 42.9	S60 55.8
Sabik	102 04.8	S15 45.1
Schedar	349 33.2	N56 39.3
Shaula	96 12.8	S37 07.2
Sirius	258 28.4	S16 44.7
Spica	158 24.5	S11 16.7
Suhail	222 48.2	S43 31.4
Vega	80 34.2	N38 48.3
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	268 46.5	10 18
Marte	322 21.2	6 43
Júpiter	351 35.7	4 46
Saturno	33 28.2	1 59

UT (HmGr)	SOL				LUNA							
	AHGr		Dec		AHGr		v		Dec		d	Ph
d h	°	′	°	′	°	′	′		°	′	′	′
18 00	178	26.4	N21	03.6	300	01.4	12.3	S	6	26.9	15.2	58.5
01	193	26.3		03.2	314	32.7	12.4		6	11.7	15.3	58.5
02	208	26.3		02.8	329	04.1	12.5		5	56.4	15.3	58.4
03	223	26.3	. .	02.3	343	35.6	12.6		5	41.1	15.3	58.4
04	238	26.2		01.9	358	07.2	12.6		5	25.8	15.2	58.4
05	253	26.2		01.5	12	38.8	12.7		5	10.6	15.3	58.3
06	268	26.1	N21	01.0	27	10.5	12.7	S	4	55.3	15.3	58.3
07	283	26.1		00.6	41	42.2	12.9		4	40.0	15.3	58.2
L 08	298	26.0	21	00.1	56	14.1	12.9		4	24.7	15.3	58.2
U 09	313	26.0	20	59.7	70	46.0	12.9		4	09.4	15.3	58.2
N 10	328	25.9		59.3	85	17.9	13.1		3	54.1	15.3	58.1
E 11	343	25.9		58.8	99	50.0	13.0		3	38.8	15.3	58.1
S 12	358	25.8	N20	58.4	114	22.0	13.2	S	3	23.5	15.2	58.0
13	13	25.8		57.9	128	54.2	13.2		3	08.3	15.3	58.0
14	28	25.7		57.5	143	26.4	13.2		2	53.0	15.3	58.0
15	43	25.7	. .	57.0	157	58.6	13.3		2	37.7	15.2	57.9
16	58	25.7		56.6	172	30.9	13.4		2	22.5	15.3	57.9
17	73	25.6		56.1	187	03.3	13.4		2	07.2	15.2	57.8
18	88	25.6	N20	55.7	201	35.7	13.5	S	1	52.0	15.2	57.8
19	103	25.5		55.3	216	08.2	13.5		1	36.8	15.2	57.8
20	118	25.5		54.8	230	40.7	13.6		1	21.6	15.2	57.7
21	133	25.4	. .	54.4	245	13.3	13.6		1	06.4	15.1	57.7
22	148	25.4		53.9	259	45.9	13.7		0	51.3	15.2	57.6
23	163	25.3		53.5	274	18.6	13.7		0	36.1	15.1	57.6
19 00	178	25.3	N20	53.0	288	51.3	13.7	S	0	21.0	15.1	57.6
01	193	25.3		52.6	303	24.0	13.8	S	0	05.9	15.1	57.5
02	208	25.2		52.1	317	56.8	13.9	N	0	09.2	15.1	57.5
03	223	25.2	. .	51.7	332	29.7	13.8		0	24.3	15.1	57.5
04	238	25.1		51.2	347	02.5	13.9		0	39.4	15.0	57.4
05	253	25.1		50.8	1	35.4	14.0		0	54.4	15.0	57.4
06	268	25.1	N20	50.3	16	08.4	14.0	N	1	09.4	15.0	57.3
07	283	25.0		49.8	30	41.4	14.0		1	24.4	14.9	57.3
M 08	298	25.0		49.4	45	14.4	14.1		1	39.3	14.9	57.3
A 09	313	24.9	. .	48.9	59	47.5	14.0		1	54.2	14.9	57.2
R 10	328	24.9		48.5	74	20.5	14.2		2	09.1	14.9	57.2
T 11	343	24.8		48.0	88	53.7	14.1		2	24.0	14.8	57.1
E 12	358	24.8	N20	47.6	103	26.8	14.2	N	2	38.8	14.8	57.1
S 13	13	24.8		47.1	118	00.0	14.2		2	53.6	14.8	57.1
14	28	24.7		46.6	132	33.2	14.2		3	08.4	14.7	57.0
15	43	24.7	. .	46.2	147	06.4	14.2		3	23.1	14.7	57.0
16	58	24.7		45.7	161	39.6	14.3		3	37.8	14.7	57.0
17	73	24.6		45.3	176	12.9	14.3		3	52.5	14.6	56.9
18	88	24.6	N20	44.8	190	46.2	14.3	N	4	07.1	14.6	56.9
19	103	24.5		44.3	205	19.5	14.4		4	21.7	14.5	56.8
20	118	24.5		43.9	219	52.9	14.3		4	36.2	14.6	56.8
21	133	24.5	. .	43.4	234	26.2	14.4		4	50.8	14.4	56.8
22	148	24.4		43.0	248	59.6	14.4		5	05.2	14.5	56.7
23	163	24.4		42.5	263	33.0	14.4		5	19.7	14.4	56.7
20 00	178	24.3	N20	42.0	278	06.4	14.4	N	5	34.1	14.3	56.7
01	193	24.3		41.6	292	39.8	14.4		5	48.4	14.3	56.6
02	208	24.3		41.1	307	13.2	14.4		6	02.7	14.3	56.6
03	223	24.2	. .	40.6	321	46.6	14.5		6	17.0	14.2	56.6
04	238	24.2		40.2	336	20.1	14.4		6	31.2	14.2	56.5
05	253	24.2		39.7	350	53.5	14.5		6	45.4	14.1	56.5
06	268	24.1	N20	39.2	5	27.0	14.5	N	6	59.5	14.1	56.5
07	283	24.1		38.8	20	00.5	14.4		7	13.6	14.0	56.4
M 08	298	24.1		38.3	34	33.9	14.5		7	27.6	14.0	56.4
I 09	313	24.0	. .	37.8	49	07.4	14.5		7	41.6	14.0	56.4
É 10	328	24.0		37.3	63	40.9	14.5		7	55.6	13.9	56.3
R 11	343	24.0		36.9	78	14.4	14.5		8	09.5	13.8	56.3
C 12	358	23.9	N20	36.4	92	47.9	14.4	N	8	23.3	13.8	56.3
O 13	13	23.9		35.9	107	21.3	14.5		8	37.1	13.7	56.2
L 14	28	23.8		35.5	121	54.8	14.5		8	50.8	13.7	56.2
E 15	43	23.8	. .	35.0	136	28.3	14.5		9	04.5	13.6	56.2
S 16	58	23.8		34.5	151	01.8	14.5		9	18.1	13.6	56.1
17	73	23.7		34.0	165	35.3	14.4		9	31.7	13.5	56.1
18	88	23.7	N20	33.6	180	08.7	14.5	N	9	45.2	13.5	56.1
19	103	23.7		33.1	194	42.2	14.5		9	58.7	13.4	56.0
20	118	23.6		32.6	209	15.7	14.4		10	12.1	13.3	56.0
21	133	23.6	. .	32.1	223	49.1	14.4		10	25.4	13.3	56.0
22	148	23.6		31.6	238	22.5	14.5		10	38.7	13.2	55.9
23	163	23.6		31.2	252	56.0	14.4	N	10	51.9	13.2	55.9
	S/D	15.8	d	0.5	S/D	15.8				15.6		15.3

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		18	19	20	21
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	22 52	22 22	21 47	20 57
N 70	▭	▭	▭	22 51	22 28	22 04	21 31
68	////	////	00 45	22 50	22 34	22 17	21 56
66	////	////	01 53	22 50	22 39	22 28	22 15
64	////	////	02 27	22 49	22 43	22 37	22 30
62	////	01 15	02 52	22 48	22 46	22 45	22 43
60	////	01 58	03 11	22 48	22 50	22 52	22 54
N 58	////	02 26	03 27	22 48	22 52	22 58	23 04
56	01 09	02 47	03 41	22 47	22 55	23 03	23 13
54	01 48	03 04	03 53	22 47	22 57	23 08	23 20
52	02 14	03 18	04 03	22 47	22 59	23 12	23 27
50	02 34	03 31	04 12	22 46	23 01	23 16	23 33
45	03 10	03 56	04 31	22 46	23 05	23 25	23 47
N 40	03 36	04 15	04 47	22 45	23 09	23 32	23 58
35	03 56	04 31	05 00	22 45	23 12	23 39	24 07
30	04 12	04 45	05 11	22 44	23 14	23 44	24 16
20	04 38	05 07	05 31	22 44	23 19	23 54	24 30
N 10	04 58	05 25	05 47	22 43	23 23	24 03	00 03
0	05 15	05 41	06 03	22 43	23 27	24 11	00 11
S 10	05 30	05 56	06 18	22 42	23 31	24 19	00 19
20	05 44	06 11	06 34	22 42	23 35	24 28	00 28
30	05 58	06 27	06 53	22 41	23 40	24 38	00 38
35	06 05	06 36	07 04	22 41	23 43	24 44	00 44
40	06 13	06 46	07 16	22 41	23 46	24 51	00 51
45	06 21	06 58	07 30	22 40	23 50	24 59	00 59
S 50	06 31	07 11	07 48	22 40	23 55	25 08	01 08
52	06 35	07 17	07 56	22 39	23 57	25 12	01 12
54	06 40	07 24	08 06	22 39	23 59	25 17	01 17
56	06 45	07 32	08 16	22 39	24 02	00 02	01 23
58	06 50	07 40	08 28	22 39	24 05	00 05	01 29
S 60	06 56	07 50	08 42	22 38	24 08	00 08	01 36

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	18	19	20	21
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	09 26	11 35	13 44	16 07
N 70	▭	▭	▭	09 32	11 32	13 30	15 35
68	23 17	////	////	09 37	11 29	13 19	15 12
66	22 17	////	////	09 41	11 27	13 10	14 54
64	21 43	////	////	09 44	11 25	13 02	14 40
62	21 19	22 53	////	09 47	11 23	12 56	14 28
60	21 00	22 12	////	09 50	11 21	12 50	14 18
N 58	20 44	21 45	////	09 52	11 20	12 45	14 09
56	20 31	21 24	23 00	09 54	11 19	12 41	14 01
54	20 19	21 08	22 22	09 56	11 18	12 37	13 54
52	20 09	20 53	21 57	09 58	11 17	12 33	13 48
50	20 00	20 41	21 38	09 59	11 16	12 30	13 43
45	19 41	20 16	21 02	10 02	11 14	12 23	13 31
N 40	19 25	19 57	20 36	10 05	11 12	12 17	13 21
35	19 12	19 41	20 16	10 08	11 11	12 12	13 13
30	19 01	19 28	20 00	10 10	11 10	12 08	13 06
20	18 42	19 06	19 34	10 13	11 08	12 01	12 53
N 10	18 25	18 48	19 14	10 16	11 06	11 54	12 42
0	18 10	18 32	18 58	10 19	11 04	11 48	12 32
S 10	17 55	18 17	18 43	10 22	11 02	11 42	12 22
20	17 38	18 02	18 29	10 25	11 00	11 35	12 11
30	17 20	17 46	18 15	10 28	10 58	11 28	11 59
35	17 09	17 37	18 08	10 30	10 57	11 24	11 52
40	16 57	17 27	18 00	10 32	10 56	11 19	11 44
45	16 43	17 15	17 52	10 34	10 54	11 14	11 34
S 50	16 25	17 02	17 42	10 37	10 52	11 07	11 23
52	16 17	16 56	17 38	10 38	10 51	11 04	11 18
54	16 08	16 49	17 33	10 40	10 50	11 01	11 12
56	15 57	16 41	17 29	10 41	10 49	10 57	11 06
58	15 45	16 33	17 23	10 43	10 48	10 53	10 59
S 60	15 31	16 24	17 17	10 45	10 47	10 49	10 51

Día	SOL			LUNA				
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
18	06 14	06 17	12 06	04 08	16 31	19	72
19	06 19	06 21	12 06	04 53	17 16	20	61
20	06 23	06 24	12 06	05 38	17 59	21	51

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·2		JÚPITER −2·6		SATURNO +0·4	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
21 00	298 44.5	204 53.7	N22 51.1	259 47.1	N13 24.1	290 16.8	N 2 08.3	332 20.0	S14 49.2
01	313 47.0	219 52.9	51.1	274 47.9	24.6	305 19.2	08.3	347 22.6	49.3
02	328 49.5	234 52.1	51.1	289 48.7	25.2	320 21.6	08.3	2 25.2	49.3
03	343 51.9	249 51.3 . .	51.1	304 49.6 . .	25.7	335 24.0 . .	08.4	17 27.8 . .	49.4
04	358 54.4	264 50.5	51.2	319 50.4	26.2	350 26.4	08.4	32 30.5	49.5
05	13 56.8	279 49.7	51.2	334 51.2	26.7	5 28.8	08.4	47 33.1	49.5
06	28 59.3	294 48.8	N22 51.2	349 52.0	N13 27.3	20 31.2	N 2 08.4	62 35.7	S14 49.6
07	44 01.8	309 48.0	51.2	4 52.9	27.8	35 33.6	08.4	77 38.3	49.6
08	59 04.2	324 47.2	51.3	19 53.7	28.3	50 36.0	08.4	92 40.9	49.7
J 09	74 06.7	339 46.4 . .	51.3	34 54.5 . .	28.9	65 38.4 . .	08.4	107 43.5 . .	49.7
U 10	89 09.2	354 45.6	51.3	49 55.4	29.4	80 40.8	08.4	122 46.2	49.8
E 11	104 11.6	9 44.8	51.3	64 56.2	29.9	95 43.2	08.5	137 48.8	49.9
V 12	119 14.1	24 44.0	N22 51.3	79 57.0	N13 30.5	110 45.6	N 2 08.5	152 51.4	S14 49.9
E 13	134 16.6	39 43.1	51.4	94 57.8	31.0	125 48.0	08.5	167 54.0	50.0
S 14	149 19.0	54 42.3	51.4	109 58.7	31.5	140 50.4	08.5	182 56.6	50.0
15	164 21.5	69 41.5 . .	51.4	124 59.5 . .	32.0	155 52.8 . .	08.5	197 59.3 . .	50.1
16	179 24.0	84 40.7	51.4	140 00.3	32.6	170 55.2	08.5	213 01.9	50.2
17	194 26.4	99 39.9	51.4	155 01.1	33.1	185 57.6	08.5	228 04.5	50.2
18	209 28.9	114 39.0	N22 51.4	170 02.0	N13 33.6	201 00.0	N 2 08.5	243 07.1	S14 50.3
19	224 31.3	129 38.2	51.4	185 02.8	34.2	216 02.4	08.6	258 09.7	50.3
20	239 33.8	144 37.4	51.5	200 03.6	34.7	231 04.8	08.6	273 12.3	50.4
21	254 36.3	159 36.6 . .	51.5	215 04.5 . .	35.2	246 07.3 . .	08.6	288 15.0 . .	50.4
22	269 38.7	174 35.8	51.5	230 05.3	35.7	261 09.7	08.6	303 17.6	50.5
23	284 41.2	189 35.0	51.5	245 06.1	36.3	276 12.1	08.6	318 20.2	50.6
22 00	299 43.7	204 34.1	N22 51.5	260 07.0	N13 36.8	291 14.5	N 2 08.6	333 22.8	S14 50.6
01	314 46.1	219 33.3	51.5	275 07.8	37.3	306 16.9	08.6	348 25.4	50.7
02	329 48.6	234 32.5	51.5	290 08.6	37.8	321 19.3	08.6	3 28.1	50.7
03	344 51.1	249 31.7 . .	51.5	305 09.4 . .	38.4	336 21.7 . .	08.6	18 30.7 . .	50.8
04	359 53.5	264 30.9	51.5	320 10.3	38.9	351 24.1	08.6	33 33.3	50.9
05	14 56.0	279 30.1	51.5	335 11.1	39.4	6 26.5	08.7	48 35.9	50.9
06	29 58.5	294 29.2	N22 51.5	350 11.9	N13 39.9	21 28.9	N 2 08.7	63 38.5	S14 51.0
07	45 00.9	309 28.4	51.5	5 12.8	40.5	36 31.3	08.7	78 41.2	51.0
V 08	60 03.4	324 27.6	51.5	20 13.6	41.0	51 33.7	08.7	93 43.8	51.1
I 09	75 05.8	339 26.8 . .	51.5	35 14.4 . .	41.5	66 36.2 . .	08.7	108 46.4 . .	51.2
E 10	90 08.3	354 26.0	51.5	50 15.3	42.0	81 38.6	08.7	123 49.0	51.2
R 11	105 10.8	9 25.1	51.5	65 16.1	42.6	96 41.0	08.7	138 51.6	51.3
N 12	120 13.2	24 24.3	N22 51.4	80 16.9	N13 43.1	111 43.4	N 2 08.7	153 54.3	S14 51.3
E 13	135 15.7	39 23.5	51.4	95 17.7	43.6	126 45.8	08.7	168 56.9	51.4
S 14	150 18.2	54 22.7	51.4	110 18.6	44.1	141 48.2	08.7	183 59.5	51.4
15	165 20.6	69 21.9 . .	51.4	125 19.4 . .	44.7	156 50.6 . .	08.8	199 02.1 . .	51.5
16	180 23.1	84 21.0	51.4	140 20.2	45.2	171 53.0	08.8	214 04.7	51.6
17	195 25.6	99 20.2	51.4	155 21.1	45.7	186 55.4	08.8	229 07.4	51.6
18	210 28.0	114 19.4	N22 51.4	170 21.9	N13 46.2	201 57.9	N 2 08.8	244 10.0	S14 51.7
19	225 30.5	129 18.6	51.4	185 22.7	46.7	217 00.3	08.8	259 12.6	51.7
20	240 32.9	144 17.8	51.3	200 23.6	47.3	232 02.7	08.8	274 15.2	51.8
21	255 35.4	159 17.0 . .	51.3	215 24.4 . .	47.8	247 05.1 . .	08.8	289 17.8 . .	51.9
22	270 37.9	174 16.1	51.3	230 25.2	48.3	262 07.5	08.8	304 20.5	51.9
23	285 40.3	189 15.3	51.3	245 26.1	48.8	277 09.9	08.8	319 23.1	52.0
23 00	300 42.8	204 14.5	N22 51.3	260 26.9	N13 49.4	292 12.3	N 2 08.8	334 25.7	S14 52.0
01	315 45.3	219 13.7	51.2	275 27.7	49.9	307 14.8	08.8	349 28.3	52.1
02	330 47.7	234 12.9	51.2	290 28.5	50.4	322 17.2	08.8	4 31.0	52.2
03	345 50.2	249 12.0 . .	51.2	305 29.4 . .	50.9	337 19.6 . .	08.9	19 33.6 . .	52.2
04	0 52.7	264 11.2	51.1	320 30.2	51.4	352 22.0	08.9	34 36.2	52.3
05	15 55.1	279 10.4	51.1	335 31.0	52.0	7 24.4	08.9	49 38.8	52.3
06	30 57.6	294 09.6	N22 51.1	350 31.9	N13 52.5	22 26.8	N 2 08.9	64 41.4	S14 52.4
07	46 00.1	309 08.8	51.1	5 32.7	53.0	37 29.3	08.9	79 44.1	52.5
S 08	61 02.5	324 07.9	51.0	20 33.5	53.5	52 31.7	08.9	94 46.7	52.5
Á 09	76 05.0	339 07.1 . .	51.0	35 34.4 . .	54.0	67 34.1 . .	08.9	109 49.3 . .	52.6
B 10	91 07.4	354 06.3	51.0	50 35.2	54.5	82 36.5	08.9	124 51.9	52.6
A 11	106 09.9	9 05.5	50.9	65 36.0	55.1	97 38.9	08.9	139 54.6	52.7
D 12	121 12.4	24 04.7	N22 50.9	80 36.9	N13 55.6	112 41.3	N 2 08.9	154 57.2	S14 52.7
O 13	136 14.8	39 03.8	50.9	95 37.7	56.1	127 43.8	08.9	169 59.8	52.8
14	151 17.3	54 03.0	50.8	110 38.5	56.6	142 46.2	08.9	185 02.4	52.9
15	166 19.8	69 02.2 . .	50.8	125 39.4 . .	57.1	157 48.6 . .	08.9	200 05.0 . .	52.9
16	181 22.2	84 01.4	50.7	140 40.2	57.6	172 51.0	08.9	215 07.7	53.0
17	196 24.7	99 00.6	50.7	155 41.0	58.2	187 53.4	08.9	230 10.3	53.0
18	211 27.2	113 59.7	N22 50.6	170 41.9	N13 58.7	202 55.9	N 2 08.9	245 12.9	S14 53.1
19	226 29.6	128 58.9	50.6	185 42.7	59.2	217 58.3	08.9	260 15.5	53.2
20	241 32.1	143 58.1	50.6	200 43.5	13 59.7	233 00.7	09.0	275 18.2	53.2
21	256 34.6	158 57.3 . .	50.5	215 44.4	14 00.2	248 03.1 . .	09.0	290 20.8 . .	53.3
22	271 37.0	173 56.5	50.5	230 45.2	00.7	263 05.5	09.0	305 23.4	53.3
23	286 39.5	188 55.6	50.4	245 46.0	01.3	278 08.0	09.0	320 26.0	53.4
	h m								
Paso Mer.	4 00.4	*v* −0.8	*d* 0.0	*v* 0.8	*d* 0.5	*v* 2.4	*d* 0.0	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.5	S40 12.6
Achernar	335 21.7	S57 07.1
Acrux	173 02.6	S63 13.6
Adhara	255 07.8	S29 00.0
Aldebaran	290 42.2	N16 33.2
Alioth	166 14.9	N55 50.6
Alkaid	152 53.6	N49 12.4
Alnair	27 35.1	S46 51.0
Alnilam	275 40.1	S 1 11.2
Alphard	217 50.1	S 8 45.3
Alphecca	126 05.3	N26 38.6
Alpheratz	357 36.7	N29 12.7
Altair	62 01.6	N 8 55.7
Ankaa	353 09.0	S42 10.8
Antares	112 18.1	S26 28.9
Arcturus	145 49.7	N19 04.1
Atria	107 13.7	S69 04.2
Avior	234 16.2	S59 34.8
Bellatrix	278 25.3	N 6 22.2
Betelgeuse	270 54.6	N 7 24.7
Canopus	263 53.8	S52 42.3
Capella	280 25.3	N46 01.1
Deneb	49 26.7	N45 21.6
Denebola	182 27.2	N14 27.0
Diphda	348 49.2	S17 51.7
Dubhe	193 44.0	N61 38.1
Elnath	278 04.7	N28 37.5
Eltanin	90 42.7	N51 29.3
Enif	33 40.5	N 9 58.7
Fomalhaut	15 16.5	S29 30.1
Gacrux	171 54.1	S57 14.5
Gienah	175 45.8	S17 40.0
Hadar	148 38.8	S60 29.1
Hamal	327 53.5	N23 34.0
Kaus Aust.	83 34.8	S34 22.4
Kochab	137 19.5	N74 04.1
Markab	13 31.7	N15 19.5
Menkar	314 08.4	N 4 10.7
Menkent	148 00.0	S36 28.9
Miaplacidus	221 39.6	S69 48.6
Mirfak	308 31.4	N49 56.2
Nunki	75 49.9	S26 16.1
Peacock	53 08.3	S56 39.7
Pollux	243 20.2	N27 58.4
Procyon	244 53.3	N 5 10.1
Rasalhague	96 00.2	N12 32.7
Regulus	207 36.9	N11 51.6
Rigel	281 06.1	S 8 10.5
Rigil Kent.	139 43.0	S60 55.8
Sabik	102 04.8	S15 45.1
Schedar	349 33.1	N56 39.4
Shaula	96 12.8	S37 07.2
Sirius	258 28.4	S16 44.7
Spica	158 24.5	S11 16.7
Suhail	222 48.2	S43 31.4
Vega	80 34.2	N38 48.4
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	264 50.5	10 22
Marte	320 23.3	6 39
Júpiter	351 30.8	4 34
Saturno	33 39.2	1 46

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	°	′	′	
21 00	178	23.5	N20	30.7	267	29.4	14.4	N11	05.1	13.1	55.9
01	193	23.5		30.2	282	02.8	14.4	11	18.2	13.0	55.8
02	208	23.5		29.7	296	36.2	14.4	11	31.2	13.0	55.8
03	223	23.4	. .	29.3	311	09.6	14.3	11	44.2	12.9	55.8
04	238	23.4		28.8	325	42.9	14.4	11	57.1	12.9	55.7
05	253	23.4		28.3	340	16.3	14.3	12	10.0	12.8	55.7
06	268	23.3	N20	27.8	354	49.6	14.3	N12	22.8	12.7	55.7
07	283	23.3		27.3	9	22.9	14.3	12	35.5	12.7	55.7
J 08	298	23.3		26.8	23	56.2	14.3	12	48.2	12.6	55.6
U 09	313	23.2	. .	26.4	38	29.5	14.2	13	00.8	12.5	55.6
E 10	328	23.2		25.9	53	02.7	14.3	13	13.3	12.5	55.6
V 11	343	23.2		25.4	67	36.0	14.2	13	25.8	12.4	55.5
E 12	358	23.2	N20	24.9	82	09.2	14.2	N13	38.2	12.3	55.5
S 13	13	23.1		24.4	96	42.4	14.1	13	50.5	12.2	55.5
14	28	23.1		23.9	111	15.5	14.2	14	02.7	12.2	55.5
15	43	23.1	. .	23.4	125	48.7	14.1	14	14.9	12.1	55.4
16	58	23.0		22.9	140	21.8	14.1	14	27.0	12.1	55.4
17	73	23.0		22.5	154	54.9	14.0	14	39.1	11.9	55.4
18	88	23.0	N20	22.0	169	27.9	14.1	N14	51.0	11.9	55.4
19	103	23.0		21.5	184	01.0	14.0	15	02.9	11.9	55.3
20	118	22.9		21.0	198	34.0	14.0	15	14.8	11.7	55.3
21	133	22.9	. .	20.5	213	07.0	13.9	15	26.5	11.7	55.3
22	148	22.9		20.0	227	39.9	13.9	15	38.2	11.6	55.3
23	163	22.9		19.5	242	12.8	13.9	15	49.8	11.5	55.2
22 00	178	22.8	N20	19.0	256	45.7	13.9	N16	01.3	11.4	55.2
01	193	22.8		18.5	271	18.6	13.8	16	12.7	11.4	55.2
02	208	22.8		18.0	285	51.4	13.8	16	24.1	11.3	55.2
03	223	22.8	. .	17.5	300	24.2	13.7	16	35.4	11.2	55.1
04	238	22.7		17.0	314	56.9	13.8	16	46.6	11.1	55.1
05	253	22.7		16.5	329	29.7	13.7	16	57.7	11.1	55.1
06	268	22.7	N20	16.0	344	02.4	13.6	N17	08.8	10.9	55.1
07	283	22.7		15.5	358	35.0	13.6	17	19.7	10.9	55.0
V 08	298	22.6		15.0	13	07.6	13.6	17	30.6	10.8	55.0
I 09	313	22.6	. .	14.5	27	40.2	13.6	17	41.4	10.7	55.0
E 10	328	22.6		14.0	42	12.8	13.5	17	52.1	10.6	55.0
R 11	343	22.6		13.5	56	45.3	13.4	18	02.7	10.6	55.0
N 12	358	22.5	N20	13.0	71	17.7	13.5	N18	13.3	10.4	54.9
E 13	13	22.5		12.5	85	50.2	13.3	18	23.7	10.4	54.9
S 14	28	22.5		12.0	100	22.5	13.4	18	34.1	10.3	54.9
15	43	22.5	. .	11.5	114	54.9	13.3	18	44.4	10.2	54.9
16	58	22.5		11.0	129	27.2	13.3	18	54.6	10.1	54.8
17	73	22.4		10.5	143	59.5	13.2	19	04.7	10.0	54.8
18	88	22.4	N20	10.0	158	31.7	13.2	N19	14.7	9.9	54.8
19	103	22.4		09.5	173	03.9	13.1	19	24.6	9.9	54.8
20	118	22.4		09.0	187	36.0	13.1	19	34.5	9.7	54.8
21	133	22.3	. .	08.5	202	08.1	13.1	19	44.2	9.7	54.7
22	148	22.3		08.0	216	40.2	13.0	19	53.9	9.6	54.7
23	163	22.3		07.5	231	12.2	13.0	20	03.5	9.4	54.7
23 00	178	22.3	N20	07.0	245	44.2	12.9	N20	12.9	9.4	54.7
01	193	22.3		06.5	260	16.1	12.9	20	22.3	9.3	54.7
02	208	22.2		06.0	274	48.0	12.9	20	31.6	9.2	54.7
03	223	22.2	. .	05.5	289	19.9	12.8	20	40.8	9.1	54.6
04	238	22.2		05.0	303	51.7	12.7	20	49.9	9.0	54.6
05	253	22.2		04.4	318	23.4	12.7	20	58.9	8.9	54.6
06	268	22.2	N20	03.9	332	55.1	12.7	N21	07.8	8.8	54.6
07	283	22.2		03.4	347	26.8	12.6	21	16.6	8.7	54.6
S 08	298	22.1		02.9	1	58.4	12.6	21	25.3	8.6	54.5
Á 09	313	22.1	. .	02.4	16	30.0	12.6	21	33.9	8.5	54.5
B 10	328	22.1		01.9	31	01.6	12.4	21	42.4	8.4	54.5
A 11	343	22.1		01.4	45	33.0	12.5	21	50.8	8.3	54.5
D 12	358	22.1	N20	00.9	60	04.5	12.4	N21	59.1	8.2	54.5
O 13	13	22.0	20	00.3	74	35.9	12.3	22	07.3	8.1	54.5
14	28	22.0	19	59.8	89	07.2	12.4	22	15.4	8.0	54.5
15	43	22.0	. .	59.3	103	38.6	12.2	22	23.4	7.9	54.4
16	58	22.0		58.8	118	09.8	12.2	22	31.3	7.8	54.4
17	73	22.0		58.3	132	41.0	12.2	22	39.1	7.7	54.4
18	88	22.0	N19	57.8	147	12.2	12.1	N22	46.8	7.5	54.4
19	103	22.0		57.2	161	43.3	12.1	22	54.3	7.5	54.4
20	118	21.9		56.7	176	14.4	12.1	23	01.8	7.4	54.4
21	133	21.9	. .	56.2	190	45.5	12.0	23	09.2	7.2	54.4
22	148	21.9		55.7	205	16.5	11.9	23	16.4	7.2	54.3
23	163	21.9		55.2	219	47.4	11.9	N23	23.6	7.0	54.3
	S/D	15.8	d	0.5	S/D		15.1		15.0		14.8

Lat.	Aurora		Orto	Orto Luna			
	Náut.	Civil	Sol	21	22	23	24
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	20 57	▭	▭	▭
N 70	▭	▭	▭	21 31	20 22	▭	▭
68	////	////	01 14	21 56	21 23	▭	▭
66	////	////	02 05	22 15	21 58	21 24	▭
64	////	////	02 36	22 30	22 23	22 13	21 53
62	////	01 31	02 59	22 43	22 43	22 44	22 51
60	////	02 08	03 18	22 54	22 59	23 08	23 24
N 58	////	02 33	03 33	23 04	23 13	23 27	23 49
56	01 23	02 53	03 46	23 13	23 25	23 43	24 09
54	01 57	03 09	03 57	23 20	23 36	23 56	24 25
52	02 21	03 23	04 07	23 27	23 45	24 08	00 08
50	02 39	03 35	04 16	23 33	23 54	24 19	00 19
45	03 14	03 59	04 34	23 47	24 11	00 11	00 41
N 40	03 39	04 18	04 49	23 58	24 26	00 26	00 59
35	03 59	04 33	05 02	24 07	00 07	00 39	01 14
30	04 15	04 46	05 13	24 16	00 16	00 50	01 27
20	04 40	05 08	05 32	24 30	00 30	01 09	01 50
N 10	04 59	05 25	05 48	00 03	00 43	01 25	02 10
0	05 15	05 41	06 03	00 11	00 55	01 41	02 28
S 10	05 30	05 55	06 18	00 19	01 07	01 56	02 46
20	05 43	06 10	06 34	00 28	01 20	02 13	03 06
30	05 57	06 26	06 52	00 38	01 35	02 32	03 29
35	06 04	06 35	07 02	00 44	01 44	02 44	03 43
40	06 11	06 44	07 14	00 51	01 54	02 57	03 59
45	06 19	06 55	07 28	00 59	02 06	03 13	04 17
S 50	06 28	07 08	07 45	01 08	02 20	03 32	04 41
52	06 32	07 14	07 53	01 12	02 27	03 41	04 52
54	06 37	07 21	08 02	01 17	02 35	03 51	05 05
56	06 41	07 28	08 12	01 23	02 43	04 03	05 20
58	06 46	07 36	08 23	01 29	02 53	04 16	05 38
S 60	06 52	07 45	08 36	01 36	03 04	04 32	06 00

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	21	22	23	24
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	16 07	▭	▭	▭
N 70	▭	▭	▭	15 35	18 19	▭	▭
68	22 53	////	////	15 12	17 19	▭	▭
66	22 04	////	////	14 54	16 45	18 56	▭
64	21 34	////	////	14 40	16 21	18 08	20 09
62	21 12	22 38	////	14 28	16 02	17 37	19 12
60	20 54	22 03	////	14 18	15 46	17 14	18 39
N 58	20 39	21 38	////	14 09	15 33	16 56	18 14
56	20 26	21 18	22 46	14 01	15 21	16 40	17 55
54	20 15	21 02	22 14	13 54	15 11	16 27	17 39
52	20 05	20 49	21 50	13 48	15 03	16 16	17 25
50	19 56	20 37	21 32	13 43	14 55	16 05	17 13
45	19 38	20 13	20 58	13 31	14 38	15 44	16 47
N 40	19 23	19 54	20 33	13 21	14 24	15 27	16 27
35	19 11	19 39	20 14	13 13	14 13	15 12	16 11
30	19 00	19 26	19 58	13 06	14 03	15 00	15 56
20	18 41	19 05	19 33	12 53	13 46	14 39	15 32
N 10	18 25	18 47	19 14	12 42	13 31	14 20	15 11
0	18 10	18 32	18 58	12 32	13 17	14 03	14 52
S 10	17 55	18 18	18 43	12 22	13 03	13 46	14 32
20	17 40	18 03	18 30	12 11	12 48	13 28	14 11
30	17 22	17 47	18 17	11 59	12 31	13 07	13 47
35	17 11	17 39	18 10	11 52	12 21	12 55	13 33
40	17 00	17 29	18 02	11 44	12 10	12 41	13 17
45	16 46	17 18	17 54	11 34	11 57	12 24	12 57
S 50	16 29	17 05	17 45	11 23	11 41	12 04	12 33
52	16 21	16 59	17 41	11 18	11 34	11 54	12 21
54	16 12	16 53	17 37	11 12	11 26	11 44	12 08
56	16 02	16 46	17 32	11 06	11 17	11 31	11 52
58	15 51	16 38	17 27	10 59	11 06	11 17	11 34
S 60	15 37	16 29	17 22	10 51	10 55	11 01	11 12

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00^h	12^h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
21	06 26	06 27	12 06	06 21	18 43	22	41
22	06 29	06 30	12 06	07 06	19 29	23	32
23	06 31	06 32	12 07	07 52	20 16	24	23

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·2		JÚPITER −2·6		SATURNO +0·3	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
24 00	301 41.9	203 54.8	N22 50.4	260 46.9	N14 01.8	293 10.4	N 2 09.0	335 28.7	S14 53.5
01	316 44.4	218 54.0	50.3	275 47.7	02.3	308 12.8	09.0	350 31.3	53.5
02	331 46.9	233 53.2	50.3	290 48.6	02.8	323 15.2	09.0	5 33.9	53.6
03	346 49.3	248 52.4	50.2	305 49.4	03.3	338 17.7	09.0	20 36.5	53.6
04	1 51.8	263 51.5	50.2	320 50.2	03.8	353 20.1	09.0	35 39.1	53.7
05	16 54.3	278 50.7	50.1	335 51.1	04.3	8 22.5	09.0	50 41.8	53.8
06	31 56.7	293 49.9	N22 50.0	350 51.9	N14 04.9	23 24.9	N 2 09.0	65 44.4	S14 53.8
07	46 59.2	308 49.1	50.0	5 52.7	05.4	38 27.4	09.0	80 47.0	53.9
08	62 01.7	323 48.2	49.9	20 53.6	05.9	53 29.8	09.0	95 49.6	53.9
D 09	77 04.1	338 47.4	49.9	35 54.4	06.4	68 32.2	09.0	110 52.3	54.0
O 10	92 06.6	353 46.6	49.8	50 55.2	06.9	83 34.6	09.0	125 54.9	54.1
M 11	107 09.1	8 45.8	49.7	65 56.1	07.4	98 37.1	09.0	140 57.5	54.1
I 12	122 11.5	23 45.0	N22 49.7	80 56.9	N14 07.9	113 39.5	N 2 09.0	156 00.1	S14 54.2
N 13	137 14.0	38 44.1	49.6	95 57.7	08.4	128 41.9	09.0	171 02.8	54.2
G 14	152 16.4	53 43.3	49.5	110 58.6	08.9	143 44.3	09.0	186 05.4	54.3
O 15	167 18.9	68 42.5	49.5	125 59.4	09.5	158 46.8	09.0	201 08.0	54.4
16	182 21.4	83 41.7	49.4	141 00.2	10.0	173 49.2	09.0	216 10.6	54.4
17	197 23.8	98 40.9	49.3	156 01.1	10.5	188 51.6	09.0	231 13.3	54.5
18	212 26.3	113 40.0	N22 49.3	171 01.9	N14 11.0	203 54.0	N 2 09.0	246 15.9	S14 54.5
19	227 28.8	128 39.2	49.2	186 02.8	11.5	218 56.5	09.0	261 18.5	54.6
20	242 31.2	143 38.4	49.1	201 03.6	12.0	233 58.9	09.0	276 21.1	54.7
21	257 33.7	158 37.6	49.1	216 04.4	12.5	249 01.3	09.0	291 23.8	54.7
22	272 36.2	173 36.8	49.0	231 05.3	13.0	264 03.8	09.0	306 26.4	54.8
23	287 38.6	188 35.9	48.9	246 06.1	13.5	279 06.2	09.0	321 29.0	54.8
25 00	302 41.1	203 35.1	N22 48.8	261 06.9	N14 14.0	294 08.6	N 2 09.0	336 31.6	S14 54.9
01	317 43.6	218 34.3	48.7	276 07.8	14.5	309 11.1	09.0	351 34.3	55.0
02	332 46.0	233 33.5	48.7	291 08.6	15.1	324 13.5	09.0	6 36.9	55.0
03	347 48.5	248 32.6	48.6	306 09.5	15.6	339 15.9	09.0	21 39.5	55.1
04	2 50.9	263 31.8	48.5	321 10.3	16.1	354 18.3	09.0	36 42.1	55.1
05	17 53.4	278 31.0	48.4	336 11.1	16.6	9 20.8	09.0	51 44.8	55.2
06	32 55.9	293 30.2	N22 48.3	351 12.0	N14 17.1	24 23.2	N 2 09.0	66 47.4	S14 55.3
07	47 58.3	308 29.4	48.3	6 12.8	17.6	39 25.6	09.0	81 50.0	55.3
L 08	63 00.8	323 28.5	48.2	21 13.6	18.1	54 28.1	09.0	96 52.7	55.4
U 09	78 03.3	338 27.7	48.1	36 14.5	18.6	69 30.5	09.0	111 55.3	55.5
N 10	93 05.7	353 26.9	48.0	51 15.3	19.1	84 32.9	09.0	126 57.9	55.5
E 11	108 08.2	8 26.1	47.9	66 16.2	19.6	99 35.4	09.0	142 00.5	55.6
S 12	123 10.7	23 25.3	N22 47.8	81 17.0	N14 20.1	114 37.8	N 2 09.0	157 03.2	S14 55.6
13	138 13.1	38 24.4	47.7	96 17.8	20.6	129 40.2	09.0	172 05.8	55.7
14	153 15.6	53 23.6	47.6	111 18.7	21.1	144 42.7	09.0	187 08.4	55.8
15	168 18.0	68 22.8	47.5	126 19.5	21.6	159 45.1	09.0	202 11.0	55.8
16	183 20.5	83 22.0	47.4	141 20.4	22.1	174 47.5	09.0	217 13.7	55.9
17	198 23.0	98 21.1	47.3	156 21.2	22.6	189 50.0	09.0	232 16.3	55.9
18	213 25.4	113 20.3	N22 47.2	171 22.0	N14 23.1	204 52.4	N 2 09.0	247 18.9	S14 56.0
19	228 27.9	128 19.5	47.1	186 22.9	23.7	219 54.8	09.0	262 21.5	56.1
20	243 30.4	143 18.7	47.0	201 23.7	24.2	234 57.3	09.0	277 24.2	56.1
21	258 32.8	158 17.9	46.9	216 24.5	24.7	249 59.7	09.0	292 26.8	56.2
22	273 35.3	173 17.0	46.8	231 25.4	25.2	265 02.2	09.0	307 29.4	56.2
23	288 37.8	188 16.2	46.7	246 26.2	25.7	280 04.6	09.0	322 32.1	56.3
26 00	303 40.2	203 15.4	N22 46.6	261 27.1	N14 26.2	295 07.0	N 2 09.0	337 34.7	S14 56.4
01	318 42.7	218 14.6	46.5	276 27.9	26.7	310 09.5	09.0	352 37.3	56.4
02	333 45.2	233 13.8	46.4	291 28.7	27.2	325 11.9	09.0	7 39.9	56.5
03	348 47.6	248 12.9	46.3	306 29.6	27.7	340 14.3	09.0	22 42.6	56.5
04	3 50.1	263 12.1	46.2	321 30.4	28.2	355 16.8	09.0	37 45.2	56.6
05	18 52.5	278 11.3	46.1	336 31.3	28.7	10 19.2	09.0	52 47.8	56.7
06	33 55.0	293 10.5	N22 46.0	351 32.1	N14 29.2	25 21.7	N 2 09.0	67 50.4	S14 56.7
07	48 57.5	308 09.7	45.9	6 33.0	29.7	40 24.1	09.0	82 53.1	56.8
M 08	63 59.9	323 08.8	45.7	21 33.8	30.2	55 26.5	09.0	97 55.7	56.8
A 09	79 02.4	338 08.0	45.6	36 34.6	30.7	70 29.0	09.0	112 58.3	56.9
R 10	94 04.9	353 07.2	45.5	51 35.5	31.2	85 31.4	09.0	128 01.0	57.0
T 11	109 07.3	8 06.4	45.4	66 36.3	31.7	100 33.9	09.0	143 03.6	57.0
E 12	124 09.8	23 05.5	N22 45.3	81 37.2	N14 32.2	115 36.3	N 2 09.0	158 06.2	S14 57.1
S 13	139 12.3	38 04.7	45.2	96 38.0	32.7	130 38.7	09.0	173 08.8	57.2
14	154 14.7	53 03.9	45.0	111 38.8	33.2	145 41.2	09.0	188 11.5	57.2
15	169 17.2	68 03.1	44.9	126 39.7	33.7	160 43.6	09.0	203 14.1	57.3
16	184 19.7	83 02.3	44.8	141 40.5	34.2	175 46.1	09.0	218 16.7	57.3
17	199 22.1	98 01.4	44.7	156 41.4	34.7	190 48.5	09.0	233 19.4	57.4
18	214 24.6	113 00.6	N22 44.5	171 42.2	N14 35.2	205 51.0	N 2 09.0	248 22.0	S14 57.5
19	229 27.0	127 59.8	44.4	186 43.1	35.7	220 53.4	09.0	263 24.6	57.5
20	244 29.5	142 59.0	44.3	201 43.9	36.2	235 55.8	09.0	278 27.2	57.6
21	259 32.0	157 58.2	44.2	216 44.7	36.7	250 58.3	09.0	293 29.9	57.6
22	274 34.4	172 57.3	44.0	231 45.6	37.1	266 00.7	09.0	308 32.5	57.7
23	289 36.9	187 56.5	43.9	246 46.4	37.6	281 03.2	08.9	323 35.1	57.8
	h m								
Paso Mer.	3 48.6	*v* −0.8	*d* 0.1	*v* 0.8	*d* 0.5	*v* 2.4	*d* 0.0	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.4	S40 12.6
Achernar	335 21.7	S57 07.1
Acrux	173 02.6	S63 13.6
Adhara	255 07.8	S29 00.0
Aldebaran	290 42.2	N16 33.2
Alioth	166 14.9	N55 50.6
Alkaid	152 53.7	N49 12.4
Alnair	27 35.1	S46 51.0
Alnilam	275 40.0	S 1 11.2
Alphard	217 50.1	S 8 45.3
Alphecca	126 05.3	N26 38.6
Alpheratz	357 36.7	N29 12.7
Altair	62 01.6	N 8 55.7
Ankaa	353 09.0	S42 10.8
Antares	112 18.1	S26 28.9
Arcturus	145 49.7	N19 04.1
Atria	107 13.7	S69 04.2
Avior	234 16.2	S59 34.8
Bellatrix	278 25.3	N 6 22.2
Betelgeuse	270 54.6	N 7 24.7
Canopus	263 53.8	S52 42.3
Capella	280 25.2	N46 01.1
Deneb	49 26.7	N45 21.6
Denebola	182 27.2	N14 27.0
Diphda	348 49.2	S17 51.7
Dubhe	193 44.0	N61 38.1
Elnath	278 04.7	N28 37.5
Eltanin	90 42.7	N51 29.3
Enif	33 40.5	N 9 58.7
Fomalhaut	15 16.5	S29 30.1
Gacrux	171 54.1	S57 14.5
Gienah	175 45.8	S17 40.0
Hadar	148 38.8	S60 29.1
Hamal	327 53.5	N23 34.0
Kaus Aust.	83 34.8	S34 22.4
Kochab	137 19.6	N74 04.1
Markab	13 31.7	N15 19.5
Menkar	314 08.3	N 4 10.7
Menkent	148 00.0	S36 28.9
Miaplacidus	221 39.6	S69 48.6
Mirfak	308 31.3	N49 56.2
Nunki	75 49.9	S26 16.1
Peacock	53 08.3	S56 39.7
Pollux	243 20.2	N27 58.4
Procyon	244 53.3	N 5 10.1
Rasalhague	96 00.2	N12 32.7
Regulus	207 36.9	N11 51.6
Rigel	281 06.1	S 8 10.4
Rigil Kent.	139 43.0	S60 55.8
Sabik	102 04.8	S15 45.1
Schedar	349 33.1	N56 39.4
Shaula	96 12.8	S37 07.2
Sirius	258 28.3	S16 44.7
Spica	158 24.5	S11 16.7
Suhail	222 48.2	S43 31.4
Vega	80 34.2	N38 48.4
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	260 54.0	10 26
Marte	318 25.9	6 35
Júpiter	351 27.5	4 23
Saturno	33 50.6	1 34

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph		
d h	°	′	°	′	°	′	°	′	′	′	
24 00	178	21.9	N19	54.6	234	18.3	11.9	N23	30.6	7.0	54.3
01	193	21.9		54.1	248	49.2	11.8	23	37.6	6.8	54.3
02	208	21.9		53.6	263	20.0	11.8	23	44.4	6.7	54.3
03	223	21.8	. .	53.1	277	50.8	11.7	23	51.1	6.6	54.3
04	238	21.8		52.5	292	21.5	11.7	23	57.7	6.5	54.3
05	253	21.8		52.0	306	52.2	11.7	24	04.2	6.4	54.3
06	268	21.8	N19	51.5	321	22.9	11.6	N24	10.6	6.3	54.2
07	283	21.8		51.0	335	53.5	11.5	24	16.9	6.1	54.2
D 08	298	21.8		50.4	350	24.0	11.5	24	23.0	6.1	54.2
O 09	313	21.8	. .	49.9	4	54.5	11.5	24	29.1	5.9	54.2
M 10	328	21.8		49.4	19	25.0	11.5	24	35.0	5.8	54.2
I 11	343	21.7		48.9	33	55.5	11.4	24	40.8	5.7	54.2
N 12	358	21.7	N19	48.3	48	25.9	11.3	N24	46.5	5.6	54.2
G 13	13	21.7		47.8	62	56.2	11.3	24	52.1	5.4	54.2
O 14	28	21.7		47.3	77	26.5	11.3	24	57.5	5.4	54.2
15	43	21.7	. .	46.7	91	56.8	11.3	25	02.9	5.2	54.2
16	58	21.7		46.2	106	27.1	11.2	25	08.1	5.1	54.1
17	73	21.7		45.7	120	57.3	11.1	25	13.2	5.0	54.1
18	88	21.7	N19	45.1	135	27.4	11.2	N25	18.2	4.9	54.1
19	103	21.7		44.6	149	57.6	11.1	25	23.1	4.8	54.1
20	118	21.6		44.1	164	27.7	11.0	25	27.9	4.6	54.1
21	133	21.6	. .	43.5	178	57.7	11.0	25	32.5	4.5	54.1
22	148	21.6		43.0	193	27.7	11.0	25	37.0	4.4	54.1
23	163	21.6		42.5	207	57.7	11.0	25	41.4	4.3	54.1
25 00	178	21.6	N19	41.9	222	27.7	10.9	N25	45.7	4.2	54.1
01	193	21.6		41.4	236	57.6	10.9	25	49.9	4.0	54.1
02	208	21.6		40.9	251	27.5	10.9	25	53.9	3.9	54.1
03	223	21.6	. .	40.3	265	57.4	10.8	25	57.8	3.8	54.1
04	238	21.6		39.8	280	27.2	10.8	26	01.6	3.7	54.1
05	253	21.6		39.3	294	57.0	10.7	26	05.3	3.5	54.1
06	268	21.6	N19	38.7	309	26.7	10.8	N26	08.8	3.4	54.0
07	283	21.6		38.2	323	56.5	10.7	26	12.2	3.3	54.0
L 08	298	21.6		37.6	338	26.2	10.7	26	15.5	3.2	54.0
U 09	313	21.6	. .	37.1	352	55.9	10.6	26	18.7	3.0	54.0
N 10	328	21.5		36.6	7	25.5	10.7	26	21.7	2.9	54.0
E 11	343	21.5		36.0	21	55.2	10.6	26	24.6	2.8	54.0
S 12	358	21.5	N19	35.5	36	24.8	10.6	N26	27.4	2.7	54.0
13	13	21.5		34.9	50	54.4	10.5	26	30.1	2.5	54.0
14	28	21.5		34.4	65	23.9	10.6	26	32.6	2.4	54.0
15	43	21.5	. .	33.8	79	53.5	10.5	26	35.0	2.3	54.0
16	58	21.5		33.3	94	23.0	10.5	26	37.3	2.2	54.0
17	73	21.5		32.8	108	52.5	10.5	26	39.5	2.0	54.0
18	88	21.5	N19	32.2	123	22.0	10.5	N26	41.5	1.9	54.0
19	103	21.5		31.7	137	51.5	10.4	26	43.4	1.8	54.0
20	118	21.5		31.1	152	20.9	10.4	26	45.2	1.7	54.0
21	133	21.5	. .	30.6	166	50.3	10.5	26	46.9	1.5	54.0
22	148	21.5		30.0	181	19.8	10.4	26	48.4	1.4	54.0
23	163	21.5		29.5	195	49.2	10.4	26	49.8	1.2	54.0
26 00	178	21.5	N19	28.9	210	18.6	10.3	N26	51.0	1.2	54.0
01	193	21.5		28.4	224	47.9	10.4	26	52.2	1.0	54.0
02	208	21.5		27.8	239	17.3	10.4	26	53.2	0.9	54.0
03	223	21.5	. .	27.3	253	46.7	10.3	26	54.1	0.7	54.0
04	238	21.5		26.7	268	16.0	10.4	26	54.8	0.6	54.0
05	253	21.5		26.2	282	45.4	10.3	26	55.4	0.5	54.0
06	268	21.5	N19	25.6	297	14.7	10.3	N26	55.9	0.4	54.0
07	283	21.5		25.1	311	44.0	10.4	26	56.3	0.2	54.0
M 08	298	21.5		24.5	326	13.4	10.3	26	56.5	0.1	54.0
A 09	313	21.5	. .	24.0	340	42.7	10.3	26	56.6	0.0	54.0
R 10	328	21.5		23.4	355	12.0	10.3	26	56.6	0.2	54.0
T 11	343	21.5		22.8	9	41.3	10.3	26	56.4	0.2	54.0
E 12	358	21.5	N19	22.3	24	10.6	10.4	N26	56.2	0.5	54.0
S 13	13	21.5		21.7	38	40.0	10.3	26	55.7	0.5	54.0
14	28	21.5		21.2	53	09.3	10.3	26	55.2	0.7	54.0
15	43	21.5	. .	20.6	67	38.6	10.3	26	54.5	0.8	54.0
16	58	21.5		20.1	82	07.9	10.4	26	53.7	0.9	54.0
17	73	21.5		19.5	96	37.3	10.3	26	52.8	1.1	54.0
18	88	21.5	N19	18.9	111	06.6	10.4	N26	51.7	1.2	54.0
19	103	21.5		18.4	125	36.0	10.3	26	50.5	1.3	54.0
20	118	21.5		17.8	140	05.3	10.4	26	49.2	1.4	54.0
21	133	21.5	. .	17.3	154	34.7	10.4	26	47.8	1.6	54.0
22	148	21.5		16.7	169	04.1	10.4	26	46.2	1.7	54.0
23	163	21.5		16.1	183	33.5	10.4	N26	44.5	1.9	54.0
	S/D	15.8	*d*	0.5	S/D	14.8		14.7		14.7	

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		24	25	26	27
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	▭	▭	▭	▭
N 70	▭	▭	▭	▭	▭	▭	▭
68	////	////	01 35	▭	▭	▭	▭
66	////	////	02 17	▭	▭	▭	▭
64	////	00 43	02 46	21 53	▭	▭	▭
62	////	01 45	03 07	22 51	23 12	24 06	00 06
60	////	02 17	03 24	23 24	23 55	24 49	00 49
N 58	00 40	02 41	03 39	23 49	24 24	00 24	01 18
56	01 36	03 00	03 51	24 09	00 09	00 47	01 40
54	02 06	03 15	04 02	24 25	00 25	01 05	01 58
52	02 28	03 28	04 11	00 08	00 39	01 21	02 13
50	02 45	03 39	04 20	00 19	00 52	01 34	02 27
45	03 18	04 03	04 37	00 41	01 17	02 02	02 54
N 40	03 42	04 21	04 52	00 59	01 38	02 23	03 16
35	04 01	04 36	05 04	01 14	01 55	02 42	03 34
30	04 17	04 48	05 15	01 27	02 10	02 57	03 49
20	04 41	05 09	05 33	01 50	02 35	03 24	04 15
N 10	05 00	05 26	05 49	02 10	02 57	03 46	04 37
0	05 16	05 41	06 03	02 28	03 17	04 08	04 58
S 10	05 29	05 55	06 17	02 46	03 38	04 29	05 19
20	05 42	06 09	06 33	03 06	04 00	04 52	05 42
30	05 55	06 24	06 50	03 29	04 25	05 18	06 08
35	06 02	06 33	07 00	03 43	04 40	05 34	06 23
40	06 09	06 42	07 11	03 59	04 58	05 52	06 41
45	06 17	06 53	07 25	04 17	05 19	06 14	07 02
S 50	06 25	07 05	07 41	04 41	05 46	06 42	07 29
52	06 29	07 11	07 49	04 52	05 59	06 56	07 42
54	06 33	07 17	07 57	05 05	06 14	07 12	07 57
56	06 37	07 24	08 07	05 20	06 31	07 31	08 15
58	06 42	07 31	08 18	05 38	06 53	07 54	08 36
S 60	06 47	07 40	08 30	06 00	07 21	08 24	09 04

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	24	25	26	27
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	▭	▭	▭	▭
N 70	▭	▭	▭	▭	▭	▭	▭
68	22 33	////	////	▭	▭	▭	▭
66	21 52	////	////	▭	▭	▭	▭
64	21 25	23 19	////	20 09	▭	▭	22 39
62	21 04	22 24	////	19 12	20 36	21 27	21 46
60	20 47	21 53	////	18 39	19 52	20 44	21 13
N 58	20 33	21 30	23 24	18 14	19 23	20 15	20 49
56	20 21	21 12	22 34	17 55	19 01	19 53	20 30
54	20 10	20 57	22 05	17 39	18 42	19 34	20 13
52	20 01	20 44	21 44	17 25	18 27	19 19	19 59
50	19 53	20 33	21 26	17 13	18 14	19 05	19 47
45	19 35	20 10	20 54	16 47	17 46	18 38	19 21
N 40	19 21	19 52	20 30	16 27	17 24	18 16	19 01
35	19 09	19 37	20 11	16 11	17 07	17 58	18 44
30	18 58	19 24	19 56	15 56	16 51	17 43	18 30
20	18 40	19 04	19 32	15 32	16 25	17 16	18 05
N 10	18 25	18 47	19 13	15 11	16 02	16 53	17 43
0	18 10	18 32	18 58	14 52	15 41	16 32	17 23
S 10	17 56	18 18	18 44	14 32	15 20	16 11	17 02
20	17 41	18 04	18 31	14 11	14 58	15 48	16 41
30	17 23	17 49	18 18	13 47	14 32	15 22	16 15
35	17 13	17 41	18 11	13 33	14 17	15 06	16 00
40	17 02	17 31	18 04	13 17	13 59	14 48	15 43
45	16 49	17 21	17 57	12 57	13 37	14 26	15 22
S 50	16 32	17 09	17 48	12 33	13 10	13 58	14 55
52	16 25	17 03	17 45	12 21	12 57	13 44	14 42
54	16 16	16 57	17 41	12 08	12 42	13 28	14 27
56	16 07	16 50	17 36	11 52	12 24	13 09	14 10
58	15 56	16 42	17 32	11 34	12 02	12 46	13 48
S 60	15 44	16 34	17 27	11 12	11 34	12 16	13 21

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
24	06 32	06 33	12 07	08 40	21 04	25 16	
25	06 34	06 34	12 07	09 29	21 54	26 9	
26	06 34	06 34	12 07	10 20	22 45	27 5	

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·2		JÚPITER −2·6		SATURNO +0·3	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
27 00	304 39.4	202 55.7	N22 43.8	261 47.3	N14 38.1	296 05.6	N 2 08.9	338 37.8	S14 57.8
01	319 41.8	217 54.9	43.6	276 48.1	38.6	311 08.1	08.9	353 40.4	57.9
02	334 44.3	232 54.1	43.5	291 49.0	39.1	326 10.5	08.9	8 43.0	57.9
03	349 46.8	247 53.2	43.4	306 49.8	39.6	341 13.0	08.9	23 45.6	58.0
04	4 49.2	262 52.4	43.2	321 50.6	40.1	356 15.4	08.9	38 48.3	58.1
05	19 51.7	277 51.6	43.1	336 51.5	40.6	11 17.9	08.9	53 50.9	58.1
06	34 54.2	292 50.8	N22 43.0	351 52.3	N14 41.1	26 20.3	N 2 08.9	68 53.5	S14 58.2
07	49 56.6	307 50.0	42.8	6 53.2	41.6	41 22.8	08.9	83 56.2	58.3
08	64 59.1	322 49.1	42.7	21 54.0	42.1	56 25.2	08.9	98 58.8	58.3
M 09	80 01.5	337 48.3	42.5	36 54.9	42.6	71 27.6	08.9	114 01.4	58.4
I 10	95 04.0	352 47.5	42.4	51 55.7	43.1	86 30.1	08.9	129 04.1	58.4
É 11	110 06.5	7 46.7	42.2	66 56.5	43.6	101 32.5	08.9	144 06.7	58.5
R 12	125 08.9	22 45.8	N22 42.1	81 57.4	N14 44.1	116 35.0	N 2 08.9	159 09.3	S14 58.6
C 13	140 11.4	37 45.0	41.9	96 58.2	44.6	131 37.4	08.9	174 11.9	58.6
O 14	155 13.9	52 44.2	41.8	111 59.1	45.1	146 39.9	08.9	189 14.6	58.7
L 15	170 16.3	67 43.4	41.6	126 59.9	45.5	161 42.3	08.8	204 17.2	58.7
E 16	185 18.8	82 42.6	41.5	142 00.8	46.0	176 44.8	08.8	219 19.8	58.8
S 17	200 21.3	97 41.7	41.3	157 01.6	46.5	191 47.2	08.8	234 22.5	58.9
18	215 23.7	112 40.9	N22 41.2	172 02.5	N14 47.0	206 49.7	N 2 08.8	249 25.1	S14 58.9
19	230 26.2	127 40.1	41.0	187 03.3	47.5	221 52.1	08.8	264 27.7	59.0
20	245 28.7	142 39.3	40.9	202 04.2	48.0	236 54.6	08.8	279 30.4	59.1
21	260 31.1	157 38.5	40.7	217 05.0	48.5	251 57.0	08.8	294 33.0	59.1
22	275 33.6	172 37.7	40.6	232 05.8	49.0	266 59.5	08.8	309 35.6	59.2
23	290 36.0	187 36.8	40.4	247 06.7	49.5	282 01.9	08.8	324 38.3	59.2
28 00	305 38.5	202 36.0	N22 40.3	262 07.5	N14 50.0	297 04.4	N 2 08.8	339 40.9	S14 59.3
01	320 41.0	217 35.2	40.1	277 08.4	50.5	312 06.9	08.8	354 43.5	59.4
02	335 43.4	232 34.4	39.9	292 09.2	50.9	327 09.3	08.8	9 46.1	59.4
03	350 45.9	247 33.6	39.8	307 10.1	51.4	342 11.8	08.8	24 48.8	59.5
04	5 48.4	262 32.7	39.6	322 10.9	51.9	357 14.2	08.7	39 51.4	59.6
05	20 50.8	277 31.9	39.4	337 11.8	52.4	12 16.7	08.7	54 54.0	59.6
06	35 53.3	292 31.1	N22 39.3	352 12.6	N14 52.9	27 19.1	N 2 08.7	69 56.7	S14 59.7
07	50 55.8	307 30.3	39.1	7 13.5	53.4	42 21.6	08.7	84 59.3	59.7
J 08	65 58.2	322 29.5	38.9	22 14.3	53.9	57 24.0	08.7	100 01.9	59.8
U 09	81 00.7	337 28.6	38.8	37 15.2	54.4	72 26.5	08.7	115 04.6	59.9
E 10	96 03.1	352 27.8	38.6	52 16.0	54.8	87 28.9	08.7	130 07.2	14 59.9
V 11	111 05.6	7 27.0	38.4	67 16.9	55.3	102 31.4	08.7	145 09.8	15 00.0
E 12	126 08.1	22 26.2	N22 38.3	82 17.7	N14 55.8	117 33.9	N 2 08.7	160 12.5	S15 00.0
S 13	141 10.5	37 25.4	38.1	97 18.6	56.3	132 36.3	08.7	175 15.1	00.1
14	156 13.0	52 24.5	37.9	112 19.4	56.8	147 38.8	08.6	190 17.7	00.2
15	171 15.5	67 23.7	37.7	127 20.2	57.3	162 41.2	08.6	205 20.4	00.2
16	186 17.9	82 22.9	37.5	142 21.1	57.8	177 43.7	08.6	220 23.0	00.3
17	201 20.4	97 22.1	37.4	157 21.9	58.3	192 46.1	08.6	235 25.6	00.4
18	216 22.9	112 21.3	N22 37.2	172 22.8	N14 58.7	207 48.6	N 2 08.6	250 28.3	S15 00.4
19	231 25.3	127 20.5	37.0	187 23.6	59.2	222 51.1	08.6	265 30.9	00.5
20	246 27.8	142 19.6	36.8	202 24.5	14 59.7	237 53.5	08.6	280 33.5	00.5
21	261 30.3	157 18.8	36.6	217 25.3	15 00.2	252 56.0	08.6	295 36.1	00.6
22	276 32.7	172 18.0	36.5	232 26.2	00.7	267 58.4	08.6	310 38.8	00.7
23	291 35.2	187 17.2	36.3	247 27.0	01.2	283 00.9	08.5	325 41.4	00.7
29 00	306 37.6	202 16.4	N22 36.1	262 27.9	N15 01.6	298 03.4	N 2 08.5	340 44.0	S15 00.8
01	321 40.1	217 15.5	35.9	277 28.7	02.1	313 05.8	08.5	355 46.7	00.9
02	336 42.6	232 14.7	35.7	292 29.6	02.6	328 08.3	08.5	10 49.3	00.9
03	351 45.0	247 13.9	35.5	307 30.4	03.1	343 10.7	08.5	25 51.9	01.0
04	6 47.5	262 13.1	35.3	322 31.3	03.6	358 13.2	08.5	40 54.6	01.0
05	21 50.0	277 12.3	35.1	337 32.1	04.1	13 15.7	08.5	55 57.2	01.1
06	36 52.4	292 11.5	N22 34.9	352 33.0	N15 04.5	28 18.1	N 2 08.5	70 59.8	S15 01.2
07	51 54.9	307 10.6	34.7	7 33.8	05.0	43 20.6	08.4	86 02.5	01.2
V 08	66 57.4	322 09.8	34.5	22 34.7	05.5	58 23.1	08.4	101 05.1	01.3
I 09	81 59.8	337 09.0	34.3	37 35.5	06.0	73 25.5	08.4	116 07.7	01.4
E 10	97 02.3	352 08.2	34.2	52 36.4	06.5	88 28.0	08.4	131 10.4	01.4
R 11	112 04.8	7 07.4	34.0	67 37.2	06.9	103 30.4	08.4	146 13.0	01.5
N 12	127 07.2	22 06.6	N22 33.8	82 38.1	N15 07.4	118 32.9	N 2 08.4	161 15.6	S15 01.5
E 13	142 09.7	37 05.7	33.5	97 38.9	07.9	133 35.4	08.4	176 18.3	01.6
S 14	157 12.1	52 04.9	33.3	112 39.8	08.4	148 37.8	08.4	191 20.9	01.7
15	172 14.6	67 04.1	33.1	127 40.6	08.9	163 40.3	08.3	206 23.5	01.7
16	187 17.1	82 03.3	32.9	142 41.5	09.3	178 42.8	08.3	221 26.2	01.8
17	202 19.5	97 02.5	32.7	157 42.4	09.8	193 45.2	08.3	236 28.8	01.8
18	217 22.0	112 01.7	N22 32.5	172 43.2	N15 10.3	208 47.7	N 2 08.3	251 31.4	S15 01.9
19	232 24.5	127 00.8	32.3	187 44.1	10.8	223 50.2	08.3	266 34.1	02.0
20	247 26.9	142 00.0	32.1	202 44.9	11.3	238 52.6	08.3	281 36.7	02.0
21	262 29.4	156 59.2	31.9	217 45.8	11.7	253 55.1	08.3	296 39.3	02.1
22	277 31.9	171 58.4	31.7	232 46.6	12.2	268 57.6	08.2	311 42.0	02.2
23	292 34.3	186 57.6	31.5	247 47.5	12.7	284 00.0	08.2	326 44.6	02.2
	h m								
Paso Mer.	3 36.8	*v* −0.8	*d* 0.2	*v* 0.8	*d* 0.5	*v* 2.5	*d* 0.0	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.4	S40 12.6
Achernar	335 21.6	S57 07.1
Acrux	173 02.6	S63 13.6
Adhara	255 07.8	S29 00.0
Aldebaran	290 42.1	N16 33.2
Alioth	166 15.0	N55 50.6
Alkaid	152 53.7	N49 12.4
Alnair	27 35.0	S46 51.0
Alnilam	275 40.0	S 1 11.2
Alphard	217 50.0	S 8 45.3
Alphecca	126 05.3	N26 38.6
Alpheratz	357 36.6	N29 12.8
Altair	62 01.6	N 8 55.7
Ankaa	353 08.9	S42 10.8
Antares	112 18.1	S26 28.9
Arcturus	145 49.8	N19 04.1
Atria	107 13.7	S69 04.2
Avior	234 16.2	S59 34.8
Bellatrix	278 25.3	N 6 22.2
Betelgeuse	270 54.5	N 7 24.7
Canopus	263 53.8	S52 42.3
Capella	280 25.2	N46 01.1
Deneb	49 26.7	N45 21.6
Denebola	182 27.2	N14 27.0
Diphda	348 49.2	S17 51.7
Dubhe	193 44.0	N61 38.1
Elnath	278 04.7	N28 37.5
Eltanin	90 42.7	N51 29.3
Enif	33 40.5	N 9 58.7
Fomalhaut	15 16.5	S29 30.1
Gacrux	171 54.1	S57 14.5
Gienah	175 45.8	S17 40.0
Hadar	148 38.9	S60 29.1
Hamal	327 53.5	N23 34.0
Kaus Aust.	83 34.8	S34 22.4
Kochab	137 19.6	N74 04.1
Markab	13 31.6	N15 19.5
Menkar	314 08.3	N 4 10.7
Menkent	148 00.0	S36 28.9
Miaplacidus	221 39.6	S69 48.6
Mirfak	308 31.3	N49 56.2
Nunki	75 49.9	S26 16.1
Peacock	53 08.3	S56 39.7
Pollux	243 20.1	N27 58.4
Procyon	244 53.3	N 5 10.1
Rasalhague	96 00.2	N12 32.7
Regulus	207 36.9	N11 51.6
Rigel	281 06.0	S 8 10.4
Rigil Kent.	139 43.0	S60 55.8
Sabik	102 04.8	S15 45.1
Schedar	349 33.1	N56 39.4
Shaula	96 12.8	S37 07.2
Sirius	258 28.3	S16 44.7
Spica	158 24.5	S11 16.7
Suhail	222 48.2	S43 31.3
Vega	80 34.2	N38 48.4
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	256 57.5	10 30
Marte	316 29.0	6 31
Júpiter	351 25.9	4 11
Saturno	34 02.4	1 21

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	′	°	′	′	′
27 00	178	21.5	N19	15.6	198	02.9	10.4	N26	42.6	1.9	54.0
01	193	21.5		15.0	212	32.3	10.4	26	40.7	2.1	54.0
02	208	21.5		14.5	227	01.7	10.5	26	38.6	2.2	54.0
03	223	21.5	. .	13.9	241	31.2	10.4	26	36.4	2.4	54.0
04	238	21.5		13.3	256	00.6	10.5	26	34.0	2.4	54.0
05	253	21.5		12.8	270	30.1	10.5	26	31.6	2.6	54.0
06	268	21.6	N19	12.2	284	59.6	10.5	N26	29.0	2.8	54.0
07	283	21.6		11.6	299	29.1	10.6	26	26.2	2.8	54.0
M 08	298	21.6		11.1	313	58.7	10.5	26	23.4	3.0	54.0
I 09	313	21.6	. .	10.5	328	28.2	10.6	26	20.4	3.1	54.0
É 10	328	21.6		09.9	342	57.8	10.6	26	17.3	3.2	54.0
R 11	343	21.6		09.4	357	27.4	10.7	26	14.1	3.4	54.0
C 12	358	21.6	N19	08.8	11	57.1	10.6	N26	10.7	3.5	54.0
O 13	13	21.6		08.2	26	26.7	10.7	26	07.2	3.6	54.0
L 14	28	21.6		07.7	40	56.4	10.7	26	03.6	3.7	54.0
E 15	43	21.6	. .	07.1	55	26.1	10.8	25	59.9	3.9	54.0
S 16	58	21.6		06.5	69	55.9	10.7	25	56.0	4.0	54.0
17	73	21.6		05.9	84	25.6	10.8	25	52.0	4.1	54.1
18	88	21.6	N19	05.4	98	55.4	10.9	N25	47.9	4.2	54.1
19	103	21.6		04.8	113	25.3	10.8	25	43.7	4.3	54.1
20	118	21.7		04.2	127	55.1	10.9	25	39.4	4.5	54.1
21	133	21.7	. .	03.6	142	25.0	10.9	25	34.9	4.6	54.1
22	148	21.7		03.1	156	54.9	11.0	25	30.3	4.7	54.1
23	163	21.7		02.5	171	24.9	11.0	25	25.6	4.9	54.1
28 00	178	21.7	N19	01.9	185	54.9	11.0	N25	20.7	4.9	54.1
01	193	21.7		01.3	200	24.9	11.1	25	15.8	5.1	54.1
02	208	21.7		00.8	214	55.0	11.1	25	10.7	5.2	54.1
03	223	21.7	19	00.2	229	25.1	11.2	25	05.5	5.3	54.1
04	238	21.7	18	59.6	243	55.3	11.1	25	00.2	5.4	54.1
05	253	21.8		59.0	258	25.4	11.3	24	54.8	5.6	54.1
06	268	21.8	N18	58.5	272	55.7	11.2	N24	49.2	5.6	54.1
07	283	21.8		57.9	287	25.9	11.3	24	43.6	5.8	54.1
J 08	298	21.8		57.3	301	56.2	11.4	24	37.8	5.9	54.1
U 09	313	21.8	. .	56.7	316	26.6	11.3	24	31.9	6.0	54.2
E 10	328	21.8		56.1	330	56.9	11.5	24	25.9	6.2	54.2
V 11	343	21.8		55.6	345	27.4	11.4	24	19.7	6.2	54.2
E 12	358	21.8	N18	55.0	359	57.8	11.5	N24	13.5	6.4	54.2
S 13	13	21.9		54.4	14	28.3	11.6	24	07.1	6.4	54.2
14	28	21.9		53.8	28	58.9	11.6	24	00.7	6.6	54.2
15	43	21.9	. .	53.2	43	29.5	11.6	23	54.1	6.7	54.2
16	58	21.9		52.6	58	00.1	11.7	23	47.4	6.8	54.2
17	73	21.9		52.1	72	30.8	11.8	23	40.6	6.9	54.2
18	88	21.9	N18	51.5	87	01.6	11.7	N23	33.7	7.0	54.2
19	103	21.9		50.9	101	32.3	11.9	23	26.7	7.2	54.2
20	118	22.0		50.3	116	03.2	11.8	23	19.5	7.2	54.2
21	133	22.0	. .	49.7	130	34.0	12.0	23	12.3	7.4	54.3
22	148	22.0		49.1	145	05.0	11.9	23	04.9	7.4	54.3
23	163	22.0		48.5	159	35.9	12.0	22	57.5	7.6	54.3
29 00	178	22.0	N18	47.9	174	06.9	12.1	N22	49.9	7.6	54.3
01	193	22.0		47.4	188	38.0	12.1	22	42.3	7.8	54.3
02	208	22.1		46.8	203	09.1	12.2	22	34.5	7.9	54.3
03	223	22.1	. .	46.2	217	40.3	12.2	22	26.6	8.0	54.3
04	238	22.1		45.6	232	11.5	12.2	22	18.6	8.1	54.3
05	253	22.1		45.0	246	42.7	12.3	22	10.5	8.2	54.3
06	268	22.1	N18	44.4	261	14.0	12.4	N22	02.3	8.2	54.3
07	283	22.1		43.8	275	45.4	12.4	21	54.1	8.4	54.4
V 08	298	22.2		43.2	290	16.8	12.4	21	45.7	8.5	54.4
I 09	313	22.2	. .	42.6	304	48.2	12.5	21	37.2	8.6	54.4
E 10	328	22.2		42.0	319	19.7	12.6	21	28.6	8.7	54.4
R 11	343	22.2		41.4	333	51.3	12.6	21	19.9	8.8	54.4
N 12	358	22.2	N18	40.8	348	22.9	12.6	N21	11.1	8.9	54.4
E 13	13	22.3		40.2	2	54.5	12.7	21	02.2	9.0	54.4
S 14	28	22.3		39.7	17	26.2	12.8	20	53.2	9.0	54.4
15	43	22.3	. .	39.1	31	58.0	12.8	20	44.2	9.2	54.4
16	58	22.3		38.5	46	29.8	12.8	20	35.0	9.3	54.5
17	73	22.3		37.9	61	01.6	12.9	20	25.7	9.3	54.5
18	88	22.4	N18	37.3	75	33.5	13.0	N20	16.4	9.5	54.5
19	103	22.4		36.7	90	05.5	13.0	20	06.9	9.5	54.5
20	118	22.4		36.1	104	37.5	13.0	19	57.4	9.6	54.5
21	133	22.4	. .	35.5	119	09.5	13.1	19	47.8	9.8	54.5
22	148	22.5		34.9	133	41.6	13.1	19	38.0	9.8	54.5
23	163	22.5		34.3	148	13.7	13.2	N19	28.2	9.9	54.5
	S/D	15.8	d	0.6	S/D	14.7		14.8			14.8

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		27	28	29	30
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	▭	▭	▭	▭
N 70	////	////	00 35	▭	▭	▭	02 38
68	////	////	01 53	▭	▭	▭	03 29
66	////	////	02 30	▭	▭	01 53	04 01
64	////	01 12	02 55	▭	00 39	02 38	04 24
62	////	01 58	03 15	00 06	01 32	03 07	04 43
60	////	02 27	03 31	00 49	02 04	03 29	04 58
N 58	01 06	02 49	03 45	01 18	02 28	03 47	05 10
56	01 48	03 06	03 56	01 40	02 47	04 02	05 21
54	02 14	03 21	04 07	01 58	03 03	04 15	05 31
52	02 35	03 33	04 16	02 13	03 17	04 27	05 40
50	02 51	03 44	04 24	02 27	03 29	04 37	05 47
45	03 23	04 06	04 41	02 54	03 53	04 57	06 04
N 40	03 46	04 24	04 55	03 16	04 13	05 14	06 17
35	04 04	04 38	05 06	03 34	04 30	05 28	06 28
30	04 19	04 50	05 17	03 49	04 44	05 41	06 38
20	04 42	05 10	05 34	04 15	05 08	06 02	06 55
N 10	05 01	05 27	05 49	04 37	05 29	06 20	07 09
0	05 16	05 41	06 03	04 58	05 48	06 37	07 23
S 10	05 29	05 55	06 17	05 19	06 08	06 53	07 36
20	05 42	06 08	06 32	05 42	06 28	07 11	07 51
30	05 54	06 23	06 48	06 08	06 52	07 32	08 07
35	06 00	06 31	06 58	06 23	07 06	07 44	08 17
40	06 07	06 40	07 09	06 41	07 22	07 58	08 28
45	06 14	06 50	07 22	07 02	07 42	08 14	08 40
S 50	06 22	07 02	07 37	07 29	08 06	08 34	08 56
52	06 26	07 07	07 45	07 42	08 17	08 43	09 03
54	06 29	07 13	07 53	07 57	08 30	08 54	09 11
56	06 33	07 19	08 02	08 15	08 45	09 06	09 20
58	06 38	07 26	08 12	08 36	09 03	09 19	09 30
S 60	06 42	07 34	08 24	09 04	09 25	09 35	09 41

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	27	28	29	30
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	▭	▭	▭	23 32
N 70	23 21	////	////	▭	▭	▭	(00 02 / 23 01)
68	22 15	////	////	▭	▭	23 09	22 38
66	21 40	////	////	▭	23 07	22 36	22 19
64	21 15	22 54	////	22 39	22 21	22 12	22 05
62	20 56	22 11	////	21 46	21 51	21 53	21 52
60	20 40	21 43	////	21 13	21 29	21 37	21 41
N 58	20 27	21 22	23 01	20 49	21 10	21 23	21 32
56	20 15	21 05	22 22	20 30	20 55	21 12	21 24
54	20 05	20 51	21 56	20 13	20 41	21 01	21 16
52	19 57	20 39	21 36	19 59	20 30	20 52	21 10
50	19 49	20 28	21 20	19 47	20 19	20 44	21 04
45	19 32	20 06	20 49	19 21	19 57	20 27	20 51
N 40	19 18	19 49	20 26	19 01	19 40	20 12	20 40
35	19 06	19 34	20 08	18 44	19 25	20 00	20 31
30	18 56	19 22	19 54	18 30	19 12	19 49	20 23
20	18 39	19 03	19 30	18 05	18 49	19 31	20 09
N 10	18 24	18 46	19 12	17 43	18 30	19 14	19 56
0	18 10	18 32	18 57	17 23	18 12	18 59	19 45
S 10	17 56	18 18	18 44	17 02	17 54	18 44	19 33
20	17 42	18 05	18 32	16 41	17 34	18 27	19 20
30	17 25	17 51	18 20	16 15	17 11	18 08	19 05
35	17 16	17 43	18 13	16 00	16 58	17 57	18 57
40	17 05	17 34	18 07	15 43	16 42	17 44	18 47
45	16 52	17 24	17 59	15 22	16 24	17 29	18 36
S 50	16 36	17 12	17 52	14 55	16 01	17 10	18 22
52	16 29	17 07	17 48	14 42	15 49	17 01	18 15
54	16 21	17 01	17 44	14 27	15 37	16 51	18 08
56	16 12	16 55	17 40	14 10	15 22	16 40	18 00
58	16 02	16 47	17 36	13 48	15 05	16 27	17 50
S 60	15 50	16 39	17 31	13 21	14 43	16 11	17 40

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
27	06 34	06 34	12 07	11 11	23 36	28 2	
28	06 33	06 33	12 07	12 00	24 24	29 0	●
29	06 32	06 31	12 07	12 48	00 24	01 1	

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·2		JÚPITER −2·6		SATURNO +0·3	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
30 00	307 36.8	201 56.8	N22 31.3	262 48.3	N15 13.2	299 02.5	N 2 08.2	341 47.2	S15 02.3
01	322 39.3	216 55.9	31.0	277 49.2	13.6	314 05.0	08.2	356 49.9	02.3
02	337 41.7	231 55.1	30.8	292 50.0	14.1	329 07.4	08.2	11 52.5	02.4
03	352 44.2	246 54.3	30.6	307 50.9	14.6	344 09.9	08.2	26 55.2	02.5
04	7 46.6	261 53.5	30.4	322 51.7	15.1	359 12.4	08.2	41 57.8	02.5
05	22 49.1	276 52.7	30.2	337 52.6	15.5	14 14.8	08.1	57 00.4	02.6
06	37 51.6	291 51.9	N22 29.9	352 53.4	N15 16.0	29 17.3	N 2 08.1	72 03.1	S15 02.7
07	52 54.0	306 51.0	29.7	7 54.3	16.5	44 19.8	08.1	87 05.7	02.7
08	67 56.5	321 50.2	29.5	22 55.1	17.0	59 22.3	08.1	102 08.3	02.8
S 09	82 59.0	336 49.4	29.3	37 56.0	17.4	74 24.7	08.1	117 11.0	02.8
Á 10	98 01.4	351 48.6	29.1	52 56.9	17.9	89 27.2	08.1	132 13.6	02.9
B 11	113 03.9	6 47.8	28.8	67 57.7	18.4	104 29.7	08.0	147 16.2	03.0
A 12	128 06.4	21 47.0	N22 28.6	82 58.6	N15 18.9	119 32.1	N 2 08.0	162 18.9	S15 03.0
D 13	143 08.8	36 46.2	28.4	97 59.4	19.3	134 34.6	08.0	177 21.5	03.1
O 14	158 11.3	51 45.3	28.1	113 00.3	19.8	149 37.1	08.0	192 24.1	03.2
15	173 13.7	66 44.5	27.9	128 01.1	20.3	164 39.6	08.0	207 26.8	03.2
16	188 16.2	81 43.7	27.7	143 02.0	20.8	179 42.0	08.0	222 29.4	03.3
17	203 18.7	96 42.9	27.4	158 02.8	21.2	194 44.5	07.9	237 32.0	03.4
18	218 21.1	111 42.1	N22 27.2	173 03.7	N15 21.7	209 47.0	N 2 07.9	252 34.7	S15 03.4
19	233 23.6	126 41.3	27.0	188 04.6	22.2	224 49.5	07.9	267 37.3	03.5
20	248 26.1	141 40.5	26.7	203 05.4	22.6	239 51.9	07.9	282 39.9	03.5
21	263 28.5	156 39.6	26.5	218 06.3	23.1	254 54.4	07.9	297 42.6	03.6
22	278 31.0	171 38.8	26.3	233 07.1	23.6	269 56.9	07.9	312 45.2	03.7
23	293 33.5	186 38.0	26.0	248 08.0	24.1	284 59.3	07.8	327 47.9	03.7
31 00	308 35.9	201 37.2	N22 25.8	263 08.8	N15 24.5	300 01.8	N 2 07.8	342 50.5	S15 03.8
01	323 38.4	216 36.4	25.5	278 09.7	25.0	315 04.3	07.8	357 53.1	03.9
02	338 40.9	231 35.6	25.3	293 10.5	25.5	330 06.8	07.8	12 55.8	03.9
03	353 43.3	246 34.8	25.0	308 11.4	25.9	345 09.3	07.8	27 58.4	04.0
04	8 45.8	261 34.0	24.8	323 12.3	26.4	0 11.7	07.7	43 01.0	04.0
05	23 48.2	276 33.1	24.5	338 13.1	26.9	15 14.2	07.7	58 03.7	04.1
06	38 50.7	291 32.3	N22 24.3	353 14.0	N15 27.4	30 16.7	N 2 07.7	73 06.3	S15 04.2
07	53 53.2	306 31.5	24.1	8 14.8	27.8	45 19.2	07.7	88 08.9	04.2
D 08	68 55.6	321 30.7	23.8	23 15.7	28.3	60 21.6	07.7	103 11.6	04.3
O 09	83 58.1	336 29.9	23.5	38 16.5	28.8	75 24.1	07.6	118 14.2	04.4
M 10	99 00.6	351 29.1	23.3	53 17.4	29.2	90 26.6	07.6	133 16.8	04.4
I 11	114 03.0	6 28.3	23.0	68 18.3	29.7	105 29.1	07.6	148 19.5	04.5
N 12	129 05.5	21 27.5	N22 22.8	83 19.1	N15 30.2	120 31.6	N 2 07.6	163 22.1	S15 04.5
G 13	144 08.0	36 26.7	22.5	98 20.0	30.6	135 34.0	07.6	178 24.8	04.6
O 14	159 10.4	51 25.8	22.3	113 20.8	31.1	150 36.5	07.5	193 27.4	04.7
15	174 12.9	66 25.0	22.0	128 21.7	31.6	165 39.0	07.5	208 30.0	04.7
16	189 15.4	81 24.2	21.8	143 22.6	32.0	180 41.5	07.5	223 32.7	04.8
17	204 17.8	96 23.4	21.5	158 23.4	32.5	195 44.0	07.5	238 35.3	04.9
18	219 20.3	111 22.6	N22 21.2	173 24.3	N15 33.0	210 46.4	N 2 07.5	253 37.9	S15 04.9
19	234 22.7	126 21.8	21.0	188 25.1	33.4	225 48.9	07.4	268 40.6	05.0
20	249 25.2	141 21.0	20.7	203 26.0	33.9	240 51.4	07.4	283 43.2	05.1
21	264 27.7	156 20.2	20.4	218 26.9	34.4	255 53.9	07.4	298 45.9	05.1
22	279 30.1	171 19.4	20.2	233 27.7	34.8	270 56.4	07.4	313 48.5	05.2
23	294 32.6	186 18.5	19.9	248 28.6	35.3	285 58.8	07.4	328 51.1	05.2
1 00	309 35.1	201 17.7	N22 19.6	263 29.4	N15 35.7	301 01.3	N 2 07.3	343 53.8	S15 05.3
01	324 37.5	216 16.9	19.4	278 30.3	36.2	316 03.8	07.3	358 56.4	05.4
02	339 40.0	231 16.1	19.1	293 31.2	36.7	331 06.3	07.3	13 59.0	05.4
03	354 42.5	246 15.3	18.8	308 32.0	37.1	346 08.8	07.3	29 01.7	05.5
04	9 44.9	261 14.5	18.6	323 32.9	37.6	1 11.3	07.3	44 04.3	05.6
05	24 47.4	276 13.7	18.3	338 33.7	38.1	16 13.8	07.2	59 06.9	05.6
06	39 49.8	291 12.9	N22 18.0	353 34.6	N15 38.5	31 16.2	N 2 07.2	74 09.6	S15 05.7
07	54 52.3	306 12.1	17.7	8 35.5	39.0	46 18.7	07.2	89 12.2	05.7
L 08	69 54.8	321 11.3	17.5	23 36.3	39.5	61 21.2	07.2	104 14.9	05.8
U 09	84 57.2	336 10.5	17.2	38 37.2	39.9	76 23.7	07.1	119 17.5	05.9
N 10	99 59.7	351 09.6	16.9	53 38.0	40.4	91 26.2	07.1	134 20.1	05.9
E 11	115 02.2	6 08.8	16.6	68 38.9	40.8	106 28.7	07.1	149 22.8	06.0
S 12	130 04.6	21 08.0	N22 16.3	83 39.8	N15 41.3	121 31.2	N 2 07.1	164 25.4	S15 06.1
13	145 07.1	36 07.2	16.0	98 40.6	41.8	136 33.6	07.1	179 28.0	06.1
14	160 09.6	51 06.4	15.8	113 41.5	42.2	151 36.1	07.0	194 30.7	06.2
15	175 12.0	66 05.6	15.5	128 42.4	42.7	166 38.6	07.0	209 33.3	06.3
16	190 14.5	81 04.8	15.2	143 43.2	43.1	181 41.1	07.0	224 36.0	06.3
17	205 17.0	96 04.0	14.9	158 44.1	43.6	196 43.6	07.0	239 38.6	06.4
18	220 19.4	111 03.2	N22 14.6	173 44.9	N15 44.1	211 46.1	N 2 06.9	254 41.2	S15 06.4
19	235 21.9	126 02.4	14.3	188 45.8	44.5	226 48.6	06.9	269 43.9	06.5
20	250 24.3	141 01.6	14.0	203 46.7	45.0	241 51.1	06.9	284 46.5	06.6
21	265 26.8	156 00.8	13.7	218 47.5	45.4	256 53.5	06.9	299 49.2	06.6
22	280 29.3	171 00.0	13.4	233 48.4	45.9	271 56.0	06.8	314 51.8	06.7
23	295 31.7	185 59.2	13.2	248 49.3	46.4	286 58.5	06.8	329 54.4	06.8
	h m								
Paso Mer.	3 25.0	*v* −0.8	*d* 0.3	*v* 0.9	*d* 0.5	*v* 2.5	*d* 0.0	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.4	S40 12.6
Achernar	335 21.6	S57 07.1
Acrux	173 02.6	S63 13.6
Adhara	255 07.8	S29 00.0
Aldebaran	290 42.1	N16 33.2
Alioth	166 15.0	N55 50.6
Alkaid	152 53.7	N49 12.4
Alnair	27 35.0	S46 51.0
Alnilam	275 40.0	S 1 11.2
Alphard	217 50.0	S 8 45.3
Alphecca	126 05.3	N26 38.6
Alpheratz	357 36.6	N29 12.8
Altair	62 01.6	N 8 55.7
Ankaa	353 08.9	S42 10.8
Antares	112 18.1	S26 28.9
Arcturus	145 49.8	N19 04.1
Atria	107 13.8	S69 04.2
Avior	234 16.2	S59 34.8
Bellatrix	278 25.3	N 6 22.2
Betelgeuse	270 54.5	N 7 24.7
Canopus	263 53.8	S52 42.2
Capella	280 25.2	N46 01.1
Deneb	49 26.7	N45 21.6
Denebola	182 27.2	N14 27.0
Diphda	348 49.2	S17 51.7
Dubhe	193 44.0	N61 38.0
Elnath	278 04.7	N28 37.5
Eltanin	90 42.7	N51 29.3
Enif	33 40.4	N 9 58.7
Fomalhaut	15 16.4	S29 30.1
Gacrux	171 54.1	S57 14.5
Gienah	175 45.8	S17 40.0
Hadar	148 38.9	S60 29.1
Hamal	327 53.4	N23 34.0
Kaus Aust.	83 34.8	S34 22.4
Kochab	137 19.7	N74 04.1
Markab	13 31.6	N15 19.6
Menkar	314 08.3	N 4 10.7
Menkent	148 00.0	S36 28.9
Miaplacidus	221 39.6	S69 48.5
Mirfak	308 31.2	N49 56.2
Nunki	75 49.9	S26 16.1
Peacock	53 08.3	S56 39.7
Pollux	243 20.1	N27 58.4
Procyon	244 53.3	N 5 10.1
Rasalhague	96 00.2	N12 32.7
Regulus	207 36.9	N11 51.6
Rigel	281 06.0	S 8 10.4
Rigil Kent.	139 43.0	S60 55.9
Sabik	102 04.9	S15 45.1
Schedar	349 33.0	N56 39.4
Shaula	96 12.8	S37 07.2
Sirius	258 28.3	S16 44.7
Spica	158 24.5	S11 16.7
Suhail	222 48.2	S43 31.3
Vega	80 34.2	N38 48.4
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	253 01.3	10 34
Marte	314 32.9	6 27
Júpiter	351 25.9	3 59
Saturno	34 14.6	1 08

UT (HmGr)	SOL AHGr	SOL Dec	LUNA AHGr	LUNA v	LUNA Dec	LUNA d	LUNA Ph
d h	° ′	° ′	° ′	′	° ′	′	′
30 00	178 22.5	N18 33.7	162 45.9	13.3	N19 18.3	10.0	54.6
01	193 22.5	33.1	177 18.2	13.2	19 08.3	10.0	54.6
02	208 22.6	32.5	191 50.4	13.4	18 58.3	10.2	54.6
03	223 22.6	31.9	206 22.8	13.3	18 48.1	10.2	54.6
04	238 22.6	31.3	220 55.1	13.5	18 37.9	10.4	54.6
05	253 22.6	30.6	235 27.6	13.4	18 27.5	10.4	54.6
06	268 22.6	N18 30.0	250 00.0	13.6	N18 17.1	10.5	54.6
07	283 22.7	29.4	264 32.6	13.5	18 06.6	10.6	54.7
S 08	298 22.7	28.8	279 05.1	13.6	17 56.0	10.6	54.7
Á 09	313 22.7	28.2	293 37.7	13.7	17 45.4	10.8	54.7
B 10	328 22.7	27.6	308 10.4	13.7	17 34.6	10.8	54.7
A 11	343 22.8	27.0	322 43.1	13.8	17 23.8	10.9	54.7
D 12	358 22.8	N18 26.4	337 15.9	13.8	N17 12.9	11.0	54.7
O 13	13 22.8	25.8	351 48.7	13.8	17 01.9	11.0	54.7
14	28 22.9	25.2	6 21.5	13.9	16 50.9	11.2	54.8
15	43 22.9	24.6	20 54.4	13.9	16 39.7	11.2	54.8
16	58 22.9	24.0	35 27.3	14.0	16 28.5	11.3	54.8
17	73 22.9	23.4	50 00.3	14.0	16 17.2	11.3	54.8
18	88 23.0	N18 22.8	64 33.3	14.0	N16 05.9	11.5	54.8
19	103 23.0	22.1	79 06.3	14.1	15 54.4	11.5	54.8
20	118 23.0	21.5	93 39.4	14.1	15 42.9	11.5	54.8
21	133 23.0	20.9	108 12.5	14.2	15 31.4	11.7	54.9
22	148 23.1	20.3	122 45.7	14.2	15 19.7	11.7	54.9
23	163 23.1	19.7	137 18.9	14.3	15 08.0	11.8	54.9
31 00	178 23.1	N18 19.1	151 52.2	14.3	N14 56.2	11.8	54.9
01	193 23.2	18.5	166 25.5	14.3	14 44.4	12.0	54.9
02	208 23.2	17.8	180 58.8	14.4	14 32.4	11.9	54.9
03	223 23.2	17.2	195 32.2	14.4	14 20.5	12.1	55.0
04	238 23.3	16.6	210 05.6	14.4	14 08.4	12.1	55.0
05	253 23.3	16.0	224 39.0	14.5	13 56.3	12.2	55.0
06	268 23.3	N18 15.4	239 12.5	14.5	N13 44.1	12.2	55.0
07	283 23.4	14.8	253 46.0	14.5	13 31.9	12.3	55.0
D 08	298 23.4	14.1	268 19.5	14.6	13 19.6	12.4	55.0
O 09	313 23.4	13.5	282 53.1	14.6	13 07.2	12.4	55.1
M 10	328 23.4	12.9	297 26.7	14.6	12 54.8	12.5	55.1
I 11	343 23.5	12.3	312 00.3	14.7	12 42.3	12.6	55.1
N 12	358 23.5	N18 11.7	326 34.0	14.7	N12 29.7	12.6	55.1
G 13	13 23.5	11.0	341 07.7	14.7	12 17.1	12.7	55.1
O 14	28 23.6	10.4	355 41.4	14.8	12 04.4	12.7	55.1
15	43 23.6	09.8	10 15.2	14.8	11 51.7	12.8	55.2
16	58 23.6	09.2	24 49.0	14.8	11 38.9	12.8	55.2
17	73 23.7	08.6	39 22.8	14.8	11 26.1	12.9	55.2
18	88 23.7	N18 07.9	53 56.6	14.9	N11 13.2	12.9	55.2
19	103 23.7	07.3	68 30.5	14.9	11 00.3	13.0	55.2
20	118 23.8	06.7	83 04.4	14.9	10 47.3	13.1	55.3
21	133 23.8	06.1	97 38.3	14.9	10 34.2	13.1	55.3
22	148 23.9	05.4	112 12.2	15.0	10 21.1	13.1	55.3
23	163 23.9	04.8	126 46.2	15.0	10 08.0	13.2	55.3
1 00	178 23.9	N18 04.2	141 20.2	15.0	N 9 54.8	13.3	55.3
01	193 24.0	03.6	155 54.2	15.0	9 41.5	13.3	55.4
02	208 24.0	02.9	170 28.2	15.1	9 28.2	13.3	55.4
03	223 24.0	02.3	185 02.3	15.0	9 14.9	13.4	55.4
04	238 24.1	01.7	199 36.3	15.1	9 01.5	13.4	55.4
05	253 24.1	01.0	214 10.4	15.1	8 48.1	13.5	55.4
06	268 24.1	N18 00.4	228 44.5	15.1	N 8 34.6	13.5	55.5
07	283 24.2	17 59.8	243 18.6	15.1	8 21.1	13.6	55.5
L 08	298 24.2	59.2	257 52.7	15.1	8 07.5	13.6	55.5
U 09	313 24.3	58.5	272 26.8	15.2	7 53.9	13.6	55.5
N 10	328 24.3	57.9	287 01.0	15.2	7 40.3	13.7	55.5
E 11	343 24.3	57.3	301 35.2	15.1	7 26.6	13.7	55.6
S 12	358 24.4	N17 56.6	316 09.3	15.2	N 7 12.9	13.8	55.6
13	13 24.4	56.0	330 43.5	15.2	6 59.1	13.8	55.6
14	28 24.5	55.4	345 17.7	15.2	6 45.3	13.8	55.6
15	43 24.5	54.7	359 51.9	15.2	6 31.5	13.9	55.6
16	58 24.5	54.1	14 26.1	15.2	6 17.6	13.9	55.7
17	73 24.6	53.5	29 00.3	15.2	6 03.7	14.0	55.7
18	88 24.6	N17 52.8	43 34.5	15.2	N 5 49.7	13.9	55.7
19	103 24.7	52.2	58 08.7	15.2	5 35.8	14.1	55.7
20	118 24.7	51.6	72 42.9	15.3	5 21.7	14.0	55.8
21	133 24.7	50.9	87 17.2	15.2	5 07.7	14.1	55.8
22	148 24.8	50.3	101 51.4	15.2	4 53.6	14.1	55.8
23	163 24.8	49.6	116 25.6	15.2	N 4 39.5	14.1	55.8
	S/D 15.8	d 0.6	S/D 14.9		15.0		15.1

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 30	Orto Luna 31	Orto Luna 1	Orto Luna 2
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	▭	04 43	07 01	09 05
N 70	////	////	01 16	02 38	05 12	07 14	09 08
68	////	////	02 10	03 29	05 34	07 24	09 11
66	////	////	02 41	04 01	05 51	07 33	09 13
64	////	01 33	03 05	04 24	06 04	07 40	09 15
62	////	02 11	03 23	04 43	06 16	07 46	09 16
60	////	02 37	03 38	04 58	06 25	07 52	09 18
N 58	01 24	02 57	03 51	05 10	06 34	07 56	09 19
56	01 59	03 13	04 02	05 21	06 41	08 00	09 20
54	02 23	03 27	04 12	05 31	06 48	08 04	09 21
52	02 42	03 39	04 20	05 40	06 54	08 07	09 22
50	02 57	03 49	04 28	05 47	06 59	08 10	09 22
45	03 27	04 10	04 44	06 04	07 10	08 17	09 24
N 40	03 49	04 27	04 57	06 17	07 20	08 22	09 25
35	04 07	04 41	05 09	06 28	07 28	08 27	09 27
30	04 21	04 52	05 18	06 38	07 35	08 31	09 28
20	04 44	05 12	05 35	06 55	07 47	08 38	09 30
N 10	05 01	05 27	05 50	07 09	07 57	08 45	09 31
0	05 16	05 41	06 03	07 23	08 07	08 50	09 33
S 10	05 29	05 54	06 16	07 36	08 17	08 56	09 34
20	05 41	06 07	06 30	07 51	08 28	09 02	09 36
30	05 52	06 21	06 46	08 07	08 39	09 09	09 38
35	05 58	06 29	06 55	08 17	08 46	09 13	09 39
40	06 04	06 37	07 06	08 28	08 54	09 18	09 40
45	06 11	06 47	07 18	08 40	09 03	09 23	09 42
S 50	06 18	06 58	07 33	08 56	09 14	09 29	09 44
52	06 22	07 03	07 40	09 03	09 19	09 32	09 44
54	06 25	07 08	07 48	09 11	09 24	09 35	09 45
56	06 29	07 14	07 56	09 20	09 30	09 39	09 46
58	06 33	07 21	08 06	09 30	09 37	09 42	09 47
S 60	06 37	07 29	08 17	09 41	09 45	09 47	09 48

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 30	Ocaso Luna 31	Ocaso Luna 1	Ocaso Luna 2
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	23 32	22 45	22 12	21 42
N 70	22 48	////	////	{00 02 / 23 01}	22 30	22 06	21 44
68	21 59	////	////	22 38	22 17	22 00	21 44
66	21 28	////	////	22 19	22 07	21 56	21 45
64	21 06	22 34	////	22 05	21 58	21 52	21 46
62	20 48	21 59	////	21 52	21 51	21 49	21 47
60	20 33	21 34	////	21 41	21 44	21 46	21 47
N 58	20 20	21 14	22 44	21 32	21 38	21 43	21 48
56	20 10	20 58	22 11	21 24	21 33	21 41	21 48
54	20 00	20 45	21 47	21 16	21 28	21 39	21 48
52	19 52	20 33	21 29	21 10	21 24	21 37	21 49
50	19 44	20 23	21 14	21 04	21 20	21 35	21 49
45	19 28	20 02	20 44	20 51	21 12	21 31	21 50
N 40	19 15	19 45	20 23	20 40	21 05	21 28	21 50
35	19 04	19 32	20 05	20 31	20 59	21 25	21 51
30	18 54	19 20	19 51	20 23	20 54	21 23	21 51
20	18 38	19 01	19 29	20 09	20 44	21 18	21 52
N 10	18 23	18 45	19 11	19 56	20 36	21 14	21 53
0	18 10	18 32	18 57	19 45	20 28	21 11	21 53
S 10	17 57	18 19	18 44	19 33	20 20	21 07	21 54
20	17 43	18 06	18 33	19 20	20 12	21 03	21 55
30	17 27	17 52	18 21	19 05	20 02	20 58	21 55
35	17 18	17 45	18 15	18 57	19 56	20 56	21 56
40	17 07	17 36	18 09	18 47	19 50	20 53	21 56
45	16 55	17 27	18 02	18 36	19 42	20 49	21 57
S 50	16 40	17 16	17 55	18 22	19 33	20 45	21 57
52	16 33	17 11	17 52	18 15	19 29	20 43	21 57
54	16 26	17 05	17 48	18 08	19 24	20 41	21 58
56	16 17	16 59	17 45	18 00	19 19	20 38	21 58
58	16 08	16 53	17 41	17 50	19 13	20 36	21 58
S 60	15 56	16 45	17 37	17 40	19 07	20 33	21 59

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d	%
30	06 30	06 29	12 06	13 34	01 11	02	3
31	06 28	06 26	12 06	14 18	01 56	03	7
1	06 24	06 23	12 06	15 01	02 39	04	13

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·1		JÚPITER −2·7		SATURNO +0·3	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
2 00	310 34.2	200 58.3	N22 12.9	263 50.1	N15 46.8	302 01.0	N 2 06.8	344 57.1	S15 06.8
01	325 36.7	215 57.5	12.6	278 51.0	47.3	317 03.5	06.8	359 59.7	06.9
02	340 39.1	230 56.7	12.3	293 51.9	47.7	332 06.0	06.7	15 02.3	07.0
03	355 41.6	245 55.9	12.0	308 52.7	48.2	347 08.5	06.7	30 05.0	07.0
04	10 44.1	260 55.1	11.7	323 53.6	48.6	2 11.0	06.7	45 07.6	07.1
05	25 46.5	275 54.3	11.4	338 54.4	49.1	17 13.5	06.7	60 10.3	07.1
06	40 49.0	290 53.5	N22 11.1	353 55.3	N15 49.6	32 16.0	N 2 06.6	75 12.9	S15 07.2
07	55 51.4	305 52.7	10.8	8 56.2	50.0	47 18.5	06.6	90 15.5	07.3
08	70 53.9	320 51.9	10.5	23 57.0	50.5	62 21.0	06.6	105 18.2	07.3
M 09	85 56.4	335 51.1	10.1	38 57.9	50.9	77 23.5	06.6	120 20.8	07.4
A 10	100 58.8	350 50.3	09.8	53 58.8	51.4	92 25.9	06.5	135 23.5	07.5
R 11	116 01.3	5 49.5	09.5	68 59.6	51.8	107 28.4	06.5	150 26.1	07.5
T 12	131 03.8	20 48.7	N22 09.2	84 00.5	N15 52.3	122 30.9	N 2 06.5	165 28.7	S15 07.6
E 13	146 06.2	35 47.9	08.9	99 01.4	52.7	137 33.4	06.5	180 31.4	07.6
S 14	161 08.7	50 47.1	08.6	114 02.2	53.2	152 35.9	06.4	195 34.0	07.7
15	176 11.2	65 46.3	08.3	129 03.1	53.6	167 38.4	06.4	210 36.6	07.8
16	191 13.6	80 45.5	08.0	144 04.0	54.1	182 40.9	06.4	225 39.3	07.8
17	206 16.1	95 44.7	07.7	159 04.8	54.6	197 43.4	06.3	240 41.9	07.9
18	221 18.6	110 43.9	N22 07.3	174 05.7	N15 55.0	212 45.9	N 2 06.3	255 44.6	S15 08.0
19	236 21.0	125 43.1	07.0	189 06.6	55.5	227 48.4	06.3	270 47.2	08.0
20	251 23.5	140 42.3	06.7	204 07.4	55.9	242 50.9	06.3	285 49.8	08.1
21	266 25.9	155 41.5	06.4	219 08.3	56.4	257 53.4	06.2	300 52.5	08.2
22	281 28.4	170 40.7	06.1	234 09.2	56.8	272 55.9	06.2	315 55.1	08.2
23	296 30.9	185 39.9	05.8	249 10.0	57.3	287 58.4	06.2	330 57.8	08.3
3 00	311 33.3	200 39.0	N22 05.4	264 10.9	N15 57.7	303 00.9	N 2 06.2	346 00.4	S15 08.3
01	326 35.8	215 38.2	05.1	279 11.8	58.2	318 03.4	06.1	1 03.0	08.4
02	341 38.3	230 37.4	04.8	294 12.6	58.6	333 05.9	06.1	16 05.7	08.5
03	356 40.7	245 36.6	04.5	309 13.5	59.1	348 08.4	06.1	31 08.3	08.5
04	11 43.2	260 35.8	04.1	324 14.4	15 59.5	3 10.9	06.0	46 11.0	08.6
05	26 45.7	275 35.0	03.8	339 15.3	16 00.0	18 13.4	06.0	61 13.6	08.7
06	41 48.1	290 34.2	N22 03.5	354 16.1	N16 00.4	33 15.9	N 2 06.0	76 16.2	S15 08.7
07	56 50.6	305 33.4	03.1	9 17.0	00.9	48 18.4	06.0	91 18.9	08.8
M 08	71 53.0	320 32.6	02.8	24 17.9	01.3	63 20.9	05.9	106 21.5	08.9
I 09	86 55.5	335 31.8	02.5	39 18.7	01.8	78 23.4	05.9	121 24.2	08.9
É 10	101 58.0	350 31.0	02.1	54 19.6	02.2	93 25.9	05.9	136 26.8	09.0
R 11	117 00.4	5 30.2	01.8	69 20.5	02.7	108 28.4	05.8	151 29.4	09.0
C 12	132 02.9	20 29.4	N22 01.5	84 21.3	N16 03.1	123 30.9	N 2 05.8	166 32.1	S15 09.1
O 13	147 05.4	35 28.6	01.1	99 22.2	03.6	138 33.4	05.8	181 34.7	09.2
L 14	162 07.8	50 27.8	00.8	114 23.1	04.0	153 35.9	05.8	196 37.4	09.2
E 15	177 10.3	65 27.0	00.5	129 23.9	04.5	168 38.4	05.7	211 40.0	09.3
S 16	192 12.8	80 26.2	22 00.1	144 24.8	04.9	183 40.9	05.7	226 42.6	09.4
17	207 15.2	95 25.4	21 59.8	159 25.7	05.3	198 43.4	05.7	241 45.3	09.4
18	222 17.7	110 24.6	N21 59.4	174 26.6	N16 05.8	213 45.9	N 2 05.6	256 47.9	S15 09.5
19	237 20.2	125 23.9	59.1	189 27.4	06.2	228 48.4	05.6	271 50.6	09.6
20	252 22.6	140 23.1	58.7	204 28.3	06.7	243 50.9	05.6	286 53.2	09.6
21	267 25.1	155 22.3	58.4	219 29.2	07.1	258 53.4	05.5	301 55.8	09.7
22	282 27.5	170 21.5	58.1	234 30.0	07.6	273 55.9	05.5	316 58.5	09.8
23	297 30.0	185 20.7	57.7	249 30.9	08.0	288 58.4	05.5	332 01.1	09.8
4 00	312 32.5	200 19.9	N21 57.4	264 31.8	N16 08.5	304 00.9	N 2 05.5	347 03.8	S15 09.9
01	327 34.9	215 19.1	57.0	279 32.7	08.9	319 03.5	05.4	2 06.4	09.9
02	342 37.4	230 18.3	56.7	294 33.5	09.4	334 06.0	05.4	17 09.0	10.0
03	357 39.9	245 17.5	56.3	309 34.4	09.8	349 08.5	05.4	32 11.7	10.1
04	12 42.3	260 16.7	56.0	324 35.3	10.2	4 11.0	05.3	47 14.3	10.1
05	27 44.8	275 15.9	55.6	339 36.2	10.7	19 13.5	05.3	62 17.0	10.2
06	42 47.3	290 15.1	N21 55.2	354 37.0	N16 11.1	34 16.0	N 2 05.3	77 19.6	S15 10.3
07	57 49.7	305 14.3	54.9	9 37.9	11.6	49 18.5	05.2	92 22.3	10.3
J 08	72 52.2	320 13.5	54.5	24 38.8	12.0	64 21.0	05.2	107 24.9	10.4
U 09	87 54.7	335 12.7	54.2	39 39.6	12.5	79 23.5	05.2	122 27.5	10.5
E 10	102 57.1	350 11.9	53.8	54 40.5	12.9	94 26.0	05.1	137 30.2	10.5
V 11	117 59.6	5 11.1	53.4	69 41.4	13.3	109 28.5	05.1	152 32.8	10.6
E 12	133 02.0	20 10.3	N21 53.1	84 42.3	N16 13.8	124 31.0	N 2 05.1	167 35.5	S15 10.6
S 13	148 04.5	35 09.5	52.7	99 43.1	14.2	139 33.5	05.0	182 38.1	10.7
14	163 07.0	50 08.7	52.4	114 44.0	14.7	154 36.1	05.0	197 40.7	10.8
15	178 09.4	65 07.9	52.0	129 44.9	15.1	169 38.6	05.0	212 43.4	10.8
16	193 11.9	80 07.1	51.6	144 45.8	15.6	184 41.1	04.9	227 46.0	10.9
17	208 14.4	95 06.3	51.3	159 46.6	16.0	199 43.6	04.9	242 48.7	11.0
18	223 16.8	110 05.5	N21 50.9	174 47.5	N16 16.4	214 46.1	N 2 04.9	257 51.3	S15 11.0
19	238 19.3	125 04.8	50.5	189 48.4	16.9	229 48.6	04.8	272 53.9	11.1
20	253 21.8	140 04.0	50.1	204 49.3	17.3	244 51.1	04.8	287 56.6	11.2
21	268 24.2	155 03.2	49.8	219 50.1	17.8	259 53.6	04.8	302 59.2	11.2
22	283 26.7	170 02.4	49.4	234 51.0	18.2	274 56.2	04.7	318 01.9	11.3
23	298 29.1	185 01.6	49.0	249 51.9	18.6	289 58.7	04.7	333 04.5	11.3
	h m								
Paso Mer.	3 13.2	*v* −0.8	*d* 0.3	*v* 0.9	*d* 0.4	*v* 2.5	*d* 0.0	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.3	S40 12.6
Achernar	335 21.6	S57 07.1
Acrux	173 02.7	S63 13.6
Adhara	255 07.8	S29 00.0
Aldebaran	290 42.1	N16 33.2
Alioth	166 15.0	N55 50.6
Alkaid	152 53.7	N49 12.4
Alnair	27 35.0	S46 51.0
Alnilam	275 40.0	S 1 11.2
Alphard	217 50.0	S 8 45.3
Alphecca	126 05.4	N26 38.6
Alpheratz	357 36.6	N29 12.8
Altair	62 01.6	N 8 55.7
Ankaa	353 08.9	S42 10.8
Antares	112 18.1	S26 28.9
Arcturus	145 49.8	N19 04.1
Atria	107 13.8	S69 04.2
Avior	234 16.2	S59 34.8
Bellatrix	278 25.3	N 6 22.3
Betelgeuse	270 54.5	N 7 24.7
Canopus	263 53.7	S52 42.2
Capella	280 25.2	N46 01.1
Deneb	49 26.7	N45 21.6
Denebola	182 27.2	N14 27.0
Diphda	348 49.1	S17 51.7
Dubhe	193 44.0	N61 38.0
Elnath	278 04.7	N28 37.5
Eltanin	90 42.7	N51 29.3
Enif	33 40.4	N 9 58.7
Fomalhaut	15 16.4	S29 30.1
Gacrux	171 54.2	S57 14.5
Gienah	175 45.8	S17 40.0
Hadar	148 38.9	S60 29.1
Hamal	327 53.4	N23 34.0
Kaus Aust.	83 34.8	S34 22.4
Kochab	137 19.7	N74 04.1
Markab	13 31.6	N15 19.6
Menkar	314 08.3	N 4 10.7
Menkent	148 00.0	S36 28.9
Miaplacidus	221 39.6	S69 48.5
Mirfak	308 31.2	N49 56.2
Nunki	75 49.9	S26 16.1
Peacock	53 08.3	S56 39.7
Pollux	243 20.1	N27 58.4
Procyon	244 53.3	N 5 10.1
Rasalhague	96 00.2	N12 32.8
Regulus	207 36.9	N11 51.6
Rigel	281 06.0	S 8 10.4
Rigil Kent.	139 43.1	S60 55.8
Sabik	102 04.9	S15 45.1
Schedar	349 33.0	N56 39.4
Shaula	96 12.8	S37 07.2
Sirius	258 28.3	S16 44.7
Spica	158 24.5	S11 16.7
Suhail	222 48.2	S43 31.3
Vega	80 34.2	N38 48.4
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	249 05.7	10 38
Marte	312 37.6	6 23
Júpiter	351 27.6	3 47
Saturno	34 27.1	0 56

UT (HmGr)	SOL AHGr	SOL Dec	LUNA AHGr	LUNA v	LUNA Dec	LUNA d	LUNA Ph
d h	° ′	° ′	° ′	′	° ′	′	′
2 00	178 24.9	N17 49.0	130 59.8	15.2	N 4 25.4	14.2	55.8
01	193 24.9	48.4	145 34.0	15.3	4 11.2	14.2	55.9
02	208 25.0	47.7	160 08.3	15.2	3 57.0	14.2	55.9
03	223 25.0	47.1	174 42.5	15.2	3 42.8	14.2	55.9
04	238 25.0	46.4	189 16.7	15.2	3 28.6	14.3	55.9
05	253 25.1	45.8	203 50.9	15.2	3 14.3	14.3	56.0
06	268 25.1	N17 45.2	218 25.1	15.1	N 3 00.0	14.3	56.0
07	283 25.2	44.5	232 59.2	15.2	2 45.7	14.3	56.0
M 08	298 25.2	43.9	247 33.4	15.2	2 31.4	14.4	56.0
09	313 25.3	43.2	262 07.6	15.1	2 17.0	14.4	56.1
A 10	328 25.3	42.6	276 41.7	15.1	2 02.6	14.4	56.1
R 11	343 25.3	41.9	291 15.8	15.1	1 48.2	14.4	56.1
T 12	358 25.4	N17 41.3	305 49.9	15.1	N 1 33.8	14.4	56.1
E 13	13 25.4	40.7	320 24.0	15.1	1 19.4	14.5	56.1
S 14	28 25.5	40.0	334 58.1	15.1	1 04.9	14.4	56.2
15	43 25.5	39.4	349 32.2	15.0	0 50.5	14.5	56.2
16	58 25.6	38.7	4 06.2	15.1	0 36.0	14.5	56.2
17	73 25.6	38.1	18 40.3	15.0	0 21.5	14.5	56.2
18	88 25.7	N17 37.4	33 14.3	14.9	N 0 07.0	14.6	56.3
19	103 25.7	36.8	47 48.2	15.0	S 0 07.6	14.5	56.3
20	118 25.8	36.1	62 22.2	14.9	0 22.1	14.6	56.3
21	133 25.8	35.5	76 56.1	14.9	0 36.7	14.5	56.3
22	148 25.9	34.8	91 30.0	14.9	0 51.2	14.6	56.4
23	163 25.9	34.2	106 03.9	14.9	1 05.8	14.6	56.4
3 00	178 26.0	N17 33.5	120 37.8	14.8	S 1 20.4	14.5	56.4
01	193 26.0	32.9	135 11.6	14.8	1 34.9	14.6	56.5
02	208 26.1	32.2	149 45.4	14.7	1 49.5	14.6	56.5
03	223 26.1	31.6	164 19.1	14.7	2 04.1	14.6	56.5
04	238 26.2	30.9	178 52.8	14.7	2 18.7	14.6	56.5
05	253 26.2	30.3	193 26.5	14.7	2 33.3	14.6	56.6
06	268 26.3	N17 29.6	208 00.2	14.6	S 2 47.9	14.6	56.6
07	283 26.3	29.0	222 33.8	14.6	3 02.5	14.6	56.6
M 08	298 26.4	28.3	237 07.4	14.5	3 17.1	14.6	56.6
I 09	313 26.4	27.7	251 40.9	14.5	3 31.7	14.6	56.7
É 10	328 26.5	27.0	266 14.4	14.4	3 46.3	14.6	56.7
R 11	343 26.5	26.3	280 47.8	14.4	4 00.9	14.6	56.7
C 12	358 26.6	N17 25.7	295 21.2	14.4	S 4 15.5	14.6	56.7
O 13	13 26.6	25.0	309 54.6	14.3	4 30.1	14.6	56.8
L 14	28 26.7	24.4	324 27.9	14.3	4 44.7	14.6	56.8
E 15	43 26.7	23.7	339 01.2	14.2	4 59.3	14.6	56.8
S 16	58 26.8	23.1	353 34.4	14.2	5 13.9	14.5	56.9
17	73 26.8	22.4	8 07.6	14.1	5 28.4	14.6	56.9
18	88 26.9	N17 21.7	22 40.7	14.1	S 5 43.0	14.5	56.9
19	103 26.9	21.1	37 13.8	14.0	5 57.5	14.5	56.9
20	118 27.0	20.4	51 46.8	13.9	6 12.0	14.6	57.0
21	133 27.1	19.8	66 19.7	13.9	6 26.6	14.5	57.0
22	148 27.1	19.1	80 52.6	13.9	6 41.1	14.4	57.0
23	163 27.2	18.4	95 25.5	13.8	6 55.5	14.5	57.1
4 00	178 27.2	N17 17.8	109 58.3	13.7	S 7 10.0	14.5	57.1
01	193 27.3	17.1	124 31.0	13.7	7 24.5	14.4	57.1
02	208 27.3	16.4	139 03.7	13.6	7 38.9	14.4	57.1
03	223 27.4	15.8	153 36.3	13.5	7 53.3	14.4	57.2
04	238 27.4	15.1	168 08.8	13.5	8 07.7	14.4	57.2
05	253 27.5	14.5	182 41.3	13.4	8 22.1	14.3	57.2
06	268 27.6	N17 13.8	197 13.7	13.3	S 8 36.4	14.3	57.3
07	283 27.6	13.1	211 46.0	13.3	8 50.7	14.3	57.3
J 08	298 27.7	12.5	226 18.3	13.2	9 05.0	14.3	57.3
U 09	313 27.7	11.8	240 50.5	13.1	9 19.3	14.3	57.4
E 10	328 27.8	11.1	255 22.6	13.0	9 33.6	14.2	57.4
V 11	343 27.8	10.5	269 54.6	13.0	9 47.8	14.1	57.4
E 12	358 27.9	N17 09.8	284 26.6	12.9	S10 01.9	14.2	57.4
S 13	13 28.0	09.1	298 58.5	12.8	10 16.1	14.1	57.5
14	28 28.0	08.5	313 30.3	12.8	10 30.2	14.1	57.5
15	43 28.1	07.8	328 02.1	12.7	10 44.3	14.0	57.5
16	58 28.1	07.1	342 33.8	12.5	10 58.3	14.0	57.6
17	73 28.2	06.4	357 05.3	12.5	11 12.3	14.0	57.6
18	88 28.3	N17 05.8	11 36.8	12.5	S11 26.3	13.9	57.6
19	103 28.3	05.1	26 08.3	12.3	11 40.2	13.9	57.7
20	118 28.4	04.4	40 39.6	12.3	11 54.1	13.9	57.7
21	133 28.4	03.8	55 10.9	12.1	12 08.0	13.8	57.7
22	148 28.5	03.1	69 42.0	12.1	12 21.8	13.7	57.7
23	163 28.6	02.4	84 13.1	12.0	S12 35.5	13.7	57.8
	S/D 15.8	d 0.7	S/D	15.3		15.5	15.7

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 2	Orto Luna 3	Orto Luna 4	Orto Luna 5
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	09 05	11 09	13 24	16 23
N 70	////	////	01 43	09 08	11 03	13 06	15 32
68	////	////	02 25	09 11	10 58	12 52	15 00
66	////	00 52	02 53	09 13	10 54	12 40	14 37
64	////	01 51	03 14	09 15	10 50	12 31	14 19
62	////	02 23	03 31	09 16	10 47	12 23	14 04
60	00 47	02 46	03 45	09 18	10 45	12 16	13 52
N 58	01 40	03 05	03 57	09 19	10 43	12 10	13 42
56	02 10	03 20	04 08	09 20	10 41	12 04	13 32
54	02 32	03 33	04 17	09 21	10 39	11 59	13 24
52	02 49	03 44	04 25	09 22	10 37	11 55	13 17
50	03 04	03 54	04 32	09 22	10 36	11 51	13 11
45	03 32	04 14	04 47	09 24	10 32	11 43	12 57
N 40	03 53	04 30	05 00	09 25	10 30	11 36	12 45
35	04 10	04 43	05 11	09 27	10 27	11 30	12 36
30	04 23	04 54	05 20	09 28	10 25	11 25	12 27
20	04 45	05 13	05 36	09 30	10 22	11 16	12 13
N 10	05 02	05 28	05 50	09 31	10 19	11 08	12 01
0	05 16	05 41	06 03	09 33	10 16	11 01	11 49
S 10	05 28	05 53	06 15	09 34	10 13	10 54	11 37
20	05 39	06 06	06 29	09 36	10 10	10 46	11 25
30	05 50	06 19	06 44	09 38	10 07	10 38	11 11
35	05 56	06 26	06 53	09 39	10 05	10 33	11 03
40	06 02	06 34	07 03	09 40	10 03	10 27	10 54
45	06 08	06 43	07 14	09 42	10 01	10 21	10 44
S 50	06 15	06 54	07 29	09 44	09 58	10 13	10 31
52	06 18	06 58	07 35	09 44	09 56	10 10	10 25
54	06 21	07 03	07 42	09 45	09 55	10 06	10 19
56	06 24	07 09	07 51	09 46	09 53	10 02	10 12
58	06 28	07 15	08 00	09 47	09 52	09 57	10 04
S 60	06 31	07 22	08 10	09 48	09 50	09 52	09 55

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 2	Ocaso Luna 3	Ocaso Luna 4	Ocaso Luna 5
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	21 42	21 11	20 32	19 15
N 70	22 23	////	////	21 44	21 21	20 53	20 09
68	21 44	////	////	21 44	21 28	21 09	20 42
66	21 16	23 09	////	21 45	21 34	21 22	21 06
64	20 56	22 17	////	21 46	21 40	21 33	21 25
62	20 39	21 46	////	21 47	21 44	21 43	21 41
60	20 26	21 24	23 15	21 47	21 49	21 51	21 55
N 58	20 14	21 06	22 28	21 48	21 52	21 58	22 06
56	20 04	20 51	22 00	21 48	21 56	22 04	22 16
54	19 55	20 38	21 39	21 48	21 58	22 10	22 25
52	19 47	20 27	21 22	21 49	22 01	22 15	22 33
50	19 39	20 18	21 07	21 49	22 04	22 20	22 40
45	19 24	19 58	20 39	21 50	22 09	22 30	22 55
N 40	19 12	19 42	20 19	21 50	22 13	22 39	23 08
35	19 01	19 29	20 02	21 51	22 17	22 46	23 19
30	18 52	19 18	19 49	21 51	22 21	22 53	23 29
20	18 36	18 59	19 27	21 52	22 27	23 04	23 45
N 10	18 22	18 44	19 10	21 53	22 32	23 14	24 00
0	18 10	18 31	18 57	21 53	22 37	23 23	24 13
S 10	17 57	18 19	18 44	21 54	22 42	23 33	24 27
20	17 44	18 07	18 33	21 55	22 47	23 43	24 42
30	17 29	17 54	18 23	21 55	22 54	23 54	24 59
35	17 20	17 47	18 17	21 56	22 57	24 01	00 01
40	17 10	17 39	18 11	21 56	23 01	24 09	00 09
45	16 58	17 30	18 05	21 57	23 06	24 18	00 18
S 50	16 44	17 20	17 58	21 57	23 11	24 29	00 29
52	16 38	17 15	17 56	21 57	23 14	24 34	00 34
54	16 31	17 10	17 53	21 58	23 17	24 39	00 39
56	16 23	17 04	17 49	21 58	23 20	24 46	00 46
58	16 14	16 58	17 46	21 58	23 24	24 53	00 53
S 60	16 03	16 51	17 42	21 59	23 27	25 00	01 00

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d	%
2	06 21	06 19	12 06	15 43	03 22	05	21
3	06 16	06 14	12 06	16 27	04 05	06	30
4	06 11	06 09	12 06	17 12	04 49	07	40

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·1		JÚPITER −2·7		SATURNO +0·3	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
5 00	313 31.6	200 00.8	N21 48.6	264 52.8	N16 19.1	305 01.2	N 2 04.7	348 07.2	S15 11.4
01	328 34.1	215 00.0	48.3	279 53.6	19.5	320 03.7	04.6	3 09.8	11.5
02	343 36.5	229 59.2	47.9	294 54.5	19.9	335 06.2	04.6	18 12.4	11.5
03	358 39.0	244 58.4	47.5	309 55.4	20.4	350 08.7	04.6	33 15.1	11.6
04	13 41.5	259 57.6	47.1	324 56.3	20.8	5 11.2	04.5	48 17.7	11.7
05	28 43.9	274 56.8	46.8	339 57.2	21.3	20 13.8	04.5	63 20.4	11.7
06	43 46.4	289 56.0	N21 46.4	354 58.0	N16 21.7	35 16.3	N 2 04.5	78 23.0	S15 11.8
07	58 48.9	304 55.3	46.0	9 58.9	22.1	50 18.8	04.4	93 25.6	11.9
08	73 51.3	319 54.5	45.6	24 59.8	22.6	65 21.3	04.4	108 28.3	11.9
V 09	88 53.8	334 53.7	45.2	40 00.7	23.0	80 23.8	04.4	123 30.9	12.0
I 10	103 56.3	349 52.9	44.8	55 01.5	23.4	95 26.3	04.3	138 33.6	12.1
E 11	118 58.7	4 52.1	44.4	70 02.4	23.9	110 28.8	04.3	153 36.2	12.1
R 12	134 01.2	19 51.3	N21 44.1	85 03.3	N16 24.3	125 31.4	N 2 04.3	168 38.9	S15 12.2
N 13	149 03.6	34 50.5	43.7	100 04.2	24.7	140 33.9	04.2	183 41.5	12.2
E 14	164 06.1	49 49.7	43.3	115 05.1	25.2	155 36.4	04.2	198 44.1	12.3
S 15	179 08.6	64 48.9	42.9	130 05.9	25.6	170 38.9	04.1	213 46.8	12.4
16	194 11.0	79 48.2	42.5	145 06.8	26.0	185 41.4	04.1	228 49.4	12.4
17	209 13.5	94 47.4	42.1	160 07.7	26.5	200 44.0	04.1	243 52.1	12.5
18	224 16.0	109 46.6	N21 41.7	175 08.6	N16 26.9	215 46.5	N 2 04.0	258 54.7	S15 12.6
19	239 18.4	124 45.8	41.3	190 09.5	27.3	230 49.0	04.0	273 57.4	12.6
20	254 20.9	139 45.0	40.9	205 10.3	27.8	245 51.5	04.0	289 00.0	12.7
21	269 23.4	154 44.2	40.5	220 11.2	28.2	260 54.0	03.9	304 02.6	12.8
22	284 25.8	169 43.4	40.1	235 12.1	28.6	275 56.6	03.9	319 05.3	12.8
23	299 28.3	184 42.6	39.7	250 13.0	29.1	290 59.1	03.8	334 07.9	12.9
6 00	314 30.8	199 41.9	N21 39.3	265 13.9	N16 29.5	306 01.6	N 2 03.8	349 10.6	S15 13.0
01	329 33.2	214 41.1	38.9	280 14.7	29.9	321 04.1	03.8	4 13.2	13.0
02	344 35.7	229 40.3	38.5	295 15.6	30.4	336 06.6	03.7	19 15.9	13.1
03	359 38.1	244 39.5	38.1	310 16.5	30.8	351 09.2	03.7	34 18.5	13.1
04	14 40.6	259 38.7	37.7	325 17.4	31.2	6 11.7	03.7	49 21.1	13.2
05	29 43.1	274 37.9	37.3	340 18.3	31.7	21 14.2	03.6	64 23.8	13.3
06	44 45.5	289 37.1	N21 36.9	355 19.1	N16 32.1	36 16.7	N 2 03.6	79 26.4	S15 13.3
07	59 48.0	304 36.4	36.5	10 20.0	32.5	51 19.2	03.5	94 29.1	13.4
S 08	74 50.5	319 35.6	36.1	25 20.9	33.0	66 21.8	03.5	109 31.7	13.5
Á 09	89 52.9	334 34.8	35.6	40 21.8	33.4	81 24.3	03.5	124 34.4	13.5
B 10	104 55.4	349 34.0	35.2	55 22.7	33.8	96 26.8	03.4	139 37.0	13.6
A 11	119 57.9	4 33.2	34.8	70 23.5	34.2	111 29.3	03.4	154 39.6	13.7
D 12	135 00.3	19 32.4	N21 34.4	85 24.4	N16 34.7	126 31.9	N 2 03.4	169 42.3	S15 13.7
O 13	150 02.8	34 31.7	34.0	100 25.3	35.1	141 34.4	03.3	184 44.9	13.8
14	165 05.2	49 30.9	33.6	115 26.2	35.5	156 36.9	03.3	199 47.6	13.8
15	180 07.7	64 30.1	33.1	130 27.1	36.0	171 39.4	03.2	214 50.2	13.9
16	195 10.2	79 29.3	32.7	145 28.0	36.4	186 42.0	03.2	229 52.9	14.0
17	210 12.6	94 28.5	32.3	160 28.8	36.8	201 44.5	03.2	244 55.5	14.0
18	225 15.1	109 27.7	N21 31.9	175 29.7	N16 37.2	216 47.0	N 2 03.1	259 58.1	S15 14.1
19	240 17.6	124 27.0	31.5	190 30.6	37.7	231 49.6	03.1	275 00.8	14.2
20	255 20.0	139 26.2	31.0	205 31.5	38.1	246 52.1	03.0	290 03.4	14.2
21	270 22.5	154 25.4	30.6	220 32.4	38.5	261 54.6	03.0	305 06.1	14.3
22	285 25.0	169 24.6	30.2	235 33.3	38.9	276 57.1	03.0	320 08.7	14.4
23	300 27.4	184 23.8	29.8	250 34.2	39.4	291 59.7	02.9	335 11.4	14.4
7 00	315 29.9	199 23.1	N21 29.3	265 35.0	N16 39.8	307 02.2	N 2 02.9	350 14.0	S15 14.5
01	330 32.4	214 22.3	28.9	280 35.9	40.2	322 04.7	02.8	5 16.6	14.6
02	345 34.8	229 21.5	28.5	295 36.8	40.6	337 07.2	02.8	20 19.3	14.6
03	0 37.3	244 20.7	28.0	310 37.7	41.1	352 09.8	02.8	35 21.9	14.7
04	15 39.7	259 19.9	27.6	325 38.6	41.5	7 12.3	02.7	50 24.6	14.7
05	30 42.2	274 19.2	27.2	340 39.5	41.9	22 14.8	02.7	65 27.2	14.8
06	45 44.7	289 18.4	N21 26.7	355 40.4	N16 42.3	37 17.4	N 2 02.6	80 29.9	S15 14.9
07	60 47.1	304 17.6	26.3	10 41.2	42.8	52 19.9	02.6	95 32.5	14.9
D 08	75 49.6	319 16.8	25.9	25 42.1	43.2	67 22.4	02.6	110 35.1	15.0
O 09	90 52.1	334 16.0	25.4	40 43.0	43.6	82 25.0	02.5	125 37.8	15.1
M 10	105 54.5	349 15.3	25.0	55 43.9	44.0	97 27.5	02.5	140 40.4	15.1
I 11	120 57.0	4 14.5	24.6	70 44.8	44.5	112 30.0	02.4	155 43.1	15.2
N 12	135 59.5	19 13.7	N21 24.1	85 45.7	N16 44.9	127 32.6	N 2 02.4	170 45.7	S15 15.3
G 13	151 01.9	34 12.9	23.7	100 46.6	45.3	142 35.1	02.3	185 48.4	15.3
O 14	166 04.4	49 12.2	23.2	115 47.4	45.7	157 37.6	02.3	200 51.0	15.4
15	181 06.9	64 11.4	22.8	130 48.3	46.1	172 40.2	02.3	215 53.7	15.5
16	196 09.3	79 10.6	22.3	145 49.2	46.6	187 42.7	02.2	230 56.3	15.5
17	211 11.8	94 09.8	21.9	160 50.1	47.0	202 45.2	02.2	245 58.9	15.6
18	226 14.2	109 09.1	N21 21.4	175 51.0	N16 47.4	217 47.8	N 2 02.1	261 01.6	S15 15.6
19	241 16.7	124 08.3	21.0	190 51.9	47.8	232 50.3	02.1	276 04.2	15.7
20	256 19.2	139 07.5	20.5	205 52.8	48.2	247 52.8	02.0	291 06.9	15.8
21	271 21.6	154 06.7	20.1	220 53.7	48.7	262 55.4	02.0	306 09.5	15.8
22	286 24.1	169 06.0	19.6	235 54.6	49.1	277 57.9	02.0	321 12.2	15.9
23	301 26.6	184 05.2	19.2	250 55.4	49.5	293 00.4	01.9	336 14.8	16.0
	h m								
Paso Mer.	3 01.5	*v* −0.8	*d* 0.4	*v* 0.9	*d* 0.4	*v* 2.5	*d* 0.0	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.3	S40 12.6
Achernar	335 21.5	S57 07.1
Acrux	173 02.7	S63 13.6
Adhara	255 07.8	S29 00.0
Aldebaran	290 42.1	N16 33.2
Alioth	166 15.0	N55 50.6
Alkaid	152 53.7	N49 12.4
Alnair	27 35.0	S46 51.0
Alnilam	275 40.0	S 1 11.2
Alphard	217 50.0	S 8 45.2
Alphecca	126 05.4	N26 38.6
Alpheratz	357 36.6	N29 12.8
Altair	62 01.6	N 8 55.7
Ankaa	353 08.9	S42 10.8
Antares	112 18.1	S26 28.9
Arcturus	145 49.8	N19 04.1
Atria	107 13.8	S69 04.2
Avior	234 16.2	S59 34.8
Bellatrix	278 25.2	N 6 22.3
Betelgeuse	270 54.5	N 7 24.7
Canopus	263 53.7	S52 42.2
Capella	280 25.1	N46 01.1
Deneb	49 26.7	N45 21.7
Denebola	182 27.2	N14 27.0
Diphda	348 49.1	S17 51.7
Dubhe	193 44.0	N61 38.0
Elnath	278 04.6	N28 37.5
Eltanin	90 42.7	N51 29.4
Enif	33 40.4	N 9 58.7
Fomalhaut	15 16.4	S29 30.1
Gacrux	171 54.2	S57 14.5
Gienah	175 45.9	S17 40.0
Hadar	148 38.9	S60 29.1
Hamal	327 53.4	N23 34.0
Kaus Aust.	83 34.8	S34 22.4
Kochab	137 19.8	N74 04.1
Markab	13 31.6	N15 19.6
Menkar	314 08.3	N 4 10.7
Menkent	148 00.0	S36 28.9
Miaplacidus	221 39.6	S69 48.5
Mirfak	308 31.2	N49 56.2
Nunki	75 49.9	S26 16.1
Peacock	53 08.3	S56 39.7
Pollux	243 20.1	N27 58.4
Procyon	244 53.2	N 5 10.1
Rasalhague	96 00.2	N12 32.8
Regulus	207 36.9	N11 51.6
Rigel	281 06.0	S 8 10.4
Rigil Kent.	139 43.1	S60 55.8
Sabik	102 04.9	S15 45.1
Schedar	349 33.0	N56 39.4
Shaula	96 12.8	S37 07.2
Sirius	258 28.3	S16 44.7
Spica	158 24.5	S11 16.6
Suhail	222 48.2	S43 31.3
Vega	80 34.2	N38 48.4
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	245 11.1	10 42
Marte	310 43.1	6 19
Júpiter	351 30.8	3 35
Saturno	34 39.8	0 43

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	′	°	′	′	′
5 00	178	28.6	N17	01.7	98	44.1	11.9	S12	49.2	13.7	57.8
01	193	28.7		01.1	113	15.0	11.8	13	02.9	13.6	57.8
02	208	28.8	17	00.4	127	45.8	11.7	13	16.5	13.6	57.9
03	223	28.8	16	59.7	142	16.5	11.6	13	30.1	13.5	57.9
04	238	28.9		59.0	156	47.1	11.5	13	43.6	13.5	57.9
05	253	28.9		58.4	171	17.6	11.5	13	57.1	13.4	58.0
06	268	29.0	N16	57.7	185	48.1	11.3	S14	10.5	13.3	58.0
07	283	29.1		57.0	200	18.4	11.2	14	23.8	13.3	58.0
08	298	29.1		56.3	214	48.6	11.2	14	37.1	13.2	58.1
09	313	29.2	. .	55.7	229	18.8	11.0	14	50.3	13.2	58.1
10	328	29.3		55.0	243	48.8	10.9	15	03.5	13.1	58.1
11	343	29.3		54.3	258	18.7	10.8	15	16.6	13.0	58.2
12	358	29.4	N16	53.6	272	48.5	10.8	S15	29.6	13.0	58.2
13	13	29.5		52.9	287	18.3	10.6	15	42.6	12.9	58.2
14	28	29.5		52.3	301	47.9	10.5	15	55.5	12.8	58.2
15	43	29.6	. .	51.6	316	17.4	10.4	16	08.3	12.8	58.3
16	58	29.7		50.9	330	46.8	10.3	16	21.1	12.7	58.3
17	73	29.7		50.2	345	16.1	10.2	16	33.8	12.6	58.3
18	88	29.8	N16	49.5	359	45.3	10.0	S16	46.4	12.6	58.4
19	103	29.9		48.8	14	14.3	10.0	16	59.0	12.4	58.4
20	118	29.9		48.2	28	43.3	9.8	17	11.4	12.4	58.4
21	133	30.0	. .	47.5	43	12.1	9.8	17	23.8	12.3	58.5
22	148	30.1		46.8	57	40.9	9.6	17	36.1	12.2	58.5
23	163	30.1		46.1	72	09.5	9.5	17	48.3	12.2	58.5
6 00	178	30.2	N16	45.4	86	38.0	9.4	S18	00.5	12.0	58.6
01	193	30.3		44.7	101	06.4	9.3	18	12.5	12.0	58.6
02	208	30.3		44.1	115	34.7	9.2	18	24.5	11.9	58.6
03	223	30.4	. .	43.4	130	02.9	9.0	18	36.4	11.8	58.7
04	238	30.5		42.7	144	30.9	8.9	18	48.2	11.7	58.7
05	253	30.5		42.0	158	58.8	8.8	18	59.9	11.6	58.7
06	268	30.6	N16	41.3	173	26.6	8.7	S19	11.5	11.5	58.8
07	283	30.7		40.6	187	54.3	8.6	19	23.0	11.4	58.8
08	298	30.7		39.9	202	21.9	8.4	19	34.4	11.3	58.8
09	313	30.8	. .	39.2	216	49.3	8.4	19	45.7	11.2	58.9
10	328	30.9		38.5	231	16.7	8.2	19	56.9	11.1	58.9
11	343	31.0		37.9	245	43.9	8.0	20	08.0	11.0	58.9
12	358	31.0	N16	37.2	260	10.9	8.0	S20	19.0	10.9	58.9
13	13	31.1		36.5	274	37.9	7.8	20	29.9	10.8	59.0
14	28	31.2		35.8	289	04.7	7.7	20	40.7	10.6	59.0
15	43	31.2	. .	35.1	303	31.4	7.6	20	51.3	10.6	59.0
16	58	31.3		34.4	317	58.0	7.5	21	01.9	10.4	59.1
17	73	31.4		33.7	332	24.5	7.3	21	12.3	10.4	59.1
18	88	31.5	N16	33.0	346	50.8	7.3	S21	22.7	10.2	59.1
19	103	31.5		32.3	1	17.1	7.1	21	32.9	10.1	59.2
20	118	31.6		31.6	15	43.2	6.9	21	43.0	9.9	59.2
21	133	31.7	. .	30.9	30	09.1	6.9	21	52.9	9.9	59.2
22	148	31.8		30.2	44	35.0	6.7	22	02.8	9.7	59.3
23	163	31.8		29.5	59	00.7	6.6	22	12.5	9.6	59.3
7 00	178	31.9	N16	28.8	73	26.3	6.5	S22	22.1	9.4	59.3
01	193	32.0		28.1	87	51.8	6.3	22	31.5	9.4	59.3
02	208	32.1		27.5	102	17.1	6.3	22	40.9	9.1	59.4
03	223	32.1	. .	26.8	116	42.4	6.1	22	50.0	9.1	59.4
04	238	32.2		26.1	131	07.5	5.9	22	59.1	8.9	59.4
05	253	32.3		25.4	145	32.4	5.9	23	08.0	8.8	59.5
06	268	32.4	N16	24.7	159	57.3	5.8	S23	16.8	8.7	59.5
07	283	32.4		24.0	174	22.1	5.6	23	25.5	8.5	59.5
08	298	32.5		23.3	188	46.7	5.5	23	34.0	8.3	59.6
09	313	32.6	. .	22.6	203	11.2	5.4	23	42.3	8.2	59.6
10	328	32.7		21.9	217	35.6	5.2	23	50.5	8.1	59.6
11	343	32.7		21.2	231	59.8	5.2	23	58.6	7.9	59.6
12	358	32.8	N16	20.5	246	24.0	5.0	S24	06.5	7.7	59.7
13	13	32.9		19.8	260	48.0	4.9	24	14.2	7.6	59.7
14	28	33.0		19.1	275	11.9	4.8	24	21.8	7.5	59.7
15	43	33.1	. .	18.3	289	35.7	4.7	24	29.3	7.3	59.8
16	58	33.1		17.6	303	59.4	4.5	24	36.6	7.1	59.8
17	73	33.2		16.9	318	22.9	4.5	24	43.7	7.0	59.8
18	88	33.3	N16	16.2	332	46.4	4.3	S24	50.7	6.8	59.8
19	103	33.4		15.5	347	09.7	4.3	24	57.5	6.6	59.9
20	118	33.5		14.8	1	33.0	4.1	25	04.1	6.5	59.9
21	133	33.5	. .	14.1	15	56.1	4.0	25	10.6	6.3	59.9
22	148	33.6		13.4	30	19.1	3.9	25	16.9	6.2	59.9
23	163	33.7		12.7	44	42.0	3.9	S25	23.1	5.9	60.0
	S/D	15.8	d	0.7	S/D	15.9		16.1			16.3

Lat.	Aurora		Orto	Orto Luna			
	Náut.	Civil	Sol	5	6	7	8
°	h m	h m	h m	h m	h m	h m	h m
N 72	////	////	00 57	16 23			
N 70	////	////	02 04	15 32			
68	////	////	02 39	15 00	18 03		
66	////	01 23	03 04	14 37	16 56		
64	////	02 06	03 24	14 19	16 20	18 46	
62	////	02 34	03 39	14 04	15 55	17 54	19 47
60	01 15	02 55	03 52	13 52	15 35	17 22	18 59
N 58	01 54	03 12	04 04	13 42	15 19	16 58	18 28
56	02 20	03 27	04 13	13 32	15 05	16 39	18 05
54	02 40	03 39	04 22	13 24	14 53	16 23	17 46
52	02 56	03 49	04 29	13 17	14 43	16 10	17 30
50	03 10	03 59	04 36	13 11	14 34	15 58	17 16
45	03 36	04 18	04 51	12 57	14 14	15 33	16 48
N 40	03 57	04 33	05 03	12 45	13 58	15 13	16 26
35	04 12	04 46	05 13	12 36	13 45	14 57	16 08
30	04 26	04 56	05 22	12 27	13 34	14 43	15 52
20	04 46	05 14	05 37	12 13	13 14	14 19	15 26
N 10	05 03	05 28	05 50	12 01	12 57	13 58	15 03
0	05 16	05 41	06 02	11 49	12 41	13 39	14 42
S 10	05 27	05 53	06 15	11 37	12 26	13 20	14 20
20	05 38	06 04	06 27	11 25	12 09	13 00	13 58
30	05 48	06 17	06 42	11 11	11 50	12 37	13 32
35	05 53	06 24	06 50	11 03	11 39	12 23	13 16
40	05 59	06 31	07 00	10 54	11 27	12 07	12 59
45	06 04	06 39	07 11	10 44	11 12	11 49	12 37
S 50	06 10	06 49	07 24	10 31	10 54	11 26	12 10
52	06 13	06 54	07 30	10 25	10 46	11 15	11 57
54	06 16	06 58	07 37	10 19	10 37	11 03	11 42
56	06 19	07 04	07 44	10 12	10 26	10 48	11 25
58	06 22	07 09	07 53	10 04	10 14	10 32	11 04
S 60	06 25	07 16	08 03	09 55	10 01	10 12	10 37

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	5	6	7	8
°	h m	h m	h m	h m	h m	h m	h m
N 72	23 01	////	////	19 15			
N 70	22 02	////	////	20 09			
68	21 29	////	////	20 42	19 30		
66	21 05	22 42	////	21 06	20 39		
64	20 46	22 01	////	21 25	21 15	20 52	
62	20 31	21 34	////	21 41	21 41	21 45	22 04
60	20 18	21 14	22 51	21 55	22 02	22 17	22 52
N 58	20 07	20 57	22 14	22 06	22 19	22 41	23 23
56	19 57	20 43	21 49	22 16	22 33	23 01	23 47
54	19 49	20 32	21 30	22 25	22 46	23 17	24 06
52	19 41	20 21	21 14	22 33	22 57	23 31	24 22
50	19 35	20 12	21 01	22 40	23 06	23 43	24 36
45	19 20	19 53	20 34	22 55	23 27	24 09	00 09
N 40	19 08	19 38	20 14	23 08	23 44	24 29	00 29
35	18 58	19 26	19 59	23 19	23 58	24 46	00 46
30	18 49	19 15	19 46	23 29	24 11	00 11	01 01
20	18 34	18 58	19 25	23 45	24 32	00 32	01 26
N 10	18 21	18 43	19 09	24 00	00 00	00 51	01 48
0	18 09	18 31	18 56	24 13	00 13	01 08	02 08
S 10	17 57	18 19	18 45	24 27	00 27	01 26	02 29
20	17 45	18 08	18 34	24 42	00 42	01 44	02 50
30	17 30	17 55	18 24	24 59	00 59	02 06	03 16
35	17 22	17 49	18 19	00 01	01 08	02 19	03 31
40	17 13	17 41	18 14	00 09	01 20	02 34	03 48
45	17 02	17 33	18 08	00 18	01 33	02 51	04 09
S 50	16 49	17 23	18 02	00 29	01 50	03 13	04 35
52	16 42	17 19	17 59	00 34	01 57	03 24	04 48
54	16 36	17 14	17 57	00 39	02 06	03 36	05 03
56	16 28	17 09	17 54	00 46	02 16	03 49	05 20
58	16 20	17 03	17 51	00 53	02 27	04 05	05 41
S 60	16 10	16 57	17 47	01 00	02 40	04 24	06 07

Día	SOL			LUNA				
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
5	06 06	06 03	12 06	18 01	05 36	08	51
6	05 59	05 56	12 06	18 55	06 27	09	62
7	05 53	05 49	12 06	19 54	07 23	10	72

VIERNES SÁBADO DOMINGO

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·1		JÚPITER −2·7		SATURNO +0·3	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
8 00	316 29.0	199 04.4	N21 18.7	265 56.3	N16 49.9	308 03.0	N 2 01.9	351 17.4	S15 16.0
01	331 31.5	214 03.6	18.3	280 57.2	50.3	323 05.5	01.8	6 20.1	16.1
02	346 34.0	229 02.9	17.8	295 58.1	50.8	338 08.0	01.8	21 22.7	16.2
03	1 36.4	244 02.1	17.4	310 59.0	51.2	353 10.6	01.7	36 25.4	16.2
04	16 38.9	259 01.3	16.9	325 59.9	51.6	8 13.1	01.7	51 28.0	16.3
05	31 41.4	274 00.5	16.5	341 00.8	52.0	23 15.6	01.7	66 30.7	16.4
06	46 43.8	288 59.8	N21 16.0	356 01.7	N16 52.4	38 18.2	N 2 01.6	81 33.3	S15 16.4
07	61 46.3	303 59.0	15.5	11 02.6	52.9	53 20.7	01.6	96 36.0	16.5
08	76 48.7	318 58.2	15.1	26 03.5	53.3	68 23.3	01.5	111 38.6	16.5
L 09	91 51.2	333 57.4	14.6	41 04.3	53.7	83 25.8	01.5	126 41.2	16.6
U 10	106 53.7	348 56.7	14.1	56 05.2	54.1	98 28.3	01.4	141 43.9	16.7
N 11	121 56.1	3 55.9	13.7	71 06.1	54.5	113 30.9	01.4	156 46.5	16.7
E 12	136 58.6	18 55.1	N21 13.2	86 07.0	N16 54.9	128 33.4	N 2 01.3	171 49.2	S15 16.8
S 13	152 01.1	33 54.4	12.7	101 07.9	55.4	143 36.0	01.3	186 51.8	16.9
14	167 03.5	48 53.6	12.3	116 08.8	55.8	158 38.5	01.3	201 54.5	16.9
15	182 06.0	63 52.8	11.8	131 09.7	56.2	173 41.0	01.2	216 57.1	17.0
16	197 08.5	78 52.1	11.3	146 10.6	56.6	188 43.6	01.2	231 59.8	17.1
17	212 10.9	93 51.3	10.9	161 11.5	57.0	203 46.1	01.1	247 02.4	17.1
18	227 13.4	108 50.5	N21 10.4	176 12.4	N16 57.4	218 48.7	N 2 01.1	262 05.0	S15 17.2
19	242 15.9	123 49.7	09.9	191 13.3	57.8	233 51.2	01.0	277 07.7	17.3
20	257 18.3	138 49.0	09.4	206 14.2	58.3	248 53.7	01.0	292 10.3	17.3
21	272 20.8	153 48.2	09.0	221 15.1	58.7	263 56.3	00.9	307 13.0	17.4
22	287 23.2	168 47.4	08.5	236 16.0	59.1	278 58.8	00.9	322 15.6	17.4
23	302 25.7	183 46.7	08.0	251 16.8	59.5	294 01.4	00.8	337 18.3	17.5
9 00	317 28.2	198 45.9	N21 07.5	266 17.7	N16 59.9	309 03.9	N 2 00.8	352 20.9	S15 17.6
01	332 30.6	213 45.1	07.0	281 18.6	17 00.3	324 06.5	00.7	7 23.6	17.6
02	347 33.1	228 44.4	06.6	296 19.5	00.7	339 09.0	00.7	22 26.2	17.7
03	2 35.6	243 43.6	06.1	311 20.4	01.1	354 11.5	00.7	37 28.9	17.8
04	17 38.0	258 42.8	05.6	326 21.3	01.6	9 14.1	00.6	52 31.5	17.8
05	32 40.5	273 42.1	05.1	341 22.2	02.0	24 16.6	00.6	67 34.1	17.9
06	47 43.0	288 41.3	N21 04.6	356 23.1	N17 02.4	39 19.2	N 2 00.5	82 36.8	S15 18.0
07	62 45.4	303 40.5	04.1	11 24.0	02.8	54 21.7	00.5	97 39.4	18.0
M 08	77 47.9	318 39.8	03.7	26 24.9	03.2	69 24.3	00.4	112 42.1	18.1
A 09	92 50.4	333 39.0	03.2	41 25.8	03.6	84 26.8	00.4	127 44.7	18.2
R 10	107 52.8	348 38.3	02.7	56 26.7	04.0	99 29.4	00.3	142 47.4	18.2
T 11	122 55.3	3 37.5	02.2	71 27.6	04.4	114 31.9	00.3	157 50.0	18.3
E 12	137 57.7	18 36.7	N21 01.7	86 28.5	N17 04.8	129 34.5	N 2 00.2	172 52.7	S15 18.3
S 13	153 00.2	33 36.0	01.2	101 29.4	05.2	144 37.0	00.2	187 55.3	18.4
14	168 02.7	48 35.2	00.7	116 30.3	05.7	159 39.6	00.1	202 57.9	18.5
15	183 05.1	63 34.4	21 00.2	131 31.2	06.1	174 42.1	00.1	218 00.6	18.5
16	198 07.6	78 33.7	20 59.7	146 32.1	06.5	189 44.7	00.0	233 03.2	18.6
17	213 10.1	93 32.9	59.2	161 33.0	06.9	204 47.2	2 00.0	248 05.9	18.7
18	228 12.5	108 32.1	N20 58.7	176 33.9	N17 07.3	219 49.7	N 1 59.9	263 08.5	S15 18.7
19	243 15.0	123 31.4	58.2	191 34.8	07.7	234 52.3	59.9	278 11.2	18.8
20	258 17.5	138 30.6	57.7	206 35.7	08.1	249 54.8	59.8	293 13.8	18.9
21	273 19.9	153 29.9	57.2	221 36.6	08.5	264 57.4	59.8	308 16.5	18.9
22	288 22.4	168 29.1	56.7	236 37.5	08.9	279 59.9	59.7	323 19.1	19.0
23	303 24.9	183 28.3	56.2	251 38.4	09.3	295 02.5	59.7	338 21.8	19.1
10 00	318 27.3	198 27.6	N20 55.7	266 39.3	N17 09.7	310 05.0	N 1 59.6	353 24.4	S15 19.1
01	333 29.8	213 26.8	55.2	281 40.2	10.1	325 07.6	59.6	8 27.0	19.2
02	348 32.2	228 26.1	54.7	296 41.1	10.5	340 10.2	59.5	23 29.7	19.2
03	3 34.7	243 25.3	54.2	311 42.0	10.9	355 12.7	59.5	38 32.3	19.3
04	18 37.2	258 24.5	53.7	326 42.9	11.3	10 15.3	59.4	53 35.0	19.4
05	33 39.6	273 23.8	53.2	341 43.8	11.8	25 17.8	59.4	68 37.6	19.4
06	48 42.1	288 23.0	N20 52.6	356 44.7	N17 12.2	40 20.4	N 1 59.3	83 40.3	S15 19.5
07	63 44.6	303 22.3	52.1	11 45.6	12.6	55 22.9	59.3	98 42.9	19.6
M 08	78 47.0	318 21.5	51.6	26 46.5	13.0	70 25.5	59.2	113 45.6	19.6
I 09	93 49.5	333 20.8	51.1	41 47.4	13.4	85 28.0	59.2	128 48.2	19.7
É 10	108 52.0	348 20.0	50.6	56 48.3	13.8	100 30.6	59.1	143 50.9	19.8
R 11	123 54.4	3 19.2	50.1	71 49.2	14.2	115 33.1	59.1	158 53.5	19.8
C 12	138 56.9	18 18.5	N20 49.6	86 50.1	N17 14.6	130 35.7	N 1 59.0	173 56.1	S15 19.9
O 13	153 59.3	33 17.7	49.0	101 51.0	15.0	145 38.2	59.0	188 58.8	20.0
L 14	169 01.8	48 17.0	48.5	116 51.9	15.4	160 40.8	58.9	204 01.4	20.0
E 15	184 04.3	63 16.2	48.0	131 52.8	15.8	175 43.3	58.9	219 04.1	20.1
S 16	199 06.7	78 15.5	47.5	146 53.7	16.2	190 45.9	58.8	234 06.7	20.1
17	214 09.2	93 14.7	47.0	161 54.6	16.6	205 48.5	58.8	249 09.4	20.2
18	229 11.7	108 13.9	N20 46.4	176 55.5	N17 17.0	220 51.0	N 1 58.7	264 12.0	S15 20.3
19	244 14.1	123 13.2	45.9	191 56.4	17.4	235 53.6	58.7	279 14.7	20.3
20	259 16.6	138 12.4	45.4	206 57.3	17.8	250 56.1	58.6	294 17.3	20.4
21	274 19.1	153 11.7	44.9	221 58.2	18.2	265 58.7	58.6	309 20.0	20.5
22	289 21.5	168 10.9	44.3	236 59.1	18.6	281 01.2	58.5	324 22.6	20.5
23	304 24.0	183 10.2	43.8	252 00.0	19.0	296 03.8	58.5	339 25.2	20.6
	h m								
Paso Mer.	2 49.7	*v* −0.8	*d* 0.5	*v* 0.9	*d* 0.4	*v* 2.5	*d* 0.0	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.3	S40 12.6
Achernar	335 21.5	S57 07.1
Acrux	173 02.7	S63 13.6
Adhara	255 07.7	S29 00.0
Aldebaran	290 42.0	N16 33.3
Alioth	166 15.0	N55 50.6
Alkaid	152 53.7	N49 12.4
Alnair	27 35.0	S46 51.0
Alnilam	275 40.0	S 1 11.2
Alphard	217 50.0	S 8 45.2
Alphecca	126 05.4	N26 38.6
Alpheratz	357 36.6	N29 12.8
Altair	62 01.6	N 8 55.8
Ankaa	353 08.8	S42 10.8
Antares	112 18.1	S26 28.9
Arcturus	145 49.8	N19 04.1
Atria	107 13.8	S69 04.3
Avior	234 16.2	S59 34.7
Bellatrix	278 25.2	N 6 22.3
Betelgeuse	270 54.5	N 7 24.7
Canopus	263 53.7	S52 42.2
Capella	280 25.1	N46 01.1
Deneb	49 26.7	N45 21.7
Denebola	182 27.2	N14 27.0
Diphda	348 49.1	S17 51.7
Dubhe	193 44.1	N61 38.0
Elnath	278 04.6	N28 37.5
Eltanin	90 42.7	N51 29.4
Enif	33 40.4	N 9 58.7
Fomalhaut	15 16.4	S29 30.1
Gacrux	171 54.2	S57 14.5
Gienah	175 45.8	S17 40.0
Hadar	148 39.0	S60 29.1
Hamal	327 53.4	N23 34.1
Kaus Aust.	83 34.8	S34 22.4
Kochab	137 19.8	N74 04.1
Markab	13 31.6	N15 19.6
Menkar	314 08.2	N 4 10.7
Menkent	148 00.0	S36 28.9
Miaplacidus	221 39.6	S69 48.5
Mirfak	308 31.1	N49 56.2
Nunki	75 49.9	S26 16.1
Peacock	53 08.3	S56 39.7
Pollux	243 20.1	N27 58.3
Procyon	244 53.2	N 5 10.1
Rasalhague	96 00.2	N12 32.8
Regulus	207 36.9	N11 51.6
Rigel	281 06.0	S 8 10.4
Rigil Kent.	139 43.1	S60 55.8
Sabik	102 04.9	S15 45.1
Schedar	349 32.9	N56 39.4
Shaula	96 12.8	S37 07.2
Sirius	258 28.3	S16 44.7
Spica	158 24.5	S11 16.6
Suhail	222 48.2	S43 31.3
Vega	80 34.2	N38 48.4
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	241 17.7	10 45
Marte	308 49.6	6 14
Júpiter	351 35.7	3 23
Saturno	34 52.7	0 31

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	°	′	′	′
LUNES 8 00	178	33.8	N16	12.0	59	04.9	3.7	S25	29.0	5.8	60.0
01	193	33.9		11.3	73	27.6	3.6	25	34.8	5.6	60.0
02	208	33.9		10.6	87	50.2	3.5	25	40.4	5.5	60.0
03	223	34.0	. .	09.9	102	12.7	3.4	25	45.9	5.3	60.1
04	238	34.1		09.2	116	35.1	3.3	25	51.2	5.0	60.1
05	253	34.2		08.5	130	57.4	3.3	25	56.2	5.0	60.1
06	268	34.3	N16	07.7	145	19.7	3.1	S26	01.2	4.7	60.1
07	283	34.4		07.0	159	41.8	3.1	26	05.9	4.5	60.2
08	298	34.4		06.3	174	03.9	2.9	26	10.4	4.4	60.2
09	313	34.5	. .	05.6	188	25.8	2.9	26	14.8	4.1	60.2
10	328	34.6		04.9	202	47.7	2.8	26	18.9	4.0	60.2
11	343	34.7		04.2	217	09.5	2.7	26	22.9	3.8	60.3
12	358	34.8	N16	03.5	231	31.2	2.7	S26	26.7	3.6	60.3
13	13	34.9		02.8	245	52.9	2.5	26	30.3	3.4	60.3
14	28	34.9		02.1	260	14.4	2.5	26	33.7	3.3	60.3
15	43	35.0	. .	01.3	274	35.9	2.5	26	37.0	3.0	60.4
16	58	35.1	16	00.6	288	57.4	2.3	26	40.0	2.8	60.4
17	73	35.2	15	59.9	303	18.7	2.3	26	42.8	2.7	60.4
18	88	35.3	N15	59.2	317	40.0	2.3	S26	45.5	2.4	60.4
19	103	35.4		58.5	332	01.3	2.1	26	47.9	2.2	60.4
20	118	35.5		57.8	346	22.4	2.2	26	50.1	2.1	60.5
21	133	35.5	. .	57.0	0	43.6	2.0	26	52.2	1.8	60.5
22	148	35.6		56.3	15	04.6	2.0	26	54.0	1.7	60.5
23	163	35.7		55.6	29	25.6	2.0	26	55.7	1.4	60.5
MARTES 9 00	178	35.8	N15	54.9	43	46.6	1.9	S26	57.1	1.2	60.5
01	193	35.9		54.2	58	07.5	1.9	26	58.3	1.1	60.6
02	208	36.0		53.5	72	28.4	1.8	26	59.4	0.8	60.6
03	223	36.1	. .	52.7	86	49.2	1.9	27	00.2	0.6	60.6
04	238	36.2		52.0	101	10.1	1.7	27	00.8	0.5	60.6
05	253	36.2		51.3	115	30.8	1.8	27	01.3	0.2	60.6
06	268	36.3	N15	50.6	129	51.6	1.7	S27	01.5	0.0	60.6
07	283	36.4		49.9	144	12.3	1.7	27	01.5	0.2	60.7
08	298	36.5		49.1	158	33.0	1.7	27	01.3	0.4	60.7
09	313	36.6	. .	48.4	172	53.7	1.6	27	00.9	0.6	60.7
10	328	36.7		47.7	187	14.3	1.7	27	00.3	0.8	60.7
11	343	36.8		47.0	201	35.0	1.6	26	59.5	1.0	60.7
12	358	36.9	N15	46.3	215	55.6	1.6	S26	58.5	1.2	60.7
13	13	37.0		45.5	230	16.2	1.6	26	57.3	1.5	60.7
14	28	37.1		44.8	244	36.8	1.6	26	55.8	1.6	60.8
15	43	37.1	. .	44.1	258	57.4	1.7	26	54.2	1.9	60.8
16	58	37.2		43.4	273	18.1	1.6	26	52.3	2.0	60.8
17	73	37.3		42.6	287	38.7	1.6	26	50.3	2.3	60.8
18	88	37.4	N15	41.9	301	59.3	1.7	S26	48.0	2.4	60.8
19	103	37.5		41.2	316	20.0	1.6	26	45.6	2.7	60.8
20	118	37.6		40.5	330	40.6	1.7	26	42.9	2.9	60.8
21	133	37.7	. .	39.7	345	01.3	1.7	26	40.0	3.1	60.8
22	148	37.8		39.0	359	22.0	1.7	26	36.9	3.2	60.8
23	163	37.9		38.3	13	42.7	1.8	26	33.7	3.5	60.9
MIÉRCOLES 10 00	178	38.0	N15	37.5	28	03.5	1.7	S26	30.2	3.7	60.9
01	193	38.1		36.8	42	24.2	1.8	26	26.5	3.9	60.9
02	208	38.2		36.1	56	45.0	1.9	26	22.6	4.1	60.9
03	223	38.3	. .	35.4	71	05.9	1.9	26	18.5	4.3	60.9
04	238	38.4		34.6	85	26.8	1.9	26	14.2	4.5	60.9
05	253	38.4		33.9	99	47.7	2.0	26	09.7	4.7	60.9
06	268	38.5	N15	33.2	114	08.7	2.0	S26	05.0	4.9	60.9
07	283	38.6		32.4	128	29.7	2.0	26	00.1	5.1	60.9
08	298	38.7		31.7	142	50.7	2.1	25	55.0	5.3	60.9
09	313	38.8	. .	31.0	157	11.8	2.2	25	49.7	5.5	60.9
10	328	38.9		30.2	171	33.0	2.2	25	44.2	5.7	60.9
11	343	39.0		29.5	185	54.2	2.3	25	38.5	5.9	60.9
12	358	39.1	N15	28.8	200	15.5	2.4	S25	32.6	6.0	60.9
13	13	39.2		28.0	214	36.9	2.4	25	26.6	6.3	60.9
14	28	39.3		27.3	228	58.3	2.5	25	20.3	6.5	60.9
15	43	39.4	. .	26.6	243	19.8	2.6	25	13.8	6.6	60.9
16	58	39.5		25.8	257	41.4	2.6	25	07.2	6.8	60.9
17	73	39.6		25.1	272	03.0	2.7	25	00.4	7.0	60.9
18	88	39.7	N15	24.4	286	24.7	2.8	S24	53.4	7.2	60.9
19	103	39.8		23.6	300	46.5	2.8	24	46.2	7.4	60.9
20	118	39.9		22.9	315	08.3	3.0	24	38.8	7.6	60.9
21	133	40.0	. .	22.2	329	30.3	3.0	24	31.2	7.7	60.9
22	148	40.1		21.4	343	52.3	3.1	24	23.5	8.0	60.9
23	163	40.2		20.7	358	14.4	3.2	S24	15.5	8.1	60.9
	S/D	15.8	d	0.7	S/D		16.4		16.5		16.6

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		8	9	10	11
°	h m	h m	h m	h m	h m	h m	h m
N 72	////	////	01 35				
N 70	////	////	02 23				
68	////	00 27	02 53				22 36
66	////	01 45	03 15				21 55
64	////	02 21	03 33			21 43	21 26
62	00 25	02 45	03 47	19 47	20 48	21 02	21 04
60	01 35	03 05	04 00	18 59	20 03	20 33	20 46
N 58	02 07	03 20	04 10	18 28	19 33	20 11	20 31
56	02 30	03 34	04 19	18 05	19 11	19 53	20 18
54	02 48	03 45	04 27	17 46	18 52	19 37	20 07
52	03 03	03 55	04 34	17 30	18 36	19 24	19 57
50	03 16	04 04	04 41	17 16	18 22	19 12	19 48
45	03 41	04 22	04 54	16 48	17 54	18 48	19 28
N 40	04 00	04 36	05 06	16 26	17 32	18 28	19 13
35	04 15	04 48	05 15	16 08	17 14	18 12	19 00
30	04 28	04 58	05 24	15 52	16 58	17 57	18 48
20	04 48	05 15	05 38	15 26	16 31	17 33	18 28
N 10	05 03	05 29	05 51	15 03	16 08	17 12	18 11
0	05 16	05 41	06 02	14 42	15 47	16 52	17 54
S 10	05 27	05 52	06 14	14 20	15 26	16 32	17 38
20	05 36	06 03	06 26	13 58	15 03	16 11	17 20
30	05 46	06 14	06 39	13 32	14 36	15 47	17 00
35	05 51	06 21	06 47	13 16	14 20	15 32	16 48
40	05 55	06 28	06 56	12 59	14 02	15 15	16 34
45	06 01	06 35	07 06	12 37	13 40	14 55	16 18
S 50	06 06	06 44	07 19	12 10	13 12	14 30	15 58
52	06 08	06 49	07 25	11 57	12 58	14 17	15 48
54	06 11	06 53	07 31	11 42	12 42	14 03	15 37
56	06 13	06 58	07 38	11 25	12 24	13 47	15 25
58	06 16	07 03	07 46	11 04	12 01	13 27	15 10
S 60	06 19	07 09	07 55	10 37	11 31	13 02	14 53

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	8	9	10	11
°	h m	h m	h m	h m	h m	h m	h m
N 72	22 28	////	////				
N 70	21 43	////	////				
68	21 14	23 22	////				
66	20 53	22 20	////				
64	20 36	21 47	////				00 43
62	20 22	21 23	23 27	22 04	23 21	25 24	01 24
60	20 10	21 04	22 31	22 52	24 06	00 06	01 52
N 58	20 00	20 49	22 01	23 23	24 36	00 36	02 13
56	19 51	20 36	21 39	23 47	24 58	00 58	02 31
54	19 43	20 25	21 21	24 06	00 06	01 17	02 46
52	19 36	20 15	21 06	24 22	00 22	01 32	02 59
50	19 29	20 06	20 54	24 36	00 36	01 46	03 10
45	19 16	19 48	20 29	00 09	01 04	02 14	03 34
N 40	19 05	19 34	20 10	00 29	01 26	02 35	03 52
35	18 55	19 22	19 55	00 46	01 45	02 53	04 08
30	18 47	19 12	19 43	01 01	02 01	03 09	04 21
20	18 33	18 56	19 23	01 26	02 28	03 35	04 44
N 10	18 20	18 42	19 08	01 48	02 51	03 57	05 04
0	18 09	18 30	18 55	02 08	03 13	04 18	05 22
S 10	17 58	18 19	18 45	02 29	03 34	04 39	05 40
20	17 46	18 09	18 35	02 50	03 57	05 01	06 00
30	17 32	17 57	18 26	03 16	04 24	05 27	06 22
35	17 24	17 51	18 21	03 31	04 40	05 42	06 35
40	17 16	17 44	18 16	03 48	04 58	05 59	06 50
45	17 05	17 36	18 11	04 09	05 20	06 20	07 07
S 50	16 53	17 27	18 06	04 35	05 48	06 46	07 29
52	16 47	17 23	18 03	04 48	06 02	06 59	07 39
54	16 41	17 19	18 01	05 03	06 18	07 13	07 50
56	16 34	17 14	17 59	05 20	06 37	07 30	08 03
58	16 26	17 09	17 56	05 41	07 00	07 50	08 18
S 60	16 17	17 03	17 53	06 07	07 30	08 15	08 36

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
8	05 45	05 41	12 06	20 57	08 25	11 82	
9	05 37	05 33	12 06	22 03	09 30	12 90	
10	05 28	05 24	12 05	23 07	10 35	13 96	

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·0		JÚPITER −2·7		SATURNO +0·2	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
11 00	319 26.5	198 09.4	N20 43.3	267 00.9	N17 19.4	311 06.4	N 1 58.4	354 27.9	S15 20.7
01	334 28.9	213 08.7	42.7	282 01.8	19.8	326 08.9	58.4	9 30.5	20.7
02	349 31.4	228 07.9	42.2	297 02.7	20.2	341 11.5	58.3	24 33.2	20.8
03	4 33.8	243 07.2 . .	41.7	312 03.6 . .	20.6	356 14.0 . .	58.3	39 35.8 . .	20.9
04	19 36.3	258 06.4	41.1	327 04.5	21.0	11 16.6	58.2	54 38.5	20.9
05	34 38.8	273 05.7	40.6	342 05.4	21.4	26 19.2	58.1	69 41.1	21.0
06	49 41.2	288 04.9	N20 40.1	357 06.3	N17 21.8	41 21.7	N 1 58.1	84 43.8	S15 21.0
07	64 43.7	303 04.2	39.5	12 07.2	22.2	56 24.3	58.0	99 46.4	21.1
08	79 46.2	318 03.4	39.0	27 08.1	22.6	71 26.8	58.0	114 49.1	21.2
J 09	94 48.6	333 02.7 . .	38.5	42 09.0 . .	23.0	86 29.4 . .	57.9	129 51.7 . .	21.2
U 10	109 51.1	348 01.9	37.9	57 09.9	23.4	101 32.0	57.9	144 54.4	21.3
E 11	124 53.6	3 01.2	37.4	72 10.9	23.8	116 34.5	57.8	159 57.0	21.4
V 12	139 56.0	18 00.4	N20 36.8	87 11.8	N17 24.2	131 37.1	N 1 57.8	174 59.6	S15 21.4
E 13	154 58.5	32 59.7	36.3	102 12.7	24.6	146 39.6	57.7	190 02.3	21.5
S 14	170 01.0	47 58.9	35.7	117 13.6	25.0	161 42.2	57.7	205 04.9	21.6
15	185 03.4	62 58.2 . .	35.2	132 14.5 . .	25.4	176 44.8 . .	57.6	220 07.6 . .	21.6
16	200 05.9	77 57.4	34.7	147 15.4	25.8	191 47.3	57.6	235 10.2	21.7
17	215 08.3	92 56.7	34.1	162 16.3	26.1	206 49.9	57.5	250 12.9	21.8
18	230 10.8	107 55.9	N20 33.6	177 17.2	N17 26.5	221 52.5	N 1 57.4	265 15.5	S15 21.8
19	245 13.3	122 55.2	33.0	192 18.1	26.9	236 55.0	57.4	280 18.2	21.9
20	260 15.7	137 54.4	32.5	207 19.0	27.3	251 57.6	57.3	295 20.8	21.9
21	275 18.2	152 53.7 . .	31.9	222 19.9 . .	27.7	267 00.1 . .	57.3	310 23.5 . .	22.0
22	290 20.7	167 52.9	31.4	237 20.8	28.1	282 02.7	57.2	325 26.1	22.1
23	305 23.1	182 52.2	30.8	252 21.7	28.5	297 05.3	57.2	340 28.8	22.1
12 00	320 25.6	197 51.5	N20 30.2	267 22.7	N17 28.9	312 07.8	N 1 57.1	355 31.4	S15 22.2
01	335 28.1	212 50.7	29.7	282 23.6	29.3	327 10.4	57.1	10 34.0	22.3
02	350 30.5	227 50.0	29.1	297 24.5	29.7	342 13.0	57.0	25 36.7	22.3
03	5 33.0	242 49.2 . .	28.6	312 25.4 . .	30.1	357 15.5 . .	56.9	40 39.3 . .	22.4
04	20 35.5	257 48.5	28.0	327 26.3	30.5	12 18.1	56.9	55 42.0	22.5
05	35 37.9	272 47.7	27.5	342 27.2	30.9	27 20.7	56.8	70 44.6	22.5
06	50 40.4	287 47.0	N20 26.9	357 28.1	N17 31.3	42 23.2	N 1 56.8	85 47.3	S15 22.6
07	65 42.8	302 46.2	26.3	12 29.0	31.7	57 25.8	56.7	100 49.9	22.7
V 08	80 45.3	317 45.5	25.8	27 29.9	32.0	72 28.4	56.7	115 52.6	22.7
I 09	95 47.8	332 44.8 . .	25.2	42 30.8 . .	32.4	87 30.9 . .	56.6	130 55.2 . .	22.8
E 10	110 50.2	347 44.0	24.6	57 31.8	32.8	102 33.5	56.5	145 57.9	22.8
R 11	125 52.7	2 43.3	24.1	72 32.7	33.2	117 36.1	56.5	161 00.5	22.9
N 12	140 55.2	17 42.5	N20 23.5	87 33.6	N17 33.6	132 38.6	N 1 56.4	176 03.2	S15 23.0
E 13	155 57.6	32 41.8	22.9	102 34.5	34.0	147 41.2	56.4	191 05.8	23.0
S 14	171 00.1	47 41.1	22.4	117 35.4	34.4	162 43.8	56.3	206 08.4	23.1
15	186 02.6	62 40.3 . .	21.8	132 36.3 . .	34.8	177 46.4 . .	56.3	221 11.1 . .	23.2
16	201 05.0	77 39.6	21.2	147 37.2	35.2	192 48.9	56.2	236 13.7	23.2
17	216 07.5	92 38.8	20.7	162 38.1	35.6	207 51.5	56.1	251 16.4	23.3
18	231 09.9	107 38.1	N20 20.1	177 39.1	N17 35.9	222 54.1	N 1 56.1	266 19.0	S15 23.4
19	246 12.4	122 37.4	19.5	192 40.0	36.3	237 56.6	56.0	281 21.7	23.4
20	261 14.9	137 36.6	18.9	207 40.9	36.7	252 59.2	56.0	296 24.3	23.5
21	276 17.3	152 35.9 . .	18.4	222 41.8 . .	37.1	268 01.8 . .	55.9	311 27.0 . .	23.6
22	291 19.8	167 35.1	17.8	237 42.7	37.5	283 04.4	55.9	326 29.6	23.6
23	306 22.3	182 34.4	17.2	252 43.6	37.9	298 06.9	55.8	341 32.3	23.7
13 00	321 24.7	197 33.7	N20 16.6	267 44.5	N17 38.3	313 09.5	N 1 55.7	356 34.9	S15 23.7
01	336 27.2	212 32.9	16.0	282 45.4	38.7	328 12.1	55.7	11 37.6	23.8
02	351 29.7	227 32.2	15.5	297 46.4	39.0	343 14.6	55.6	26 40.2	23.9
03	6 32.1	242 31.5 . .	14.9	312 47.3 . .	39.4	358 17.2 . .	55.6	41 42.9 . .	23.9
04	21 34.6	257 30.7	14.3	327 48.2	39.8	13 19.8	55.5	56 45.5	24.0
05	36 37.1	272 30.0	13.7	342 49.1	40.2	28 22.4	55.4	71 48.1	24.1
06	51 39.5	287 29.2	N20 13.1	357 50.0	N17 40.6	43 24.9	N 1 55.4	86 50.8	S15 24.1
07	66 42.0	302 28.5	12.5	12 50.9	41.0	58 27.5	55.3	101 53.4	24.2
S 08	81 44.4	317 27.8	12.0	27 51.9	41.4	73 30.1	55.3	116 56.1	24.3
Á 09	96 46.9	332 27.0 . .	11.4	42 52.8 . .	41.7	88 32.7 . .	55.2	131 58.7 . .	24.3
B 10	111 49.4	347 26.3	10.8	57 53.7	42.1	103 35.2	55.1	147 01.4	24.4
A 11	126 51.8	2 25.6	10.2	72 54.6	42.5	118 37.8	55.1	162 04.0	24.5
D 12	141 54.3	17 24.8	N20 09.6	87 55.5	N17 42.9	133 40.4	N 1 55.0	177 06.7	S15 24.5
O 13	156 56.8	32 24.1	09.0	102 56.4	43.3	148 43.0	55.0	192 09.3	24.6
14	171 59.2	47 23.4	08.4	117 57.4	43.7	163 45.5	54.9	207 12.0	24.6
15	187 01.7	62 22.6 . .	07.8	132 58.3 . .	44.0	178 48.1 . .	54.8	222 14.6 . .	24.7
16	202 04.2	77 21.9	07.2	147 59.2	44.4	193 50.7	54.8	237 17.3	24.8
17	217 06.6	92 21.2	06.6	163 00.1	44.8	208 53.3	54.7	252 19.9	24.8
18	232 09.1	107 20.5	N20 06.0	178 01.0	N17 45.2	223 55.9	N 1 54.7	267 22.6	S15 24.9
19	247 11.6	122 19.7	05.4	193 02.0	45.6	238 58.4	54.6	282 25.2	25.0
20	262 14.0	137 19.0	04.8	208 02.9	45.9	254 01.0	54.5	297 27.8	25.0
21	277 16.5	152 18.3 . .	04.2	223 03.8 . .	46.3	269 03.6 . .	54.5	312 30.5 . .	25.1
22	292 18.9	167 17.5	03.6	238 04.7	46.7	284 06.2	54.4	327 33.1	25.2
23	307 21.4	182 16.8	03.0	253 05.6	47.1	299 08.8	54.4	342 35.8	25.2
Paso Mer.	h m 2 37.9	*v* −0.7	*d* 0.6	*v* 0.9	*d* 0.4	*v* 2.6	*d* 0.1	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.3	S40 12.6
Achernar	335 21.4	S57 07.1
Acrux	173 02.7	S63 13.6
Adhara	255 07.7	S29 00.0
Aldebaran	290 42.0	N16 33.3
Alioth	166 15.0	N55 50.6
Alkaid	152 53.8	N49 12.4
Alnair	27 34.9	S46 51.0
Alnilam	275 39.9	S 1 11.1
Alphard	217 50.0	S 8 45.2
Alphecca	126 05.4	N26 38.6
Alpheratz	357 36.5	N29 12.8
Altair	62 01.6	N 8 55.8
Ankaa	353 08.8	S42 10.8
Antares	112 18.1	S26 28.9
Arcturus	145 49.8	N19 04.1
Atria	107 13.9	S69 04.3
Avior	234 16.2	S59 34.7
Bellatrix	278 25.2	N 6 22.3
Betelgeuse	270 54.4	N 7 24.7
Canopus	263 53.7	S52 42.2
Capella	280 25.1	N46 01.1
Deneb	49 26.7	N45 21.7
Denebola	182 27.2	N14 27.0
Diphda	348 49.1	S17 51.6
Dubhe	193 44.0	N61 38.0
Elnath	278 04.6	N28 37.5
Eltanin	90 42.8	N51 29.4
Enif	33 40.4	N 9 58.8
Fomalhaut	15 16.4	S29 30.1
Gacrux	171 54.2	S57 14.5
Gienah	175 45.9	S17 39.9
Hadar	148 39.0	S60 29.1
Hamal	327 53.3	N23 34.1
Kaus Aust.	83 34.8	S34 22.5
Kochab	137 19.9	N74 04.1
Markab	13 31.6	N15 19.6
Menkar	314 08.2	N 4 10.7
Menkent	148 00.1	S36 28.9
Miaplacidus	221 39.6	S69 48.5
Mirfak	308 31.1	N49 56.2
Nunki	75 49.9	S26 16.1
Peacock	53 08.3	S56 39.8
Pollux	243 20.1	N27 58.3
Procyon	244 53.2	N 5 10.1
Rasalhague	96 00.2	N12 32.8
Regulus	207 36.9	N11 51.6
Rigel	281 05.9	S 8 10.4
Rigil Kent.	139 43.1	S60 55.8
Sabik	102 04.9	S15 45.1
Schedar	349 32.9	N56 39.5
Shaula	96 12.8	S37 07.3
Sirius	258 28.2	S16 44.6
Spica	158 24.5	S11 16.6
Suhail	222 48.2	S43 31.3
Vega	80 34.2	N38 48.4
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	237 25.9	10 49
Marte	306 57.1	6 10
Júpiter	351 42.2	3 11
Saturno	35 05.8	0 18

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	°	′	′	
11 00	178	40.3	N15	19.9	12	36.6	3.3	S24	07.4	8.3	60.9
01	193	40.4		19.2	26	58.9	3.4	23	59.1	8.4	60.9
02	208	40.5		18.5	41	21.3	3.4	23	50.7	8.6	60.9
03	223	40.6	. .	17.7	55	43.7	3.6	23	42.1	8.8	60.9
04	238	40.7		17.0	70	06.3	3.7	23	33.3	9.0	60.9
05	253	40.8		16.2	84	29.0	3.7	23	24.3	9.1	60.9
06	268	40.9	N15	15.5	98	51.7	3.9	S23	15.2	9.3	60.9
07	283	41.0		14.8	113	14.6	4.0	23	05.9	9.5	60.9
J 08	298	41.1		14.0	127	37.6	4.0	22	56.4	9.6	60.9
U 09	313	41.2	. .	13.3	142	00.6	4.2	22	46.8	9.7	60.9
E 10	328	41.3		12.5	156	23.8	4.2	22	37.1	10.0	60.9
V 11	343	41.4		11.8	170	47.0	4.4	22	27.1	10.1	60.9
E 12	358	41.5	N15	11.0	185	10.4	4.5	S22	17.0	10.2	60.8
S 13	13	41.6		10.3	199	33.9	4.6	22	06.8	10.4	60.8
14	28	41.7		09.6	213	57.5	4.7	21	56.4	10.5	60.8
15	43	41.8	. .	08.8	228	21.2	4.8	21	45.9	10.7	60.8
16	58	41.9		08.1	242	45.0	4.9	21	35.2	10.9	60.8
17	73	42.0		07.3	257	08.9	5.0	21	24.3	10.9	60.8
18	88	42.1	N15	06.6	271	32.9	5.2	S21	13.4	11.1	60.8
19	103	42.2		05.8	285	57.1	5.2	21	02.3	11.3	60.8
20	118	42.3		05.1	300	21.3	5.4	20	51.0	11.4	60.8
21	133	42.4	. .	04.3	314	45.7	5.4	20	39.6	11.5	60.7
22	148	42.5		03.6	329	10.1	5.6	20	28.1	11.7	60.7
23	163	42.6		02.8	343	34.7	5.7	20	16.4	11.7	60.7
12 00	178	42.8	N15	02.1	357	59.4	5.8	S20	04.7	12.0	60.7
01	193	42.9		01.3	12	24.2	6.0	19	52.7	12.0	60.7
02	208	43.0	15	00.6	26	49.2	6.0	19	40.7	12.2	60.7
03	223	43.1	14	59.8	41	14.2	6.2	19	28.5	12.2	60.6
04	238	43.2		59.1	55	39.4	6.2	19	16.3	12.4	60.6
05	253	43.3		58.3	70	04.6	6.4	19	03.9	12.6	60.6
06	268	43.4	N14	57.6	84	30.0	6.5	S18	51.3	12.6	60.6
07	283	43.5		56.8	98	55.5	6.7	18	38.7	12.7	60.6
V 08	298	43.6		56.1	113	21.2	6.7	18	26.0	12.9	60.6
I 09	313	43.7	. .	55.3	127	46.9	6.9	18	13.1	13.0	60.5
E 10	328	43.8		54.6	142	12.8	6.9	18	00.1	13.0	60.5
R 11	343	43.9		53.8	156	38.7	7.1	17	47.1	13.2	60.5
N 12	358	44.0	N14	53.1	171	04.8	7.2	S17	33.9	13.3	60.5
E 13	13	44.1		52.3	185	31.0	7.3	17	20.6	13.4	60.5
S 14	28	44.3		51.6	199	57.3	7.4	17	07.2	13.4	60.4
15	43	44.4	. .	50.8	214	23.7	7.6	16	53.8	13.6	60.4
16	58	44.5		50.1	228	50.3	7.6	16	40.2	13.7	60.4
17	73	44.6		49.3	243	16.9	7.8	16	26.5	13.7	60.4
18	88	44.7	N14	48.5	257	43.7	7.9	S16	12.8	13.8	60.3
19	103	44.8		47.8	272	10.6	7.9	15	59.0	14.0	60.3
20	118	44.9		47.0	286	37.5	8.1	15	45.0	14.0	60.3
21	133	45.0	. .	46.3	301	04.6	8.3	15	31.0	14.1	60.3
22	148	45.1		45.5	315	31.9	8.3	15	16.9	14.1	60.2
23	163	45.2		44.8	329	59.2	8.4	15	02.8	14.3	60.2
13 00	178	45.4	N14	44.0	344	26.6	8.5	S14	48.5	14.3	60.2
01	193	45.5		43.2	358	54.1	8.7	14	34.2	14.4	60.2
02	208	45.6		42.5	13	21.8	8.7	14	19.8	14.5	60.1
03	223	45.7	. .	41.7	27	49.5	8.9	14	05.3	14.5	60.1
04	238	45.8		41.0	42	17.4	8.9	13	50.8	14.6	60.1
05	253	45.9		40.2	56	45.3	9.1	13	36.2	14.7	60.1
06	268	46.0	N14	39.4	71	13.4	9.2	S13	21.5	14.7	60.0
07	283	46.1		38.7	85	41.6	9.2	13	06.8	14.8	60.0
S 08	298	46.3		37.9	100	09.8	9.4	12	52.0	14.9	60.0
Á 09	313	46.4	. .	37.2	114	38.2	9.5	12	37.1	14.9	59.9
B 10	328	46.5		36.4	129	06.7	9.6	12	22.2	14.9	59.9
A 11	343	46.6		35.6	143	35.3	9.6	12	07.3	15.1	59.9
D 12	358	46.7	N14	34.9	158	03.9	9.8	S11	52.2	15.0	59.9
O 13	13	46.8		34.1	172	32.7	9.9	11	37.2	15.1	59.8
14	28	46.9		33.3	187	01.6	9.9	11	22.1	15.2	59.8
15	43	47.0	. .	32.6	201	30.5	10.1	11	06.9	15.2	59.8
16	58	47.2		31.8	215	59.6	10.2	10	51.7	15.3	59.7
17	73	47.3		31.1	230	28.8	10.2	10	36.4	15.3	59.7
18	88	47.4	N14	30.3	244	58.0	10.3	S10	21.1	15.3	59.7
19	103	47.5		29.5	259	27.3	10.5	10	05.8	15.4	59.6
20	118	47.6		28.8	273	56.8	10.5	9	50.4	15.4	59.6
21	133	47.7	. .	28.0	288	26.3	10.6	9	35.0	15.4	59.6
22	148	47.9		27.2	302	55.9	10.7	9	19.6	15.5	59.5
23	163	48.0		26.5	317	25.6	10.8	S 9	04.1	15.5	59.5
	S/D	15.8	d	0.8	S/D		16.6		16.5		16.3

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			11	12	13	14
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	////		////		02 01	▬	22 48	21 52	21 16
N 70	////		////		02 40	▬	22 15	21 38	21 12
68	////		01	16	03 06	22 36	21 51	21 27	21 08
66	////		02	04	03 26	21 55	21 32	21 17	21 05
64	////		02	34	03 42	21 26	21 16	21 09	21 02
62	01	08	02	56	03 56	21 04	21 03	21 02	21 00
60	01	51	03	14	04 07	20 46	20 52	20 56	20 58
N 58	02	19	03	28	04 16	20 31	20 43	20 50	20 56
56	02	39	03	40	04 25	20 18	20 34	20 45	20 54
54	02	56	03	51	04 32	20 07	20 26	20 41	20 53
52	03	10	04	00	04 39	19 57	20 20	20 37	20 51
50	03	22	04	08	04 45	19 48	20 13	20 33	20 50
45	03	46	04	26	04 58	19 28	20 00	20 26	20 47
N 40	04	04	04	39	05 09	19 13	19 49	20 19	20 45
35	04	18	04	51	05 18	19 00	19 39	20 13	20 43
30	04	30	05	00	05 26	18 48	19 31	20 08	20 41
20	04	49	05	16	05 39	18 28	19 16	19 59	20 38
N 10	05	03	05	29	05 51	18 11	19 04	19 52	20 36
0	05	15	05	40	06 02	17 54	18 52	19 44	20 33
S 10	05	26	05	51	06 12	17 38	18 40	19 37	20 31
20	05	35	06	01	06 24	17 20	18 27	19 29	20 28
30	05	43	06	12	06 37	17 00	18 12	19 20	20 25
35	05	48	06	18	06 44	16 48	18 03	19 15	20 23
40	05	52	06	24	06 52	16 34	17 53	19 09	20 21
45	05	57	06	31	07 02	16 18	17 41	19 02	20 19
S 50	06	01	06	40	07 14	15 58	17 27	18 54	20 16
52	06	03	06	43	07 19	15 48	17 21	18 50	20 15
54	06	05	06	47	07 25	15 37	17 13	18 46	20 14
56	06	08	06	52	07 32	15 25	17 05	18 41	20 12
58	06	10	06	57	07 39	15 10	16 55	18 36	20 10
S 60	06	13	07	02	07 47	14 53	16 44	18 30	20 08

Lat.	Ocaso Sol	Crepúsculo			Ocaso Luna			
		Civil		Náut.	11	12	13	14
°	h	m	h	m	h m	h m	h m	h m
N 72	22	02	////		////	▬	▬	03 49	06 33
N 70	21	26	////		////	▬	▬	04 20	06 44
68	21	00	22	45	////	▬	01 59	04 42	06 53
66	20	41	22	01	////	▬	02 40	04 59	07 01
64	20	25	21	33	////	00 43	03 07	05 13	07 07
62	20	13	21	11	22 54	01 24	03 28	05 25	07 12
60	20	02	20	54	22 15	01 52	03 45	05 35	07 17
N 58	19	52	20	40	21 48	02 13	04 00	05 43	07 21
56	19	44	20	28	21 28	02 31	04 12	05 51	07 25
54	19	37	20	18	21 12	02 46	04 22	05 57	07 28
52	19	30	20	09	20 58	02 59	04 32	06 03	07 31
50	19	24	20	00	20 47	03 10	04 40	06 09	07 34
45	19	11	19	44	20 23	03 34	04 58	06 20	07 39
N 40	19	01	19	30	20 06	03 52	05 12	06 30	07 44
35	18	52	19	19	19 51	04 08	05 24	06 38	07 48
30	18	44	19	09	19 40	04 21	05 34	06 45	07 52
20	18	31	18	54	19 21	04 44	05 52	06 57	07 58
N 10	18	19	18	41	19 06	05 04	06 08	07 07	08 03
0	18	08	18	30	18 55	05 22	06 22	07 17	08 08
S 10	17	58	18	20	18 45	05 40	06 36	07 27	08 13
20	17	47	18	09	18 36	06 00	06 51	07 37	08 18
30	17	34	17	59	18 27	06 22	07 09	07 49	08 24
35	17	27	17	53	18 23	06 35	07 19	07 55	08 27
40	17	18	17	47	18 19	06 50	07 30	08 03	08 31
45	17	09	17	39	18 14	07 07	07 43	08 11	08 35
S 50	16	57	17	31	18 09	07 29	07 59	08 22	08 40
52	16	52	17	28	18 08	07 39	08 06	08 27	08 42
54	16	46	17	24	18 05	07 50	08 15	08 32	08 45
56	16	39	17	19	18 03	08 03	08 24	08 38	08 48
58	16	32	17	14	18 01	08 18	08 34	08 44	08 51
S 60	16	24	17	09	17 59	08 36	08 46	08 51	08 54

Día	SOL				Paso Mer.	LUNA				
	Ec. Tiempo					Paso Mer.		Edad	Fase
	00h		12h			Sup.	Inf.		
d	m	s	m	s	h m	h m	h m	d	%	
11	05	19	05	14	12 05	24 08	11 38	14	99	
12	05	09	05	04	12 05	00 08	12 37	15	100	○
13	04	59	04	53	12 05	01 05	13 31	16	97	

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·0		JÚPITER −2·8		SATURNO +0·2	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
14 00	322 23.9	197 16.1	N20 02.4	268 06.5	N17 47.5	314 11.3	N 1 54.3	357 38.4	S15 25.3
01	337 26.3	212 15.3	01.8	283 07.5	47.8	329 13.9	54.2	12 41.1	25.4
02	352 28.8	227 14.6	01.2	298 08.4	48.2	344 16.5	54.2	27 43.7	25.4
03	7 31.3	242 13.9	00.6	313 09.3	48.6	359 19.1	54.1	42 46.4	25.5
04	22 33.7	257 13.2	20 00.0	328 10.2	49.0	14 21.7	54.0	57 49.0	25.5
05	37 36.2	272 12.4	19 59.4	343 11.1	49.4	29 24.2	54.0	72 51.7	25.6
06	52 38.7	287 11.7	N19 58.8	358 12.1	N17 49.7	44 26.8	N 1 53.9	87 54.3	S15 25.7
07	67 41.1	302 11.0	58.2	13 13.0	50.1	59 29.4	53.9	102 57.0	25.7
08	82 43.6	317 10.3	57.6	28 13.9	50.5	74 32.0	53.8	117 59.6	25.8
D 09	97 46.0	332 09.5	56.9	43 14.8	50.9	89 34.6	53.7	133 02.3	25.9
O 10	112 48.5	347 08.8	56.3	58 15.8	51.3	104 37.1	53.7	148 04.9	25.9
M 11	127 51.0	2 08.1	55.7	73 16.7	51.6	119 39.7	53.6	163 07.5	26.0
I 12	142 53.4	17 07.4	N19 55.1	88 17.6	N17 52.0	134 42.3	N 1 53.5	178 10.2	S15 26.1
N 13	157 55.9	32 06.6	54.5	103 18.5	52.4	149 44.9	53.5	193 12.8	26.1
G 14	172 58.4	47 05.9	53.9	118 19.4	52.8	164 47.5	53.4	208 15.5	26.2
O 15	188 00.8	62 05.2	53.2	133 20.4	53.1	179 50.1	53.4	223 18.1	26.2
16	203 03.3	77 04.5	52.6	148 21.3	53.5	194 52.6	53.3	238 20.8	26.3
17	218 05.8	92 03.7	52.0	163 22.2	53.9	209 55.2	53.2	253 23.4	26.4
18	233 08.2	107 03.0	N19 51.4	178 23.1	N17 54.3	224 57.8	N 1 53.2	268 26.1	S15 26.4
19	248 10.7	122 02.3	50.8	193 24.1	54.6	240 00.4	53.1	283 28.7	26.5
20	263 13.2	137 01.6	50.1	208 25.0	55.0	255 03.0	53.0	298 31.4	26.6
21	278 15.6	152 00.8	49.5	223 25.9	55.4	270 05.6	53.0	313 34.0	26.6
22	293 18.1	167 00.1	48.9	238 26.8	55.8	285 08.2	52.9	328 36.7	26.7
23	308 20.5	181 59.4	48.3	253 27.8	56.1	300 10.7	52.8	343 39.3	26.8
15 00	323 23.0	196 58.7	N19 47.6	268 28.7	N17 56.5	315 13.3	N 1 52.8	358 42.0	S15 26.8
01	338 25.5	211 58.0	47.0	283 29.6	56.9	330 15.9	52.7	13 44.6	26.9
02	353 27.9	226 57.2	46.4	298 30.5	57.3	345 18.5	52.6	28 47.2	27.0
03	8 30.4	241 56.5	45.7	313 31.5	57.6	0 21.1	52.6	43 49.9	27.0
04	23 32.9	256 55.8	45.1	328 32.4	58.0	15 23.7	52.5	58 52.5	27.1
05	38 35.3	271 55.1	44.5	343 33.3	58.4	30 26.3	52.5	73 55.2	27.1
06	53 37.8	286 54.4	N19 43.9	358 34.3	N17 58.8	45 28.9	N 1 52.4	88 57.8	S15 27.2
07	68 40.3	301 53.6	43.2	13 35.2	59.1	60 31.5	52.3	104 00.5	27.3
L 08	83 42.7	316 52.9	42.6	28 36.1	59.5	75 34.0	52.3	119 03.1	27.3
U 09	98 45.2	331 52.2	41.9	43 37.0	17 59.9	90 36.6	52.2	134 05.8	27.4
N 10	113 47.6	346 51.5	41.3	58 38.0	18 00.2	105 39.2	52.1	149 08.4	27.5
E 11	128 50.1	1 50.8	40.7	73 38.9	00.6	120 41.8	52.1	164 11.1	27.5
S 12	143 52.6	16 50.1	N19 40.0	88 39.8	N18 01.0	135 44.4	N 1 52.0	179 13.7	S15 27.6
13	158 55.0	31 49.3	39.4	103 40.7	01.4	150 47.0	51.9	194 16.4	27.7
14	173 57.5	46 48.6	38.7	118 41.7	01.7	165 49.6	51.9	209 19.0	27.7
15	189 00.0	61 47.9	38.1	133 42.6	02.1	180 52.2	51.8	224 21.7	27.8
16	204 02.4	76 47.2	37.5	148 43.5	02.5	195 54.8	51.7	239 24.3	27.8
17	219 04.9	91 46.5	36.8	163 44.5	02.8	210 57.4	51.7	254 27.0	27.9
18	234 07.4	106 45.8	N19 36.2	178 45.4	N18 03.2	226 00.0	N 1 51.6	269 29.6	S15 28.0
19	249 09.8	121 45.1	35.5	193 46.3	03.6	241 02.5	51.5	284 32.2	28.0
20	264 12.3	136 44.3	34.9	208 47.3	03.9	256 05.1	51.5	299 34.9	28.1
21	279 14.8	151 43.6	34.2	223 48.2	04.3	271 07.7	51.4	314 37.5	28.2
22	294 17.2	166 42.9	33.6	238 49.1	04.7	286 10.3	51.3	329 40.2	28.2
23	309 19.7	181 42.2	32.9	253 50.0	05.0	301 12.9	51.3	344 42.8	28.3
16 00	324 22.1	196 41.5	N19 32.3	268 51.0	N18 05.4	316 15.5	N 1 51.2	359 45.5	S15 28.4
01	339 24.6	211 40.8	31.6	283 51.9	05.8	331 18.1	51.1	14 48.1	28.4
02	354 27.1	226 40.1	31.0	298 52.8	06.1	346 20.7	51.1	29 50.8	28.5
03	9 29.5	241 39.4	30.3	313 53.8	06.5	1 23.3	51.0	44 53.4	28.5
04	24 32.0	256 38.7	29.7	328 54.7	06.9	16 25.9	50.9	59 56.1	28.6
05	39 34.5	271 37.9	29.0	343 55.6	07.2	31 28.5	50.8	74 58.7	28.7
06	54 36.9	286 37.2	N19 28.4	358 56.6	N18 07.6	46 31.1	N 1 50.8	90 01.4	S15 28.7
07	69 39.4	301 36.5	27.7	13 57.5	08.0	61 33.7	50.7	105 04.0	28.8
M 08	84 41.9	316 35.8	27.0	28 58.4	08.3	76 36.3	50.6	120 06.7	28.9
A 09	99 44.3	331 35.1	26.4	43 59.4	08.7	91 38.9	50.6	135 09.3	28.9
R 10	114 46.8	346 34.4	25.7	59 00.3	09.1	106 41.5	50.5	150 11.9	29.0
T 11	129 49.3	1 33.7	25.1	74 01.2	09.4	121 44.1	50.4	165 14.6	29.1
E 12	144 51.7	16 33.0	N19 24.4	89 02.2	N18 09.8	136 46.7	N 1 50.4	180 17.2	S15 29.1
S 13	159 54.2	31 32.3	23.7	104 03.1	10.2	151 49.3	50.3	195 19.9	29.2
14	174 56.6	46 31.6	23.1	119 04.0	10.5	166 51.9	50.2	210 22.5	29.2
15	189 59.1	61 30.9	22.4	134 05.0	10.9	181 54.5	50.2	225 25.2	29.3
16	205 01.6	76 30.2	21.7	149 05.9	11.3	196 57.1	50.1	240 27.8	29.4
17	220 04.0	91 29.4	21.1	164 06.9	11.6	211 59.7	50.0	255 30.5	29.4
18	235 06.5	106 28.7	N19 20.4	179 07.8	N18 12.0	227 02.3	N 1 50.0	270 33.1	S15 29.5
19	250 09.0	121 28.0	19.7	194 08.7	12.3	242 04.9	49.9	285 35.8	29.6
20	265 11.4	136 27.3	19.1	209 09.7	12.7	257 07.5	49.8	300 38.4	29.6
21	280 13.9	151 26.6	18.4	224 10.6	13.1	272 10.1	49.7	315 41.1	29.7
22	295 16.4	166 25.9	17.7	239 11.5	13.4	287 12.7	49.7	330 43.7	29.8
23	310 18.8	181 25.2	17.0	254 12.5	13.8	302 15.3	49.6	345 46.4	29.8
	h m								
Paso Mer.	2 26.1	*v* −0.7	*d* 0.6	*v* 0.9	*d* 0.4	*v* 2.6	*d* 0.1	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.2	S40 12.6
Achernar	335 21.4	S57 07.1
Acrux	173 02.7	S63 13.6
Adhara	255 07.7	S28 59.9
Aldebaran	290 42.0	N16 33.3
Alioth	166 15.1	N55 50.6
Alkaid	152 53.8	N49 12.4
Alnair	27 34.9	S46 51.0
Alnilam	275 39.9	S 1 11.1
Alphard	217 50.0	S 8 45.2
Alphecca	126 05.4	N26 38.6
Alpheratz	357 36.5	N29 12.8
Altair	62 01.6	N 8 55.8
Ankaa	353 08.8	S42 10.8
Antares	112 18.1	S26 28.9
Arcturus	145 49.8	N19 04.1
Atria	107 13.9	S69 04.3
Avior	234 16.1	S59 34.7
Bellatrix	278 25.2	N 6 22.3
Betelgeuse	270 54.4	N 7 24.7
Canopus	263 53.6	S52 42.2
Capella	280 25.0	N46 01.1
Deneb	49 26.7	N45 21.7
Denebola	182 27.2	N14 27.0
Diphda	348 49.1	S17 51.6
Dubhe	193 44.1	N61 38.0
Elnath	278 04.6	N28 37.5
Eltanin	90 42.8	N51 29.4
Enif	33 40.4	N 9 58.8
Fomalhaut	15 16.4	S29 30.1
Gacrux	171 54.2	S57 14.5
Gienah	175 45.9	S17 39.9
Hadar	148 39.0	S60 29.1
Hamal	327 53.3	N23 34.1
Kaus Aust.	83 34.9	S34 22.5
Kochab	137 19.9	N74 04.1
Markab	13 31.6	N15 19.6
Menkar	314 08.2	N 4 10.7
Menkent	148 00.1	S36 28.9
Miaplacidus	221 39.6	S69 48.5
Mirfak	308 31.1	N49 56.2
Nunki	75 49.9	S26 16.1
Peacock	53 08.3	S56 39.8
Pollux	243 20.1	N27 58.3
Procyon	244 53.2	N 5 10.1
Rasalhague	96 00.2	N12 32.8
Regulus	207 36.9	N11 51.6
Rigel	281 05.9	S 8 10.4
Rigil Kent.	139 43.2	S60 55.8
Sabik	102 04.9	S15 45.1
Schedar	349 32.9	N56 39.5
Shaula	96 12.8	S37 07.3
Sirius	258 28.2	S16 44.6
Spica	158 24.5	S11 16.6
Suhail	222 48.2	S43 31.3
Vega	80 34.2	N38 48.5
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	233 35.7	10 53
Marte	305 05.7	6 06
Júpiter	351 50.3	2 59
Saturno	35 18.9	0 05

UT (HmGr)	SOL				LUNA							
	AHGr		Dec		AHGr	v		Dec		d	Ph	
d h	°	′	°	′	°	′	′	°	′	′	′	
14 00	178	48.1	N14	25.7	331	55.4	10.8	S 8	48.6	15.6	59.5	
01	193	48.2		24.9	346	25.2	11.0	8	33.0	15.5	59.4	
02	208	48.3		24.1	0	55.2	11.0	8	17.5	15.6	59.4	
03	223	48.4	. .	23.4	15	25.2	11.1	8	01.9	15.6	59.4	
04	238	48.6		22.6	29	55.3	11.2	7	46.3	15.7	59.3	
05	253	48.7		21.8	44	25.5	11.3	7	30.6	15.6	59.3	
06	268	48.8	N14	21.1	58	55.8	11.3	S 7	15.0	15.7	59.3	
07	283	48.9		20.3	73	26.1	11.4	6	59.3	15.7	59.2	
08	298	49.0		19.5	87	56.5	11.5	6	43.6	15.7	59.2	
09	313	49.2	. .	18.8	102	27.0	11.6	6	27.9	15.7	59.2	
10	328	49.3		18.0	116	57.6	11.6	6	12.2	15.7	59.1	
11	343	49.4		17.2	131	28.2	11.7	5	56.5	15.8	59.1	
12	358	49.5	N14	16.4	145	58.9	11.8	S 5	40.7	15.7	59.0	
13	13	49.6		15.7	160	29.7	11.9	5	25.0	15.8	59.0	
14	28	49.7		14.9	175	00.6	11.9	5	09.2	15.7	59.0	
15	43	49.9	. .	14.1	189	31.5	12.0	4	53.5	15.8	58.9	
16	58	50.0		13.3	204	02.5	12.0	4	37.7	15.8	58.9	
17	73	50.1		12.6	218	33.5	12.1	4	21.9	15.7	58.9	
18	88	50.2	N14	11.8	233	04.6	12.2	S 4	06.2	15.8	58.8	
19	103	50.4		11.0	247	35.8	12.3	3	50.4	15.8	58.8	
20	118	50.5		10.2	262	07.1	12.3	3	34.6	15.7	58.8	
21	133	50.6	. .	09.5	276	38.4	12.3	3	18.9	15.8	58.7	
22	148	50.7		08.7	291	09.7	12.4	3	03.1	15.8	58.7	
23	163	50.8		07.9	305	41.1	12.5	2	47.3	15.7	58.6	
15 00	178	51.0	N14	07.1	320	12.6	12.5	S 2	31.6	15.7	58.6	
01	193	51.1		06.4	334	44.1	12.6	2	15.9	15.8	58.6	
02	208	51.2		05.6	349	15.7	12.6	2	00.1	15.7	58.5	
03	223	51.3	. .	04.8	3	47.3	12.7	1	44.4	15.7	58.5	
04	238	51.5		04.0	18	19.0	12.8	1	28.7	15.7	58.5	
05	253	51.6		03.2	32	50.8	12.7	1	13.0	15.6	58.4	
06	268	51.7	N14	02.5	47	22.5	12.9	S 0	57.4	15.7	58.4	
07	283	51.8		01.7	61	54.4	12.8	0	41.7	15.6	58.3	
08	298	51.9		00.9	76	26.2	13.0	0	26.1	15.7	58.3	
09	313	52.1	14	00.1	90	58.2	12.9	S 0	10.4	15.6	58.3	
10	328	52.2	13	59.3	105	30.1	13.0	N 0	05.2	15.5	58.2	
11	343	52.3		58.6	120	02.1	13.1	0	20.7	15.6	58.2	
12	358	52.4	N13	57.8	134	34.2	13.1	N 0	36.3	15.5	58.1	
13	13	52.6		57.0	149	06.3	13.1	0	51.8	15.5	58.1	
14	28	52.7		56.2	163	38.4	13.2	1	07.3	15.5	58.1	
15	43	52.8	. .	55.4	178	10.6	13.2	1	22.8	15.4	58.0	
16	58	52.9		54.6	192	42.8	13.2	1	38.2	15.5	58.0	
17	73	53.1		53.9	207	15.0	13.3	1	53.7	15.4	58.0	
18	88	53.2	N13	53.1	221	47.3	13.3	N 2	09.1	15.3	57.9	
19	103	53.3		52.3	236	19.6	13.3	2	24.4	15.3	57.9	
20	118	53.5		51.5	250	51.9	13.3	2	39.7	15.3	57.8	
21	133	53.6	. .	50.7	265	24.2	13.4	2	55.0	15.3	57.8	
22	148	53.7		49.9	279	56.6	13.4	3	10.3	15.2	57.8	
23	163	53.8		49.2	294	29.0	13.5	3	25.5	15.2	57.7	
16 00	178	54.0	N13	48.4	309	01.5	13.5	N 3	40.7	15.1	57.7	
01	193	54.1		47.6	323	34.0	13.5	3	55.8	15.1	57.6	
02	208	54.2		46.8	338	06.5	13.5	4	10.9	15.1	57.6	
03	223	54.3	. .	46.0	352	39.0	13.5	4	26.0	15.0	57.6	
04	238	54.5		45.2	7	11.5	13.6	4	41.0	15.0	57.5	
05	253	54.6		44.4	21	44.1	13.5	4	56.0	15.0	57.5	
06	268	54.7	N13	43.6	36	16.6	13.6	N 5	11.0	14.9	57.5	
07	283	54.9		42.8	50	49.2	13.7	5	25.9	14.8	57.4	
08	298	55.0		42.1	65	21.9	13.6	5	40.7	14.8	57.4	
09	313	55.1	. .	41.3	79	54.5	13.6	5	55.5	14.8	57.3	
10	328	55.3		40.5	94	27.1	13.7	6	10.3	14.7	57.3	
11	343	55.4		39.7	108	59.8	13.7	6	25.0	14.7	57.3	
12	358	55.5	N13	38.9	123	32.5	13.6	N 6	39.7	14.6	57.2	
13	13	55.6		38.1	138	05.1	13.7	6	54.3	14.5	57.2	
14	28	55.8		37.3	152	37.8	13.7	7	08.8	14.5	57.1	
15	43	55.9	. .	36.5	167	10.5	13.8	7	23.3	14.5	57.1	
16	58	56.0		35.7	181	43.3	13.7	7	37.8	14.4	57.1	
17	73	56.2		34.9	196	16.0	13.7	7	52.2	14.4	57.0	
18	88	56.3	N13	34.1	210	48.7	13.7	N 8	06.6	14.3	57.0	
19	103	56.4		33.3	225	21.4	13.8	8	20.9	14.2	57.0	
20	118	56.6		32.5	239	54.2	13.7	8	35.1	14.2	56.9	
21	133	56.7	. .	31.8	254	26.9	13.8	8	49.3	14.1	56.9	
22	148	56.8		31.0	268	59.7	13.7	9	03.4	14.1	56.9	
23	163	57.0		30.2	283	32.4	13.7	N 9	17.5	14.0	56.8	
	S/D	15.8	d	0.8	S/D	16.1			15.8		15.6	

DOMINGO — LUNES — MARTES

Lat.	Aurora		Orto	Orto Luna			
	Náut.	Civil	Sol	14	15	16	17
°	h m	h m	h m	h m	h m	h m	h m
N 72	////	////	02 24	21 16	20 44	20 11	19 28
N 70	////	////	02 56	21 12	20 48	20 24	19 54
68	////	01 43	03 19	21 08	20 51	20 34	20 14
66	////	02 21	03 37	21 05	20 54	20 42	20 29
64	////	02 47	03 52	21 02	20 56	20 49	20 43
62	01 31	03 06	04 04	21 00	20 58	20 55	20 54
60	02 06	03 22	04 14	20 58	20 59	21 01	21 03
N 58	02 30	03 36	04 23	20 56	21 01	21 06	21 12
56	02 48	03 47	04 31	20 54	21 02	21 10	21 19
54	03 04	03 57	04 38	20 53	21 03	21 14	21 26
52	03 17	04 06	04 44	20 51	21 04	21 17	21 32
50	03 28	04 13	04 50	20 50	21 05	21 21	21 37
45	03 50	04 30	05 02	20 47	21 08	21 28	21 49
N 40	04 07	04 42	05 11	20 45	21 09	21 34	21 59
35	04 21	04 53	05 20	20 43	21 11	21 39	22 07
30	04 32	05 02	05 27	20 41	21 13	21 43	22 15
20	04 50	05 17	05 40	20 38	21 15	21 51	22 28
N 10	05 04	05 29	05 51	20 36	21 17	21 58	22 39
0	05 15	05 40	06 01	20 33	21 20	22 05	22 50
S 10	05 25	05 50	06 11	20 31	21 22	22 11	23 01
20	05 33	05 59	06 22	20 28	21 24	22 19	23 12
30	05 41	06 09	06 34	20 25	21 27	22 27	23 26
35	05 45	06 15	06 41	20 23	21 28	22 32	23 34
40	05 49	06 20	06 48	20 21	21 30	22 37	23 43
45	05 52	06 27	06 57	20 19	21 32	22 43	23 53
S 50	05 56	06 34	07 08	20 16	21 35	22 51	24 06
52	05 58	06 38	07 13	20 15	21 36	22 55	24 12
54	06 00	06 42	07 19	20 14	21 37	22 59	24 19
56	06 02	06 46	07 25	20 12	21 39	23 03	24 26
58	06 04	06 50	07 32	20 10	21 40	23 08	24 34
S 60	06 06	06 55	07 39	20 08	21 42	23 14	24 44

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	14	15	16	17
°	h m	h m	h m	h m	h m	h m	h m
N 72	21 39	////	////	06 33	08 51	11 04	13 23
N 70	21 09	23 32	////	06 44	08 52	10 54	12 59
68	20 47	22 19	////	06 53	08 52	10 46	12 41
66	20 29	21 44	////	07 01	08 53	10 40	12 27
64	20 15	21 19	23 36	07 07	08 53	10 34	12 15
62	20 03	21 00	22 31	07 12	08 53	10 30	12 05
60	19 53	20 44	21 59	07 17	08 53	10 26	11 57
N 58	19 45	20 31	21 36	07 21	08 54	10 22	11 49
56	19 37	20 20	21 18	07 25	08 54	10 19	11 43
54	19 30	20 10	21 03	07 28	08 54	10 16	11 37
52	19 24	20 02	20 51	07 31	08 54	10 14	11 32
50	19 18	19 54	20 40	07 34	08 54	10 12	11 27
45	19 07	19 39	20 18	07 39	08 54	10 07	11 17
N 40	18 57	19 26	20 01	07 44	08 55	10 02	11 09
35	18 49	19 15	19 47	07 48	08 55	09 59	11 01
30	18 41	19 06	19 36	07 52	08 55	09 56	10 55
20	18 29	18 52	19 19	07 58	08 55	09 50	10 44
N 10	18 18	18 40	19 05	08 03	08 55	09 46	10 35
0	18 08	18 29	18 54	08 08	08 55	09 41	10 26
S 10	17 58	18 20	18 45	08 13	08 56	09 37	10 17
20	17 47	18 10	18 36	08 18	08 56	09 32	10 08
30	17 36	18 00	18 28	08 24	08 56	09 27	09 58
35	17 29	17 55	18 25	08 27	08 56	09 23	09 51
40	17 21	17 49	18 21	08 31	08 56	09 20	09 45
45	17 12	17 43	18 17	08 35	08 56	09 16	09 37
S 50	17 01	17 35	18 13	08 40	08 56	09 11	09 27
52	16 56	17 32	18 12	08 42	08 56	09 09	09 23
54	16 51	17 28	18 10	08 45	08 56	09 07	09 18
56	16 45	17 24	18 08	08 48	08 56	09 04	09 12
58	16 38	17 20	18 06	08 51	08 56	09 01	09 07
S 60	16 30	17 15	18 05	08 54	08 56	08 58	09 00

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
14	04 48	04 42	12 05	01 56	14 21	17	92
15	04 36	04 30	12 05	02 44	15 08	18	85
16	04 24	04 18	12 04	03 30	15 53	19	76

UT (HmGr)	ARIES	VENUS −3·9		MARTE +0·0		JÚPITER −2·8		SATURNO +0·2	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
17 00	325 21.3	196 24.5	N19 16.4	269 13.4	N18 14.1	317 17.9	N 1 49.5	0 49.0	S15 29.9
01	340 23.7	211 23.8	15.7	284 14.4	14.5	332 20.5	49.5	15 51.7	29.9
02	355 26.2	226 23.1	15.0	299 15.3	14.9	347 23.1	49.4	30 54.3	30.0
03	10 28.7	241 22.4	14.3	314 16.2	15.2	2 25.7	49.3	45 56.9	30.1
04	25 31.1	256 21.7	13.7	329 17.2	15.6	17 28.3	49.2	60 59.6	30.1
05	40 33.6	271 21.0	13.0	344 18.1	15.9	32 30.9	49.2	76 02.2	30.2
06	55 36.1	286 20.3	N19 12.3	359 19.0	N18 16.3	47 33.5	N 1 49.1	91 04.9	S15 30.3
07	70 38.5	301 19.6	11.6	14 20.0	16.7	62 36.1	49.0	106 07.5	30.3
08	85 41.0	316 18.9	10.9	29 20.9	17.0	77 38.7	49.0	121 10.2	30.4
M 09	100 43.5	331 18.2	10.3	44 21.9	17.4	92 41.3	48.9	136 12.8	30.5
I 10	115 45.9	346 17.5	09.6	59 22.8	17.7	107 43.9	48.8	151 15.5	30.5
É 11	130 48.4	1 16.8	08.9	74 23.7	18.1	122 46.5	48.7	166 18.1	30.6
R 12	145 50.9	16 16.1	N19 08.2	89 24.7	N18 18.5	137 49.1	N 1 48.7	181 20.8	S15 30.6
C 13	160 53.3	31 15.4	07.5	104 25.6	18.8	152 51.7	48.6	196 23.4	30.7
O 14	175 55.8	46 14.7	06.8	119 26.6	19.2	167 54.3	48.5	211 26.1	30.8
L 15	190 58.2	61 14.0	06.1	134 27.5	19.5	182 56.9	48.5	226 28.7	30.8
E 16	206 00.7	76 13.3	05.5	149 28.5	19.9	197 59.5	48.4	241 31.4	30.9
S 17	221 03.2	91 12.6	04.8	164 29.4	20.2	213 02.1	48.3	256 34.0	31.0
18	236 05.6	106 11.9	N19 04.1	179 30.3	N18 20.6	228 04.7	N 1 48.2	271 36.6	S15 31.0
19	251 08.1	121 11.2	03.4	194 31.3	21.0	243 07.3	48.2	286 39.3	31.1
20	266 10.6	136 10.5	02.7	209 32.2	21.3	258 09.9	48.1	301 41.9	31.1
21	281 13.0	151 09.8	02.0	224 33.2	21.7	273 12.6	48.0	316 44.6	31.2
22	296 15.5	166 09.1	01.3	239 34.1	22.0	288 15.2	48.0	331 47.2	31.3
23	311 18.0	181 08.5	19 00.6	254 35.1	22.4	303 17.8	47.9	346 49.9	31.3
18 00	326 20.4	196 07.8	N18 59.9	269 36.0	N18 22.7	318 20.4	N 1 47.8	1 52.5	S15 31.4
01	341 22.9	211 07.1	59.2	284 36.9	23.1	333 23.0	47.7	16 55.2	31.5
02	356 25.3	226 06.4	58.5	299 37.9	23.4	348 25.6	47.7	31 57.8	31.5
03	11 27.8	241 05.7	57.8	314 38.8	23.8	3 28.2	47.6	47 00.5	31.6
04	26 30.3	256 05.0	57.1	329 39.8	24.1	18 30.8	47.5	62 03.1	31.7
05	41 32.7	271 04.3	56.4	344 40.7	24.5	33 33.4	47.4	77 05.8	31.7
06	56 35.2	286 03.6	N18 55.7	359 41.7	N18 24.8	48 36.0	N 1 47.4	92 08.4	S15 31.8
07	71 37.7	301 02.9	55.0	14 42.6	25.2	63 38.6	47.3	107 11.1	31.8
08	86 40.1	316 02.2	54.3	29 43.6	25.6	78 41.3	47.2	122 13.7	31.9
J 09	101 42.6	331 01.5	53.6	44 44.5	25.9	93 43.9	47.1	137 16.3	32.0
U 10	116 45.1	346 00.8	52.9	59 45.5	26.3	108 46.5	47.1	152 19.0	32.0
E 11	131 47.5	1 00.2	52.2	74 46.4	26.6	123 49.1	47.0	167 21.6	32.1
V 12	146 50.0	15 59.5	N18 51.5	89 47.3	N18 27.0	138 51.7	N 1 46.9	182 24.3	S15 32.2
E 13	161 52.5	30 58.8	50.8	104 48.3	27.3	153 54.3	46.8	197 26.9	32.2
S 14	176 54.9	45 58.1	50.0	119 49.2	27.7	168 56.9	46.8	212 29.6	32.3
15	191 57.4	60 57.4	49.3	134 50.2	28.0	183 59.5	46.7	227 32.2	32.4
16	206 59.8	75 56.7	48.6	149 51.1	28.4	199 02.2	46.6	242 34.9	32.4
17	222 02.3	90 56.0	47.9	164 52.1	28.7	214 04.8	46.5	257 37.5	32.5
18	237 04.8	105 55.3	N18 47.2	179 53.0	N18 29.1	229 07.4	N 1 46.5	272 40.2	S15 32.5
19	252 07.2	120 54.6	46.5	194 54.0	29.4	244 10.0	46.4	287 42.8	32.6
20	267 09.7	135 54.0	45.8	209 54.9	29.8	259 12.6	46.3	302 45.5	32.7
21	282 12.2	150 53.3	45.0	224 55.9	30.1	274 15.2	46.2	317 48.1	32.7
22	297 14.6	165 52.6	44.3	239 56.8	30.5	289 17.8	46.2	332 50.8	32.8
23	312 17.1	180 51.9	43.6	254 57.8	30.8	304 20.4	46.1	347 53.4	32.9
19 00	327 19.6	195 51.2	N18 42.9	269 58.7	N18 31.2	319 23.1	N 1 46.0	2 56.0	S15 32.9
01	342 22.0	210 50.5	42.2	284 59.7	31.5	334 25.7	45.9	17 58.7	33.0
02	357 24.5	225 49.9	41.4	300 00.6	31.9	349 28.3	45.9	33 01.3	33.0
03	12 27.0	240 49.2	40.7	315 01.6	32.2	4 30.9	45.8	48 04.0	33.1
04	27 29.4	255 48.5	40.0	330 02.5	32.5	19 33.5	45.7	63 06.6	33.2
05	42 31.9	270 47.8	39.3	345 03.5	32.9	34 36.1	45.6	78 09.3	33.2
06	57 34.3	285 47.1	N18 38.6	0 04.4	N18 33.2	49 38.8	N 1 45.6	93 11.9	S15 33.3
07	72 36.8	300 46.4	37.8	15 05.4	33.6	64 41.4	45.5	108 14.6	33.4
V 08	87 39.3	315 45.8	37.1	30 06.4	33.9	79 44.0	45.4	123 17.2	33.4
I 09	102 41.7	330 45.1	36.4	45 07.3	34.3	94 46.6	45.3	138 19.9	33.5
E 10	117 44.2	345 44.4	35.6	60 08.3	34.6	109 49.2	45.2	153 22.5	33.5
R 11	132 46.7	0 43.7	34.9	75 09.2	35.0	124 51.9	45.2	168 25.2	33.6
N 12	147 49.1	15 43.0	N18 34.2	90 10.2	N18 35.3	139 54.5	N 1 45.1	183 27.8	S15 33.7
E 13	162 51.6	30 42.4	33.4	105 11.1	35.7	154 57.1	45.0	198 30.4	33.7
S 14	177 54.1	45 41.7	32.7	120 12.1	36.0	169 59.7	44.9	213 33.1	33.8
15	192 56.5	60 41.0	32.0	135 13.0	36.3	185 02.3	44.9	228 35.7	33.9
16	207 59.0	75 40.3	31.2	150 14.0	36.7	200 04.9	44.8	243 38.4	33.9
17	223 01.4	90 39.6	30.5	165 14.9	37.0	215 07.6	44.7	258 41.0	34.0
18	238 03.9	105 39.0	N18 29.8	180 15.9	N18 37.4	230 10.2	N 1 44.6	273 43.7	S15 34.0
19	253 06.4	120 38.3	29.0	195 16.9	37.7	245 12.8	44.5	288 46.3	34.1
20	268 08.8	135 37.6	28.3	210 17.8	38.1	260 15.4	44.5	303 49.0	34.2
21	283 11.3	150 36.9	27.6	225 18.8	38.4	275 18.1	44.4	318 51.6	34.2
22	298 13.8	165 36.3	26.8	240 19.7	38.7	290 20.7	44.3	333 54.3	34.3
23	313 16.2	180 35.6	26.1	255 20.7	39.1	305 23.3	44.2	348 56.9	34.4
	h m								
Paso Mer.	2 14.3	*v* −0.7	*d* 0.7	*v* 0.9	*d* 0.4	*v* 2.6	*d* 0.1	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.2	S40 12.6
Achernar	335 21.4	S57 07.1
Acrux	173 02.8	S63 13.5
Adhara	255 07.7	S28 59.9
Aldebaran	290 42.0	N16 33.3
Alioth	166 15.1	N55 50.6
Alkaid	152 53.8	N49 12.4
Alnair	27 34.9	S46 51.0
Alnilam	275 39.9	S 1 11.1
Alphard	217 50.0	S 8 45.2
Alphecca	126 05.4	N26 38.6
Alpheratz	357 36.5	N29 12.8
Altair	62 01.6	N 8 55.8
Ankaa	353 08.8	S42 10.8
Antares	112 18.2	S26 28.9
Arcturus	145 49.8	N19 04.1
Atria	107 14.0	S69 04.3
Avior	234 16.1	S59 34.7
Bellatrix	278 25.1	N 6 22.3
Betelgeuse	270 54.4	N 7 24.8
Canopus	263 53.6	S52 42.2
Capella	280 25.0	N46 01.1
Deneb	49 26.7	N45 21.7
Denebola	182 27.2	N14 27.0
Diphda	348 49.0	S17 51.6
Dubhe	193 44.1	N61 38.0
Elnath	278 04.5	N28 37.5
Eltanin	90 42.8	N51 29.4
Enif	33 40.4	N 9 58.8
Fomalhaut	15 16.3	S29 30.1
Gacrux	171 54.3	S57 14.4
Gienah	175 45.9	S17 39.9
Hadar	148 39.0	S60 29.1
Hamal	327 53.3	N23 34.1
Kaus Aust.	83 34.9	S34 22.5
Kochab	137 20.0	N74 04.1
Markab	13 31.5	N15 19.6
Menkar	314 08.2	N 4 10.7
Menkent	148 00.1	S36 28.9
Miaplacidus	221 39.6	S69 48.4
Mirfak	308 31.1	N49 56.3
Nunki	75 49.9	S26 16.1
Peacock	53 08.3	S56 39.8
Pollux	243 20.0	N27 58.3
Procyon	244 53.2	N 5 10.1
Rasalhague	96 00.2	N12 32.8
Regulus	207 36.9	N11 51.6
Rigel	281 05.9	S 8 10.4
Rigil Kent.	139 43.2	S60 55.8
Sabik	102 04.9	S15 45.1
Schedar	349 32.9	N56 39.5
Shaula	96 12.8	S37 07.3
Sirius	258 28.2	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 48.2	S43 31.3
Vega	80 34.3	N38 48.5
Zuben'ubi	136 58.3	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	229 47.3	10 56
Marte	303 15.6	6 01
Júpiter	352 00.0	2 46
Saturno	35 32.1	23 48

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph		
d h	°	′	°	′	°	′	°	′	′		
17 00	178	57.1	N13	29.4	298	05.1	13.8	N 9	31.5	13.9	56.8
01	193	57.2		28.6	312	37.9	13.7	9	45.4	13.9	56.7
02	208	57.4		27.8	327	10.6	13.8	9	59.3	13.8	56.7
03	223	57.5	. .	27.0	341	43.4	13.7	10	13.1	13.8	56.7
04	238	57.6		26.2	356	16.1	13.7	10	26.9	13.7	56.6
05	253	57.8		25.4	10	48.8	13.7	10	40.6	13.6	56.6
06	268	57.9	N13	24.6	25	21.5	13.8	N10	54.2	13.6	56.6
07	283	58.0		23.8	39	54.3	13.7	11	07.8	13.5	56.5
08	298	58.2		23.0	54	27.0	13.7	11	21.3	13.4	56.5
09	313	58.3	. .	22.2	68	59.7	13.7	11	34.7	13.4	56.5
10	328	58.4		21.4	83	32.4	13.6	11	48.1	13.3	56.4
11	343	58.6		20.6	98	05.0	13.7	12	01.4	13.2	56.4
12	358	58.7	N13	19.8	112	37.7	13.7	N12	14.6	13.2	56.4
13	13	58.8		19.0	127	10.4	13.6	12	27.8	13.0	56.3
14	28	59.0		18.2	141	43.0	13.7	12	40.8	13.1	56.3
15	43	59.1	. .	17.4	156	15.7	13.6	12	53.9	12.9	56.3
16	58	59.2		16.6	170	48.3	13.6	13	06.8	12.9	56.2
17	73	59.4		15.8	185	20.9	13.6	13	19.7	12.8	56.2
18	88	59.5	N13	15.0	199	53.5	13.5	N13	32.5	12.7	56.2
19	103	59.7		14.2	214	26.0	13.6	13	45.2	12.6	56.1
20	118	59.8		13.4	228	58.6	13.5	13	57.8	12.6	56.1
21	133	59.9	. .	12.6	243	31.1	13.5	14	10.4	12.5	56.1
22	149	00.1		11.8	258	03.6	13.5	14	22.9	12.4	56.0
23	164	00.2		11.0	272	36.1	13.5	14	35.3	12.3	56.0
18 00	179	00.3	N13	10.2	287	08.6	13.4	N14	47.6	12.3	56.0
01	194	00.5		09.4	301	41.0	13.5	14	59.9	12.2	55.9
02	209	00.6		08.5	316	13.5	13.4	15	12.1	12.1	55.9
03	224	00.8	. .	07.7	330	45.9	13.4	15	24.2	12.0	55.9
04	239	00.9		06.9	345	18.3	13.3	15	36.2	11.9	55.8
05	254	01.0		06.1	359	50.6	13.3	15	48.1	11.9	55.8
06	269	01.2	N13	05.3	14	22.9	13.4	N16	00.0	11.8	55.8
07	284	01.3		04.5	28	55.3	13.2	16	11.8	11.6	55.7
08	299	01.5		03.7	43	27.5	13.3	16	23.4	11.6	55.7
09	314	01.6	. .	02.9	57	59.8	13.2	16	35.0	11.6	55.7
10	329	01.7		02.1	72	32.0	13.2	16	46.6	11.4	55.7
11	344	01.9		01.3	87	04.2	13.2	16	58.0	11.3	55.6
12	359	02.0	N13	00.5	101	36.4	13.1	N17	09.3	11.3	55.6
13	14	02.2	12	59.7	116	08.5	13.1	17	20.6	11.2	55.6
14	29	02.3		58.9	130	40.6	13.1	17	31.8	11.0	55.5
15	44	02.4	. .	58.0	145	12.7	13.1	17	42.8	11.0	55.5
16	59	02.6		57.2	159	44.8	13.0	17	53.8	10.9	55.5
17	74	02.7		56.4	174	16.8	13.0	18	04.7	10.8	55.5
18	89	02.9	N12	55.6	188	48.8	12.9	N18	15.5	10.8	55.4
19	104	03.0		54.8	203	20.7	12.9	18	26.3	10.6	55.4
20	119	03.1		54.0	217	52.6	12.9	18	36.9	10.5	55.4
21	134	03.3	. .	53.2	232	24.5	12.9	18	47.4	10.5	55.3
22	149	03.4		52.4	246	56.4	12.8	18	57.9	10.3	55.3
23	164	03.6		51.6	261	28.2	12.8	19	08.2	10.3	55.3
19 00	179	03.7	N12	50.7	276	00.0	12.7	N19	18.5	10.1	55.3
01	194	03.9		49.9	290	31.7	12.7	19	28.6	10.1	55.2
02	209	04.0		49.1	305	03.4	12.7	19	38.7	10.0	55.2
03	224	04.1	. .	48.3	319	35.1	12.6	19	48.7	9.8	55.2
04	239	04.3		47.5	334	06.7	12.6	19	58.5	9.8	55.2
05	254	04.4		46.7	348	38.3	12.6	20	08.3	9.7	55.1
06	269	04.6	N12	45.9	3	09.9	12.5	N20	18.0	9.5	55.1
07	284	04.7		45.0	17	41.4	12.5	20	27.5	9.5	55.1
08	299	04.9		44.2	32	12.9	12.5	20	37.0	9.4	55.1
09	314	05.0	. .	43.4	46	44.4	12.4	20	46.4	9.3	55.1
10	329	05.2		42.6	61	15.8	12.4	20	55.7	9.1	55.0
11	344	05.3		41.8	75	47.2	12.3	21	04.8	9.1	55.0
12	359	05.4	N12	41.0	90	18.5	12.3	N21	13.9	9.0	55.0
13	14	05.6		40.1	104	49.8	12.3	21	22.9	8.9	55.0
14	29	05.7		39.3	119	21.1	12.2	21	31.8	8.7	54.9
15	44	05.9	. .	38.5	133	52.3	12.2	21	40.5	8.7	54.9
16	59	06.0		37.7	148	23.5	12.1	21	49.2	8.5	54.9
17	74	06.2		36.9	162	54.6	12.2	21	57.7	8.5	54.9
18	89	06.3	N12	36.0	177	25.8	12.0	N22	06.2	8.3	54.9
19	104	06.5		35.2	191	56.8	12.1	22	14.5	8.2	54.8
20	119	06.6		34.4	206	27.9	11.9	22	22.7	8.2	54.8
21	134	06.8	. .	33.6	220	58.8	12.0	22	30.9	8.0	54.8
22	149	06.9		32.8	235	29.8	11.9	22	38.9	7.9	54.8
23	164	07.1		31.9	250	00.7	11.9	N22	46.8	7.8	54.8
	S/D	15.8	*d*	0.8	S/D	15.4		15.1			15.0

Lat.	Aurora				Orto Sol		Orto Luna							
	Náut.		Civil				17		18		19		20	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	////		////		02	44	19	28	▭		▭		▭	
N 70	////		01	12	03	11	19	54	19	04	▭		▭	
68	////		02	05	03	32	20	14	19	45	▭		▭	
66	////		02	36	03	48	20	29	20	13	19	47	▭	
64	01	04	02	59	04	01	20	43	20	35	20	25	20	09
62	01	50	03	17	04	12	20	54	20	52	20	53	20	56
60	02	19	03	31	04	21	21	03	21	07	21	14	21	27
N 58	02	40	03	43	04	29	21	12	21	20	21	31	21	50
56	02	57	03	54	04	37	21	19	21	30	21	46	22	09
54	03	11	04	03	04	43	21	26	21	40	21	59	22	24
52	03	23	04	11	04	49	21	32	21	49	22	10	22	38
50	03	34	04	18	04	54	21	37	21	56	22	20	22	50
45	03	55	04	33	05	05	21	49	22	13	22	41	23	15
N 40	04	11	04	46	05	14	21	59	22	26	22	58	23	35
35	04	24	04	56	05	22	22	07	22	38	23	12	23	52
30	04	34	05	04	05	29	22	15	22	48	23	25	24	06
20	04	51	05	18	05	41	22	28	23	06	23	47	24	31
N 10	05	04	05	29	05	51	22	39	23	21	24	05	00	05
0	05	15	05	39	06	01	22	50	23	36	24	23	00	23
S 10	05	23	05	48	06	10	23	01	23	50	24	41	00	41
20	05	31	05	57	06	20	23	12	24	06	00	06	01	00
30	05	38	06	06	06	31	23	26	24	24	00	24	01	22
35	05	41	06	11	06	37	23	34	24	35	00	35	01	35
40	05	45	06	17	06	44	23	43	24	47	00	47	01	50
45	05	48	06	22	06	53	23	53	25	01	01	01	02	08
S 50	05	51	06	29	07	03	24	06	00	06	01	19	02	31
52	05	53	06	32	07	07	24	12	00	12	01	28	02	41
54	05	54	06	35	07	12	24	19	00	19	01	37	02	54
56	05	55	06	39	07	18	24	26	00	26	01	48	03	08
58	05	57	06	43	07	24	24	34	00	34	02	00	03	24
S 60	05	58	06	47	07	31	24	44	00	44	02	15	03	44

Lat.	Ocaso Sol		Crepúsculo				Ocaso Luna							
			Civil		Náut.		17		18		19		20	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	21	19	////		////		13	23	▭		▭		▭	
N 70	20	53	22	45	////		12	59	15	24	▭		▭	
68	20	33	21	57	////		12	41	14	45	▭		▭	
66	20	18	21	28	////		12	27	14	18	16	22	▭	
64	20	05	21	06	22	54	12	15	13	57	15	44	17	42
62	19	54	20	49	22	12	12	05	13	41	15	18	16	55
60	19	45	20	34	21	45	11	57	13	27	14	57	16	25
N 58	19	37	20	22	21	25	11	49	13	15	14	40	16	02
56	19	30	20	12	21	08	11	43	13	05	14	26	15	44
54	19	24	20	03	20	54	11	37	12	56	14	14	15	28
52	19	18	19	55	20	43	11	32	12	48	14	03	15	15
50	19	13	19	48	20	33	11	27	12	41	13	54	15	03
45	19	02	19	33	20	12	11	17	12	26	13	34	14	39
N 40	18	53	19	21	19	56	11	09	12	14	13	18	14	20
35	18	45	19	12	19	43	11	01	12	03	13	04	14	04
30	18	38	19	03	19	33	10	55	11	54	12	52	13	50
20	18	27	18	49	19	16	10	44	11	38	12	32	13	26
N 10	18	17	18	38	19	03	10	35	11	24	12	15	13	06
0	18	07	18	28	18	53	10	26	11	12	11	58	12	47
S 10	17	58	18	20	18	44	10	17	10	59	11	42	12	28
20	17	48	18	11	18	37	10	08	10	45	11	25	12	07
30	17	37	18	02	18	30	09	58	10	30	11	05	11	44
35	17	31	17	57	18	27	09	51	10	21	10	54	11	30
40	17	24	17	52	18	24	09	45	10	11	10	40	11	15
45	17	16	17	46	18	20	09	37	09	59	10	25	10	56
S 50	17	06	17	39	18	17	09	27	09	45	10	06	10	32
52	17	01	17	36	18	16	09	23	09	38	09	57	10	21
54	16	56	17	33	18	15	09	18	09	31	09	47	10	09
56	16	51	17	30	18	13	09	12	09	22	09	36	09	54
58	16	44	17	26	18	12	09	07	09	13	09	23	09	37
S 60	16	37	17	22	18	10	09	00	09	03	09	08	09	17

Día	SOL						LUNA					
	Ec. Tiempo				Paso Mer.		Paso Mer.				Edad	Fase
	00h		12h				Sup.		Inf.			
d	m	s	m	s	h	m	h	m	h	m	d	%
17	04	12	04	05	12	04	04	15	16	38	20	67
18	03	59	03	52	12	04	05	01	17	24	21	57
19	03	45	03	38	12	04	05	47	18	11	22	47

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·1		JÚPITER −2·8		SATURNO +0·3	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
20 00	328 18.7	195 34.9	N18 25.3	270 21.6	N18 39.4	320 25.9	N 1 44.1	3 59.6	S15 34.4
01	343 21.2	210 34.2	24.6	285 22.6	39.8	335 28.5	44.1	19 02.2	34.5
02	358 23.6	225 33.6	23.9	300 23.6	40.1	350 31.2	44.0	34 04.8	34.6
03	13 26.1	240 32.9	23.1	315 24.5	40.5	5 33.8	43.9	49 07.5	34.6
04	28 28.6	255 32.2	22.4	330 25.5	40.8	20 36.4	43.8	64 10.1	34.7
05	43 31.0	270 31.5	21.6	345 26.4	41.1	35 39.0	43.8	79 12.8	34.7
06	58 33.5	285 30.9	N18 20.9	0 27.4	N18 41.5	50 41.7	N 1 43.7	94 15.4	S15 34.8
07	73 35.9	300 30.2	20.1	15 28.4	41.8	65 44.3	43.6	109 18.1	34.9
08	88 38.4	315 29.5	19.4	30 29.3	42.2	80 46.9	43.5	124 20.7	34.9
S 09	103 40.9	330 28.8	18.6	45 30.3	42.5	95 49.5	43.4	139 23.4	35.0
Á 10	118 43.3	345 28.2	17.9	60 31.2	42.8	110 52.2	43.4	154 26.0	35.1
B 11	133 45.8	0 27.5	17.1	75 32.2	43.2	125 54.8	43.3	169 28.7	35.1
A 12	148 48.3	15 26.8	N18 16.4	90 33.2	N18 43.5	140 57.4	N 1 43.2	184 31.3	S15 35.2
D 13	163 50.7	30 26.2	15.6	105 34.1	43.8	156 00.0	43.1	199 34.0	35.2
O 14	178 53.2	45 25.5	14.9	120 35.1	44.2	171 02.7	43.0	214 36.6	35.3
15	193 55.7	60 24.8	14.1	135 36.0	44.5	186 05.3	43.0	229 39.2	35.4
16	208 58.1	75 24.2	13.3	150 37.0	44.9	201 07.9	42.9	244 41.9	35.4
17	224 00.6	90 23.5	12.6	165 38.0	45.2	216 10.5	42.8	259 44.5	35.5
18	239 03.1	105 22.8	N18 11.8	180 38.9	N18 45.5	231 13.2	N 1 42.7	274 47.2	S15 35.6
19	254 05.5	120 22.2	11.1	195 39.9	45.9	246 15.8	42.6	289 49.8	35.6
20	269 08.0	135 21.5	10.3	210 40.9	46.2	261 18.4	42.5	304 52.5	35.7
21	284 10.4	150 20.8	09.6	225 41.8	46.5	276 21.0	42.5	319 55.1	35.7
22	299 12.9	165 20.2	08.8	240 42.8	46.9	291 23.7	42.4	334 57.8	35.8
23	314 15.4	180 19.5	08.0	255 43.8	47.2	306 26.3	42.3	350 00.4	35.9
21 00	329 17.8	195 18.8	N18 07.3	270 44.7	N18 47.5	321 28.9	N 1 42.2	5 03.1	S15 35.9
01	344 20.3	210 18.2	06.5	285 45.7	47.9	336 31.6	42.1	20 05.7	36.0
02	359 22.8	225 17.5	05.7	300 46.7	48.2	351 34.2	42.1	35 08.3	36.1
03	14 25.2	240 16.8	05.0	315 47.6	48.6	6 36.8	42.0	50 11.0	36.1
04	29 27.7	255 16.2	04.2	330 48.6	48.9	21 39.5	41.9	65 13.6	36.2
05	44 30.2	270 15.5	03.4	345 49.6	49.2	36 42.1	41.8	80 16.3	36.2
06	59 32.6	285 14.8	N18 02.7	0 50.5	N18 49.6	51 44.7	N 1 41.7	95 18.9	S15 36.3
07	74 35.1	300 14.2	01.9	15 51.5	49.9	66 47.3	41.6	110 21.6	36.4
D 08	89 37.6	315 13.5	01.1	30 52.5	50.2	81 50.0	41.6	125 24.2	36.4
O 09	104 40.0	330 12.8	18 00.4	45 53.4	50.6	96 52.6	41.5	140 26.9	36.5
M 10	119 42.5	345 12.2	17 59.6	60 54.4	50.9	111 55.2	41.4	155 29.5	36.5
I 11	134 44.9	0 11.5	58.8	75 55.4	51.2	126 57.9	41.3	170 32.2	36.6
N 12	149 47.4	15 10.9	N17 58.0	90 56.3	N18 51.5	142 00.5	N 1 41.2	185 34.8	S15 36.7
G 13	164 49.9	30 10.2	57.3	105 57.3	51.9	157 03.1	41.1	200 37.4	36.7
O 14	179 52.3	45 09.5	56.5	120 58.3	52.2	172 05.8	41.1	215 40.1	36.8
15	194 54.8	60 08.9	55.7	135 59.2	52.5	187 08.4	41.0	230 42.7	36.9
16	209 57.3	75 08.2	54.9	151 00.2	52.9	202 11.0	40.9	245 45.4	36.9
17	224 59.7	90 07.6	54.2	166 01.2	53.2	217 13.7	40.8	260 48.0	37.0
18	240 02.2	105 06.9	N17 53.4	181 02.1	N18 53.5	232 16.3	N 1 40.7	275 50.7	S15 37.0
19	255 04.7	120 06.2	52.6	196 03.1	53.9	247 18.9	40.6	290 53.3	37.1
20	270 07.1	135 05.6	51.8	211 04.1	54.2	262 21.6	40.6	305 56.0	37.2
21	285 09.6	150 04.9	51.0	226 05.1	54.5	277 24.2	40.5	320 58.6	37.2
22	300 12.1	165 04.3	50.2	241 06.0	54.9	292 26.8	40.4	336 01.3	37.3
23	315 14.5	180 03.6	49.5	256 07.0	55.2	307 29.5	40.3	351 03.9	37.4
22 00	330 17.0	195 03.0	N17 48.7	271 08.0	N18 55.5	322 32.1	N 1 40.2	6 06.5	S15 37.4
01	345 19.4	210 02.3	47.9	286 08.9	55.8	337 34.7	40.1	21 09.2	37.5
02	0 21.9	225 01.7	47.1	301 09.9	56.2	352 37.4	40.1	36 11.8	37.5
03	15 24.4	240 01.0	46.3	316 10.9	56.5	7 40.0	40.0	51 14.5	37.6
04	30 26.8	255 00.3	45.5	331 11.9	56.8	22 42.7	39.9	66 17.1	37.7
05	45 29.3	269 59.7	44.7	346 12.8	57.2	37 45.3	39.8	81 19.8	37.7
06	60 31.8	284 59.0	N17 44.0	1 13.8	N18 57.5	52 47.9	N 1 39.7	96 22.4	S15 37.8
07	75 34.2	299 58.4	43.2	16 14.8	57.8	67 50.6	39.6	111 25.1	37.9
L 08	90 36.7	314 57.7	42.4	31 15.8	58.1	82 53.2	39.5	126 27.7	37.9
U 09	105 39.2	329 57.1	41.6	46 16.7	58.5	97 55.8	39.5	141 30.3	38.0
N 10	120 41.6	344 56.4	40.8	61 17.7	58.8	112 58.5	39.4	156 33.0	38.0
E 11	135 44.1	359 55.8	40.0	76 18.7	59.1	128 01.1	39.3	171 35.6	38.1
S 12	150 46.5	14 55.1	N17 39.2	91 19.7	N18 59.4	143 03.8	N 1 39.2	186 38.3	S15 38.2
13	165 49.0	29 54.5	38.4	106 20.6	18 59.8	158 06.4	39.1	201 40.9	38.2
14	180 51.5	44 53.8	37.6	121 21.6	19 00.1	173 09.0	39.0	216 43.6	38.3
15	195 53.9	59 53.2	36.8	136 22.6	00.4	188 11.7	38.9	231 46.2	38.3
16	210 56.4	74 52.5	36.0	151 23.6	00.7	203 14.3	38.9	246 48.9	38.4
17	225 58.9	89 51.9	35.2	166 24.6	01.1	218 17.0	38.8	261 51.5	38.5
18	241 01.3	104 51.2	N17 34.4	181 25.5	N19 01.4	233 19.6	N 1 38.7	276 54.2	S15 38.5
19	256 03.8	119 50.6	33.6	196 26.5	01.7	248 22.2	38.6	291 56.8	38.6
20	271 06.3	134 49.9	32.8	211 27.5	02.0	263 24.9	38.5	306 59.4	38.7
21	286 08.7	149 49.3	32.0	226 28.5	02.4	278 27.5	38.4	322 02.1	38.7
22	301 11.2	164 48.6	31.2	241 29.5	02.7	293 30.2	38.3	337 04.7	38.8
23	316 13.7	179 48.0	30.4	256 30.4	03.0	308 32.8	38.3	352 07.4	38.8
	h m								
Paso Mer.	2 02.5	*v* −0.7	*d* 0.8	*v* 1.0	*d* 0.3	*v* 2.6	*d* 0.1	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.2	S40 12.6
Achernar	335 21.4	S57 07.1
Acrux	173 02.8	S63 13.5
Adhara	255 07.7	S28 59.9
Aldebaran	290 41.9	N16 33.3
Alioth	166 15.1	N55 50.5
Alkaid	152 53.8	N49 12.4
Alnair	27 34.9	S46 51.0
Alnilam	275 39.9	S 1 11.1
Alphard	217 50.0	S 8 45.2
Alphecca	126 05.4	N26 38.6
Alpheratz	357 36.5	N29 12.9
Altair	62 01.6	N 8 55.8
Ankaa	353 08.8	S42 10.8
Antares	112 18.2	S26 28.9
Arcturus	145 49.8	N19 04.1
Atria	107 14.0	S69 04.3
Avior	234 16.1	S59 34.7
Bellatrix	278 25.1	N 6 22.3
Betelgeuse	270 54.4	N 7 24.8
Canopus	263 53.6	S52 42.1
Capella	280 25.0	N46 01.1
Deneb	49 26.7	N45 21.7
Denebola	182 27.2	N14 27.0
Diphda	348 49.0	S17 51.6
Dubhe	193 44.1	N61 38.0
Elnath	278 04.5	N28 37.5
Eltanin	90 42.8	N51 29.4
Enif	33 40.4	N 9 58.8
Fomalhaut	15 16.3	S29 30.1
Gacrux	171 54.3	S57 14.4
Gienah	175 45.9	S17 39.9
Hadar	148 39.1	S60 29.0
Hamal	327 53.3	N23 34.1
Kaus Aust.	83 34.9	S34 22.5
Kochab	137 20.1	N74 04.1
Markab	13 31.5	N15 19.6
Menkar	314 08.1	N 4 10.7
Menkent	148 00.1	S36 28.9
Miaplacidus	221 39.6	S69 48.4
Mirfak	308 31.0	N49 56.3
Nunki	75 49.9	S26 16.1
Peacock	53 08.3	S56 39.8
Pollux	243 20.0	N27 58.3
Procyon	244 53.2	N 5 10.1
Rasalhague	96 00.2	N12 32.8
Regulus	207 36.9	N11 51.6
Rigel	281 05.9	S 8 10.4
Rigil Kent.	139 43.2	S60 55.8
Sabik	102 04.9	S15 45.1
Schedar	349 32.8	N56 39.5
Shaula	96 12.8	S37 07.3
Sirius	258 28.2	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 48.2	S43 31.2
Vega	80 34.3	N38 48.5
Zuben'ubi	136 58.3	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	226 01.0	10 59
Marte	301 26.9	5 57
Júpiter	352 11.1	2 34
Saturno	35 45.2	23 36

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	′	°	′	′	′
20 00	179	07.2	N12	31.1	264	31.6	11.8	N22	54.6	7.7	54.7
01	194	07.4		30.3	279	02.4	11.8	23	02.3	7.6	54.7
02	209	07.5		29.5	293	33.2	11.8	23	09.9	7.4	54.7
03	224	07.7	. .	28.6	308	04.0	11.7	23	17.3	7.4	54.7
04	239	07.8		27.8	322	34.7	11.7	23	24.7	7.3	54.7
05	254	08.0		27.0	337	05.4	11.6	23	32.0	7.1	54.6
06	269	08.1	N12	26.2	351	36.0	11.6	N23	39.1	7.0	54.6
07	284	08.2		25.4	6	06.6	11.6	23	46.1	6.9	54.6
S 08	299	08.4		24.5	20	37.2	11.5	23	53.0	6.8	54.6
Á 09	314	08.5	. .	23.7	35	07.7	11.5	23	59.8	6.7	54.6
B 10	329	08.7		22.9	49	38.2	11.4	24	06.5	6.6	54.6
A 11	344	08.8		22.1	64	08.6	11.5	24	13.1	6.4	54.5
D 12	359	09.0	N12	21.2	78	39.1	11.3	N24	19.5	6.4	54.5
O 13	14	09.1		20.4	93	09.4	11.4	24	25.9	6.2	54.5
14	29	09.3		19.6	107	39.8	11.3	24	32.1	6.1	54.5
15	44	09.4	. .	18.7	122	10.1	11.2	24	38.2	6.0	54.5
16	59	09.6		17.9	136	40.3	11.3	24	44.2	5.8	54.5
17	74	09.8		17.1	151	10.6	11.2	24	50.0	5.8	54.5
18	89	09.9	N12	16.3	165	40.8	11.1	N24	55.8	5.6	54.4
19	104	10.1		15.4	180	10.9	11.2	25	01.4	5.5	54.4
20	119	10.2		14.6	194	41.1	11.1	25	06.9	5.4	54.4
21	134	10.4	. .	13.8	209	11.2	11.0	25	12.3	5.3	54.4
22	149	10.5		13.0	223	41.2	11.1	25	17.6	5.2	54.4
23	164	10.7		12.1	238	11.3	11.0	25	22.8	5.0	54.4
21 00	179	10.8	N12	11.3	252	41.3	10.9	N25	27.8	4.9	54.4
01	194	11.0		10.5	267	11.2	10.9	25	32.7	4.8	54.3
02	209	11.1		09.6	281	41.1	10.9	25	37.5	4.7	54.3
03	224	11.3	. .	08.8	296	11.0	10.9	25	42.2	4.5	54.3
04	239	11.4		08.0	310	40.9	10.9	25	46.7	4.4	54.3
05	254	11.6		07.1	325	10.8	10.8	25	51.1	4.3	54.3
06	269	11.7	N12	06.3	339	40.6	10.8	N25	55.4	4.2	54.3
07	284	11.9		05.5	354	10.4	10.7	25	59.6	4.1	54.3
D 08	299	12.0		04.6	8	40.1	10.7	26	03.7	3.9	54.3
O 09	314	12.2	. .	03.8	23	09.8	10.7	26	07.6	3.8	54.3
M 10	329	12.4		03.0	37	39.5	10.7	26	11.4	3.7	54.2
I 11	344	12.5		02.1	52	09.2	10.7	26	15.1	3.5	54.2
N 12	359	12.7	N12	01.3	66	38.9	10.6	N26	18.6	3.4	54.2
G 13	14	12.8	12	00.5	81	08.5	10.6	26	22.0	3.3	54.2
O 14	29	13.0	11	59.6	95	38.1	10.6	26	25.3	3.2	54.2
15	44	13.1	. .	58.8	110	07.7	10.5	26	28.5	3.1	54.2
16	59	13.3		58.0	124	37.2	10.6	26	31.6	2.9	54.2
17	74	13.4		57.1	139	06.8	10.5	26	34.5	2.8	54.2
18	89	13.6	N11	56.3	153	36.3	10.5	N26	37.3	2.6	54.2
19	104	13.8		55.5	168	05.8	10.5	26	39.9	2.6	54.2
20	119	13.9		54.6	182	35.3	10.4	26	42.5	2.4	54.2
21	134	14.1	. .	53.8	197	04.7	10.5	26	44.9	2.3	54.2
22	149	14.2		52.9	211	34.2	10.4	26	47.2	2.1	54.2
23	164	14.4		52.1	226	03.6	10.4	26	49.3	2.1	54.2
22 00	179	14.5	N11	51.3	240	33.0	10.4	N26	51.4	1.9	54.1
01	194	14.7		50.4	255	02.4	10.4	26	53.3	1.7	54.1
02	209	14.9		49.6	269	31.8	10.3	26	55.0	1.7	54.1
03	224	15.0	. .	48.8	284	01.1	10.4	26	56.7	1.5	54.1
04	239	15.2		47.9	298	30.5	10.3	26	58.2	1.4	54.1
05	254	15.3		47.1	312	59.8	10.4	26	59.6	1.2	54.1
06	269	15.5	N11	46.2	327	29.2	10.3	N27	00.8	1.1	54.1
07	284	15.6		45.4	341	58.5	10.3	27	01.9	1.0	54.1
L 08	299	15.8		44.6	356	27.8	10.3	27	02.9	0.9	54.1
U 09	314	16.0	. .	43.7	10	57.1	10.3	27	03.8	0.7	54.1
N 10	329	16.1		42.9	25	26.4	10.3	27	04.5	0.6	54.1
E 11	344	16.3		42.0	39	55.7	10.3	27	05.1	0.5	54.1
S 12	359	16.4	N11	41.2	54	25.0	10.3	N27	05.6	0.3	54.1
13	14	16.6		40.3	68	54.3	10.3	27	05.9	0.3	54.1
14	29	16.8		39.5	83	23.6	10.2	27	06.2	0.0	54.1
15	44	16.9	. .	38.7	97	52.8	10.3	27	06.2	0.0	54.1
16	59	17.1		37.8	112	22.1	10.3	27	06.2	0.2	54.1
17	74	17.2		37.0	126	51.4	10.3	27	06.0	0.3	54.1
18	89	17.4	N11	36.1	141	20.7	10.3	N27	05.7	0.4	54.1
19	104	17.6		35.3	155	50.0	10.3	27	05.3	0.6	54.1
20	119	17.7		34.4	170	19.3	10.2	27	04.7	0.7	54.1
21	134	17.9	. .	33.6	184	48.5	10.3	27	04.0	0.8	54.1
22	149	18.0		32.8	199	17.8	10.3	27	03.2	1.0	54.1
23	164	18.2		31.9	213	47.1	10.4	N27	02.2	1.1	54.1
	S/D	15.8	d	0.8	S/D	14.9		14.8		14.7	

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			20	21	22	23
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	////		////		03 02	▭	▭	▭	▭
N 70	////		01	44	03 26	▭	▭	▭	▭
68	////		02	24	03 44	▭	▭	▭	▭
66	////		02	50	03 58	▭	▭	▭	▭
64	01	31	03	10	04 10	20 09	▭	▭	▭
62	02	07	03	26	04 20	20 56	21 09	21 50	23 10
60	02	31	03	40	04 28	21 27	21 51	22 37	23 47
N 58	02	50	03	51	04 36	21 50	22 20	23 07	24 13
56	03	06	04	01	04 42	22 09	22 42	23 30	24 34
54	03	19	04	09	04 48	22 24	23 00	23 49	24 51
52	03	30	04	17	04 54	22 38	23 16	24 05	00 05
50	03	39	04	23	04 58	22 50	23 29	24 19	00 19
45	03	59	04	37	05 09	23 15	23 57	24 47	00 47
N 40	04	14	04	49	05 17	23 35	24 18	00 18	01 09
35	04	26	04	58	05 24	23 52	24 36	00 36	01 27
30	04	36	05	06	05 31	24 06	00 06	00 52	01 43
20	04	52	05	19	05 42	24 31	00 31	01 18	02 09
N 10	05	04	05	30	05 51	00 05	00 52	01 41	02 32
0	05	14	05	39	06 00	00 23	01 12	02 02	02 53
S 10	05	22	05	47	06 08	00 41	01 32	02 24	03 15
20	05	29	05	55	06 17	01 00	01 54	02 47	03 37
30	05	35	06	03	06 28	01 22	02 19	03 13	04 04
35	05	38	06	08	06 34	01 35	02 34	03 29	04 20
40	05	41	06	12	06 40	01 50	02 51	03 47	04 38
45	05	43	06	18	06 48	02 08	03 11	04 09	05 00
S 50	05	46	06	24	06 57	02 31	03 38	04 37	05 28
52	05	47	06	26	07 01	02 41	03 50	04 51	05 41
54	05	48	06	29	07 06	02 54	04 05	05 07	05 57
56	05	49	06	32	07 11	03 08	04 22	05 26	06 15
58	05	50	06	36	07 17	03 24	04 43	05 50	06 38
S 60	05	51	06	39	07 23	03 44	05 10	06 21	07 08

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 20	21	22	23
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	21	00	23	34	////	▭	▭	▭	▭
N 70	20	37	22	15	////	▭	▭	▭	▭
68	20	20	21	38	////	▭	▭	▭	▭
66	20	06	21	13	23 38	▭	▭	▭	▭
64	19	54	20	53	22 28	17 42	▭	▭	▭
62	19	45	20	37	21 55	16 55	18 26	19 31	19 56
60	19	36	20	25	21 32	16 25	17 44	18 44	19 19
N 58	19	29	20	14	21 13	16 02	17 16	18 14	18 53
56	19	22	20	04	20 58	15 44	16 54	17 51	18 32
54	19	17	19	56	20 46	15 28	16 36	17 32	18 15
52	19	12	19	48	20 35	15 15	16 20	17 16	18 00
50	19	07	19	42	20 25	15 03	16 07	17 02	17 47
45	18	57	19	28	20 06	14 39	15 40	16 34	17 20
N 40	18	48	19	17	19 51	14 20	15 18	16 12	16 59
35	18	41	19	08	19 39	14 04	15 01	15 54	16 42
30	18	35	19	00	19 29	13 50	14 45	15 38	16 27
20	18	24	18	47	19 14	13 26	14 19	15 11	16 01
N 10	18	15	18	37	19 02	13 06	13 57	14 48	15 39
0	18	07	18	28	18 52	12 47	13 36	14 27	15 18
S 10	17	58	18	19	18 44	12 28	13 15	14 05	14 57
20	17	49	18	12	18 37	12 07	12 53	13 42	14 34
30	17	39	18	03	18 31	11 44	12 27	13 16	14 08
35	17	33	17	59	18 29	11 30	12 12	13 00	13 53
40	17	27	17	54	18 26	11 15	11 55	12 41	13 35
45	17	19	17	49	18 24	10 56	11 33	12 19	13 13
S 50	17	10	17	43	18 21	10 32	11 07	11 51	12 46
52	17	06	17	41	18 20	10 21	10 54	11 37	12 32
54	17	01	17	38	18 19	10 09	10 39	11 21	12 17
56	16	56	17	35	18 18	09 54	10 22	11 02	11 58
58	16	51	17	32	18 17	09 37	10 00	10 39	11 36
S 60	16	44	17	28	18 17	09 17	09 34	10 08	11 06

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		SOL Paso Mer.	LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		LUNA Edad	LUNA Fase
d	m	s	m	s	h m	h	m	h	m	d	%
20	03	31	03	24	12 03	06	35	18	59	23	38
21	03	17	03	10	12 03	07	24	19	49	24	29
22	03	02	02	55	12 03	08	15	20	40	25	21

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·1		JÚPITER −2·8		SATURNO +0·3	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
23 00	331 16.1	194 47.3	N17 29.6	271 31.4	N19 03.3	323 35.4	N 1 38.2	7 10.0	S15 38.9
01	346 18.6	209 46.7	28.8	286 32.4	03.6	338 38.1	38.1	22 12.7	39.0
02	1 21.0	224 46.0	28.0	301 33.4	04.0	353 40.7	38.0	37 15.3	39.0
03	16 23.5	239 45.4	27.2	316 34.4	04.3	8 43.4	37.9	52 18.0	39.1
04	31 26.0	254 44.8	26.3	331 35.3	04.6	23 46.0	37.8	67 20.6	39.1
05	46 28.4	269 44.1	25.5	346 36.3	04.9	38 48.7	37.7	82 23.2	39.2
06	61 30.9	284 43.5	N17 24.7	1 37.3	N19 05.3	53 51.3	N 1 37.6	97 25.9	S15 39.3
07	76 33.4	299 42.8	23.9	16 38.3	05.6	68 54.0	37.6	112 28.5	39.3
08	91 35.8	314 42.2	23.1	31 39.3	05.9	83 56.6	37.5	127 31.2	39.4
M 09	106 38.3	329 41.5	22.3	46 40.3	06.2	98 59.2	37.4	142 33.8	39.5
A 10	121 40.8	344 40.9	21.5	61 41.2	06.5	114 01.9	37.3	157 36.5	39.5
R 11	136 43.2	359 40.3	20.7	76 42.2	06.9	129 04.5	37.2	172 39.1	39.6
T 12	151 45.7	14 39.6	N17 19.8	91 43.2	N19 07.2	144 07.2	N 1 37.1	187 41.8	S15 39.6
E 13	166 48.2	29 39.0	19.0	106 44.2	07.5	159 09.8	37.0	202 44.4	39.7
S 14	181 50.6	44 38.3	18.2	121 45.2	07.8	174 12.5	36.9	217 47.0	39.8
15	196 53.1	59 37.7	17.4	136 46.2	08.1	189 15.1	36.8	232 49.7	39.8
16	211 55.5	74 37.1	16.6	151 47.1	08.4	204 17.8	36.8	247 52.3	39.9
17	226 58.0	89 36.4	15.8	166 48.1	08.8	219 20.4	36.7	262 55.0	39.9
18	242 00.5	104 35.8	N17 14.9	181 49.1	N19 09.1	234 23.1	N 1 36.6	277 57.6	S15 40.0
19	257 02.9	119 35.1	14.1	196 50.1	09.4	249 25.7	36.5	293 00.3	40.1
20	272 05.4	134 34.5	13.3	211 51.1	09.7	264 28.3	36.4	308 02.9	40.1
21	287 07.9	149 33.9	12.5	226 52.1	10.0	279 31.0	36.3	323 05.5	40.2
22	302 10.3	164 33.2	11.6	241 53.1	10.3	294 33.6	36.2	338 08.2	40.3
23	317 12.8	179 32.6	10.8	256 54.1	10.7	309 36.3	36.1	353 10.8	40.3
24 00	332 15.3	194 32.0	N17 10.0	271 55.0	N19 11.0	324 38.9	N 1 36.0	8 13.5	S15 40.4
01	347 17.7	209 31.3	09.2	286 56.0	11.3	339 41.6	36.0	23 16.1	40.4
02	2 20.2	224 30.7	08.3	301 57.0	11.6	354 44.2	35.9	38 18.8	40.5
03	17 22.7	239 30.0	07.5	316 58.0	11.9	9 46.9	35.8	53 21.4	40.6
04	32 25.1	254 29.4	06.7	331 59.0	12.2	24 49.5	35.7	68 24.1	40.6
05	47 27.6	269 28.8	05.8	347 00.0	12.6	39 52.2	35.6	83 26.7	40.7
06	62 30.0	284 28.1	N17 05.0	2 01.0	N19 12.9	54 54.8	N 1 35.5	98 29.3	S15 40.7
07	77 32.5	299 27.5	04.2	17 02.0	13.2	69 57.5	35.4	113 32.0	40.8
M 08	92 35.0	314 26.9	03.3	32 03.0	13.5	85 00.1	35.3	128 34.6	40.9
I 09	107 37.4	329 26.2	02.5	47 04.0	13.8	100 02.8	35.2	143 37.3	40.9
É 10	122 39.9	344 25.6	01.7	62 04.9	14.1	115 05.4	35.1	158 39.9	41.0
R 11	137 42.4	359 25.0	00.8	77 05.9	14.4	130 08.1	35.1	173 42.6	41.0
C 12	152 44.8	14 24.3	N17 00.0	92 06.9	N19 14.8	145 10.7	N 1 35.0	188 45.2	S15 41.1
O 13	167 47.3	29 23.7	16 59.2	107 07.9	15.1	160 13.4	34.9	203 47.8	41.2
L 14	182 49.8	44 23.1	58.3	122 08.9	15.4	175 16.1	34.8	218 50.5	41.2
E 15	197 52.2	59 22.5	57.5	137 09.9	15.7	190 18.7	34.7	233 53.1	41.3
S 16	212 54.7	74 21.8	56.7	152 10.9	16.0	205 21.4	34.6	248 55.8	41.4
17	227 57.1	89 21.2	55.8	167 11.9	16.3	220 24.0	34.5	263 58.4	41.4
18	242 59.6	104 20.6	N16 55.0	182 12.9	N19 16.6	235 26.7	N 1 34.4	279 01.1	S15 41.5
19	258 02.1	119 19.9	54.1	197 13.9	16.9	250 29.3	34.3	294 03.7	41.5
20	273 04.5	134 19.3	53.3	212 14.9	17.2	265 32.0	34.2	309 06.3	41.6
21	288 07.0	149 18.7	52.4	227 15.9	17.6	280 34.6	34.1	324 09.0	41.7
22	303 09.5	164 18.1	51.6	242 16.9	17.9	295 37.3	34.0	339 11.6	41.7
23	318 11.9	179 17.4	50.8	257 17.9	18.2	310 39.9	34.0	354 14.3	41.8
25 00	333 14.4	194 16.8	N16 49.9	272 18.9	N19 18.5	325 42.6	N 1 33.9	9 16.9	S15 41.8
01	348 16.9	209 16.2	49.1	287 19.9	18.8	340 45.2	33.8	24 19.6	41.9
02	3 19.3	224 15.6	48.2	302 20.9	19.1	355 47.9	33.7	39 22.2	42.0
03	18 21.8	239 14.9	47.4	317 21.9	19.4	10 50.6	33.6	54 24.8	42.0
04	33 24.3	254 14.3	46.5	332 22.9	19.7	25 53.2	33.5	69 27.5	42.1
05	48 26.7	269 13.7	45.7	347 23.9	20.0	40 55.9	33.4	84 30.1	42.1
06	63 29.2	284 13.1	N16 44.8	2 24.9	N19 20.3	55 58.5	N 1 33.3	99 32.8	S15 42.2
07	78 31.6	299 12.4	44.0	17 25.9	20.6	71 01.2	33.2	114 35.4	42.3
J 08	93 34.1	314 11.8	43.1	32 26.9	21.0	86 03.8	33.1	129 38.1	42.3
U 09	108 36.6	329 11.2	42.3	47 27.9	21.3	101 06.5	33.0	144 40.7	42.4
E 10	123 39.0	344 10.6	41.4	62 28.9	21.6	116 09.2	32.9	159 43.3	42.4
V 11	138 41.5	359 09.9	40.5	77 29.9	21.9	131 11.8	32.8	174 46.0	42.5
E 12	153 44.0	14 09.3	N16 39.7	92 30.9	N19 22.2	146 14.5	N 1 32.7	189 48.6	S15 42.6
S 13	168 46.4	29 08.7	38.8	107 31.9	22.5	161 17.1	32.7	204 51.3	42.6
14	183 48.9	44 08.1	38.0	122 32.9	22.8	176 19.8	32.6	219 53.9	42.7
15	198 51.4	59 07.5	37.1	137 33.9	23.1	191 22.5	32.5	234 56.6	42.7
16	213 53.8	74 06.8	36.3	152 34.9	23.4	206 25.1	32.4	249 59.2	42.8
17	228 56.3	89 06.2	35.4	167 35.9	23.7	221 27.8	32.3	265 01.8	42.9
18	243 58.8	104 05.6	N16 34.5	182 36.9	N19 24.0	236 30.4	N 1 32.2	280 04.5	S15 42.9
19	259 01.2	119 05.0	33.7	197 37.9	24.3	251 33.1	32.1	295 07.1	43.0
20	274 03.7	134 04.4	32.8	212 38.9	24.6	266 35.7	32.0	310 09.8	43.0
21	289 06.1	149 03.7	31.9	227 39.9	24.9	281 38.4	31.9	325 12.4	43.1
22	304 08.6	164 03.1	31.1	242 40.9	25.2	296 41.1	31.8	340 15.1	43.2
23	319 11.1	179 02.5	30.2	257 41.9	25.5	311 43.7	31.7	355 17.7	43.2
	h m								
Paso Mer.	1 50.7	*v* −0.6	*d* 0.8	*v* 1.0	*d* 0.3	*v* 2.7	*d* 0.1	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.2	S40 12.6
Achernar	335 21.3	S57 07.1
Acrux	173 02.8	S63 13.5
Adhara	255 07.7	S28 59.9
Aldebaran	290 41.9	N16 33.3
Alioth	166 15.1	N55 50.5
Alkaid	152 53.8	N49 12.3
Alnair	27 34.9	S46 51.0
Alnilam	275 39.8	S 1 11.1
Alphard	217 50.0	S 8 45.2
Alphecca	126 05.4	N26 38.6
Alpheratz	357 36.5	N29 12.9
Altair	62 01.6	N 8 55.8
Ankaa	353 08.7	S42 10.8
Antares	112 18.2	S26 28.9
Arcturus	145 49.9	N19 04.1
Atria	107 14.0	S69 04.3
Avior	234 16.1	S59 34.7
Bellatrix	278 25.1	N 6 22.3
Betelgeuse	270 54.4	N 7 24.8
Canopus	263 53.6	S52 42.1
Capella	280 24.9	N46 01.1
Deneb	49 26.7	N45 21.8
Denebola	182 27.2	N14 27.0
Diphda	348 49.0	S17 51.6
Dubhe	193 44.1	N61 37.9
Elnath	278 04.5	N28 37.5
Eltanin	90 42.8	N51 29.4
Enif	33 40.4	N 9 58.8
Fomalhaut	15 16.3	S29 30.1
Gacrux	171 54.3	S57 14.4
Gienah	175 45.9	S17 39.9
Hadar	148 39.1	S60 29.0
Hamal	327 53.2	N23 34.1
Kaus Aust.	83 34.9	S34 22.5
Kochab	137 20.1	N74 04.1
Markab	13 31.5	N15 19.6
Menkar	314 08.1	N 4 10.8
Menkent	148 00.1	S36 28.9
Miaplacidus	221 39.6	S69 48.4
Mirfak	308 31.0	N49 56.3
Nunki	75 49.9	S26 16.1
Peacock	53 08.3	S56 39.8
Pollux	243 20.0	N27 58.3
Procyon	244 53.1	N 5 10.1
Rasalhague	96 00.2	N12 32.8
Regulus	207 36.9	N11 51.6
Rigel	281 05.9	S 8 10.4
Rigil Kent.	139 43.2	S60 55.8
Sabik	102 04.9	S15 45.1
Schedar	349 32.8	N56 39.5
Shaula	96 12.9	S37 07.3
Sirius	258 28.2	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 48.2	S43 31.2
Vega	80 34.3	N38 48.5
Zuben'ubi	136 58.3	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	222 16.7	11 02
Marte	299 39.8	5 52
Júpiter	352 23.7	2 21
Saturno	35 58.2	23 23

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	°	′	′	′	
23 00	179	18.4	N11	31.1	228	16.5	10.3	N27	01.1	1.2	54.1
01	194	18.5		30.2	242	45.8	10.3	26	59.9	1.3	54.1
02	209	18.7		29.4	257	15.1	10.3	26	58.6	1.5	54.1
03	224	18.9	. .	28.5	271	44.4	10.4	26	57.1	1.6	54.1
04	239	19.0		27.7	286	13.8	10.3	26	55.5	1.8	54.1
05	254	19.2		26.8	300	43.1	10.4	26	53.7	1.8	54.1
06	269	19.3	N11	26.0	315	12.5	10.4	N26	51.9	2.0	54.1
07	284	19.5		25.1	329	41.9	10.4	26	49.9	2.1	54.1
M 08	299	19.7		24.3	344	11.3	10.4	26	47.8	2.3	54.1
A 09	314	19.8	. .	23.4	358	40.7	10.4	26	45.5	2.4	54.1
R 10	329	20.0		22.6	13	10.1	10.5	26	43.1	2.5	54.1
11	344	20.2		21.7	27	39.6	10.5	26	40.6	2.6	54.1
T 12	359	20.3	N11	20.9	42	09.1	10.4	N26	38.0	2.8	54.1
E 13	14	20.5		20.0	56	38.5	10.5	26	35.2	2.9	54.1
S 14	29	20.7		19.2	71	08.0	10.6	26	32.3	3.0	54.1
15	44	20.8	. .	18.3	85	37.6	10.5	26	29.3	3.1	54.1
16	59	21.0		17.5	100	07.1	10.6	26	26.2	3.3	54.1
17	74	21.1		16.6	114	36.7	10.6	26	22.9	3.4	54.1
18	89	21.3	N11	15.8	129	06.3	10.6	N26	19.5	3.5	54.1
19	104	21.5		14.9	143	35.9	10.6	26	16.0	3.7	54.1
20	119	21.6		14.1	158	05.5	10.7	26	12.3	3.8	54.1
21	134	21.8	. .	13.2	172	35.2	10.7	26	08.5	3.9	54.1
22	149	22.0		12.4	187	04.9	10.7	26	04.6	4.0	54.2
23	164	22.1		11.5	201	34.6	10.8	26	00.6	4.1	54.2
24 00	179	22.3	N11	10.7	216	04.4	10.8	N25	56.5	4.3	54.2
01	194	22.5		09.8	230	34.2	10.8	25	52.2	4.4	54.2
02	209	22.6		09.0	245	04.0	10.8	25	47.8	4.5	54.2
03	224	22.8	. .	08.1	259	33.8	10.9	25	43.3	4.7	54.2
04	239	23.0		07.3	274	03.7	10.9	25	38.6	4.7	54.2
05	254	23.1		06.4	288	33.6	11.0	25	33.9	4.9	54.2
06	269	23.3	N11	05.5	303	03.6	10.9	N25	29.0	5.0	54.2
07	284	23.5		04.7	317	33.5	11.0	25	24.0	5.1	54.2
M 08	299	23.6		03.8	332	03.5	11.1	25	18.9	5.3	54.2
I 09	314	23.8	. .	03.0	346	33.6	11.1	25	13.6	5.4	54.2
É 10	329	24.0		02.1	1	03.7	11.1	25	08.2	5.5	54.2
R 11	344	24.1		01.3	15	33.8	11.1	25	02.7	5.6	54.2
C 12	359	24.3	N11	00.4	30	03.9	11.2	N24	57.1	5.7	54.2
O 13	14	24.5	10	59.6	44	34.1	11.3	24	51.4	5.8	54.3
L 14	29	24.6		58.7	59	04.4	11.2	24	45.6	6.0	54.3
E 15	44	24.8	. .	57.8	73	34.6	11.3	24	39.6	6.1	54.3
S 16	59	25.0		57.0	88	04.9	11.4	24	33.5	6.2	54.3
17	74	25.2		56.1	102	35.3	11.4	24	27.3	6.3	54.3
18	89	25.3	N10	55.3	117	05.7	11.4	N24	21.0	6.4	54.3
19	104	25.5		54.4	131	36.1	11.4	24	14.6	6.6	54.3
20	119	25.7		53.5	146	06.5	11.6	24	08.0	6.6	54.3
21	134	25.8	. .	52.7	160	37.1	11.5	24	01.4	6.8	54.3
22	149	26.0		51.8	175	07.6	11.6	23	54.6	6.9	54.3
23	164	26.2		51.0	189	38.2	11.6	23	47.7	7.0	54.3
25 00	179	26.3	N10	50.1	204	08.8	11.7	N23	40.7	7.1	54.4
01	194	26.5		49.2	218	39.5	11.7	23	33.6	7.2	54.4
02	209	26.7		48.4	233	10.2	11.8	23	26.4	7.3	54.4
03	224	26.9	. .	47.5	247	41.0	11.8	23	19.1	7.4	54.4
04	239	27.0		46.7	262	11.8	11.9	23	11.7	7.6	54.4
05	254	27.2		45.8	276	42.7	11.9	23	04.1	7.6	54.4
06	269	27.4	N10	44.9	291	13.6	11.9	N22	56.5	7.8	54.4
07	284	27.5		44.1	305	44.5	12.0	22	48.7	7.9	54.4
J 08	299	27.7		43.2	320	15.5	12.0	22	40.8	8.0	54.4
U 09	314	27.9	. .	42.3	334	46.5	12.1	22	32.8	8.0	54.5
E 10	329	28.1		41.5	349	17.6	12.1	22	24.8	8.2	54.5
V 11	344	28.2		40.6	3	48.7	12.2	22	16.6	8.3	54.5
E 12	359	28.4	N10	39.8	18	19.9	12.2	N22	08.3	8.4	54.5
S 13	14	28.6		38.9	32	51.1	12.3	21	59.9	8.5	54.5
14	29	28.8		38.0	47	22.4	12.3	21	51.4	8.6	54.5
15	44	28.9	. .	37.2	61	53.7	12.4	21	42.8	8.7	54.5
16	59	29.1		36.3	76	25.1	12.4	21	34.1	8.8	54.5
17	74	29.3		35.4	90	56.5	12.4	21	25.3	8.9	54.6
18	89	29.4	N10	34.6	105	27.9	12.5	N21	16.4	9.0	54.6
19	104	29.6		33.7	119	59.4	12.6	21	07.4	9.1	54.6
20	119	29.8		32.8	134	31.0	12.6	20	58.3	9.2	54.6
21	134	30.0	. .	32.0	149	02.6	12.6	20	49.1	9.3	54.6
22	149	30.1		31.1	163	34.2	12.7	20	39.8	9.4	54.6
23	164	30.3		30.2	178	05.9	12.7	N20	30.4	9.5	54.6
	S/D	15.8	d	0.9	S/D	14.7		14.8			14.8

Lat.	Aurora		Orto	Orto Luna			
	Náut.	Civil	Sol	23	24	25	26
°	h m	h m	h m	h m	h m	h m	h m
N 72	////	01 14	03 19	▭	▭	▭	▭
N 70	////	02 08	03 40	▭	▭	▭	▭
68	////	02 40	03 55	▭	▭	▭	00 51
66	01 04	03 03	04 08	▭	23 00	25 33	01 33
64	01 52	03 21	04 19	▭	▭	00 10	02 01
62	02 21	03 36	04 28	23 10	24 46	00 46	02 23
60	02 43	03 48	04 36	23 47	25 11	01 11	02 40
N 58	03 00	03 58	04 42	24 13	00 13	01 31	02 54
56	03 14	04 07	04 48	24 34	00 34	01 48	03 07
54	03 26	04 15	04 54	24 51	00 51	02 02	03 18
52	03 36	04 22	04 59	00 05	01 05	02 14	03 27
50	03 45	04 28	05 03	00 19	01 18	02 25	03 36
45	04 03	04 41	05 12	00 47	01 44	02 47	03 53
N 40	04 18	04 52	05 20	01 09	02 05	03 05	04 08
35	04 29	05 00	05 27	01 27	02 22	03 20	04 20
30	04 39	05 08	05 32	01 43	02 37	03 33	04 31
20	04 53	05 20	05 42	02 09	03 02	03 56	04 49
N 10	05 05	05 30	05 51	02 32	03 23	04 15	05 05
0	05 14	05 38	05 59	02 53	03 44	04 33	05 20
S 10	05 21	05 46	06 07	03 15	04 04	04 51	05 35
20	05 27	05 53	06 15	03 37	04 25	05 10	05 50
30	05 32	06 00	06 24	04 04	04 50	05 31	06 08
35	05 35	06 04	06 30	04 20	05 05	05 44	06 19
40	05 37	06 08	06 36	04 38	05 22	05 59	06 31
45	05 39	06 13	06 43	05 00	05 42	06 16	06 44
S 50	05 40	06 18	06 51	05 28	06 07	06 38	07 01
52	05 41	06 20	06 55	05 41	06 19	06 48	07 09
54	05 42	06 23	06 59	05 57	06 33	06 59	07 18
56	05 42	06 25	07 04	06 15	06 50	07 12	07 28
58	05 43	06 28	07 09	06 38	07 09	07 28	07 39
S 60	05 43	06 31	07 15	07 08	07 33	07 46	07 52

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	23	24	25	26
°	h m	h m	h m	h m	h m	h m	h m
N 72	20 41	22 39	////	▭	▭	▭	22 09
N 70	20 22	21 50	////	▭	▭	▭	21 27
68	20 06	21 20	////	▭	▭	21 40	20 58
66	19 54	20 58	22 50	▭	21 51	20 57	20 36
64	19 44	20 41	22 07	▭	20 40	20 27	20 19
62	19 35	20 26	21 39	19 56	20 04	20 05	20 05
60	19 27	20 15	21 19	19 19	19 38	19 47	19 52
N 58	19 21	20 05	21 02	18 53	19 17	19 32	19 42
56	19 15	19 56	20 49	18 32	19 00	19 19	19 32
54	19 10	19 48	20 37	18 15	18 46	19 08	19 24
52	19 05	19 41	20 27	18 00	18 33	18 58	19 17
50	19 01	19 35	20 18	17 47	18 22	18 49	19 10
45	18 52	19 23	20 00	17 20	17 59	18 30	18 56
N 40	18 44	19 12	19 46	16 59	17 40	18 14	18 44
35	18 38	19 04	19 35	16 42	17 24	18 01	18 33
30	18 32	18 56	19 26	16 27	17 10	17 49	18 24
20	18 22	18 45	19 11	16 01	16 47	17 29	18 09
N 10	18 14	18 35	19 00	15 39	16 27	17 12	17 55
0	18 06	18 27	18 51	15 18	16 08	16 56	17 42
S 10	17 58	18 19	18 44	14 57	15 48	16 39	17 29
20	17 50	18 12	18 38	14 34	15 28	16 22	17 15
30	17 41	18 05	18 33	14 08	15 04	16 01	16 59
35	17 35	18 01	18 31	13 53	14 50	15 49	16 49
40	17 30	17 57	18 29	13 35	14 33	15 35	16 39
45	17 23	17 53	18 27	13 13	14 14	15 19	16 26
S 50	17 15	17 48	18 25	12 46	13 49	14 58	16 10
52	17 11	17 45	18 25	12 32	13 37	14 49	16 03
54	17 07	17 43	18 24	12 17	13 23	14 38	15 55
56	17 02	17 40	18 24	11 58	13 08	14 25	15 45
58	16 57	17 38	18 23	11 36	12 49	14 10	15 35
S 60	16 51	17 34	18 23	11 06	12 25	13 53	15 23

Día	SOL		Paso Mer.	LUNA			
	Ec. Tiempo			Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
23	02 47	02 39	12 03	09 05	21 31	26 14	
24	02 31	02 23	12 02	09 56	22 20	27 8	
25	02 15	02 07	12 02	10 44	23 08	28 3	

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·1		JÚPITER −2·8		SATURNO +0·3	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
26 00	334 13.5	194 01.9	N16 29.4	272 42.9	N19 25.8	326 46.4	N 1 31.6	10 20.3	S15 43.3
01	349 16.0	209 01.3	28.5	287 43.9	26.1	341 49.1	31.5	25 23.0	43.4
02	4 18.5	224 00.7	27.6	302 44.9	26.4	356 51.7	31.4	40 25.6	43.4
03	19 20.9	239 00.0	26.8	317 45.9	26.8	11 54.4	31.3	55 28.3	43.5
04	34 23.4	253 59.4	25.9	332 46.9	27.1	26 57.0	31.2	70 30.9	43.5
05	49 25.9	268 58.8	25.0	347 47.9	27.4	41 59.7	31.1	85 33.5	43.6
06	64 28.3	283 58.2	N16 24.1	2 48.9	N19 27.7	57 02.4	N 1 31.0	100 36.2	S15 43.7
07	79 30.8	298 57.6	23.3	17 50.0	28.0	72 05.0	31.0	115 38.8	43.7
08	94 33.2	313 57.0	22.4	32 51.0	28.3	87 07.7	30.9	130 41.5	43.8
V 09	109 35.7	328 56.4	21.5	47 52.0	28.6	102 10.4	30.8	145 44.1	43.8
I 10	124 38.2	343 55.8	20.7	62 53.0	28.9	117 13.0	30.7	160 46.8	43.9
E 11	139 40.6	358 55.1	19.8	77 54.0	29.2	132 15.7	30.6	175 49.4	44.0
R 12	154 43.1	13 54.5	N16 18.9	92 55.0	N19 29.5	147 18.4	N 1 30.5	190 52.0	S15 44.0
N 13	169 45.6	28 53.9	18.0	107 56.0	29.8	162 21.0	30.4	205 54.7	44.1
E 14	184 48.0	43 53.3	17.1	122 57.0	30.1	177 23.7	30.3	220 57.3	44.1
S 15	199 50.5	58 52.7	16.3	137 58.0	30.4	192 26.3	30.2	236 00.0	44.2
16	214 53.0	73 52.1	15.4	152 59.0	30.7	207 29.0	30.1	251 02.6	44.3
17	229 55.4	88 51.5	14.5	168 00.1	31.0	222 31.7	30.0	266 05.2	44.3
18	244 57.9	103 50.9	N16 13.6	183 01.1	N19 31.3	237 34.3	N 1 29.9	281 07.9	S15 44.4
19	260 00.4	118 50.3	12.8	198 02.1	31.6	252 37.0	29.8	296 10.5	44.4
20	275 02.8	133 49.7	11.9	213 03.1	31.9	267 39.7	29.7	311 13.2	44.5
21	290 05.3	148 49.0	11.0	228 04.1	32.2	282 42.3	29.6	326 15.8	44.6
22	305 07.7	163 48.4	10.1	243 05.1	32.5	297 45.0	29.5	341 18.4	44.6
23	320 10.2	178 47.8	09.2	258 06.1	32.8	312 47.7	29.4	356 21.1	44.7
27 00	335 12.7	193 47.2	N16 08.3	273 07.1	N19 33.0	327 50.3	N 1 29.3	11 23.7	S15 44.7
01	350 15.1	208 46.6	07.4	288 08.2	33.3	342 53.0	29.2	26 26.4	44.8
02	5 17.6	223 46.0	06.6	303 09.2	33.6	357 55.7	29.1	41 29.0	44.9
03	20 20.1	238 45.4	05.7	318 10.2	33.9	12 58.3	29.0	56 31.7	44.9
04	35 22.5	253 44.8	04.8	333 11.2	34.2	28 01.0	28.9	71 34.3	45.0
05	50 25.0	268 44.2	03.9	348 12.2	34.5	43 03.7	28.8	86 36.9	45.0
06	65 27.5	283 43.6	N16 03.0	3 13.2	N19 34.8	58 06.4	N 1 28.7	101 39.6	S15 45.1
07	80 29.9	298 43.0	02.1	18 14.3	35.1	73 09.0	28.6	116 42.2	45.1
08	95 32.4	313 42.4	01.2	33 15.3	35.4	88 11.7	28.5	131 44.9	45.2
S 09	110 34.9	328 41.8	16 00.3	48 16.3	35.7	103 14.4	28.4	146 47.5	45.3
Á 10	125 37.3	343 41.2	15 59.4	63 17.3	36.0	118 17.0	28.3	161 50.1	45.3
B 11	140 39.8	358 40.6	58.5	78 18.3	36.3	133 19.7	28.2	176 52.8	45.4
A 12	155 42.2	13 40.0	N15 57.7	93 19.4	N19 36.6	148 22.4	N 1 28.1	191 55.4	S15 45.4
D 13	170 44.7	28 39.4	56.8	108 20.4	36.9	163 25.0	28.0	206 58.1	45.5
O 14	185 47.2	43 38.8	55.9	123 21.4	37.2	178 27.7	27.9	222 00.7	45.6
15	200 49.6	58 38.2	55.0	138 22.4	37.5	193 30.4	27.8	237 03.3	45.6
16	215 52.1	73 37.6	54.1	153 23.4	37.8	208 33.1	27.7	252 06.0	45.7
17	230 54.6	88 37.0	53.2	168 24.5	38.1	223 35.7	27.6	267 08.6	45.7
18	245 57.0	103 36.4	N15 52.3	183 25.5	N19 38.4	238 38.4	N 1 27.5	282 11.3	S15 45.8
19	260 59.5	118 35.8	51.4	198 26.5	38.6	253 41.1	27.4	297 13.9	45.9
20	276 02.0	133 35.2	50.5	213 27.5	38.9	268 43.7	27.3	312 16.5	45.9
21	291 04.4	148 34.6	49.6	228 28.5	39.2	283 46.4	27.2	327 19.2	46.0
22	306 06.9	163 34.0	48.7	243 29.6	39.5	298 49.1	27.1	342 21.8	46.0
23	321 09.3	178 33.4	47.8	258 30.6	39.8	313 51.8	27.0	357 24.5	46.1
28 00	336 11.8	193 32.8	N15 46.9	273 31.6	N19 40.1	328 54.4	N 1 26.9	12 27.1	S15 46.2
01	351 14.3	208 32.2	46.0	288 32.6	40.4	343 57.1	26.8	27 29.7	46.2
02	6 16.7	223 31.6	45.0	303 33.7	40.7	358 59.8	26.7	42 32.4	46.3
03	21 19.2	238 31.0	44.1	318 34.7	41.0	14 02.5	26.6	57 35.0	46.3
04	36 21.7	253 30.4	43.2	333 35.7	41.3	29 05.1	26.5	72 37.7	46.4
05	51 24.1	268 29.8	42.3	348 36.7	41.6	44 07.8	26.4	87 40.3	46.5
06	66 26.6	283 29.2	N15 41.4	3 37.8	N19 41.8	59 10.5	N 1 26.3	102 42.9	S15 46.5
07	81 29.1	298 28.6	40.5	18 38.8	42.1	74 13.2	26.2	117 45.6	46.6
D 08	96 31.5	313 28.0	39.6	33 39.8	42.4	89 15.8	26.1	132 48.2	46.6
O 09	111 34.0	328 27.4	38.7	48 40.8	42.7	104 18.5	26.0	147 50.9	46.7
M 10	126 36.5	343 26.8	37.8	63 41.9	43.0	119 21.2	25.9	162 53.5	46.8
I 11	141 38.9	358 26.3	36.9	78 42.9	43.3	134 23.9	25.8	177 56.1	46.8
N 12	156 41.4	13 25.7	N15 36.0	93 43.9	N19 43.6	149 26.5	N 1 25.7	192 58.8	S15 46.9
G 13	171 43.8	28 25.1	35.0	108 45.0	43.9	164 29.2	25.6	208 01.4	46.9
O 14	186 46.3	43 24.5	34.1	123 46.0	44.2	179 31.9	25.5	223 04.1	47.0
15	201 48.8	58 23.9	33.2	138 47.0	44.4	194 34.6	25.4	238 06.7	47.0
16	216 51.2	73 23.3	32.3	153 48.0	44.7	209 37.3	25.3	253 09.3	47.1
17	231 53.7	88 22.7	31.4	168 49.1	45.0	224 39.9	25.2	268 12.0	47.2
18	246 56.2	103 22.1	N15 30.5	183 50.1	N19 45.3	239 42.6	N 1 25.1	283 14.6	S15 47.2
19	261 58.6	118 21.5	29.5	198 51.1	45.6	254 45.3	25.0	298 17.2	47.3
20	277 01.1	133 20.9	28.6	213 52.2	45.9	269 48.0	24.9	313 19.9	47.3
21	292 03.6	148 20.4	27.7	228 53.2	46.2	284 50.6	24.8	328 22.5	47.4
22	307 06.0	163 19.8	26.8	243 54.2	46.4	299 53.3	24.7	343 25.2	47.5
23	322 08.5	178 19.2	25.9	258 55.3	46.7	314 56.0	24.6	358 27.8	47.5
	h m								
Paso Mer.	1 38.9	*v* −0.6	*d* 0.9	*v* 1.0	*d* 0.3	*v* 2.7	*d* 0.1	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.1	S40 12.6
Achernar	335 21.3	S57 07.1
Acrux	173 02.8	S63 13.5
Adhara	255 07.6	S28 59.9
Aldebaran	290 41.9	N16 33.3
Alioth	166 15.1	N55 50.5
Alkaid	152 53.8	N49 12.3
Alnair	27 34.9	S46 51.1
Alnilam	275 39.8	S 1 11.1
Alphard	217 50.0	S 8 45.2
Alphecca	126 05.5	N26 38.6
Alpheratz	357 36.5	N29 12.9
Altair	62 01.6	N 8 55.8
Ankaa	353 08.7	S42 10.8
Antares	112 18.2	S26 28.9
Arcturus	145 49.9	N19 04.1
Atria	107 14.0	S69 04.3
Avior	234 16.1	S59 34.7
Bellatrix	278 25.1	N 6 22.3
Betelgeuse	270 54.3	N 7 24.8
Canopus	263 53.5	S52 42.1
Capella	280 24.9	N46 01.1
Deneb	49 26.7	N45 21.8
Denebola	182 27.2	N14 27.0
Diphda	348 49.0	S17 51.6
Dubhe	193 44.1	N61 37.9
Elnath	278 04.5	N28 37.5
Eltanin	90 42.9	N51 29.4
Enif	33 40.4	N 9 58.8
Fomalhaut	15 16.3	S29 30.1
Gacrux	171 54.3	S57 14.4
Gienah	175 45.9	S17 39.9
Hadar	148 39.1	S60 29.0
Hamal	327 53.2	N23 34.1
Kaus Aust.	83 34.9	S34 22.5
Kochab	137 20.2	N74 04.1
Markab	13 31.5	N15 19.7
Menkar	314 08.1	N 4 10.8
Menkent	148 00.1	S36 28.9
Miaplacidus	221 39.6	S69 48.4
Mirfak	308 30.9	N49 56.3
Nunki	75 49.9	S26 16.1
Peacock	53 08.3	S56 39.8
Pollux	243 20.0	N27 58.3
Procyon	244 53.1	N 5 10.2
Rasalhague	96 00.2	N12 32.8
Regulus	207 36.8	N11 51.6
Rigel	281 05.8	S 8 10.4
Rigil Kent.	139 43.3	S60 55.8
Sabik	102 04.9	S15 45.1
Schedar	349 32.8	N56 39.5
Shaula	96 12.9	S37 07.3
Sirius	258 28.2	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 48.2	S43 31.2
Vega	80 34.3	N38 48.5
Zuben'ubi	136 58.3	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	218 34.5	11 05
Marte	297 54.5	5 47
Júpiter	352 37.7	2 08
Saturno	36 11.1	23 10

UT (HmGr)		SOL				LUNA						
		AHGr		Dec		AHGr	v	Dec	d	Ph		
d	h	°	′	°	′	°	′	′	°	′	′	′
26	00	179	30.5	N10	29.4	192	37.6	12.8	N20	20.9	9.6	54.6
	01	194	30.7		28.5	207	09.4	12.8	20	11.3	9.7	54.7
	02	209	30.8		27.6	221	41.2	12.9	20	01.6	9.8	54.7
	03	224	31.0	. .	26.8	236	13.1	12.9	19	51.8	9.8	54.7
	04	239	31.2		25.9	250	45.0	13.0	19	42.0	10.0	54.7
	05	254	31.4		25.0	265	17.0	13.0	19	32.0	10.0	54.7
	06	269	31.5	N10	24.2	279	49.0	13.0	N19	22.0	10.2	54.7
	07	284	31.7		23.3	294	21.0	13.1	19	11.8	10.2	54.7
V	08	299	31.9		22.4	308	53.1	13.2	19	01.6	10.3	54.8
I	09	314	32.1	. .	21.5	323	25.3	13.2	18	51.3	10.4	54.8
E	10	329	32.2		20.7	337	57.5	13.2	18	40.9	10.5	54.8
R	11	344	32.4		19.8	352	29.7	13.3	18	30.4	10.6	54.8
N	12	359	32.6	N10	18.9	7	02.0	13.3	N18	19.8	10.7	54.8
E	13	14	32.8		18.1	21	34.3	13.4	18	09.1	10.7	54.8
S	14	29	33.0		17.2	36	06.7	13.4	17	58.4	10.9	54.9
	15	44	33.1	. .	16.3	50	39.1	13.5	17	47.5	10.9	54.9
	16	59	33.3		15.4	65	11.6	13.5	17	36.6	11.0	54.9
	17	74	33.5		14.6	79	44.1	13.5	17	25.6	11.1	54.9
	18	89	33.7	N10	13.7	94	16.6	13.6	N17	14.5	11.1	54.9
	19	104	33.8		12.8	108	49.2	13.6	17	03.4	11.3	54.9
	20	119	34.0		12.0	123	21.8	13.7	16	52.1	11.3	54.9
	21	134	34.2	. .	11.1	137	54.5	13.7	16	40.8	11.4	55.0
	22	149	34.4		10.2	152	27.2	13.7	16	29.4	11.5	55.0
	23	164	34.6		09.3	166	59.9	13.8	16	17.9	11.5	55.0
27	00	179	34.7	N10	08.5	181	32.7	13.8	N16	06.4	11.7	55.0
	01	194	34.9		07.6	196	05.5	13.9	15	54.7	11.7	55.0
	02	209	35.1		06.7	210	38.4	13.9	15	43.0	11.7	55.0
	03	224	35.3	. .	05.8	225	11.3	14.0	15	31.3	11.9	55.1
	04	239	35.4		05.0	239	44.3	14.0	15	19.4	11.9	55.1
	05	254	35.6		04.1	254	17.3	14.0	15	07.5	12.0	55.1
	06	269	35.8	N10	03.2	268	50.3	14.0	N14	55.5	12.1	55.1
	07	284	36.0		02.3	283	23.3	14.1	14	43.4	12.1	55.1
S	08	299	36.2		01.4	297	56.4	14.2	14	31.3	12.2	55.1
Á	09	314	36.3	10	00.6	312	29.6	14.1	14	19.1	12.3	55.2
B	10	329	36.5	9	59.7	327	02.7	14.2	14	06.8	12.3	55.2
A	11	344	36.7		58.8	341	35.9	14.3	13	54.5	12.4	55.2
D	12	359	36.9	N 9	57.9	356	09.2	14.2	N13	42.1	12.5	55.2
O	13	14	37.1		57.1	10	42.4	14.3	13	29.6	12.5	55.2
	14	29	37.2		56.2	25	15.7	14.4	13	17.1	12.6	55.3
	15	44	37.4	. .	55.3	39	49.1	14.3	13	04.5	12.7	55.3
	16	59	37.6		54.4	54	22.4	14.4	12	51.8	12.7	55.3
	17	74	37.8		53.5	68	55.8	14.4	12	39.1	12.8	55.3
	18	89	38.0	N 9	52.7	83	29.2	14.5	N12	26.3	12.8	55.3
	19	104	38.2		51.8	98	02.7	14.5	12	13.5	12.9	55.3
	20	119	38.3		50.9	112	36.2	14.5	12	00.6	13.0	55.4
	21	134	38.5	. .	50.0	127	09.7	14.5	11	47.6	13.0	55.4
	22	149	38.7		49.1	141	43.2	14.6	11	34.6	13.1	55.4
	23	164	38.9		48.3	156	16.8	14.6	11	21.5	13.1	55.4
28	00	179	39.1	N 9	47.4	170	50.4	14.6	N11	08.4	13.2	55.4
	01	194	39.3		46.5	185	24.0	14.6	10	55.2	13.3	55.5
	02	209	39.4		45.6	199	57.6	14.7	10	41.9	13.2	55.5
	03	224	39.6	. .	44.7	214	31.3	14.7	10	28.7	13.4	55.5
	04	239	39.8		43.9	229	05.0	14.7	10	15.3	13.4	55.5
	05	254	40.0		43.0	243	38.7	14.7	10	01.9	13.4	55.5
	06	269	40.2	N 9	42.1	258	12.4	14.8	N 9	48.5	13.5	55.5
	07	284	40.4		41.2	272	46.2	14.7	9	35.0	13.6	55.6
D	08	299	40.5		40.3	287	19.9	14.8	9	21.4	13.6	55.6
O	09	314	40.7	. .	39.4	301	53.7	14.8	9	07.8	13.6	55.6
M	10	329	40.9		38.6	316	27.5	14.9	8	54.2	13.7	55.6
I	11	344	41.1		37.7	331	01.4	14.8	8	40.5	13.7	55.6
N	12	359	41.3	N 9	36.8	345	35.2	14.9	N 8	26.8	13.8	55.7
G	13	14	41.5		35.9	0	09.1	14.8	8	13.0	13.8	55.7
O	14	29	41.6		35.0	14	42.9	14.9	7	59.2	13.9	55.7
	15	44	41.8	. .	34.1	29	16.8	14.9	7	45.3	13.9	55.7
	16	59	42.0		33.3	43	50.7	14.9	7	31.4	13.9	55.7
	17	74	42.2		32.4	58	24.6	14.9	7	17.5	14.0	55.8
	18	89	42.4	N 9	31.5	72	58.5	15.0	N 7	03.5	14.0	55.8
	19	104	42.6		30.6	87	32.5	14.9	6	49.5	14.1	55.8
	20	119	42.8		29.7	102	06.4	15.0	6	35.4	14.0	55.8
	21	134	42.9	. .	28.8	116	40.4	14.9	6	21.4	14.2	55.8
	22	149	43.1		27.9	131	14.3	15.0	6	07.2	14.1	55.9
	23	164	43.3		27.0	145	48.3	14.9	N 5	53.1	14.2	55.9
		S/D	15.9	d	0.9	S/D	14.9		15.0			15.2

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			26	27	28	29
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	////		01	49	03 35	▭	02 00	04 33	06 41
N 70	////		02	29	03 53	▭	02 40	04 50	06 47
68	////		02	56	04 07	00 51	03 08	05 03	06 52
66	01	34	03	16	04 18	01 33	03 28	05 14	06 56
64	02	10	03	32	04 28	02 01	03 44	05 23	06 59
62	02	35	03	45	04 36	02 23	03 58	05 31	07 02
60	02	54	03	56	04 43	02 40	04 09	05 37	07 04
N 58	03	09	04	06	04 49	02 54	04 19	05 43	07 06
56	03	22	04	14	04 54	03 07	04 27	05 48	07 08
54	03	33	04	21	04 59	03 18	04 35	05 52	07 10
52	03	42	04	27	05 03	03 27	04 42	05 57	07 12
50	03	51	04	33	05 07	03 36	04 48	06 00	07 13
45	04	08	04	45	05 16	03 53	05 01	06 08	07 16
N 40	04	21	04	55	05 23	04 08	05 11	06 15	07 19
35	04	32	05	03	05 29	04 20	05 21	06 21	07 21
30	04	41	05	10	05 34	04 31	05 29	06 26	07 23
20	04	54	05	21	05 43	04 49	05 42	06 34	07 26
N 10	05	05	05	30	05 51	05 05	05 54	06 42	07 29
0	05	13	05	37	05 58	05 20	06 05	06 49	07 32
S 10	05	19	05	44	06 05	05 35	06 16	06 56	07 35
20	05	25	05	51	06 13	05 50	06 28	07 04	07 38
30	05	29	05	57	06 21	06 08	06 41	07 12	07 41
35	05	31	06	00	06 26	06 19	06 49	07 17	07 43
40	05	32	06	04	06 31	06 31	06 58	07 22	07 45
45	05	34	06	08	06 38	06 44	07 08	07 29	07 48
S 50	05	35	06	12	06 45	07 01	07 20	07 36	07 51
52	05	35	06	14	06 48	07 09	07 26	07 40	07 52
54	05	35	06	16	06 52	07 18	07 32	07 44	07 54
56	05	35	06	18	06 56	07 28	07 39	07 48	07 55
58	05	35	06	21	07 01	07 39	07 47	07 53	07 57
S 60	05	35	06	23	07 06	07 52	07 56	07 58	07 59

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 26	27	28	29
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	20	24	22	06	////	22 09	21 09	20 33	20 02
N 70	20	07	21	29	////	21 27	20 50	20 24	20 01
68	19	53	21	03	23 30	20 58	20 35	20 17	20 00
66	19	42	20	44	22 22	20 36	20 22	20 11	20 00
64	19	33	20	28	21 48	20 19	20 12	20 05	19 59
62	19	25	20	16	21 25	20 05	20 03	20 01	19 58
60	19	19	20	05	21 06	19 52	19 55	19 57	19 58
N 58	19	13	19	56	20 51	19 42	19 48	19 53	19 58
56	19	07	19	48	20 39	19 32	19 42	19 50	19 57
54	19	03	19	41	20 28	19 24	19 37	19 47	19 57
52	18	59	19	34	20 19	19 17	19 32	19 45	19 57
50	18	55	19	29	20 11	19 10	19 27	19 42	19 56
45	18	46	19	17	19 54	18 56	19 18	19 37	19 56
N 40	18	40	19	08	19 41	18 44	19 09	19 33	19 55
35	18	34	19	00	19 31	18 33	19 02	19 29	19 55
30	18	28	18	53	19 22	18 24	18 56	19 26	19 55
20	18	20	18	42	19 08	18 09	18 45	19 20	19 54
N 10	18	12	18	33	18 58	17 55	18 35	19 15	19 53
0	18	05	18	26	18 50	17 42	18 26	19 10	19 53
S 10	17	58	18	19	18 44	17 29	18 17	19 05	19 52
20	17	51	18	13	18 39	17 15	18 07	18 59	19 51
30	17	42	18	07	18 34	16 59	17 56	18 53	19 50
35	17	38	18	03	18 33	16 49	17 50	18 50	19 50
40	17	32	18	00	18 31	16 39	17 42	18 46	19 49
45	17	26	17	56	18 30	16 26	17 33	18 41	19 49
S 50	17	19	17	52	18 29	16 10	17 23	18 35	19 48
52	17	16	17	50	18 29	16 03	17 18	18 32	19 48
54	17	12	17	48	18 29	15 55	17 12	18 30	19 47
56	17	08	17	46	18 29	15 45	17 06	18 26	19 47
58	17	03	17	43	18 29	15 35	16 59	18 23	19 46
S 60	16	58	17	41	18 29	15 23	16 51	18 19	19 46

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d	%
26	01 58	01 50	12 02	11 31	23 54	29	1
27	01 41	01 33	12 02	12 16	24 38	00	0
28	01 24	01 15	12 01	12 59	00 38	01	1

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·2		JÚPITER −2·9		SATURNO +0·3	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
29 00	337 10.9	193 18.6	N15 24.9	273 56.3	N19 47.0	329 58.7	N 1 24.5	13 30.4	S15 47.6
01	352 13.4	208 18.0	24.0	288 57.3	47.3	345 01.4	24.4	28 33.1	47.6
02	7 15.9	223 17.4	23.1	303 58.4	47.6	0 04.0	24.3	43 35.7	47.7
03	22 18.3	238 16.8	22.2	318 59.4	47.9	15 06.7	24.2	58 38.4	47.7
04	37 20.8	253 16.3	21.2	334 00.4	48.1	30 09.4	24.1	73 41.0	47.8
05	52 23.3	268 15.7	20.3	349 01.5	48.4	45 12.1	24.0	88 43.6	47.9
06	67 25.7	283 15.1	N15 19.4	4 02.5	N19 48.7	60 14.8	N 1 23.9	103 46.3	S15 47.9
07	82 28.2	298 14.5	18.5	19 03.5	49.0	75 17.4	23.8	118 48.9	48.0
08	97 30.7	313 13.9	17.5	34 04.6	49.3	90 20.1	23.7	133 51.5	48.0
L 09	112 33.1	328 13.3	16.6	49 05.6	49.6	105 22.8	23.6	148 54.2	48.1
U 10	127 35.6	343 12.8	15.7	64 06.7	49.8	120 25.5	23.5	163 56.8	48.2
N 11	142 38.1	358 12.2	14.8	79 07.7	50.1	135 28.2	23.4	178 59.5	48.2
E 12	157 40.5	13 11.6	N15 13.8	94 08.7	N19 50.4	150 30.9	N 1 23.3	194 02.1	S15 48.3
S 13	172 43.0	28 11.0	12.9	109 09.8	50.7	165 33.5	23.2	209 04.7	48.3
14	187 45.4	43 10.4	12.0	124 10.8	51.0	180 36.2	23.1	224 07.4	48.4
15	202 47.9	58 09.8	11.0	139 11.8	51.3	195 38.9	23.0	239 10.0	48.5
16	217 50.4	73 09.3	10.1	154 12.9	51.5	210 41.6	22.9	254 12.7	48.5
17	232 52.8	88 08.7	09.2	169 13.9	51.8	225 44.3	22.8	269 15.3	48.6
18	247 55.3	103 08.1	N15 08.2	184 15.0	N19 52.1	240 47.0	N 1 22.7	284 17.9	S15 48.6
19	262 57.8	118 07.5	07.3	199 16.0	52.4	255 49.6	22.6	299 20.6	48.7
20	278 00.2	133 06.9	06.3	214 17.0	52.7	270 52.3	22.5	314 23.2	48.7
21	293 02.7	148 06.4	05.4	229 18.1	52.9	285 55.0	22.4	329 25.8	48.8
22	308 05.2	163 05.8	04.5	244 19.1	53.2	300 57.7	22.3	344 28.5	48.9
23	323 07.6	178 05.2	03.5	259 20.2	53.5	316 00.4	22.2	359 31.1	48.9
30 00	338 10.1	193 04.6	N15 02.6	274 21.2	N19 53.8	331 03.1	N 1 22.1	14 33.8	S15 49.0
01	353 12.5	208 04.1	01.7	289 22.3	54.1	346 05.7	21.9	29 36.4	49.0
02	8 15.0	223 03.5	15 00.7	304 23.3	54.3	1 08.4	21.8	44 39.0	49.1
03	23 17.5	238 02.9	14 59.8	319 24.3	54.6	16 11.1	21.7	59 41.7	49.1
04	38 19.9	253 02.3	58.8	334 25.4	54.9	31 13.8	21.6	74 44.3	49.2
05	53 22.4	268 01.8	57.9	349 26.4	55.2	46 16.5	21.5	89 46.9	49.3
06	68 24.9	283 01.2	N14 56.9	4 27.5	N19 55.4	61 19.2	N 1 21.4	104 49.6	S15 49.3
07	83 27.3	298 00.6	56.0	19 28.5	55.7	76 21.9	21.3	119 52.2	49.4
M 08	98 29.8	313 00.0	55.0	34 29.6	56.0	91 24.6	21.2	134 54.8	49.4
A 09	113 32.3	327 59.5	54.1	49 30.6	56.3	106 27.2	21.1	149 57.5	49.5
R 10	128 34.7	342 58.9	53.2	64 31.7	56.5	121 29.9	21.0	165 00.1	49.6
T 11	143 37.2	357 58.3	52.2	79 32.7	56.8	136 32.6	20.9	180 02.8	49.6
E 12	158 39.7	12 57.7	N14 51.3	94 33.8	N19 57.1	151 35.3	N 1 20.8	195 05.4	S15 49.7
S 13	173 42.1	27 57.2	50.3	109 34.8	57.4	166 38.0	20.7	210 08.0	49.7
14	188 44.6	42 56.6	49.4	124 35.9	57.7	181 40.7	20.6	225 10.7	49.8
15	203 47.0	57 56.0	48.4	139 36.9	57.9	196 43.4	20.5	240 13.3	49.8
16	218 49.5	72 55.5	47.5	154 38.0	58.2	211 46.1	20.4	255 15.9	49.9
17	233 52.0	87 54.9	46.5	169 39.0	58.5	226 48.7	20.3	270 18.6	50.0
18	248 54.4	102 54.3	N14 45.6	184 40.1	N19 58.8	241 51.4	N 1 20.2	285 21.2	S15 50.0
19	263 56.9	117 53.8	44.6	199 41.1	59.0	256 54.1	20.1	300 23.8	50.1
20	278 59.4	132 53.2	43.6	214 42.2	59.3	271 56.8	19.9	315 26.5	50.1
21	294 01.8	147 52.6	42.7	229 43.2	59.6	286 59.5	19.8	330 29.1	50.2
22	309 04.3	162 52.1	41.7	244 44.3	19 59.8	302 02.2	19.7	345 31.8	50.2
23	324 06.8	177 51.5	40.8	259 45.3	20 00.1	317 04.9	19.6	0 34.4	50.3
31 00	339 09.2	192 50.9	N14 39.8	274 46.4	N20 00.4	332 07.6	N 1 19.5	15 37.0	S15 50.4
01	354 11.7	207 50.4	38.9	289 47.4	00.7	347 10.3	19.4	30 39.7	50.4
02	9 14.2	222 49.8	37.9	304 48.5	00.9	2 13.0	19.3	45 42.3	50.5
03	24 16.6	237 49.2	36.9	319 49.5	01.2	17 15.6	19.2	60 44.9	50.5
04	39 19.1	252 48.7	36.0	334 50.6	01.5	32 18.3	19.1	75 47.6	50.6
05	54 21.5	267 48.1	35.0	349 51.6	01.8	47 21.0	19.0	90 50.2	50.6
06	69 24.0	282 47.5	N14 34.1	4 52.7	N20 02.0	62 23.7	N 1 18.9	105 52.8	S15 50.7
07	84 26.5	297 47.0	33.1	19 53.8	02.3	77 26.4	18.8	120 55.5	50.8
M 08	99 28.9	312 46.4	32.1	34 54.8	02.6	92 29.1	18.7	135 58.1	50.8
I 09	114 31.4	327 45.8	31.2	49 55.9	02.8	107 31.8	18.6	151 00.7	50.9
É 10	129 33.9	342 45.3	30.2	64 56.9	03.1	122 34.5	18.5	166 03.4	50.9
R 11	144 36.3	357 44.7	29.2	79 58.0	03.4	137 37.2	18.3	181 06.0	51.0
C 12	159 38.8	12 44.1	N14 28.3	94 59.0	N20 03.6	152 39.9	N 1 18.2	196 08.7	S15 51.0
O 13	174 41.3	27 43.6	27.3	110 00.1	03.9	167 42.6	18.1	211 11.3	51.1
L 14	189 43.7	42 43.0	26.3	125 01.2	04.2	182 45.3	18.0	226 13.9	51.2
E 15	204 46.2	57 42.5	25.4	140 02.2	04.5	197 48.0	17.9	241 16.6	51.2
S 16	219 48.6	72 41.9	24.4	155 03.3	04.7	212 50.7	17.8	256 19.2	51.3
17	234 51.1	87 41.3	23.4	170 04.3	05.0	227 53.4	17.7	271 21.8	51.3
18	249 53.6	102 40.8	N14 22.5	185 05.4	N20 05.3	242 56.0	N 1 17.6	286 24.5	S15 51.4
19	264 56.0	117 40.2	21.5	200 06.5	05.5	257 58.7	17.5	301 27.1	51.4
20	279 58.5	132 39.7	20.5	215 07.5	05.8	273 01.4	17.4	316 29.7	51.5
21	295 01.0	147 39.1	19.6	230 08.6	06.1	288 04.1	17.3	331 32.4	51.6
22	310 03.4	162 38.5	18.6	245 09.7	06.3	303 06.8	17.2	346 35.0	51.6
23	325 05.9	177 38.0	17.6	260 10.7	06.6	318 09.5	17.1	1 37.6	51.7
	h m								
Paso Mer.	1 27.1	*v* −0.6	*d* 0.9	*v* 1.0	*d* 0.3	*v* 2.7	*d* 0.1	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.1	S40 12.6
Achernar	335 21.3	S57 07.1
Acrux	173 02.8	S63 13.5
Adhara	255 07.6	S28 59.9
Aldebaran	290 41.9	N16 33.3
Alioth	166 15.1	N55 50.5
Alkaid	152 53.9	N49 12.3
Alnair	27 34.9	S46 51.1
Alnilam	275 39.8	S 1 11.1
Alphard	217 50.0	S 8 45.2
Alphecca	126 05.5	N26 38.6
Alpheratz	357 36.5	N29 12.9
Altair	62 01.6	N 8 55.8
Ankaa	353 08.7	S42 10.8
Antares	112 18.2	S26 28.9
Arcturus	145 49.9	N19 04.1
Atria	107 14.1	S69 04.3
Avior	234 16.1	S59 34.6
Bellatrix	278 25.1	N 6 22.3
Betelgeuse	270 54.3	N 7 24.8
Canopus	263 53.5	S52 42.1
Capella	280 24.9	N46 01.1
Deneb	49 26.7	N45 21.8
Denebola	182 27.2	N14 27.0
Diphda	348 49.0	S17 51.6
Dubhe	193 44.1	N61 37.9
Elnath	278 04.4	N28 37.5
Eltanin	90 42.9	N51 29.4
Enif	33 40.4	N 9 58.8
Fomalhaut	15 16.3	S29 30.1
Gacrux	171 54.3	S57 14.4
Gienah	175 45.9	S17 39.9
Hadar	148 39.1	S60 29.0
Hamal	327 53.2	N23 34.1
Kaus Aust.	83 34.9	S34 22.5
Kochab	137 20.2	N74 04.1
Markab	13 31.5	N15 19.7
Menkar	314 08.1	N 4 10.8
Menkent	148 00.1	S36 28.9
Miaplacidus	221 39.5	S69 48.4
Mirfak	308 30.9	N49 56.3
Nunki	75 50.0	S26 16.1
Peacock	53 08.3	S56 39.8
Pollux	243 20.0	N27 58.3
Procyon	244 53.1	N 5 10.2
Rasalhague	96 00.3	N12 32.8
Regulus	207 36.8	N11 51.6
Rigel	281 05.8	S 8 10.4
Rigil Kent.	139 43.3	S60 55.8
Sabik	102 04.9	S15 45.1
Schedar	349 32.8	N56 39.5
Shaula	96 12.9	S37 07.3
Sirius	258 28.1	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 48.2	S43 31.2
Vega	80 34.3	N38 48.5
Zuben'ubi	136 58.3	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	214 54.6	11 08
Marte	296 11.1	5 42
Júpiter	352 53.0	1 55
Saturno	36 23.7	22 58

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	*v*		Dec		*d*	Ph
d h	°	′	°	′	°	′	′	°	′	′	′
29 00	179	43.5	N 9	26.2	160	22.2	15.0	N 5	38.9	14.3	55.9
01	194	43.7		25.3	174	56.2	15.0	5	24.6	14.2	55.9
02	209	43.9		24.4	189	30.2	15.0	5	10.4	14.3	55.9
03	224	44.1	. .	23.5	204	04.2	15.0	4	56.1	14.3	56.0
04	239	44.2		22.6	218	38.2	14.9	4	41.8	14.4	56.0
05	254	44.4		21.7	233	12.1	15.0	4	27.4	14.4	56.0
06	269	44.6	N 9	20.8	247	46.1	15.0	N 4	13.0	14.4	56.0
07	284	44.8		19.9	262	20.1	15.0	3	58.6	14.4	56.0
L 08	299	45.0		19.1	276	54.1	15.0	3	44.2	14.5	56.1
U 09	314	45.2	. .	18.2	291	28.1	14.9	3	29.7	14.4	56.1
N 10	329	45.4		17.3	306	02.0	15.0	3	15.3	14.5	56.1
E 11	344	45.6		16.4	320	36.0	14.9	3	00.8	14.6	56.1
S 12	359	45.7	N 9	15.5	335	09.9	15.0	N 2	46.2	14.5	56.1
13	14	45.9		14.6	349	43.9	14.9	2	31.7	14.6	56.2
14	29	46.1		13.7	4	17.8	15.0	2	17.1	14.6	56.2
15	44	46.3	. .	12.8	18	51.8	14.9	2	02.5	14.6	56.2
16	59	46.5		11.9	33	25.7	14.9	1	47.9	14.6	56.2
17	74	46.7		11.0	47	59.6	14.9	1	33.3	14.6	56.2
18	89	46.9	N 9	10.1	62	33.5	14.9	N 1	18.7	14.7	56.3
19	104	47.1		09.3	77	07.4	14.9	1	04.0	14.7	56.3
20	119	47.3		08.4	91	41.3	14.8	0	49.3	14.7	56.3
21	134	47.4	. .	07.5	106	15.1	14.9	0	34.6	14.7	56.3
22	149	47.6		06.6	120	49.0	14.8	0	19.9	14.7	56.3
23	164	47.8		05.7	135	22.8	14.8	N 0	05.2	14.7	56.4
30 00	179	48.0	N 9	04.8	149	56.6	14.8	S 0	09.5	14.7	56.4
01	194	48.2		03.9	164	30.4	14.8	0	24.2	14.8	56.4
02	209	48.4		03.0	179	04.2	14.7	0	39.0	14.7	56.4
03	224	48.6	. .	02.1	193	37.9	14.7	0	53.7	14.8	56.4
04	239	48.8		01.2	208	11.6	14.7	1	08.5	14.7	56.5
05	254	49.0		9 00.3	222	45.3	14.7	1	23.2	14.8	56.5
06	269	49.2	N 8	59.4	237	19.0	14.7	S 1	38.0	14.7	56.5
07	284	49.4		58.5	251	52.7	14.6	1	52.7	14.8	56.5
M 08	299	49.5		57.6	266	26.3	14.6	2	07.5	14.8	56.5
A 09	314	49.7	. .	56.7	280	59.9	14.5	2	22.3	14.7	56.6
R 10	329	49.9		55.8	295	33.4	14.5	2	37.0	14.8	56.6
T 11	344	50.1		54.9	310	06.9	14.5	2	51.8	14.8	56.6
E 12	359	50.3	N 8	54.0	324	40.4	14.5	S 3	06.6	14.7	56.6
S 13	14	50.5		53.1	339	13.9	14.4	3	21.3	14.8	56.7
14	29	50.7		52.3	353	47.3	14.4	3	36.1	14.7	56.7
15	44	50.9	. .	51.4	8	20.7	14.4	3	50.8	14.8	56.7
16	59	51.1		50.5	22	54.1	14.3	4	05.6	14.7	56.7
17	74	51.3		49.6	37	27.4	14.3	4	20.3	14.8	56.7
18	89	51.5	N 8	48.7	52	00.7	14.2	S 4	35.1	14.7	56.8
19	104	51.7		47.8	66	33.9	14.2	4	49.8	14.7	56.8
20	119	51.8		46.9	81	07.1	14.2	5	04.5	14.7	56.8
21	134	52.0	. .	46.0	95	40.3	14.1	5	19.2	14.7	56.8
22	149	52.2		45.1	110	13.4	14.1	5	33.9	14.7	56.8
23	164	52.4		44.2	124	46.5	14.0	5	48.6	14.6	56.9
31 00	179	52.6	N 8	43.3	139	19.5	14.0	S 6	03.2	14.7	56.9
01	194	52.8		42.4	153	52.5	13.9	6	17.9	14.6	56.9
02	209	53.0		41.5	168	25.4	13.9	6	32.5	14.6	56.9
03	224	53.2	. .	40.6	182	58.3	13.8	6	47.1	14.6	57.0
04	239	53.4		39.7	197	31.1	13.8	7	01.7	14.6	57.0
05	254	53.6		38.8	212	03.9	13.8	7	16.3	14.5	57.0
06	269	53.8	N 8	37.9	226	36.7	13.6	S 7	30.8	14.5	57.0
07	284	54.0		37.0	241	09.3	13.7	7	45.3	14.5	57.0
M 08	299	54.2		36.1	255	42.0	13.5	7	59.8	14.5	57.1
I 09	314	54.4	. .	35.2	270	14.5	13.5	8	14.3	14.4	57.1
É 10	329	54.6		34.3	284	47.0	13.5	8	28.7	14.5	57.1
R 11	344	54.8		33.4	299	19.5	13.4	8	43.2	14.3	57.1
C 12	359	55.0	N 8	32.5	313	51.9	13.3	S 8	57.5	14.4	57.2
O 13	14	55.2		31.6	328	24.2	13.3	9	11.9	14.3	57.2
L 14	29	55.3		30.6	342	56.5	13.2	9	26.2	14.3	57.2
E 15	44	55.5	. .	29.7	357	28.7	13.1	9	40.5	14.3	57.2
S 16	59	55.7		28.8	12	00.8	13.1	9	54.8	14.2	57.2
17	74	55.9		27.9	26	32.9	13.0	10	09.0	14.2	57.3
18	89	56.1	N 8	27.0	41	04.9	12.9	S10	23.2	14.1	57.3
19	104	56.3		26.1	55	36.8	12.9	10	37.3	14.1	57.3
20	119	56.5		25.2	70	08.7	12.8	10	51.4	14.1	57.3
21	134	56.7	. .	24.3	84	40.5	12.8	11	05.5	14.0	57.4
22	149	56.9		23.4	99	12.3	12.6	11	19.5	14.0	57.4
23	164	57.1		22.5	113	43.9	12.6	S11	33.5	14.0	57.4
	S/D	15.9	*d*	0.9	S/D	15.3		15.4			15.6

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		29	30	31	1
°	h m	h m	h m	h m	h m	h m	h m
N 72	////	02 15	03 51	06 41	08 46	10 57	13 35
N 70	////	02 48	04 06	06 47	08 42	10 43	12 59
68	01 08	03 11	04 18	06 52	08 39	10 31	12 34
66	01 56	03 28	04 28	06 56	08 37	10 22	12 15
64	02 26	03 43	04 37	06 59	08 35	10 14	12 00
62	02 47	03 54	04 44	07 02	08 33	10 08	11 47
60	03 04	04 04	04 50	07 04	08 32	10 02	11 36
N 58	03 18	04 13	04 55	07 06	08 30	09 57	11 27
56	03 30	04 20	05 00	07 08	08 29	09 52	11 19
54	03 40	04 27	05 04	07 10	08 28	09 48	11 12
52	03 49	04 33	05 08	07 12	08 27	09 45	11 06
50	03 56	04 38	05 12	07 13	08 26	09 42	11 00
45	04 12	04 49	05 19	07 16	08 25	09 35	10 47
N 40	04 24	04 58	05 26	07 19	08 23	09 29	10 37
35	04 34	05 05	05 31	07 21	08 22	09 24	10 29
30	04 43	05 11	05 36	07 23	08 21	09 20	10 21
20	04 55	05 22	05 44	07 26	08 19	09 12	10 08
N 10	05 05	05 30	05 51	07 29	08 17	09 06	09 57
0	05 12	05 36	05 57	07 32	08 15	09 00	09 46
S 10	05 18	05 42	06 04	07 35	08 14	08 54	09 36
20	05 22	05 48	06 10	07 38	08 12	08 47	09 25
30	05 26	05 54	06 18	07 41	08 10	08 40	09 12
35	05 27	05 57	06 22	07 43	08 09	08 36	09 05
40	05 28	05 59	06 27	07 45	08 08	08 31	08 57
45	05 29	06 03	06 32	07 48	08 06	08 26	08 48
S 50	05 29	06 06	06 39	07 51	08 05	08 20	08 36
52	05 29	06 08	06 42	07 52	08 04	08 17	08 31
54	05 29	06 09	06 45	07 54	08 03	08 14	08 26
56	05 28	06 11	06 49	07 55	08 02	08 10	08 19
58	05 28	06 13	06 53	07 57	08 02	08 06	08 12
S 60	05 27	06 15	06 57	07 59	08 00	08 02	08 04

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	29	30	31	1
°	h m	h m	h m	h m	h m	h m	h m
N 72	20 07	21 39	////	20 02	19 31	18 55	17 56
N 70	19 52	21 09	////	20 01	19 38	19 11	18 34
68	19 40	20 47	22 42	20 00	19 44	19 25	19 00
66	19 31	20 30	21 59	20 00	19 48	19 36	19 21
64	19 23	20 16	21 31	19 59	19 52	19 46	19 38
62	19 16	20 05	21 11	19 58	19 56	19 54	19 52
60	19 10	19 55	20 54	19 58	19 59	20 01	20 03
N 58	19 04	19 47	20 41	19 58	20 02	20 07	20 14
56	19 00	19 39	20 29	19 57	20 04	20 12	20 23
54	18 56	19 33	20 20	19 57	20 07	20 17	20 31
52	18 52	19 27	20 11	19 57	20 09	20 22	20 38
50	18 48	19 22	20 04	19 56	20 11	20 26	20 44
45	18 41	19 11	19 48	19 56	20 15	20 35	20 58
N 40	18 35	19 03	19 36	19 55	20 18	20 42	21 10
35	18 30	18 56	19 26	19 55	20 21	20 49	21 20
30	18 25	18 49	19 18	19 55	20 24	20 55	21 29
20	18 17	18 39	19 06	19 54	20 28	21 04	21 44
N 10	18 10	18 32	18 56	19 53	20 32	21 13	21 57
0	18 04	18 25	18 49	19 53	20 36	21 21	22 10
S 10	17 58	18 19	18 44	19 52	20 40	21 30	22 22
20	17 51	18 13	18 39	19 51	20 44	21 39	22 36
30	17 44	18 08	18 36	19 50	20 49	21 49	22 51
35	17 40	18 05	18 35	19 50	20 51	21 55	23 00
40	17 35	18 02	18 34	19 49	20 54	22 01	23 11
45	17 30	17 59	18 33	19 49	20 58	22 09	23 23
S 50	17 23	17 56	18 33	19 48	21 02	22 19	23 38
52	17 20	17 54	18 34	19 48	21 04	22 23	23 45
54	17 17	17 53	18 34	19 47	21 06	22 28	23 53
56	17 14	17 51	18 34	19 47	21 09	22 33	24 01
58	17 10	17 49	18 35	19 46	21 11	22 39	24 11
S 60	17 05	17 48	18 36	19 46	21 14	22 46	24 23

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
29	01 06	00 57	12 01	13 42	01 21	02 5	
30	00 48	00 39	12 01	14 26	02 04	03 10	
31	00 30	00 21	12 00	15 10	02 48	04 17	

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·2		JÚPITER −2·9		SATURNO +0·3	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1 00	340 08.4	192 37.4	N14 16.6	275 11.8	N20 06.9	333 12.2	N 1 16.9	16 40.3	S15 51.7
01	355 10.8	207 36.9	15.7	290 12.8	07.1	348 14.9	16.8	31 42.9	51.8
02	10 13.3	222 36.3	14.7	305 13.9	07.4	3 17.6	16.7	46 45.5	51.8
03	25 15.8	237 35.8	13.7	320 15.0	07.7	18 20.3	16.6	61 48.2	51.9
04	40 18.2	252 35.2	12.7	335 16.0	07.9	33 23.0	16.5	76 50.8	52.0
05	55 20.7	267 34.7	11.8	350 17.1	08.2	48 25.7	16.4	91 53.4	52.0
06	70 23.1	282 34.1	N14 10.8	5 18.2	N20 08.5	63 28.4	N 1 16.3	106 56.1	S15 52.1
07	85 25.6	297 33.5	09.8	20 19.2	08.7	78 31.1	16.2	121 58.7	52.1
08	100 28.1	312 33.0	08.8	35 20.3	09.0	93 33.8	16.1	137 01.3	52.2
J 09	115 30.5	327 32.4	07.8	50 21.4	09.3	108 36.5	16.0	152 04.0	52.2
U 10	130 33.0	342 31.9	06.9	65 22.4	09.5	123 39.2	15.9	167 06.6	52.3
E 11	145 35.5	357 31.3	05.9	80 23.5	09.8	138 41.9	15.7	182 09.2	52.3
V 12	160 37.9	12 30.8	N14 04.9	95 24.6	N20 10.0	153 44.6	N 1 15.6	197 11.9	S15 52.4
E 13	175 40.4	27 30.2	03.9	110 25.6	10.3	168 47.3	15.5	212 14.5	52.5
S 14	190 42.9	42 29.7	02.9	125 26.7	10.6	183 50.0	15.4	227 17.1	52.5
15	205 45.3	57 29.1	01.9	140 27.8	10.8	198 52.7	15.3	242 19.8	52.6
16	220 47.8	72 28.6	01.0	155 28.9	11.1	213 55.4	15.2	257 22.4	52.6
17	235 50.2	87 28.0	14 00.0	170 29.9	11.4	228 58.1	15.1	272 25.0	52.7
18	250 52.7	102 27.5	N13 59.0	185 31.0	N20 11.6	244 00.8	N 1 15.0	287 27.7	S15 52.7
19	265 55.2	117 26.9	58.0	200 32.1	11.9	259 03.5	14.9	302 30.3	52.8
20	280 57.6	132 26.4	57.0	215 33.1	12.2	274 06.2	14.8	317 32.9	52.9
21	296 00.1	147 25.8	56.0	230 34.2	12.4	289 08.9	14.6	332 35.6	52.9
22	311 02.6	162 25.3	55.0	245 35.3	12.7	304 11.6	14.5	347 38.2	53.0
23	326 05.0	177 24.7	54.0	260 36.4	12.9	319 14.3	14.4	2 40.8	53.0
2 00	341 07.5	192 24.2	N13 53.1	275 37.4	N20 13.2	334 17.0	N 1 14.3	17 43.5	S15 53.1
01	356 10.0	207 23.6	52.1	290 38.5	13.5	349 19.7	14.2	32 46.1	53.1
02	11 12.4	222 23.1	51.1	305 39.6	13.7	4 22.4	14.1	47 48.7	53.2
03	26 14.9	237 22.5	50.1	320 40.7	14.0	19 25.1	14.0	62 51.4	53.2
04	41 17.4	252 22.0	49.1	335 41.7	14.2	34 27.8	13.9	77 54.0	53.3
05	56 19.8	267 21.4	48.1	350 42.8	14.5	49 30.5	13.8	92 56.6	53.4
06	71 22.3	282 20.9	N13 47.1	5 43.9	N20 14.8	64 33.2	N 1 13.7	107 59.3	S15 53.4
07	86 24.7	297 20.4	46.1	20 45.0	15.0	79 35.9	13.5	123 01.9	53.5
V 08	101 27.2	312 19.8	45.1	35 46.0	15.3	94 38.6	13.4	138 04.5	53.5
I 09	116 29.7	327 19.3	44.1	50 47.1	15.5	109 41.3	13.3	153 07.2	53.6
E 10	131 32.1	342 18.7	43.1	65 48.2	15.8	124 44.0	13.2	168 09.8	53.6
R 11	146 34.6	357 18.2	42.1	80 49.3	16.1	139 46.7	13.1	183 12.4	53.7
N 12	161 37.1	12 17.6	N13 41.1	95 50.4	N20 16.3	154 49.4	N 1 13.0	198 15.1	S15 53.7
E 13	176 39.5	27 17.1	40.1	110 51.4	16.6	169 52.1	12.9	213 17.7	53.8
S 14	191 42.0	42 16.6	39.1	125 52.5	16.8	184 54.8	12.8	228 20.3	53.9
15	206 44.5	57 16.0	38.1	140 53.6	17.1	199 57.5	12.6	243 23.0	53.9
16	221 46.9	72 15.5	37.1	155 54.7	17.3	215 00.2	12.5	258 25.6	54.0
17	236 49.4	87 14.9	36.1	170 55.8	17.6	230 03.0	12.4	273 28.2	54.0
18	251 51.9	102 14.4	N13 35.1	185 56.8	N20 17.9	245 05.7	N 1 12.3	288 30.9	S15 54.1
19	266 54.3	117 13.8	34.1	200 57.9	18.1	260 08.4	12.2	303 33.5	54.1
20	281 56.8	132 13.3	33.1	215 59.0	18.4	275 11.1	12.1	318 36.1	54.2
21	296 59.2	147 12.8	32.1	231 00.1	18.6	290 13.8	12.0	333 38.7	54.2
22	312 01.7	162 12.2	31.1	246 01.2	18.9	305 16.5	11.9	348 41.4	54.3
23	327 04.2	177 11.7	30.1	261 02.3	19.1	320 19.2	11.8	3 44.0	54.4
3 00	342 06.6	192 11.2	N13 29.1	276 03.3	N20 19.4	335 21.9	N 1 11.6	18 46.6	S15 54.4
01	357 09.1	207 10.6	28.1	291 04.4	19.6	350 24.6	11.5	33 49.3	54.5
02	12 11.6	222 10.1	27.1	306 05.5	19.9	5 27.3	11.4	48 51.9	54.5
03	27 14.0	237 09.5	26.1	321 06.6	20.2	20 30.0	11.3	63 54.5	54.6
04	42 16.5	252 09.0	25.1	336 07.7	20.4	35 32.7	11.2	78 57.2	54.6
05	57 19.0	267 08.5	24.0	351 08.8	20.7	50 35.4	11.1	93 59.8	54.7
06	72 21.4	282 07.9	N13 23.0	6 09.9	N20 20.9	65 38.1	N 1 11.0	109 02.4	S15 54.7
07	87 23.9	297 07.4	22.0	21 10.9	21.2	80 40.8	10.8	124 05.1	54.8
S 08	102 26.3	312 06.9	21.0	36 12.0	21.4	95 43.6	10.7	139 07.7	54.9
Á 09	117 28.8	327 06.3	20.0	51 13.1	21.7	110 46.3	10.6	154 10.3	54.9
B 10	132 31.3	342 05.8	19.0	66 14.2	21.9	125 49.0	10.5	169 12.9	55.0
A 11	147 33.7	357 05.3	18.0	81 15.3	22.2	140 51.7	10.4	184 15.6	55.0
D 12	162 36.2	12 04.7	N13 17.0	96 16.4	N20 22.4	155 54.4	N 1 10.3	199 18.2	S15 55.1
O 13	177 38.7	27 04.2	15.9	111 17.5	22.7	170 57.1	10.2	214 20.8	55.1
14	192 41.1	42 03.7	14.9	126 18.6	22.9	185 59.8	10.1	229 23.5	55.2
15	207 43.6	57 03.1	13.9	141 19.7	23.2	201 02.5	09.9	244 26.1	55.2
16	222 46.1	72 02.6	12.9	156 20.8	23.4	216 05.2	09.8	259 28.7	55.3
17	237 48.5	87 02.1	11.9	171 21.9	23.7	231 07.9	09.7	274 31.4	55.3
18	252 51.0	102 01.5	N13 10.9	186 22.9	N20 23.9	246 10.6	N 1 09.6	289 34.0	S15 55.4
19	267 53.5	117 01.0	09.8	201 24.0	24.2	261 13.4	09.5	304 36.6	55.5
20	282 55.9	132 00.5	08.8	216 25.1	24.4	276 16.1	09.4	319 39.2	55.5
21	297 58.4	146 59.9	07.8	231 26.2	24.7	291 18.8	09.3	334 41.9	55.6
22	313 00.8	161 59.4	06.8	246 27.3	24.9	306 21.5	09.1	349 44.5	55.6
23	328 03.3	176 58.9	05.8	261 28.4	25.2	321 24.2	09.0	4 47.1	55.7
	h m								
Paso Mer.	1 15.3	*v* −0.5	*d* 1.0	*v* 1.1	*d* 0.3	*v* 2.7	*d* 0.1	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.1	S40 12.6
Achernar	335 21.2	S57 07.1
Acrux	173 02.8	S63 13.5
Adhara	255 07.6	S28 59.9
Aldebaran	290 41.9	N16 33.3
Alioth	166 15.2	N55 50.5
Alkaid	152 53.9	N49 12.3
Alnair	27 34.9	S46 51.1
Alnilam	275 39.8	S 1 11.1
Alphard	217 50.0	S 8 45.2
Alphecca	126 05.5	N26 38.6
Alpheratz	357 36.5	N29 12.9
Altair	62 01.6	N 8 55.8
Ankaa	353 08.7	S42 10.8
Antares	112 18.2	S26 28.9
Arcturus	145 49.9	N19 04.1
Atria	107 14.1	S69 04.3
Avior	234 16.0	S59 34.6
Bellatrix	278 25.0	N 6 22.3
Betelgeuse	270 54.3	N 7 24.8
Canopus	263 53.5	S52 42.1
Capella	280 24.8	N46 01.1
Deneb	49 26.7	N45 21.8
Denebola	182 27.2	N14 26.9
Diphda	348 49.0	S17 51.6
Dubhe	193 44.1	N61 37.9
Elnath	278 04.4	N28 37.5
Eltanin	90 42.9	N51 29.4
Enif	33 40.4	N 9 58.8
Fomalhaut	15 16.3	S29 30.1
Gacrux	171 54.3	S57 14.4
Gienah	175 45.9	S17 39.9
Hadar	148 39.2	S60 29.0
Hamal	327 53.2	N23 34.1
Kaus Aust.	83 34.9	S34 22.5
Kochab	137 20.3	N74 04.1
Markab	13 31.5	N15 19.7
Menkar	314 08.1	N 4 10.8
Menkent	148 00.2	S36 28.9
Miaplacidus	221 39.5	S69 48.4
Mirfak	308 30.9	N49 56.3
Nunki	75 50.0	S26 16.1
Peacock	53 08.3	S56 39.8
Pollux	243 20.0	N27 58.3
Procyon	244 53.1	N 5 10.2
Rasalhague	96 00.3	N12 32.8
Regulus	207 36.8	N11 51.6
Rigel	281 05.8	S 8 10.4
Rigil Kent.	139 43.3	S60 55.8
Sabik	102 05.0	S15 45.1
Schedar	349 32.8	N56 39.6
Shaula	96 12.9	S37 07.3
Sirius	258 28.1	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 48.1	S43 31.2
Vega	80 34.3	N38 48.5
Zuben'ubi	136 58.3	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	211 16.7	11 11
Marte	294 29.9	5 37
Júpiter	353 09.5	1 43
Saturno	36 36.0	22 45

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph	
d h	°	′	°	′	°	′	°	′	′	
1 00	179	57.3	N 8	21.6	128	15.5	12.5	S11	47.5	13.9	57.4
01	194	57.5		20.7	142	47.0	12.5	12	01.4	13.8	57.4
02	209	57.7		19.8	157	18.5	12.3	12	15.2	13.8	57.5
03	224	57.9	. .	18.9	171	49.8	12.3	12	29.0	13.8	57.5
04	239	58.1		18.0	186	21.1	12.2	12	42.8	13.7	57.5
05	254	58.3		17.1	200	52.3	12.2	12	56.5	13.6	57.5
06	269	58.5	N 8	16.2	215	23.5	12.0	S13	10.1	13.6	57.6
07	284	58.7		15.3	229	54.5	12.0	13	23.7	13.5	57.6
J 08	299	58.9		14.4	244	25.5	11.9	13	37.2	13.5	57.6
U 09	314	59.1	. .	13.5	258	56.4	11.8	13	50.7	13.5	57.6
E 10	329	59.3		12.5	273	27.2	11.7	14	04.2	13.3	57.6
V 11	344	59.5		11.6	287	57.9	11.6	14	17.5	13.3	57.7
E 12	359	59.7	N 8	10.7	302	28.5	11.6	S14	30.8	13.3	57.7
S 13	14	59.9		09.8	316	59.1	11.4	14	44.1	13.2	57.7
14	30	00.1		08.9	331	29.5	11.4	14	57.3	13.1	57.7
15	45	00.3	. .	08.0	345	59.9	11.3	15	10.4	13.0	57.8
16	60	00.5		07.1	0	30.2	11.2	15	23.4	13.0	57.8
17	75	00.7		06.2	15	00.4	11.1	15	36.4	12.9	57.8
18	90	00.9	N 8	05.3	29	30.5	11.0	S15	49.3	12.9	57.8
19	105	01.1		04.4	44	00.5	10.9	16	02.2	12.7	57.8
20	120	01.3		03.5	58	30.4	10.8	16	14.9	12.7	57.9
21	135	01.5	. .	02.5	73	00.2	10.7	16	27.6	12.6	57.9
22	150	01.7		01.6	87	29.9	10.7	16	40.2	12.6	57.9
23	165	01.9	8	00.7	101	59.6	10.5	16	52.8	12.4	57.9
2 00	180	02.1	N 7	59.8	116	29.1	10.4	S17	05.2	12.4	58.0
01	195	02.3		58.9	130	58.5	10.4	17	17.6	12.3	58.0
02	210	02.5		58.0	145	27.9	10.2	17	29.9	12.3	58.0
03	225	02.7	. .	57.1	159	57.1	10.1	17	42.2	12.1	58.0
04	240	02.9		56.2	174	26.2	10.1	17	54.3	12.0	58.1
05	255	03.1		55.3	188	55.3	9.9	18	06.3	12.0	58.1
06	270	03.3	N 7	54.3	203	24.2	9.9	S18	18.3	11.9	58.1
07	285	03.5		53.4	217	53.1	9.7	18	30.2	11.8	58.1
V 08	300	03.7		52.5	232	21.8	9.6	18	42.0	11.7	58.1
I 09	315	03.9	. .	51.6	246	50.4	9.6	18	53.7	11.6	58.2
E 10	330	04.1		50.7	261	19.0	9.4	19	05.3	11.5	58.2
R 11	345	04.3		49.8	275	47.4	9.3	19	16.8	11.4	58.2
N 12	0	04.5	N 7	48.9	290	15.7	9.2	S19	28.2	11.3	58.2
E 13	15	04.7		48.0	304	43.9	9.1	19	39.5	11.2	58.3
S 14	30	04.9		47.0	319	12.0	9.0	19	50.7	11.1	58.3
15	45	05.1	. .	46.1	333	40.0	8.9	20	01.8	11.0	58.3
16	60	05.3		45.2	348	07.9	8.8	20	12.8	10.9	58.3
17	75	05.5		44.3	2	35.7	8.7	20	23.7	10.8	58.3
18	90	05.7	N 7	43.4	17	03.4	8.6	S20	34.5	10.7	58.4
19	105	05.9		42.5	31	31.0	8.5	20	45.2	10.5	58.4
20	120	06.1		41.6	45	58.5	8.3	20	55.7	10.5	58.4
21	135	06.3	. .	40.6	60	25.8	8.3	21	06.2	10.4	58.4
22	150	06.5		39.7	74	53.1	8.1	21	16.6	10.2	58.5
23	165	06.7		38.8	89	20.2	8.1	21	26.8	10.1	58.5
3 00	180	06.9	N 7	37.9	103	47.3	7.9	S21	36.9	10.0	58.5
01	195	07.1		37.0	118	14.2	7.8	21	46.9	9.9	58.5
02	210	07.3		36.1	132	41.0	7.7	21	56.8	9.8	58.5
03	225	07.5	. .	35.2	147	07.7	7.6	22	06.6	9.6	58.6
04	240	07.7		34.2	161	34.3	7.5	22	16.2	9.5	58.6
05	255	07.9		33.3	176	00.8	7.4	22	25.7	9.4	58.6
06	270	08.1	N 7	32.4	190	27.2	7.3	S22	35.1	9.3	58.6
07	285	08.3		31.5	204	53.5	7.2	22	44.4	9.1	58.7
S 08	300	08.6		30.6	219	19.7	7.0	22	53.5	9.0	58.7
Á 09	315	08.8	. .	29.6	233	45.7	7.0	23	02.5	8.8	58.7
B 10	330	09.0		28.7	248	11.7	6.8	23	11.3	8.8	58.7
A 11	345	09.2		27.8	262	37.5	6.8	23	20.1	8.6	58.7
D 12	0	09.4	N 7	26.9	277	03.3	6.6	S23	28.7	8.4	58.8
O 13	15	09.6		26.0	291	28.9	6.5	23	37.1	8.4	58.8
14	30	09.8		25.1	305	54.4	6.5	23	45.5	8.1	58.8
15	45	10.0	. .	24.1	320	19.9	6.3	23	53.6	8.1	58.8
16	60	10.2		23.2	334	45.2	6.2	24	01.7	7.9	58.9
17	75	10.4		22.3	349	10.4	6.1	24	09.6	7.7	58.9
18	90	10.6	N 7	21.4	3	35.5	6.0	S24	17.3	7.6	58.9
19	105	10.8		20.5	18	00.5	5.9	24	24.9	7.5	58.9
20	120	11.0		19.5	32	25.4	5.9	24	32.4	7.3	58.9
21	135	11.2	. .	18.6	46	50.3	5.7	24	39.7	7.1	59.0
22	150	11.4		17.7	61	15.0	5.6	24	46.8	7.0	59.0
23	165	11.6		16.8	75	39.6	5.5	S24	53.8	6.8	59.0
	S/D	15.9	*d*	0.9	S/D	15.7		15.9			16.0

Lat.	Aurora				Orto Sol		Orto Luna							
	Náut.		Civil				1		2		3		4	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	////		02	38	04	06	13	35						
N 70	00	05	03	05	04	19	12	59						
68	01	39	03	24	04	30	12	34	15	08				
66	02	15	03	40	04	38	12	15	14	25				
64	02	40	03	53	04	45	12	00	13	56	16	10		
62	02	59	04	03	04	52	11	47	13	34	15	29	17	27
60	03	14	04	12	04	57	11	36	13	17	15	01	16	42
N 58	03	27	04	20	05	02	11	27	13	02	14	40	16	12
56	03	37	04	27	05	06	11	19	12	50	14	22	15	50
54	03	47	04	33	05	10	11	12	12	39	14	07	15	32
52	03	55	04	38	05	13	11	06	12	29	13	54	15	16
50	04	02	04	43	05	16	11	00	12	21	13	43	15	02
45	04	16	04	53	05	23	10	47	12	03	13	20	14	35
N 40	04	28	05	01	05	29	10	37	11	48	13	01	14	13
35	04	37	05	07	05	33	10	29	11	36	12	46	13	55
30	04	44	05	13	05	37	10	21	11	25	12	32	13	40
20	04	56	05	22	05	45	10	08	11	07	12	09	13	14
N 10	05	05	05	30	05	51	09	57	10	51	11	50	12	51
0	05	11	05	36	05	56	09	46	10	37	11	31	12	31
S 10	05	16	05	41	06	02	09	36	10	22	11	13	12	10
20	05	20	05	46	06	08	09	25	10	07	10	54	11	48
30	05	22	05	50	06	14	09	12	09	49	10	32	11	22
35	05	23	05	53	06	18	09	05	09	39	10	19	11	07
40	05	24	05	55	06	22	08	57	09	27	10	04	10	50
45	05	23	05	57	06	27	08	48	09	14	09	46	10	29
S 50	05	23	06	00	06	33	08	36	08	57	09	25	10	03
52	05	22	06	01	06	35	08	31	08	50	09	15	09	50
54	05	22	06	02	06	38	08	26	08	41	09	03	09	36
56	05	21	06	04	06	41	08	19	08	32	08	50	09	19
58	05	20	06	05	06	45	08	12	08	21	08	35	08	59
S 60	05	19	06	07	06	48	08	04	08	08	08	17	08	34

Lat.	Ocaso Sol		Crepúsculo				Ocaso Luna							
			Civil		Náut.		1		2		3		4	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	19	50	21	16	////		17	56						
N 70	19	38	20	51	23	16	18	34						
68	19	27	20	32	22	13	19	00	18	13				
66	19	19	20	17	21	39	19	21	18	58				
64	19	12	20	04	21	16	19	38	19	28	19	10		
62	19	06	19	54	20	57	19	52	19	50	19	51	19	59
60	19	01	19	45	20	43	20	03	20	09	20	19	20	44
N 58	18	56	19	38	20	30	20	14	20	24	20	41	21	14
56	18	52	19	31	20	20	20	23	20	37	20	59	21	36
54	18	48	19	25	20	11	20	31	20	49	21	15	21	55
52	18	45	19	20	20	03	20	38	20	59	21	28	22	11
50	18	42	19	16	19	56	20	44	21	08	21	40	22	25
45	18	36	19	06	19	42	20	58	21	27	22	04	22	53
N 40	18	30	18	58	19	31	21	10	21	43	22	24	23	15
35	18	26	18	51	19	22	21	20	21	56	22	40	23	33
30	18	21	18	46	19	14	21	29	22	08	22	54	23	49
20	18	15	18	37	19	03	21	44	22	28	23	18	24	16
N 10	18	09	18	30	18	54	21	57	22	46	23	39	24	39
0	18	03	18	24	18	48	22	10	23	02	23	59	25	00
S 10	17	58	18	19	18	43	22	22	23	19	24	19	00	19
20	17	52	18	14	18	40	22	36	23	36	24	40	00	40
30	17	46	18	10	18	37	22	51	23	57	25	04	01	04
35	17	42	18	07	18	37	23	00	24	09	00	09	01	19
40	17	38	18	05	18	36	23	11	24	23	00	23	01	36
45	17	33	18	03	18	37	23	23	24	39	00	39	01	56
S 50	17	28	18	00	18	38	23	38	25	00	01	00	02	21
52	17	25	17	59	18	38	23	45	25	09	01	09	02	33
54	17	22	17	58	18	39	23	53	25	20	01	20	02	47
56	17	19	17	57	18	40	24	01	00	01	01	33	03	04
58	17	16	17	56	18	41	24	11	00	11	01	48	03	23
S 60	17	12	17	54	18	42	24	23	00	23	02	05	03	48

Día	SOL						LUNA					
	Ec. Tiempo				Paso Mer.		Paso Mer.				Edad	Fase
	00h		12h				Sup.		Inf.			
d	m	s	m	s	h	m	h	m	h	m	d	%
1	00	11	00	02	12	00	15	58	03	34	05	26
2	00	08	00	18	12	00	16	49	04	23	06	36
3	00	27	00	37	11	59	17	45	05	17	07	47

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·2		JÚPITER −2·9		SATURNO +0·3	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
4 00	343 05.8	191 58.3	N13 04.7	276 29.5	N20 25.4	336 26.9	N 1 08.9	19 49.8	S15 55.7
01	358 08.2	206 57.8	03.7	291 30.6	25.7	351 29.6	08.8	34 52.4	55.8
02	13 10.7	221 57.3	02.7	306 31.7	25.9	6 32.3	08.7	49 55.0	55.8
03	28 13.2	236 56.8	01.7	321 32.8	26.2	21 35.1	08.6	64 57.7	55.9
04	43 15.6	251 56.2	13 00.7	336 33.9	26.4	36 37.8	08.5	80 00.3	55.9
05	58 18.1	266 55.7	12 59.6	351 35.0	26.7	51 40.5	08.3	95 02.9	56.0
06	73 20.6	281 55.2	N12 58.6	6 36.1	N20 26.9	66 43.2	N 1 08.2	110 05.5	S15 56.1
07	88 23.0	296 54.7	57.6	21 37.2	27.2	81 45.9	08.1	125 08.2	56.1
08	103 25.5	311 54.1	56.5	36 38.3	27.4	96 48.6	08.0	140 10.8	56.2
D 09	118 28.0	326 53.6	55.5	51 39.4	27.7	111 51.3	07.9	155 13.4	56.2
O 10	133 30.4	341 53.1	54.5	66 40.5	27.9	126 54.0	07.8	170 16.1	56.3
M 11	148 32.9	356 52.6	53.5	81 41.6	28.2	141 56.8	07.7	185 18.7	56.3
I 12	163 35.3	11 52.0	N12 52.4	96 42.7	N20 28.4	156 59.5	N 1 07.5	200 21.3	S15 56.4
N 13	178 37.8	26 51.5	51.4	111 43.8	28.7	172 02.2	07.4	215 23.9	56.4
G 14	193 40.3	41 51.0	50.4	126 44.9	28.9	187 04.9	07.3	230 26.6	56.5
O 15	208 42.7	56 50.5	49.3	141 46.0	29.2	202 07.6	07.2	245 29.2	56.5
16	223 45.2	71 49.9	48.3	156 47.1	29.4	217 10.3	07.1	260 31.8	56.6
17	238 47.7	86 49.4	47.3	171 48.2	29.7	232 13.0	07.0	275 34.4	56.7
18	253 50.1	101 48.9	N12 46.2	186 49.3	N20 29.9	247 15.8	N 1 06.8	290 37.1	S15 56.7
19	268 52.6	116 48.4	45.2	201 50.4	30.1	262 18.5	06.7	305 39.7	56.8
20	283 55.1	131 47.8	44.2	216 51.5	30.4	277 21.2	06.6	320 42.3	56.8
21	298 57.5	146 47.3	43.1	231 52.6	30.6	292 23.9	06.5	335 45.0	56.9
22	314 00.0	161 46.8	42.1	246 53.7	30.9	307 26.6	06.4	350 47.6	56.9
23	329 02.5	176 46.3	41.1	261 54.9	31.1	322 29.3	06.3	5 50.2	57.0
5 00	344 04.9	191 45.8	N12 40.0	276 56.0	N20 31.4	337 32.0	N 1 06.2	20 52.8	S15 57.0
01	359 07.4	206 45.2	39.0	291 57.1	31.6	352 34.8	06.0	35 55.5	57.1
02	14 09.8	221 44.7	38.0	306 58.2	31.9	7 37.5	05.9	50 58.1	57.1
03	29 12.3	236 44.2	36.9	321 59.3	32.1	22 40.2	05.8	66 00.7	57.2
04	44 14.8	251 43.7	35.9	337 00.4	32.3	37 42.9	05.7	81 03.4	57.2
05	59 17.2	266 43.2	34.8	352 01.5	32.6	52 45.6	05.6	96 06.0	57.3
06	74 19.7	281 42.7	N12 33.8	7 02.6	N20 32.8	67 48.4	N 1 05.5	111 08.6	S15 57.4
07	89 22.2	296 42.1	32.8	22 03.7	33.1	82 51.1	05.3	126 11.2	57.4
L 08	104 24.6	311 41.6	31.7	37 04.8	33.3	97 53.8	05.2	141 13.9	57.5
U 09	119 27.1	326 41.1	30.7	52 05.9	33.6	112 56.5	05.1	156 16.5	57.5
N 10	134 29.6	341 40.6	29.6	67 07.1	33.8	127 59.2	05.0	171 19.1	57.6
E 11	149 32.0	356 40.1	28.6	82 08.2	34.0	143 01.9	04.9	186 21.7	57.6
S 12	164 34.5	11 39.6	N12 27.6	97 09.3	N20 34.3	158 04.7	N 1 04.8	201 24.4	S15 57.7
13	179 37.0	26 39.0	26.5	112 10.4	34.5	173 07.4	04.6	216 27.0	57.7
14	194 39.4	41 38.5	25.5	127 11.5	34.8	188 10.1	04.5	231 29.6	57.8
15	209 41.9	56 38.0	24.4	142 12.6	35.0	203 12.8	04.4	246 32.2	57.8
16	224 44.3	71 37.5	23.4	157 13.7	35.2	218 15.5	04.3	261 34.9	57.9
17	239 46.8	86 37.0	22.3	172 14.9	35.5	233 18.3	04.2	276 37.5	57.9
18	254 49.3	101 36.5	N12 21.3	187 16.0	N20 35.7	248 21.0	N 1 04.0	291 40.1	S15 58.0
19	269 51.7	116 36.0	20.2	202 17.1	36.0	263 23.7	03.9	306 42.7	58.0
20	284 54.2	131 35.4	19.2	217 18.2	36.2	278 26.4	03.8	321 45.4	58.1
21	299 56.7	146 34.9	18.1	232 19.3	36.4	293 29.1	03.7	336 48.0	58.1
22	314 59.1	161 34.4	17.1	247 20.4	36.7	308 31.9	03.6	351 50.6	58.2
23	330 01.6	176 33.9	16.0	262 21.6	36.9	323 34.6	03.5	6 53.3	58.3
6 00	345 04.1	191 33.4	N12 15.0	277 22.7	N20 37.2	338 37.3	N 1 03.3	21 55.9	S15 58.3
01	0 06.5	206 32.9	13.9	292 23.8	37.4	353 40.0	03.2	36 58.5	58.4
02	15 09.0	221 32.4	12.9	307 24.9	37.6	8 42.7	03.1	52 01.1	58.4
03	30 11.5	236 31.9	11.8	322 26.0	37.9	23 45.5	03.0	67 03.8	58.5
04	45 13.9	251 31.4	10.8	337 27.2	38.1	38 48.2	02.9	82 06.4	58.5
05	60 16.4	266 30.9	09.7	352 28.3	38.3	53 50.9	02.8	97 09.0	58.6
06	75 18.8	281 30.3	N12 08.7	7 29.4	N20 38.6	68 53.6	N 1 02.6	112 11.6	S15 58.6
07	90 21.3	296 29.8	07.6	22 30.5	38.8	83 56.3	02.5	127 14.3	58.7
M 08	105 23.8	311 29.3	06.5	37 31.6	39.1	98 59.1	02.4	142 16.9	58.7
A 09	120 26.2	326 28.8	05.5	52 32.8	39.3	114 01.8	02.3	157 19.5	58.8
R 10	135 28.7	341 28.3	04.4	67 33.9	39.5	129 04.5	02.2	172 22.1	58.8
T 11	150 31.2	356 27.8	03.4	82 35.0	39.8	144 07.2	02.0	187 24.8	58.9
E 12	165 33.6	11 27.3	N12 02.3	97 36.1	N20 40.0	159 10.0	N 1 01.9	202 27.4	S15 58.9
S 13	180 36.1	26 26.8	01.3	112 37.3	40.2	174 12.7	01.8	217 30.0	59.0
14	195 38.6	41 26.3	12 00.2	127 38.4	40.5	189 15.4	01.7	232 32.6	59.0
15	210 41.0	56 25.8	11 59.1	142 39.5	40.7	204 18.1	01.6	247 35.2	59.1
16	225 43.5	71 25.3	58.1	157 40.7	40.9	219 20.9	01.4	262 37.9	59.2
17	240 45.9	86 24.8	57.0	172 41.8	41.2	234 23.6	01.3	277 40.5	59.2
18	255 48.4	101 24.3	N11 56.0	187 42.9	N20 41.4	249 26.3	N 1 01.2	292 43.1	S15 59.3
19	270 50.9	116 23.8	54.9	202 44.0	41.6	264 29.0	01.1	307 45.7	59.3
20	285 53.3	131 23.3	53.8	217 45.2	41.9	279 31.8	01.0	322 48.4	59.4
21	300 55.8	146 22.8	52.8	232 46.3	42.1	294 34.5	00.9	337 51.0	59.4
22	315 58.3	161 22.3	51.7	247 47.4	42.3	309 37.2	00.7	352 53.6	59.5
23	331 00.7	176 21.7	50.6	262 48.6	42.6	324 39.9	00.6	7 56.2	59.5
	h m								
Paso Mer.	1 03.5	*v* −0.5	*d* 1.0	*v* 1.1	*d* 0.2	*v* 2.7	*d* 0.1	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.1	S40 12.6
Achernar	335 21.2	S57 07.1
Acrux	173 02.8	S63 13.5
Adhara	255 07.6	S28 59.9
Aldebaran	290 41.8	N16 33.3
Alioth	166 15.2	N55 50.5
Alkaid	152 53.9	N49 12.3
Alnair	27 34.9	S46 51.1
Alnilam	275 39.8	S 1 11.1
Alphard	217 50.0	S 8 45.2
Alphecca	126 05.5	N26 38.6
Alpheratz	357 36.4	N29 12.9
Altair	62 01.6	N 8 55.8
Ankaa	353 08.7	S42 10.9
Antares	112 18.2	S26 28.9
Arcturus	145 49.9	N19 04.1
Atria	107 14.2	S69 04.3
Avior	234 16.0	S59 34.6
Bellatrix	278 25.0	N 6 22.3
Betelgeuse	270 54.3	N 7 24.8
Canopus	263 53.5	S52 42.1
Capella	280 24.8	N46 01.1
Deneb	49 26.7	N45 21.8
Denebola	182 27.2	N14 26.9
Diphda	348 49.0	S17 51.6
Dubhe	193 44.1	N61 37.9
Elnath	278 04.4	N28 37.5
Eltanin	90 42.9	N51 29.4
Enif	33 40.4	N 9 58.8
Fomalhaut	15 16.3	S29 30.1
Gacrux	171 54.3	S57 14.4
Gienah	175 45.9	S17 39.9
Hadar	148 39.2	S60 29.0
Hamal	327 53.2	N23 34.1
Kaus Aust.	83 34.9	S34 22.5
Kochab	137 20.3	N74 04.0
Markab	13 31.5	N15 19.7
Menkar	314 08.0	N 4 10.8
Menkent	148 00.2	S36 28.9
Miaplacidus	221 39.5	S69 48.4
Mirfak	308 30.9	N49 56.3
Nunki	75 50.0	S26 16.1
Peacock	53 08.3	S56 39.8
Pollux	243 19.9	N27 58.3
Procyon	244 53.1	N 5 10.2
Rasalhague	96 00.3	N12 32.8
Regulus	207 36.8	N11 51.6
Rigel	281 05.8	S 8 10.4
Rigil Kent.	139 43.3	S60 55.8
Sabik	102 05.0	S15 45.1
Schedar	349 32.7	N56 39.6
Shaula	96 12.9	S37 07.3
Sirius	258 28.1	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 48.1	S43 31.2
Vega	80 34.3	N38 48.5
Zuben'ubi	136 58.3	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	207 40.9	11 13
Marte	292 51.0	5 32
Júpiter	353 27.1	1 30
Saturno	36 47.9	22 33

UT (HmGr)	SOL AHGr	SOL Dec	LUNA AHGr	LUNA v	LUNA Dec	LUNA d	LUNA Ph
d h	° ′	° ′	° ′	′	° ′	′	′
4 00	180 11.8	N 7 15.9	90 04.1	5.4	S25 00.6	6.7	59.0
01	195 12.0	14.9	104 28.5	5.3	25 07.3	6.6	59.0
02	210 12.3	14.0	118 52.8	5.3	25 13.9	6.3	59.1
03	225 12.5	. . 13.1	133 17.1	5.1	25 20.2	6.2	59.1
04	240 12.7	12.2	147 41.2	5.0	25 26.4	6.1	59.1
05	255 12.9	11.3	162 05.2	5.0	25 32.5	5.9	59.1
06	270 13.1	N 7 10.3	176 29.2	4.8	S25 38.4	5.7	59.1
07	285 13.3	09.4	190 53.0	4.8	25 44.1	5.5	59.2
08	300 13.5	08.5	205 16.8	4.7	25 49.6	5.4	59.2
09	315 13.7	. . 07.6	219 40.5	4.6	25 55.0	5.2	59.2
10	330 13.9	06.6	234 04.1	4.5	26 00.2	5.1	59.2
11	345 14.1	05.7	248 27.6	4.4	26 05.3	4.9	59.2
12	0 14.3	N 7 04.8	262 51.0	4.4	S26 10.2	4.7	59.3
13	15 14.5	03.9	277 14.4	4.3	26 14.9	4.5	59.3
14	30 14.7	02.9	291 37.7	4.2	26 19.4	4.3	59.3
15	45 14.9	. . 02.0	306 00.9	4.1	26 23.7	4.2	59.3
16	60 15.2	01.1	320 24.0	4.0	26 27.9	4.0	59.3
17	75 15.4	7 00.2	334 47.0	4.0	26 31.9	3.8	59.4
18	90 15.6	N 6 59.3	349 10.0	3.9	S26 35.7	3.7	59.4
19	105 15.8	58.3	3 32.9	3.9	26 39.4	3.5	59.4
20	120 16.0	57.4	17 55.8	3.8	26 42.9	3.2	59.4
21	135 16.2	. . 56.5	32 18.6	3.7	26 46.1	3.1	59.4
22	150 16.4	55.6	46 41.3	3.6	26 49.2	2.9	59.5
23	165 16.6	54.6	61 03.9	3.6	26 52.1	2.8	59.5
5 00	180 16.8	N 6 53.7	75 26.5	3.6	S26 54.9	2.5	59.5
01	195 17.0	52.8	89 49.1	3.4	26 57.4	2.4	59.5
02	210 17.2	51.9	104 11.5	3.5	26 59.8	2.1	59.5
03	225 17.4	. . 50.9	118 34.0	3.4	27 01.9	2.0	59.5
04	240 17.7	50.0	132 56.4	3.3	27 03.9	1.8	59.6
05	255 17.9	49.1	147 18.7	3.3	27 05.7	1.6	59.6
06	270 18.1	N 6 48.1	161 41.0	3.2	S27 07.3	1.5	59.6
07	285 18.3	47.2	176 03.2	3.2	27 08.8	1.2	59.6
08	300 18.5	46.3	190 25.4	3.2	27 10.0	1.0	59.6
09	315 18.7	. . 45.4	204 47.6	3.1	27 11.0	0.9	59.6
10	330 18.9	44.4	219 09.7	3.1	27 11.9	0.6	59.7
11	345 19.1	43.5	233 31.8	3.1	27 12.5	0.5	59.7
12	0 19.3	N 6 42.6	247 53.9	3.0	S27 13.0	0.2	59.7
13	15 19.5	41.7	262 15.9	3.1	27 13.2	0.1	59.7
14	30 19.8	40.7	276 38.0	3.0	27 13.3	0.1	59.7
15	45 20.0	. . 39.8	291 00.0	2.9	27 13.2	0.3	59.7
16	60 20.2	38.9	305 21.9	3.0	27 12.9	0.6	59.8
17	75 20.4	37.9	319 43.9	2.9	27 12.3	0.7	59.8
18	90 20.6	N 6 37.0	334 05.8	3.0	S27 11.6	0.9	59.8
19	105 20.8	36.1	348 27.8	2.9	27 10.7	1.1	59.8
20	120 21.0	35.2	2 49.7	2.9	27 09.6	1.2	59.8
21	135 21.2	. . 34.2	17 11.6	2.9	27 08.4	1.5	59.8
22	150 21.4	33.3	31 33.5	2.9	27 06.9	1.7	59.8
23	165 21.7	32.4	45 55.4	2.9	27 05.2	1.9	59.9
6 00	180 21.9	N 6 31.4	60 17.3	2.9	S27 03.3	2.1	59.9
01	195 22.1	30.5	74 39.2	3.0	27 01.2	2.2	59.9
02	210 22.3	29.6	89 01.2	2.9	26 59.0	2.5	59.9
03	225 22.5	. . 28.6	103 23.1	2.9	26 56.5	2.6	59.9
04	240 22.7	27.7	117 45.0	3.0	26 53.9	2.9	59.9
05	255 22.9	26.8	132 07.0	2.9	26 51.0	3.0	59.9
06	270 23.1	N 6 25.9	146 28.9	3.0	S26 48.0	3.3	59.9
07	285 23.3	24.9	160 50.9	3.0	26 44.7	3.4	60.0
08	300 23.6	24.0	175 12.9	3.1	26 41.3	3.6	60.0
09	315 23.8	. . 23.1	189 35.0	3.0	26 37.7	3.8	60.0
10	330 24.0	22.1	203 57.0	3.1	26 33.9	4.0	60.0
11	345 24.2	21.2	218 19.1	3.2	26 29.9	4.2	60.0
12	0 24.4	N 6 20.3	232 41.3	3.1	S26 25.7	4.4	60.0
13	15 24.6	19.3	247 03.4	3.2	26 21.3	4.6	60.0
14	30 24.8	18.4	261 25.6	3.2	26 16.7	4.8	60.0
15	45 25.0	. . 17.5	275 47.8	3.3	26 11.9	4.9	60.0
16	60 25.3	16.5	290 10.1	3.3	26 07.0	5.2	60.0
17	75 25.5	15.6	304 32.4	3.4	26 01.8	5.3	60.0
18	90 25.7	N 6 14.7	318 54.8	3.4	S25 56.5	5.5	60.1
19	105 25.9	13.7	333 17.2	3.5	25 51.0	5.7	60.1
20	120 26.1	12.8	347 39.7	3.5	25 45.3	5.9	60.1
21	135 26.3	. . 11.9	2 02.2	3.5	25 39.4	6.1	60.1
22	150 26.5	10.9	16 24.7	3.7	25 33.3	6.2	60.1
23	165 26.8	10.0	30 47.4	3.6	S25 27.1	6.4	60.1
	S/D 15.9	d 0.9	S/D	16.1		16.3	16.3

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 4	Orto Luna 5	Orto Luna 6	Orto Luna 7
°	h m	h m	h m	h m	h m	h m	h m
N 72	////	02 58	04 21	▬	▬	▬	▬
N 70	01 16	03 20	04 32	▬	▬	▬	▬
68	02 03	03 38	04 40	▬	▬	▬	▬
66	02 32	03 51	04 48	▬	▬	▬	20 29
64	02 53	04 03	04 54	▬	▬	20 26	19 46
62	03 10	04 12	04 59	17 27	18 52	19 13	19 17
60	03 24	04 20	05 04	16 42	17 58	18 37	18 54
N 58	03 35	04 27	05 08	16 12	17 26	18 11	18 36
56	03 45	04 33	05 12	15 50	17 02	17 51	18 21
54	03 53	04 38	05 15	15 32	16 42	17 33	18 07
52	04 01	04 43	05 18	15 16	16 26	17 19	17 56
50	04 07	04 47	05 21	15 02	16 12	17 06	17 45
45	04 21	04 57	05 27	14 35	15 43	16 39	17 24
N 40	04 31	05 04	05 31	14 13	15 20	16 18	17 06
35	04 39	05 10	05 36	13 55	15 01	16 01	16 51
30	04 46	05 15	05 39	13 40	14 45	15 45	16 38
20	04 57	05 23	05 45	13 14	14 18	15 20	16 16
N 10	05 05	05 29	05 51	12 51	13 55	14 57	15 56
0	05 10	05 35	05 55	12 31	13 33	14 37	15 38
S 10	05 15	05 39	06 00	12 10	13 11	14 16	15 20
20	05 17	05 43	06 05	11 48	12 48	13 53	15 01
30	05 19	05 47	06 11	11 22	12 21	13 27	14 38
35	05 19	05 48	06 14	11 07	12 05	13 12	14 25
40	05 19	05 50	06 17	10 50	11 47	12 54	14 09
45	05 18	05 52	06 21	10 29	11 24	12 33	13 51
S 50	05 17	05 54	06 26	10 03	10 56	12 06	13 28
52	05 16	05 55	06 28	09 50	10 42	11 52	13 17
54	05 15	05 55	06 31	09 36	10 26	11 37	13 04
56	05 13	05 56	06 33	09 19	10 07	11 19	12 50
58	05 12	05 57	06 36	08 59	09 44	10 57	12 33
S 60	05 10	05 58	06 40	08 34	09 13	10 29	12 12

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 4	Ocaso Luna 5	Ocaso Luna 6	Ocaso Luna 7
°	h m	h m	h m	h m	h m	h m	h m
N 72	19 34	20 55	////	▬	▬	▬	▬
N 70	19 23	20 33	22 31	▬	▬	▬	▬
68	19 15	20 17	21 49	▬	▬	▬	▬
66	19 07	20 03	21 21	▬	▬	▬	23 31
64	19 01	19 53	21 01	▬	▬	21 25	24 14
62	18 56	19 43	20 45	19 59	20 46	22 37	24 42
60	18 52	19 36	20 31	20 44	21 40	23 13	25 03
N 58	18 48	19 29	20 20	21 14	22 12	23 39	25 21
56	18 44	19 23	20 11	21 36	22 36	23 59	25 36
54	18 41	19 18	20 03	21 55	22 55	24 16	00 16
52	18 38	19 13	19 55	22 11	23 12	24 30	00 30
50	18 36	19 09	19 49	22 25	23 26	24 43	00 43
45	18 30	19 00	19 36	22 53	23 55	25 09	01 09
N 40	18 25	18 53	19 26	23 15	24 17	00 17	01 29
35	18 21	18 47	19 17	23 33	24 36	00 36	01 46
30	18 18	18 42	19 10	23 49	24 52	00 52	02 01
20	18 12	18 34	19 00	24 16	00 16	01 19	02 25
N 10	18 07	18 28	18 53	24 39	00 39	01 42	02 47
0	18 02	18 23	18 47	25 00	01 00	02 03	03 06
S 10	17 57	18 18	18 43	00 19	01 22	02 25	03 26
20	17 53	18 15	18 40	00 40	01 45	02 48	03 47
30	17 47	18 11	18 39	01 04	02 11	03 14	04 11
35	17 44	18 09	18 39	01 19	02 27	03 30	04 25
40	17 41	18 08	18 39	01 36	02 46	03 48	04 41
45	17 37	18 06	18 40	01 56	03 08	04 10	05 00
S 50	17 32	18 04	18 42	02 21	03 36	04 38	05 24
52	17 30	18 04	18 43	02 33	03 50	04 51	05 36
54	17 28	18 03	18 44	02 47	04 06	05 07	05 49
56	17 25	18 02	18 45	03 04	04 25	05 25	06 04
58	17 22	18 02	18 47	03 23	04 48	05 47	06 21
S 60	17 19	18 01	18 49	03 48	05 18	06 16	06 43

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
4	00 47	00 57	11 59	18 45	06 15	08 59	
5	01 07	01 17	11 59	19 48	07 16	09 70	
6	01 27	01 37	11 58	20 51	08 20	10 80	

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·3		JÚPITER −2·9		SATURNO +0·3	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
7 00	346 03.2	191 21.2	N11 49.6	277 49.7	N20 42.8	339 42.7	N 1 00.5	22 58.9	S15 59.6
01	1 05.7	206 20.7	48.5	292 50.8	43.0	354 45.4	00.4	38 01.5	59.6
02	16 08.1	221 20.2	47.4	307 51.9	43.3	9 48.1	00.3	53 04.1	59.7
03	31 10.6	236 19.7	46.4	322 53.1	43.5	24 50.8	00.1	68 06.7	59.7
04	46 13.1	251 19.2	45.3	337 54.2	43.7	39 53.6	1 00.0	83 09.4	59.8
05	61 15.5	266 18.7	44.2	352 55.3	44.0	54 56.3	0 59.9	98 12.0	59.8
06	76 18.0	281 18.2	N11 43.2	7 56.5	N20 44.2	69 59.0	N 0 59.8	113 14.6	S15 59.9
07	91 20.4	296 17.7	42.1	22 57.6	44.4	85 01.7	59.7	128 17.2	15 59.9
08	106 22.9	311 17.2	41.0	37 58.7	44.7	100 04.5	59.5	143 19.8	16 00.0
M 09	121 25.4	326 16.7	40.0	52 59.9	44.9	115 07.2	59.4	158 22.5	00.0
I 10	136 27.8	341 16.2	38.9	68 01.0	45.1	130 09.9	59.3	173 25.1	00.1
É 11	151 30.3	356 15.7	37.8	83 02.2	45.4	145 12.6	59.2	188 27.7	00.1
R 12	166 32.8	11 15.2	N11 36.8	98 03.3	N20 45.6	160 15.4	N 0 59.1	203 30.3	S16 00.2
C 13	181 35.2	26 14.7	35.7	113 04.4	45.8	175 18.1	58.9	218 33.0	00.2
O 14	196 37.7	41 14.3	34.6	128 05.6	46.1	190 20.8	58.8	233 35.6	00.3
L 15	211 40.2	56 13.8	33.5	143 06.7	46.3	205 23.5	58.7	248 38.2	00.3
E 16	226 42.6	71 13.3	32.5	158 07.8	46.5	220 26.3	58.6	263 40.8	00.4
S 17	241 45.1	86 12.8	31.4	173 09.0	46.7	235 29.0	58.5	278 43.4	00.5
18	256 47.6	101 12.3	N11 30.3	188 10.1	N20 47.0	250 31.7	N 0 58.3	293 46.1	S16 00.5
19	271 50.0	116 11.8	29.2	203 11.3	47.2	265 34.5	58.2	308 48.7	00.6
20	286 52.5	131 11.3	28.2	218 12.4	47.4	280 37.2	58.1	323 51.3	00.6
21	301 54.9	146 10.8	27.1	233 13.6	47.7	295 39.9	58.0	338 53.9	00.7
22	316 57.4	161 10.3	26.0	248 14.7	47.9	310 42.6	57.9	353 56.6	00.7
23	331 59.9	176 09.8	24.9	263 15.8	48.1	325 45.4	57.7	8 59.2	00.8
8 00	347 02.3	191 09.3	N11 23.8	278 17.0	N20 48.3	340 48.1	N 0 57.6	24 01.8	S16 00.8
01	2 04.8	206 08.8	22.8	293 18.1	48.6	355 50.8	57.5	39 04.4	00.9
02	17 07.3	221 08.3	21.7	308 19.3	48.8	10 53.6	57.4	54 07.0	00.9
03	32 09.7	236 07.8	20.6	323 20.4	49.0	25 56.3	57.2	69 09.7	01.0
04	47 12.2	251 07.3	19.5	338 21.6	49.3	40 59.0	57.1	84 12.3	01.0
05	62 14.7	266 06.8	18.4	353 22.7	49.5	56 01.8	57.0	99 14.9	01.1
06	77 17.1	281 06.3	N11 17.4	8 23.8	N20 49.7	71 04.5	N 0 56.9	114 17.5	S16 01.1
07	92 19.6	296 05.8	16.3	23 25.0	49.9	86 07.2	56.8	129 20.1	01.2
J 08	107 22.1	311 05.4	15.2	38 26.1	50.2	101 09.9	56.6	144 22.8	01.2
U 09	122 24.5	326 04.9	14.1	53 27.3	50.4	116 12.7	56.5	159 25.4	01.3
E 10	137 27.0	341 04.4	13.0	68 28.4	50.6	131 15.4	56.4	174 28.0	01.3
V 11	152 29.4	356 03.9	12.0	83 29.6	50.8	146 18.1	56.3	189 30.6	01.4
E 12	167 31.9	11 03.4	N11 10.9	98 30.7	N20 51.1	161 20.9	N 0 56.2	204 33.2	S16 01.4
S 13	182 34.4	26 02.9	09.8	113 31.9	51.3	176 23.6	56.0	219 35.9	01.5
14	197 36.8	41 02.4	08.7	128 33.0	51.5	191 26.3	55.9	234 38.5	01.5
15	212 39.3	56 01.9	07.6	143 34.2	51.7	206 29.1	55.8	249 41.1	01.6
16	227 41.8	71 01.4	06.5	158 35.3	52.0	221 31.8	55.7	264 43.7	01.6
17	242 44.2	86 01.0	05.4	173 36.5	52.2	236 34.5	55.5	279 46.3	01.7
18	257 46.7	101 00.5	N11 04.3	188 37.6	N20 52.4	251 37.3	N 0 55.4	294 49.0	S16 01.7
19	272 49.2	116 00.0	03.3	203 38.8	52.6	266 40.0	55.3	309 51.6	01.8
20	287 51.6	130 59.5	02.2	218 40.0	52.9	281 42.7	55.2	324 54.2	01.8
21	302 54.1	145 59.0	01.1	233 41.1	53.1	296 45.5	55.1	339 56.8	01.9
22	317 56.5	160 58.5	11 00.0	248 42.3	53.3	311 48.2	54.9	354 59.4	01.9
23	332 59.0	175 58.0	10 58.9	263 43.4	53.5	326 50.9	54.8	10 02.1	02.0
9 00	348 01.5	190 57.5	N10 57.8	278 44.6	N20 53.7	341 53.7	N 0 54.7	25 04.7	S16 02.0
01	3 03.9	205 57.1	56.7	293 45.7	54.0	356 56.4	54.6	40 07.3	02.1
02	18 06.4	220 56.6	55.6	308 46.9	54.2	11 59.1	54.4	55 09.9	02.1
03	33 08.9	235 56.1	54.5	323 48.0	54.4	27 01.9	54.3	70 12.5	02.2
04	48 11.3	250 55.6	53.4	338 49.2	54.6	42 04.6	54.2	85 15.2	02.2
05	63 13.8	265 55.1	52.3	353 50.4	54.9	57 07.3	54.1	100 17.8	02.3
06	78 16.3	280 54.6	N10 51.2	8 51.5	N20 55.1	72 10.1	N 0 53.9	115 20.4	S16 02.3
07	93 18.7	295 54.2	50.1	23 52.7	55.3	87 12.8	53.8	130 23.0	02.4
V 08	108 21.2	310 53.7	49.1	38 53.8	55.5	102 15.5	53.7	145 25.6	02.4
I 09	123 23.7	325 53.2	48.0	53 55.0	55.7	117 18.3	53.6	160 28.3	02.5
E 10	138 26.1	340 52.7	46.9	68 56.2	56.0	132 21.0	53.5	175 30.9	02.5
R 11	153 28.6	355 52.2	45.8	83 57.3	56.2	147 23.7	53.3	190 33.5	02.6
N 12	168 31.0	10 51.7	N10 44.7	98 58.5	N20 56.4	162 26.5	N 0 53.2	205 36.1	S16 02.6
E 13	183 33.5	25 51.3	43.6	113 59.6	56.6	177 29.2	53.1	220 38.7	02.7
S 14	198 36.0	40 50.8	42.5	129 00.8	56.8	192 32.0	53.0	235 41.3	02.7
15	213 38.4	55 50.3	41.4	144 02.0	57.1	207 34.7	52.8	250 44.0	02.8
16	228 40.9	70 49.8	40.3	159 03.1	57.3	222 37.4	52.7	265 46.6	02.8
17	243 43.4	85 49.3	39.2	174 04.3	57.5	237 40.2	52.6	280 49.2	02.9
18	258 45.8	100 48.9	N10 38.1	189 05.5	N20 57.7	252 42.9	N 0 52.5	295 51.8	S16 02.9
19	273 48.3	115 48.4	37.0	204 06.6	57.9	267 45.6	52.3	310 54.4	03.0
20	288 50.8	130 47.9	35.9	219 07.8	58.2	282 48.4	52.2	325 57.0	03.0
21	303 53.2	145 47.4	34.8	234 09.0	58.4	297 51.1	52.1	340 59.7	03.1
22	318 55.7	160 46.9	33.7	249 10.1	58.6	312 53.8	52.0	356 02.3	03.1
23	333 58.1	175 46.5	32.6	264 11.3	58.8	327 56.6	51.9	11 04.9	03.2
	h m								
Paso Mer.	0 51.7	*v* −0.5	*d* 1.1	*v* 1.1	*d* 0.2	*v* 2.7	*d* 0.1	*v* 2.6	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.0	S40 12.6
Achernar	335 21.2	S57 07.1
Acrux	173 02.9	S63 13.5
Adhara	255 07.6	S28 59.9
Aldebaran	290 41.8	N16 33.3
Alioth	166 15.2	N55 50.5
Alkaid	152 53.9	N49 12.3
Alnair	27 34.9	S46 51.1
Alnilam	275 39.7	S 1 11.1
Alphard	217 49.9	S 8 45.2
Alphecca	126 05.5	N26 38.6
Alpheratz	357 36.4	N29 12.9
Altair	62 01.6	N 8 55.8
Ankaa	353 08.7	S42 10.9
Antares	112 18.2	S26 28.9
Arcturus	145 49.9	N19 04.1
Atria	107 14.2	S69 04.3
Avior	234 16.0	S59 34.6
Bellatrix	278 25.0	N 6 22.3
Betelgeuse	270 54.2	N 7 24.8
Canopus	263 53.4	S52 42.1
Capella	280 24.8	N46 01.1
Deneb	49 26.7	N45 21.8
Denebola	182 27.2	N14 26.9
Diphda	348 48.9	S17 51.6
Dubhe	193 44.0	N61 37.9
Elnath	278 04.3	N28 37.5
Eltanin	90 43.0	N51 29.4
Enif	33 40.4	N 9 58.8
Fomalhaut	15 16.3	S29 30.1
Gacrux	171 54.3	S57 14.4
Gienah	175 45.9	S17 39.9
Hadar	148 39.2	S60 29.0
Hamal	327 53.1	N23 34.1
Kaus Aust.	83 34.9	S34 22.5
Kochab	137 20.4	N74 04.0
Markab	13 31.5	N15 19.7
Menkar	314 08.0	N 4 10.8
Menkent	148 00.2	S36 28.9
Miaplacidus	221 39.5	S69 48.3
Mirfak	308 30.8	N49 56.3
Nunki	75 50.0	S26 16.1
Peacock	53 08.3	S56 39.8
Pollux	243 19.9	N27 58.3
Procyon	244 53.1	N 5 10.2
Rasalhague	96 00.3	N12 32.8
Regulus	207 36.8	N11 51.6
Rigel	281 05.7	S 8 10.4
Rigil Kent.	139 43.3	S60 55.8
Sabik	102 05.0	S15 45.1
Schedar	349 32.7	N56 39.6
Shaula	96 12.9	S37 07.3
Sirius	258 28.1	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 48.1	S43 31.2
Vega	80 34.4	N38 48.5
Zuben'ubi	136 58.3	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	204 07.0	11 16
Marte	291 14.6	5 26
Júpiter	353 45.8	1 17
Saturno	36 59.5	22 20

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	′	°	′	′	′
7 00	180	27.0	N 6	09.1	45	10.0	3.8	S25	20.7	6.7	60.1
01	195	27.2		08.1	59	32.8	3.8	25	14.0	6.7	60.1
02	210	27.4		07.2	73	55.6	3.9	25	07.3	7.0	60.1
03	225	27.6		06.3	88	18.5	3.9	25	00.3	7.2	60.1
04	240	27.8		05.3	102	41.4	4.0	24	53.1	7.3	60.1
05	255	28.0		04.4	117	04.4	4.1	24	45.8	7.5	60.1
06	270	28.3	N 6	03.5	131	27.5	4.1	S24	38.3	7.6	60.1
07	285	28.5		02.5	145	50.6	4.2	24	30.7	7.9	60.1
08	300	28.7		01.6	160	13.8	4.3	24	22.8	8.0	60.1
09	315	28.9	6	00.7	174	37.1	4.4	24	14.8	8.1	60.1
10	330	29.1	5	59.7	189	00.5	4.4	24	06.7	8.4	60.1
11	345	29.3		58.8	203	23.9	4.5	23	58.3	8.5	60.1
12	0	29.5	N 5	57.8	217	47.4	4.6	S23	49.8	8.7	60.2
13	15	29.8		56.9	232	11.0	4.7	23	41.1	8.8	60.2
14	30	30.0		56.0	246	34.7	4.8	23	32.3	9.0	60.2
15	45	30.2		55.0	260	58.5	4.9	23	23.3	9.2	60.2
16	60	30.4		54.1	275	22.4	4.9	23	14.1	9.3	60.2
17	75	30.6		53.2	289	46.3	5.0	23	04.8	9.4	60.2
18	90	30.8	N 5	52.2	304	10.3	5.1	S22	55.4	9.7	60.2
19	105	31.0		51.3	318	34.4	5.2	22	45.7	9.7	60.2
20	120	31.3		50.4	332	58.6	5.3	22	36.0	10.0	60.2
21	135	31.5		49.4	347	22.9	5.4	22	26.0	10.0	60.2
22	150	31.7		48.5	1	47.3	5.5	22	16.0	10.3	60.2
23	165	31.9		47.5	16	11.8	5.5	22	05.7	10.3	60.2
8 00	180	32.1	N 5	46.6	30	36.3	5.7	S21	55.4	10.6	60.2
01	195	32.3		45.7	45	01.0	5.7	21	44.8	10.6	60.2
02	210	32.6		44.7	59	25.7	5.9	21	34.2	10.8	60.1
03	225	32.8		43.8	73	50.6	5.9	21	23.4	11.0	60.1
04	240	33.0		42.8	88	15.5	6.1	21	12.4	11.1	60.1
05	255	33.2		41.9	102	40.6	6.1	21	01.3	11.2	60.1
06	270	33.4	N 5	41.0	117	05.7	6.2	S20	50.1	11.3	60.1
07	285	33.6		40.0	131	30.9	6.3	20	38.8	11.5	60.1
08	300	33.9		39.1	145	56.2	6.5	20	27.3	11.6	60.1
09	315	34.1		38.1	160	21.7	6.5	20	15.7	11.7	60.1
10	330	34.3		37.2	174	47.2	6.6	20	04.0	11.9	60.1
11	345	34.5		36.3	189	12.8	6.7	19	52.1	12.0	60.1
12	0	34.7	N 5	35.3	203	38.5	6.8	S19	40.1	12.1	60.1
13	15	34.9		34.4	218	04.3	6.9	19	28.0	12.2	60.1
14	30	35.2		33.4	232	30.2	7.0	19	15.8	12.4	60.1
15	45	35.4		32.5	246	56.2	7.1	19	03.4	12.5	60.1
16	60	35.6		31.6	261	22.3	7.2	18	50.9	12.5	60.1
17	75	35.8		30.6	275	48.5	7.3	18	38.4	12.7	60.1
18	90	36.0	N 5	29.7	290	14.8	7.5	S18	25.7	12.8	60.1
19	105	36.2		28.7	304	41.3	7.5	18	12.9	13.0	60.0
20	120	36.5		27.8	319	07.8	7.5	17	59.9	13.0	60.0
21	135	36.7		26.9	333	34.3	7.7	17	46.9	13.1	60.0
22	150	36.9		25.9	348	01.0	7.8	17	33.8	13.2	60.0
23	165	37.1		25.0	2	27.8	7.9	17	20.6	13.4	60.0
9 00	180	37.3	N 5	24.0	16	54.7	8.0	S17	07.2	13.4	60.0
01	195	37.5		23.1	31	21.7	8.1	16	53.8	13.5	60.0
02	210	37.8		22.2	45	48.8	8.2	16	40.3	13.7	60.0
03	225	38.0		21.2	60	16.0	8.3	16	26.6	13.7	60.0
04	240	38.2		20.3	74	43.3	8.3	16	12.9	13.8	59.9
05	255	38.4		19.3	89	10.6	8.5	15	59.1	13.9	59.9
06	270	38.6	N 5	18.4	103	38.1	8.6	S15	45.2	14.0	59.9
07	285	38.8		17.4	118	05.7	8.6	15	31.2	14.0	59.9
08	300	39.1		16.5	132	33.3	8.8	15	17.2	14.2	59.9
09	315	39.3		15.6	147	01.1	8.8	15	03.0	14.2	59.9
10	330	39.5		14.6	161	28.9	8.9	14	48.8	14.3	59.9
11	345	39.7		13.7	175	56.8	9.1	14	34.5	14.4	59.8
12	0	39.9	N 5	12.7	190	24.9	9.1	S14	20.1	14.5	59.8
13	15	40.2		11.8	204	53.0	9.2	14	05.6	14.6	59.8
14	30	40.4		10.8	219	21.2	9.3	13	51.0	14.6	59.8
15	45	40.6		09.9	233	49.5	9.4	13	36.4	14.7	59.8
16	60	40.8		08.9	248	17.9	9.5	13	21.7	14.7	59.8
17	75	41.0		08.0	262	46.4	9.5	13	07.0	14.8	59.7
18	90	41.3	N 5	07.1	277	14.9	9.7	S12	52.2	14.9	59.7
19	105	41.5		06.1	291	43.6	9.7	12	37.3	15.0	59.7
20	120	41.7		05.2	306	12.3	9.8	12	22.3	15.0	59.7
21	135	41.9		04.2	320	41.1	9.9	12	07.3	15.0	59.7
22	150	42.1		03.3	335	10.0	10.0	11	52.3	15.1	59.7
23	165	42.3		02.3	349	39.0	10.1	S11	37.2	15.2	59.6
	S/D	15.9	d	0.9	S/D		16.4		16.4		16.3

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			7	8	9	10
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	00	35	03	16	04 35	▬	22 05	20 27	19 44
N 70	01	48	03	35	04 44	▬	20 57	20 06	19 35
68	02	23	03	50	04 51	▬	20 20	19 49	19 28
66	02	47	04	02	04 57	20 29	19 54	19 35	19 22
64	03	06	04	12	05 03	19 46	19 33	19 24	19 16
62	03	21	04	21	05 07	19 17	19 16	19 14	19 12
60	03	33	04	28	05 11	18 54	19 02	19 06	19 08
N 58	03	43	04	34	05 15	18 36	18 50	18 58	19 04
56	03	52	04	39	05 18	18 21	18 39	18 52	19 01
54	04	00	04	44	05 20	18 07	18 30	18 46	18 58
52	04	06	04	48	05 23	17 56	18 22	18 41	18 56
50	04	12	04	52	05 25	17 45	18 14	18 36	18 53
45	04	25	05	00	05 30	17 24	17 58	18 25	18 48
N 40	04	34	05	07	05 34	17 06	17 45	18 16	18 44
35	04	42	05	12	05 38	16 51	17 33	18 09	18 40
30	04	48	05	17	05 41	16 38	17 23	18 02	18 37
20	04	58	05	24	05 46	16 16	17 06	17 51	18 31
N 10	05	05	05	29	05 50	15 56	16 51	17 40	18 26
0	05	10	05	34	05 54	15 38	16 37	17 31	18 21
S 10	05	13	05	37	05 58	15 20	16 22	17 21	18 16
20	05	15	05	40	06 03	15 01	16 07	17 11	18 11
30	05	15	05	43	06 07	14 38	15 49	16 59	18 05
35	05	15	05	44	06 10	14 25	15 39	16 52	18 02
40	05	14	05	45	06 13	14 09	15 27	16 44	17 58
45	05	13	05	47	06 16	13 51	15 13	16 35	17 53
S 50	05	10	05	48	06 20	13 28	14 56	16 23	17 48
52	05	09	05	48	06 22	13 17	14 48	16 18	17 45
54	05	07	05	48	06 23	13 04	14 39	16 12	17 43
56	05	06	05	49	06 26	12 50	14 28	16 06	17 40
58	05	04	05	49	06 28	12 33	14 17	15 59	17 36
S 60	05	01	05	49	06 31	12 12	14 03	15 50	17 32

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	7	8	9	10
°	h m	h m	h m	h m	h m	h m	h m
N 72	19 18	20 35	22 59	▬	23 59	27 29	03 29
N 70	19 09	20 16	22 00	▬	▬	01 05	03 48
68	19 02	20 02	21 28	▬	▬	01 41	04 03
66	18 56	19 51	21 04	23 31	26 06	02 06	04 14
64	18 51	19 41	20 46	24 14	00 14	02 25	04 24
62	18 46	19 33	20 32	24 42	00 42	02 41	04 32
60	18 43	19 26	20 20	25 03	01 03	02 54	04 39
N 58	18 39	19 20	20 10	25 21	01 21	03 05	04 45
56	18 36	19 15	20 02	25 36	01 36	03 15	04 51
54	18 34	19 10	19 54	00 16	01 48	03 23	04 56
52	18 31	19 06	19 48	00 30	01 59	03 31	05 00
50	18 29	19 02	19 42	00 43	02 09	03 38	05 04
45	18 24	18 54	19 30	01 09	02 30	03 52	05 12
N 40	18 20	18 48	19 20	01 29	02 46	04 04	05 19
35	18 17	18 43	19 13	01 46	03 00	04 14	05 25
30	18 14	18 38	19 07	02 01	03 12	04 23	05 31
20	18 09	18 31	18 57	02 25	03 33	04 38	05 40
N 10	18 05	18 26	18 51	02 47	03 50	04 51	05 48
0	18 01	18 22	18 46	03 06	04 07	05 03	05 55
S 10	17 57	18 18	18 43	03 26	04 23	05 15	06 02
20	17 53	18 15	18 41	03 47	04 40	05 27	06 10
30	17 49	18 13	18 40	04 11	05 00	05 42	06 18
35	17 46	18 12	18 41	04 25	05 11	05 50	06 23
40	17 43	18 11	18 42	04 41	05 24	05 59	06 29
45	17 40	18 10	18 44	05 00	05 40	06 10	06 35
S 50	17 36	18 09	18 46	05 24	05 58	06 23	06 43
52	17 35	18 08	18 48	05 36	06 07	06 29	06 46
54	17 33	18 08	18 49	05 49	06 17	06 36	06 50
56	17 31	18 08	18 51	06 04	06 28	06 43	06 54
58	17 29	18 08	18 53	06 21	06 40	06 52	06 59
S 60	17 26	18 08	18 56	06 43	06 55	07 01	07 04

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
7	01 47	01 58	11 58	21 53	09 22	11 88	
8	02 08	02 18	11 58	22 50	10 22	12 95	
9	02 29	02 39	11 57	23 43	11 17	13 99	

MIÉRCOLES JUEVES VIERNES

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·3		JÚPITER −2·9		SATURNO +0·4		ESTRELLAS		
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec	Nombre	AHS	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′		° ′	° ′
10 00	349 00.6	190 46.0	N10 31.5	279 12.5	N20 59.0	342 59.3	N 0 51.7	26 07.5	S16 03.2	Acamar	315 13.0	S40 12.6
01	4 03.1	205 45.5	30.3	294 13.6	59.2	358 02.1	51.6	41 10.1	03.3	Achernar	335 21.2	S57 07.1
02	19 05.5	220 45.0	29.2	309 14.8	59.5	13 04.8	51.5	56 12.8	03.3	Acrux	173 02.9	S63 13.4
03	34 08.0	235 44.6	28.1	324 16.0	59.7	28 07.5	51.4	71 15.4	03.4	Adhara	255 07.5	S28 59.9
04	49 10.5	250 44.1	27.0	339 17.1	20 59.9	43 10.3	51.2	86 18.0	03.4	Aldebaran	290 41.8	N16 33.3
05	64 12.9	265 43.6	25.9	354 18.3	21 00.1	58 13.0	51.1	101 20.6	03.5			
06	79 15.4	280 43.1	N10 24.8	9 19.5	N21 00.3	73 15.7	N 0 51.0	116 23.2	S16 03.5	Alioth	166 15.2	N55 50.5
07	94 17.9	295 42.6	23.7	24 20.7	00.5	88 18.5	50.9	131 25.8	03.6	Alkaid	152 53.9	N49 12.3
08	109 20.3	310 42.2	22.6	39 21.8	00.8	103 21.2	50.7	146 28.4	03.6	Alnair	27 34.9	S46 51.1
S 09	124 22.8	325 41.7	21.5	54 23.0	01.0	118 24.0	50.6	161 31.1	03.7	Alnilam	275 39.7	S 1 11.1
Á 10	139 25.3	340 41.2	20.4	69 24.2	01.2	133 26.7	50.5	176 33.7	03.7	Alphard	217 49.9	S 8 45.2
B 11	154 27.7	355 40.7	19.3	84 25.4	01.4	148 29.4	50.4	191 36.3	03.8			
A 12	169 30.2	10 40.3	N10 18.2	99 26.5	N21 01.6	163 32.2	N 0 50.2	206 38.9	S16 03.8	Alphecca	126 05.5	N26 38.6
D 13	184 32.6	25 39.8	17.1	114 27.7	01.8	178 34.9	50.1	221 41.5	03.9	Alpheratz	357 36.4	N29 12.9
O 14	199 35.1	40 39.3	15.9	129 28.9	02.1	193 37.7	50.0	236 44.1	03.9	Altair	62 01.6	N 8 55.8
15	214 37.6	55 38.9	14.8	144 30.1	02.3	208 40.4	49.9	251 46.8	04.0	Ankaa	353 08.6	S42 10.9
16	229 40.0	70 38.4	13.7	159 31.2	02.5	223 43.1	49.7	266 49.4	04.0	Antares	112 18.3	S26 28.9
17	244 42.5	85 37.9	12.6	174 32.4	02.7	238 45.9	49.6	281 52.0	04.1			
18	259 45.0	100 37.4	N10 11.5	189 33.6	N21 02.9	253 48.6	N 0 49.5	296 54.6	S16 04.1	Arcturus	145 49.9	N19 04.1
19	274 47.4	115 37.0	10.4	204 34.8	03.1	268 51.4	49.4	311 57.2	04.2	Atria	107 14.2	S69 04.3
20	289 49.9	130 36.5	09.3	219 36.0	03.3	283 54.1	49.2	326 59.8	04.2	Avior	234 16.0	S59 34.6
21	304 52.4	145 36.0	08.2	234 37.1	03.5	298 56.8	49.1	342 02.4	04.3	Bellatrix	278 25.0	N 6 22.3
22	319 54.8	160 35.6	07.0	249 38.3	03.8	313 59.6	49.0	357 05.1	04.3	Betelgeuse	270 54.2	N 7 24.8
23	334 57.3	175 35.1	05.9	264 39.5	04.0	329 02.3	48.9	12 07.7	04.4			
11 00	349 59.8	190 34.6	N10 04.8	279 40.7	N21 04.2	344 05.1	N 0 48.7	27 10.3	S16 04.4	Canopus	263 53.4	S52 42.1
01	5 02.2	205 34.1	03.7	294 41.9	04.4	359 07.8	48.6	42 12.9	04.5	Capella	280 24.7	N46 01.1
02	20 04.7	220 33.7	02.6	309 43.0	04.6	14 10.5	48.5	57 15.5	04.5	Deneb	49 26.8	N45 21.8
03	35 07.1	235 33.2	01.5	324 44.2	04.8	29 13.3	48.4	72 18.1	04.6	Denebola	182 27.2	N14 26.9
04	50 09.6	250 32.7	10 00.3	339 45.4	05.0	44 16.0	48.2	87 20.8	04.6	Diphda	348 48.9	S17 51.6
05	65 12.1	265 32.3	9 59.2	354 46.6	05.2	59 18.8	48.1	102 23.4	04.7			
06	80 14.5	280 31.8	N 9 58.1	9 47.8	N21 05.5	74 21.5	N 0 48.0	117 26.0	S16 04.7	Dubhe	193 44.0	N61 37.8
07	95 17.0	295 31.3	57.0	24 49.0	05.7	89 24.2	47.9	132 28.6	04.8	Elnath	278 04.3	N28 37.5
D 08	110 19.5	310 30.9	55.9	39 50.2	05.9	104 27.0	47.7	147 31.2	04.8	Eltanin	90 43.0	N51 29.4
O 09	125 21.9	325 30.4	54.7	54 51.3	06.1	119 29.7	47.6	162 33.8	04.8	Enif	33 40.4	N 9 58.8
M 10	140 24.4	340 29.9	53.6	69 52.5	06.3	134 32.5	47.5	177 36.4	04.9	Fomalhaut	15 16.3	S29 30.1
I 11	155 26.9	355 29.5	52.5	84 53.7	06.5	149 35.2	47.4	192 39.0	04.9			
N 12	170 29.3	10 29.0	N 9 51.4	99 54.9	N21 06.7	164 38.0	N 0 47.2	207 41.7	S16 05.0	Gacrux	171 54.3	S57 14.4
G 13	185 31.8	25 28.5	50.3	114 56.1	06.9	179 40.7	47.1	222 44.3	05.0	Gienah	175 45.9	S17 39.9
O 14	200 34.2	40 28.1	49.1	129 57.3	07.1	194 43.4	47.0	237 46.9	05.1	Hadar	148 39.2	S60 29.0
15	215 36.7	55 27.6	48.0	144 58.5	07.3	209 46.2	46.9	252 49.5	05.1	Hamal	327 53.1	N23 34.2
16	230 39.2	70 27.1	46.9	159 59.7	07.6	224 48.9	46.7	267 52.1	05.2	Kaus Aust.	83 34.9	S34 22.5
17	245 41.6	85 26.7	45.8	175 00.9	07.8	239 51.7	46.6	282 54.7	05.2			
18	260 44.1	100 26.2	N 9 44.6	190 02.0	N21 08.0	254 54.4	N 0 46.5	297 57.3	S16 05.3	Kochab	137 20.4	N74 04.0
19	275 46.6	115 25.7	43.5	205 03.2	08.2	269 57.2	46.3	313 00.0	05.3	Markab	13 31.5	N15 19.7
20	290 49.0	130 25.3	42.4	220 04.4	08.4	284 59.9	46.2	328 02.6	05.4	Menkar	314 08.0	N 4 10.8
21	305 51.5	145 24.8	41.3	235 05.6	08.6	300 02.7	46.1	343 05.2	05.4	Menkent	148 00.2	S36 28.8
22	320 54.0	160 24.3	40.1	250 06.8	08.8	315 05.4	46.0	358 07.8	05.5	Miaplacidus	221 39.5	S69 48.3
23	335 56.4	175 23.9	39.0	265 08.0	09.0	330 08.1	45.8	13 10.4	05.5			
12 00	350 58.9	190 23.4	N 9 37.9	280 09.2	N21 09.2	345 10.9	N 0 45.7	28 13.0	S16 05.6	Mirfak	308 30.8	N49 56.3
01	6 01.4	205 22.9	36.7	295 10.4	09.4	0 13.6	45.6	43 15.6	05.6	Nunki	75 50.0	S26 16.1
02	21 03.8	220 22.5	35.6	310 11.6	09.6	15 16.4	45.5	58 18.2	05.7	Peacock	53 08.3	S56 39.9
03	36 06.3	235 22.0	34.5	325 12.8	09.8	30 19.1	45.3	73 20.9	05.7	Pollux	243 19.9	N27 58.3
04	51 08.7	250 21.6	33.4	340 14.0	10.1	45 21.9	45.2	88 23.5	05.8	Procyon	244 53.0	N 5 10.2
05	66 11.2	265 21.1	32.2	355 15.2	10.3	60 24.6	45.1	103 26.1	05.8			
06	81 13.7	280 20.6	N 9 31.1	10 16.4	N21 10.5	75 27.4	N 0 45.0	118 28.7	S16 05.9	Rasalhague	96 00.3	N12 32.8
07	96 16.1	295 20.2	30.0	25 17.6	10.7	90 30.1	44.8	133 31.3	05.9	Regulus	207 36.8	N11 51.6
L 08	111 18.6	310 19.7	28.8	40 18.8	10.9	105 32.8	44.7	148 33.9	06.0	Rigel	281 05.7	S 8 10.3
U 09	126 21.1	325 19.3	27.7	55 20.0	11.1	120 35.6	44.6	163 36.5	06.0	Rigil Kent.	139 43.4	S60 55.8
N 10	141 23.5	340 18.8	26.6	70 21.2	11.3	135 38.3	44.4	178 39.1	06.0	Sabik	102 05.0	S15 45.1
E 11	156 26.0	355 18.3	25.4	85 22.4	11.5	150 41.1	44.3	193 41.7	06.1			
S 12	171 28.5	10 17.9	N 9 24.3	100 23.6	N21 11.7	165 43.8	N 0 44.2	208 44.4	S16 06.1	Schedar	349 32.7	N56 39.6
13	186 30.9	25 17.4	23.2	115 24.8	11.9	180 46.6	44.1	223 47.0	06.2	Shaula	96 12.9	S37 07.3
14	201 33.4	40 17.0	22.0	130 26.0	12.1	195 49.3	43.9	238 49.6	06.2	Sirius	258 28.1	S16 44.6
15	216 35.8	55 16.5	20.9	145 27.2	12.3	210 52.1	43.8	253 52.2	06.3	Spica	158 24.6	S11 16.6
16	231 38.3	70 16.0	19.8	160 28.4	12.5	225 54.8	43.7	268 54.8	06.3	Suhail	222 48.1	S43 31.2
17	246 40.8	85 15.6	18.6	175 29.6	12.7	240 57.6	43.6	283 57.4	06.4			
18	261 43.2	100 15.1	N 9 17.5	190 30.8	N21 12.9	256 00.3	N 0 43.4	299 00.0	S16 06.4	Vega	80 34.4	N38 48.5
19	276 45.7	115 14.7	16.4	205 32.0	13.1	271 03.1	43.3	314 02.6	06.5	Zuben'ubi	136 58.3	S16 08.1
20	291 48.2	130 14.2	15.2	220 33.2	13.3	286 05.8	43.2	329 05.2	06.5			
21	306 50.6	145 13.8	14.1	235 34.4	13.5	301 08.6	43.1	344 07.8	06.6		AHS	Paso Mer.
22	321 53.1	160 13.3	13.0	250 35.7	13.7	316 11.3	42.9	359 10.5	06.6		° ′	h m
23	336 55.6	175 12.8	11.8	265 36.9	13.9	331 14.0	42.8	14 13.1	06.7	Venus	200 34.9	11 18
	h m									Marte	289 40.9	5 21
Paso Mer.	0 39.9	*v* −0.5	*d* 1.1	*v* 1.2	*d* 0.2	*v* 2.7	*d* 0.1	*v* 2.6	*d* 0.0	Júpiter	354 05.3	1 03
										Saturno	37 10.5	22 07

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v		Dec	d		Ph
d h	°	′	°	′	°	′	′	°	′	′	′
10 00	180	42.6	N 5	01.4	4	08.1	10.1	S11	22.0	15.2	59.6
01	195	42.8	5	00.4	18	37.2	10.2	11	06.8	15.3	59.6
02	210	43.0	4	59.5	33	06.4	10.4	10	51.5	15.4	59.6
03	225	43.2	. .	58.5	47	35.8	10.3	10	36.1	15.3	59.6
04	240	43.4		57.6	62	05.1	10.5	10	20.8	15.5	59.5
05	255	43.7		56.7	76	34.6	10.6	10	05.3	15.4	59.5
06	270	43.9	N 4	55.7	91	04.2	10.6	S 9	49.9	15.5	59.5
07	285	44.1		54.8	105	33.8	10.7	9	34.4	15.6	59.5
S 08	300	44.3		53.8	120	03.5	10.7	9	18.8	15.6	59.4
Á 09	315	44.5	. .	52.9	134	33.2	10.9	9	03.2	15.6	59.4
B 10	330	44.8		51.9	149	03.1	10.9	8	47.6	15.6	59.4
A 11	345	45.0		51.0	163	33.0	10.9	8	32.0	15.7	59.4
D 12	0	45.2	N 4	50.0	178	02.9	11.1	S 8	16.3	15.8	59.4
O 13	15	45.4		49.1	192	33.0	11.1	8	00.5	15.7	59.3
14	30	45.6		48.1	207	03.1	11.2	7	44.8	15.8	59.3
15	45	45.9	. .	47.2	221	33.3	11.2	7	29.0	15.8	59.3
16	60	46.1		46.2	236	03.5	11.4	7	13.2	15.8	59.3
17	75	46.3		45.3	250	33.9	11.3	6	57.4	15.9	59.2
18	90	46.5	N 4	44.3	265	04.2	11.5	S 6	41.5	15.8	59.2
19	105	46.7		43.4	279	34.7	11.5	6	25.7	15.9	59.2
20	120	47.0		42.4	294	05.2	11.6	6	09.8	16.0	59.2
21	135	47.2	. .	41.5	308	35.8	11.6	5	53.8	15.9	59.1
22	150	47.4		40.5	323	06.4	11.7	5	37.9	15.9	59.1
23	165	47.6		39.6	337	37.1	11.7	5	22.0	16.0	59.1
11 00	180	47.8	N 4	38.6	352	07.8	11.8	S 5	06.0	15.9	59.0
01	195	48.1		37.7	6	38.6	11.8	4	50.1	16.0	59.0
02	210	48.3		36.7	21	09.4	12.0	4	34.1	16.0	59.0
03	225	48.5	. .	35.8	35	40.4	11.9	4	18.1	16.0	59.0
04	240	48.7		34.8	50	11.3	12.0	4	02.1	16.0	58.9
05	255	48.9		33.9	64	42.3	12.1	3	46.1	16.0	58.9
06	270	49.2	N 4	32.9	79	13.4	12.1	S 3	30.1	16.0	58.9
07	285	49.4		32.0	93	44.5	12.1	3	14.1	16.0	58.9
D 08	300	49.6		31.0	108	15.6	12.3	2	58.1	16.0	58.8
O 09	315	49.8	. .	30.1	122	46.9	12.2	2	42.1	16.0	58.8
M 10	330	50.1		29.1	137	18.1	12.3	2	26.1	16.0	58.8
I 11	345	50.3		28.2	151	49.4	12.3	2	10.1	16.0	58.7
N 12	0	50.5	N 4	27.2	166	20.7	12.4	S 1	54.1	15.9	58.7
G 13	15	50.7		26.3	180	52.1	12.4	1	38.2	16.0	58.7
O 14	30	50.9		25.3	195	23.5	12.5	1	22.2	16.0	58.6
15	45	51.2	. .	24.4	209	55.0	12.5	1	06.2	15.9	58.6
16	60	51.4		23.4	224	26.5	12.5	0	50.3	16.0	58.6
17	75	51.6		22.5	238	58.0	12.6	0	34.3	15.9	58.6
18	90	51.8	N 4	21.5	253	29.6	12.6	S 0	18.4	15.9	58.5
19	105	52.0		20.6	268	01.2	12.7	S 0	02.5	15.9	58.5
20	120	52.3		19.6	282	32.9	12.7	N 0	13.4	15.8	58.5
21	135	52.5	. .	18.7	297	04.6	12.7	0	29.2	15.9	58.4
22	150	52.7		17.7	311	36.3	12.7	0	45.1	15.8	58.4
23	165	52.9		16.8	326	08.0	12.8	1	00.9	15.8	58.4
12 00	180	53.2	N 4	15.8	340	39.8	12.8	N 1	16.7	15.8	58.3
01	195	53.4		14.9	355	11.6	12.8	1	32.5	15.8	58.3
02	210	53.6		13.9	9	43.4	12.9	1	48.3	15.7	58.3
03	225	53.8	. .	13.0	24	15.3	12.9	2	04.0	15.7	58.2
04	240	54.0		12.0	38	47.2	12.9	2	19.7	15.7	58.2
05	255	54.3		11.1	53	19.1	12.9	2	35.4	15.6	58.2
06	270	54.5	N 4	10.1	67	51.0	13.0	N 2	51.0	15.6	58.1
07	285	54.7		09.2	82	23.0	12.9	3	06.6	15.6	58.1
L 08	300	54.9		08.2	96	54.9	13.0	3	22.2	15.6	58.1
U 09	315	55.1	. .	07.3	111	26.9	13.0	3	37.8	15.5	58.0
N 10	330	55.4		06.3	125	58.9	13.1	3	53.3	15.5	58.0
E 11	345	55.6		05.3	140	31.0	13.0	4	08.8	15.4	58.0
S 12	0	55.8	N 4	04.4	155	03.0	13.1	N 4	24.2	15.4	57.9
13	15	56.0		03.4	169	35.1	13.1	4	39.6	15.3	57.9
14	30	56.3		02.5	184	07.2	13.1	4	54.9	15.4	57.9
15	45	56.5	. .	01.5	198	39.3	13.1	5	10.3	15.2	57.8
16	60	56.7	4	00.6	213	11.4	13.1	5	25.5	15.3	57.8
17	75	56.9	3	59.6	227	43.5	13.1	5	40.8	15.1	57.8
18	90	57.1	N 3	58.7	242	15.6	13.2	N 5	55.9	15.2	57.7
19	105	57.4		57.7	256	47.8	13.1	6	11.1	15.1	57.7
20	120	57.6		56.8	271	19.9	13.2	6	26.2	15.0	57.7
21	135	57.8	. .	55.8	285	52.1	13.1	6	41.2	15.0	57.6
22	150	58.0		54.8	300	24.2	13.2	6	56.2	15.0	57.6
23	165	58.3		53.9	314	56.4	13.2	N 7	11.2	14.9	57.6
	S/D	15.9	d	1.0	S/D	16.2			16.0		15.8

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			10	11	12	13
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	01	27	03	33	04 49	19 44	19 10	18 37	17 59
N 70	02	12	03	50	04 56	19 35	19 10	18 45	18 18
68	02	40	04	02	05 02	19 28	19 10	18 52	18 33
66	03	01	04	13	05 07	19 22	19 10	18 58	18 45
64	03	17	04	22	05 11	19 16	19 10	19 03	18 56
62	03	31	04	29	05 15	19 12	19 09	19 07	19 05
60	03	42	04	35	05 18	19 08	19 09	19 11	19 12
N 58	03	51	04	41	05 21	19 04	19 09	19 14	19 19
56	03	59	04	45	05 24	19 01	19 09	19 17	19 25
54	04	06	04	50	05 26	18 58	19 09	19 20	19 31
52	04	12	04	53	05 28	18 56	19 09	19 22	19 36
50	04	17	04	57	05 30	18 53	19 09	19 24	19 40
45	04	29	05	04	05 34	18 48	19 09	19 29	19 50
N 40	04	37	05	10	05 37	18 44	19 09	19 33	19 58
35	04	44	05	14	05 40	18 40	19 09	19 37	20 05
30	04	50	05	18	05 42	18 37	19 09	19 40	20 11
20	04	59	05	24	05 47	18 31	19 09	19 45	20 22
N 10	05	05	05	29	05 50	18 26	19 09	19 50	20 32
0	05	09	05	33	05 53	18 21	19 09	19 55	20 41
S 10	05	11	05	36	05 57	18 16	19 09	20 00	20 50
20	05	12	05	38	06 00	18 11	19 09	20 05	21 00
30	05	12	05	40	06 03	18 05	19 09	20 11	21 11
35	05	11	05	40	06 05	18 02	19 09	20 14	21 18
40	05	09	05	41	06 08	17 58	19 09	20 18	21 25
45	05	07	05	41	06 10	17 53	19 09	20 22	21 34
S 50	05	04	05	41	06 13	17 48	19 09	20 28	21 45
52	05	02	05	41	06 15	17 45	19 09	20 30	21 50
54	05	00	05	41	06 16	17 43	19 09	20 33	21 56
56	04	58	05	41	06 18	17 40	19 09	20 36	22 02
58	04	55	05	41	06 20	17 36	19 09	20 40	22 09
S 60	04	52	05	40	06 22	17 32	19 09	20 43	22 16

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna			
						10	11	12	13
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	19	02	20	16	22 16	03 29	05 58	08 13	10 31
N 70	18	55	20	00	21 35	03 48	06 03	08 09	10 14
68	18	49	19	48	21 08	04 03	06 07	08 05	10 01
66	18	44	19	38	20 49	04 14	06 11	08 01	09 51
64	18	40	19	29	20 33	04 24	06 14	07 59	09 42
62	18	37	19	22	20 20	04 32	06 17	07 56	09 34
60	18	34	19	16	20 09	04 39	06 19	07 54	09 28
N 58	18	31	19	11	20 00	04 45	06 21	07 52	09 22
56	18	28	19	06	19 53	04 51	06 23	07 51	09 17
54	18	26	19	02	19 46	04 56	06 24	07 49	09 13
52	18	24	18	59	19 40	05 00	06 26	07 48	09 09
50	18	23	18	55	19 35	05 04	06 27	07 47	09 05
45	18	19	18	48	19 24	05 12	06 30	07 44	08 57
N 40	18	16	18	43	19 15	05 19	06 32	07 42	08 50
35	18	13	18	38	19 08	05 25	06 34	07 40	08 45
30	18	10	18	35	19 03	05 31	06 36	07 39	08 40
20	18	06	18	29	18 54	05 40	06 39	07 36	08 31
N 10	18	03	18	24	18 49	05 48	06 41	07 33	08 24
0	18	00	18	21	18 45	05 55	06 44	07 31	08 17
S 10	17	57	18	18	18 42	06 02	06 46	07 29	08 10
20	17	54	18	16	18 41	06 10	06 49	07 26	08 03
30	17	50	18	14	18 42	06 18	06 52	07 23	07 54
35	17	48	18	14	18 43	06 23	06 53	07 21	07 49
40	17	46	18	13	18 45	06 29	06 55	07 20	07 44
45	17	44	18	13	18 47	06 35	06 57	07 17	07 38
S 50	17	41	18	13	18 51	06 43	07 00	07 15	07 30
52	17	40	18	13	18 52	06 46	07 01	07 14	07 27
54	17	38	18	13	18 54	06 50	07 02	07 12	07 23
56	17	37	18	14	18 57	06 54	07 03	07 11	07 19
58	17	35	18	14	19 00	06 59	07 05	07 09	07 14
S 60	17	33	18	14	19 03	07 04	07 06	07 08	07 09

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		SOL Paso Mer.	LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		LUNA Edad	LUNA Fase
d	m	s	m	s	h m	h	m	h	m	d	%
10	02	50	03	00	11 57	24	33	12	08	14	100
11	03	11	03	22	11 57	00	33	12	56	15	98
12	03	32	03	43	11 56	01	20	13	43	16	94

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·4		JÚPITER −2·9		SATURNO +0·4	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
13 00	351 58.0	190 12.4	N 9 10.7	280 38.1	N21 14.1	346 16.8	N 0 42.7	29 15.7	S16 06.7
01	7 00.5	205 11.9	09.5	295 39.3	14.3	1 19.5	42.5	44 18.3	06.8
02	22 03.0	220 11.5	08.4	310 40.5	14.5	16 22.3	42.4	59 20.9	06.8
03	37 05.4	235 11.0	07.3	325 41.7	14.7	31 25.0	42.3	74 23.5	06.8
04	52 07.9	250 10.6	06.1	340 42.9	15.0	46 27.8	42.2	89 26.1	06.9
05	67 10.3	265 10.1	05.0	355 44.1	15.2	61 30.5	42.0	104 28.7	06.9
06	82 12.8	280 09.7	N 9 03.8	10 45.3	N21 15.4	76 33.3	N 0 41.9	119 31.3	S16 07.0
07	97 15.3	295 09.2	02.7	25 46.6	15.6	91 36.0	41.8	134 33.9	07.0
08	112 17.7	310 08.7	01.6	40 47.8	15.8	106 38.8	41.6	149 36.6	07.1
M 09	127 20.2	325 08.3	9 00.4	55 49.0	16.0	121 41.5	41.5	164 39.2	07.1
A 10	142 22.7	340 07.8	8 59.3	70 50.2	16.2	136 44.3	41.4	179 41.8	07.2
R 11	157 25.1	355 07.4	58.1	85 51.4	16.4	151 47.0	41.3	194 44.4	07.2
T 12	172 27.6	10 06.9	N 8 57.0	100 52.6	N21 16.6	166 49.8	N 0 41.1	209 47.0	S16 07.3
E 13	187 30.1	25 06.5	55.8	115 53.8	16.8	181 52.5	41.0	224 49.6	07.3
S 14	202 32.5	40 06.0	54.7	130 55.1	17.0	196 55.3	40.9	239 52.2	07.4
15	217 35.0	55 05.6	53.5	145 56.3	17.2	211 58.0	40.7	254 54.8	07.4
16	232 37.4	70 05.1	52.4	160 57.5	17.4	227 00.8	40.6	269 57.4	07.4
17	247 39.9	85 04.7	51.3	175 58.7	17.6	242 03.5	40.5	285 00.0	07.5
18	262 42.4	100 04.2	N 8 50.1	190 59.9	N21 17.8	257 06.3	N 0 40.4	300 02.6	S16 07.5
19	277 44.8	115 03.8	49.0	206 01.2	18.0	272 09.0	40.2	315 05.2	07.6
20	292 47.3	130 03.3	47.8	221 02.4	18.2	287 11.8	40.1	330 07.9	07.6
21	307 49.8	145 02.9	46.7	236 03.6	18.4	302 14.5	40.0	345 10.5	07.7
22	322 52.2	160 02.4	45.5	251 04.8	18.5	317 17.3	39.8	0 13.1	07.7
23	337 54.7	175 02.0	44.4	266 06.1	18.7	332 20.0	39.7	15 15.7	07.8
14 00	352 57.2	190 01.5	N 8 43.2	281 07.3	N21 18.9	347 22.8	N 0 39.6	30 18.3	S16 07.8
01	7 59.6	205 01.1	42.1	296 08.5	19.1	2 25.5	39.5	45 20.9	07.9
02	23 02.1	220 00.6	40.9	311 09.7	19.3	17 28.3	39.3	60 23.5	07.9
03	38 04.6	235 00.2	39.8	326 11.0	19.5	32 31.0	39.2	75 26.1	08.0
04	53 07.0	249 59.7	38.6	341 12.2	19.7	47 33.8	39.1	90 28.7	08.0
05	68 09.5	264 59.3	37.5	356 13.4	19.9	62 36.5	38.9	105 31.3	08.0
06	83 11.9	279 58.8	N 8 36.3	11 14.6	N21 20.1	77 39.3	N 0 38.8	120 33.9	S16 08.1
07	98 14.4	294 58.4	35.2	26 15.9	20.3	92 42.0	38.7	135 36.5	08.1
M 08	113 16.9	309 57.9	34.0	41 17.1	20.5	107 44.8	38.6	150 39.1	08.2
I 09	128 19.3	324 57.5	32.9	56 18.3	20.7	122 47.5	38.4	165 41.7	08.2
É 10	143 21.8	339 57.0	31.7	71 19.5	20.9	137 50.3	38.3	180 44.3	08.3
R 11	158 24.3	354 56.6	30.5	86 20.8	21.1	152 53.1	38.2	195 47.0	08.3
C 12	173 26.7	9 56.1	N 8 29.4	101 22.0	N21 21.3	167 55.8	N 0 38.0	210 49.6	S16 08.4
O 13	188 29.2	24 55.7	28.2	116 23.2	21.5	182 58.6	37.9	225 52.2	08.4
L 14	203 31.7	39 55.3	27.1	131 24.5	21.7	198 01.3	37.8	240 54.8	08.5
E 15	218 34.1	54 54.8	25.9	146 25.7	21.9	213 04.1	37.7	255 57.4	08.5
S 16	233 36.6	69 54.4	24.8	161 26.9	22.1	228 06.8	37.5	271 00.0	08.5
17	248 39.1	84 53.9	23.6	176 28.2	22.3	243 09.6	37.4	286 02.6	08.6
18	263 41.5	99 53.5	N 8 22.5	191 29.4	N21 22.5	258 12.3	N 0 37.3	301 05.2	S16 08.6
19	278 44.0	114 53.0	21.3	206 30.6	22.7	273 15.1	37.1	316 07.8	08.7
20	293 46.4	129 52.6	20.1	221 31.9	22.9	288 17.8	37.0	331 10.4	08.7
21	308 48.9	144 52.1	19.0	236 33.1	23.1	303 20.6	36.9	346 13.0	08.8
22	323 51.4	159 51.7	17.8	251 34.4	23.2	318 23.3	36.8	1 15.6	08.8
23	338 53.8	174 51.3	16.7	266 35.6	23.4	333 26.1	36.6	16 18.2	08.9
15 00	353 56.3	189 50.8	N 8 15.5	281 36.8	N21 23.6	348 28.8	N 0 36.5	31 20.8	S16 08.9
01	8 58.8	204 50.4	14.3	296 38.1	23.8	3 31.6	36.4	46 23.4	08.9
02	24 01.2	219 49.9	13.2	311 39.3	24.0	18 34.4	36.2	61 26.0	09.0
03	39 03.7	234 49.5	12.0	326 40.6	24.2	33 37.1	36.1	76 28.6	09.0
04	54 06.2	249 49.0	10.9	341 41.8	24.4	48 39.9	36.0	91 31.2	09.1
05	69 08.6	264 48.6	09.7	356 43.0	24.6	63 42.6	35.8	106 33.8	09.1
06	84 11.1	279 48.2	N 8 08.5	11 44.3	N21 24.8	78 45.4	N 0 35.7	121 36.4	S16 09.2
07	99 13.5	294 47.7	07.4	26 45.5	25.0	93 48.1	35.6	136 39.0	09.2
J 08	114 16.0	309 47.3	06.2	41 46.8	25.2	108 50.9	35.5	151 41.7	09.3
U 09	129 18.5	324 46.8	05.1	56 48.0	25.4	123 53.6	35.3	166 44.3	09.3
E 10	144 20.9	339 46.4	03.9	71 49.3	25.6	138 56.4	35.2	181 46.9	09.3
V 11	159 23.4	354 46.0	02.7	86 50.5	25.7	153 59.1	35.1	196 49.5	09.4
E 12	174 25.9	9 45.5	N 8 01.6	101 51.7	N21 25.9	169 01.9	N 0 34.9	211 52.1	S16 09.4
S 13	189 28.3	24 45.1	8 00.4	116 53.0	26.1	184 04.7	34.8	226 54.7	09.5
14	204 30.8	39 44.6	7 59.2	131 54.2	26.3	199 07.4	34.7	241 57.3	09.5
15	219 33.3	54 44.2	58.1	146 55.5	26.5	214 10.2	34.5	256 59.9	09.6
16	234 35.7	69 43.8	56.9	161 56.7	26.7	229 12.9	34.4	272 02.5	09.6
17	249 38.2	84 43.3	55.7	176 58.0	26.9	244 15.7	34.3	287 05.1	09.7
18	264 40.7	99 42.9	N 7 54.6	191 59.2	N21 27.1	259 18.4	N 0 34.2	302 07.7	S16 09.7
19	279 43.1	114 42.4	53.4	207 00.5	27.3	274 21.2	34.0	317 10.3	09.7
20	294 45.6	129 42.0	52.2	222 01.7	27.5	289 23.9	33.9	332 12.9	09.8
21	309 48.0	144 41.6	51.1	237 03.0	27.6	304 26.7	33.8	347 15.5	09.8
22	324 50.5	159 41.1	49.9	252 04.2	27.8	319 29.5	33.6	2 18.1	09.9
23	339 53.0	174 40.7	48.7	267 05.5	28.0	334 32.2	33.5	17 20.7	09.9
	h m								
Paso Mer.	0 28.1	*v* −0.4	*d* 1.2	*v* 1.2	*d* 0.2	*v* 2.8	*d* 0.1	*v* 2.6	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.0	S40 12.6
Achernar	335 21.1	S57 07.1
Acrux	173 02.9	S63 13.4
Adhara	255 07.5	S28 59.9
Aldebaran	290 41.8	N16 33.3
Alioth	166 15.2	N55 50.4
Alkaid	152 53.9	N49 12.3
Alnair	27 34.9	S46 51.1
Alnilam	275 39.7	S 1 11.1
Alphard	217 49.9	S 8 45.2
Alphecca	126 05.5	N26 38.6
Alpheratz	357 36.4	N29 13.0
Altair	62 01.6	N 8 55.8
Ankaa	353 08.6	S42 10.9
Antares	112 18.3	S26 28.9
Arcturus	145 49.9	N19 04.1
Atria	107 14.3	S69 04.3
Avior	234 15.9	S59 34.6
Bellatrix	278 24.9	N 6 22.3
Betelgeuse	270 54.2	N 7 24.8
Canopus	263 53.4	S52 42.1
Capella	280 24.7	N46 01.1
Deneb	49 26.8	N45 21.8
Denebola	182 27.2	N14 26.9
Diphda	348 48.9	S17 51.6
Dubhe	193 44.0	N61 37.8
Elnath	278 04.3	N28 37.5
Eltanin	90 43.0	N51 29.4
Enif	33 40.4	N 9 58.8
Fomalhaut	15 16.3	S29 30.1
Gacrux	171 54.3	S57 14.3
Gienah	175 45.9	S17 39.9
Hadar	148 39.2	S60 29.0
Hamal	327 53.1	N23 34.2
Kaus Aust.	83 35.0	S34 22.5
Kochab	137 20.5	N74 04.0
Markab	13 31.5	N15 19.7
Menkar	314 08.0	N 4 10.8
Menkent	148 00.2	S36 28.8
Miaplacidus	221 39.4	S69 48.3
Mirfak	308 30.8	N49 56.3
Nunki	75 50.0	S26 16.1
Peacock	53 08.3	S56 39.9
Pollux	243 19.9	N27 58.3
Procyon	244 53.0	N 5 10.2
Rasalhague	96 00.3	N12 32.8
Regulus	207 36.8	N11 51.6
Rigel	281 05.7	S 8 10.3
Rigil Kent.	139 43.4	S60 55.8
Sabik	102 05.0	S15 45.1
Schedar	349 32.7	N56 39.6
Shaula	96 13.0	S37 07.3
Sirius	258 28.0	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 48.1	S43 31.1
Vega	80 34.4	N38 48.5
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	197 04.4	11 20
Marte	288 10.1	5 15
Júpiter	354 25.6	0 50
Saturno	37 21.1	21 55

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	°	′	′	′
13 00	180	58.5	N 3	52.9	329	28.6	13.1	N 7	26.1	14.8	57.5
01	195	58.7		52.0	344	00.7	13.2	7	40.9	14.8	57.5
02	210	58.9		51.0	358	32.9	13.2	7	55.7	14.7	57.5
03	225	59.2	. .	50.1	13	05.1	13.2	8	10.4	14.7	57.4
04	240	59.4		49.1	27	37.3	13.2	8	25.1	14.6	57.4
05	255	59.6		48.2	42	09.5	13.2	8	39.7	14.6	57.4
06	270	59.8	N 3	47.2	56	41.7	13.1	N 8	54.3	14.5	57.3
07	286	00.0		46.2	71	13.8	13.2	9	08.8	14.4	57.3
M 08	301	00.3		45.3	85	46.0	13.2	9	23.2	14.4	57.3
A 09	316	00.5	. .	44.3	100	18.2	13.1	9	37.6	14.3	57.2
R 10	331	00.7		43.4	114	50.3	13.2	9	51.9	14.3	57.2
11	346	00.9		42.4	129	22.5	13.2	10	06.2	14.2	57.2
T 12	1	01.2	N 3	41.5	143	54.7	13.1	N10	20.4	14.1	57.1
E 13	16	01.4		40.5	158	26.8	13.2	10	34.5	14.1	57.1
S 14	31	01.6		39.6	172	59.0	13.1	10	48.6	14.0	57.1
15	46	01.8	. .	38.6	187	31.1	13.1	11	02.6	13.9	57.0
16	61	02.0		37.6	202	03.2	13.1	11	16.5	13.8	57.0
17	76	02.3		36.7	216	35.3	13.1	11	30.3	13.8	57.0
18	91	02.5	N 3	35.7	231	07.4	13.1	N11	44.1	13.8	56.9
19	106	02.7		34.8	245	39.5	13.1	11	57.9	13.6	56.9
20	121	02.9		33.8	260	11.6	13.1	12	11.5	13.6	56.9
21	136	03.2	. .	32.8	274	43.7	13.0	12	25.1	13.5	56.8
22	151	03.4		31.9	289	15.7	13.0	12	38.6	13.4	56.8
23	166	03.6		30.9	303	47.7	13.1	12	52.0	13.4	56.8
14 00	181	03.8	N 3	30.0	318	19.8	13.0	N13	05.4	13.3	56.7
01	196	04.1		29.0	332	51.8	12.9	13	18.7	13.2	56.7
02	211	04.3		28.1	347	23.7	13.0	13	31.9	13.1	56.7
03	226	04.5	. .	27.1	1	55.7	12.9	13	45.0	13.0	56.6
04	241	04.7		26.1	16	27.6	13.0	13	58.0	13.0	56.6
05	256	04.9		25.2	30	59.6	12.9	14	11.0	12.9	56.6
06	271	05.2	N 3	24.2	45	31.5	12.9	N14	23.9	12.8	56.5
07	286	05.4		23.3	60	03.4	12.8	14	36.7	12.7	56.5
M 08	301	05.6		22.3	74	35.2	12.9	14	49.4	12.6	56.5
I 09	316	05.8	. .	21.3	89	07.1	12.8	15	02.0	12.6	56.4
É 10	331	06.1		20.4	103	38.9	12.8	15	14.6	12.5	56.4
R 11	346	06.3		19.4	118	10.7	12.7	15	27.1	12.4	56.4
C 12	1	06.5	N 3	18.5	132	42.4	12.8	N15	39.5	12.3	56.3
O 13	16	06.7		17.5	147	14.2	12.7	15	51.8	12.2	56.3
L 14	31	07.0		16.6	161	45.9	12.7	16	04.0	12.1	56.3
E 15	46	07.2	. .	15.6	176	17.6	12.7	16	16.1	12.0	56.2
S 16	61	07.4		14.6	190	49.3	12.6	16	28.1	12.0	56.2
17	76	07.6		13.7	205	20.9	12.6	16	40.1	11.8	56.2
18	91	07.9	N 3	12.7	219	52.5	12.6	N16	51.9	11.8	56.2
19	106	08.1		11.8	234	24.1	12.6	17	03.7	11.7	56.1
20	121	08.3		10.8	248	55.7	12.5	17	15.4	11.6	56.1
21	136	08.5	. .	09.8	263	27.2	12.5	17	27.0	11.5	56.1
22	151	08.7		08.9	277	58.7	12.5	17	38.5	11.4	56.0
23	166	09.0		07.9	292	30.2	12.4	17	49.9	11.3	56.0
15 00	181	09.2	N 3	06.9	307	01.6	12.4	N18	01.2	11.2	56.0
01	196	09.4		06.0	321	33.0	12.4	18	12.4	11.1	55.9
02	211	09.6		05.0	336	04.4	12.3	18	23.5	11.0	55.9
03	226	09.9	. .	04.1	350	35.7	12.3	18	34.5	10.9	55.9
04	241	10.1		03.1	5	07.0	12.3	18	45.4	10.9	55.9
05	256	10.3		02.1	19	38.3	12.3	18	56.3	10.7	55.8
06	271	10.5	N 3	01.2	34	09.6	12.2	N19	07.0	10.6	55.8
07	286	10.8	3	00.2	48	40.8	12.2	19	17.6	10.5	55.8
J 08	301	11.0	2	59.3	63	12.0	12.1	19	28.1	10.4	55.7
U 09	316	11.2	. .	58.3	77	43.1	12.1	19	38.5	10.4	55.7
E 10	331	11.4		57.3	92	14.2	12.1	19	48.9	10.2	55.7
V 11	346	11.7		56.4	106	45.3	12.1	19	59.1	10.1	55.7
E 12	1	11.9	N 2	55.4	121	16.4	12.0	N20	09.2	10.0	55.6
S 13	16	12.1		54.5	135	47.4	12.0	20	19.2	9.9	55.6
14	31	12.3		53.5	150	18.4	11.9	20	29.1	9.8	55.6
15	46	12.5	. .	52.5	164	49.3	11.9	20	38.9	9.7	55.5
16	61	12.8		51.6	179	20.2	11.9	20	48.6	9.6	55.5
17	76	13.0		50.6	193	51.1	11.9	20	58.2	9.5	55.5
18	91	13.2	N 2	49.6	208	22.0	11.8	N21	07.7	9.4	55.5
19	106	13.4		48.7	222	52.8	11.7	21	17.1	9.3	55.4
20	121	13.7		47.7	237	23.5	11.8	21	26.4	9.1	55.4
21	136	13.9	. .	46.8	251	54.3	11.7	21	35.5	9.1	55.4
22	151	14.1		45.8	266	25.0	11.6	21	44.6	8.9	55.4
23	166	14.3		44.8	280	55.6	11.7	N21	53.5	8.8	55.3
	S/D	15.9	d	1.0	S/D	15.6		15.4			15.2

Lat.	Aurora		Orto	Orto Luna			
	Náut.	Civil	Sol	13	14	15	16
°	h m	h m	h m	h m	h m	h m	h m
N 72	01 58	03 49	05 02	17 59	16 54	▭	▭
N 70	02 32	04 03	05 08	18 18	17 38	▭	▭
68	02 56	04 14	05 13	18 33	18 08	17 21	▭
66	03 14	04 23	05 17	18 45	18 30	18 08	▭
64	03 29	04 31	05 20	18 56	18 48	18 38	18 23
62	03 40	04 37	05 23	19 05	19 03	19 01	19 02
60	03 50	04 43	05 25	19 12	19 15	19 20	19 29
N 58	03 59	04 47	05 27	19 19	19 26	19 36	19 51
56	04 06	04 52	05 29	19 25	19 35	19 49	20 08
54	04 12	04 55	05 31	19 31	19 44	20 00	20 23
52	04 18	04 59	05 33	19 36	19 51	20 11	20 36
50	04 23	05 02	05 34	19 40	19 58	20 20	20 48
45	04 33	05 08	05 37	19 50	20 13	20 39	21 11
N 40	04 41	05 13	05 40	19 58	20 25	20 55	21 31
35	04 47	05 17	05 42	20 05	20 35	21 09	21 47
30	04 52	05 20	05 44	20 11	20 45	21 21	22 01
20	04 59	05 25	05 47	20 22	21 00	21 41	22 24
N 10	05 04	05 29	05 50	20 32	21 14	21 59	22 45
0	05 08	05 32	05 52	20 41	21 28	22 15	23 04
S 10	05 09	05 34	05 55	20 50	21 41	22 32	23 24
20	05 10	05 35	05 57	21 00	21 55	22 50	23 45
30	05 08	05 36	06 00	21 11	22 11	23 11	24 09
35	05 07	05 36	06 01	21 18	22 21	23 23	24 24
40	05 04	05 36	06 03	21 25	22 32	23 37	24 40
45	05 01	05 35	06 05	21 34	22 45	23 54	25 00
S 50	04 57	05 35	06 07	21 45	23 01	24 15	00 15
52	04 55	05 34	06 08	21 50	23 09	24 25	00 25
54	04 53	05 34	06 09	21 56	23 17	24 36	00 36
56	04 50	05 33	06 10	22 02	23 26	24 49	00 49
58	04 46	05 32	06 11	22 09	23 37	25 05	01 05
S 60	04 43	05 31	06 13	22 16	23 50	25 23	01 23

Lat.	Ocaso	Crepúsculo		Ocaso Luna			
	Sol	Civil	Náut.	13	14	15	16
°	h m	h m	h m	h m	h m	h m	h m
N 72	18 46	19 58	21 45	10 31	13 13	▭	▭
N 70	18 41	19 45	21 13	10 14	12 31	▭	▭
68	18 36	19 34	20 51	10 01	12 03	14 29	▭
66	18 33	19 25	20 34	09 51	11 42	13 44	▭
64	18 30	19 18	20 20	09 42	11 26	13 14	15 10
62	18 27	19 12	20 08	09 34	11 12	12 51	14 32
60	18 24	19 07	19 59	09 28	11 01	12 34	14 05
N 58	18 22	19 02	19 51	09 22	10 51	12 19	13 45
56	18 21	18 58	19 44	09 17	10 42	12 06	13 27
54	18 19	18 55	19 38	09 13	10 34	11 55	13 13
52	18 17	18 51	19 32	09 09	10 28	11 45	13 00
50	18 16	18 49	19 27	09 05	10 21	11 37	12 49
45	18 13	18 43	19 17	08 57	10 08	11 18	12 26
N 40	18 11	18 38	19 10	08 50	09 58	11 04	12 08
35	18 09	18 34	19 04	08 45	09 48	10 51	11 53
30	18 07	18 31	18 59	08 40	09 40	10 40	11 39
20	18 04	18 26	18 51	08 31	09 26	10 21	11 17
N 10	18 01	18 22	18 47	08 24	09 14	10 05	10 57
0	17 59	18 20	18 44	08 17	09 03	09 50	10 39
S 10	17 57	18 18	18 42	08 10	08 52	09 35	10 21
20	17 54	18 16	18 42	08 03	08 40	09 19	10 01
30	17 52	18 16	18 44	07 54	08 27	09 01	09 39
35	17 51	18 16	18 45	07 49	08 19	08 50	09 26
40	17 49	18 16	18 47	07 44	08 10	08 38	09 11
45	17 47	18 17	18 51	07 38	08 00	08 24	08 53
S 50	17 45	18 18	18 55	07 30	07 47	08 07	08 31
52	17 44	18 18	18 57	07 27	07 41	07 59	08 21
54	17 43	18 19	19 00	07 23	07 35	07 50	08 09
56	17 42	18 19	19 03	07 19	07 28	07 40	07 56
58	17 41	18 20	19 06	07 14	07 20	07 28	07 40
S 60	17 40	18 21	19 10	07 09	07 11	07 15	07 21

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00^h	12^h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
13	03 53	04 04	11 56	02 06	14 29	17	89
14	04 15	04 26	11 56	02 52	15 15	18	81
15	04 36	04 47	11 55	03 39	16 03	19	73

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·4		JÚPITER −2·9		SATURNO +0·4	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
16 00	354 55.4	189 40.3	N 7 47.6	282 06.8	N21 28.2	349 35.0	N 0 33.4	32 23.3	S16 10.0
01	9 57.9	204 39.8	46.4	297 08.0	28.4	4 37.7	33.2	47 25.9	10.0
02	25 00.4	219 39.4	45.2	312 09.3	28.6	19 40.5	33.1	62 28.5	10.1
03	40 02.8	234 38.9	44.1	327 10.5	28.8	34 43.2	33.0	77 31.1	10.1
04	55 05.3	249 38.5	42.9	342 11.8	29.0	49 46.0	32.9	92 33.7	10.1
05	70 07.8	264 38.1	41.7	357 13.0	29.2	64 48.8	32.7	107 36.3	10.2
06	85 10.2	279 37.6	N 7 40.5	12 14.3	N21 29.3	79 51.5	N 0 32.6	122 38.9	S16 10.2
07	100 12.7	294 37.2	39.4	27 15.6	29.5	94 54.3	32.5	137 41.5	10.3
08	115 15.2	309 36.8	38.2	42 16.8	29.7	109 57.0	32.3	152 44.1	10.3
V 09	130 17.6	324 36.3	37.0	57 18.1	29.9	124 59.8	32.2	167 46.7	10.4
I 10	145 20.1	339 35.9	35.8	72 19.3	30.1	140 02.5	32.1	182 49.3	10.4
E 11	160 22.5	354 35.5	34.7	87 20.6	30.3	155 05.3	31.9	197 51.9	10.4
R 12	175 25.0	9 35.0	N 7 33.5	102 21.9	N21 30.5	170 08.1	N 0 31.8	212 54.5	S16 10.5
N 13	190 27.5	24 34.6	32.3	117 23.1	30.7	185 10.8	31.7	227 57.1	10.5
E 14	205 29.9	39 34.2	31.2	132 24.4	30.8	200 13.6	31.5	242 59.7	10.6
S 15	220 32.4	54 33.7	30.0	147 25.6	31.0	215 16.3	31.4	258 02.3	10.6
16	235 34.9	69 33.3	28.8	162 26.9	31.2	230 19.1	31.3	273 04.9	10.7
17	250 37.3	84 32.9	27.6	177 28.2	31.4	245 21.8	31.1	288 07.5	10.7
18	265 39.8	99 32.4	N 7 26.5	192 29.4	N21 31.6	260 24.6	N 0 31.0	303 10.1	S16 10.7
19	280 42.3	114 32.0	25.3	207 30.7	31.8	275 27.4	30.9	318 12.7	10.8
20	295 44.7	129 31.6	24.1	222 32.0	31.9	290 30.1	30.8	333 15.3	10.8
21	310 47.2	144 31.1	22.9	237 33.2	32.1	305 32.9	30.6	348 17.9	10.9
22	325 49.6	159 30.7	21.7	252 34.5	32.3	320 35.6	30.5	3 20.5	10.9
23	340 52.1	174 30.3	20.6	267 35.8	32.5	335 38.4	30.4	18 23.1	11.0
17 00	355 54.6	189 29.8	N 7 19.4	282 37.0	N21 32.7	350 41.2	N 0 30.2	33 25.7	S16 11.0
01	10 57.0	204 29.4	18.2	297 38.3	32.9	5 43.9	30.1	48 28.3	11.0
02	25 59.5	219 29.0	17.0	312 39.6	33.1	20 46.7	30.0	63 30.9	11.1
03	41 02.0	234 28.5	15.9	327 40.9	33.2	35 49.4	29.8	78 33.5	11.1
04	56 04.4	249 28.1	14.7	342 42.1	33.4	50 52.2	29.7	93 36.1	11.2
05	71 06.9	264 27.7	13.5	357 43.4	33.6	65 55.0	29.6	108 38.7	11.2
06	86 09.4	279 27.2	N 7 12.3	12 44.7	N21 33.8	80 57.7	N 0 29.4	123 41.3	S16 11.3
07	101 11.8	294 26.8	11.1	27 46.0	34.0	96 00.5	29.3	138 43.9	11.3
S 08	116 14.3	309 26.4	10.0	42 47.2	34.2	111 03.2	29.2	153 46.5	11.3
Á 09	131 16.8	324 26.0	08.8	57 48.5	34.3	126 06.0	29.0	168 49.1	11.4
B 10	146 19.2	339 25.5	07.6	72 49.8	34.5	141 08.8	28.9	183 51.7	11.4
A 11	161 21.7	354 25.1	06.4	87 51.1	34.7	156 11.5	28.8	198 54.3	11.5
D 12	176 24.1	9 24.7	N 7 05.2	102 52.3	N21 34.9	171 14.3	N 0 28.7	213 56.9	S16 11.5
O 13	191 26.6	24 24.2	04.0	117 53.6	35.1	186 17.0	28.5	228 59.5	11.6
14	206 29.1	39 23.8	02.9	132 54.9	35.2	201 19.8	28.4	244 02.1	11.6
15	221 31.5	54 23.4	01.7	147 56.2	35.4	216 22.6	28.3	259 04.7	11.6
16	236 34.0	69 23.0	7 00.5	162 57.5	35.6	231 25.3	28.1	274 07.3	11.7
17	251 36.5	84 22.5	6 59.3	177 58.7	35.8	246 28.1	28.0	289 09.9	11.7
18	266 38.9	99 22.1	N 6 58.1	193 00.0	N21 36.0	261 30.8	N 0 27.9	304 12.5	S16 11.8
19	281 41.4	114 21.7	56.9	208 01.3	36.2	276 33.6	27.7	319 15.1	11.8
20	296 43.9	129 21.2	55.8	223 02.6	36.3	291 36.4	27.6	334 17.7	11.9
21	311 46.3	144 20.8	54.6	238 03.9	36.5	306 39.1	27.5	349 20.3	11.9
22	326 48.8	159 20.4	53.4	253 05.2	36.7	321 41.9	27.3	4 22.9	11.9
23	341 51.3	174 20.0	52.2	268 06.4	36.9	336 44.6	27.2	19 25.5	12.0
18 00	356 53.7	189 19.5	N 6 51.0	283 07.7	N21 37.1	351 47.4	N 0 27.1	34 28.1	S16 12.0
01	11 56.2	204 19.1	49.8	298 09.0	37.2	6 50.2	26.9	49 30.6	12.1
02	26 58.6	219 18.7	48.6	313 10.3	37.4	21 52.9	26.8	64 33.2	12.1
03	42 01.1	234 18.3	47.4	328 11.6	37.6	36 55.7	26.7	79 35.8	12.1
04	57 03.6	249 17.8	46.3	343 12.9	37.8	51 58.5	26.5	94 38.4	12.2
05	72 06.0	264 17.4	45.1	358 14.2	38.0	67 01.2	26.4	109 41.0	12.2
06	87 08.5	279 17.0	N 6 43.9	13 15.5	N21 38.1	82 04.0	N 0 26.3	124 43.6	S16 12.3
07	102 11.0	294 16.6	42.7	28 16.8	38.3	97 06.7	26.1	139 46.2	12.3
D 08	117 13.4	309 16.1	41.5	43 18.0	38.5	112 09.5	26.0	154 48.8	12.4
O 09	132 15.9	324 15.7	40.3	58 19.3	38.7	127 12.3	25.9	169 51.4	12.4
M 10	147 18.4	339 15.3	39.1	73 20.6	38.8	142 15.0	25.8	184 54.0	12.4
I 11	162 20.8	354 14.9	37.9	88 21.9	39.0	157 17.8	25.6	199 56.6	12.5
N 12	177 23.3	9 14.4	N 6 36.7	103 23.2	N21 39.2	172 20.5	N 0 25.5	214 59.2	S16 12.5
G 13	192 25.8	24 14.0	35.5	118 24.5	39.4	187 23.3	25.4	230 01.8	12.6
O 14	207 28.2	39 13.6	34.4	133 25.8	39.6	202 26.1	25.2	245 04.4	12.6
15	222 30.7	54 13.2	33.2	148 27.1	39.7	217 28.8	25.1	260 07.0	12.6
16	237 33.1	69 12.7	32.0	163 28.4	39.9	232 31.6	25.0	275 09.6	12.7
17	252 35.6	84 12.3	30.8	178 29.7	40.1	247 34.4	24.8	290 12.2	12.7
18	267 38.1	99 11.9	N 6 29.6	193 31.0	N21 40.3	262 37.1	N 0 24.7	305 14.8	S16 12.8
19	282 40.5	114 11.5	28.4	208 32.3	40.4	277 39.9	24.6	320 17.4	12.8
20	297 43.0	129 11.1	27.2	223 33.6	40.6	292 42.7	24.4	335 20.0	12.8
21	312 45.5	144 10.6	26.0	238 34.9	40.8	307 45.4	24.3	350 22.5	12.9
22	327 47.9	159 10.2	24.8	253 36.2	41.0	322 48.2	24.2	5 25.1	12.9
23	342 50.4	174 09.8	23.6	268 37.5	41.1	337 50.9	24.0	20 27.7	13.0
	h m								
Paso Mer.	0 16.3	*v* −0.4	*d* 1.2	*v* 1.3	*d* 0.2	*v* 2.8	*d* 0.1	*v* 2.6	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 13.0	S40 12.6
Achernar	335 21.1	S57 07.1
Acrux	173 02.9	S63 13.4
Adhara	255 07.5	S28 59.9
Aldebaran	290 41.7	N16 33.3
Alioth	166 15.2	N55 50.4
Alkaid	152 53.9	N49 12.3
Alnair	27 34.9	S46 51.1
Alnilam	275 39.7	S 1 11.1
Alphard	217 49.9	S 8 45.2
Alphecca	126 05.5	N26 38.6
Alpheratz	357 36.4	N29 13.0
Altair	62 01.6	N 8 55.8
Ankaa	353 08.6	S42 10.9
Antares	112 18.3	S26 28.9
Arcturus	145 49.9	N19 04.1
Atria	107 14.3	S69 04.3
Avior	234 15.9	S59 34.6
Bellatrix	278 24.9	N 6 22.3
Betelgeuse	270 54.2	N 7 24.8
Canopus	263 53.3	S52 42.1
Capella	280 24.7	N46 01.1
Deneb	49 26.8	N45 21.9
Denebola	182 27.2	N14 26.9
Diphda	348 48.9	S17 51.6
Dubhe	193 44.0	N61 37.8
Elnath	278 04.3	N28 37.5
Eltanin	90 43.0	N51 29.4
Enif	33 40.4	N 9 58.8
Fomalhaut	15 16.3	S29 30.1
Gacrux	171 54.3	S57 14.3
Gienah	175 45.9	S17 39.9
Hadar	148 39.2	S60 29.0
Hamal	327 53.1	N23 34.2
Kaus Aust.	83 35.0	S34 22.5
Kochab	137 20.5	N74 04.0
Markab	13 31.5	N15 19.7
Menkar	314 08.0	N 4 10.8
Menkent	148 00.2	S36 28.8
Miaplacidus	221 39.4	S69 48.3
Mirfak	308 30.7	N49 56.3
Nunki	75 50.0	S26 16.1
Peacock	53 08.4	S56 39.9
Pollux	243 19.8	N27 58.3
Procyon	244 53.0	N 5 10.2
Rasalhague	96 00.3	N12 32.8
Regulus	207 36.8	N11 51.6
Rigel	281 05.7	S 8 10.3
Rigil Kent.	139 43.4	S60 55.8
Sabik	102 05.0	S15 45.1
Schedar	349 32.7	N56 39.6
Shaula	96 13.0	S37 07.3
Sirius	258 28.0	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 48.1	S43 31.1
Vega	80 34.4	N38 48.5
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	193 35.3	11 22
Marte	286 42.5	5 09
Júpiter	354 46.6	0 37
Saturno	37 31.1	21 43

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph	
d h	°	′	°	′	°	′	°	′	′	′
16 00	181	14.6	N 2	43.9	295	26.3	11.6	N22	02.3	8.8	55.3
01	196	14.8		42.9	309	56.9	11.5	22	11.1	8.6	55.3
02	211	15.0		41.9	324	27.4	11.6	22	19.7	8.5	55.3
03	226	15.2	. .	41.0	338	58.0	11.4	22	28.2	8.4	55.2
04	241	15.5		40.0	353	28.4	11.5	22	36.6	8.2	55.2
05	256	15.7		39.0	7	58.9	11.4	22	44.8	8.2	55.2
06	271	15.9	N 2	38.1	22	29.3	11.4	N22	53.0	8.0	55.2
07	286	16.1		37.1	36	59.7	11.4	23	01.0	8.0	55.1
08	301	16.3		36.2	51	30.1	11.3	23	09.0	7.8	55.1
09	316	16.6	. .	35.2	66	00.4	11.2	23	16.8	7.7	55.1
10	331	16.8		34.2	80	30.6	11.3	23	24.5	7.6	55.1
11	346	17.0		33.3	95	00.9	11.2	23	32.1	7.4	55.0
12	1	17.2	N 2	32.3	109	31.1	11.2	N23	39.5	7.4	55.0
13	16	17.5		31.3	124	01.3	11.1	23	46.9	7.2	55.0
14	31	17.7		30.4	138	31.4	11.1	23	54.1	7.1	55.0
15	46	17.9	. .	29.4	153	01.5	11.1	24	01.2	7.0	55.0
16	61	18.1		28.4	167	31.6	11.1	24	08.2	6.9	54.9
17	76	18.4		27.5	182	01.7	11.0	24	15.1	6.7	54.9
18	91	18.6	N 2	26.5	196	31.7	11.0	N24	21.8	6.7	54.9
19	106	18.8		25.5	211	01.7	10.9	24	28.5	6.5	54.9
20	121	19.0		24.6	225	31.6	10.9	24	35.0	6.4	54.9
21	136	19.3	. .	23.6	240	01.5	10.9	24	41.4	6.2	54.8
22	151	19.5		22.7	254	31.4	10.9	24	47.6	6.2	54.8
23	166	19.7		21.7	269	01.3	10.8	24	53.8	6.0	54.8
17 00	181	19.9	N 2	20.7	283	31.1	10.8	N24	59.8	5.9	54.8
01	196	20.2		19.8	298	00.9	10.8	25	05.7	5.8	54.8
02	211	20.4		18.8	312	30.7	10.7	25	11.5	5.6	54.7
03	226	20.6	. .	17.8	327	00.4	10.7	25	17.1	5.6	54.7
04	241	20.8		16.9	341	30.1	10.7	25	22.7	5.4	54.7
05	256	21.0		15.9	355	59.8	10.6	25	28.1	5.3	54.7
06	271	21.3	N 2	14.9	10	29.4	10.7	N25	33.4	5.1	54.7
07	286	21.5		14.0	24	59.1	10.6	25	38.5	5.1	54.7
08	301	21.7		13.0	39	28.7	10.5	25	43.6	4.9	54.6
09	316	21.9	. .	12.0	53	58.2	10.6	25	48.5	4.7	54.6
10	331	22.2		11.1	68	27.8	10.5	25	53.2	4.7	54.6
11	346	22.4		10.1	82	57.3	10.5	25	57.9	4.5	54.6
12	1	22.6	N 2	09.1	97	26.8	10.5	N26	02.4	4.4	54.6
13	16	22.8		08.2	111	56.3	10.5	26	06.8	4.3	54.6
14	31	23.1		07.2	126	25.8	10.4	26	11.1	4.1	54.6
15	46	23.3	. .	06.2	140	55.2	10.4	26	15.2	4.0	54.5
16	61	23.5		05.3	155	24.6	10.4	26	19.2	3.9	54.5
17	76	23.7		04.3	169	54.0	10.4	26	23.1	3.8	54.5
18	91	24.0	N 2	03.3	184	23.4	10.3	N26	26.9	3.6	54.5
19	106	24.2		02.4	198	52.7	10.4	26	30.5	3.5	54.5
20	121	24.4		01.4	213	22.1	10.3	26	34.0	3.4	54.5
21	136	24.6	2	00.4	227	51.4	10.3	26	37.4	3.2	54.5
22	151	24.8	1	59.5	242	20.7	10.3	26	40.6	3.1	54.4
23	166	25.1		58.5	256	50.0	10.3	26	43.7	3.0	54.4
18 00	181	25.3	N 1	57.5	271	19.3	10.2	N26	46.7	2.8	54.4
01	196	25.5		56.6	285	48.5	10.3	26	49.5	2.8	54.4
02	211	25.7		55.6	300	17.8	10.2	26	52.3	2.6	54.4
03	226	26.0	. .	54.6	314	47.0	10.2	26	54.9	2.4	54.4
04	241	26.2		53.7	329	16.2	10.2	26	57.3	2.3	54.4
05	256	26.4		52.7	343	45.4	10.2	26	59.6	2.2	54.4
06	271	26.6	N 1	51.7	358	14.6	10.2	N27	01.8	2.1	54.4
07	286	26.9		50.8	12	43.8	10.2	27	03.9	1.9	54.3
08	301	27.1		49.8	27	13.0	10.2	27	05.8	1.8	54.3
09	316	27.3	. .	48.8	41	42.2	10.1	27	07.6	1.7	54.3
10	331	27.5		47.9	56	11.3	10.2	27	09.3	1.5	54.3
11	346	27.7		46.9	70	40.5	10.1	27	10.8	1.5	54.3
12	1	28.0	N 1	45.9	85	09.6	10.2	N27	12.3	1.2	54.3
13	16	28.2		45.0	99	38.8	10.1	27	13.5	1.2	54.3
14	31	28.4		44.0	114	07.9	10.2	27	14.7	1.0	54.3
15	46	28.6	. .	43.0	128	37.1	10.1	27	15.7	0.9	54.3
16	61	28.9		42.0	143	06.2	10.2	27	16.6	0.7	54.3
17	76	29.1		41.1	157	35.4	10.1	27	17.3	0.6	54.3
18	91	29.3	N 1	40.1	172	04.5	10.1	N27	17.9	0.5	54.3
19	106	29.5		39.1	186	33.6	10.2	27	18.4	0.4	54.3
20	121	29.8		38.2	201	02.8	10.1	27	18.8	0.2	54.3
21	136	30.0	. .	37.2	215	31.9	10.2	27	19.0	0.1	54.2
22	151	30.2		36.2	230	01.1	10.1	27	19.1	0.1	54.2
23	166	30.4		35.3	244	30.2	10.2	N27	19.0	0.1	54.2
	S/D	15.9	*d*	1.0	S/D	15.0		14.9			14.8

VIERNES — SÁBADO — DOMINGO

Lat.	Aurora		Orto	Orto Luna			
	Náut.	Civil	Sol	16	17	18	19
°	h m	h m	h m	h m	h m	h m	h m
N 72	02 23	04 05	05 16	▭	▭	▭	▭
N 70	02 51	04 17	05 20	▭	▭	▭	▭
68	03 11	04 26	05 23	▭	▭	▭	▭
66	03 27	04 34	05 26	▭	▭	▭	▭
64	03 39	04 40	05 28	18 23	▭	▭	▭
62	03 50	04 45	05 30	19 02	19 08	19 34	20 43
60	03 59	04 50	05 32	19 29	19 48	20 25	21 27
N 58	04 06	04 54	05 34	19 51	20 16	20 56	21 56
56	04 12	04 58	05 35	20 08	20 37	21 20	22 18
54	04 18	05 01	05 36	20 23	20 55	21 39	22 36
52	04 23	05 04	05 38	20 36	21 10	21 55	22 52
50	04 27	05 06	05 39	20 48	21 23	22 09	23 05
45	04 37	05 11	05 41	21 11	21 50	22 37	23 33
N 40	04 44	05 16	05 43	21 31	22 12	23 00	23 54
35	04 49	05 19	05 44	21 47	22 30	23 18	24 12
30	04 54	05 22	05 46	22 01	22 45	23 34	24 27
20	05 00	05 26	05 48	22 24	23 11	24 01	00 01
N 10	05 04	05 29	05 50	22 45	23 34	24 24	00 24
0	05 07	05 31	05 51	23 04	23 55	24 46	00 46
S 10	05 07	05 32	05 53	23 24	24 16	00 16	01 08
20	05 07	05 32	05 54	23 45	24 39	00 39	01 31
30	05 04	05 32	05 56	24 09	00 09	01 05	01 58
35	05 02	05 32	05 57	24 24	00 24	01 21	02 14
40	04 59	05 31	05 58	24 40	00 40	01 39	02 33
45	04 56	05 30	05 59	25 00	01 00	02 01	02 55
S 50	04 50	05 28	06 00	00 15	01 26	02 29	03 24
52	04 48	05 27	06 01	00 25	01 38	02 43	03 38
54	04 45	05 26	06 01	00 36	01 52	02 59	03 54
56	04 42	05 25	06 02	00 49	02 08	03 18	04 13
58	04 38	05 24	06 03	01 05	02 28	03 41	04 37
S 60	04 33	05 22	06 04	01 23	02 53	04 12	05 09

Lat.	Ocaso	Crepúsculo		Ocaso Luna			
	Sol	Civil	Náut.	16	17	18	19
°	h m	h m	h m	h m	h m	h m	h m
N 72	18 31	19 41	21 20	▭	▭	▭	▭
N 70	18 27	19 30	20 54	▭	▭	▭	▭
68	18 24	19 21	20 34	▭	▭	▭	▭
66	18 21	19 13	20 19	▭	▭	▭	▭
64	18 19	19 07	20 07	15 10	▭	▭	▭
62	18 17	19 02	19 57	14 32	16 11	17 31	18 08
60	18 15	18 57	19 48	14 05	15 31	16 40	17 24
N 58	18 14	18 53	19 41	13 45	15 04	16 09	16 55
56	18 13	18 50	19 35	13 27	14 42	15 45	16 33
54	18 11	18 47	19 29	13 13	14 25	15 26	16 14
52	18 10	18 44	19 25	13 00	14 10	15 10	15 58
50	18 09	18 42	19 20	12 49	13 57	14 56	15 45
45	18 07	18 37	19 11	12 26	13 30	14 28	15 17
N 40	18 06	18 33	19 05	12 08	13 09	14 05	14 55
35	18 04	18 30	18 59	11 53	12 52	13 47	14 37
30	18 03	18 27	18 55	11 39	12 37	13 31	14 22
20	18 01	18 23	18 49	11 17	12 11	13 04	13 55
N 10	17 59	18 20	18 45	10 57	11 49	12 41	13 32
0	17 58	18 18	18 42	10 39	11 29	12 20	13 11
S 10	17 56	18 17	18 42	10 21	11 08	11 58	12 49
20	17 55	18 17	18 43	10 01	10 46	11 35	12 26
30	17 54	18 17	18 45	09 39	10 21	11 08	11 59
35	17 53	18 18	18 47	09 26	10 06	10 52	11 44
40	17 52	18 19	18 50	09 11	09 49	10 34	11 25
45	17 51	18 20	18 54	08 53	09 28	10 11	11 03
S 50	17 50	18 22	19 00	08 31	09 03	09 43	10 34
52	17 49	18 23	19 02	08 21	08 50	09 29	10 20
54	17 49	18 24	19 05	08 09	08 36	09 13	10 04
56	17 48	18 25	19 09	07 56	08 19	08 54	09 45
58	17 48	18 27	19 13	07 40	07 59	08 31	09 21
S 60	17 47	18 28	19 17	07 21	07 34	08 00	08 49

Día	SOL		Paso Mer.	LUNA			
	Ec. Tiempo			Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
16	04 58	05 09	11 55	04 27	16 52	20	64
17	05 19	05 30	11 55	05 17	17 42	21	54
18	05 41	05 51	11 54	06 07	18 33	22	45

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·4		JÚPITER −2·9		SATURNO +0·4	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
19 00	357 52.9	189 09.4	N 6 22.4	283 38.8	N21 41.3	352 53.7	N 0 23.9	35 30.3	S16 13.0
01	12 55.3	204 08.9	21.2	298 40.1	41.5	7 56.5	23.8	50 32.9	13.1
02	27 57.8	219 08.5	20.0	313 41.4	41.7	22 59.2	23.6	65 35.5	13.1
03	43 00.2	234 08.1	18.8	328 42.7	41.8	38 02.0	23.5	80 38.1	13.1
04	58 02.7	249 07.7	17.6	343 44.0	42.0	53 04.8	23.4	95 40.7	13.2
05	73 05.2	264 07.3	16.4	358 45.3	42.2	68 07.5	23.2	110 43.3	13.2
06	88 07.6	279 06.8	N 6 15.2	13 46.6	N21 42.4	83 10.3	N 0 23.1	125 45.9	S16 13.3
07	103 10.1	294 06.4	14.1	28 47.9	42.5	98 13.0	23.0	140 48.5	13.3
08	118 12.6	309 06.0	12.9	43 49.3	42.7	113 15.8	22.8	155 51.1	13.3
L 09	133 15.0	324 05.6	11.7	58 50.6	42.9	128 18.6	22.7	170 53.7	13.4
U 10	148 17.5	339 05.2	10.5	73 51.9	43.1	143 21.3	22.6	185 56.3	13.4
N 11	163 20.0	354 04.7	09.3	88 53.2	43.2	158 24.1	22.4	200 58.8	13.5
E 12	178 22.4	9 04.3	N 6 08.1	103 54.5	N21 43.4	173 26.9	N 0 22.3	216 01.4	S16 13.5
S 13	193 24.9	24 03.9	06.9	118 55.8	43.6	188 29.6	22.2	231 04.0	13.5
14	208 27.4	39 03.5	05.7	133 57.1	43.8	203 32.4	22.0	246 06.6	13.6
15	223 29.8	54 03.1	04.5	148 58.4	43.9	218 35.2	21.9	261 09.2	13.6
16	238 32.3	69 02.7	03.3	163 59.7	44.1	233 37.9	21.8	276 11.8	13.7
17	253 34.7	84 02.2	02.1	179 01.1	44.3	248 40.7	21.6	291 14.4	13.7
18	268 37.2	99 01.8	N 6 00.9	194 02.4	N21 44.4	263 43.5	N 0 21.5	306 17.0	S16 13.7
19	283 39.7	114 01.4	5 59.7	209 03.7	44.6	278 46.2	21.4	321 19.6	13.8
20	298 42.1	129 01.0	58.5	224 05.0	44.8	293 49.0	21.2	336 22.2	13.8
21	313 44.6	144 00.6	57.3	239 06.3	45.0	308 51.8	21.1	351 24.8	13.9
22	328 47.1	159 00.1	56.1	254 07.6	45.1	323 54.5	21.0	6 27.4	13.9
23	343 49.5	173 59.7	54.9	269 09.0	45.3	338 57.3	20.8	21 29.9	13.9
20 00	358 52.0	188 59.3	N 5 53.7	284 10.3	N21 45.5	354 00.0	N 0 20.7	36 32.5	S16 14.0
01	13 54.5	203 58.9	52.5	299 11.6	45.7	9 02.8	20.6	51 35.1	14.0
02	28 56.9	218 58.5	51.2	314 12.9	45.8	24 05.6	20.4	66 37.7	14.1
03	43 59.4	233 58.1	50.0	329 14.3	46.0	39 08.3	20.3	81 40.3	14.1
04	59 01.9	248 57.6	48.8	344 15.6	46.2	54 11.1	20.2	96 42.9	14.1
05	74 04.3	263 57.2	47.6	359 16.9	46.3	69 13.9	20.0	111 45.5	14.2
06	89 06.8	278 56.8	N 5 46.4	14 18.2	N21 46.5	84 16.6	N 0 19.9	126 48.1	S16 14.2
07	104 09.2	293 56.4	45.2	29 19.5	46.7	99 19.4	19.8	141 50.7	14.3
M 08	119 11.7	308 56.0	44.0	44 20.9	46.8	114 22.2	19.7	156 53.3	14.3
A 09	134 14.2	323 55.6	42.8	59 22.2	47.0	129 24.9	19.5	171 55.8	14.3
R 10	149 16.6	338 55.2	41.6	74 23.5	47.2	144 27.7	19.4	186 58.4	14.4
T 11	164 19.1	353 54.7	40.4	89 24.9	47.4	159 30.5	19.3	202 01.0	14.4
E 12	179 21.6	8 54.3	N 5 39.2	104 26.2	N21 47.5	174 33.2	N 0 19.1	217 03.6	S16 14.4
S 13	194 24.0	23 53.9	38.0	119 27.5	47.7	189 36.0	19.0	232 06.2	14.5
14	209 26.5	38 53.5	36.8	134 28.8	47.9	204 38.8	18.9	247 08.8	14.5
15	224 29.0	53 53.1	35.6	149 30.2	48.0	219 41.5	18.7	262 11.4	14.6
16	239 31.4	68 52.7	34.4	164 31.5	48.2	234 44.3	18.6	277 14.0	14.6
17	254 33.9	83 52.3	33.2	179 32.8	48.4	249 47.1	18.5	292 16.5	14.6
18	269 36.3	98 51.8	N 5 32.0	194 34.2	N21 48.5	264 49.8	N 0 18.3	307 19.1	S16 14.7
19	284 38.8	113 51.4	30.8	209 35.5	48.7	279 52.6	18.2	322 21.7	14.7
20	299 41.3	128 51.0	29.5	224 36.8	48.9	294 55.4	18.1	337 24.3	14.8
21	314 43.7	143 50.6	28.3	239 38.2	49.0	309 58.1	17.9	352 26.9	14.8
22	329 46.2	158 50.2	27.1	254 39.5	49.2	325 00.9	17.8	7 29.5	14.8
23	344 48.7	173 49.8	25.9	269 40.9	49.4	340 03.7	17.7	22 32.1	14.9
21 00	359 51.1	188 49.4	N 5 24.7	284 42.2	N21 49.5	355 06.4	N 0 17.5	37 34.7	S16 14.9
01	14 53.6	203 49.0	23.5	299 43.5	49.7	10 09.2	17.4	52 37.3	15.0
02	29 56.1	218 48.5	22.3	314 44.9	49.9	25 12.0	17.3	67 39.8	15.0
03	44 58.5	233 48.1	21.1	329 46.2	50.0	40 14.7	17.1	82 42.4	15.0
04	60 01.0	248 47.7	19.9	344 47.5	50.2	55 17.5	17.0	97 45.0	15.1
05	75 03.5	263 47.3	18.7	359 48.9	50.4	70 20.3	16.9	112 47.6	15.1
06	90 05.9	278 46.9	N 5 17.4	14 50.2	N21 50.5	85 23.0	N 0 16.7	127 50.2	S16 15.1
07	105 08.4	293 46.5	16.2	29 51.6	50.7	100 25.8	16.6	142 52.8	15.2
M 08	120 10.8	308 46.1	15.0	44 52.9	50.9	115 28.6	16.5	157 55.4	15.2
I 09	135 13.3	323 45.7	13.8	59 54.3	51.0	130 31.3	16.3	172 57.9	15.3
É 10	150 15.8	338 45.2	12.6	74 55.6	51.2	145 34.1	16.2	188 00.5	15.3
R 11	165 18.2	353 44.8	11.4	89 57.0	51.4	160 36.9	16.0	203 03.1	15.3
C 12	180 20.7	8 44.4	N 5 10.2	104 58.3	N21 51.5	175 39.6	N 0 15.9	218 05.7	S16 15.4
O 13	195 23.2	23 44.0	09.0	119 59.6	51.7	190 42.4	15.8	233 08.3	15.4
L 14	210 25.6	38 43.6	07.7	135 01.0	51.9	205 45.2	15.6	248 10.9	15.5
E 15	225 28.1	53 43.2	06.5	150 02.3	52.0	220 47.9	15.5	263 13.5	15.5
S 16	240 30.6	68 42.8	05.3	165 03.7	52.2	235 50.7	15.4	278 16.0	15.5
17	255 33.0	83 42.4	04.1	180 05.0	52.4	250 53.5	15.2	293 18.6	15.6
18	270 35.5	98 42.0	N 5 02.9	195 06.4	N21 52.5	265 56.2	N 0 15.1	308 21.2	S16 15.6
19	285 38.0	113 41.6	01.7	210 07.8	52.7	280 59.0	15.0	323 23.8	15.6
20	300 40.4	128 41.2	5 00.5	225 09.1	52.9	296 01.8	14.8	338 26.4	15.7
21	315 42.9	143 40.7	4 59.2	240 10.5	53.0	311 04.6	14.7	353 29.0	15.7
22	330 45.3	158 40.3	58.0	255 11.8	53.2	326 07.3	14.6	8 31.6	15.8
23	345 47.8	173 39.9	56.8	270 13.2	53.4	341 10.1	14.4	23 34.1	15.8
	h m								
Paso Mer.	0 04.5	*v* −0.4	*d* 1.2	*v* 1.3	*d* 0.2	*v* 2.8	*d* 0.1	*v* 2.6	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.9	S40 12.6
Achernar	335 21.1	S57 07.2
Acrux	173 02.9	S63 13.4
Adhara	255 07.5	S28 59.9
Aldebaran	290 41.7	N16 33.3
Alioth	166 15.2	N55 50.4
Alkaid	152 53.9	N49 12.2
Alnair	27 34.9	S46 51.1
Alnilam	275 39.6	S 1 11.1
Alphard	217 49.9	S 8 45.2
Alphecca	126 05.6	N26 38.6
Alpheratz	357 36.4	N29 13.0
Altair	62 01.7	N 8 55.8
Ankaa	353 08.6	S42 10.9
Antares	112 18.3	S26 28.9
Arcturus	145 49.9	N19 04.1
Atria	107 14.4	S69 04.3
Avior	234 15.9	S59 34.6
Bellatrix	278 24.9	N 6 22.3
Betelgeuse	270 54.2	N 7 24.8
Canopus	263 53.3	S52 42.1
Capella	280 24.6	N46 01.1
Deneb	49 26.8	N45 21.9
Denebola	182 27.2	N14 26.9
Diphda	348 48.9	S17 51.6
Dubhe	193 44.0	N61 37.8
Elnath	278 04.2	N28 37.5
Eltanin	90 43.1	N51 29.4
Enif	33 40.4	N 9 58.8
Fomalhaut	15 16.3	S29 30.1
Gacrux	171 54.3	S57 14.3
Gienah	175 45.9	S17 39.9
Hadar	148 39.3	S60 29.0
Hamal	327 53.1	N23 34.2
Kaus Aust.	83 35.0	S34 22.5
Kochab	137 20.6	N74 04.0
Markab	13 31.5	N15 19.7
Menkar	314 07.9	N 4 10.8
Menkent	148 00.2	S36 28.8
Miaplacidus	221 39.4	S69 48.3
Mirfak	308 30.7	N49 56.3
Nunki	75 50.0	S26 16.1
Peacock	53 08.4	S56 39.9
Pollux	243 19.8	N27 58.3
Procyon	244 53.0	N 5 10.2
Rasalhague	96 00.3	N12 32.8
Regulus	207 36.8	N11 51.5
Rigel	281 05.7	S 8 10.3
Rigil Kent.	139 43.4	S60 55.8
Sabik	102 05.0	S15 45.1
Schedar	349 32.7	N56 39.7
Shaula	96 13.0	S37 07.3
Sirius	258 28.0	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 48.0	S43 31.1
Vega	80 34.4	N38 48.5
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	190 07.3	11 24
Marte	285 18.3	5 03
Júpiter	355 08.1	0 24
Saturno	37 40.5	21 30

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph	
d h	°	′	°	′	°	′	°	′	′	′
19 00	181	30.7	N 1	34.3	258	59.4	10.2	N27	18.9	0.3	54.2
01	196	30.9		33.3	273	28.6	10.1	27	18.6	0.5	54.2
02	211	31.1		32.4	287	57.7	10.2	27	18.1	0.5	54.2
03	226	31.3	. .	31.4	302	26.9	10.2	27	17.6	0.7	54.2
04	241	31.5		30.4	316	56.1	10.2	27	16.9	0.9	54.2
05	256	31.8		29.5	331	25.3	10.2	27	16.0	0.9	54.2
06	271	32.0	N 1	28.5	345	54.5	10.3	N27	15.1	1.1	54.2
07	286	32.2		27.5	0	23.8	10.2	27	14.0	1.2	54.2
L 08	301	32.4		26.5	14	53.0	10.3	27	12.8	1.4	54.2
U 09	316	32.7	. .	25.6	29	22.3	10.2	27	11.4	1.5	54.2
N 10	331	32.9		24.6	43	51.5	10.3	27	09.9	1.6	54.2
E 11	346	33.1		23.6	58	20.8	10.3	27	08.3	1.7	54.2
S 12	1	33.3	N 1	22.7	72	50.1	10.3	N27	06.6	1.9	54.2
13	16	33.5		21.7	87	19.4	10.4	27	04.7	2.0	54.2
14	31	33.8		20.7	101	48.8	10.3	27	02.7	2.1	54.2
15	46	34.0	. .	19.8	116	18.1	10.4	27	00.6	2.3	54.2
16	61	34.2		18.8	130	47.5	10.4	26	58.3	2.4	54.2
17	76	34.4		17.8	145	16.9	10.4	26	55.9	2.5	54.2
18	91	34.7	N 1	16.8	159	46.3	10.4	N26	53.4	2.7	54.2
19	106	34.9		15.9	174	15.7	10.5	26	50.7	2.7	54.2
20	121	35.1		14.9	188	45.2	10.5	26	48.0	2.9	54.2
21	136	35.3	. .	13.9	203	14.7	10.5	26	45.1	3.1	54.2
22	151	35.5		13.0	217	44.2	10.5	26	42.0	3.1	54.2
23	166	35.8		12.0	232	13.7	10.6	26	38.9	3.3	54.2
20 00	181	36.0	N 1	11.0	246	43.3	10.6	N26	35.6	3.4	54.2
01	196	36.2		10.1	261	12.9	10.6	26	32.2	3.6	54.2
02	211	36.4		09.1	275	42.5	10.6	26	28.6	3.6	54.2
03	226	36.7	. .	08.1	290	12.1	10.7	26	25.0	3.8	54.2
04	241	36.9		07.1	304	41.8	10.7	26	21.2	3.9	54.2
05	256	37.1		06.2	319	11.5	10.7	26	17.3	4.1	54.2
06	271	37.3	N 1	05.2	333	41.2	10.8	N26	13.2	4.1	54.2
07	286	37.5		04.2	348	11.0	10.8	26	09.1	4.3	54.2
M 08	301	37.8		03.3	2	40.8	10.8	26	04.8	4.4	54.2
A 09	316	38.0	. .	02.3	17	10.6	10.9	26	00.4	4.6	54.2
R 10	331	38.2		01.3	31	40.5	10.9	25	55.8	4.6	54.3
T 11	346	38.4	1	00.3	46	10.4	10.9	25	51.2	4.8	54.3
E 12	1	38.7	N 0	59.4	60	40.3	11.0	N25	46.4	4.9	54.3
S 13	16	38.9		58.4	75	10.3	11.0	25	41.5	5.0	54.3
14	31	39.1		57.4	89	40.3	11.0	25	36.5	5.2	54.3
15	46	39.3	. .	56.5	104	10.3	11.1	25	31.3	5.3	54.3
16	61	39.5		55.5	118	40.4	11.1	25	26.0	5.3	54.3
17	76	39.8		54.5	133	10.5	11.1	25	20.7	5.6	54.3
18	91	40.0	N 0	53.6	147	40.6	11.2	N25	15.1	5.6	54.3
19	106	40.2		52.6	162	10.8	11.2	25	09.5	5.7	54.3
20	121	40.4		51.6	176	41.0	11.3	25	03.8	5.9	54.3
21	136	40.7	. .	50.6	191	11.3	11.3	24	57.9	6.0	54.3
22	151	40.9		49.7	205	41.6	11.3	24	51.9	6.1	54.3
23	166	41.1		48.7	220	11.9	11.4	24	45.8	6.2	54.3
21 00	181	41.3	N 0	47.7	234	42.3	11.4	N24	39.6	6.3	54.4
01	196	41.5		46.8	249	12.7	11.5	24	33.3	6.5	54.4
02	211	41.8		45.8	263	43.2	11.5	24	26.8	6.5	54.4
03	226	42.0	. .	44.8	278	13.7	11.5	24	20.3	6.7	54.4
04	241	42.2		43.8	292	44.2	11.6	24	13.6	6.8	54.4
05	256	42.4		42.9	307	14.8	11.6	24	06.8	6.9	54.4
06	271	42.6	N 0	41.9	321	45.4	11.7	N23	59.9	7.0	54.4
07	286	42.9		40.9	336	16.1	11.7	23	52.9	7.1	54.4
M 08	301	43.1		39.9	350	46.8	11.8	23	45.8	7.3	54.4
I 09	316	43.3	. .	39.0	5	17.6	11.8	23	38.5	7.3	54.4
É 10	331	43.5		38.0	19	48.4	11.8	23	31.2	7.5	54.5
R 11	346	43.8		37.0	34	19.2	11.9	23	23.7	7.6	54.5
C 12	1	44.0	N 0	36.1	48	50.1	11.9	N23	16.1	7.6	54.5
O 13	16	44.2		35.1	63	21.0	12.0	23	08.5	7.8	54.5
L 14	31	44.4		34.1	77	52.0	12.0	23	00.7	7.9	54.5
E 15	46	44.6	. .	33.1	92	23.0	12.1	22	52.8	8.0	54.5
S 16	61	44.9		32.2	106	54.1	12.1	22	44.8	8.1	54.5
17	76	45.1		31.2	121	25.2	12.1	22	36.7	8.3	54.5
18	91	45.3	N 0	30.2	135	56.3	12.2	N22	28.4	8.3	54.6
19	106	45.5		29.3	150	27.5	12.3	22	20.1	8.4	54.6
20	121	45.7		28.3	164	58.8	12.2	22	11.7	8.5	54.6
21	136	46.0	. .	27.3	179	30.0	12.4	22	03.2	8.7	54.6
22	151	46.2		26.3	194	01.4	12.4	21	54.5	8.7	54.6
23	166	46.4		25.4	208	32.8	12.4	N21	45.8	8.9	54.6
	S/D	16.0	*d*	1.0	S/D	14.8		14.8			14.8

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			19	20	21	22
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	02	45	04	20	05 29	▭	▭	▭	22 26
N 70	03	08	04	29	05 32	▭	▭	▭	23 52
68	03	25	04	37	05 34	▭	▭	21 26	24 30
66	03	39	04	44	05 35	▭	▭	22 53	24 57
64	03	50	04	49	05 37	▭	21 30	23 30	25 17
62	03	59	04	54	05 38	20 43	22 17	23 56	25 33
60	04	07	04	57	05 39	21 27	22 48	24 16	00 16
N 58	04	13	05	01	05 40	21 56	23 11	24 33	00 33
56	04	19	05	04	05 41	22 18	23 29	24 47	00 47
54	04	24	05	06	05 42	22 36	23 45	24 59	00 59
52	04	29	05	09	05 43	22 52	23 58	25 10	01 10
50	04	32	05	11	05 43	23 05	24 10	00 10	01 19
45	04	40	05	15	05 44	23 33	24 34	00 34	01 39
N 40	04	47	05	18	05 46	23 54	24 53	00 53	01 55
35	04	52	05	21	05 46	24 12	00 12	01 09	02 09
30	04	55	05	23	05 47	24 27	00 27	01 23	02 21
20	05	01	05	26	05 48	00 01	00 53	01 47	02 41
N 10	05	04	05	28	05 49	00 24	01 16	02 07	02 58
0	05	06	05	30	05 50	00 46	01 37	02 26	03 14
S 10	05	06	05	30	05 51	01 08	01 58	02 45	03 30
20	05	04	05	30	05 52	01 31	02 20	03 06	03 48
30	05	01	05	28	05 52	01 58	02 46	03 29	04 07
35	04	58	05	27	05 53	02 14	03 01	03 43	04 19
40	04	54	05	26	05 53	02 33	03 19	03 58	04 32
45	04	50	05	24	05 53	02 55	03 40	04 17	04 47
S 50	04	44	05	21	05 54	03 24	04 07	04 40	05 06
52	04	41	05	20	05 54	03 38	04 20	04 51	05 15
54	04	37	05	19	05 54	03 54	04 35	05 04	05 25
56	04	33	05	17	05 54	04 13	04 52	05 19	05 36
58	04	29	05	15	05 54	04 37	05 14	05 36	05 49
S 60	04	24	05	13	05 54	05 09	05 41	05 56	06 04

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	19	20	21	22
°	h m	h m	h m	h m	h m	h m	h m
N 72	18 15	19 24	20 57	▭	▭	▭	21 31
N 70	18 13	19 15	20 35	▭	▭	▭	20 04
68	18 11	19 07	20 19	▭	▭	20 51	19 25
66	18 10	19 01	20 05	▭	▭	19 24	18 57
64	18 08	18 56	19 55	▭	19 05	18 46	18 36
62	18 07	18 52	19 46	18 08	18 18	18 19	18 18
60	18 06	18 48	19 38	17 24	17 47	17 58	18 04
N 58	18 05	18 45	19 32	16 55	17 24	17 41	17 52
56	18 05	18 42	19 26	16 33	17 05	17 26	17 41
54	18 04	18 39	19 21	16 14	16 49	17 14	17 31
52	18 03	18 37	19 17	15 58	16 35	17 02	17 23
50	18 03	18 35	19 13	15 45	16 23	16 52	17 15
45	18 02	18 31	19 05	15 17	15 58	16 32	16 59
N 40	18 01	18 28	18 59	14 55	15 38	16 15	16 45
35	18 00	18 25	18 55	14 37	15 22	16 00	16 34
30	17 59	18 23	18 51	14 22	15 07	15 48	16 24
20	17 58	18 20	18 46	13 55	14 42	15 26	16 06
N 10	17 57	18 18	18 43	13 32	14 21	15 07	15 51
0	17 57	18 17	18 41	13 11	14 01	14 50	15 37
S 10	17 56	18 17	18 41	12 49	13 41	14 32	15 22
20	17 56	18 18	18 43	12 26	13 19	14 13	15 07
30	17 55	18 19	18 47	11 59	12 54	13 51	14 49
35	17 55	18 20	18 50	11 44	12 39	13 38	14 38
40	17 55	18 22	18 53	11 25	12 22	13 23	14 26
45	17 54	18 24	18 58	11 03	12 01	13 05	14 12
S 50	17 54	18 27	19 04	10 34	11 35	12 43	13 54
52	17 54	18 28	19 08	10 20	11 22	12 32	13 46
54	17 54	18 29	19 11	10 04	11 07	12 20	13 36
56	17 54	18 31	19 15	09 45	10 50	12 06	13 26
58	17 54	18 33	19 20	09 21	10 29	11 49	13 13
S 60	17 54	18 35	19 25	08 49	10 02	11 29	12 59

Día	SOL				LUNA				
	Ec. Tiempo				Paso Mer.	Paso Mer.		Edad	Fase
	00h		12h			Sup.	Inf.		
d	m	s	m	s	h m	h m	h m	d %	
19	06	02	06	13	11 54	06 58	19 24	23 35	
20	06	24	06	34	11 53	07 49	20 14	24 27	
21	06	45	06	55	11 53	08 38	21 02	25 19	

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·5		JÚPITER −2·9		SATURNO +0·4	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
22 00	0 50.3	188 39.5	N 4 55.6	285 14.5	N21 53.5	356 12.9	N 0 14.3	38 36.7	S16 15.8
01	15 52.7	203 39.1	54.4	300 15.9	53.7	11 15.6	14.2	53 39.3	15.9
02	30 55.2	218 38.7	53.2	315 17.2	53.8	26 18.4	14.0	68 41.9	15.9
03	45 57.7	233 38.3	51.9	330 18.6	54.0	41 21.2	13.9	83 44.5	15.9
04	61 00.1	248 37.9	50.7	345 20.0	54.2	56 23.9	13.8	98 47.1	16.0
05	76 02.6	263 37.5	49.5	0 21.3	54.3	71 26.7	13.6	113 49.6	16.0
06	91 05.1	278 37.1	N 4 48.3	15 22.7	N21 54.5	86 29.5	N 0 13.5	128 52.2	S16 16.1
07	106 07.5	293 36.7	47.1	30 24.0	54.7	101 32.2	13.4	143 54.8	16.1
08	121 10.0	308 36.3	45.9	45 25.4	54.8	116 35.0	13.2	158 57.4	16.1
J 09	136 12.5	323 35.8	44.6	60 26.8	55.0	131 37.8	13.1	174 00.0	16.2
U 10	151 14.9	338 35.4	43.4	75 28.1	55.1	146 40.5	13.0	189 02.6	16.2
E 11	166 17.4	353 35.0	42.2	90 29.5	55.3	161 43.3	12.8	204 05.1	16.2
V 12	181 19.8	8 34.6	N 4 41.0	105 30.9	N21 55.5	176 46.1	N 0 12.7	219 07.7	S16 16.3
E 13	196 22.3	23 34.2	39.8	120 32.2	55.6	191 48.8	12.6	234 10.3	16.3
S 14	211 24.8	38 33.8	38.5	135 33.6	55.8	206 51.6	12.4	249 12.9	16.3
15	226 27.2	53 33.4	37.3	150 35.0	56.0	221 54.4	12.3	264 15.5	16.4
16	241 29.7	68 33.0	36.1	165 36.3	56.1	236 57.2	12.2	279 18.1	16.4
17	256 32.2	83 32.6	34.9	180 37.7	56.3	251 59.9	12.0	294 20.6	16.5
18	271 34.6	98 32.2	N 4 33.7	195 39.1	N21 56.4	267 02.7	N 0 11.9	309 23.2	S16 16.5
19	286 37.1	113 31.8	32.4	210 40.4	56.6	282 05.5	11.8	324 25.8	16.5
20	301 39.6	128 31.4	31.2	225 41.8	56.8	297 08.2	11.6	339 28.4	16.6
21	316 42.0	143 31.0	30.0	240 43.2	56.9	312 11.0	11.5	354 31.0	16.6
22	331 44.5	158 30.6	28.8	255 44.6	57.1	327 13.8	11.4	9 33.5	16.6
23	346 46.9	173 30.2	27.6	270 45.9	57.2	342 16.5	11.2	24 36.1	16.7
23 00	1 49.4	188 29.8	N 4 26.3	285 47.3	N21 57.4	357 19.3	N 0 11.1	39 38.7	S16 16.7
01	16 51.9	203 29.3	25.1	300 48.7	57.6	12 22.1	11.0	54 41.3	16.8
02	31 54.3	218 28.9	23.9	315 50.1	57.7	27 24.8	10.8	69 43.9	16.8
03	46 56.8	233 28.5	22.7	330 51.4	57.9	42 27.6	10.7	84 46.4	16.8
04	61 59.3	248 28.1	21.4	345 52.8	58.0	57 30.4	10.6	99 49.0	16.9
05	77 01.7	263 27.7	20.2	0 54.2	58.2	72 33.2	10.4	114 51.6	16.9
06	92 04.2	278 27.3	N 4 19.0	15 55.6	N21 58.4	87 35.9	N 0 10.3	129 54.2	S16 16.9
07	107 06.7	293 26.9	17.8	30 56.9	58.5	102 38.7	10.2	144 56.8	17.0
V 08	122 09.1	308 26.5	16.5	45 58.3	58.7	117 41.5	10.0	159 59.3	17.0
I 09	137 11.6	323 26.1	15.3	60 59.7	58.8	132 44.2	09.9	175 01.9	17.0
E 10	152 14.1	338 25.7	14.1	76 01.1	59.0	147 47.0	09.8	190 04.5	17.1
R 11	167 16.5	353 25.3	12.9	91 02.5	59.1	162 49.8	09.6	205 07.1	17.1
N 12	182 19.0	8 24.9	N 4 11.6	106 03.9	N21 59.3	177 52.5	N 0 09.5	220 09.7	S16 17.1
E 13	197 21.4	23 24.5	10.4	121 05.2	59.5	192 55.3	09.4	235 12.2	17.2
S 14	212 23.9	38 24.1	09.2	136 06.6	59.6	207 58.1	09.2	250 14.8	17.2
15	227 26.4	53 23.7	08.0	151 08.0	59.8	223 00.9	09.1	265 17.4	17.3
16	242 28.8	68 23.3	06.7	166 09.4	21 59.9	238 03.6	09.0	280 20.0	17.3
17	257 31.3	83 22.9	05.5	181 10.8	22 00.1	253 06.4	08.8	295 22.6	17.3
18	272 33.8	98 22.5	N 4 04.3	196 12.2	N22 00.2	268 09.2	N 0 08.7	310 25.1	S16 17.4
19	287 36.2	113 22.1	03.1	211 13.6	00.4	283 11.9	08.6	325 27.7	17.4
20	302 38.7	128 21.7	01.8	226 15.0	00.6	298 14.7	08.4	340 30.3	17.4
21	317 41.2	143 21.3	4 00.6	241 16.4	00.7	313 17.5	08.3	355 32.9	17.5
22	332 43.6	158 20.9	3 59.4	256 17.7	00.9	328 20.2	08.2	10 35.5	17.5
23	347 46.1	173 20.5	58.2	271 19.1	01.0	343 23.0	08.0	25 38.0	17.5
24 00	2 48.5	188 20.1	N 3 56.9	286 20.5	N22 01.2	358 25.8	N 0 07.9	40 40.6	S16 17.6
01	17 51.0	203 19.7	55.7	301 21.9	01.3	13 28.6	07.8	55 43.2	17.6
02	32 53.5	218 19.3	54.5	316 23.3	01.5	28 31.3	07.6	70 45.8	17.6
03	47 55.9	233 18.9	53.2	331 24.7	01.7	43 34.1	07.5	85 48.3	17.7
04	62 58.4	248 18.5	52.0	346 26.1	01.8	58 36.9	07.4	100 50.9	17.7
05	78 00.9	263 18.1	50.8	1 27.5	02.0	73 39.6	07.2	115 53.5	17.7
06	93 03.3	278 17.7	N 3 49.6	16 28.9	N22 02.1	88 42.4	N 0 07.1	130 56.1	S16 17.8
07	108 05.8	293 17.3	48.3	31 30.3	02.3	103 45.2	07.0	145 58.7	17.8
S 08	123 08.3	308 16.9	47.1	46 31.7	02.4	118 47.9	06.8	161 01.2	17.9
Á 09	138 10.7	323 16.5	45.9	61 33.1	02.6	133 50.7	06.7	176 03.8	17.9
B 10	153 13.2	338 16.1	44.6	76 34.5	02.7	148 53.5	06.5	191 06.4	17.9
A 11	168 15.7	353 15.7	43.4	91 35.9	02.9	163 56.3	06.4	206 09.0	18.0
D 12	183 18.1	8 15.3	N 3 42.2	106 37.3	N22 03.1	178 59.0	N 0 06.3	221 11.5	S16 18.0
O 13	198 20.6	23 14.9	41.0	121 38.7	03.2	194 01.8	06.1	236 14.1	18.0
14	213 23.0	38 14.5	39.7	136 40.1	03.4	209 04.6	06.0	251 16.7	18.1
15	228 25.5	53 14.1	38.5	151 41.5	03.5	224 07.3	05.9	266 19.3	18.1
16	243 28.0	68 13.7	37.3	166 42.9	03.7	239 10.1	05.7	281 21.8	18.1
17	258 30.4	83 13.3	36.0	181 44.4	03.8	254 12.9	05.6	296 24.4	18.2
18	273 32.9	98 12.9	N 3 34.8	196 45.8	N22 04.0	269 15.7	N 0 05.5	311 27.0	S16 18.2
19	288 35.4	113 12.5	33.6	211 47.2	04.1	284 18.4	05.3	326 29.6	18.2
20	303 37.8	128 12.1	32.3	226 48.6	04.3	299 21.2	05.2	341 32.1	18.3
21	318 40.3	143 11.7	31.1	241 50.0	04.4	314 24.0	05.1	356 34.7	18.3
22	333 42.8	158 11.3	29.9	256 51.4	04.6	329 26.7	04.9	11 37.3	18.3
23	348 45.2	173 10.9	28.6	271 52.8	04.7	344 29.5	04.8	26 39.9	18.4
	h m								
Paso Mer.	23 48.8	*v* −0.4	*d* 1.2	*v* 1.4	*d* 0.2	*v* 2.8	*d* 0.1	*v* 2.6	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.9	S40 12.6
Achernar	335 21.1	S57 07.2
Acrux	173 02.9	S63 13.4
Adhara	255 07.4	S28 59.9
Aldebaran	290 41.7	N16 33.3
Alioth	166 15.2	N55 50.4
Alkaid	152 53.9	N49 12.2
Alnair	27 34.9	S46 51.1
Alnilam	275 39.6	S 1 11.1
Alphard	217 49.9	S 8 45.2
Alphecca	126 05.6	N26 38.5
Alpheratz	357 36.4	N29 13.0
Altair	62 01.7	N 8 55.8
Ankaa	353 08.6	S42 10.9
Antares	112 18.3	S26 28.9
Arcturus	145 49.9	N19 04.1
Atria	107 14.4	S69 04.3
Avior	234 15.9	S59 34.6
Bellatrix	278 24.9	N 6 22.3
Betelgeuse	270 54.1	N 7 24.8
Canopus	263 53.3	S52 42.1
Capella	280 24.6	N46 01.1
Deneb	49 26.8	N45 21.9
Denebola	182 27.2	N14 26.9
Diphda	348 48.9	S17 51.6
Dubhe	193 44.0	N61 37.8
Elnath	278 04.2	N28 37.5
Eltanin	90 43.1	N51 29.4
Enif	33 40.4	N 9 58.8
Fomalhaut	15 16.3	S29 30.1
Gacrux	171 54.3	S57 14.3
Gienah	175 45.9	S17 39.9
Hadar	148 39.3	S60 28.9
Hamal	327 53.1	N23 34.2
Kaus Aust.	83 35.0	S34 22.5
Kochab	137 20.6	N74 04.0
Markab	13 31.5	N15 19.7
Menkar	314 07.9	N 4 10.8
Menkent	148 00.2	S36 28.8
Miaplacidus	221 39.3	S69 48.3
Mirfak	308 30.7	N49 56.4
Nunki	75 50.0	S26 16.1
Peacock	53 08.4	S56 39.9
Pollux	243 19.8	N27 58.3
Procyon	244 53.0	N 5 10.2
Rasalhague	96 00.4	N12 32.8
Regulus	207 36.8	N11 51.5
Rigel	281 05.6	S 8 10.3
Rigil Kent.	139 43.4	S60 55.7
Sabik	102 05.0	S15 45.1
Schedar	349 32.6	N56 39.7
Shaula	96 13.0	S37 07.3
Sirius	258 28.0	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 48.0	S43 31.1
Vega	80 34.5	N38 48.5
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	186 40.3	11 26
Marte	283 57.9	4 56
Júpiter	355 29.9	0 11
Saturno	37 49.3	21 18

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph	
d h	°	′	°	′	°	′	°	′	′	′
22 00	181	46.6	N 0	24.4	223	04.2	12.4	N21	36.9	8.9	54.6
01	196	46.8		23.4	237	35.6	12.5	21	28.0	9.1	54.7
02	211	47.1		22.4	252	07.1	12.6	21	18.9	9.1	54.7
03	226	47.3	. .	21.5	266	38.7	12.6	21	09.8	9.2	54.7
04	241	47.5		20.5	281	10.3	12.6	21	00.6	9.4	54.7
05	256	47.7		19.5	295	41.9	12.7	20	51.2	9.4	54.7
06	271	47.9	N 0	18.6	310	13.6	12.7	N20	41.8	9.6	54.7
07	286	48.2		17.6	324	45.3	12.8	20	32.2	9.6	54.7
J 08	301	48.4		16.6	339	17.1	12.8	20	22.6	9.7	54.8
U 09	316	48.6	. .	15.6	353	48.9	12.9	20	12.9	9.9	54.8
E 10	331	48.8		14.7	8	20.8	12.9	20	03.0	9.9	54.8
V 11	346	49.0		13.7	22	52.7	12.9	19	53.1	10.0	54.8
E 12	1	49.3	N 0	12.7	37	24.6	13.0	N19	43.1	10.1	54.8
S 13	16	49.5		11.7	51	56.6	13.1	19	33.0	10.2	54.8
14	31	49.7		10.8	66	28.7	13.0	19	22.8	10.3	54.9
15	46	49.9	. .	09.8	81	00.7	13.1	19	12.5	10.4	54.9
16	61	50.1		08.8	95	32.8	13.2	19	02.1	10.5	54.9
17	76	50.4		07.9	110	05.0	13.2	18	51.6	10.5	54.9
18	91	50.6	N 0	06.9	124	37.2	13.2	N18	41.1	10.7	54.9
19	106	50.8		05.9	139	09.4	13.3	18	30.4	10.7	54.9
20	121	51.0		04.9	153	41.7	13.3	18	19.7	10.8	55.0
21	136	51.2	. .	04.0	168	14.0	13.4	18	08.9	10.9	55.0
22	151	51.5		03.0	182	46.4	13.4	17	58.0	11.0	55.0
23	166	51.7		02.0	197	18.8	13.4	17	47.0	11.1	55.0
23 00	181	51.9	N 0	01.0	211	51.2	13.5	N17	35.9	11.2	55.0
01	196	52.1	N	00.1	226	23.7	13.5	17	24.7	11.3	55.1
02	211	52.3	S	00.9	240	56.2	13.6	17	13.4	11.3	55.1
03	226	52.6	. .	01.9	255	28.8	13.6	17	02.1	11.4	55.1
04	241	52.8		02.8	270	01.4	13.6	16	50.7	11.5	55.1
05	256	53.0		03.8	284	34.0	13.7	16	39.2	11.6	55.1
06	271	53.2	S 0	04.8	299	06.7	13.7	N16	27.6	11.6	55.2
07	286	53.4		05.8	313	39.4	13.7	16	16.0	11.8	55.2
V 08	301	53.7		06.7	328	12.1	13.8	16	04.2	11.8	55.2
I 09	316	53.9	. .	07.7	342	44.9	13.8	15	52.4	11.9	55.2
E 10	331	54.1		08.7	357	17.7	13.9	15	40.5	11.9	55.2
R 11	346	54.3		09.7	11	50.6	13.8	15	28.6	12.1	55.3
N 12	1	54.5	S 0	10.6	26	23.4	13.9	N15	16.5	12.1	55.3
E 13	16	54.7		11.6	40	56.3	14.0	15	04.4	12.2	55.3
S 14	31	55.0		12.6	55	29.3	14.0	14	52.2	12.3	55.3
15	46	55.2	. .	13.6	70	02.3	14.0	14	39.9	12.3	55.3
16	61	55.4		14.5	84	35.3	14.0	14	27.6	12.4	55.4
17	76	55.6		15.5	99	08.3	14.1	14	15.2	12.5	55.4
18	91	55.8	S 0	16.5	113	41.4	14.1	N14	02.7	12.5	55.4
19	106	56.1		17.5	128	14.5	14.1	13	50.2	12.6	55.4
20	121	56.3		18.4	142	47.6	14.1	13	37.6	12.7	55.4
21	136	56.5	. .	19.4	157	20.7	14.2	13	24.9	12.8	55.5
22	151	56.7		20.4	171	53.9	14.2	13	12.1	12.8	55.5
23	166	56.9		21.3	186	27.1	14.2	12	59.3	12.9	55.5
24 00	181	57.1	S 0	22.3	201	00.3	14.3	N12	46.4	12.9	55.5
01	196	57.4		23.3	215	33.6	14.3	12	33.5	13.0	55.5
02	211	57.6		24.3	230	06.9	14.3	12	20.5	13.1	55.6
03	226	57.8	. .	25.2	244	40.2	14.3	12	07.4	13.2	55.6
04	241	58.0		26.2	259	13.5	14.4	11	54.2	13.2	55.6
05	256	58.2		27.2	273	46.9	14.3	11	41.0	13.2	55.6
06	271	58.4	S 0	28.2	288	20.2	14.4	N11	27.8	13.3	55.7
07	286	58.7		29.1	302	53.6	14.5	11	14.5	13.4	55.7
S 08	301	58.9		30.1	317	27.1	14.4	11	01.1	13.4	55.7
Á 09	316	59.1	. .	31.1	332	00.5	14.4	10	47.7	13.5	55.7
B 10	331	59.3		32.1	346	33.9	14.5	10	34.2	13.6	55.7
A 11	346	59.5		33.0	1	07.4	14.5	10	20.6	13.6	55.8
D 12	1	59.8	S 0	34.0	15	40.9	14.5	N10	07.0	13.6	55.8
O 13	17	00.0		35.0	30	14.4	14.5	9	53.4	13.8	55.8
14	32	00.2		36.0	44	47.9	14.6	9	39.6	13.7	55.8
15	47	00.4	. .	36.9	59	21.5	14.5	9	25.9	13.8	55.9
16	62	00.6		37.9	73	55.0	14.6	9	12.1	13.9	55.9
17	77	00.8		38.9	88	28.6	14.6	8	58.2	13.9	55.9
18	92	01.1	S 0	39.8	103	02.2	14.5	N 8	44.3	14.0	55.9
19	107	01.3		40.8	117	35.7	14.6	8	30.3	14.0	56.0
20	122	01.5		41.8	132	09.3	14.6	8	16.3	14.0	56.0
21	137	01.7	. .	42.8	146	42.9	14.7	8	02.3	14.1	56.0
22	152	01.9		43.7	161	16.6	14.6	7	48.2	14.2	56.0
23	167	02.1		44.7	175	50.2	14.6	N 7	34.0	14.2	56.0
	S/D	16.0	*d*	1.0	S/D		14.9		15.1		15.2

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			22	23	24	25
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	03	04	04	34	05 43	22 26	25 51	01 51	04 07
N 70	03	23	04	42	05 44	23 52	26 15	02 15	04 17
68	03	38	04	48	05 44	24 30	00 30	02 32	04 24
66	03	50	04	53	05 45	24 57	00 57	02 46	04 31
64	04	00	04	58	05 45	25 17	01 17	02 58	04 36
62	04	08	05	02	05 46	25 33	01 33	03 07	04 40
60	04	15	05	05	05 46	00 16	01 47	03 16	04 44
N 58	04	20	05	07	05 47	00 33	01 58	03 23	04 48
56	04	26	05	10	05 47	00 47	02 08	03 29	04 51
54	04	30	05	12	05 47	00 59	02 17	03 35	04 54
52	04	34	05	14	05 47	01 10	02 25	03 40	04 56
50	04	37	05	15	05 48	01 19	02 32	03 45	04 58
45	04	44	05	19	05 48	01 39	02 47	03 55	05 03
N 40	04	50	05	21	05 48	01 55	02 59	04 03	05 07
35	04	54	05	23	05 49	02 09	03 09	04 10	05 11
30	04	57	05	25	05 49	02 21	03 19	04 16	05 14
20	05	01	05	27	05 49	02 41	03 34	04 27	05 19
N 10	05	04	05	28	05 49	02 58	03 48	04 36	05 24
0	05	04	05	28	05 49	03 14	04 00	04 45	05 28
S 10	05	04	05	28	05 49	03 30	04 13	04 54	05 33
20	05	01	05	27	05 49	03 48	04 26	05 03	05 38
30	04	57	05	25	05 48	04 07	04 42	05 13	05 43
35	04	53	05	23	05 48	04 19	04 50	05 19	05 46
40	04	49	05	21	05 48	04 32	05 00	05 26	05 49
45	04	44	05	18	05 47	04 47	05 12	05 34	05 53
S 50	04	37	05	15	05 47	05 06	05 26	05 43	05 58
52	04	33	05	13	05 47	05 15	05 33	05 47	06 00
54	04	29	05	11	05 46	05 25	05 40	05 52	06 02
56	04	25	05	09	05 46	05 36	05 48	05 57	06 05
58	04	20	05	07	05 46	05 49	05 57	06 03	06 08
S 60	04	14	05	04	05 45	06 04	06 08	06 10	06 11

Lat.	Ocaso Sol	Crepúsculo			Ocaso Luna			
		Civil		Náut.	22	23	24	25
°	h m	h	m	h m	h m	h m	h m	h m
N 72	18 00	19	08	20 36	21 31	19 41	18 58	18 25
N 70	17 59	19	00	20 18	20 04	19 15	18 46	18 21
68	17 58	18	54	20 03	19 25	18 56	18 36	18 18
66	17 58	18	49	19 52	18 57	18 40	18 27	18 16
64	17 58	18	45	19 43	18 36	18 27	18 20	18 13
62	17 57	18	42	19 35	18 18	18 16	18 14	18 11
60	17 57	18	39	19 28	18 04	18 07	18 09	18 10
N 58	17 57	18	36	19 23	17 52	17 59	18 04	18 08
56	17 57	18	34	19 18	17 41	17 51	18 00	18 07
54	17 56	18	32	19 13	17 31	17 45	17 56	18 06
52	17 56	18	30	19 10	17 23	17 39	17 52	18 05
50	17 56	18	28	19 06	17 15	17 34	17 49	18 04
45	17 56	18	25	18 59	16 59	17 22	17 42	18 01
N 40	17 56	18	23	18 54	16 45	17 12	17 37	17 59
35	17 56	18	21	18 50	16 34	17 04	17 32	17 58
30	17 56	18	19	18 47	16 24	16 57	17 27	17 56
20	17 55	18	17	18 43	16 06	16 44	17 19	17 54
N 10	17 55	18	16	18 41	15 51	16 33	17 12	17 51
0	17 56	18	16	18 40	15 37	16 22	17 06	17 49
S 10	17 56	18	17	18 41	15 22	16 11	16 59	17 47
20	17 56	18	18	18 44	15 07	16 00	16 52	17 45
30	17 57	18	21	18 49	14 49	15 46	16 44	17 42
35	17 57	18	22	18 52	14 38	15 39	16 39	17 40
40	17 58	18	25	18 56	14 26	15 30	16 34	17 39
45	17 58	18	27	19 02	14 12	15 19	16 28	17 36
S 50	17 59	18	31	19 09	13 54	15 07	16 20	17 34
52	17 59	18	33	19 13	13 46	15 01	16 17	17 33
54	17 59	18	35	19 17	13 36	14 54	16 13	17 31
56	18 00	18	37	19 21	13 26	14 47	16 08	17 30
58	18 00	18	40	19 27	13 13	14 39	16 04	17 28
S 60	18 01	18	43	19 33	12 59	14 29	15 58	17 27

Día	SOL				Paso Mer.	LUNA				
	Ec. Tiempo					Paso Mer.		Edad	Fase
	00h		12h			Sup.	Inf.		
d	m	s	m	s	h m	h m	h m	d	%
22	07	06	07	17	11 53	09 26	21 49	26	12
23	07	27	07	38	11 52	10 11	22 33	27	6
24	07	48	07	59	11 52	10 55	23 17	28	2

UT (HmGr)		ARIES	VENUS −3·9		MARTE −0·5		JÚPITER −2·9		SATURNO +0·4	
	d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
		° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	25 00	3 47.7	188 10.5	N 3 27.4	286 54.2	N22 04.9	359 32.3	N 0 04.7	41 42.4	S16 18.4
	01	18 50.1	203 10.1	26.2	301 55.6	05.0	14 35.1	04.5	56 45.0	18.4
	02	33 52.6	218 09.7	24.9	316 57.1	05.2	29 37.8	04.4	71 47.6	18.5
	03	48 55.1	233 09.3	23.7	331 58.5	05.4	44 40.6	04.3	86 50.2	18.5
	04	63 57.5	248 08.9	22.5	346 59.9	05.5	59 43.4	04.1	101 52.7	18.5
	05	79 00.0	263 08.5	21.2	2 01.3	05.7	74 46.1	04.0	116 55.3	18.6
	06	94 02.5	278 08.1	N 3 20.0	17 02.7	N22 05.8	89 48.9	N 0 03.9	131 57.9	S16 18.6
	07	109 04.9	293 07.7	18.8	32 04.1	06.0	104 51.7	03.7	147 00.5	18.6
	08	124 07.4	308 07.3	17.5	47 05.6	06.1	119 54.4	03.6	162 03.0	18.7
D	09	139 09.9	323 06.9	16.3	62 07.0	06.3	134 57.2	03.5	177 05.6	18.7
O	10	154 12.3	338 06.5	15.1	77 08.4	06.4	150 00.0	03.3	192 08.2	18.7
M	11	169 14.8	353 06.1	13.8	92 09.8	06.6	165 02.8	03.2	207 10.7	18.8
I	12	184 17.3	8 05.7	N 3 12.6	107 11.3	N22 06.7	180 05.5	N 0 03.1	222 13.3	S16 18.8
N	13	199 19.7	23 05.3	11.4	122 12.7	06.9	195 08.3	02.9	237 15.9	18.8
G	14	214 22.2	38 04.9	10.1	137 14.1	07.0	210 11.1	02.8	252 18.5	18.9
O	15	229 24.6	53 04.5	08.9	152 15.5	07.2	225 13.8	02.7	267 21.0	18.9
	16	244 27.1	68 04.1	07.7	167 17.0	07.3	240 16.6	02.5	282 23.6	18.9
	17	259 29.6	83 03.7	06.4	182 18.4	07.5	255 19.4	02.4	297 26.2	19.0
	18	274 32.0	98 03.3	N 3 05.2	197 19.8	N22 07.6	270 22.2	N 0 02.3	312 28.8	S16 19.0
	19	289 34.5	113 02.9	03.9	212 21.2	07.8	285 24.9	02.1	327 31.3	19.0
	20	304 37.0	128 02.5	02.7	227 22.7	07.9	300 27.7	02.0	342 33.9	19.1
	21	319 39.4	143 02.1	01.5	242 24.1	08.1	315 30.5	01.9	357 36.5	19.1
	22	334 41.9	158 01.7	3 00.2	257 25.5	08.2	330 33.2	01.7	12 39.0	19.1
	23	349 44.4	173 01.3	2 59.0	272 27.0	08.4	345 36.0	01.6	27 41.6	19.2
	26 00	4 46.8	188 00.9	N 2 57.8	287 28.4	N22 08.5	0 38.8	N 0 01.5	42 44.2	S16 19.2
	01	19 49.3	203 00.5	56.5	302 29.8	08.7	15 41.6	01.3	57 46.8	19.2
	02	34 51.8	218 00.1	55.3	317 31.3	08.8	30 44.3	01.2	72 49.3	19.3
	03	49 54.2	232 59.7	54.0	332 32.7	09.0	45 47.1	01.1	87 51.9	19.3
	04	64 56.7	247 59.3	52.8	347 34.2	09.1	60 49.9	00.9	102 54.5	19.3
	05	79 59.1	262 58.9	51.6	2 35.6	09.3	75 52.6	00.8	117 57.0	19.4
	06	95 01.6	277 58.5	N 2 50.3	17 37.0	N22 09.4	90 55.4	N 0 00.7	132 59.6	S16 19.4
	07	110 04.1	292 58.1	49.1	32 38.5	09.6	105 58.2	00.5	148 02.2	19.4
L	08	125 06.5	307 57.7	47.9	47 39.9	09.7	121 01.0	00.4	163 04.7	19.5
U	09	140 09.0	322 57.3	46.6	62 41.3	09.9	136 03.7	00.3	178 07.3	19.5
N	10	155 11.5	337 56.9	45.4	77 42.8	10.0	151 06.5	N 00.1	193 09.9	19.5
E	11	170 13.9	352 56.5	44.1	92 44.2	10.2	166 09.3	00.0	208 12.5	19.6
S	12	185 16.4	7 56.1	N 2 42.9	107 45.7	N22 10.3	181 12.0	S 0 00.1	223 15.0	S16 19.6
	13	200 18.9	22 55.8	41.7	122 47.1	10.4	196 14.8	00.3	238 17.6	19.6
	14	215 21.3	37 55.4	40.4	137 48.6	10.6	211 17.6	00.4	253 20.2	19.7
	15	230 23.8	52 55.0	39.2	152 50.0	10.7	226 20.4	00.5	268 22.7	19.7
	16	245 26.2	67 54.6	37.9	167 51.5	10.9	241 23.1	00.7	283 25.3	19.7
	17	260 28.7	82 54.2	36.7	182 52.9	11.0	256 25.9	00.8	298 27.9	19.8
	18	275 31.2	97 53.8	N 2 35.5	197 54.4	N22 11.2	271 28.7	S 0 00.9	313 30.4	S16 19.8
	19	290 33.6	112 53.4	34.2	212 55.8	11.3	286 31.4	01.1	328 33.0	19.8
	20	305 36.1	127 53.0	33.0	227 57.3	11.5	301 34.2	01.2	343 35.6	19.9
	21	320 38.6	142 52.6	31.7	242 58.7	11.6	316 37.0	01.3	358 38.1	19.9
	22	335 41.0	157 52.2	30.5	258 00.2	11.8	331 39.8	01.5	13 40.7	19.9
	23	350 43.5	172 51.8	29.3	273 01.6	11.9	346 42.5	01.6	28 43.3	20.0
	27 00	5 46.0	187 51.4	N 2 28.0	288 03.1	N22 12.1	1 45.3	S 0 01.7	43 45.8	S16 20.0
	01	20 48.4	202 51.0	26.8	303 04.5	12.2	16 48.1	01.9	58 48.4	20.0
	02	35 50.9	217 50.6	25.5	318 06.0	12.4	31 50.8	02.0	73 51.0	20.0
	03	50 53.4	232 50.2	24.3	333 07.4	12.5	46 53.6	02.1	88 53.5	20.1
	04	65 55.8	247 49.8	23.0	348 08.9	12.6	61 56.4	02.3	103 56.1	20.1
	05	80 58.3	262 49.4	21.8	3 10.4	12.8	76 59.2	02.4	118 58.7	20.1
	06	96 00.7	277 49.0	N 2 20.6	18 11.8	N22 12.9	92 01.9	S 0 02.5	134 01.3	S16 20.2
	07	111 03.2	292 48.6	19.3	33 13.3	13.1	107 04.7	02.7	149 03.8	20.2
M	08	126 05.7	307 48.2	18.1	48 14.7	13.2	122 07.5	02.8	164 06.4	20.2
A	09	141 08.1	322 47.9	16.8	63 16.2	13.4	137 10.2	02.9	179 09.0	20.3
R	10	156 10.6	337 47.5	15.6	78 17.7	13.5	152 13.0	03.1	194 11.5	20.3
T	11	171 13.1	352 47.1	14.3	93 19.1	13.7	167 15.8	03.2	209 14.1	20.3
E	12	186 15.5	7 46.7	N 2 13.1	108 20.6	N22 13.8	182 18.6	S 0 03.3	224 16.6	S16 20.4
S	13	201 18.0	22 46.3	11.9	123 22.1	13.9	197 21.3	03.5	239 19.2	20.4
	14	216 20.5	37 45.9	10.6	138 23.5	14.1	212 24.1	03.6	254 21.8	20.4
	15	231 22.9	52 45.5	09.4	153 25.0	14.2	227 26.9	03.7	269 24.3	20.5
	16	246 25.4	67 45.1	08.1	168 26.5	14.4	242 29.6	03.9	284 26.9	20.5
	17	261 27.8	82 44.7	06.9	183 27.9	14.5	257 32.4	04.0	299 29.5	20.5
	18	276 30.3	97 44.3	N 2 05.6	198 29.4	N22 14.7	272 35.2	S 0 04.1	314 32.0	S16 20.5
	19	291 32.8	112 43.9	04.4	213 30.9	14.8	287 38.0	04.3	329 34.6	20.6
	20	306 35.2	127 43.5	03.2	228 32.3	15.0	302 40.7	04.4	344 37.2	20.6
	21	321 37.7	142 43.1	01.9	243 33.8	15.1	317 43.5	04.5	359 39.7	20.6
	22	336 40.2	157 42.7	2 00.7	258 35.3	15.2	332 46.3	04.7	14 42.3	20.7
	23	351 42.6	172 42.3	N 1 59.4	273 36.8	15.4	347 49.0	04.8	29 44.9	20.7
		h m								
	Paso Mer.	23 37.0	*v* −0.4	*d* 1.2	*v* 1.4	*d* 0.1	*v* 2.8	*d* 0.1	*v* 2.6	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.9	S40 12.6
Achernar	335 21.1	S57 07.2
Acrux	173 02.9	S63 13.4
Adhara	255 07.4	S28 59.9
Aldebaran	290 41.7	N16 33.3
Alioth	166 15.2	N55 50.4
Alkaid	152 54.0	N49 12.2
Alnair	27 34.9	S46 51.2
Alnilam	275 39.6	S 1 11.1
Alphard	217 49.9	S 8 45.2
Alphecca	126 05.6	N26 38.5
Alpheratz	357 36.4	N29 13.0
Altair	62 01.7	N 8 55.8
Ankaa	353 08.6	S42 10.9
Antares	112 18.3	S26 28.9
Arcturus	145 49.9	N19 04.1
Atria	107 14.4	S69 04.3
Avior	234 15.8	S59 34.5
Bellatrix	278 24.9	N 6 22.3
Betelgeuse	270 54.1	N 7 24.8
Canopus	263 53.3	S52 42.1
Capella	280 24.6	N46 01.1
Deneb	49 26.8	N45 21.9
Denebola	182 27.2	N14 26.9
Diphda	348 48.9	S17 51.6
Dubhe	193 44.0	N61 37.8
Elnath	278 04.2	N28 37.5
Eltanin	90 43.1	N51 29.4
Enif	33 40.4	N 9 58.8
Fomalhaut	15 16.3	S29 30.1
Gacrux	171 54.4	S57 14.3
Gienah	175 45.9	S17 39.9
Hadar	148 39.3	S60 28.9
Hamal	327 53.0	N23 34.2
Kaus Aust.	83 35.0	S34 22.5
Kochab	137 20.7	N74 04.0
Markab	13 31.5	N15 19.7
Menkar	314 07.9	N 4 10.8
Menkent	148 00.2	S36 28.8
Miaplacidus	221 39.3	S69 48.3
Mirfak	308 30.7	N49 56.4
Nunki	75 50.1	S26 16.1
Peacock	53 08.4	S56 39.9
Pollux	243 19.8	N27 58.3
Procyon	244 52.9	N 5 10.2
Rasalhague	96 00.4	N12 32.8
Regulus	207 36.7	N11 51.5
Rigel	281 05.6	S 8 10.3
Rigil Kent.	139 43.5	S60 55.7
Sabik	102 05.1	S15 45.1
Schedar	349 32.6	N56 39.7
Shaula	96 13.0	S37 07.3
Sirius	258 28.0	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 48.0	S43 31.1
Vega	80 34.5	N38 48.5
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	183 14.1	11 28
Marte	282 41.6	4 50
Júpiter	355 52.0	23 53
Saturno	37 57.4	21 05

UT (HmGr)	SOL AHGr	SOL Dec	LUNA AHGr	LUNA v	LUNA Dec	LUNA d	LUNA Ph
d h	° ′	° ′	° ′	′	° ′	′	′
25 00	182 02.3	S 0 45.7	190 23.8	14.7	N 7 19.8	14.2	56.1
01	197 02.6	46.7	204 57.5	14.6	7 05.6	14.3	56.1
02	212 02.8	47.6	219 31.1	14.6	6 51.3	14.3	56.1
03	227 03.0	48.6	234 04.7	14.7	6 37.0	14.4	56.1
04	242 03.2	49.6	248 38.4	14.6	6 22.6	14.4	56.2
05	257 03.4	50.6	263 12.0	14.7	6 08.2	14.4	56.2
06	272 03.6	S 0 51.5	277 45.7	14.7	N 5 53.8	14.5	56.2
07	287 03.9	52.5	292 19.4	14.6	5 39.3	14.5	56.2
08	302 04.1	53.5	306 53.0	14.7	5 24.8	14.5	56.3
09	317 04.3	54.5	321 26.7	14.6	5 10.3	14.6	56.3
10	332 04.5	55.4	336 00.3	14.7	4 55.7	14.6	56.3
11	347 04.7	56.4	350 34.0	14.6	4 41.1	14.6	56.3
12	2 04.9	S 0 57.4	5 07.6	14.7	N 4 26.5	14.7	56.3
13	17 05.2	58.4	19 41.3	14.6	4 11.8	14.7	56.4
14	32 05.4	0 59.3	34 14.9	14.6	3 57.1	14.8	56.4
15	47 05.6	1 00.3	48 48.5	14.6	3 42.3	14.7	56.4
16	62 05.8	01.3	63 22.1	14.6	3 27.6	14.8	56.4
17	77 06.0	02.2	77 55.7	14.7	3 12.8	14.8	56.5
18	92 06.2	S 1 03.2	92 29.4	14.5	N 2 58.0	14.9	56.5
19	107 06.4	04.2	107 02.9	14.6	2 43.1	14.8	56.5
20	122 06.7	05.2	121 36.5	14.6	2 28.3	14.9	56.5
21	137 06.9	06.1	136 10.1	14.5	2 13.4	14.9	56.6
22	152 07.1	07.1	150 43.6	14.6	1 58.5	14.9	56.6
23	167 07.3	08.1	165 17.2	14.5	1 43.6	15.0	56.6
26 00	182 07.5	S 1 09.1	179 50.7	14.5	N 1 28.6	15.0	56.6
01	197 07.7	10.0	194 24.2	14.5	1 13.6	15.0	56.6
02	212 07.9	11.0	208 57.7	14.5	0 58.6	15.0	56.7
03	227 08.2	12.0	223 31.2	14.4	0 43.6	15.0	56.7
04	242 08.4	13.0	238 04.6	14.4	0 28.6	15.0	56.7
05	257 08.6	13.9	252 38.0	14.4	N 0 13.6	15.0	56.7
06	272 08.8	S 1 14.9	267 11.4	14.4	S 0 01.4	15.1	56.8
07	287 09.0	15.9	281 44.8	14.4	0 16.5	15.1	56.8
08	302 09.2	16.9	296 18.2	14.3	0 31.6	15.1	56.8
09	317 09.4	17.8	310 51.5	14.3	0 46.7	15.0	56.8
10	332 09.7	18.8	325 24.8	14.3	1 01.7	15.1	56.8
11	347 09.9	19.8	339 58.1	14.2	1 16.8	15.1	56.9
12	2 10.1	S 1 20.8	354 31.3	14.3	S 1 31.9	15.1	56.9
13	17 10.3	21.7	9 04.6	14.2	1 47.0	15.2	56.9
14	32 10.5	22.7	23 37.8	14.1	2 02.2	15.1	56.9
15	47 10.7	23.7	38 10.9	14.1	2 17.3	15.1	57.0
16	62 10.9	24.6	52 44.0	14.1	2 32.4	15.1	57.0
17	77 11.1	25.6	67 17.1	14.1	2 47.5	15.1	57.0
18	92 11.4	S 1 26.6	81 50.2	14.0	S 3 02.6	15.1	57.0
19	107 11.6	27.6	96 23.2	14.0	3 17.7	15.1	57.1
20	122 11.8	28.5	110 56.2	13.9	3 32.8	15.1	57.1
21	137 12.0	29.5	125 29.1	14.0	3 47.9	15.1	57.1
22	152 12.2	30.5	140 02.1	13.8	4 03.0	15.1	57.1
23	167 12.4	31.5	154 34.9	13.9	4 18.1	15.1	57.1
27 00	182 12.6	S 1 32.4	169 07.8	13.7	S 4 33.2	15.1	57.2
01	197 12.8	33.4	183 40.5	13.8	4 48.3	15.1	57.2
02	212 13.1	34.4	198 13.3	13.7	5 03.4	15.0	57.2
03	227 13.3	35.4	212 46.0	13.6	5 18.4	15.1	57.2
04	242 13.5	36.3	227 18.6	13.6	5 33.5	15.0	57.2
05	257 13.7	37.3	241 51.2	13.6	5 48.5	15.0	57.3
06	272 13.9	S 1 38.3	256 23.8	13.5	S 6 03.5	15.0	57.3
07	287 14.1	39.3	270 56.3	13.5	6 18.5	15.0	57.3
08	302 14.3	40.2	285 28.8	13.4	6 33.5	15.0	57.3
09	317 14.5	41.2	300 01.2	13.3	6 48.5	14.9	57.4
10	332 14.8	42.2	314 33.5	13.3	7 03.4	14.9	57.4
11	347 15.0	43.1	329 05.8	13.3	7 18.3	14.9	57.4
12	2 15.2	S 1 44.1	343 38.1	13.2	S 7 33.2	14.9	57.4
13	17 15.4	45.1	358 10.3	13.1	7 48.1	14.8	57.4
14	32 15.6	46.1	12 42.4	13.1	8 02.9	14.9	57.5
15	47 15.8	47.0	27 14.5	13.0	8 17.8	14.7	57.5
16	62 16.0	48.0	41 46.5	13.0	8 32.5	14.8	57.5
17	77 16.2	49.0	56 18.5	12.9	8 47.3	14.7	57.5
18	92 16.4	S 1 50.0	70 50.4	12.8	S 9 02.0	14.7	57.5
19	107 16.7	50.9	85 22.2	12.8	9 16.7	14.7	57.6
20	122 16.9	51.9	99 54.0	12.7	9 31.4	14.6	57.6
21	137 17.1	52.9	114 25.7	12.7	9 46.0	14.6	57.6
22	152 17.3	53.9	128 57.4	12.5	10 00.6	14.6	57.6
23	167 17.5	54.8	143 28.9	12.6	S10 15.2	14.5	57.6
	S/D 16.0	d 1.0	S/D	15.4		15.5	15.6

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 25	Orto Luna 26	Orto Luna 27	Orto Luna 28
°	h m	h m	h m	h m	h m	h m	h m
N 72	03 22	04 48	05 56	04 07	06 14	08 25	10 54
N 70	03 38	04 54	05 55	04 17	06 14	08 15	10 27
68	03 51	04 59	05 55	04 24	06 14	08 06	10 07
66	04 01	05 03	05 54	04 31	06 14	07 59	09 52
64	04 09	05 07	05 54	04 36	06 13	07 53	09 39
62	04 16	05 09	05 54	04 40	06 13	07 48	09 28
60	04 22	05 12	05 53	04 44	06 13	07 44	09 19
N 58	04 27	05 14	05 53	04 48	06 13	07 40	09 11
56	04 32	05 16	05 53	04 51	06 13	07 37	09 04
54	04 36	05 17	05 53	04 54	06 13	07 34	08 58
52	04 39	05 19	05 52	04 56	06 13	07 31	08 53
50	04 42	05 20	05 52	04 58	06 13	07 29	08 48
45	04 48	05 22	05 52	05 03	06 13	07 23	08 37
N 40	04 53	05 24	05 51	05 07	06 12	07 19	08 28
35	04 56	05 26	05 51	05 11	06 12	07 15	08 20
30	04 59	05 27	05 50	05 14	06 12	07 12	08 14
20	05 02	05 28	05 50	05 19	06 12	07 06	08 02
N 10	05 04	05 28	05 49	05 24	06 12	07 01	07 53
0	05 03	05 27	05 48	05 28	06 12	06 57	07 43
S 10	05 02	05 26	05 47	05 33	06 12	06 52	07 34
20	04 58	05 24	05 46	05 38	06 12	06 47	07 25
30	04 53	05 21	05 45	05 43	06 12	06 42	07 14
35	04 49	05 19	05 44	05 46	06 12	06 39	07 07
40	04 44	05 16	05 43	05 49	06 12	06 35	07 00
45	04 38	05 12	05 42	05 53	06 12	06 31	06 52
S 50	04 30	05 08	05 40	05 58	06 12	06 26	06 42
52	04 26	05 06	05 40	06 00	06 12	06 24	06 38
54	04 21	05 04	05 39	06 02	06 12	06 22	06 33
56	04 16	05 01	05 38	06 05	06 12	06 19	06 28
58	04 10	04 58	05 37	06 08	06 12	06 16	06 22
S 60	04 04	04 54	05 36	06 11	06 12	06 13	06 15

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 25	Ocaso Luna 26	Ocaso Luna 27	Ocaso Luna 28
°	h m	h m	h m	h m	h m	h m	h m
N 72	17 44	18 52	20 17	18 25	17 54	17 19	16 29
N 70	17 45	18 46	20 01	18 21	17 58	17 32	16 58
68	17 46	18 41	19 49	18 18	18 01	17 43	17 20
66	17 47	18 37	19 39	18 16	18 04	17 52	17 37
64	17 47	18 34	19 31	18 13	18 06	17 59	17 51
62	17 48	18 32	19 24	18 11	18 09	18 06	18 03
60	17 48	18 29	19 19	18 10	18 11	18 12	18 14
N 58	17 48	18 27	19 14	18 08	18 12	18 17	18 23
56	17 49	18 26	19 09	18 07	18 14	18 21	18 31
54	17 49	18 24	19 06	18 06	18 15	18 25	18 38
52	17 49	18 23	19 02	18 05	18 16	18 29	18 44
50	17 50	18 22	18 59	18 04	18 18	18 32	18 50
45	17 50	18 19	18 54	18 01	18 20	18 40	19 02
N 40	17 51	18 18	18 49	17 59	18 22	18 46	19 13
35	17 51	18 16	18 46	17 58	18 24	18 51	19 22
30	17 52	18 16	18 43	17 56	18 26	18 56	19 30
20	17 53	18 15	18 40	17 54	18 28	19 04	19 43
N 10	17 54	18 15	18 39	17 51	18 31	19 12	19 55
0	17 55	18 15	18 39	17 49	18 33	19 19	20 07
S 10	17 56	18 17	18 41	17 47	18 35	19 25	20 18
20	17 57	18 19	18 45	17 45	18 38	19 33	20 30
30	17 58	18 22	18 50	17 42	18 41	19 41	20 44
35	17 59	18 25	18 54	17 40	18 42	19 46	20 52
40	18 00	18 28	18 59	17 39	18 44	19 52	21 02
45	18 02	18 31	19 06	17 36	18 46	19 58	21 13
S 50	18 03	18 36	19 14	17 34	18 49	20 06	21 26
52	18 04	18 38	19 18	17 33	18 50	20 10	21 32
54	18 05	18 40	19 23	17 31	18 51	20 14	21 39
56	18 06	18 43	19 28	17 30	18 53	20 18	21 47
58	18 07	18 46	19 34	17 28	18 54	20 23	21 56
S 60	18 08	18 50	19 41	17 27	18 56	20 29	22 06

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
25	08 09	08 19	11 52	11 39	24 01	29 0	
26	08 30	08 40	11 51	12 23	00 01	01 0	●
27	08 50	09 00	11 51	13 08	00 45	02 3	

DOMINGO LUNES MARTES

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·6		JÚPITER −2·9		SATURNO +0·4	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
28 00	6 45.1	187 41.9	N 1 58.2	288 38.2	N22 15.5	2 51.8	S 0 04.9	44 47.4	S16 20.7
01	21 47.6	202 41.6	56.9	303 39.7	15.7	17 54.6	05.1	59 50.0	20.8
02	36 50.0	217 41.2	55.7	318 41.2	15.8	32 57.4	05.2	74 52.6	20.8
03	51 52.5	232 40.8	54.4	333 42.7	16.0	48 00.1	05.3	89 55.1	20.8
04	66 55.0	247 40.4	53.2	348 44.2	16.1	63 02.9	05.5	104 57.7	20.9
05	81 57.4	262 40.0	52.0	3 45.6	16.2	78 05.7	05.6	120 00.2	20.9
06	96 59.9	277 39.6	N 1 50.7	18 47.1	N22 16.4	93 08.4	S 0 05.7	135 02.8	S16 20.9
07	112 02.3	292 39.2	49.5	33 48.6	16.5	108 11.2	05.9	150 05.4	20.9
08	127 04.8	307 38.8	48.2	48 50.1	16.7	123 14.0	06.0	165 07.9	21.0
M 09	142 07.3	322 38.4	47.0	63 51.6	16.8	138 16.8	06.1	180 10.5	21.0
I 10	157 09.7	337 38.0	45.7	78 53.0	17.0	153 19.5	06.3	195 13.1	21.0
É 11	172 12.2	352 37.6	44.5	93 54.5	17.1	168 22.3	06.4	210 15.6	21.1
R 12	187 14.7	7 37.2	N 1 43.2	108 56.0	N22 17.2	183 25.1	S 0 06.5	225 18.2	S16 21.1
C 13	202 17.1	22 36.8	42.0	123 57.5	17.4	198 27.8	06.7	240 20.8	21.1
O 14	217 19.6	37 36.4	40.7	138 59.0	17.5	213 30.6	06.8	255 23.3	21.2
L 15	232 22.1	52 36.1	39.5	154 00.5	17.7	228 33.4	06.9	270 25.9	21.2
E 16	247 24.5	67 35.7	38.2	169 02.0	17.8	243 36.2	07.1	285 28.4	21.2
S 17	262 27.0	82 35.3	37.0	184 03.5	17.9	258 38.9	07.2	300 31.0	21.2
18	277 29.4	97 34.9	N 1 35.7	199 05.0	N22 18.1	273 41.7	S 0 07.3	315 33.6	S16 21.3
19	292 31.9	112 34.5	34.5	214 06.4	18.2	288 44.5	07.5	330 36.1	21.3
20	307 34.4	127 34.1	33.3	229 07.9	18.4	303 47.2	07.6	345 38.7	21.3
21	322 36.8	142 33.7	32.0	244 09.4	18.5	318 50.0	07.7	0 41.2	21.4
22	337 39.3	157 33.3	30.8	259 10.9	18.6	333 52.8	07.9	15 43.8	21.4
23	352 41.8	172 32.9	29.5	274 12.4	18.8	348 55.6	08.0	30 46.4	21.4
29 00	7 44.2	187 32.5	N 1 28.3	289 13.9	N22 18.9	3 58.3	S 0 08.1	45 48.9	S16 21.4
01	22 46.7	202 32.1	27.0	304 15.4	19.1	19 01.1	08.3	60 51.5	21.5
02	37 49.2	217 31.7	25.8	319 16.9	19.2	34 03.9	08.4	75 54.0	21.5
03	52 51.6	232 31.3	24.5	334 18.4	19.3	49 06.6	08.5	90 56.6	21.5
04	67 54.1	247 31.0	23.3	349 19.9	19.5	64 09.4	08.7	105 59.2	21.6
05	82 56.6	262 30.6	22.0	4 21.4	19.6	79 12.2	08.8	121 01.7	21.6
06	97 59.0	277 30.2	N 1 20.8	19 22.9	N22 19.8	94 15.0	S 0 08.9	136 04.3	S16 21.6
07	113 01.5	292 29.8	19.5	34 24.4	19.9	109 17.7	09.1	151 06.8	21.6
08	128 03.9	307 29.4	18.3	49 25.9	20.0	124 20.5	09.2	166 09.4	21.7
J 09	143 06.4	322 29.0	17.0	64 27.4	20.2	139 23.3	09.3	181 12.0	21.7
U 10	158 08.9	337 28.6	15.8	79 28.9	20.3	154 26.0	09.5	196 14.5	21.7
E 11	173 11.3	352 28.2	14.5	94 30.5	20.5	169 28.8	09.6	211 17.1	21.8
V 12	188 13.8	7 27.8	N 1 13.3	109 32.0	N22 20.6	184 31.6	S 0 09.7	226 19.6	S16 21.8
E 13	203 16.3	22 27.4	12.0	124 33.5	20.7	199 34.3	09.9	241 22.2	21.8
S 14	218 18.7	37 27.0	10.8	139 35.0	20.9	214 37.1	10.0	256 24.8	21.9
15	233 21.2	52 26.6	09.5	154 36.5	21.0	229 39.9	10.1	271 27.3	21.9
16	248 23.7	67 26.3	08.3	169 38.0	21.2	244 42.7	10.3	286 29.9	21.9
17	263 26.1	82 25.9	07.0	184 39.5	21.3	259 45.4	10.4	301 32.4	21.9
18	278 28.6	97 25.5	N 1 05.8	199 41.0	N22 21.4	274 48.2	S 0 10.5	316 35.0	S16 22.0
19	293 31.1	112 25.1	04.5	214 42.5	21.6	289 51.0	10.6	331 37.6	22.0
20	308 33.5	127 24.7	03.3	229 44.1	21.7	304 53.7	10.8	346 40.1	22.0
21	323 36.0	142 24.3	02.0	244 45.6	21.8	319 56.5	10.9	1 42.7	22.0
22	338 38.4	157 23.9	1 00.8	259 47.1	22.0	334 59.3	11.0	16 45.2	22.1
23	353 40.9	172 23.5	0 59.5	274 48.6	22.1	350 02.1	11.2	31 47.8	22.1
30 00	8 43.4	187 23.1	N 0 58.3	289 50.1	N22 22.3	5 04.8	S 0 11.3	46 50.3	S16 22.1
01	23 45.8	202 22.7	57.0	304 51.7	22.4	20 07.6	11.4	61 52.9	22.2
02	38 48.3	217 22.3	55.8	319 53.2	22.5	35 10.4	11.6	76 55.5	22.2
03	53 50.8	232 22.0	54.5	334 54.7	22.7	50 13.1	11.7	91 58.0	22.2
04	68 53.2	247 21.6	53.3	349 56.2	22.8	65 15.9	11.8	107 00.6	22.2
05	83 55.7	262 21.2	52.0	4 57.7	22.9	80 18.7	12.0	122 03.1	22.3
06	98 58.2	277 20.8	N 0 50.8	19 59.3	N22 23.1	95 21.4	S 0 12.1	137 05.7	S16 22.3
07	114 00.6	292 20.4	49.5	35 00.8	23.2	110 24.2	12.2	152 08.2	22.3
V 08	129 03.1	307 20.0	48.3	50 02.3	23.4	125 27.0	12.4	167 10.8	22.4
I 09	144 05.5	322 19.6	47.0	65 03.8	23.5	140 29.8	12.5	182 13.3	22.4
E 10	159 08.0	337 19.2	45.8	80 05.4	23.6	155 32.5	12.6	197 15.9	22.4
R 11	174 10.5	352 18.8	44.5	95 06.9	23.8	170 35.3	12.8	212 18.5	22.4
N 12	189 12.9	7 18.4	N 0 43.3	110 08.4	N22 23.9	185 38.1	S 0 12.9	227 21.0	S16 22.5
E 13	204 15.4	22 18.0	42.0	125 10.0	24.0	200 40.8	13.0	242 23.6	22.5
S 14	219 17.9	37 17.6	40.8	140 11.5	24.2	215 43.6	13.2	257 26.1	22.5
15	234 20.3	52 17.3	39.5	155 13.0	24.3	230 46.4	13.3	272 28.7	22.5
16	249 22.8	67 16.9	38.3	170 14.6	24.4	245 49.2	13.4	287 31.2	22.6
17	264 25.3	82 16.5	37.0	185 16.1	24.6	260 51.9	13.6	302 33.8	22.6
18	279 27.7	97 16.1	N 0 35.8	200 17.6	N22 24.7	275 54.7	S 0 13.7	317 36.3	S16 22.6
19	294 30.2	112 15.7	34.5	215 19.2	24.8	290 57.5	13.8	332 38.9	22.7
20	309 32.7	127 15.3	33.3	230 20.7	25.0	306 00.2	13.9	347 41.4	22.7
21	324 35.1	142 14.9	32.0	245 22.3	25.1	321 03.0	14.1	2 44.0	22.7
22	339 37.6	157 14.5	30.8	260 23.8	25.3	336 05.8	14.2	17 46.6	22.7
23	354 40.0	172 14.1	29.5	275 25.3	25.4	351 08.5	14.3	32 49.1	22.8
	h m								
Paso Mer.	23 25.2	*v* −0.4	*d* 1.2	*v* 1.5	*d* 0.1	*v* 2.8	*d* 0.1	*v* 2.6	*d* 0.0

ESTRELLAS		
Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.9	S40 12.6
Achernar	335 21.1	S57 07.2
Acrux	173 02.9	S63 13.4
Adhara	255 07.4	S28 59.9
Aldebaran	290 41.6	N16 33.3
Alioth	166 15.2	N55 50.4
Alkaid	152 54.0	N49 12.2
Alnair	27 34.9	S46 51.2
Alnilam	275 39.6	S 1 11.1
Alphard	217 49.8	S 8 45.2
Alphecca	126 05.6	N26 38.5
Alpheratz	357 36.4	N29 13.0
Altair	62 01.7	N 8 55.8
Ankaa	353 08.6	S42 10.9
Antares	112 18.3	S26 28.9
Arcturus	145 50.0	N19 04.1
Atria	107 14.5	S69 04.3
Avior	234 15.8	S59 34.5
Bellatrix	278 24.8	N 6 22.3
Betelgeuse	270 54.1	N 7 24.8
Canopus	263 53.2	S52 42.1
Capella	280 24.6	N46 01.1
Deneb	49 26.8	N45 21.9
Denebola	182 27.2	N14 26.9
Diphda	348 48.9	S17 51.7
Dubhe	193 44.0	N61 37.7
Elnath	278 04.2	N28 37.5
Eltanin	90 43.1	N51 29.4
Enif	33 40.4	N 9 58.8
Fomalhaut	15 16.3	S29 30.1
Gacrux	171 54.4	S57 14.3
Gienah	175 45.9	S17 39.9
Hadar	148 39.3	S60 28.9
Hamal	327 53.0	N23 34.2
Kaus Aust.	83 35.0	S34 22.5
Kochab	137 20.7	N74 03.9
Markab	13 31.5	N15 19.7
Menkar	314 07.9	N 4 10.8
Menkent	148 00.2	S36 28.8
Miaplacidus	221 39.3	S69 48.3
Mirfak	308 30.6	N49 56.4
Nunki	75 50.1	S26 16.1
Peacock	53 08.4	S56 39.9
Pollux	243 19.8	N27 58.3
Procyon	244 52.9	N 5 10.1
Rasalhague	96 00.4	N12 32.8
Regulus	207 36.7	N11 51.5
Rigel	281 05.6	S 8 10.3
Rigil Kent.	139 43.5	S60 55.7
Sabik	102 05.1	S15 45.1
Schedar	349 32.6	N56 39.7
Shaula	96 13.0	S37 07.3
Sirius	258 27.9	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 48.0	S43 31.1
Vega	80 34.5	N38 48.5
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	179 48.3	11 30
Marte	281 29.7	4 43
Júpiter	356 14.1	23 40
Saturno	38 04.7	20 53

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	°	′	′	
28 00	182	17.7	S 1	55.8	158	00.5	12.4	S10	29.7	14.5	57.7
01	197	17.9		56.8	172	31.9	12.4	10	44.2	14.4	57.7
02	212	18.1		57.7	187	03.3	12.3	10	58.6	14.4	57.7
03	227	18.3	. .	58.7	201	34.6	12.3	11	13.0	14.3	57.7
04	242	18.5	1	59.7	216	05.9	12.1	11	27.3	14.3	57.7
05	257	18.8	2	00.7	230	37.0	12.1	11	41.6	14.3	57.8
06	272	19.0	S 2	01.6	245	08.1	12.0	S11	55.9	14.2	57.8
07	287	19.2		02.6	259	39.1	12.0	12	10.1	14.1	57.8
M 08	302	19.4		03.6	274	10.1	11.9	12	24.2	14.1	57.8
I 09	317	19.6	. .	04.6	288	41.0	11.8	12	38.3	14.1	57.8
É 10	332	19.8		05.5	303	11.8	11.7	12	52.4	14.0	57.9
R 11	347	20.0		06.5	317	42.5	11.6	13	06.4	13.9	57.9
C 12	2	20.2	S 2	07.5	332	13.1	11.6	S13	20.3	13.9	57.9
O 13	17	20.4		08.4	346	43.7	11.5	13	34.2	13.8	57.9
L 14	32	20.6		09.4	1	14.2	11.4	13	48.0	13.8	57.9
E 15	47	20.9	. .	10.4	15	44.6	11.3	14	01.8	13.6	57.9
S 16	62	21.1		11.4	30	14.9	11.2	14	15.4	13.7	58.0
17	77	21.3		12.3	44	45.1	11.2	14	29.1	13.5	58.0
18	92	21.5	S 2	13.3	59	15.3	11.0	S14	42.6	13.5	58.0
19	107	21.7		14.3	73	45.3	11.0	14	56.1	13.5	58.0
20	122	21.9		15.3	88	15.3	10.9	15	09.6	13.3	58.0
21	137	22.1	. .	16.2	102	45.2	10.8	15	22.9	13.3	58.1
22	152	22.3		17.2	117	15.0	10.7	15	36.2	13.2	58.1
23	167	22.5		18.2	131	44.7	10.7	15	49.4	13.1	58.1
29 00	182	22.7	S 2	19.1	146	14.4	10.5	S16	02.5	13.1	58.1
01	197	22.9		20.1	160	43.9	10.5	16	15.6	13.0	58.1
02	212	23.1		21.1	175	13.4	10.3	16	28.6	12.9	58.1
03	227	23.4	. .	22.1	189	42.7	10.3	16	41.5	12.8	58.2
04	242	23.6		23.0	204	12.0	10.2	16	54.3	12.7	58.2
05	257	23.8		24.0	218	41.2	10.1	17	07.0	12.7	58.2
06	272	24.0	S 2	25.0	233	10.3	10.0	S17	19.7	12.6	58.2
07	287	24.2		26.0	247	39.3	9.9	17	32.3	12.4	58.2
J 08	302	24.4		26.9	262	08.2	9.8	17	44.7	12.4	58.2
U 09	317	24.6	. .	27.9	276	37.0	9.7	17	57.1	12.3	58.3
E 10	332	24.8		28.9	291	05.7	9.6	18	09.4	12.2	58.3
V 11	347	25.0		29.8	305	34.3	9.5	18	21.6	12.2	58.3
E 12	2	25.2	S 2	30.8	320	02.8	9.5	S18	33.8	12.0	58.3
S 13	17	25.4		31.8	334	31.3	9.3	18	45.8	11.9	58.3
14	32	25.6		32.8	348	59.6	9.2	18	57.7	11.8	58.3
15	47	25.8	. .	33.7	3	27.8	9.2	19	09.5	11.7	58.4
16	62	26.0		34.7	17	56.0	9.0	19	21.2	11.7	58.4
17	77	26.2		35.7	32	24.0	8.9	19	32.9	11.5	58.4
18	92	26.5	S 2	36.6	46	51.9	8.9	S19	44.4	11.4	58.4
19	107	26.7		37.6	61	19.8	8.7	19	55.8	11.3	58.4
20	122	26.9		38.6	75	47.5	8.7	20	07.1	11.2	58.4
21	137	27.1	. .	39.6	90	15.2	8.5	20	18.3	11.1	58.4
22	152	27.3		40.5	104	42.7	8.5	20	29.4	10.9	58.5
23	167	27.5		41.5	119	10.2	8.3	20	40.3	10.9	58.5
30 00	182	27.7	S 2	42.5	133	37.5	8.3	S20	51.2	10.8	58.5
01	197	27.9		43.4	148	04.8	8.1	21	02.0	10.6	58.5
02	212	28.1		44.4	162	31.9	8.1	21	12.6	10.5	58.5
03	227	28.3	. .	45.4	176	59.0	7.9	21	23.1	10.4	58.5
04	242	28.5		46.4	191	25.9	7.9	21	33.5	10.3	58.5
05	257	28.7		47.3	205	52.8	7.7	21	43.8	10.1	58.6
06	272	28.9	S 2	48.3	220	19.5	7.7	S21	53.9	10.0	58.6
07	287	29.1		49.3	234	46.2	7.5	22	03.9	9.9	58.6
V 08	302	29.3		50.2	249	12.7	7.5	22	13.8	9.8	58.6
I 09	317	29.5	. .	51.2	263	39.2	7.4	22	23.6	9.6	58.6
E 10	332	29.7		52.2	278	05.6	7.2	22	33.2	9.5	58.6
R 11	347	29.9		53.2	292	31.8	7.2	22	42.7	9.4	58.6
N 12	2	30.1	S 2	54.1	306	58.0	7.1	S22	52.1	9.3	58.7
E 13	17	30.4		55.1	321	24.1	6.9	23	01.4	9.1	58.7
S 14	32	30.6		56.1	335	50.0	6.9	23	10.5	8.9	58.7
15	47	30.8	. .	57.0	350	15.9	6.8	23	19.4	8.9	58.7
16	62	31.0		58.0	4	41.7	6.7	23	28.3	8.7	58.7
17	77	31.2		59.0	19	07.4	6.6	23	37.0	8.5	58.7
18	92	31.4	S 2	59.9	33	33.0	6.5	S23	45.5	8.4	58.7
19	107	31.6	3	00.9	47	58.5	6.4	23	53.9	8.3	58.7
20	122	31.8		01.9	62	23.9	6.3	24	02.2	8.1	58.8
21	137	32.0	. .	02.9	76	49.2	6.2	24	10.3	8.0	58.8
22	152	32.2		03.8	91	14.4	6.2	24	18.3	7.8	58.8
23	167	32.4		04.8	105	39.6	6.0	S24	26.1	7.7	58.8
	S/D	16.0	d	1.0	S/D		15.8		15.9		16.0

Lat.	Aurora				Orto Sol		Orto Luna							
	Náut.		Civil				28		29		30		1	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	03	38	05	02	06	09	10	54	▬		▬		▬	
N 70	03	52	05	06	06	07	10	27	13	27	▬		▬	
68	04	03	05	10	06	05	10	07	12	31	▬		▬	
66	04	12	05	13	06	04	09	52	11	58	14	45	▬	
64	04	19	05	15	06	03	09	39	11	34	13	44	▬	
62	04	25	05	17	06	01	09	28	11	15	13	10	15	10
60	04	30	05	19	06	00	09	19	10	59	12	45	14	29
N 58	04	34	05	20	06	00	09	11	10	47	12	25	14	01
56	04	38	05	22	05	59	09	04	10	35	12	09	13	40
54	04	41	05	23	05	58	08	58	10	26	11	55	13	22
52	04	44	05	24	05	57	08	53	10	17	11	43	13	07
50	04	47	05	25	05	57	08	48	10	09	11	32	12	53
45	04	52	05	26	05	55	08	37	09	53	11	10	12	27
N 40	04	56	05	27	05	54	08	28	09	39	10	53	12	05
35	04	58	05	28	05	53	08	20	09	28	10	38	11	48
30	05	01	05	28	05	52	08	14	09	18	10	25	11	33
20	05	03	05	28	05	50	08	02	09	01	10	03	11	07
N 10	05	03	05	28	05	49	07	53	08	47	09	44	10	45
0	05	02	05	26	05	47	07	43	08	33	09	27	10	25
S 10	05	00	05	24	05	45	07	34	08	20	09	10	10	05
20	04	56	05	21	05	43	07	25	08	05	08	51	09	43
30	04	49	05	17	05	41	07	14	07	49	08	30	09	18
35	04	45	05	14	05	40	07	07	07	40	08	18	09	03
40	04	39	05	11	05	38	07	00	07	29	08	04	08	47
45	04	32	05	07	05	36	06	52	07	17	07	47	08	26
S 50	04	23	05	01	05	34	06	42	07	02	07	27	08	01
52	04	18	04	59	05	33	06	38	06	55	07	17	07	49
54	04	13	04	56	05	31	06	33	06	47	07	07	07	35
56	04	08	04	53	05	30	06	28	06	39	06	54	07	19
58	04	01	04	49	05	29	06	22	06	29	06	40	07	00
S 60	03	54	04	45	05	27	06	15	06	18	06	24	06	37

Lat.	Ocaso Sol		Crepúsculo				Ocaso Luna							
			Civil		Náut.		28		29		30		1	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	17	29	18	36	19	59	16	29	▬		▬		▬	
N 70	17	31	18	32	19	45	16	58	15	44	▬		▬	
68	17	33	18	28	19	35	17	20	16	42	▬		▬	
66	17	35	18	26	19	27	17	37	17	16	16	22	▬	
64	17	36	18	24	19	20	17	51	17	41	17	25	▬	
62	17	38	18	22	19	14	18	03	18	01	18	00	18	02
60	17	39	18	20	19	09	18	14	18	17	18	25	18	43
N 58	17	40	18	19	19	05	18	23	18	31	18	46	19	12
56	17	41	18	18	19	01	18	31	18	43	19	02	19	34
54	17	42	18	17	18	58	18	38	18	54	19	17	19	52
52	17	42	18	16	18	55	18	44	19	03	19	29	20	07
50	17	43	18	15	18	53	18	50	19	11	19	40	20	21
45	17	45	18	14	18	48	19	02	19	29	20	04	20	48
N 40	17	46	18	13	18	44	19	13	19	44	20	22	21	10
35	17	47	18	12	18	42	19	22	19	57	20	38	21	28
30	17	48	18	12	18	40	19	30	20	07	20	52	21	43
20	17	50	18	12	18	38	19	43	20	26	21	15	22	10
N 10	17	52	18	13	18	37	19	55	20	43	21	35	22	33
0	17	54	18	14	18	38	20	07	20	58	21	54	22	54
S 10	17	55	18	16	18	41	20	18	21	14	22	13	23	15
20	17	58	18	20	18	45	20	30	21	31	22	34	23	38
30	18	00	18	24	18	52	20	44	21	50	22	57	24	04
35	18	02	18	27	18	57	20	52	22	01	23	11	24	20
40	18	03	18	31	19	03	21	02	22	14	23	27	24	38
45	18	05	18	35	19	10	21	13	22	29	23	47	25	00
S 50	18	08	18	40	19	19	21	26	22	49	24	11	00	11
52	18	09	18	43	19	24	21	32	22	58	24	23	00	23
54	18	10	18	46	19	29	21	39	23	08	24	36	00	36
56	18	12	18	49	19	35	21	47	23	19	24	52	00	52
58	18	13	18	53	19	41	21	56	23	33	25	10	01	10
S 60	18	15	18	57	19	49	22	06	23	48	25	33	01	33

Día	SOL						LUNA					
	Ec. Tiempo				Paso Mer.		Paso Mer.				Edad	Fase
	00^h		12^h				Sup.		Inf.			
d	m	s	m	s	h	m	h	m	h	m	d	%
28	09	10	09	20	11	51	13	55	01	31	03	8
29	09	30	09	40	11	50	14	46	02	20	04	14
30	09	50	10	00	11	50	15	40	03	13	05	23

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·6		JÚPITER −2·9		SATURNO +0·4		ESTRELLAS		
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec	Nombre	AHS	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′		° ′	° ′
1 00	9 42.5	187 13.7	N 0 28.3	290 26.9	N22 25.5	6 11.3	S 0 14.5	47 51.7	S16 22.8	Acamar	315 12.9	S40 12.6
01	24 45.0	202 13.3	27.0	305 28.4	25.7	21 14.1	14.6	62 54.2	22.8	Achernar	335 21.0	S57 07.2
02	39 47.4	217 13.0	25.7	320 30.0	25.8	36 16.8	14.7	77 56.8	22.8	Acrux	173 02.9	S63 13.4
03	54 49.9	232 12.6	. . 24.5	335 31.5	. . 25.9	51 19.6	. . 14.9	92 59.3	. . 22.9	Adhara	255 07.4	S28 59.9
04	69 52.4	247 12.2	23.2	350 33.1	26.1	66 22.4	15.0	108 01.9	22.9	Aldebaran	290 41.6	N16 33.3
05	84 54.8	262 11.8	22.0	5 34.6	26.2	81 25.2	15.1	123 04.4	22.9			
06	99 57.3	277 11.4	N 0 20.7	20 36.1	N22 26.3	96 27.9	S 0 15.3	138 07.0	S16 22.9	Alioth	166 15.2	N55 50.3
07	114 59.8	292 11.0	19.5	35 37.7	26.5	111 30.7	15.4	153 09.5	23.0	Alkaid	152 54.0	N49 12.2
08	130 02.2	307 10.6	18.2	50 39.2	26.6	126 33.5	15.5	168 12.1	23.0	Alnair	27 34.9	S46 51.2
S 09	145 04.7	322 10.2	. . 17.0	65 40.8	. . 26.7	141 36.2	. . 15.7	183 14.6	. . 23.0	Alnilam	275 39.6	S 1 11.1
Á 10	160 07.2	337 09.8	15.7	80 42.3	26.9	156 39.0	15.8	198 17.2	23.1	Alphard	217 49.8	S 8 45.2
B 11	175 09.6	352 09.4	14.5	95 43.9	27.0	171 41.8	15.9	213 19.7	23.1			
A 12	190 12.1	7 09.0	N 0 13.2	110 45.5	N22 27.1	186 44.5	S 0 16.0	228 22.3	S16 23.1	Alphecca	126 05.6	N26 38.5
D 13	205 14.5	22 08.7	12.0	125 47.0	27.3	201 47.3	16.2	243 24.8	23.1	Alpheratz	357 36.4	N29 13.0
O 14	220 17.0	37 08.3	10.7	140 48.6	27.4	216 50.1	16.3	258 27.4	23.2	Altair	62 01.7	N 8 55.8
15	235 19.5	52 07.9	. . 09.5	155 50.1	. . 27.5	231 52.8	. . 16.4	273 29.9	. . 23.2	Ankaa	353 08.6	S42 10.9
16	250 21.9	67 07.5	08.2	170 51.7	27.7	246 55.6	16.6	288 32.5	23.2	Antares	112 18.3	S26 28.9
17	265 24.4	82 07.1	07.0	185 53.2	27.8	261 58.4	16.7	303 35.0	23.2			
18	280 26.9	97 06.7	N 0 05.7	200 54.8	N22 27.9	277 01.2	S 0 16.8	318 37.6	S16 23.3	Arcturus	145 50.0	N19 04.1
19	295 29.3	112 06.3	04.4	215 56.4	28.1	292 03.9	17.0	333 40.2	23.3	Atria	107 14.5	S69 04.3
20	310 31.8	127 05.9	03.2	230 57.9	28.2	307 06.7	17.1	348 42.7	23.3	Avior	234 15.8	S59 34.5
21	325 34.3	142 05.5	. . 01.9	245 59.5	. . 28.3	322 09.5	. . 17.2	3 45.3	. . 23.3	Bellatrix	278 24.8	N 6 22.3
22	340 36.7	157 05.1	N 00.7	261 01.0	28.5	337 12.2	17.4	18 47.8	23.4	Betelgeuse	270 54.1	N 7 24.8
23	355 39.2	172 04.7	S 00.6	276 02.6	28.6	352 15.0	17.5	33 50.4	23.4			
2 00	10 41.7	187 04.4	S 0 01.8	291 04.2	N22 28.7	7 17.8	S 0 17.6	48 52.9	S16 23.4	Canopus	263 53.2	S52 42.1
01	25 44.1	202 04.0	03.1	306 05.7	28.9	22 20.5	17.7	63 55.5	23.4	Capella	280 24.5	N46 01.1
02	40 46.6	217 03.6	04.3	321 07.3	29.0	37 23.3	17.9	78 58.0	23.5	Deneb	49 26.9	N45 21.9
03	55 49.0	232 03.2	. . 05.6	336 08.9	. . 29.1	52 26.1	. . 18.0	94 00.5	. . 23.5	Denebola	182 27.2	N14 26.9
04	70 51.5	247 02.8	06.8	351 10.4	29.3	67 28.8	18.1	109 03.1	23.5	Diphda	348 48.9	S17 51.7
05	85 54.0	262 02.4	08.1	6 12.0	29.4	82 31.6	18.3	124 05.6	23.5			
06	100 56.4	277 02.0	S 0 09.3	21 13.6	N22 29.5	97 34.4	S 0 18.4	139 08.2	S16 23.6	Dubhe	193 43.9	N61 37.7
07	115 58.9	292 01.6	10.6	36 15.2	29.7	112 37.1	18.5	154 10.7	23.6	Elnath	278 04.1	N28 37.5
D 08	131 01.4	307 01.2	11.9	51 16.7	29.8	127 39.9	18.7	169 13.3	23.6	Eltanin	90 43.2	N51 29.4
O 09	146 03.8	322 00.8	. . 13.1	66 18.3	. . 29.9	142 42.7	. . 18.8	184 15.8	. . 23.6	Enif	33 40.4	N 9 58.9
M 10	161 06.3	337 00.4	14.4	81 19.9	30.0	157 45.5	18.9	199 18.4	23.7	Fomalhaut	15 16.3	S29 30.1
I 11	176 08.8	352 00.1	15.6	96 21.4	30.2	172 48.2	19.0	214 20.9	23.7			
N 12	191 11.2	6 59.7	S 0 16.9	111 23.0	N22 30.3	187 51.0	S 0 19.2	229 23.5	S16 23.7	Gacrux	171 54.3	S57 14.3
G 13	206 13.7	21 59.3	18.1	126 24.6	30.4	202 53.8	19.3	244 26.0	23.7	Gienah	175 45.9	S17 39.9
O 14	221 16.2	36 58.9	19.4	141 26.2	30.6	217 56.5	19.4	259 28.6	23.8	Hadar	148 39.3	S60 28.9
15	236 18.6	51 58.5	. . 20.6	156 27.8	. . 30.7	232 59.3	. . 19.6	274 31.1	. . 23.8	Hamal	327 53.0	N23 34.2
16	251 21.1	66 58.1	21.9	171 29.3	30.8	248 02.1	19.7	289 33.7	23.8	Kaus Aust.	83 35.1	S34 22.5
17	266 23.5	81 57.7	23.1	186 30.9	31.0	263 04.8	19.8	304 36.2	23.8			
18	281 26.0	96 57.3	S 0 24.4	201 32.5	N22 31.1	278 07.6	S 0 20.0	319 38.8	S16 23.9	Kochab	137 20.7	N74 03.9
19	296 28.5	111 56.9	25.6	216 34.1	31.2	293 10.4	20.1	334 41.3	23.9	Markab	13 31.5	N15 19.7
20	311 30.9	126 56.5	26.9	231 35.7	31.4	308 13.1	20.2	349 43.9	23.9	Menkar	314 07.9	N 4 10.8
21	326 33.4	141 56.1	. . 28.2	246 37.3	. . 31.5	323 15.9	. . 20.3	4 46.4	. . 23.9	Menkent	148 00.2	S36 28.8
22	341 35.9	156 55.8	29.4	261 38.8	31.6	338 18.7	20.5	19 49.0	24.0	Miaplacidus	221 39.2	S69 48.2
23	356 38.3	171 55.4	30.7	276 40.4	31.7	353 21.4	20.6	34 51.5	24.0			
3 00	11 40.8	186 55.0	S 0 31.9	291 42.0	N22 31.9	8 24.2	S 0 20.7	49 54.0	S16 24.0	Mirfak	308 30.6	N49 56.4
01	26 43.3	201 54.6	33.2	306 43.6	32.0	23 27.0	20.9	64 56.6	24.0	Nunki	75 50.1	S26 16.1
02	41 45.7	216 54.2	34.4	321 45.2	32.1	38 29.7	21.0	79 59.1	24.1	Peacock	53 08.4	S56 39.9
03	56 48.2	231 53.8	. . 35.7	336 46.8	. . 32.3	53 32.5	. . 21.1	95 01.7	. . 24.1	Pollux	243 19.7	N27 58.3
04	71 50.6	246 53.4	36.9	351 48.4	32.4	68 35.3	21.3	110 04.2	24.1	Procyon	244 52.9	N 5 10.1
05	86 53.1	261 53.0	38.2	6 50.0	32.5	83 38.0	21.4	125 06.8	24.1			
06	101 55.6	276 52.6	S 0 39.4	21 51.6	N22 32.7	98 40.8	S 0 21.5	140 09.3	S16 24.2	Rasalhague	96 00.4	N12 32.8
07	116 58.0	291 52.2	40.7	36 53.2	32.8	113 43.6	21.6	155 11.9	24.2	Regulus	207 36.7	N11 51.5
L 08	132 00.5	306 51.8	42.0	51 54.8	32.9	128 46.3	21.8	170 14.4	24.2	Rigel	281 05.6	S 8 10.3
U 09	147 03.0	321 51.4	. . 43.2	66 56.4	. . 33.0	143 49.1	. . 21.9	185 17.0	. . 24.2	Rigil Kent.	139 43.5	S60 55.7
N 10	162 05.4	336 51.1	44.5	81 58.0	33.2	158 51.9	22.0	200 19.5	24.3	Sabik	102 05.1	S15 45.1
E 11	177 07.9	351 50.7	45.7	96 59.6	33.3	173 54.6	22.2	215 22.0	24.3			
S 12	192 10.4	6 50.3	S 0 47.0	112 01.2	N22 33.4	188 57.4	S 0 22.3	230 24.6	S16 24.3	Schedar	349 32.6	N56 39.7
13	207 12.8	21 49.9	48.2	127 02.8	33.6	204 00.2	22.4	245 27.1	24.3	Shaula	96 13.1	S37 07.3
14	222 15.3	36 49.5	49.5	142 04.4	33.7	219 02.9	22.5	260 29.7	24.3	Sirius	258 27.9	S16 44.6
15	237 17.8	51 49.1	. . 50.7	157 06.0	. . 33.8	234 05.7	. . 22.7	275 32.2	. . 24.4	Spica	158 24.6	S11 16.6
16	252 20.2	66 48.7	52.0	172 07.6	33.9	249 08.5	22.8	290 34.8	24.4	Suhail	222 48.0	S43 31.1
17	267 22.7	81 48.3	53.3	187 09.2	34.1	264 11.2	22.9	305 37.3	24.4			
18	282 25.1	96 47.9	S 0 54.5	202 10.8	N22 34.2	279 14.0	S 0 23.1	320 39.9	S16 24.4	Vega	80 34.5	N38 48.5
19	297 27.6	111 47.5	55.8	217 12.4	34.3	294 16.8	23.2	335 42.4	24.5	Zuben'ubi	136 58.4	S16 08.0
20	312 30.1	126 47.1	57.0	232 14.0	34.5	309 19.5	23.3	350 44.9	24.5			
21	327 32.5	141 46.7	. . 58.3	247 15.6	. . 34.6	324 22.3	. . 23.4	5 47.5	. . 24.5		AHS	Paso Mer.
22	342 35.0	156 46.4	0 59.5	262 17.2	34.7	339 25.1	23.6	20 50.0	24.5		° ′	h m
23	357 37.5	171 46.0	S 1 00.8	277 18.8	34.8	354 27.8	23.7	35 52.6	24.6	Venus	176 22.7	11 32
	h m									Marte	280 22.5	4 35
Paso Mer.	23 13.4	*v* −0.4	*d* 1.3	*v* 1.6	*d* 0.1	*v* 2.8	*d* 0.1	*v* 2.5	*d* 0.0	Júpiter	356 36.1	23 26
										Saturno	38 11.2	20 41

UT (HmGr)	SOL			LUNA					
	AHGr	Dec		AHGr	*v*	Dec	*d*	Ph	
d h	° ′	° ′		° ′	′	° ′	′	′	
1 00	182 32.6	S 3 05.8		120 04.6	6.0	S24 33.8	7.5	58.8	
01	197 32.8	06.7		134 29.6	5.8	24 41.3	7.3	58.8	
02	212 33.0	07.7		148 54.4	5.8	24 48.6	7.3	58.8	
03	227 33.2	08.7		163 19.2	5.7	24 55.9	7.0	58.8	
04	242 33.4	09.6		177 43.9	5.6	25 02.9	6.9	58.9	
05	257 33.6	10.6		192 08.5	5.6	25 09.8	6.7	58.9	
06	272 33.8	S 3 11.6		206 33.1	5.4	S25 16.5	6.6	58.9	
07	287 34.0	12.6		220 57.5	5.4	25 23.1	6.4	58.9	
08	302 34.2	13.5		235 21.9	5.3	25 29.5	6.3	58.9	
09	317 34.4	14.5		249 46.2	5.2	25 35.8	6.1	58.9	
10	332 34.6	15.5		264 10.4	5.1	25 41.9	5.9	58.9	
11	347 34.8	16.4		278 34.5	5.1	25 47.8	5.8	58.9	
12	2 35.0	S 3 17.4		292 58.6	5.0	S25 53.6	5.6	58.9	
13	17 35.2	18.4		307 22.6	4.9	25 59.2	5.4	59.0	
14	32 35.4	19.3		321 46.5	4.8	26 04.6	5.3	59.0	
15	47 35.6	20.3		336 10.3	4.8	26 09.9	5.1	59.0	
16	62 35.8	21.3		350 34.1	4.7	26 15.0	4.9	59.0	
17	77 36.0	22.2		4 57.8	4.6	26 19.9	4.7	59.0	
18	92 36.2	S 3 23.2		19 21.4	4.6	S26 24.6	4.6	59.0	
19	107 36.4	24.2		33 45.0	4.5	26 29.2	4.4	59.0	
20	122 36.6	25.2		48 08.5	4.5	26 33.6	4.2	59.0	
21	137 36.8	26.1		62 32.0	4.4	26 37.8	4.1	59.0	
22	152 37.0	27.1		76 55.4	4.3	26 41.9	3.8	59.0	
23	167 37.2	28.1		91 18.7	4.3	26 45.7	3.7	59.1	
2 00	182 37.4	S 3 29.0		105 42.0	4.3	S26 49.4	3.5	59.1	
01	197 37.6	30.0		120 05.3	4.2	26 52.9	3.4	59.1	
02	212 37.8	31.0		134 28.5	4.1	26 56.3	3.1	59.1	
03	227 38.0	31.9		148 51.6	4.1	26 59.4	3.0	59.1	
04	242 38.2	32.9		163 14.7	4.0	27 02.4	2.8	59.1	
05	257 38.4	33.9		177 37.7	4.0	27 05.2	2.6	59.1	
06	272 38.6	S 3 34.8		192 00.7	4.0	S27 07.8	2.4	59.1	
07	287 38.8	35.8		206 23.7	3.9	27 10.2	2.2	59.1	
08	302 39.0	36.8		220 46.6	3.9	27 12.4	2.1	59.1	
09	317 39.2	37.7		235 09.5	3.9	27 14.5	1.8	59.1	
10	332 39.4	38.7		249 32.4	3.8	27 16.3	1.7	59.1	
11	347 39.6	39.7		263 55.2	3.8	27 18.0	1.5	59.2	
12	2 39.8	S 3 40.6		278 18.0	3.8	S27 19.5	1.3	59.2	
13	17 40.0	41.6		292 40.8	3.8	27 20.8	1.2	59.2	
14	32 40.2	42.6		307 03.6	3.7	27 22.0	0.9	59.2	
15	47 40.4	43.5		321 26.3	3.7	27 22.9	0.7	59.2	
16	62 40.6	44.5		335 49.0	3.7	27 23.6	0.6	59.2	
17	77 40.8	45.5		350 11.7	3.7	27 24.2	0.4	59.2	
18	92 41.0	S 3 46.4		4 34.4	3.6	S27 24.6	0.2	59.2	
19	107 41.2	47.4		18 57.0	3.7	27 24.8	0.0	59.2	
20	122 41.4	48.4		33 19.7	3.6	27 24.8	0.2	59.2	
21	137 41.6	49.3		47 42.3	3.7	27 24.6	0.4	59.2	
22	152 41.8	50.3		62 05.0	3.6	27 24.2	0.6	59.2	
23	167 42.0	51.3		76 27.6	3.7	27 23.6	0.7	59.2	
3 00	182 42.2	S 3 52.2		90 50.3	3.6	S27 22.9	1.0	59.2	
01	197 42.4	53.2		105 12.9	3.7	27 21.9	1.1	59.2	
02	212 42.6	54.2		119 35.6	3.6	27 20.8	1.3	59.3	
03	227 42.8	55.1		133 58.2	3.7	27 19.5	1.6	59.3	
04	242 43.0	56.1		148 20.9	3.7	27 17.9	1.7	59.3	
05	257 43.2	57.1		162 43.6	3.7	27 16.2	1.8	59.3	
06	272 43.4	S 3 58.0		177 06.3	3.7	S27 14.4	2.1	59.3	
07	287 43.6	3 59.0		191 29.0	3.7	27 12.3	2.3	59.3	
08	302 43.8	4 00.0		205 51.7	3.7	27 10.0	2.4	59.3	
09	317 43.9	00.9		220 14.4	3.8	27 07.6	2.7	59.3	
10	332 44.1	01.9		234 37.2	3.8	27 04.9	2.8	59.3	
11	347 44.3	02.9		249 00.0	3.8	27 02.1	3.0	59.3	
12	2 44.5	S 4 03.8		263 22.8	3.9	S26 59.1	3.2	59.3	
13	17 44.7	04.8		277 45.7	3.8	26 55.9	3.4	59.3	
14	32 44.9	05.8		292 08.5	4.0	26 52.5	3.5	59.3	
15	47 45.1	06.7		306 31.5	3.9	26 49.0	3.8	59.3	
16	62 45.3	07.7		320 54.4	4.0	26 45.2	3.9	59.3	
17	77 45.5	08.7		335 17.4	4.0	26 41.3	4.1	59.3	
18	92 45.7	S 4 09.6		349 40.4	4.1	S26 37.2	4.3	59.3	
19	107 45.9	10.6		4 03.5	4.1	26 32.9	4.5	59.3	
20	122 46.1	11.6		18 26.6	4.2	26 28.4	4.6	59.3	
21	137 46.3	12.5		32 49.8	4.2	26 23.8	4.9	59.3	
22	152 46.5	13.5		47 13.0	4.3	26 18.9	5.0	59.3	
23	167 46.7	14.5		61 36.3	4.3	S26 13.9	5.2	59.3	
	S/D 16.0	*d* 1.0		S/D	16.1		16.1		16.2

SÁBADO

DOMINGO

LUNES

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		1	2	3	4
°	h m	h m	h m	h m	h m	h m	h m
N 72	03 54	05 16	06 23				
N 70	04 05	05 18	06 19				
68	04 15	05 21	06 16				
66	04 22	05 22	06 14				
64	04 28	05 24	06 11				18 09
62	04 33	05 25	06 09	15 10	16 55	17 28	17 31
60	04 37	05 26	06 08	14 29	15 55	16 43	17 04
N 58	04 41	05 27	06 06	14 01	15 21	16 14	16 43
56	04 44	05 28	06 05	13 40	14 57	15 51	16 25
54	04 47	05 28	06 04	13 22	14 37	15 33	16 11
52	04 49	05 29	06 02	13 07	14 20	15 17	15 58
50	04 52	05 29	06 01	12 53	14 06	15 04	15 46
45	04 56	05 30	05 59	12 27	13 37	14 36	15 22
N 40	04 59	05 30	05 57	12 05	13 14	14 14	15 03
35	05 01	05 30	05 55	11 48	12 55	13 55	14 47
30	05 02	05 30	05 54	11 33	12 39	13 40	14 33
20	05 04	05 29	05 51	11 07	12 11	13 13	14 09
N 10	05 03	05 28	05 49	10 45	11 48	12 50	13 49
0	05 01	05 25	05 46	10 25	11 26	12 28	13 29
S 10	04 58	05 22	05 44	10 05	11 04	12 07	13 10
20	04 53	05 19	05 41	09 43	10 41	11 44	12 49
30	04 45	05 13	05 37	09 18	10 14	11 17	12 25
35	04 40	05 10	05 35	09 03	09 58	11 01	12 11
40	04 34	05 06	05 33	08 47	09 40	10 43	11 54
45	04 26	05 01	05 30	08 26	09 17	10 21	11 34
S 50	04 16	04 55	05 27	08 01	08 49	09 52	11 09
52	04 11	04 52	05 26	07 49	08 35	09 38	10 57
54	04 05	04 48	05 24	07 35	08 19	09 22	10 43
56	03 59	04 45	05 22	07 19	08 00	09 03	10 27
58	03 52	04 40	05 20	07 00	07 37	08 40	10 08
S 60	03 43	04 35	05 18	06 37	07 07	08 09	09 44

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	1	2	3	4
°	h m	h m	h m	h m	h m	h m	h m
N 72	17 14	18 20	19 41				
N 70	17 18	18 18	19 30				
68	17 21	18 16	19 22				
66	17 24	18 14	19 14				
64	17 26	18 13	19 09				21 30
62	17 28	18 12	19 04	18 02	18 27	20 04	22 07
60	17 30	18 11	19 00	18 43	19 26	20 48	22 33
N 58	17 31	18 10	18 56	19 12	20 00	21 17	22 54
56	17 33	18 10	18 53	19 34	20 25	21 40	23 11
54	17 34	18 09	18 50	19 52	20 45	21 58	23 25
52	17 35	18 09	18 48	20 07	21 01	22 13	23 38
50	17 36	18 09	18 46	20 21	21 16	22 27	23 49
45	17 39	18 08	18 42	20 48	21 45	22 54	24 11
N 40	17 41	18 08	18 39	21 10	22 08	23 16	24 30
35	17 43	18 08	18 37	21 28	22 27	23 34	24 45
30	17 44	18 08	18 36	21 43	22 43	23 49	24 58
20	17 47	18 09	18 35	22 10	23 10	24 15	00 15
N 10	17 50	18 11	18 35	22 33	23 34	24 37	00 37
0	17 53	18 13	18 37	22 54	23 56	24 58	00 58
S 10	17 55	18 16	18 41	23 15	24 18	00 18	01 18
20	17 58	18 20	18 46	23 38	24 41	00 41	01 40
30	18 02	18 26	18 54	24 04	00 04	01 08	02 06
35	18 04	18 29	18 59	24 20	00 20	01 24	02 20
40	18 06	18 34	19 06	24 38	00 38	01 43	02 38
45	18 09	18 39	19 14	25 00	01 00	02 05	02 58
S 50	18 13	18 45	19 24	00 11	01 28	02 34	03 24
52	18 14	18 48	19 29	00 23	01 42	02 48	03 36
54	18 16	18 52	19 35	00 36	01 58	03 04	03 51
56	18 18	18 56	19 42	00 52	02 17	03 23	04 07
58	18 20	19 00	19 49	01 10	02 40	03 47	04 27
S 60	18 22	19 05	19 58	01 33	03 10	04 18	04 51

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
1	10 10	10 20	11 50	16 39	04 09	06 33	
2	10 29	10 39	11 49	17 41	05 10	07 44	
3	10 48	10 58	11 49	18 43	06 12	08 56	

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·7		JÚPITER −2·9		SATURNO +0·5	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
4 00	12 39.9	186 45.6	S 1 02.0	292 20.4	N22 35.0	9 30.6	S 0 23.8	50 55.1	S16 24.6
01	27 42.4	201 45.2	03.3	307 22.1	35.1	24 33.4	24.0	65 57.6	24.6
02	42 44.9	216 44.8	04.5	322 23.7	35.2	39 36.1	24.1	81 00.2	24.6
03	57 47.3	231 44.4	05.8	337 25.3	35.4	54 38.9	24.2	96 02.7	24.6
04	72 49.8	246 44.0	07.1	352 26.9	35.5	69 41.7	24.3	111 05.3	24.7
05	87 52.3	261 43.6	08.3	7 28.5	35.6	84 44.4	24.5	126 07.8	24.7
06	102 54.7	276 43.2	S 1 09.6	22 30.1	N22 35.7	99 47.2	S 0 24.6	141 10.4	S16 24.7
07	117 57.2	291 42.8	10.8	37 31.8	35.9	114 50.0	24.7	156 12.9	24.7
08	132 59.6	306 42.4	12.1	52 33.4	36.0	129 52.7	24.9	171 15.4	24.8
M 09	148 02.1	321 42.0	13.3	67 35.0	36.1	144 55.5	25.0	186 18.0	24.8
A 10	163 04.6	336 41.6	14.6	82 36.6	36.3	159 58.2	25.1	201 20.5	24.8
R 11	178 07.0	351 41.2	15.8	97 38.2	36.4	175 01.0	25.2	216 23.1	24.8
T 12	193 09.5	6 40.9	S 1 17.1	112 39.9	N22 36.5	190 03.8	S 0 25.4	231 25.6	S16 24.9
E 13	208 12.0	21 40.5	18.3	127 41.5	36.6	205 06.5	25.5	246 28.1	24.9
S 14	223 14.4	36 40.1	19.6	142 43.1	36.8	220 09.3	25.6	261 30.7	24.9
15	238 16.9	51 39.7	20.9	157 44.7	36.9	235 12.1	25.8	276 33.2	24.9
16	253 19.4	66 39.3	22.1	172 46.4	37.0	250 14.8	25.9	291 35.8	24.9
17	268 21.8	81 38.9	23.4	187 48.0	37.1	265 17.6	26.0	306 38.3	25.0
18	283 24.3	96 38.5	S 1 24.6	202 49.6	N22 37.3	280 20.4	S 0 26.1	321 40.8	S16 25.0
19	298 26.8	111 38.1	25.9	217 51.3	37.4	295 23.1	26.3	336 43.4	25.0
20	313 29.2	126 37.7	27.1	232 52.9	37.5	310 25.9	26.4	351 45.9	25.0
21	328 31.7	141 37.3	28.4	247 54.5	37.6	325 28.7	26.5	6 48.5	25.1
22	343 34.1	156 36.9	29.6	262 56.2	37.8	340 31.4	26.7	21 51.0	25.1
23	358 36.6	171 36.5	30.9	277 57.8	37.9	355 34.2	26.8	36 53.5	25.1
5 00	13 39.1	186 36.1	S 1 32.2	292 59.4	N22 38.0	10 37.0	S 0 26.9	51 56.1	S16 25.1
01	28 41.5	201 35.7	33.4	308 01.1	38.1	25 39.7	27.0	66 58.6	25.1
02	43 44.0	216 35.4	34.7	323 02.7	38.3	40 42.5	27.2	82 01.2	25.2
03	58 46.5	231 35.0	35.9	338 04.4	38.4	55 45.2	27.3	97 03.7	25.2
04	73 48.9	246 34.6	37.2	353 06.0	38.5	70 48.0	27.4	112 06.2	25.2
05	88 51.4	261 34.2	38.4	8 07.6	38.7	85 50.8	27.5	127 08.8	25.2
06	103 53.9	276 33.8	S 1 39.7	23 09.3	N22 38.8	100 53.5	S 0 27.7	142 11.3	S16 25.2
07	118 56.3	291 33.4	40.9	38 10.9	38.9	115 56.3	27.8	157 13.8	25.3
M 08	133 58.8	306 33.0	42.2	53 12.6	39.0	130 59.1	27.9	172 16.4	25.3
I 09	149 01.2	321 32.6	43.4	68 14.2	39.2	146 01.8	28.1	187 18.9	25.3
É 10	164 03.7	336 32.2	44.7	83 15.9	39.3	161 04.6	28.2	202 21.4	25.3
R 11	179 06.2	351 31.8	46.0	98 17.5	39.4	176 07.3	28.3	217 24.0	25.4
C 12	194 08.6	6 31.4	S 1 47.2	113 19.2	N22 39.5	191 10.1	S 0 28.4	232 26.5	S16 25.4
O 13	209 11.1	21 31.0	48.5	128 20.8	39.7	206 12.9	28.6	247 29.1	25.4
L 14	224 13.6	36 30.6	49.7	143 22.5	39.8	221 15.6	28.7	262 31.6	25.4
E 15	239 16.0	51 30.2	51.0	158 24.1	39.9	236 18.4	28.8	277 34.1	25.4
S 16	254 18.5	66 29.8	52.2	173 25.8	40.0	251 21.2	28.9	292 36.7	25.5
17	269 21.0	81 29.4	53.5	188 27.4	40.2	266 23.9	29.1	307 39.2	25.5
18	284 23.4	96 29.0	S 1 54.7	203 29.1	N22 40.3	281 26.7	S 0 29.2	322 41.7	S16 25.5
19	299 25.9	111 28.6	56.0	218 30.7	40.4	296 29.5	29.3	337 44.3	25.5
20	314 28.4	126 28.3	57.2	233 32.4	40.5	311 32.2	29.4	352 46.8	25.5
21	329 30.8	141 27.9	58.5	248 34.1	40.7	326 35.0	29.6	7 49.3	25.6
22	344 33.3	156 27.5	1 59.8	263 35.7	40.8	341 37.7	29.7	22 51.9	25.6
23	359 35.7	171 27.1	2 01.0	278 37.4	40.9	356 40.5	29.8	37 54.4	25.6
6 00	14 38.2	186 26.7	S 2 02.3	293 39.0	N22 41.0	11 43.3	S 0 30.0	52 56.9	S16 25.6
01	29 40.7	201 26.3	03.5	308 40.7	41.1	26 46.0	30.1	67 59.5	25.6
02	44 43.1	216 25.9	04.8	323 42.4	41.3	41 48.8	30.2	83 02.0	25.7
03	59 45.6	231 25.5	06.0	338 44.0	41.4	56 51.5	30.3	98 04.6	25.7
04	74 48.1	246 25.1	07.3	353 45.7	41.5	71 54.3	30.5	113 07.1	25.7
05	89 50.5	261 24.7	08.5	8 47.4	41.6	86 57.1	30.6	128 09.6	25.7
06	104 53.0	276 24.3	S 2 09.8	23 49.0	N22 41.8	101 59.8	S 0 30.7	143 12.2	S16 25.7
07	119 55.5	291 23.9	11.0	38 50.7	41.9	117 02.6	30.8	158 14.7	25.8
J 08	134 57.9	306 23.5	12.3	53 52.4	42.0	132 05.4	31.0	173 17.2	25.8
U 09	150 00.4	321 23.1	13.5	68 54.0	42.1	147 08.1	31.1	188 19.8	25.8
E 10	165 02.9	336 22.7	14.8	83 55.7	42.3	162 10.9	31.2	203 22.3	25.8
V 11	180 05.3	351 22.3	16.1	98 57.4	42.4	177 13.6	31.3	218 24.8	25.8
E 12	195 07.8	6 21.9	S 2 17.3	113 59.1	N22 42.5	192 16.4	S 0 31.5	233 27.4	S16 25.9
S 13	210 10.2	21 21.5	18.6	129 00.7	42.6	207 19.2	31.6	248 29.9	25.9
14	225 12.7	36 21.1	19.8	144 02.4	42.8	222 21.9	31.7	263 32.4	25.9
15	240 15.2	51 20.7	21.1	159 04.1	42.9	237 24.7	31.8	278 35.0	25.9
16	255 17.6	66 20.3	22.3	174 05.8	43.0	252 27.4	32.0	293 37.5	25.9
17	270 20.1	81 19.9	23.6	189 07.4	43.1	267 30.2	32.1	308 40.0	26.0
18	285 22.6	96 19.5	S 2 24.8	204 09.1	N22 43.2	282 33.0	S 0 32.2	323 42.5	S16 26.0
19	300 25.0	111 19.1	26.1	219 10.8	43.4	297 35.7	32.3	338 45.1	26.0
20	315 27.5	126 18.7	27.3	234 12.5	43.5	312 38.5	32.5	353 47.6	26.0
21	330 30.0	141 18.3	28.6	249 14.2	43.6	327 41.2	32.6	8 50.1	26.0
22	345 32.4	156 18.0	29.8	264 15.9	43.7	342 44.0	32.7	23 52.7	26.1
23	0 34.9	171 17.6	31.1	279 17.5	43.9	357 46.8	32.8	38 55.2	26.1
	h m								
Paso Mer.	23 01.6	*v* −0.4	*d* 1.3	*v* 1.6	*d* 0.1	*v* 2.8	*d* 0.1	*v* 2.5	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.9	S40 12.6
Achernar	335 21.0	S57 07.2
Acrux	173 02.9	S63 13.3
Adhara	255 07.4	S28 59.9
Aldebaran	290 41.6	N16 33.3
Alioth	166 15.2	N55 50.3
Alkaid	152 54.0	N49 12.2
Alnair	27 34.9	S46 51.2
Alnilam	275 39.5	S 1 11.1
Alphard	217 49.8	S 8 45.2
Alphecca	126 05.6	N26 38.5
Alpheratz	357 36.4	N29 13.0
Altair	62 01.7	N 8 55.8
Ankaa	353 08.6	S42 10.9
Antares	112 18.4	S26 28.9
Arcturus	145 50.0	N19 04.0
Atria	107 14.5	S69 04.3
Avior	234 15.7	S59 34.5
Bellatrix	278 24.8	N 6 22.3
Betelgeuse	270 54.0	N 7 24.8
Canopus	263 53.2	S52 42.1
Capella	280 24.5	N46 01.1
Deneb	49 26.9	N45 21.9
Denebola	182 27.2	N14 26.9
Diphda	348 48.9	S17 51.7
Dubhe	193 43.9	N61 37.7
Elnath	278 04.1	N28 37.6
Eltanin	90 43.2	N51 29.4
Enif	33 40.4	N 9 58.9
Fomalhaut	15 16.3	S29 30.1
Gacrux	171 54.3	S57 14.3
Gienah	175 45.9	S17 39.9
Hadar	148 39.3	S60 28.9
Hamal	327 53.0	N23 34.2
Kaus Aust.	83 35.1	S34 22.5
Kochab	137 20.8	N74 03.9
Markab	13 31.5	N15 19.7
Menkar	314 07.9	N 4 10.8
Menkent	148 00.2	S36 28.8
Miaplacidus	221 39.2	S69 48.2
Mirfak	308 30.6	N49 56.4
Nunki	75 50.1	S26 16.1
Peacock	53 08.5	S56 39.9
Pollux	243 19.7	N27 58.3
Procyon	244 52.9	N 5 10.1
Rasalhague	96 00.4	N12 32.8
Regulus	207 36.7	N11 51.5
Rigel	281 05.5	S 8 10.3
Rigil Kent.	139 43.5	S60 55.7
Sabik	102 05.1	S15 45.1
Schedar	349 32.6	N56 39.7
Shaula	96 13.1	S37 07.3
Sirius	258 27.9	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 47.9	S43 31.1
Vega	80 34.5	N38 48.5
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	172 57.1	11 34
Marte	279 20.4	4 28
Júpiter	356 57.9	23 13
Saturno	38 17.0	20 29

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	° ′		° ′		° ′	′	° ′	′	′	
4 00	182 46.9	S	4 15.4		75 59.6	4.4	S26 08.7	5.3	59.3	
01	197 47.1		16.4		90 23.0	4.4	26 03.4	5.6	59.4	
02	212 47.3		17.3		104 46.4	4.5	25 57.8	5.7	59.4	
03	227 47.4	. .	18.3		119 09.9	4.5	25 52.1	5.9	59.4	
04	242 47.6		19.3		133 33.4	4.6	25 46.2	6.0	59.4	
05	257 47.8		20.2		147 57.0	4.7	25 40.2	6.3	59.4	
06	272 48.0	S	4 21.2		162 20.7	4.7	S25 33.9	6.4	59.4	
07	287 48.2		22.2		176 44.4	4.8	25 27.5	6.6	59.4	
08	302 48.4		23.1		191 08.2	4.9	25 20.9	6.7	59.4	
09	317 48.6	. .	24.1		205 32.1	4.9	25 14.2	6.9	59.4	
10	332 48.8		25.1		219 56.0	5.0	25 07.3	7.1	59.4	
11	347 49.0		26.0		234 20.0	5.1	25 00.2	7.2	59.4	
12	2 49.2	S	4 27.0		248 44.1	5.1	S24 53.0	7.5	59.4	
13	17 49.4		27.9		263 08.2	5.3	24 45.5	7.5	59.4	
14	32 49.6		28.9		277 32.5	5.3	24 38.0	7.8	59.4	
15	47 49.8	. .	29.9		291 56.8	5.3	24 30.2	7.8	59.4	
16	62 49.9		30.8		306 21.1	5.5	24 22.4	8.1	59.4	
17	77 50.1		31.8		320 45.6	5.5	24 14.3	8.2	59.4	
18	92 50.3	S	4 32.8		335 10.1	5.6	S24 06.1	8.4	59.4	
19	107 50.5		33.7		349 34.7	5.7	23 57.7	8.5	59.4	
20	122 50.7		34.7		3 59.4	5.8	23 49.2	8.7	59.4	
21	137 50.9	. .	35.6		18 24.2	5.9	23 40.5	8.8	59.4	
22	152 51.1		36.6		32 49.1	5.9	23 31.7	9.0	59.4	
23	167 51.3		37.6		47 14.0	6.0	23 22.7	9.1	59.4	
5 00	182 51.5	S	4 38.5		61 39.0	6.1	S23 13.6	9.3	59.4	
01	197 51.7		39.5		76 04.1	6.2	23 04.3	9.4	59.4	
02	212 51.8		40.5		90 29.3	6.3	22 54.9	9.5	59.4	
03	227 52.0	. .	41.4		104 54.6	6.4	22 45.4	9.7	59.4	
04	242 52.2		42.4		119 20.0	6.4	22 35.7	9.9	59.4	
05	257 52.4		43.3		133 45.4	6.6	22 25.8	10.0	59.4	
06	272 52.6	S	4 44.3		148 11.0	6.6	S22 15.8	10.1	59.4	
07	287 52.8		45.3		162 36.6	6.8	22 05.7	10.3	59.4	
08	302 53.0		46.2		177 02.4	6.8	21 55.4	10.4	59.4	
09	317 53.2	. .	47.2		191 28.2	6.9	21 45.0	10.5	59.3	
10	332 53.4		48.2		205 54.1	7.0	21 34.5	10.7	59.3	
11	347 53.5		49.1		220 20.1	7.1	21 23.8	10.8	59.3	
12	2 53.7	S	4 50.1		234 46.2	7.2	S21 13.0	10.9	59.3	
13	17 53.9		51.0		249 12.4	7.2	21 02.1	11.0	59.3	
14	32 54.1		52.0		263 38.6	7.4	20 51.1	11.2	59.3	
15	47 54.3	. .	53.0		278 05.0	7.4	20 39.9	11.3	59.3	
16	62 54.5		53.9		292 31.4	7.6	20 28.6	11.5	59.3	
17	77 54.7		54.9		306 58.0	7.6	20 17.1	11.5	59.3	
18	92 54.9	S	4 55.8		321 24.6	7.8	S20 05.6	11.7	59.3	
19	107 55.1		56.8		335 51.4	7.8	19 53.9	11.7	59.3	
20	122 55.2		57.8		350 18.2	7.9	19 42.2	11.9	59.3	
21	137 55.4	. .	58.7		4 45.1	8.0	19 30.3	12.1	59.3	
22	152 55.6		4 59.7		19 12.1	8.1	19 18.2	12.1	59.3	
23	167 55.8		5 00.6		33 39.2	8.2	19 06.1	12.2	59.3	
6 00	182 56.0	S	5 01.6		48 06.4	8.3	S18 53.9	12.4	59.3	
01	197 56.2		02.6		62 33.7	8.3	18 41.5	12.4	59.3	
02	212 56.4		03.5		77 01.0	8.5	18 29.1	12.6	59.3	
03	227 56.5	. .	04.5		91 28.5	8.5	18 16.5	12.6	59.3	
04	242 56.7		05.4		105 56.0	8.7	18 03.9	12.8	59.3	
05	257 56.9		06.4		120 23.7	8.7	17 51.1	12.9	59.2	
06	272 57.1	S	5 07.4		134 51.4	8.8	S17 38.2	12.9	59.2	
07	287 57.3		08.3		149 19.2	8.9	17 25.3	13.1	59.2	
08	302 57.5		09.3		163 47.1	9.0	17 12.2	13.2	59.2	
09	317 57.7	. .	10.2		178 15.1	9.1	16 59.0	13.2	59.2	
10	332 57.8		11.2		192 43.2	9.2	16 45.8	13.3	59.2	
11	347 58.0		12.1		207 11.4	9.2	16 32.5	13.5	59.2	
12	2 58.2	S	5 13.1		221 39.6	9.4	S16 19.0	13.5	59.2	
13	17 58.4		14.1		236 08.0	9.4	16 05.5	13.6	59.2	
14	32 58.6		15.0		250 36.4	9.5	15 51.9	13.7	59.2	
15	47 58.8	. .	16.0		265 04.9	9.6	15 38.2	13.8	59.2	
16	62 58.9		16.9		279 33.5	9.7	15 24.4	13.8	59.2	
17	77 59.1		17.9		294 02.2	9.7	15 10.6	14.0	59.1	
18	92 59.3	S	5 18.8		308 30.9	9.9	S14 56.6	14.0	59.1	
19	107 59.5		19.8		322 59.8	9.9	14 42.6	14.1	59.1	
20	122 59.7		20.8		337 28.7	10.0	14 28.5	14.2	59.1	
21	137 59.9	. .	21.7		351 57.7	10.1	14 14.3	14.2	59.1	
22	153 00.0		22.7		6 26.8	10.2	14 00.1	14.3	59.1	
23	168 00.2		23.6		20 56.0	10.2	S13 45.8	14.4	59.1	
	S/D 16.0		d 1.0		S/D	16.2		16.2		16.1

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		4	5	6	7
°	h m	h m	h m	h m	h m	h m	h m
N 72	04 09	05 29	06 37	▬	▬	19 07	18 14
N 70	04 18	05 30	06 31	▬	20 08	18 36	18 00
68	04 26	05 31	06 27	▬	18 55	18 13	17 49
66	04 32	05 32	06 23	▬	18 18	17 55	17 40
64	04 37	05 33	06 20	18 09	17 51	17 41	17 32
62	04 41	05 33	06 17	17 31	17 30	17 28	17 25
60	04 45	05 33	06 15	17 04	17 13	17 17	17 20
N 58	04 48	05 33	06 13	16 43	16 59	17 08	17 14
56	04 50	05 34	06 11	16 25	16 46	17 00	17 10
54	04 53	05 34	06 09	16 11	16 35	16 53	17 06
52	04 55	05 34	06 07	15 58	16 26	16 46	17 02
50	04 56	05 34	06 06	15 46	16 17	16 40	16 58
45	04 59	05 33	06 03	15 22	15 59	16 27	16 51
N 40	05 02	05 33	06 00	15 03	15 43	16 16	16 45
35	05 03	05 32	05 58	14 47	15 31	16 07	16 39
30	05 04	05 32	05 56	14 33	15 19	15 59	16 34
20	05 04	05 30	05 52	14 09	15 00	15 45	16 26
N 10	05 03	05 27	05 48	13 49	14 43	15 33	16 18
0	05 00	05 24	05 45	13 29	14 27	15 21	16 11
S 10	04 56	05 21	05 42	13 10	14 11	15 09	16 04
20	04 50	05 16	05 38	12 49	13 54	14 57	15 57
30	04 41	05 10	05 34	12 25	13 34	14 42	15 48
35	04 36	05 06	05 31	12 11	13 23	14 34	15 43
40	04 29	05 01	05 28	11 54	13 09	14 24	15 38
45	04 20	04 55	05 25	11 34	12 53	14 13	15 31
S 50	04 09	04 48	05 21	11 09	12 34	13 59	15 23
52	04 03	04 44	05 19	10 57	12 24	13 53	15 19
54	03 57	04 41	05 17	10 43	12 14	13 46	15 15
56	03 50	04 36	05 14	10 27	12 02	13 38	15 11
58	03 42	04 31	05 12	10 08	11 48	13 29	15 06
S 60	03 32	04 26	05 09	09 44	11 32	13 18	15 00

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	4	5	6	7
°	h m	h m	h m	h m	h m	h m	h m
N 72	16 58	18 05	19 25	▬	▬	▬	00 27
N 70	17 04	18 04	19 16	▬	21 33	24 56	00 56
68	17 08	18 04	19 09	▬	22 44	25 17	01 17
66	17 12	18 03	19 03	▬	23 20	25 33	01 33
64	17 15	18 03	18 58	21 30	23 46	25 46	01 46
62	17 18	18 02	18 54	22 07	24 06	00 06	01 58
60	17 21	18 02	18 50	22 33	24 22	00 22	02 07
N 58	17 23	18 02	18 48	22 54	24 36	00 36	02 15
56	17 25	18 02	18 45	23 11	24 47	00 47	02 22
54	17 27	18 02	18 43	23 25	24 57	00 57	02 29
52	17 29	18 02	18 41	23 38	25 06	01 06	02 34
50	17 30	18 02	18 40	23 49	25 14	01 14	02 40
45	17 33	18 03	18 37	24 11	00 11	01 31	02 51
N 40	17 36	18 03	18 34	24 30	00 30	01 45	03 00
35	17 39	18 04	18 33	24 45	00 45	01 57	03 07
30	17 41	18 05	18 32	24 58	00 58	02 07	03 14
20	17 45	18 07	18 32	00 15	01 20	02 24	03 26
N 10	17 48	18 09	18 34	00 37	01 39	02 39	03 36
0	17 52	18 12	18 37	00 58	01 57	02 53	03 45
S 10	17 55	18 16	18 41	01 18	02 15	03 07	03 55
20	17 59	18 21	18 47	01 40	02 34	03 22	04 05
30	18 04	18 28	18 56	02 06	02 55	03 38	04 16
35	18 06	18 32	19 02	02 20	03 08	03 48	04 22
40	18 09	18 37	19 09	02 38	03 22	03 59	04 29
45	18 13	18 43	19 18	02 58	03 39	04 12	04 38
S 50	18 17	18 50	19 30	03 24	04 00	04 27	04 48
52	18 19	18 54	19 35	03 36	04 10	04 34	04 52
54	18 21	18 58	19 42	03 51	04 21	04 42	04 57
56	18 24	19 02	19 49	04 07	04 34	04 51	05 03
58	18 27	19 07	19 57	04 27	04 49	05 01	05 09
S 60	18 30	19 13	20 07	04 51	05 06	05 13	05 16

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
4	11 07	11 16	11 49	19 43	07 14	09 67	
5	11 25	11 35	11 48	20 40	08 12	10 77	
6	11 44	11 52	11 48	21 33	09 07	11 86	

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·7		JÚPITER −2·9		SATURNO +0·5		ESTRELLAS		
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec	Nombre	AHS	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′		° ′	° ′
7 00	15 37.3	186 17.2	S 2 32.3	294 19.2	N22 44.0	12 49.5	S 0 33.0	53 57.7	S16 26.1	Acamar	315 12.8	S40 12.6
01	30 39.8	201 16.8	33.6	309 20.9	44.1	27 52.3	33.1	69 00.3	26.1	Achernar	335 21.0	S57 07.2
02	45 42.3	216 16.4	34.9	324 22.6	44.2	42 55.0	33.2	84 02.8	26.1	Acrux	173 02.9	S63 13.3
03	60 44.7	231 16.0 . .	36.1	339 24.3 . .	44.4	57 57.8 . .	33.3	99 05.3 . .	26.2	Adhara	255 07.3	S28 59.9
04	75 47.2	246 15.6	37.4	354 26.0	44.5	73 00.6	33.5	114 07.9	26.2	Aldebaran	290 41.6	N16 33.3
05	90 49.7	261 15.2	38.6	9 27.7	44.6	88 03.3	33.6	129 10.4	26.2			
06	105 52.1	276 14.8	S 2 39.9	24 29.4	N22 44.7	103 06.1	S 0 33.7	144 12.9	S16 26.2	Alioth	166 15.2	N55 50.3
07	120 54.6	291 14.4	41.1	39 31.1	44.8	118 08.8	33.8	159 15.4	26.2	Alkaid	152 54.0	N49 12.2
08	135 57.1	306 14.0	42.4	54 32.8	45.0	133 11.6	34.0	174 18.0	26.3	Alnair	27 34.9	S46 51.2
V 09	150 59.5	321 13.6 . .	43.6	69 34.5 . .	45.1	148 14.4 . .	34.1	189 20.5 . .	26.3	Alnilam	275 39.5	S 1 11.1
I 10	166 02.0	336 13.2	44.9	84 36.2	45.2	163 17.1	34.2	204 23.0	26.3	Alphard	217 49.8	S 8 45.2
E 11	181 04.5	351 12.8	46.1	99 37.9	45.3	178 19.9	34.3	219 25.6	26.3			
R 12	196 06.9	6 12.4	S 2 47.4	114 39.6	N22 45.5	193 22.6	S 0 34.5	234 28.1	S16 26.3	Alphecca	126 05.6	N26 38.5
N 13	211 09.4	21 12.0	48.6	129 41.3	45.6	208 25.4	34.6	249 30.6	26.3	Alpheratz	357 36.4	N29 13.0
E 14	226 11.8	36 11.6	49.9	144 43.0	45.7	223 28.2	34.7	264 33.1	26.4	Altair	62 01.7	N 8 55.8
S 15	241 14.3	51 11.2 . .	51.1	159 44.7 . .	45.8	238 30.9 . .	34.8	279 35.7 . .	26.4	Ankaa	353 08.6	S42 11.0
16	256 16.8	66 10.8	52.4	174 46.4	45.9	253 33.7	35.0	294 38.2	26.4	Antares	112 18.4	S26 28.9
17	271 19.2	81 10.4	53.6	189 48.1	46.1	268 36.4	35.1	309 40.7	26.4			
18	286 21.7	96 10.0	S 2 54.9	204 49.8	N22 46.2	283 39.2	S 0 35.2	324 43.3	S16 26.4	Arcturus	145 50.0	N19 04.0
19	301 24.2	111 09.6	56.1	219 51.5	46.3	298 41.9	35.3	339 45.8	26.5	Atria	107 14.6	S69 04.3
20	316 26.6	126 09.2	57.4	234 53.2	46.4	313 44.7	35.5	354 48.3	26.5	Avior	234 15.7	S59 34.5
21	331 29.1	141 08.8 . .	58.6	249 54.9 . .	46.5	328 47.5 . .	35.6	9 50.8 . .	26.5	Bellatrix	278 24.8	N 6 22.3
22	346 31.6	156 08.4	2 59.9	264 56.6	46.7	343 50.2	35.7	24 53.4	26.5	Betelgeuse	270 54.0	N 7 24.8
23	1 34.0	171 08.0	3 01.1	279 58.3	46.8	358 53.0	35.8	39 55.9	26.5			
8 00	16 36.5	186 07.6	S 3 02.4	295 00.0	N22 46.9	13 55.7	S 0 36.0	54 58.4	S16 26.5	Canopus	263 53.1	S52 42.1
01	31 39.0	201 07.2	03.7	310 01.8	47.0	28 58.5	36.1	70 01.0	26.6	Capella	280 24.5	N46 01.1
02	46 41.4	216 06.8	04.9	325 03.5	47.1	44 01.2	36.2	85 03.5	26.6	Deneb	49 26.9	N45 21.9
03	61 43.9	231 06.4 . .	06.2	340 05.2 . .	47.3	59 04.0 . .	36.3	100 06.0 . .	26.6	Denebola	182 27.2	N14 26.9
04	76 46.3	246 06.0	07.4	355 06.9	47.4	74 06.8	36.5	115 08.5	26.6	Diphda	348 48.9	S17 51.7
05	91 48.8	261 05.6	08.7	10 08.6	47.5	89 09.5	36.6	130 11.1	26.6			
06	106 51.3	276 05.2	S 3 09.9	25 10.4	N22 47.6	104 12.3	S 0 36.7	145 13.6	S16 26.7	Dubhe	193 43.9	N61 37.7
07	121 53.7	291 04.8	11.2	40 12.1	47.8	119 15.0	36.8	160 16.1	26.7	Elnath	278 04.1	N28 37.6
S 08	136 56.2	306 04.4	12.4	55 13.8	47.9	134 17.8	36.9	175 18.6	26.7	Eltanin	90 43.2	N51 29.4
Á 09	151 58.7	321 04.0 . .	13.7	70 15.5 . .	48.0	149 20.5 . .	37.1	190 21.2 . .	26.7	Enif	33 40.4	N 9 58.9
B 10	167 01.1	336 03.6	14.9	85 17.2	48.1	164 23.3	37.2	205 23.7	26.7	Fomalhaut	15 16.3	S29 30.1
A 11	182 03.6	351 03.2	16.2	100 19.0	48.2	179 26.1	37.3	220 26.2	26.7			
D 12	197 06.1	6 02.8	S 3 17.4	115 20.7	N22 48.4	194 28.8	S 0 37.4	235 28.7	S16 26.8	Gacrux	171 54.3	S57 14.2
O 13	212 08.5	21 02.4	18.7	130 22.4	48.5	209 31.6	37.6	250 31.3	26.8	Gienah	175 45.9	S17 39.9
14	227 11.0	36 02.0	19.9	145 24.2	48.6	224 34.3	37.7	265 33.8	26.8	Hadar	148 39.3	S60 28.9
15	242 13.4	51 01.6 . .	21.2	160 25.9 . .	48.7	239 37.1 . .	37.8	280 36.3 . .	26.8	Hamal	327 53.0	N23 34.2
16	257 15.9	66 01.2	22.4	175 27.6	48.8	254 39.8	37.9	295 38.8	26.8	Kaus Aust.	83 35.1	S34 22.5
17	272 18.4	81 00.8	23.7	190 29.3	49.0	269 42.6	38.1	310 41.4	26.8			
18	287 20.8	96 00.4	S 3 24.9	205 31.1	N22 49.1	284 45.3	S 0 38.2	325 43.9	S16 26.9	Kochab	137 20.8	N74 03.9
19	302 23.3	111 00.0	26.2	220 32.8	49.2	299 48.1	38.3	340 46.4	26.9	Markab	13 31.5	N15 19.7
20	317 25.8	125 59.6	27.4	235 34.5	49.3	314 50.9	38.4	355 48.9	26.9	Menkar	314 07.8	N 4 10.8
21	332 28.2	140 59.2 . .	28.7	250 36.3 . .	49.4	329 53.6 . .	38.5	10 51.5 . .	26.9	Menkent	148 00.2	S36 28.8
22	347 30.7	155 58.7	29.9	265 38.0	49.6	344 56.4	38.7	25 54.0	26.9	Miaplacidus	221 39.1	S69 48.2
23	2 33.2	170 58.3	31.2	280 39.8	49.7	359 59.1	38.8	40 56.5	26.9			
9 00	17 35.6	185 57.9	S 3 32.4	295 41.5	N22 49.8	15 01.9	S 0 38.9	55 59.0	S16 27.0	Mirfak	308 30.5	N49 56.4
01	32 38.1	200 57.5	33.7	310 43.2	49.9	30 04.6	39.0	71 01.5	27.0	Nunki	75 50.1	S26 16.1
02	47 40.6	215 57.1	34.9	325 45.0	50.0	45 07.4	39.2	86 04.1	27.0	Peacock	53 08.5	S56 39.9
03	62 43.0	230 56.7 . .	36.2	340 46.7 . .	50.2	60 10.1 . .	39.3	101 06.6 . .	27.0	Pollux	243 19.7	N27 58.3
04	77 45.5	245 56.3	37.4	355 48.5	50.3	75 12.9	39.4	116 09.1	27.0	Procyon	244 52.8	N 5 10.1
05	92 47.9	260 55.9	38.7	10 50.2	50.4	90 15.6	39.5	131 11.6	27.0			
06	107 50.4	275 55.5	S 3 39.9	25 52.0	N22 50.5	105 18.4	S 0 39.6	146 14.2	S16 27.1	Rasalhague	96 00.4	N12 32.8
07	122 52.9	290 55.1	41.1	40 53.7	50.6	120 21.2	39.8	161 16.7	27.1	Regulus	207 36.7	N11 51.5
D 08	137 55.3	305 54.7	42.4	55 55.5	50.7	135 23.9	39.9	176 19.2	27.1	Rigel	281 05.5	S 8 10.3
O 09	152 57.8	320 54.3 . .	43.6	70 57.2 . .	50.9	150 26.7 . .	40.0	191 21.7 . .	27.1	Rigil Kent.	139 43.5	S60 55.7
M 10	168 00.3	335 53.9	44.9	85 59.0	51.0	165 29.4	40.1	206 24.2	27.1	Sabik	102 05.1	S15 45.1
I 11	183 02.7	350 53.5	46.1	101 00.7	51.1	180 32.2	40.3	221 26.8	27.1			
N 12	198 05.2	5 53.1	S 3 47.4	116 02.5	N22 51.2	195 34.9	S 0 40.4	236 29.3	S16 27.2	Schedar	349 32.6	N56 39.8
G 13	213 07.7	20 52.7	48.6	131 04.2	51.3	210 37.7	40.5	251 31.8	27.2	Shaula	96 13.1	S37 07.3
O 14	228 10.1	35 52.3	49.9	146 06.0	51.5	225 40.4	40.6	266 34.3	27.2	Sirius	258 27.9	S16 44.6
15	243 12.6	50 51.9 . .	51.1	161 07.7 . .	51.6	240 43.2 . .	40.7	281 36.8 . .	27.2	Spica	158 24.6	S11 16.6
16	258 15.0	65 51.5	52.4	176 09.5	51.7	255 45.9	40.9	296 39.4	27.2	Suhail	222 47.9	S43 31.1
17	273 17.5	80 51.1	53.6	191 11.2	51.8	270 48.7	41.0	311 41.9	27.2			
18	288 20.0	95 50.7	S 3 54.9	206 13.0	N22 51.9	285 51.4	S 0 41.1	326 44.4	S16 27.2	Vega	80 34.5	N38 48.5
19	303 22.4	110 50.3	56.1	221 14.8	52.1	300 54.2	41.2	341 46.9	27.3	Zuben'ubi	136 58.4	S16 08.0
20	318 24.9	125 49.8	57.4	236 16.5	52.2	315 56.9	41.3	356 49.4	27.3			
21	333 27.4	140 49.4 . .	58.6	251 18.3 . .	52.3	330 59.7 . .	41.5	11 52.0 . .	27.3		AHS	Paso Mer.
22	348 29.8	155 49.0	3 59.9	266 20.1	52.4	346 02.5	41.6	26 54.5	27.3		° ′	h m
23	3 32.3	170 48.6	S 4 01.1	281 21.8	52.5	1 05.2	41.7	41 57.0	27.3	Venus	169 31.1	11 36
	h m									Marte	278 23.6	4 20
Paso Mer.	22 49.8	*v* −0.4	*d* 1.3	*v* 1.7	*d* 0.1	*v* 2.8	*d* 0.1	*v* 2.5	*d* 0.0	Júpiter	357 19.2	23 00
										Saturno	38 21.9	20 17

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	°	′	′		
7 00	183	00.4	S 5	24.6	35	25.2	10.3	S13	31.4	14.5	59.1
01	198	00.6		25.5	49	54.5	10.4	13	16.9	14.5	59.1
02	213	00.8		26.5	64	23.9	10.5	13	02.4	14.6	59.0
03	228	01.0	. .	27.5	78	53.4	10.5	12	47.8	14.6	59.0
04	243	01.1		28.4	93	22.9	10.7	12	33.2	14.8	59.0
05	258	01.3		29.4	107	52.6	10.7	12	18.4	14.7	59.0
06	273	01.5	S 5	30.3	122	22.3	10.7	S12	03.7	14.9	59.0
07	288	01.7		31.3	136	52.0	10.9	11	48.8	14.9	59.0
08	303	01.9		32.2	151	21.9	10.9	11	33.9	14.9	59.0
09	318	02.0	. .	33.2	165	51.8	10.9	11	19.0	15.0	59.0
10	333	02.2		34.2	180	21.7	11.1	11	04.0	15.0	58.9
11	348	02.4		35.1	194	51.8	11.1	10	49.0	15.1	58.9
12	3	02.6	S 5	36.1	209	21.9	11.2	S10	33.9	15.2	58.9
13	18	02.8		37.0	223	52.1	11.2	10	18.7	15.2	58.9
14	33	02.9		38.0	238	22.3	11.3	10	03.5	15.2	58.9
15	48	03.1	. .	38.9	252	52.6	11.4	9	48.3	15.3	58.9
16	63	03.3		39.9	267	23.0	11.4	9	33.0	15.3	58.9
17	78	03.5		40.8	281	53.4	11.5	9	17.7	15.4	58.8
18	93	03.7	S 5	41.8	296	23.9	11.6	S 9	02.3	15.4	58.8
19	108	03.8		42.7	310	54.5	11.6	8	46.9	15.5	58.8
20	123	04.0		43.7	325	25.1	11.7	8	31.4	15.4	58.8
21	138	04.2	. .	44.7	339	55.8	11.7	8	16.0	15.6	58.8
22	153	04.4		45.6	354	26.5	11.8	8	00.4	15.5	58.8
23	168	04.6		46.6	8	57.3	11.9	7	44.9	15.6	58.7
8 00	183	04.7	S 5	47.5	23	28.2	11.9	S 7	29.3	15.6	58.7
01	198	04.9		48.5	37	59.1	11.9	7	13.7	15.6	58.7
02	213	05.1		49.4	52	30.0	12.0	6	58.1	15.7	58.7
03	228	05.3	. .	50.4	67	01.0	12.1	6	42.4	15.7	58.7
04	243	05.4		51.3	81	32.1	12.1	6	26.7	15.7	58.7
05	258	05.6		52.3	96	03.2	12.1	6	11.0	15.7	58.6
06	273	05.8	S 5	53.2	110	34.3	12.2	S 5	55.3	15.8	58.6
07	288	06.0		54.2	125	05.5	12.3	5	39.5	15.8	58.6
08	303	06.2		55.1	139	36.8	12.2	5	23.7	15.7	58.6
09	318	06.3	. .	56.1	154	08.0	12.4	5	08.0	15.9	58.6
10	333	06.5		57.0	168	39.4	12.4	4	52.1	15.8	58.6
11	348	06.7		58.0	183	10.8	12.4	4	36.3	15.8	58.5
12	3	06.9	S 5	58.9	197	42.2	12.4	S 4	20.5	15.9	58.5
13	18	07.0	5	59.9	212	13.6	12.5	4	04.6	15.8	58.5
14	33	07.2	6	00.9	226	45.1	12.6	3	48.8	15.9	58.5
15	48	07.4	. .	01.8	241	16.7	12.5	3	32.9	15.8	58.5
16	63	07.6		02.8	255	48.2	12.7	3	17.1	15.9	58.4
17	78	07.7		03.7	270	19.9	12.6	3	01.2	15.9	58.4
18	93	07.9	S 6	04.7	284	51.5	12.7	S 2	45.3	15.9	58.4
19	108	08.1		05.6	299	23.2	12.7	2	29.4	15.9	58.4
20	123	08.3		06.6	313	54.9	12.8	2	13.5	15.9	58.4
21	138	08.4	. .	07.5	328	26.7	12.7	1	57.6	15.9	58.3
22	153	08.6		08.5	342	58.4	12.8	1	41.7	15.8	58.3
23	168	08.8		09.4	357	30.2	12.9	1	25.9	15.9	58.3
9 00	183	09.0	S 6	10.4	12	02.1	12.8	S 1	10.0	15.9	58.3
01	198	09.1		11.3	26	33.9	12.9	0	54.1	15.9	58.2
02	213	09.3		12.3	41	05.8	13.0	0	38.2	15.8	58.2
03	228	09.5	. .	13.2	55	37.8	12.9	0	22.4	15.9	58.2
04	243	09.6		14.2	70	09.7	13.0	S 0	06.5	15.8	58.2
05	258	09.8		15.1	84	41.7	12.9	N 0	09.3	15.8	58.2
06	273	10.0	S 6	16.1	99	13.6	13.1	N 0	25.1	15.8	58.1
07	288	10.2		17.0	113	45.7	13.0	0	40.9	15.8	58.1
08	303	10.3		18.0	128	17.7	13.0	0	56.7	15.8	58.1
09	318	10.5	. .	18.9	142	49.7	13.1	1	12.5	15.8	58.1
10	333	10.7		19.9	157	21.8	13.1	1	28.3	15.7	58.0
11	348	10.9		20.8	171	53.9	13.1	1	44.0	15.7	58.0
12	3	11.0	S 6	21.8	186	26.0	13.1	N 1	59.7	15.7	58.0
13	18	11.2		22.7	200	58.1	13.1	2	15.4	15.7	58.0
14	33	11.4		23.7	215	30.2	13.2	2	31.1	15.7	58.0
15	48	11.5	. .	24.6	230	02.4	13.1	2	46.8	15.6	57.9
16	63	11.7		25.5	244	34.5	13.2	3	02.4	15.6	57.9
17	78	11.9		26.5	259	06.7	13.1	3	18.0	15.6	57.9
18	93	12.1	S 6	27.4	273	38.8	13.2	N 3	33.6	15.5	57.9
19	108	12.2		28.4	288	11.0	13.2	3	49.1	15.5	57.8
20	123	12.4		29.3	302	43.2	13.2	4	04.6	15.5	57.8
21	138	12.6	. .	30.3	317	15.4	13.2	4	20.1	15.4	57.8
22	153	12.7		31.2	331	47.6	13.2	4	35.5	15.5	57.8
23	168	12.9		32.2	346	19.8	13.2	N 4	51.0	15.3	57.7
	S/D	16.0	d	1.0	S/D	16.1		15.9			15.8

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		7	8	9	10
°	h m	h m	h m	h m	h m	h m	h m
N 72	04 23	05 42	06 50	18 14	17 37	17 04	16 29
N 70	04 31	05 42	06 43	18 00	17 33	17 09	16 43
68	04 37	05 42	06 38	17 49	17 30	17 12	16 53
66	04 42	05 41	06 33	17 40	17 27	17 15	17 03
64	04 46	05 41	06 29	17 32	17 25	17 18	17 10
62	04 49	05 41	06 25	17 25	17 23	17 20	17 17
60	04 52	05 40	06 22	17 20	17 21	17 22	17 23
N 58	04 54	05 40	06 19	17 14	17 19	17 23	17 28
56	04 56	05 40	06 17	17 10	17 18	17 25	17 33
54	04 58	05 39	06 15	17 06	17 16	17 26	17 37
52	05 00	05 39	06 12	17 02	17 15	17 28	17 41
50	05 01	05 38	06 11	16 58	17 14	17 29	17 44
45	05 03	05 37	06 07	16 51	17 12	17 32	17 52
N 40	05 05	05 36	06 03	16 45	17 10	17 34	17 58
35	05 05	05 35	06 00	16 39	17 08	17 36	18 03
30	05 06	05 33	05 57	16 34	17 06	17 37	18 08
20	05 05	05 31	05 53	16 26	17 04	17 40	18 17
N 10	05 03	05 27	05 48	16 18	17 01	17 43	18 24
0	04 59	05 23	05 44	16 11	16 59	17 46	18 31
S 10	04 54	05 19	05 40	16 04	16 57	17 48	18 39
20	04 47	05 13	05 35	15 57	16 55	17 51	18 46
30	04 38	05 06	05 30	15 48	16 52	17 54	18 55
35	04 31	05 01	05 27	15 43	16 50	17 56	19 00
40	04 23	04 56	05 23	15 38	16 49	17 58	19 06
45	04 14	04 49	05 19	15 31	16 47	18 00	19 13
S 50	04 01	04 41	05 14	15 23	16 44	18 03	19 21
52	03 55	04 37	05 12	15 19	16 43	18 05	19 25
54	03 49	04 33	05 09	15 15	16 42	18 06	19 29
56	03 41	04 28	05 06	15 11	16 41	18 08	19 34
58	03 32	04 23	05 03	15 06	16 39	18 10	19 40
S 60	03 22	04 16	05 00	15 00	16 37	18 12	19 46

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	7	8	9	10
°	h m	h m	h m	h m	h m	h m	h m
N 72	16 43	17 50	19 09	00 27	03 06	05 23	07 38
N 70	16 50	17 51	19 02	00 56	03 16	05 23	07 28
68	16 56	17 51	18 56	01 17	03 25	05 23	07 19
66	17 01	17 52	18 51	01 33	03 32	05 23	07 12
64	17 05	17 52	18 47	01 46	03 37	05 23	07 06
62	17 09	17 53	18 44	01 58	03 42	05 23	07 01
60	17 12	17 53	18 41	02 07	03 47	05 23	06 56
N 58	17 15	17 54	18 39	02 15	03 51	05 23	06 53
56	17 17	17 54	18 37	02 22	03 54	05 22	06 49
54	17 20	17 55	18 36	02 29	03 57	05 22	06 46
52	17 22	17 55	18 34	02 34	04 00	05 22	06 43
50	17 24	17 56	18 33	02 40	04 02	05 22	06 41
45	17 28	17 57	18 31	02 51	04 07	05 22	06 35
N 40	17 31	17 58	18 30	03 00	04 12	05 22	06 31
35	17 35	18 00	18 29	03 07	04 16	05 22	06 27
30	17 37	18 01	18 29	03 14	04 19	05 22	06 23
20	17 42	18 04	18 30	03 26	04 25	05 22	06 17
N 10	17 47	18 08	18 32	03 36	04 30	05 22	06 12
0	17 51	18 12	18 36	03 45	04 34	05 21	06 07
S 10	17 55	18 16	18 41	03 55	04 39	05 21	06 02
20	18 00	18 22	18 48	04 05	04 44	05 21	05 57
30	18 05	18 30	18 58	04 16	04 49	05 21	05 51
35	18 09	18 34	19 05	04 22	04 52	05 20	05 48
40	18 12	18 40	19 12	04 29	04 56	05 20	05 44
45	18 17	18 47	19 22	04 38	05 00	05 20	05 40
S 50	18 22	18 55	19 35	04 48	05 05	05 20	05 35
52	18 24	18 59	19 41	04 52	05 07	05 20	05 32
54	18 27	19 04	19 48	04 57	05 09	05 20	05 30
56	18 30	19 09	19 56	05 03	05 12	05 19	05 27
58	18 33	19 14	20 05	05 09	05 15	05 19	05 24
S 60	18 37	19 21	20 16	05 16	05 18	05 19	05 20

Día	SOL			LUNA				
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00^h	12^h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
7	12 01	12 10	11 48	22 23	09 58	12 93	
8	12 19	12 27	11 48	23 10	10 47	13 98	
9	12 35	12 44	11 47	23 56	11 33	14 100	

VIERNES

SÁBADO

DOMINGO

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·8		JÚPITER −2·9		SATURNO +0·5	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
10 00	18 34.8	185 48.2	S 4 02.4	296 23.6	N22 52.6	16 08.0	S 0 41.8	56 59.5	S16 27.3
01	33 37.2	200 47.8	03.6	311 25.4	52.8	31 10.7	41.9	72 02.0	27.4
02	48 39.7	215 47.4	04.8	326 27.1	52.9	46 13.5	42.1	87 04.6	27.4
03	63 42.2	230 47.0	06.1	341 28.9	53.0	61 16.2	42.2	102 07.1	27.4
04	78 44.6	245 46.6	07.3	356 30.7	53.1	76 19.0	42.3	117 09.6	27.4
05	93 47.1	260 46.2	08.6	11 32.4	53.2	91 21.7	42.4	132 12.1	27.4
06	108 49.5	275 45.8	S 4 09.8	26 34.2	N22 53.4	106 24.5	S 0 42.6	147 14.6	S16 27.4
07	123 52.0	290 45.4	11.1	41 36.0	53.5	121 27.2	42.7	162 17.2	27.4
08	138 54.5	305 45.0	12.3	56 37.8	53.6	136 30.0	42.8	177 19.7	27.5
L 09	153 56.9	320 44.6	13.6	71 39.6	53.7	151 32.7	42.9	192 22.2	27.5
U 10	168 59.4	335 44.1	14.8	86 41.3	53.8	166 35.5	43.0	207 24.7	27.5
N 11	184 01.9	350 43.7	16.1	101 43.1	53.9	181 38.2	43.2	222 27.2	27.5
E 12	199 04.3	5 43.3	S 4 17.3	116 44.9	N22 54.1	196 41.0	S 0 43.3	237 29.7	S16 27.5
S 13	214 06.8	20 42.9	18.5	131 46.7	54.2	211 43.7	43.4	252 32.3	27.5
14	229 09.3	35 42.5	19.8	146 48.5	54.3	226 46.5	43.5	267 34.8	27.5
15	244 11.7	50 42.1	21.0	161 50.2	54.4	241 49.2	43.6	282 37.3	27.6
16	259 14.2	65 41.7	22.3	176 52.0	54.5	256 52.0	43.8	297 39.8	27.6
17	274 16.6	80 41.3	23.5	191 53.8	54.6	271 54.7	43.9	312 42.3	27.6
18	289 19.1	95 40.9	S 4 24.8	206 55.6	N22 54.8	286 57.5	S 0 44.0	327 44.8	S16 27.6
19	304 21.6	110 40.5	26.0	221 57.4	54.9	302 00.2	44.1	342 47.4	27.6
20	319 24.0	125 40.1	27.3	236 59.2	55.0	317 03.0	44.2	357 49.9	27.6
21	334 26.5	140 39.6	28.5	252 01.0	55.1	332 05.7	44.3	12 52.4	27.6
22	349 29.0	155 39.2	29.7	267 02.8	55.2	347 08.5	44.5	27 54.9	27.7
23	4 31.4	170 38.8	31.0	282 04.6	55.4	2 11.2	44.6	42 57.4	27.7
11 00	19 33.9	185 38.4	S 4 32.2	297 06.4	N22 55.5	17 14.0	S 0 44.7	57 59.9	S16 27.7
01	34 36.4	200 38.0	33.5	312 08.1	55.6	32 16.7	44.8	73 02.4	27.7
02	49 38.8	215 37.6	34.7	327 09.9	55.7	47 19.5	44.9	88 05.0	27.7
03	64 41.3	230 37.2	36.0	342 11.7	55.8	62 22.2	45.1	103 07.5	27.7
04	79 43.8	245 36.8	37.2	357 13.5	55.9	77 25.0	45.2	118 10.0	27.7
05	94 46.2	260 36.4	38.4	12 15.3	56.1	92 27.7	45.3	133 12.5	27.8
06	109 48.7	275 35.9	S 4 39.7	27 17.1	N22 56.2	107 30.5	S 0 45.4	148 15.0	S16 27.8
07	124 51.1	290 35.5	40.9	42 19.0	56.3	122 33.2	45.5	163 17.5	27.8
M 08	139 53.6	305 35.1	42.2	57 20.8	56.4	137 36.0	45.7	178 20.0	27.8
A 09	154 56.1	320 34.7	43.4	72 22.6	56.5	152 38.7	45.8	193 22.6	27.8
R 10	169 58.5	335 34.3	44.7	87 24.4	56.6	167 41.4	45.9	208 25.1	27.8
T 11	185 01.0	350 33.9	45.9	102 26.2	56.8	182 44.2	46.0	223 27.6	27.8
E 12	200 03.5	5 33.5	S 4 47.1	117 28.0	N22 56.9	197 46.9	S 0 46.1	238 30.1	S16 27.9
S 13	215 05.9	20 33.1	48.4	132 29.8	57.0	212 49.7	46.2	253 32.6	27.9
14	230 08.4	35 32.6	49.6	147 31.6	57.1	227 52.4	46.4	268 35.1	27.9
15	245 10.9	50 32.2	50.9	162 33.4	57.2	242 55.2	46.5	283 37.6	27.9
16	260 13.3	65 31.8	52.1	177 35.2	57.3	257 57.9	46.6	298 40.2	27.9
17	275 15.8	80 31.4	53.3	192 37.0	57.5	273 00.7	46.7	313 42.7	27.9
18	290 18.2	95 31.0	S 4 54.6	207 38.9	N22 57.6	288 03.4	S 0 46.8	328 45.2	S16 27.9
19	305 20.7	110 30.6	55.8	222 40.7	57.7	303 06.2	47.0	343 47.7	27.9
20	320 23.2	125 30.2	57.1	237 42.5	57.8	318 08.9	47.1	358 50.2	28.0
21	335 25.6	140 29.7	58.3	252 44.3	57.9	333 11.7	47.2	13 52.7	28.0
22	350 28.1	155 29.3	4 59.5	267 46.1	58.0	348 14.4	47.3	28 55.2	28.0
23	5 30.6	170 28.9	5 00.8	282 48.0	58.1	3 17.2	47.4	43 57.7	28.0
12 00	20 33.0	185 28.5	S 5 02.0	297 49.8	N22 58.3	18 19.9	S 0 47.5	59 00.2	S16 28.0
01	35 35.5	200 28.1	03.3	312 51.6	58.4	33 22.6	47.7	74 02.8	28.0
02	50 38.0	215 27.7	04.5	327 53.4	58.5	48 25.4	47.8	89 05.3	28.0
03	65 40.4	230 27.2	05.7	342 55.3	58.6	63 28.1	47.9	104 07.8	28.0
04	80 42.9	245 26.8	07.0	357 57.1	58.7	78 30.9	48.0	119 10.3	28.1
05	95 45.4	260 26.4	08.2	12 58.9	58.8	93 33.6	48.1	134 12.8	28.1
06	110 47.8	275 26.0	S 5 09.5	28 00.8	N22 59.0	108 36.4	S 0 48.2	149 15.3	S16 28.1
07	125 50.3	290 25.6	10.7	43 02.6	59.1	123 39.1	48.4	164 17.8	28.1
M 08	140 52.7	305 25.2	11.9	58 04.4	59.2	138 41.9	48.5	179 20.3	28.1
I 09	155 55.2	320 24.8	13.2	73 06.3	59.3	153 44.6	48.6	194 22.8	28.1
É 10	170 57.7	335 24.3	14.4	88 08.1	59.4	168 47.4	48.7	209 25.3	28.1
R 11	186 00.1	350 23.9	15.7	103 09.9	59.5	183 50.1	48.8	224 27.9	28.1
C 12	201 02.6	5 23.5	S 5 16.9	118 11.8	N22 59.7	198 52.8	S 0 48.9	239 30.4	S16 28.2
O 13	216 05.1	20 23.1	18.1	133 13.6	59.8	213 55.6	49.1	254 32.9	28.2
L 14	231 07.5	35 22.7	19.4	148 15.4	22 59.9	228 58.3	49.2	269 35.4	28.2
E 15	246 10.0	50 22.2	20.6	163 17.3	23 00.0	244 01.1	49.3	284 37.9	28.2
S 16	261 12.5	65 21.8	21.8	178 19.1	00.1	259 03.8	49.4	299 40.4	28.2
17	276 14.9	80 21.4	23.1	193 21.0	00.2	274 06.6	49.5	314 42.9	28.2
18	291 17.4	95 21.0	S 5 24.3	208 22.8	N23 00.3	289 09.3	S 0 49.6	329 45.4	S16 28.2
19	306 19.9	110 20.6	25.5	223 24.7	00.5	304 12.0	49.8	344 47.9	28.2
20	321 22.3	125 20.1	26.8	238 26.5	00.6	319 14.8	49.9	359 50.4	28.3
21	336 24.8	140 19.7	28.0	253 28.4	00.7	334 17.5	50.0	14 52.9	28.3
22	351 27.2	155 19.3	29.3	268 30.2	00.8	349 20.3	50.1	29 55.4	28.3
23	6 29.7	170 18.9	30.5	283 32.1	00.9	4 23.0	50.2	44 58.0	28.3
	h m								
Paso Mer.	22 38.0	*v* −0.4	*d* 1.2	*v* 1.8	*d* 0.1	*v* 2.7	*d* 0.1	*v* 2.5	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.8	S40 12.7
Achernar	335 21.0	S57 07.2
Acrux	173 02.8	S63 13.3
Adhara	255 07.3	S28 59.9
Aldebaran	290 41.6	N16 33.3
Alioth	166 15.2	N55 50.3
Alkaid	152 54.0	N49 12.1
Alnair	27 35.0	S46 51.2
Alnilam	275 39.5	S 1 11.1
Alphard	217 49.8	S 8 45.2
Alphecca	126 05.6	N26 38.5
Alpheratz	357 36.4	N29 13.0
Altair	62 01.7	N 8 55.8
Ankaa	353 08.6	S42 11.0
Antares	112 18.4	S26 28.9
Arcturus	145 50.0	N19 04.0
Atria	107 14.6	S69 04.2
Avior	234 15.7	S59 34.5
Bellatrix	278 24.7	N 6 22.3
Betelgeuse	270 54.0	N 7 24.8
Canopus	263 53.1	S52 42.1
Capella	280 24.4	N46 01.1
Deneb	49 26.9	N45 21.9
Denebola	182 27.2	N14 26.9
Diphda	348 48.9	S17 51.7
Dubhe	193 43.9	N61 37.7
Elnath	278 04.1	N28 37.6
Eltanin	90 43.2	N51 29.4
Enif	33 40.5	N 9 58.9
Fomalhaut	15 16.3	S29 30.2
Gacrux	171 54.3	S57 14.2
Gienah	175 45.8	S17 39.9
Hadar	148 39.3	S60 28.9
Hamal	327 53.0	N23 34.2
Kaus Aust.	83 35.1	S34 22.5
Kochab	137 20.8	N74 03.9
Markab	13 31.5	N15 19.8
Menkar	314 07.8	N 4 10.8
Menkent	148 00.2	S36 28.8
Miaplacidus	221 39.1	S69 48.2
Mirfak	308 30.5	N49 56.4
Nunki	75 50.1	S26 16.1
Peacock	53 08.5	S56 39.9
Pollux	243 19.6	N27 58.3
Procyon	244 52.8	N 5 10.1
Rasalhague	96 00.4	N12 32.8
Regulus	207 36.7	N11 51.5
Rigel	281 05.5	S 8 10.4
Rigil Kent.	139 43.5	S60 55.7
Sabik	102 05.1	S15 45.1
Schedar	349 32.6	N56 39.8
Shaula	96 13.1	S37 07.3
Sirius	258 27.8	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 47.9	S43 31.1
Vega	80 34.6	N38 48.5
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	166 04.5	11 38
Marte	277 32.5	4 11
Júpiter	357 40.1	22 47
Saturno	38 26.0	20 05

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v		Dec	d		Ph
d h	°	′	°	′	°	′	′	°	′	′	′
10 00	183	13.1	S 6	33.1	0	52.0	13.2	N 5	06.3	15.4	57.7
01	198	13.2		34.1	15	24.2	13.2	5	21.7	15.3	57.7
02	213	13.4		35.0	29	56.4	13.2	5	37.0	15.2	57.7
03	228	13.6	. .	36.0	44	28.6	13.3	5	52.2	15.2	57.6
04	243	13.7		36.9	59	00.9	13.2	6	07.4	15.2	57.6
05	258	13.9		37.9	73	33.1	13.2	6	22.6	15.2	57.6
06	273	14.1	S 6	38.8	88	05.3	13.2	N 6	37.8	15.1	57.6
07	288	14.2		39.8	102	37.5	13.2	6	52.9	15.0	57.5
L 08	303	14.4		40.7	117	09.7	13.2	7	07.9	15.0	57.5
U 09	318	14.6	. .	41.6	131	41.9	13.2	7	22.9	15.0	57.5
N 10	333	14.7		42.6	146	14.1	13.2	7	37.9	14.9	57.4
E 11	348	14.9		43.5	160	46.3	13.1	7	52.8	14.8	57.4
S 12	3	15.1	S 6	44.5	175	18.4	13.2	N 8	07.6	14.8	57.4
13	18	15.2		45.4	189	50.6	13.2	8	22.4	14.8	57.4
14	33	15.4		46.4	204	22.8	13.1	8	37.2	14.7	57.3
15	48	15.6	. .	47.3	218	54.9	13.1	8	51.9	14.6	57.3
16	63	15.7		48.3	233	27.0	13.2	9	06.5	14.6	57.3
17	78	15.9		49.2	247	59.2	13.1	9	21.1	14.5	57.3
18	93	16.1	S 6	50.1	262	31.3	13.1	N 9	35.6	14.5	57.2
19	108	16.2		51.1	277	03.4	13.1	9	50.1	14.4	57.2
20	123	16.4		52.0	291	35.5	13.0	10	04.5	14.4	57.2
21	138	16.6	. .	53.0	306	07.5	13.1	10	18.9	14.2	57.2
22	153	16.7		53.9	320	39.6	13.0	10	33.1	14.3	57.1
23	168	16.9		54.9	335	11.6	13.0	10	47.4	14.1	57.1
11 00	183	17.1	S 6	55.8	349	43.6	13.0	N11	01.5	14.1	57.1
01	198	17.2		56.7	4	15.6	13.0	11	15.6	14.1	57.0
02	213	17.4		57.7	18	47.6	13.0	11	29.7	13.9	57.0
03	228	17.6	. .	58.6	33	19.6	12.9	11	43.6	13.9	57.0
04	243	17.7	6	59.6	47	51.5	12.9	11	57.5	13.9	57.0
05	258	17.9	7	00.5	62	23.4	12.9	12	11.4	13.7	56.9
06	273	18.0	S 7	01.5	76	55.3	12.9	N12	25.1	13.7	56.9
07	288	18.2		02.4	91	27.2	12.9	12	38.8	13.6	56.9
M 08	303	18.4		03.3	105	59.1	12.8	12	52.4	13.6	56.8
A 09	318	18.5	. .	04.3	120	30.9	12.8	13	06.0	13.5	56.8
R 10	333	18.7		05.2	135	02.7	12.8	13	19.5	13.4	56.8
T 11	348	18.9		06.2	149	34.5	12.7	13	32.9	13.3	56.8
E 12	3	19.0	S 7	07.1	164	06.2	12.7	N13	46.2	13.2	56.7
S 13	18	19.2		08.1	178	37.9	12.7	13	59.4	13.2	56.7
14	33	19.3		09.0	193	09.6	12.7	14	12.6	13.1	56.7
15	48	19.5	. .	09.9	207	41.3	12.7	14	25.7	13.0	56.7
16	63	19.7		10.9	222	13.0	12.6	14	38.7	12.9	56.6
17	78	19.8		11.8	236	44.6	12.6	14	51.6	12.9	56.6
18	93	20.0	S 7	12.8	251	16.2	12.5	N15	04.5	12.7	56.6
19	108	20.1		13.7	265	47.7	12.5	15	17.2	12.7	56.5
20	123	20.3		14.6	280	19.2	12.5	15	29.9	12.6	56.5
21	138	20.5	. .	15.6	294	50.7	12.5	15	42.5	12.5	56.5
22	153	20.6		16.5	309	22.2	12.4	15	55.0	12.4	56.5
23	168	20.8		17.5	323	53.6	12.4	16	07.4	12.4	56.4
12 00	183	20.9	S 7	18.4	338	25.0	12.4	N16	19.8	12.2	56.4
01	198	21.1		19.3	352	56.4	12.3	16	32.0	12.2	56.4
02	213	21.3		20.3	7	27.7	12.3	16	44.2	12.0	56.4
03	228	21.4	. .	21.2	21	59.0	12.3	16	56.2	12.0	56.3
04	243	21.6		22.1	36	30.3	12.2	17	08.2	11.9	56.3
05	258	21.7		23.1	51	01.5	12.2	17	20.1	11.8	56.3
06	273	21.9	S 7	24.0	65	32.7	12.1	N17	31.9	11.7	56.2
07	288	22.0		25.0	80	03.8	12.2	17	43.6	11.6	56.2
M 08	303	22.2		25.9	94	35.0	12.1	17	55.2	11.5	56.2
I 09	318	22.4	. .	26.8	109	06.1	12.0	18	06.7	11.4	56.2
É 10	333	22.5		27.8	123	37.1	12.0	18	18.1	11.3	56.1
R 11	348	22.7		28.7	138	08.1	12.0	18	29.4	11.2	56.1
C 12	3	22.8	S 7	29.6	152	39.1	11.9	N18	40.6	11.1	56.1
O 13	18	23.0		30.6	167	10.0	12.0	18	51.7	11.0	56.1
L 14	33	23.1		31.5	181	41.0	11.8	19	02.7	10.9	56.0
E 15	48	23.3	. .	32.5	196	11.8	11.9	19	13.6	10.9	56.0
S 16	63	23.5		33.4	210	42.7	11.7	19	24.5	10.7	56.0
17	78	23.6		34.3	225	13.4	11.8	19	35.2	10.6	55.9
18	93	23.8	S 7	35.3	239	44.2	11.7	N19	45.8	10.5	55.9
19	108	23.9		36.2	254	14.9	11.7	19	56.3	10.4	55.9
20	123	24.1		37.1	268	45.6	11.6	20	06.7	10.3	55.9
21	138	24.2	. .	38.1	283	16.2	11.6	20	17.0	10.2	55.8
22	153	24.4		39.0	297	46.8	11.6	20	27.2	10.0	55.8
23	168	24.5		39.9	312	17.4	11.5	N20	37.2	10.0	55.8
	S/D	16.0	d	0.9	S/D	15.6			15.5		15.3

Lat.	Aurora				Orto Sol		Orto Luna							
	Náut.		Civil				10		11		12		13	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	04	37	05	56	07	05	16	29	15	41				
N 70	04	43	05	54	06	56	16	43	16	09	15	06		
68	04	48	05	52	06	49	16	53	16	31	15	57		
66	04	52	05	51	06	43	17	03	16	48	16	29	15	52
64	04	55	05	50	06	38	17	10	17	03	16	53	16	40
62	04	57	05	48	06	33	17	17	17	14	17	12	17	11
60	04	59	05	47	06	29	17	23	17	25	17	28	17	35
N 58	05	01	05	46	06	26	17	28	17	34	17	42	17	54
56	05	02	05	45	06	23	17	33	17	42	17	53	18	10
54	05	04	05	45	06	20	17	37	17	49	18	03	18	23
52	05	05	05	44	06	18	17	41	17	55	18	13	18	35
50	05	05	05	43	06	15	17	44	18	01	18	21	18	46
45	05	07	05	41	06	10	17	52	18	13	18	38	19	08
N 40	05	08	05	39	06	06	17	58	18	24	18	53	19	26
35	05	08	05	37	06	02	18	03	18	33	19	05	19	41
30	05	07	05	35	05	59	18	08	18	41	19	16	19	54
20	05	06	05	31	05	54	18	17	18	54	19	34	20	17
N 10	05	03	05	27	05	48	18	24	19	06	19	50	20	36
0	04	58	05	23	05	43	18	31	19	18	20	06	20	55
S 10	04	53	05	17	05	38	18	39	19	29	20	21	21	13
20	04	45	05	11	05	33	18	46	19	42	20	38	21	33
30	04	34	05	02	05	27	18	55	19	56	20	57	21	57
35	04	27	04	57	05	23	19	00	20	04	21	08	22	10
40	04	18	04	51	05	19	19	06	20	14	21	21	22	26
45	04	08	04	44	05	14	19	13	20	25	21	36	22	45
S 50	03	54	04	35	05	08	19	21	20	39	21	55	23	09
52	03	48	04	30	05	05	19	25	20	45	22	04	23	20
54	03	40	04	25	05	02	19	29	20	52	22	14	23	33
56	03	32	04	20	04	59	19	34	21	00	22	26	23	48
58	03	22	04	14	04	55	19	40	21	09	22	39	24	06
S 60	03	10	04	07	04	51	19	46	21	20	22	54	24	28

Lat.	Ocaso Sol		Crepúsculo				Ocaso Luna							
			Civil		Náut.		10		11		12		13	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	16	27	17	36	18	54	07	38	10	05				
N 70	16	36	17	38	18	48	07	28	09	38	12	21		
68	16	43	17	39	18	44	07	19	09	18	11	32		
66	16	49	17	41	18	40	07	12	09	03	11	00	13	20
64	16	55	17	42	18	37	07	06	08	50	10	37	12	32
62	16	59	17	44	18	35	07	01	08	39	10	19	12	02
60	17	03	17	45	18	33	06	56	08	30	10	04	11	39
N 58	17	06	17	46	18	31	06	53	08	22	09	52	11	21
56	17	10	17	47	18	30	06	49	08	15	09	41	11	05
54	17	12	17	48	18	29	06	46	08	09	09	31	10	52
52	17	15	17	49	18	28	06	43	08	03	09	23	10	41
50	17	17	17	50	18	27	06	41	07	58	09	15	10	31
45	17	22	17	52	18	26	06	35	07	48	08	59	10	09
N 40	17	27	17	54	18	25	06	31	07	39	08	46	09	52
35	17	30	17	56	18	25	06	27	07	31	08	35	09	38
30	17	34	17	58	18	26	06	23	07	24	08	25	09	26
20	17	40	18	02	18	27	06	17	07	13	08	09	09	04
N 10	17	45	18	06	18	31	06	12	07	03	07	54	08	46
0	17	50	18	11	18	35	06	07	06	53	07	41	08	29
S 10	17	55	18	16	18	41	06	02	06	44	07	27	08	12
20	18	01	18	23	18	49	05	57	06	34	07	13	07	54
30	18	07	18	32	19	00	05	51	06	23	06	57	07	33
35	18	11	18	37	19	07	05	48	06	17	06	47	07	21
40	18	15	18	43	19	16	05	44	06	09	06	36	07	07
45	18	21	18	51	19	27	05	40	06	01	06	24	06	51
S 50	18	27	19	00	19	41	05	35	05	51	06	09	06	31
52	18	30	19	05	19	47	05	32	05	46	06	02	06	21
54	18	33	19	10	19	55	05	30	05	41	05	54	06	11
56	18	36	19	15	20	04	05	27	05	35	05	45	05	59
58	18	40	19	21	20	14	05	24	05	29	05	35	05	45
S 60	18	44	19	29	20	26	05	20	05	21	05	24	05	28

Día	SOL						LUNA					
	Ec. Tiempo				Paso Mer.		Paso Mer.				Edad	Fase
	00^h		12^h				Sup.		Inf.			
d	m	s	m	s	h	m	h	m	h	m	d	%
10	12	52	13	00	11	47	24	42	12	19	15	100
11	13	08	13	16	11	47	00	42	13	06	16	97
12	13	23	13	31	11	46	01	29	13	53	17	92

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·9		JÚPITER −2·9		SATURNO +0·5		ESTRELLAS		
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec	Nombre	AHS	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′		° ′	° ′
13 00	21 32.2	185 18.5	S 5 31.7	298 33.9	N23 01.0	19 25.8	S 0 50.3	60 00.5	S16 28.3	Acamar	315 12.8	S40 12.7
01	36 34.6	200 18.1	33.0	313 35.8	01.2	34 28.5	50.5	75 03.0	28.3	Achernar	335 21.0	S57 07.3
02	51 37.1	215 17.6	34.2	328 37.6	01.3	49 31.2	50.6	90 05.5	28.3	Acrux	173 02.8	S63 13.3
03	66 39.6	230 17.2	35.4	343 39.5	01.4	64 34.0	50.7	105 08.0	28.3	Adhara	255 07.3	S28 59.9
04	81 42.0	245 16.8	36.7	358 41.3	01.5	79 36.7	50.8	120 10.5	28.3	Aldebaran	290 41.5	N16 33.3
05	96 44.5	260 16.4	37.9	13 43.2	01.6	94 39.5	50.9	135 13.0	28.4			
06	111 47.0	275 15.9	S 5 39.1	28 45.1	N23 01.7	109 42.2	S 0 51.0	150 15.5	S16 28.4	Alioth	166 15.2	N55 50.3
07	126 49.4	290 15.5	40.4	43 46.9	01.8	124 44.9	51.1	165 18.0	28.4	Alkaid	152 54.0	N49 12.1
08	141 51.9	305 15.1	41.6	58 48.8	02.0	139 47.7	51.3	180 20.5	28.4	Alnair	27 35.0	S46 51.2
J 09	156 54.4	320 14.7	42.8	73 50.6	02.1	154 50.4	51.4	195 23.0	28.4	Alnilam	275 39.5	S 1 11.1
U 10	171 56.8	335 14.3	44.1	88 52.5	02.2	169 53.2	51.5	210 25.5	28.4	Alphard	217 49.8	S 8 45.2
E 11	186 59.3	350 13.8	45.3	103 54.4	02.3	184 55.9	51.6	225 28.0	28.4			
V 12	202 01.7	5 13.4	S 5 46.5	118 56.2	N23 02.4	199 58.7	S 0 51.7	240 30.5	S16 28.4	Alphecca	126 05.6	N26 38.5
E 13	217 04.2	20 13.0	47.8	133 58.1	02.5	215 01.4	51.8	255 33.0	28.4	Alpheratz	357 36.4	N29 13.1
S 14	232 06.7	35 12.6	49.0	149 00.0	02.6	230 04.1	52.0	270 35.5	28.4	Altair	62 01.8	N 8 55.8
15	247 09.1	50 12.1	50.2	164 01.9	02.8	245 06.9	52.1	285 38.0	28.5	Ankaa	353 08.6	S42 11.0
16	262 11.6	65 11.7	51.5	179 03.7	02.9	260 09.6	52.2	300 40.6	28.5	Antares	112 18.4	S26 28.9
17	277 14.1	80 11.3	52.7	194 05.6	03.0	275 12.4	52.3	315 43.1	28.5			
18	292 16.5	95 10.9	S 5 53.9	209 07.5	N23 03.1	290 15.1	S 0 52.4	330 45.6	S16 28.5	Arcturus	145 50.0	N19 04.0
19	307 19.0	110 10.4	55.2	224 09.3	03.2	305 17.8	52.5	345 48.1	28.5	Atria	107 14.6	S69 04.2
20	322 21.5	125 10.0	56.4	239 11.2	03.3	320 20.6	52.6	0 50.6	28.5	Avior	234 15.6	S59 34.5
21	337 23.9	140 09.6	57.6	254 13.1	03.4	335 23.3	52.8	15 53.1	28.5	Bellatrix	278 24.7	N 6 22.3
22	352 26.4	155 09.2	5 58.9	269 15.0	03.6	350 26.0	52.9	30 55.6	28.5	Betelgeuse	270 54.0	N 7 24.8
23	7 28.8	170 08.7	6 00.1	284 16.9	03.7	5 28.8	53.0	45 58.1	28.5			
14 00	22 31.3	185 08.3	S 6 01.3	299 18.7	N23 03.8	20 31.5	S 0 53.1	61 00.6	S16 28.6	Canopus	263 53.1	S52 42.1
01	37 33.8	200 07.9	02.6	314 20.6	03.9	35 34.3	53.2	76 03.1	28.6	Capella	280 24.4	N46 01.1
02	52 36.2	215 07.5	03.8	329 22.5	04.0	50 37.0	53.3	91 05.6	28.6	Deneb	49 26.9	N45 21.9
03	67 38.7	230 07.0	05.0	344 24.4	04.1	65 39.7	53.4	106 08.1	28.6	Denebola	182 27.2	N14 26.9
04	82 41.2	245 06.6	06.2	359 26.3	04.2	80 42.5	53.5	121 10.6	28.6	Diphda	348 48.9	S17 51.7
05	97 43.6	260 06.2	07.5	14 28.2	04.4	95 45.2	53.7	136 13.1	28.6			
06	112 46.1	275 05.8	S 6 08.7	29 30.1	N23 04.5	110 48.0	S 0 53.8	151 15.6	S16 28.6	Dubhe	193 43.8	N61 37.7
07	127 48.6	290 05.3	09.9	44 32.0	04.6	125 50.7	53.9	166 18.1	28.6	Elnath	278 04.0	N28 37.6
V 08	142 51.0	305 04.9	11.2	59 33.9	04.7	140 53.4	54.0	181 20.6	28.6	Eltanin	90 43.3	N51 29.4
I 09	157 53.5	320 04.5	12.4	74 35.7	04.8	155 56.2	54.1	196 23.1	28.6	Enif	33 40.5	N 9 58.9
E 10	172 56.0	335 04.1	13.6	89 37.6	04.9	170 58.9	54.2	211 25.6	28.6	Fomalhaut	15 16.3	S29 30.2
R 11	187 58.4	350 03.6	14.8	104 39.5	05.0	186 01.6	54.3	226 28.1	28.7			
N 12	203 00.9	5 03.2	S 6 16.1	119 41.4	N23 05.2	201 04.4	S 0 54.5	241 30.6	S16 28.7	Gacrux	171 54.3	S57 14.2
E 13	218 03.3	20 02.8	17.3	134 43.3	05.3	216 07.1	54.6	256 33.1	28.7	Gienah	175 45.8	S17 39.9
14	233 05.8	35 02.3	18.5	149 45.2	05.4	231 09.8	54.7	271 35.6	28.7	Hadar	148 39.3	S60 28.9
S 15	248 08.3	50 01.9	19.8	164 47.1	05.5	246 12.6	54.8	286 38.1	28.7	Hamal	327 53.0	N23 34.2
16	263 10.7	65 01.5	21.0	179 49.0	05.6	261 15.3	54.9	301 40.6	28.7	Kaus Aust.	83 35.1	S34 22.5
17	278 13.2	80 01.1	22.2	194 50.9	05.7	276 18.1	55.0	316 43.1	28.7			
18	293 15.7	95 00.6	S 6 23.4	209 52.8	N23 05.8	291 20.8	S 0 55.1	331 45.6	S16 28.7	Kochab	137 20.9	N74 03.9
19	308 18.1	110 00.2	24.7	224 54.8	06.0	306 23.5	55.2	346 48.1	28.7	Markab	13 31.5	N15 19.8
20	323 20.6	124 59.8	25.9	239 56.7	06.1	321 26.3	55.3	1 50.6	28.7	Menkar	314 07.8	N 4 10.8
21	338 23.1	139 59.3	27.1	254 58.6	06.2	336 29.0	55.5	16 53.1	28.7	Menkent	148 00.2	S36 28.8
22	353 25.5	154 58.9	28.3	270 00.5	06.3	351 31.7	55.6	31 55.6	28.8	Miaplacidus	221 39.0	S69 48.2
23	8 28.0	169 58.5	29.6	285 02.4	06.4	6 34.5	55.7	46 58.1	28.8			
15 00	23 30.5	184 58.0	S 6 30.8	300 04.3	N23 06.5	21 37.2	S 0 55.8	62 00.6	S16 28.8	Mirfak	308 30.5	N49 56.4
01	38 32.9	199 57.6	32.0	315 06.2	06.6	36 39.9	55.9	77 03.1	28.8	Nunki	75 50.1	S26 16.1
02	53 35.4	214 57.2	33.2	330 08.1	06.8	51 42.7	56.0	92 05.6	28.8	Peacock	53 08.5	S56 39.9
03	68 37.8	229 56.7	34.5	345 10.1	06.9	66 45.4	56.1	107 08.1	28.8	Pollux	243 19.6	N27 58.3
04	83 40.3	244 56.3	35.7	0 12.0	07.0	81 48.1	56.2	122 10.6	28.8	Procyon	244 52.8	N 5 10.1
05	98 42.8	259 55.9	36.9	15 13.9	07.1	96 50.9	56.4	137 13.1	28.8			
06	113 45.2	274 55.5	S 6 38.1	30 15.8	N23 07.2	111 53.6	S 0 56.5	152 15.6	S16 28.8	Rasalhague	96 00.4	N12 32.8
07	128 47.7	289 55.0	39.4	45 17.7	07.3	126 56.3	56.6	167 18.1	28.8	Regulus	207 36.6	N11 51.5
S 08	143 50.2	304 54.6	40.6	60 19.7	07.4	141 59.1	56.7	182 20.6	28.8	Rigel	281 05.5	S 8 10.4
Á 09	158 52.6	319 54.2	41.8	75 21.6	07.5	157 01.8	56.8	197 23.1	28.9	Rigil Kent.	139 43.5	S60 55.7
B 10	173 55.1	334 53.7	43.0	90 23.5	07.7	172 04.5	56.9	212 25.6	28.9	Sabik	102 05.1	S15 45.1
A 11	188 57.6	349 53.3	44.3	105 25.4	07.8	187 07.3	57.0	227 28.1	28.9			
D 12	204 00.0	4 52.8	S 6 45.5	120 27.4	N23 07.9	202 10.0	S 0 57.1	242 30.6	S16 28.9	Schedar	349 32.6	N56 39.8
O 13	219 02.5	19 52.4	46.7	135 29.3	08.0	217 12.7	57.2	257 33.1	28.9	Shaula	96 13.1	S37 07.3
14	234 05.0	34 52.0	47.9	150 31.2	08.1	232 15.5	57.4	272 35.6	28.9	Sirius	258 27.8	S16 44.6
15	249 07.4	49 51.5	49.1	165 33.2	08.2	247 18.2	57.5	287 38.1	28.9	Spica	158 24.6	S11 16.6
16	264 09.9	64 51.1	50.4	180 35.1	08.3	262 20.9	57.6	302 40.6	28.9	Suhail	222 47.9	S43 31.1
17	279 12.3	79 50.7	51.6	195 37.0	08.5	277 23.7	57.7	317 43.1	28.9			
18	294 14.8	94 50.2	S 6 52.8	210 39.0	N23 08.6	292 26.4	S 0 57.8	332 45.6	S16 28.9	Vega	80 34.6	N38 48.5
19	309 17.3	109 49.8	54.0	225 40.9	08.7	307 29.1	57.9	347 48.1	28.9	Zuben'ubi	136 58.4	S16 08.0
20	324 19.7	124 49.4	55.3	240 42.8	08.8	322 31.9	58.0	2 50.5	28.9			
21	339 22.2	139 48.9	56.5	255 44.8	08.9	337 34.6	58.1	17 53.0	28.9		AHS	Paso Mer.
22	354 24.7	154 48.5	57.7	270 46.7	09.0	352 37.3	58.2	32 55.5	29.0		° ′	h m
23	9 27.1	169 48.1	58.9	285 48.7	09.1	7 40.1	58.3	47 58.0	29.0	Venus	162 37.0	11 40
	h m									Marte	276 47.4	4 02
Paso Mer.	22 26.2	*v* −0.4	*d* 1.2	*v* 1.9	*d* 0.1	*v* 2.7	*d* 0.1	*v* 2.5	*d* 0.0	Júpiter	358 00.2	22 34
										Saturno	38 29.3	19 53

UT (HmGr)	SOL AHGr	SOL Dec	LUNA AHGr	LUNA v	LUNA Dec	LUNA d	LUNA Ph
d h	° ′	° ′	° ′	′	° ′	′	′
13 00	183 24.7	S 7 40.9	326 47.9	11.5	N20 47.2	9.9	55.8
01	198 24.8	41.8	341 18.4	11.5	20 57.1	9.7	55.7
02	213 25.0	42.7	355 48.9	11.4	21 06.8	9.7	55.7
03	228 25.1	. . 43.7	10 19.3	11.4	21 16.5	9.5	55.7
04	243 25.3	44.6	24 49.7	11.3	21 26.0	9.5	55.7
05	258 25.5	45.6	39 20.0	11.3	21 35.5	9.3	55.6
06	273 25.6	S 7 46.5	53 50.3	11.3	N21 44.8	9.2	55.6
07	288 25.8	47.4	68 20.6	11.2	21 54.0	9.1	55.6
J 08	303 25.9	48.4	82 50.8	11.2	22 03.1	8.9	55.6
U 09	318 26.1	. . 49.3	97 21.0	11.1	22 12.0	8.9	55.5
E 10	333 26.2	50.2	111 51.1	11.2	22 20.9	8.7	55.5
V 11	348 26.4	51.2	126 21.3	11.0	22 29.6	8.7	55.5
E 12	3 26.5	S 7 52.1	140 51.3	11.1	N22 38.3	8.5	55.5
S 13	18 26.7	53.0	155 21.4	11.0	22 46.8	8.4	55.4
14	33 26.8	54.0	169 51.4	10.9	22 55.2	8.2	55.4
15	48 27.0	. . 54.9	184 21.3	11.0	23 03.4	8.2	55.4
16	63 27.1	55.8	198 51.3	10.9	23 11.6	8.0	55.4
17	78 27.3	56.7	213 21.2	10.8	23 19.6	8.0	55.4
18	93 27.4	S 7 57.7	227 51.0	10.9	N23 27.6	7.8	55.3
19	108 27.6	58.6	242 20.9	10.7	23 35.4	7.6	55.3
20	123 27.7	7 59.5	256 50.6	10.8	23 43.0	7.6	55.3
21	138 27.9	8 00.5	271 20.4	10.7	23 50.6	7.4	55.3
22	153 28.0	01.4	285 50.1	10.7	23 58.0	7.4	55.2
23	168 28.2	02.3	300 19.8	10.7	24 05.4	7.1	55.2
14 00	183 28.3	S 8 03.3	314 49.5	10.6	N24 12.5	7.1	55.2
01	198 28.5	04.2	329 19.1	10.6	24 19.6	7.0	55.2
02	213 28.6	05.1	343 48.7	10.6	24 26.6	6.8	55.2
03	228 28.7	. . 06.1	358 18.3	10.5	24 33.4	6.7	55.1
04	243 28.9	07.0	12 47.8	10.5	24 40.1	6.5	55.1
05	258 29.0	07.9	27 17.3	10.5	24 46.6	6.5	55.1
06	273 29.2	S 8 08.8	41 46.8	10.4	N24 53.1	6.3	55.1
07	288 29.3	09.8	56 16.2	10.4	24 59.4	6.2	55.0
V 08	303 29.5	10.7	70 45.6	10.4	25 05.6	6.1	55.0
I 09	318 29.6	. . 11.6	85 15.0	10.3	25 11.7	5.9	55.0
E 10	333 29.8	12.6	99 44.3	10.4	25 17.6	5.8	55.0
R 11	348 29.9	13.5	114 13.7	10.3	25 23.4	5.7	55.0
N 12	3 30.1	S 8 14.4	128 43.0	10.3	N25 29.1	5.5	54.9
E 13	18 30.2	15.3	143 12.3	10.2	25 34.6	5.5	54.9
S 14	33 30.4	16.3	157 41.5	10.2	25 40.1	5.3	54.9
15	48 30.5	. . 17.2	172 10.7	10.2	25 45.4	5.1	54.9
16	63 30.6	18.1	186 39.9	10.2	25 50.5	5.1	54.9
17	78 30.8	19.1	201 09.1	10.2	25 55.6	4.9	54.9
18	93 30.9	S 8 20.0	215 38.3	10.1	N26 00.5	4.7	54.8
19	108 31.1	20.9	230 07.4	10.1	26 05.2	4.7	54.8
20	123 31.2	21.8	244 36.5	10.1	26 09.9	4.5	54.8
21	138 31.4	. . 22.8	259 05.6	10.1	26 14.4	4.4	54.8
22	153 31.5	23.7	273 34.7	10.1	26 18.8	4.2	54.8
23	168 31.6	24.6	288 03.8	10.0	26 23.0	4.1	54.7
15 00	183 31.8	S 8 25.5	302 32.8	10.1	N26 27.1	4.0	54.7
01	198 31.9	26.5	317 01.9	10.0	26 31.1	3.9	54.7
02	213 32.1	27.4	331 30.9	10.0	26 35.0	3.7	54.7
03	228 32.2	. . 28.3	345 59.9	10.0	26 38.7	3.6	54.7
04	243 32.4	29.2	0 28.9	9.9	26 42.3	3.4	54.7
05	258 32.5	30.2	14 57.8	10.0	26 45.7	3.3	54.7
06	273 32.6	S 8 31.1	29 26.8	9.9	N26 49.0	3.2	54.6
07	288 32.8	32.0	43 55.7	10.0	26 52.2	3.1	54.6
S 08	303 32.9	32.9	58 24.7	9.9	26 55.3	2.9	54.6
Á 09	318 33.1	. . 33.9	72 53.6	9.9	26 58.2	2.8	54.6
B 10	333 33.2	34.8	87 22.5	9.9	27 01.0	2.6	54.6
A 11	348 33.3	35.7	101 51.4	9.9	27 03.6	2.5	54.6
D 12	3 33.5	S 8 36.6	116 20.3	9.9	N27 06.1	2.4	54.6
O 13	18 33.6	37.6	130 49.2	9.9	27 08.5	2.3	54.5
14	33 33.7	38.5	145 18.1	9.9	27 10.8	2.1	54.5
15	48 33.9	. . 39.4	159 47.0	9.9	27 12.9	1.9	54.5
16	63 34.0	40.3	174 15.9	9.9	27 14.8	1.9	54.5
17	78 34.2	41.2	188 44.8	9.9	27 16.7	1.7	54.5
18	93 34.3	S 8 42.2	203 13.7	9.9	N27 18.4	1.6	54.5
19	108 34.4	43.1	217 42.6	9.9	27 20.0	1.4	54.5
20	123 34.6	44.0	232 11.5	9.9	27 21.4	1.3	54.5
21	138 34.7	. . 44.9	246 40.4	9.9	27 22.7	1.2	54.4
22	153 34.8	45.9	261 09.3	9.8	27 23.9	1.0	54.4
23	168 35.0	46.8	275 38.1	10.0	N27 24.9	0.9	54.4
	S/D 16.1	d 0.9	S/D	15.1		15.0	14.9

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 13	Orto Luna 14	Orto Luna 15	Orto Luna 16
°	h m	h m	h m	h m	h m	h m	h m
N 72	04 51	06 09	07 19				
N 70	04 55	06 05	07 08				
68	04 58	06 03	07 00				
66	05 01	06 00	06 53	15 52			
64	05 03	05 58	06 46	16 40	16 07		
62	05 05	05 56	06 41	17 11	17 13	17 25	18 16
60	05 06	05 54	06 37	17 35	17 48	18 16	19 08
N 58	05 07	05 53	06 33	17 54	18 14	18 47	19 39
56	05 08	05 51	06 29	18 10	18 34	19 11	20 03
54	05 09	05 50	06 26	18 23	18 51	19 30	20 22
52	05 10	05 49	06 23	18 35	19 05	19 46	20 38
50	05 10	05 47	06 20	18 46	19 18	20 00	20 52
45	05 11	05 45	06 14	19 08	19 44	20 28	21 20
N 40	05 11	05 42	06 09	19 26	20 05	20 51	21 43
35	05 10	05 39	06 05	19 41	20 22	21 09	22 01
30	05 09	05 37	06 01	19 54	20 37	21 25	22 17
20	05 07	05 32	05 54	20 17	21 03	21 52	22 44
N 10	05 03	05 27	05 48	20 36	21 25	22 15	23 07
0	04 58	05 22	05 43	20 55	21 46	22 37	23 28
S 10	04 51	05 16	05 37	21 13	22 06	22 59	23 50
20	04 42	05 08	05 31	21 33	22 29	23 22	24 13
30	04 30	04 59	05 23	21 57	22 55	23 49	24 40
35	04 23	04 53	05 19	22 10	23 10	24 06	00 06
40	04 13	04 46	05 14	22 26	23 28	24 24	00 24
45	04 02	04 38	05 08	22 45	23 49	24 47	00 47
S 50	03 47	04 28	05 02	23 09	24 17	00 17	01 16
52	03 40	04 23	04 58	23 20	24 30	00 30	01 30
54	03 32	04 18	04 55	23 33	24 46	00 46	01 47
56	03 22	04 12	04 51	23 48	25 04	01 04	02 07
58	03 12	04 05	04 47	24 06	00 06	01 27	02 31
S 60	02 59	03 57	04 42	24 28	00 28	01 56	03 05

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 13	Ocaso Luna 14	Ocaso Luna 15	Ocaso Luna 16
°	h m	h m	h m	h m	h m	h m	h m
N 72	16 11	17 21	18 39				
N 70	16 22	17 25	18 35				
68	16 31	17 28	18 32				
66	16 38	17 30	18 29	13 20			
64	16 44	17 32	18 27	12 32	14 50		
62	16 50	17 34	18 26	12 02	13 45	15 20	16 16
60	16 54	17 36	18 24	11 39	13 10	14 29	15 25
N 58	16 58	17 38	18 23	11 21	12 45	13 58	14 53
56	17 02	17 40	18 22	11 05	12 25	13 35	14 29
54	17 05	17 41	18 22	10 52	12 09	13 16	14 10
52	17 08	17 42	18 21	10 41	11 54	13 00	13 54
50	17 11	17 44	18 21	10 31	11 42	12 46	13 40
45	17 17	17 47	18 21	10 09	11 16	12 18	13 11
N 40	17 22	17 49	18 21	09 52	10 56	11 56	12 49
35	17 27	17 52	18 21	09 38	10 39	11 37	12 30
30	17 30	17 55	18 22	09 26	10 25	11 21	12 14
20	17 37	17 59	18 25	09 04	10 00	10 55	11 47
N 10	17 43	18 05	18 29	08 46	09 39	10 32	11 24
0	17 49	18 10	18 34	08 29	09 19	10 10	11 02
S 10	17 55	18 17	18 41	08 12	09 00	09 49	10 40
20	18 02	18 24	18 50	07 54	08 38	09 26	10 17
30	18 09	18 34	19 02	07 33	08 14	09 00	09 50
35	18 14	18 40	19 10	07 21	08 00	08 44	09 33
40	18 19	18 46	19 20	07 07	07 43	08 26	09 15
45	18 24	18 55	19 31	06 51	07 24	08 04	08 52
S 50	18 32	19 05	19 46	06 31	06 59	07 36	08 23
52	18 35	19 10	19 54	06 21	06 47	07 22	08 09
54	18 38	19 16	20 02	06 11	06 34	07 07	07 52
56	18 42	19 22	20 12	05 59	06 18	06 48	07 32
58	18 47	19 29	20 23	05 45	06 00	06 25	07 08
S 60	18 52	19 37	20 36	05 28	05 37	05 56	06 34

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
13	13 38	13 46	11 46	02 17	14 42	18 86	
14	13 53	14 00	11 46	03 07	15 32	19 79	
15	14 07	14 14	11 46	03 58	16 24	20 71	

UT (HmGr)	ARIES	VENUS −3·9		MARTE −0·9		JÚPITER −2·9		SATURNO +0·5		ESTRELLAS		
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec	Nombre	AHS	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′		° ′	° ′
16 00	24 29.6	184 47.6	S 7 00.1	300 50.6	N23 09.2	22 42.8	S 0 58.5	63 00.5	S16 29.0	Acamar	315 12.8	S40 12.7
01	39 32.1	199 47.2	01.4	315 52.6	09.4	37 45.5	58.6	78 03.0	29.0	Achernar	335 21.0	S57 07.3
02	54 34.5	214 46.7	02.6	330 54.5	09.5	52 48.3	58.7	93 05.5	29.0	Acrux	173 02.8	S63 13.3
03	69 37.0	229 46.3	03.8	345 56.4	09.6	67 51.0	58.8	108 08.0	29.0	Adhara	255 07.3	S28 59.9
04	84 39.4	244 45.9	05.0	0 58.4	09.7	82 53.7	58.9	123 10.5	29.0	Aldebaran	290 41.5	N16 33.3
05	99 41.9	259 45.4	06.2	16 00.3	09.8	97 56.4	59.0	138 13.0	29.0			
06	114 44.4	274 45.0	S 7 07.4	31 02.3	N23 09.9	112 59.2	S 0 59.1	153 15.5	S16 29.0	Alioth	166 15.2	N55 50.3
07	129 46.8	289 44.6	08.7	46 04.3	10.0	128 01.9	59.2	168 18.0	29.0	Alkaid	152 54.0	N49 12.1
08	144 49.3	304 44.1	09.9	61 06.2	10.2	143 04.6	59.3	183 20.5	29.0	Alnair	27 35.0	S46 51.2
D 09	159 51.8	319 43.7	11.1	76 08.2	10.3	158 07.4	59.4	198 23.0	29.0	Alnilam	275 39.5	S 1 11.1
O 10	174 54.2	334 43.2	12.3	91 10.1	10.4	173 10.1	59.5	213 25.5	29.0	Alphard	217 49.7	S 8 45.2
M 11	189 56.7	349 42.8	13.5	106 12.1	10.5	188 12.8	59.7	228 28.0	29.0			
I 12	204 59.2	4 42.4	S 7 14.7	121 14.0	N23 10.6	203 15.5	S 0 59.8	243 30.5	S16 29.1	Alphecca	126 05.6	N26 38.5
N 13	220 01.6	19 41.9	16.0	136 16.0	10.7	218 18.3	0 59.9	258 32.9	29.1	Alpheratz	357 36.4	N29 13.1
G 14	235 04.1	34 41.5	17.2	151 18.0	10.8	233 21.0	1 00.0	273 35.4	29.1	Altair	62 01.8	N 8 55.8
O 15	250 06.6	49 41.0	18.4	166 19.9	10.9	248 23.7	00.1	288 37.9	29.1	Ankaa	353 08.6	S42 11.0
16	265 09.0	64 40.6	19.6	181 21.9	11.1	263 26.5	00.2	303 40.4	29.1	Antares	112 18.4	S26 28.9
17	280 11.5	79 40.1	20.8	196 23.9	11.2	278 29.2	00.3	318 42.9	29.1			
18	295 13.9	94 39.7	S 7 22.0	211 25.8	N23 11.3	293 31.9	S 1 00.4	333 45.4	S16 29.1	Arcturus	145 50.0	N19 04.0
19	310 16.4	109 39.3	23.3	226 27.8	11.4	308 34.6	00.5	348 47.9	29.1	Atria	107 14.6	S69 04.2
20	325 18.9	124 38.8	24.5	241 29.8	11.5	323 37.4	00.6	3 50.4	29.1	Avior	234 15.6	S59 34.5
21	340 21.3	139 38.4	25.7	256 31.7	11.6	338 40.1	00.7	18 52.9	29.1	Bellatrix	278 24.7	N 6 22.3
22	355 23.8	154 37.9	26.9	271 33.7	11.7	353 42.8	00.8	33 55.4	29.1	Betelgeuse	270 54.0	N 7 24.8
23	10 26.3	169 37.5	28.1	286 35.7	11.8	8 45.5	01.0	48 57.9	29.1			
17 00	25 28.7	184 37.0	S 7 29.3	301 37.7	N23 12.0	23 48.3	S 1 01.1	64 00.4	S16 29.1	Canopus	263 53.0	S52 42.1
01	40 31.2	199 36.6	30.5	316 39.6	12.1	38 51.0	01.2	79 02.8	29.1	Capella	280 24.4	N46 01.1
02	55 33.7	214 36.2	31.8	331 41.6	12.2	53 53.7	01.3	94 05.3	29.1	Deneb	49 27.0	N45 21.9
03	70 36.1	229 35.7	33.0	346 43.6	12.3	68 56.5	01.4	109 07.8	29.1	Denebola	182 27.1	N14 26.8
04	85 38.6	244 35.3	34.2	1 45.6	12.4	83 59.2	01.5	124 10.3	29.1	Diphda	348 48.8	S17 51.7
05	100 41.1	259 34.8	35.4	16 47.6	12.5	99 01.9	01.6	139 12.8	29.2			
06	115 43.5	274 34.4	S 7 36.6	31 49.5	N23 12.6	114 04.6	S 1 01.7	154 15.3	S16 29.2	Dubhe	193 43.8	N61 37.6
07	130 46.0	289 33.9	37.8	46 51.5	12.7	129 07.4	01.8	169 17.8	29.2	Elnath	278 04.0	N28 37.6
08	145 48.4	304 33.5	39.0	61 53.5	12.9	144 10.1	01.9	184 20.3	29.2	Eltanin	90 43.3	N51 29.4
L 09	160 50.9	319 33.0	40.2	76 55.5	13.0	159 12.8	02.0	199 22.8	29.2	Enif	33 40.5	N 9 58.9
U 10	175 53.4	334 32.6	41.4	91 57.5	13.1	174 15.5	02.1	214 25.3	29.2	Fomalhaut	15 16.3	S29 30.2
N 11	190 55.8	349 32.1	42.7	106 59.5	13.2	189 18.3	02.2	229 27.7	29.2			
E 12	205 58.3	4 31.7	S 7 43.9	122 01.5	N23 13.3	204 21.0	S 1 02.3	244 30.2	S16 29.2	Gacrux	171 54.3	S57 14.2
S 13	221 00.8	19 31.2	45.1	137 03.5	13.4	219 23.7	02.5	259 32.7	29.2	Gienah	175 45.8	S17 39.9
14	236 03.2	34 30.8	46.3	152 05.5	13.5	234 26.4	02.6	274 35.2	29.2	Hadar	148 39.3	S60 28.9
15	251 05.7	49 30.4	47.5	167 07.5	13.6	249 29.2	02.7	289 37.7	29.2	Hamal	327 53.0	N23 34.2
16	266 08.2	64 29.9	48.7	182 09.5	13.8	264 31.9	02.8	304 40.2	29.2	Kaus Aust.	83 35.1	S34 22.5
17	281 10.6	79 29.5	49.9	197 11.5	13.9	279 34.6	02.9	319 42.7	29.2			
18	296 13.1	94 29.0	S 7 51.1	212 13.5	N23 14.0	294 37.3	S 1 03.0	334 45.2	S16 29.2	Kochab	137 20.9	N74 03.8
19	311 15.6	109 28.6	52.3	227 15.5	14.1	309 40.0	03.1	349 47.6	29.2	Markab	13 31.5	N15 19.8
20	326 18.0	124 28.1	53.5	242 17.5	14.2	324 42.8	03.2	4 50.1	29.2	Menkar	314 07.8	N 4 10.8
21	341 20.5	139 27.7	54.7	257 19.5	14.3	339 45.5	03.3	19 52.6	29.2	Menkent	148 00.2	S36 28.8
22	356 22.9	154 27.2	56.0	272 21.5	14.4	354 48.2	03.4	34 55.1	29.2	Miaplacidus	221 39.0	S69 48.2
23	11 25.4	169 26.8	57.2	287 23.5	14.5	9 50.9	03.5	49 57.6	29.2			
18 00	26 27.9	184 26.3	S 7 58.4	302 25.5	N23 14.7	24 53.7	S 1 03.6	65 00.1	S16 29.3	Mirfak	308 30.5	N49 56.4
01	41 30.3	199 25.9	7 59.6	317 27.5	14.8	39 56.4	03.7	80 02.6	29.3	Nunki	75 50.1	S26 16.1
02	56 32.8	214 25.4	8 00.8	332 29.5	14.9	54 59.1	03.8	95 05.1	29.3	Peacock	53 08.6	S56 39.9
03	71 35.3	229 25.0	02.0	347 31.5	15.0	70 01.8	03.9	110 07.5	29.3	Pollux	243 19.6	N27 58.3
04	86 37.7	244 24.5	03.2	2 33.5	15.1	85 04.5	04.0	125 10.0	29.3	Procyon	244 52.8	N 5 10.1
05	101 40.2	259 24.0	04.4	17 35.6	15.2	100 07.3	04.1	140 12.5	29.3			
06	116 42.7	274 23.6	S 8 05.6	32 37.6	N23 15.3	115 10.0	S 1 04.2	155 15.0	S16 29.3	Rasalhague	96 00.5	N12 32.8
07	131 45.1	289 23.1	06.8	47 39.6	15.4	130 12.7	04.4	170 17.5	29.3	Regulus	207 36.6	N11 51.5
M 08	146 47.6	304 22.7	08.0	62 41.6	15.6	145 15.4	04.5	185 20.0	29.3	Rigel	281 05.5	S 8 10.4
A 09	161 50.0	319 22.2	09.2	77 43.6	15.7	160 18.1	04.6	200 22.4	29.3	Rigil Kent.	139 43.5	S60 55.7
R 10	176 52.5	334 21.8	10.4	92 45.7	15.8	175 20.9	04.7	215 24.9	29.3	Sabik	102 05.1	S15 45.1
T 11	191 55.0	349 21.3	11.6	107 47.7	15.9	190 23.6	04.8	230 27.4	29.3			
E 12	206 57.4	4 20.9	S 8 12.8	122 49.7	N23 16.0	205 26.3	S 1 04.9	245 29.9	S16 29.3	Schedar	349 32.6	N56 39.8
S 13	221 59.9	19 20.4	14.0	137 51.7	16.1	220 29.0	05.0	260 32.4	29.3	Shaula	96 13.1	S37 07.3
14	237 02.4	34 20.0	15.2	152 53.8	16.2	235 31.7	05.1	275 34.9	29.3	Sirius	258 27.8	S16 44.6
15	252 04.8	49 19.5	16.4	167 55.8	16.3	250 34.5	05.2	290 37.4	29.3	Spica	158 24.6	S11 16.6
16	267 07.3	64 19.1	17.6	182 57.8	16.4	265 37.2	05.3	305 39.8	29.3	Suhail	222 47.8	S43 31.1
17	282 09.8	79 18.6	18.8	197 59.9	16.6	280 39.9	05.4	320 42.3	29.3			
18	297 12.2	94 18.1	S 8 20.0	213 01.9	N23 16.7	295 42.6	S 1 05.5	335 44.8	S16 29.3	Vega	80 34.6	N38 48.5
19	312 14.7	109 17.7	21.2	228 03.9	16.8	310 45.3	05.6	350 47.3	29.3	Zuben'ubi	136 58.4	S16 08.0
20	327 17.2	124 17.2	22.4	243 06.0	16.9	325 48.1	05.7	5 49.8	29.3			
21	342 19.6	139 16.8	23.6	258 08.0	17.0	340 50.8	05.8	20 52.3	29.3		AHS	Paso Mer.
22	357 22.1	154 16.3	24.8	273 10.0	17.1	355 53.5	05.9	35 54.7	29.3		° ′	h m
23	12 24.5	169 15.9	26.0	288 12.1	17.2	10 56.2	06.0	50 57.2	29.3	Venus	159 08.3	11 42
	h m									Marte	276 08.9	3 53
Paso Mer.	22 14.4	*v* −0.4	*d* 1.2	*v* 2.0	*d* 0.1	*v* 2.7	*d* 0.1	*v* 2.5	*d* 0.0	Júpiter	358 19.5	22 21
										Saturno	38 31.6	19 41

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	° ′		° ′		° ′	′	° ′	′	′	
16 00	183 35.1	S	8 47.7		290 07.1	9.9	N27 25.8	0.8	54.4	
01	198 35.3		48.6		304 36.0	9.9	27 26.6	0.6	54.4	
02	213 35.4		49.5		319 04.9	9.9	27 27.2	0.5	54.4	
03	228 35.5	. .	50.5		333 33.8	9.9	27 27.7	0.4	54.4	
04	243 35.7		51.4		348 02.7	10.0	27 28.1	0.2	54.4	
05	258 35.8		52.3		2 31.7	9.9	27 28.3	0.1	54.4	
06	273 35.9	S	8 53.2		17 00.6	10.0	N27 28.4	0.0	54.4	
07	288 36.1		54.1		31 29.6	10.0	27 28.4	0.2	54.3	
08	303 36.2		55.1		45 58.6	10.0	27 28.2	0.3	54.3	
09	318 36.3	. .	56.0		60 27.6	10.0	27 27.9	0.4	54.3	
10	333 36.5		56.9		74 56.6	10.0	27 27.5	0.6	54.3	
11	348 36.6		57.8		89 25.6	10.0	27 26.9	0.7	54.3	
12	3 36.7	S	8 58.7		103 54.6	10.1	N27 26.2	0.8	54.3	
13	18 36.9		8 59.6		118 23.7	10.0	27 25.4	1.0	54.3	
14	33 37.0		9 00.6		132 52.7	10.1	27 24.4	1.1	54.3	
15	48 37.1	. .	01.5		147 21.8	10.1	27 23.3	1.2	54.3	
16	63 37.3		02.4		161 50.9	10.2	27 22.1	1.4	54.3	
17	78 37.4		03.3		176 20.1	10.1	27 20.7	1.5	54.3	
18	93 37.5	S	9 04.2		190 49.2	10.2	N27 19.2	1.6	54.3	
19	108 37.7		05.1		205 18.4	10.2	27 17.6	1.7	54.3	
20	123 37.8		06.1		219 47.6	10.2	27 15.9	1.9	54.3	
21	138 37.9	. .	07.0		234 16.8	10.3	27 14.0	2.0	54.3	
22	153 38.1		07.9		248 46.1	10.3	27 12.0	2.2	54.3	
23	168 38.2		08.8		263 15.4	10.3	27 09.8	2.3	54.3	
17 00	183 38.3	S	9 09.7		277 44.7	10.3	N27 07.5	2.4	54.2	
01	198 38.4		10.6		292 14.0	10.4	27 05.1	2.5	54.2	
02	213 38.6		11.6		306 43.4	10.4	27 02.6	2.7	54.2	
03	228 38.7	. .	12.5		321 12.8	10.4	26 59.9	2.7	54.2	
04	243 38.8		13.4		335 42.2	10.4	26 57.2	3.0	54.2	
05	258 39.0		14.3		350 11.6	10.5	26 54.2	3.0	54.2	
06	273 39.1	S	9 15.2		4 41.1	10.5	N26 51.2	3.2	54.2	
07	288 39.2		16.1		19 10.6	10.6	26 48.0	3.3	54.2	
08	303 39.3		17.0		33 40.2	10.6	26 44.7	3.4	54.2	
09	318 39.5	. .	18.0		48 09.8	10.6	26 41.3	3.6	54.2	
10	333 39.6		18.9		62 39.4	10.6	26 37.7	3.6	54.2	
11	348 39.7		19.8		77 09.0	10.7	26 34.1	3.8	54.2	
12	3 39.9	S	9 20.7		91 38.7	10.7	N26 30.3	4.0	54.2	
13	18 40.0		21.6		106 08.4	10.8	26 26.3	4.0	54.2	
14	33 40.1		22.5		120 38.2	10.8	26 22.3	4.2	54.2	
15	48 40.2	. .	23.4		135 08.0	10.8	26 18.1	4.3	54.2	
16	63 40.4		24.3		149 37.8	10.9	26 13.8	4.4	54.2	
17	78 40.5		25.3		164 07.7	10.9	26 09.4	4.6	54.2	
18	93 40.6	S	9 26.2		178 37.6	11.0	N26 04.8	4.6	54.2	
19	108 40.7		27.1		193 07.6	11.0	26 00.2	4.8	54.2	
20	123 40.9		28.0		207 37.6	11.0	25 55.4	4.9	54.2	
21	138 41.0	. .	28.9		222 07.6	11.1	25 50.5	5.1	54.2	
22	153 41.1		29.8		236 37.7	11.1	25 45.4	5.1	54.3	
23	168 41.2		30.7		251 07.8	11.1	25 40.3	5.3	54.3	
18 00	183 41.4	S	9 31.6		265 37.9	11.2	N25 35.0	5.4	54.3	
01	198 41.5		32.5		280 08.1	11.3	25 29.6	5.5	54.3	
02	213 41.6		33.5		294 38.4	11.3	25 24.1	5.6	54.3	
03	228 41.7	. .	34.4		309 08.7	11.3	25 18.5	5.7	54.3	
04	243 41.8		35.3		323 39.0	11.4	25 12.8	5.9	54.3	
05	258 42.0		36.2		338 09.4	11.4	25 06.9	6.0	54.3	
06	273 42.1	S	9 37.1		352 39.8	11.5	N25 00.9	6.1	54.3	
07	288 42.2		38.0		7 10.3	11.5	24 54.8	6.2	54.3	
08	303 42.3		38.9		21 40.8	11.6	24 48.6	6.3	54.3	
09	318 42.5	. .	39.8		36 11.4	11.6	24 42.3	6.4	54.3	
10	333 42.6		40.7		50 42.0	11.6	24 35.9	6.6	54.3	
11	348 42.7		41.6		65 12.6	11.7	24 29.3	6.6	54.3	
12	3 42.8	S	9 42.5		79 43.3	11.7	N24 22.7	6.8	54.3	
13	18 42.9		43.4		94 14.0	11.8	24 15.9	6.9	54.3	
14	33 43.1		44.3		108 44.8	11.9	24 09.0	7.0	54.3	
15	48 43.2	. .	45.3		123 15.7	11.8	24 02.0	7.1	54.4	
16	63 43.3		46.2		137 46.5	12.0	23 54.9	7.2	54.4	
17	78 43.4		47.1		152 17.5	11.9	23 47.7	7.3	54.4	
18	93 43.5	S	9 48.0		166 48.4	12.1	N23 40.4	7.5	54.4	
19	108 43.6		48.9		181 19.5	12.0	23 32.9	7.5	54.4	
20	123 43.8		49.8		195 50.5	12.1	23 25.4	7.7	54.4	
21	138 43.9	. .	50.7		210 21.6	12.2	23 17.7	7.7	54.4	
22	153 44.0		51.6		224 52.8	12.2	23 10.0	7.9	54.4	
23	168 44.1		52.5		239 24.0	12.3	N23 02.1	7.9	54.4	
	S/D 16.1		d 0.9		S/D	14.8		14.8		14.8

DOMINGO — LUNES — MARTES

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			16	17	18	19
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	05	04	06	22	07 34				
N 70	05	07	06	17	07 21				20 21
68	05	09	06	13	07 11				21 40
66	05	10	06	10	07 03			19 53	22 17
64	05	12	06	07	06 55		18 19	20 52	22 43
62	05	13	06	04	06 49	18 16	19 46	21 25	23 03
60	05	13	06	02	06 44	19 08	20 23	21 50	23 20
N 58	05	14	05	59	06 39	19 39	20 49	22 09	23 33
56	05	14	05	57	06 35	20 03	21 09	22 25	23 45
54	05	15	05	55	06 31	20 22	21 26	22 39	23 55
52	05	15	05	54	06 28	20 38	21 41	22 51	24 04
50	05	15	05	52	06 25	20 52	21 54	23 01	24 13
45	05	14	05	48	06 18	21 20	22 20	23 23	24 30
N 40	05	14	05	45	06 12	21 43	22 40	23 41	24 44
35	05	12	05	42	06 07	22 01	22 57	23 56	24 56
30	05	11	05	39	06 03	22 17	23 12	24 09	00 09
20	05	07	05	33	05 55	22 44	23 37	24 30	00 30
N 10	05	03	05	27	05 49	23 07	23 58	24 49	00 49
0	04	57	05	21	05 42	23 28	24 18	00 18	01 07
S 10	04	49	05	14	05 35	23 50	24 38	00 38	01 24
20	04	40	05	06	05 28	24 13	00 13	01 00	01 43
30	04	27	04	55	05 20	24 40	00 40	01 25	02 04
35	04	18	04	49	05 15	00 06	00 55	01 39	02 17
40	04	08	04	42	05 10	00 24	01 14	01 56	02 31
45	03	56	04	33	05 03	00 47	01 36	02 16	02 48
S 50	03	40	04	21	04 55	01 16	02 04	02 41	03 09
52	03	32	04	16	04 52	01 30	02 18	02 53	03 19
54	03	23	04	10	04 48	01 47	02 34	03 07	03 30
56	03	13	04	04	04 43	02 07	02 52	03 23	03 43
58	03	01	03	56	04 38	02 31	03 15	03 42	03 58
S 60	02	47	03	47	04 33	03 05	03 46	04 05	04 15

Lat.	Ocaso Sol	Crepúsculo			Ocaso Luna			
		Civil		Náut.	16	17	18	19
°	h m	h	m	h m	h m	h m	h m	h m
N 72	15 55	17	07	18 24				
N 70	16 08	17	12	18 22				19 18
68	16 18	17	16	18 20				17 59
66	16 27	17	19	18 19			18 07	17 21
64	16 34	17	23	18 17		17 59	17 07	16 54
62	16 40	17	25	18 17	16 16	16 31	16 33	16 33
60	16 46	17	28	18 16	15 25	15 54	16 08	16 15
N 58	16 50	17	30	18 16	14 53	15 28	15 49	16 01
56	16 55	17	32	18 15	14 29	15 07	15 32	15 49
54	16 58	17	34	18 15	14 10	14 50	15 18	15 38
52	17 02	17	36	18 15	13 54	14 35	15 05	15 28
50	17 05	17	38	18 15	13 40	14 22	14 55	15 19
45	17 12	17	42	18 16	13 11	13 56	14 32	15 01
N 40	17 18	17	45	18 16	12 49	13 34	14 13	14 46
35	17 23	17	48	18 18	12 30	13 17	13 58	14 33
30	17 27	17	51	18 19	12 14	13 02	13 44	14 22
20	17 35	17	57	18 23	11 47	12 36	13 21	14 02
N 10	17 42	18	03	18 28	11 24	12 14	13 01	13 45
0	17 49	18	10	18 34	11 02	11 53	12 42	13 29
S 10	17 55	18	17	18 42	10 40	11 32	12 23	13 13
20	18 03	18	25	18 51	10 17	11 09	12 03	12 56
30	18 11	18	36	19 05	09 50	10 43	11 39	12 36
35	18 16	18	42	19 13	09 33	10 28	11 25	12 25
40	18 22	18	50	19 23	09 15	10 10	11 09	12 11
45	18 28	18	59	19 36	08 52	09 48	10 50	11 55
S 50	18 36	19	11	19 52	08 23	09 20	10 25	11 35
52	18 40	19	16	20 00	08 09	09 07	10 14	11 26
54	18 44	19	22	20 09	07 52	08 51	10 00	11 15
56	18 49	19	29	20 20	07 32	08 32	09 44	11 03
58	18 54	19	37	20 32	07 08	08 09	09 26	10 49
S 60	18 59	19	45	20 46	06 34	07 39	09 03	10 32

Día	SOL				Paso Mer.	LUNA			
	Ec. Tiempo					Paso Mer. Sup.		Paso Mer. Inf.		Edad	Fase
	00h		12h							
d	m	s	m	s	h m	h	m	h	m	d	%
16	14	20	14	27	11 46	04	50	17	15	21	62
17	14	33	14	39	11 45	05	41	18	06	22	52
18	14	45	14	51	11 45	06	30	18	55	23	43

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·0		JÚPITER −2·9		SATURNO +0·5	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
19 00	27 27.0	184 15.4	S 8 27.2	303 14.1	N23 17.3	25 58.9	S 1 06.1	65 59.7	S16 29.4
01	42 29.5	199 14.9	28.4	318 16.2	17.5	41 01.6	06.2	81 02.2	29.4
02	57 31.9	214 14.5	29.6	333 18.2	17.6	56 04.4	06.3	96 04.7	29.4
03	72 34.4	229 14.0	30.8	348 20.3	17.7	71 07.1	06.4	111 07.2	29.4
04	87 36.9	244 13.6	32.0	3 22.3	17.8	86 09.8	06.5	126 09.6	29.4
05	102 39.3	259 13.1	33.2	18 24.3	17.9	101 12.5	06.6	141 12.1	29.4
06	117 41.8	274 12.6	S 8 34.4	33 26.4	N23 18.0	116 15.2	S 1 06.7	156 14.6	S16 29.4
07	132 44.3	289 12.2	35.6	48 28.4	18.1	131 17.9	06.8	171 17.1	29.4
08	147 46.7	304 11.7	36.8	63 30.5	18.2	146 20.7	06.9	186 19.6	29.4
M 09	162 49.2	319 11.3	38.0	78 32.6	18.4	161 23.4	07.0	201 22.0	29.4
I 10	177 51.7	334 10.8	39.2	93 34.6	18.5	176 26.1	07.1	216 24.5	29.4
É 11	192 54.1	349 10.3	40.4	108 36.7	18.6	191 28.8	07.2	231 27.0	29.4
R 12	207 56.6	4 09.9	S 8 41.6	123 38.7	N23 18.7	206 31.5	S 1 07.3	246 29.5	S16 29.4
C 13	222 59.0	19 09.4	42.8	138 40.8	18.8	221 34.2	07.4	261 32.0	29.4
O 14	238 01.5	34 09.0	44.0	153 42.9	18.9	236 37.0	07.6	276 34.4	29.4
L 15	253 04.0	49 08.5	45.2	168 44.9	19.0	251 39.7	07.7	291 36.9	29.4
E 16	268 06.4	64 08.0	46.4	183 47.0	19.1	266 42.4	07.8	306 39.4	29.4
S 17	283 08.9	79 07.6	47.6	198 49.0	19.2	281 45.1	07.9	321 41.9	29.4
18	298 11.4	94 07.1	S 8 48.8	213 51.1	N23 19.4	296 47.8	S 1 08.0	336 44.4	S16 29.4
19	313 13.8	109 06.6	49.9	228 53.2	19.5	311 50.5	08.1	351 46.8	29.4
20	328 16.3	124 06.2	51.1	243 55.3	19.6	326 53.2	08.2	6 49.3	29.4
21	343 18.8	139 05.7	52.3	258 57.3	19.7	341 56.0	08.3	21 51.8	29.4
22	358 21.2	154 05.2	53.5	273 59.4	19.8	356 58.7	08.4	36 54.3	29.4
23	13 23.7	169 04.8	54.7	289 01.5	19.9	12 01.4	08.5	51 56.8	29.4
20 00	28 26.1	184 04.3	S 8 55.9	304 03.5	N23 20.0	27 04.1	S 1 08.6	66 59.2	S16 29.4
01	43 28.6	199 03.8	57.1	319 05.6	20.1	42 06.8	08.7	82 01.7	29.4
02	58 31.1	214 03.4	58.3	334 07.7	20.3	57 09.5	08.8	97 04.2	29.4
03	73 33.5	229 02.9	8 59.5	349 09.8	20.4	72 12.2	08.9	112 06.7	29.4
04	88 36.0	244 02.4	9 00.7	4 11.9	20.5	87 14.9	09.0	127 09.1	29.4
05	103 38.5	259 02.0	01.9	19 13.9	20.6	102 17.7	09.1	142 11.6	29.4
06	118 40.9	274 01.5	S 9 03.0	34 16.0	N23 20.7	117 20.4	S 1 09.2	157 14.1	S16 29.4
07	133 43.4	289 01.0	04.2	49 18.1	20.8	132 23.1	09.3	172 16.6	29.4
J 08	148 45.9	304 00.6	05.4	64 20.2	20.9	147 25.8	09.4	187 19.1	29.4
U 09	163 48.3	319 00.1	06.6	79 22.3	21.0	162 28.5	09.5	202 21.5	29.4
E 10	178 50.8	333 59.6	07.8	94 24.4	21.2	177 31.2	09.6	217 24.0	29.4
V 11	193 53.3	348 59.2	09.0	109 26.5	21.3	192 33.9	09.7	232 26.5	29.4
E 12	208 55.7	3 58.7	S 9 10.2	124 28.6	N23 21.4	207 36.6	S 1 09.8	247 29.0	S16 29.4
S 13	223 58.2	18 58.2	11.4	139 30.7	21.5	222 39.3	09.9	262 31.4	29.4
14	239 00.6	33 57.8	12.5	154 32.8	21.6	237 42.0	10.0	277 33.9	29.4
15	254 03.1	48 57.3	13.7	169 34.9	21.7	252 44.8	10.1	292 36.4	29.4
16	269 05.6	63 56.8	14.9	184 37.0	21.8	267 47.5	10.2	307 38.9	29.4
17	284 08.0	78 56.3	16.1	199 39.1	21.9	282 50.2	10.3	322 41.3	29.4
18	299 10.5	93 55.9	S 9 17.3	214 41.2	N23 22.0	297 52.9	S 1 10.4	337 43.8	S16 29.4
19	314 13.0	108 55.4	18.5	229 43.3	22.2	312 55.6	10.5	352 46.3	29.4
20	329 15.4	123 54.9	19.7	244 45.4	22.3	327 58.3	10.6	7 48.8	29.4
21	344 17.9	138 54.4	20.8	259 47.5	22.4	343 01.0	10.7	22 51.2	29.4
22	359 20.4	153 54.0	22.0	274 49.6	22.5	358 03.7	10.8	37 53.7	29.4
23	14 22.8	168 53.5	23.2	289 51.7	22.6	13 06.4	10.9	52 56.2	29.4
21 00	29 25.3	183 53.0	S 9 24.4	304 53.8	N23 22.7	28 09.1	S 1 11.0	67 58.7	S16 29.4
01	44 27.8	198 52.6	25.6	319 55.9	22.8	43 11.8	11.1	83 01.1	29.4
02	59 30.2	213 52.1	26.8	334 58.0	22.9	58 14.5	11.1	98 03.6	29.4
03	74 32.7	228 51.6	27.9	350 00.1	23.1	73 17.3	11.2	113 06.1	29.4
04	89 35.1	243 51.1	29.1	5 02.2	23.2	88 20.0	11.3	128 08.6	29.4
05	104 37.6	258 50.7	30.3	20 04.4	23.3	103 22.7	11.4	143 11.0	29.4
06	119 40.1	273 50.2	S 9 31.5	35 06.5	N23 23.4	118 25.4	S 1 11.5	158 13.5	S16 29.4
07	134 42.5	288 49.7	32.7	50 08.6	23.5	133 28.1	11.6	173 16.0	29.4
V 08	149 45.0	303 49.2	33.8	65 10.7	23.6	148 30.8	11.7	188 18.4	29.5
I 09	164 47.5	318 48.7	35.0	80 12.9	23.7	163 33.5	11.8	203 20.9	29.5
E 10	179 49.9	333 48.3	36.2	95 15.0	23.8	178 36.2	11.9	218 23.4	29.5
R 11	194 52.4	348 47.8	37.4	110 17.1	23.9	193 38.9	12.0	233 25.9	29.5
N 12	209 54.9	3 47.3	S 9 38.6	125 19.2	N23 24.1	208 41.6	S 1 12.1	248 28.3	S16 29.5
E 13	224 57.3	18 46.8	39.7	140 21.4	24.2	223 44.3	12.2	263 30.8	29.5
S 14	239 59.8	33 46.4	40.9	155 23.5	24.3	238 47.0	12.3	278 33.3	29.5
15	255 02.2	48 45.9	42.1	170 25.6	24.4	253 49.7	12.4	293 35.7	29.5
16	270 04.7	63 45.4	43.3	185 27.8	24.5	268 52.4	12.5	308 38.2	29.4
17	285 07.2	78 44.9	44.4	200 29.9	24.6	283 55.1	12.6	323 40.7	29.4
18	300 09.6	93 44.4	S 9 45.6	215 32.0	N23 24.7	298 57.8	S 1 12.7	338 43.2	S16 29.4
19	315 12.1	108 44.0	46.8	230 34.2	24.8	314 00.5	12.8	353 45.6	29.4
20	330 14.6	123 43.5	48.0	245 36.3	25.0	329 03.2	12.9	8 48.1	29.4
21	345 17.0	138 43.0	49.1	260 38.4	25.1	344 05.9	13.0	23 50.6	29.4
22	0 19.5	153 42.5	50.3	275 40.6	25.2	359 08.6	13.1	38 53.0	29.4
23	15 22.0	168 42.0	51.5	290 42.7	25.3	14 11.4	13.2	53 55.5	29.4
	h m								
Paso Mer.	22 02.6	*v* −0.5	*d* 1.2	*v* 2.1	*d* 0.1	*v* 2.7	*d* 0.1	*v* 2.5	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.8	S40 12.7
Achernar	335 21.0	S57 07.3
Acrux	173 02.8	S63 13.3
Adhara	255 07.2	S28 59.9
Aldebaran	290 41.5	N16 33.3
Alioth	166 15.2	N55 50.2
Alkaid	152 54.0	N49 12.1
Alnair	27 35.0	S46 51.2
Alnilam	275 39.4	S 1 11.1
Alphard	217 49.7	S 8 45.2
Alphecca	126 05.6	N26 38.5
Alpheratz	357 36.4	N29 13.1
Altair	62 01.8	N 8 55.8
Ankaa	353 08.6	S42 11.0
Antares	112 18.4	S26 28.9
Arcturus	145 50.0	N19 04.0
Atria	107 14.7	S69 04.2
Avior	234 15.6	S59 34.5
Bellatrix	278 24.7	N 6 22.3
Betelgeuse	270 53.9	N 7 24.8
Canopus	263 53.0	S52 42.1
Capella	280 24.3	N46 01.1
Deneb	49 27.0	N45 21.9
Denebola	182 27.1	N14 26.8
Diphda	348 48.8	S17 51.7
Dubhe	193 43.8	N61 37.6
Elnath	278 04.0	N28 37.6
Eltanin	90 43.3	N51 29.4
Enif	33 40.5	N 9 58.9
Fomalhaut	15 16.3	S29 30.2
Gacrux	171 54.3	S57 14.2
Gienah	175 45.8	S17 39.9
Hadar	148 39.3	S60 28.8
Hamal	327 52.9	N23 34.2
Kaus Aust.	83 35.1	S34 22.5
Kochab	137 20.9	N74 03.8
Markab	13 31.5	N15 19.8
Menkar	314 07.8	N 4 10.8
Menkent	148 00.2	S36 28.8
Miaplacidus	221 39.0	S69 48.2
Mirfak	308 30.5	N49 56.4
Nunki	75 50.2	S26 16.1
Peacock	53 08.6	S56 39.9
Pollux	243 19.6	N27 58.3
Procyon	244 52.8	N 5 10.1
Rasalhague	96 00.5	N12 32.8
Regulus	207 36.6	N11 51.5
Rigel	281 05.4	S 8 10.4
Rigil Kent.	139 43.5	S60 55.6
Sabik	102 05.1	S15 45.1
Schedar	349 32.6	N56 39.8
Shaula	96 13.1	S37 07.3
Sirius	258 27.8	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 47.8	S43 31.1
Vega	80 34.6	N38 48.5
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	155 38.2	11 44
Marte	275 37.4	3 43
Júpiter	358 37.9	22 08
Saturno	38 33.1	19 29

UT (HmGr)	SOL AHGr	SOL Dec	LUNA AHGr	LUNA *v*	LUNA Dec	LUNA *d*	LUNA Ph
d h	° ′	° ′	° ′	′	° ′	′	′
19 00	183 44.2	S 9 53.4	253 55.3	12.3	N22 54.2	8.1	54.4
01	198 44.4	54.3	268 26.6	12.3	22 46.1	8.2	54.5
02	213 44.5	55.2	282 57.9	12.4	22 37.9	8.3	54.5
03	228 44.6	. . 56.1	297 29.3	12.5	22 29.6	8.4	54.5
04	243 44.7	57.0	312 00.8	12.5	22 21.2	8.5	54.5
05	258 44.8	57.9	326 32.3	12.5	22 12.7	8.5	54.5
06	273 44.9	S 9 58.8	341 03.8	12.6	N22 04.2	8.7	54.5
07	288 45.0	9 59.7	355 35.4	12.6	21 55.5	8.8	54.5
M 08	303 45.2	10 00.6	10 07.0	12.7	21 46.7	8.9	54.5
I 09	318 45.3	. . 01.5	24 38.7	12.7	21 37.8	9.0	54.6
É 10	333 45.4	02.4	39 10.4	12.8	21 28.8	9.1	54.6
É 11	348 45.5	03.3	53 42.2	12.8	21 19.7	9.2	54.6
R 12	3 45.6	S10 04.2	68 14.0	12.9	N21 10.5	9.3	54.6
C 13	18 45.7	05.1	82 45.9	12.9	21 01.2	9.4	54.6
O 14	33 45.8	06.0	97 17.8	12.9	20 51.8	9.4	54.6
L 15	48 46.0	. . 06.9	111 49.7	13.0	20 42.4	9.6	54.6
E 16	63 46.1	07.8	126 21.7	13.1	20 32.8	9.7	54.7
S 17	78 46.2	08.7	140 53.8	13.1	20 23.1	9.8	54.7
18	93 46.3	S10 09.6	155 25.9	13.1	N20 13.3	9.8	54.7
19	108 46.4	10.5	169 58.0	13.2	20 03.5	10.0	54.7
20	123 46.5	11.4	184 30.2	13.2	19 53.5	10.0	54.7
21	138 46.6	. . 12.3	199 02.4	13.3	19 43.5	10.1	54.7
22	153 46.7	13.2	213 34.7	13.3	19 33.4	10.3	54.8
23	168 46.8	14.1	228 07.0	13.3	19 23.1	10.3	54.8
20 00	183 47.0	S10 15.0	242 39.3	13.4	N19 12.8	10.4	54.8
01	198 47.1	15.9	257 11.7	13.4	19 02.4	10.5	54.8
02	213 47.2	16.8	271 44.1	13.5	18 51.9	10.6	54.8
03	228 47.3	. . 17.7	286 16.6	13.5	18 41.3	10.6	54.9
04	243 47.4	18.6	300 49.1	13.5	18 30.7	10.8	54.9
05	258 47.5	19.5	315 21.6	13.6	18 19.9	10.8	54.9
06	273 47.6	S10 20.4	329 54.2	13.6	N18 09.1	10.9	54.9
07	288 47.7	21.3	344 26.8	13.7	17 58.2	11.1	54.9
J 08	303 47.8	22.2	358 59.5	13.7	17 47.1	11.1	55.0
U 09	318 47.9	. . 23.1	13 32.2	13.7	17 36.0	11.1	55.0
E 10	333 48.0	24.0	28 04.9	13.8	17 24.9	11.3	55.0
V 11	348 48.2	24.9	42 37.7	13.8	17 13.6	11.3	55.0
E 12	3 48.3	S10 25.8	57 10.5	13.9	N17 02.3	11.5	55.0
S 13	18 48.4	26.7	71 43.4	13.8	16 50.8	11.5	55.1
14	33 48.5	27.6	86 16.2	14.0	16 39.3	11.5	55.1
15	48 48.6	. . 28.5	100 49.2	13.9	16 27.8	11.7	55.1
16	63 48.7	29.4	115 22.1	14.0	16 16.1	11.8	55.1
17	78 48.8	30.3	129 55.1	14.0	16 04.3	11.8	55.1
18	93 48.9	S10 31.2	144 28.1	14.1	N15 52.5	11.9	55.2
19	108 49.0	32.0	159 01.2	14.0	15 40.6	11.9	55.2
20	123 49.1	32.9	173 34.2	14.1	15 28.7	12.1	55.2
21	138 49.2	. . 33.8	188 07.3	14.2	15 16.6	12.1	55.2
22	153 49.3	34.7	202 40.5	14.1	15 04.5	12.2	55.3
23	168 49.4	35.6	217 13.6	14.2	14 52.3	12.3	55.3
21 00	183 49.5	S10 36.5	231 46.8	14.3	N14 40.0	12.3	55.3
01	198 49.6	37.4	246 20.1	14.2	14 27.7	12.4	55.3
02	213 49.7	38.3	260 53.3	14.3	14 15.3	12.5	55.3
03	228 49.8	. . 39.2	275 26.6	14.3	14 02.8	12.6	55.4
04	243 49.9	40.1	289 59.9	14.3	13 50.2	12.6	55.4
05	258 50.0	41.0	304 33.2	14.4	13 37.6	12.7	55.4
06	273 50.1	S10 41.9	319 06.6	14.3	N13 24.9	12.7	55.4
07	288 50.2	42.7	333 39.9	14.4	13 12.2	12.9	55.5
V 08	303 50.3	43.6	348 13.3	14.4	12 59.3	12.9	55.5
I 09	318 50.4	. . 44.5	2 46.7	14.5	12 46.4	12.9	55.5
E 10	333 50.5	45.4	17 20.2	14.4	12 33.5	13.1	55.5
R 11	348 50.6	46.3	31 53.6	14.5	12 20.4	13.0	55.6
N 12	3 50.7	S10 47.2	46 27.1	14.5	N12 07.4	13.2	55.6
E 13	18 50.8	48.1	61 00.6	14.5	11 54.2	13.2	55.6
S 14	33 50.9	49.0	75 34.1	14.5	11 41.0	13.3	55.6
15	48 51.0	. . 49.9	90 07.6	14.6	11 27.7	13.3	55.7
16	63 51.1	50.7	104 41.2	14.5	11 14.4	13.4	55.7
17	78 51.2	51.6	119 14.7	14.6	11 01.0	13.5	55.7
18	93 51.3	S10 52.5	133 48.3	14.6	N10 47.5	13.5	55.8
19	108 51.4	53.4	148 21.9	14.6	10 34.0	13.6	55.8
20	123 51.5	54.3	162 55.5	14.6	10 20.4	13.6	55.8
21	138 51.6	. . 55.2	177 29.1	14.6	10 06.8	13.7	55.8
22	153 51.7	56.1	192 02.7	14.7	9 53.1	13.7	55.9
23	168 51.8	56.9	206 36.4	14.6	N 9 39.4	13.8	55.9
	S/D 16.1	*d* 0.9	S/D	14.9		15.0	15.1

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 19	Orto Luna 20	Orto Luna 21	Orto Luna 22
°	h m	h m	h m	h m	h m	h m	h m
N 72	05 17	06 35	07 49	▭	22 54	25 21	01 21
N 70	05 18	06 29	07 34	20 21	23 28	25 36	01 36
68	05 19	06 24	07 22	21 40	23 52	25 47	01 47
66	05 20	06 19	07 13	22 17	24 11	00 11	01 57
64	05 20	06 15	07 05	22 43	24 26	00 26	02 05
62	05 20	06 12	06 58	23 03	24 38	00 38	02 12
60	05 20	06 09	06 52	23 20	24 49	00 49	02 17
N 58	05 20	06 06	06 46	23 33	24 58	00 58	02 22
56	05 20	06 03	06 41	23 45	25 06	01 06	02 27
54	05 20	06 01	06 37	23 55	25 13	01 13	02 31
52	05 20	05 59	06 33	24 04	00 04	01 19	02 35
50	05 19	05 57	06 30	24 13	00 13	01 25	02 38
45	05 18	05 52	06 22	24 30	00 30	01 37	02 45
N 40	05 17	05 48	06 16	24 44	00 44	01 47	02 51
35	05 15	05 44	06 10	24 56	00 56	01 56	02 56
30	05 13	05 41	06 05	00 09	01 06	02 03	03 01
20	05 08	05 34	05 56	00 30	01 24	02 16	03 09
N 10	05 03	05 27	05 49	00 49	01 39	02 28	03 15
0	04 56	05 20	05 41	01 07	01 53	02 38	03 22
S 10	04 48	05 13	05 34	01 24	02 08	02 48	03 28
20	04 37	05 04	05 26	01 43	02 23	03 00	03 35
30	04 23	04 52	05 17	02 04	02 40	03 12	03 42
35	04 14	04 45	05 11	02 17	02 50	03 19	03 47
40	04 03	04 37	05 05	02 31	03 01	03 28	03 52
45	03 50	04 27	04 58	02 48	03 15	03 37	03 57
S 50	03 33	04 15	04 49	03 09	03 31	03 49	04 04
52	03 24	04 09	04 45	03 19	03 39	03 54	04 07
54	03 15	04 03	04 41	03 30	03 47	04 00	04 11
56	03 04	03 55	04 36	03 43	03 57	04 07	04 14
58	02 51	03 47	04 30	03 58	04 07	04 14	04 19
S 60	02 35	03 38	04 24	04 15	04 20	04 22	04 23

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 19	Ocaso Luna 20	Ocaso Luna 21	Ocaso Luna 22
°	h m	h m	h m	h m	h m	h m	h m
N 72	15 39	16 52	18 11	▭	18 22	17 28	16 51
N 70	15 54	16 59	18 10	19 18	17 46	17 11	16 44
68	16 06	17 04	18 09	17 59	17 20	16 57	16 38
66	16 16	17 09	18 08	17 21	17 00	16 46	16 33
64	16 24	17 13	18 08	16 54	16 44	16 36	16 29
62	16 31	17 17	18 08	16 33	16 31	16 28	16 25
60	16 37	17 20	18 08	16 15	16 19	16 21	16 22
N 58	16 42	17 23	18 08	16 01	16 09	16 15	16 19
56	16 47	17 25	18 08	15 49	16 00	16 09	16 16
54	16 52	17 28	18 09	15 38	15 52	16 04	16 14
52	16 55	17 30	18 09	15 28	15 45	15 59	16 12
50	16 59	17 32	18 09	15 19	15 39	15 55	16 10
45	17 07	17 37	18 11	15 01	15 25	15 46	16 05
N 40	17 13	17 41	18 12	14 46	15 14	15 39	16 02
35	17 19	17 45	18 14	14 33	15 04	15 32	15 59
30	17 24	17 48	18 16	14 22	14 55	15 26	15 56
20	17 33	17 55	18 21	14 02	14 40	15 16	15 51
N 10	17 41	18 02	18 27	13 45	14 27	15 07	15 47
0	17 48	18 09	18 34	13 29	14 15	14 59	15 42
S 10	17 56	18 17	18 42	13 13	14 02	14 51	15 38
20	18 04	18 26	18 53	12 56	13 49	14 41	15 34
30	18 13	18 38	19 07	12 36	13 34	14 31	15 29
35	18 19	18 45	19 16	12 25	13 25	14 25	15 26
40	18 25	18 53	19 27	12 11	13 14	14 18	15 22
45	18 32	19 03	19 41	11 55	13 02	14 10	15 18
S 50	18 41	19 16	19 58	11 35	12 47	14 00	15 13
52	18 45	19 22	20 07	11 26	12 40	13 55	15 11
54	18 50	19 28	20 17	11 15	12 32	13 50	15 09
56	18 55	19 36	20 28	11 03	12 24	13 45	15 06
58	19 01	19 44	20 42	10 49	12 14	13 38	15 03
S 60	19 07	19 54	20 58	10 32	12 02	13 31	15 00

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
19	14 57	15 02	11 45	07 18	19 41	24 33	
20	15 08	15 13	11 45	08 04	20 27	25 25	
21	15 18	15 23	11 45	08 49	21 10	26 17	

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·0		JÚPITER −2·9		SATURNO +0·5	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
22 00	30 24.4	183 41.6	S 9 52.7	305 44.9	N23 25.4	29 14.1	S 1 13.3	68 58.0	S16 29.4
01	45 26.9	198 41.1	53.8	320 47.0	25.5	44 16.8	13.4	84 00.5	29.4
02	60 29.4	213 40.6	55.0	335 49.2	25.6	59 19.5	13.5	99 02.9	29.4
03	75 31.8	228 40.1	56.2	350 51.3	25.7	74 22.2	13.6	114 05.4	29.4
04	90 34.3	243 39.6	57.4	5 53.5	25.8	89 24.9	13.7	129 07.9	29.4
05	105 36.7	258 39.1	58.5	20 55.6	26.0	104 27.6	13.8	144 10.3	29.4
06	120 39.2	273 38.6	S 9 59.7	35 57.8	N23 26.1	119 30.3	S 1 13.9	159 12.8	S16 29.4
07	135 41.7	288 38.2	10 00.9	50 59.9	26.2	134 33.0	13.9	174 15.3	29.4
08	150 44.1	303 37.7	02.0	66 02.1	26.3	149 35.7	14.0	189 17.7	29.4
S 09	165 46.6	318 37.2	03.2	81 04.3	26.4	164 38.4	14.1	204 20.2	29.4
Á 10	180 49.1	333 36.7	04.4	96 06.4	26.5	179 41.1	14.2	219 22.7	29.4
B 11	195 51.5	348 36.2	05.5	111 08.6	26.6	194 43.8	14.3	234 25.1	29.4
A 12	210 54.0	3 35.7	S10 06.7	126 10.7	N23 26.7	209 46.5	S 1 14.4	249 27.6	S16 29.4
D 13	225 56.5	18 35.2	07.9	141 12.9	26.9	224 49.2	14.5	264 30.1	29.4
O 14	240 58.9	33 34.8	09.0	156 15.1	27.0	239 51.9	14.6	279 32.5	29.4
15	256 01.4	48 34.3	10.2	171 17.2	27.1	254 54.6	14.7	294 35.0	29.4
16	271 03.8	63 33.8	11.4	186 19.4	27.2	269 57.3	14.8	309 37.5	29.4
17	286 06.3	78 33.3	12.6	201 21.6	27.3	285 00.0	14.9	324 39.9	29.4
18	301 08.8	93 32.8	S10 13.7	216 23.8	N23 27.4	300 02.7	S 1 15.0	339 42.4	S16 29.4
19	316 11.2	108 32.3	14.9	231 25.9	27.5	315 05.4	15.1	354 44.9	29.4
20	331 13.7	123 31.8	16.0	246 28.1	27.6	330 08.1	15.2	9 47.3	29.4
21	346 16.2	138 31.3	17.2	261 30.3	27.7	345 10.8	15.3	24 49.8	29.4
22	1 18.6	153 30.8	18.4	276 32.5	27.9	0 13.5	15.4	39 52.3	29.4
23	16 21.1	168 30.4	19.5	291 34.6	28.0	15 16.1	15.5	54 54.7	29.4
23 00	31 23.6	183 29.9	S10 20.7	306 36.8	N23 28.1	30 18.8	S 1 15.6	69 57.2	S16 29.4
01	46 26.0	198 29.4	21.9	321 39.0	28.2	45 21.5	15.6	84 59.7	29.4
02	61 28.5	213 28.9	23.0	336 41.2	28.3	60 24.2	15.7	100 02.1	29.4
03	76 31.0	228 28.4	24.2	351 43.4	28.4	75 26.9	15.8	115 04.6	29.4
04	91 33.4	243 27.9	25.4	6 45.6	28.5	90 29.6	15.9	130 07.1	29.4
05	106 35.9	258 27.4	26.5	21 47.7	28.6	105 32.3	16.0	145 09.5	29.4
06	121 38.3	273 26.9	S10 27.7	36 49.9	N23 28.8	120 35.0	S 1 16.1	160 12.0	S16 29.4
07	136 40.8	288 26.4	28.8	51 52.1	28.9	135 37.7	16.2	175 14.5	29.4
D 08	151 43.3	303 25.9	30.0	66 54.3	29.0	150 40.4	16.3	190 16.9	29.4
O 09	166 45.7	318 25.4	31.2	81 56.5	29.1	165 43.1	16.4	205 19.4	29.4
M 10	181 48.2	333 24.9	32.3	96 58.7	29.2	180 45.8	16.5	220 21.9	29.4
I 11	196 50.7	348 24.4	33.5	112 00.9	29.3	195 48.5	16.6	235 24.3	29.4
N 12	211 53.1	3 23.9	S10 34.6	127 03.1	N23 29.4	210 51.2	S 1 16.7	250 26.8	S16 29.4
G 13	226 55.6	18 23.4	35.8	142 05.3	29.5	225 53.9	16.8	265 29.2	29.4
O 14	241 58.1	33 22.9	37.0	157 07.5	29.6	240 56.6	16.8	280 31.7	29.4
15	257 00.5	48 22.5	38.1	172 09.7	29.8	255 59.3	16.9	295 34.2	29.4
16	272 03.0	63 22.0	39.3	187 11.9	29.9	271 02.0	17.0	310 36.6	29.4
17	287 05.4	78 21.5	40.4	202 14.1	30.0	286 04.7	17.1	325 39.1	29.4
18	302 07.9	93 21.0	S10 41.6	217 16.3	N23 30.1	301 07.4	S 1 17.2	340 41.6	S16 29.4
19	317 10.4	108 20.5	42.7	232 18.5	30.2	316 10.0	17.3	355 44.0	29.4
20	332 12.8	123 20.0	43.9	247 20.8	30.3	331 12.7	17.4	10 46.5	29.4
21	347 15.3	138 19.5	45.1	262 23.0	30.4	346 15.4	17.5	25 48.9	29.4
22	2 17.8	153 19.0	46.2	277 25.2	30.5	1 18.1	17.6	40 51.4	29.4
23	17 20.2	168 18.5	47.4	292 27.4	30.7	16 20.8	17.7	55 53.9	29.4
24 00	32 22.7	183 18.0	S10 48.5	307 29.6	N23 30.8	31 23.5	S 1 17.8	70 56.3	S16 29.3
01	47 25.2	198 17.5	49.7	322 31.8	30.9	46 26.2	17.8	85 58.8	29.3
02	62 27.6	213 17.0	50.8	337 34.1	31.0	61 28.9	17.9	101 01.2	29.3
03	77 30.1	228 16.5	52.0	352 36.3	31.1	76 31.6	18.0	116 03.7	29.3
04	92 32.6	243 16.0	53.1	7 38.5	31.2	91 34.3	18.1	131 06.2	29.3
05	107 35.0	258 15.5	54.3	22 40.7	31.3	106 37.0	18.2	146 08.6	29.3
06	122 37.5	273 15.0	S10 55.4	37 43.0	N23 31.4	121 39.7	S 1 18.3	161 11.1	S16 29.3
07	137 39.9	288 14.5	56.6	52 45.2	31.5	136 42.3	18.4	176 13.6	29.3
L 08	152 42.4	303 13.9	57.7	67 47.4	31.7	151 45.0	18.5	191 16.0	29.3
U 09	167 44.9	318 13.4	10 58.9	82 49.6	31.8	166 47.7	18.6	206 18.5	29.3
N 10	182 47.3	333 12.9	11 00.0	97 51.9	31.9	181 50.4	18.7	221 20.9	29.3
E 11	197 49.8	348 12.4	01.2	112 54.1	32.0	196 53.1	18.7	236 23.4	29.3
S 12	212 52.3	3 11.9	S11 02.3	127 56.4	N23 32.1	211 55.8	S 1 18.8	251 25.8	S16 29.3
13	227 54.7	18 11.4	03.5	142 58.6	32.2	226 58.5	18.9	266 28.3	29.3
14	242 57.2	33 10.9	04.6	158 00.8	32.3	242 01.2	19.0	281 30.8	29.3
15	257 59.7	48 10.4	05.8	173 03.1	32.4	257 03.9	19.1	296 33.2	29.3
16	273 02.1	63 09.9	06.9	188 05.3	32.6	272 06.5	19.2	311 35.7	29.3
17	288 04.6	78 09.4	08.1	203 07.6	32.7	287 09.2	19.3	326 38.1	29.3
18	303 07.1	93 08.9	S11 09.2	218 09.8	N23 32.8	302 11.9	S 1 19.4	341 40.6	S16 29.3
19	318 09.5	108 08.4	10.4	233 12.0	32.9	317 14.6	19.5	356 43.1	29.3
20	333 12.0	123 07.9	11.5	248 14.3	33.0	332 17.3	19.5	11 45.5	29.3
21	348 14.4	138 07.4	12.6	263 16.5	33.1	347 20.0	19.6	26 48.0	29.3
22	3 16.9	153 06.9	13.8	278 18.8	33.2	2 22.7	19.7	41 50.4	29.3
23	18 19.4	168 06.3	14.9	293 21.0	33.3	17 25.4	19.8	56 52.9	29.3
	h m								
Paso Mer.	21 50.8	*v* −0.5	*d* 1.2	*v* 2.2	*d* 0.1	*v* 2.7	*d* 0.1	*v* 2.5	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.8	S40 12.7
Achernar	335 21.0	S57 07.3
Acrux	173 02.8	S63 13.3
Adhara	255 07.2	S28 59.9
Aldebaran	290 41.5	N16 33.3
Alioth	166 15.1	N55 50.2
Alkaid	152 54.0	N49 12.1
Alnair	27 35.0	S46 51.2
Alnilam	275 39.4	S 1 11.1
Alphard	217 49.7	S 8 45.2
Alphecca	126 05.7	N26 38.5
Alpheratz	357 36.4	N29 13.1
Altair	62 01.8	N 8 55.8
Ankaa	353 08.6	S42 11.0
Antares	112 18.4	S26 28.9
Arcturus	145 50.0	N19 04.0
Atria	107 14.7	S69 04.2
Avior	234 15.5	S59 34.5
Bellatrix	278 24.7	N 6 22.3
Betelgeuse	270 53.9	N 7 24.8
Canopus	263 53.0	S52 42.1
Capella	280 24.3	N46 01.1
Deneb	49 27.0	N45 21.9
Denebola	182 27.1	N14 26.8
Diphda	348 48.8	S17 51.7
Dubhe	193 43.8	N61 37.6
Elnath	278 04.0	N28 37.6
Eltanin	90 43.3	N51 29.4
Enif	33 40.5	N 9 58.9
Fomalhaut	15 16.3	S29 30.2
Gacrux	171 54.3	S57 14.2
Gienah	175 45.8	S17 39.9
Hadar	148 39.3	S60 28.8
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.1	S34 22.5
Kochab	137 20.9	N74 03.8
Markab	13 31.5	N15 19.8
Menkar	314 07.8	N 4 10.8
Menkent	148 00.2	S36 28.8
Miaplacidus	221 38.9	S69 48.2
Mirfak	308 30.4	N49 56.5
Nunki	75 50.2	S26 16.1
Peacock	53 08.6	S56 39.9
Pollux	243 19.5	N27 58.3
Procyon	244 52.7	N 5 10.1
Rasalhague	96 00.5	N12 32.8
Regulus	207 36.6	N11 51.5
Rigel	281 05.4	S 8 10.4
Rigil Kent.	139 43.5	S60 55.6
Sabik	102 05.1	S15 45.1
Schedar	349 32.6	N56 39.8
Shaula	96 13.1	S37 07.3
Sirius	258 27.7	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 47.8	S43 31.1
Vega	80 34.6	N38 48.5
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	152 06.3	11 46
Marte	275 13.3	3 33
Júpiter	358 55.3	21 55
Saturno	38 33.6	19 17

UT (HmGr)	SOL				LUNA							
	AHGr		Dec		AHGr	v		Dec		d	Ph	
d h	°	′	°	′	°	′	′	°	′	′	′	
22 00	183	51.9	S10	57.8	221	10.0	14.7	N 9	25.6	13.9	55.9	
01	198	52.0		58.7	235	43.7	14.6	9	11.7	13.9	55.9	
02	213	52.1	10	59.6	250	17.3	14.7	8	57.8	14.0	56.0	
03	228	52.2	11	00.5	264	51.0	14.6	8	43.8	14.0	56.0	
04	243	52.3		01.4	279	24.6	14.7	8	29.8	14.0	56.0	
05	258	52.4		02.3	293	58.3	14.7	8	15.8	14.1	56.1	
06	273	52.5	S11	03.1	308	32.0	14.7	N 8	01.7	14.2	56.1	
07	288	52.6		04.0	323	05.7	14.6	7	47.5	14.2	56.1	
S 08	303	52.7		04.9	337	39.3	14.7	7	33.3	14.3	56.1	
Á 09	318	52.8	. .	05.8	352	13.0	14.7	7	19.0	14.3	56.2	
B 10	333	52.9		06.7	6	46.7	14.7	7	04.7	14.3	56.2	
A 11	348	53.0		07.6	21	20.4	14.6	6	50.4	14.4	56.2	
D 12	3	53.0	S11	08.4	35	54.0	14.7	N 6	36.0	14.4	56.2	
O 13	18	53.1		09.3	50	27.7	14.7	6	21.6	14.5	56.3	
14	33	53.2		10.2	65	01.4	14.6	6	07.1	14.5	56.3	
15	48	53.3	. .	11.1	79	35.0	14.7	5	52.6	14.6	56.3	
16	63	53.4		12.0	94	08.7	14.6	5	38.0	14.6	56.4	
17	78	53.5		12.8	108	42.3	14.6	5	23.4	14.6	56.4	
18	93	53.6	S11	13.7	123	15.9	14.7	N 5	08.8	14.7	56.4	
19	108	53.7		14.6	137	49.6	14.6	4	54.1	14.7	56.5	
20	123	53.8		15.5	152	23.2	14.6	4	39.4	14.7	56.5	
21	138	53.9	. .	16.4	166	56.8	14.6	4	24.7	14.8	56.5	
22	153	54.0		17.2	181	30.4	14.6	4	09.9	14.8	56.5	
23	168	54.0		18.1	196	04.0	14.5	3	55.1	14.9	56.6	
23 00	183	54.1	S11	19.0	210	37.5	14.6	N 3	40.2	14.9	56.6	
01	198	54.2		19.9	225	11.1	14.5	3	25.3	14.9	56.6	
02	213	54.3		20.8	239	44.6	14.5	3	10.4	14.9	56.7	
03	228	54.4	. .	21.6	254	18.1	14.5	2	55.5	15.0	56.7	
04	243	54.5		22.5	268	51.6	14.5	2	40.5	15.0	56.7	
05	258	54.6		23.4	283	25.1	14.4	2	25.5	15.0	56.7	
06	273	54.7	S11	24.3	297	58.5	14.4	N 2	10.5	15.1	56.8	
07	288	54.8		25.1	312	31.9	14.4	1	55.4	15.0	56.8	
D 08	303	54.8		26.0	327	05.3	14.4	1	40.4	15.1	56.8	
O 09	318	54.9	. .	26.9	341	38.7	14.4	1	25.3	15.2	56.9	
M 10	333	55.0		27.8	356	12.1	14.3	1	10.1	15.1	56.9	
I 11	348	55.1		28.6	10	45.4	14.3	0	55.0	15.2	56.9	
N 12	3	55.2	S11	29.5	25	18.7	14.2	N 0	39.8	15.2	57.0	
G 13	18	55.3		30.4	39	51.9	14.3	0	24.6	15.2	57.0	
O 14	33	55.4		31.3	54	25.2	14.2	N 0	09.4	15.2	57.0	
15	48	55.4	. .	32.1	68	58.4	14.2	S 0	05.8	15.2	57.0	
16	63	55.5		33.0	83	31.6	14.1	0	21.0	15.3	57.1	
17	78	55.6		33.9	98	04.7	14.1	0	36.3	15.3	57.1	
18	93	55.7	S11	34.8	112	37.8	14.1	S 0	51.6	15.2	57.1	
19	108	55.8		35.6	127	10.9	14.0	1	06.8	15.3	57.2	
20	123	55.9		36.5	141	43.9	14.0	1	22.1	15.3	57.2	
21	138	55.9	. .	37.4	156	16.9	14.0	1	37.4	15.4	57.2	
22	153	56.0		38.2	170	49.9	13.9	1	52.8	15.3	57.2	
23	168	56.1		39.1	185	22.8	13.8	2	08.1	15.3	57.3	
24 00	183	56.2	S11	40.0	199	55.6	13.9	S 2	23.4	15.3	57.3	
01	198	56.3		40.9	214	28.5	13.8	2	38.7	15.4	57.3	
02	213	56.3		41.7	229	01.3	13.7	2	54.1	15.3	57.4	
03	228	56.4	. .	42.6	243	34.0	13.7	3	09.4	15.4	57.4	
04	243	56.5		43.5	258	06.7	13.6	3	24.8	15.3	57.4	
05	258	56.6		44.3	272	39.3	13.6	3	40.1	15.4	57.5	
06	273	56.7	S11	45.2	287	11.9	13.6	S 3	55.5	15.3	57.5	
07	288	56.8		46.1	301	44.5	13.5	4	10.8	15.3	57.5	
L 08	303	56.8		46.9	316	17.0	13.5	4	26.1	15.4	57.5	
U 09	318	56.9	. .	47.8	330	49.5	13.3	4	41.5	15.3	57.6	
N 10	333	57.0		48.7	345	21.8	13.4	4	56.8	15.3	57.6	
E 11	348	57.1		49.5	359	54.2	13.3	5	12.1	15.4	57.6	
S 12	3	57.1	S11	50.4	14	26.5	13.2	S 5	27.5	15.3	57.7	
13	18	57.2		51.3	28	58.7	13.2	5	42.8	15.3	57.7	
14	33	57.3		52.2	43	30.9	13.1	5	58.1	15.2	57.7	
15	48	57.4	. .	53.0	58	03.0	13.1	6	13.3	15.3	57.7	
16	63	57.5		53.9	72	35.1	12.9	6	28.6	15.3	57.8	
17	78	57.5		54.7	87	07.0	13.0	6	43.9	15.2	57.8	
18	93	57.6	S11	55.6	101	39.0	12.8	S 6	59.1	15.2	57.8	
19	108	57.7		56.5	116	10.8	12.9	7	14.3	15.2	57.8	
20	123	57.8		57.3	130	42.7	12.7	7	29.5	15.2	57.9	
21	138	57.8	. .	58.2	145	14.4	12.7	7	44.7	15.2	57.9	
22	153	57.9		59.1	159	46.1	12.6	7	59.9	15.1	57.9	
23	168	58.0		59.9	174	17.7	12.5	S 8	15.0	15.1	58.0	
	S/D	16.1	d	0.9	S/D	15.3		15.5			15.7	

Lat.	Aurora		Orto	Orto Luna			
	Náut.	Civil	Sol	22	23	24	25
°	h m	h m	h m	h m	h m	h m	h m
N 72	05 29	06 49	08 05	01 21	03 31	05 40	08 02
N 70	05 29	06 41	07 48	01 36	03 35	05 34	07 43
68	05 29	06 34	07 34	01 47	03 38	05 29	07 28
66	05 29	06 28	07 23	01 57	03 40	05 26	07 17
64	05 28	06 24	07 14	02 05	03 43	05 22	07 07
62	05 28	06 19	07 06	02 12	03 44	05 19	06 59
60	05 27	06 16	06 59	02 17	03 46	05 17	06 52
N 58	05 27	06 12	06 53	02 22	03 48	05 15	06 46
56	05 26	06 09	06 48	02 27	03 49	05 13	06 40
54	05 25	06 06	06 43	02 31	03 50	05 11	06 35
52	05 25	06 04	06 39	02 35	03 51	05 10	06 31
50	05 24	06 01	06 35	02 38	03 52	05 08	06 27
45	05 22	05 56	06 26	02 45	03 54	05 05	06 19
N 40	05 20	05 51	06 19	02 51	03 56	05 03	06 12
35	05 17	05 47	06 13	02 56	03 58	05 00	06 06
30	05 15	05 43	06 07	03 01	03 59	04 58	06 00
20	05 09	05 35	05 58	03 09	04 01	04 55	05 51
N 10	05 03	05 28	05 49	03 15	04 03	04 52	05 43
0	04 55	05 20	05 41	03 22	04 05	04 50	05 36
S 10	04 46	05 11	05 33	03 28	04 07	04 47	05 29
20	04 35	05 01	05 24	03 35	04 09	04 44	05 21
30	04 20	04 49	05 14	03 42	04 12	04 41	05 12
35	04 10	04 41	05 08	03 47	04 13	04 39	05 07
40	03 59	04 33	05 01	03 52	04 14	04 37	05 02
45	03 44	04 22	04 53	03 57	04 16	04 35	04 55
S 50	03 26	04 09	04 43	04 04	04 18	04 32	04 48
52	03 16	04 02	04 39	04 07	04 19	04 31	04 44
54	03 06	03 55	04 34	04 11	04 20	04 30	04 40
56	02 54	03 47	04 29	04 14	04 21	04 28	04 36
58	02 40	03 38	04 22	04 19	04 23	04 27	04 31
S 60	02 22	03 28	04 15	04 23	04 24	04 25	04 26

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	22	23	24	25
°	h m	h m	h m	h m	h m	h m	h m
N 72	15 22	16 38	17 57	16 51	16 20	15 46	15 04
N 70	15 40	16 46	17 58	16 44	16 20	15 55	15 25
68	15 53	16 53	17 58	16 38	16 21	16 03	15 42
66	16 04	16 59	17 58	16 33	16 21	16 09	15 55
64	16 14	17 04	17 59	16 29	16 22	16 15	16 07
62	16 22	17 08	18 00	16 25	16 22	16 19	16 16
60	16 29	17 12	18 00	16 22	16 22	16 23	16 25
N 58	16 35	17 15	18 01	16 19	16 23	16 27	16 32
56	16 40	17 18	18 02	16 16	16 23	16 30	16 38
54	16 45	17 21	18 02	16 14	16 23	16 33	16 44
52	16 49	17 24	18 03	16 12	16 23	16 36	16 50
50	16 53	17 26	18 04	16 10	16 24	16 38	16 54
45	17 02	17 32	18 06	16 05	16 24	16 43	17 05
N 40	17 09	17 37	18 08	16 02	16 24	16 48	17 14
35	17 16	17 41	18 11	15 59	16 25	16 52	17 21
30	17 21	17 45	18 13	15 56	16 25	16 55	17 28
20	17 31	17 53	18 19	15 51	16 25	17 01	17 39
N 10	17 39	18 01	18 26	15 47	16 26	17 06	17 50
0	17 48	18 09	18 33	15 42	16 26	17 11	17 59
S 10	17 56	18 18	18 43	15 38	16 27	17 16	18 09
20	18 05	18 28	18 54	15 34	16 27	17 22	18 19
30	18 15	18 40	19 10	15 29	16 27	17 28	18 31
35	18 22	18 48	19 19	15 26	16 27	17 31	18 38
40	18 28	18 57	19 31	15 22	16 28	17 35	18 46
45	18 37	19 08	19 46	15 18	16 28	17 40	18 55
S 50	18 46	19 21	20 05	15 13	16 28	17 45	19 06
52	18 51	19 28	20 14	15 11	16 28	17 48	19 11
54	18 56	19 35	20 25	15 09	16 28	17 51	19 17
56	19 02	19 43	20 37	15 06	16 29	17 54	19 23
58	19 08	19 52	20 52	15 03	16 29	17 57	19 30
S 60	19 15	20 03	21 10	15 00	16 29	18 01	19 39

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00^h	12^h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
22	15 27	15 32	11 44	09 32	21 54	27 10	
23	15 36	15 41	11 44	10 16	22 38	28 5	
24	15 45	15 48	11 44	11 00	23 24	29 1	

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·1		JÚPITER −2·8		SATURNO +0·6	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
25 00	33 21.8	183 05.8	S11 16.1	308 23.3	N23 33.5	32 28.0	S 1 19.9	71 55.3	S16 29.2
01	48 24.3	198 05.3	17.2	323 25.6	33.6	47 30.7	20.0	86 57.8	29.2
02	63 26.8	213 04.8	18.4	338 27.8	33.7	62 33.4	20.1	102 00.3	29.2
03	78 29.2	228 04.3	19.5	353 30.1	33.8	77 36.1	20.2	117 02.7	29.2
04	93 31.7	243 03.8	20.6	8 32.3	33.9	92 38.8	20.2	132 05.2	29.2
05	108 34.2	258 03.3	21.8	23 34.6	34.0	107 41.5	20.3	147 07.6	29.2
06	123 36.6	273 02.8	S11 22.9	38 36.9	N23 34.1	122 44.1	S 1 20.4	162 10.1	S16 29.2
07	138 39.1	288 02.3	24.1	53 39.1	34.2	137 46.8	20.5	177 12.5	29.2
08	153 41.5	303 01.7	25.2	68 41.4	34.3	152 49.5	20.6	192 15.0	29.2
M 09	168 44.0	318 01.2	26.3	83 43.7	34.5	167 52.2	20.7	207 17.5	29.2
A 10	183 46.5	333 00.7	27.5	98 45.9	34.6	182 54.9	20.8	222 19.9	29.2
R 11	198 48.9	348 00.2	28.6	113 48.2	34.7	197 57.6	20.9	237 22.4	29.2
T 12	213 51.4	2 59.7	S11 29.8	128 50.5	N23 34.8	213 00.2	S 1 20.9	252 24.8	S16 29.2
E 13	228 53.9	17 59.2	30.9	143 52.8	34.9	228 02.9	21.0	267 27.3	29.2
S 14	243 56.3	32 58.7	32.0	158 55.0	35.0	243 05.6	21.1	282 29.7	29.2
15	258 58.8	47 58.1	33.2	173 57.3	35.1	258 08.3	21.2	297 32.2	29.2
16	274 01.3	62 57.6	34.3	188 59.6	35.2	273 11.0	21.3	312 34.6	29.2
17	289 03.7	77 57.1	35.4	204 01.9	35.4	288 13.7	21.4	327 37.1	29.2
18	304 06.2	92 56.6	S11 36.6	219 04.2	N23 35.5	303 16.3	S 1 21.5	342 39.5	S16 29.2
19	319 08.7	107 56.1	37.7	234 06.4	35.6	318 19.0	21.5	357 42.0	29.1
20	334 11.1	122 55.6	38.8	249 08.7	35.7	333 21.7	21.6	12 44.5	29.1
21	349 13.6	137 55.0	40.0	264 11.0	35.8	348 24.4	21.7	27 46.9	29.1
22	4 16.0	152 54.5	41.1	279 13.3	35.9	3 27.1	21.8	42 49.4	29.1
23	19 18.5	167 54.0	42.2	294 15.6	36.0	18 29.7	21.9	57 51.8	29.1
26 00	34 21.0	182 53.5	S11 43.4	309 17.9	N23 36.1	33 32.4	S 1 22.0	72 54.3	S16 29.1
01	49 23.4	197 53.0	44.5	324 20.2	36.3	48 35.1	22.1	87 56.7	29.1
02	64 25.9	212 52.4	45.6	339 22.5	36.4	63 37.8	22.1	102 59.2	29.1
03	79 28.4	227 51.9	46.8	354 24.8	36.5	78 40.5	22.2	118 01.6	29.1
04	94 30.8	242 51.4	47.9	9 27.1	36.6	93 43.1	22.3	133 04.1	29.1
05	109 33.3	257 50.9	49.0	24 29.4	36.7	108 45.8	22.4	148 06.5	29.1
06	124 35.8	272 50.4	S11 50.2	39 31.7	N23 36.8	123 48.5	S 1 22.5	163 09.0	S16 29.1
07	139 38.2	287 49.8	51.3	54 34.0	36.9	138 51.2	22.6	178 11.4	29.1
M 08	154 40.7	302 49.3	52.4	69 36.3	37.0	153 53.9	22.6	193 13.9	29.1
I 09	169 43.1	317 48.8	53.5	84 38.6	37.2	168 56.5	22.7	208 16.3	29.1
É 10	184 45.6	332 48.3	54.7	99 40.9	37.3	183 59.2	22.8	223 18.8	29.1
R 11	199 48.1	347 47.7	55.8	114 43.2	37.4	199 01.9	22.9	238 21.2	29.0
C 12	214 50.5	2 47.2	S11 56.9	129 45.5	N23 37.5	214 04.6	S 1 23.0	253 23.7	S16 29.0
O 13	229 53.0	17 46.7	58.0	144 47.8	37.6	229 07.2	23.1	268 26.1	29.0
L 14	244 55.5	32 46.2	11 59.2	159 50.1	37.7	244 09.9	23.2	283 28.6	29.0
E 15	259 57.9	47 45.6	12 00.3	174 52.4	37.8	259 12.6	23.2	298 31.0	29.0
S 16	275 00.4	62 45.1	01.4	189 54.8	37.9	274 15.3	23.3	313 33.5	29.0
17	290 02.9	77 44.6	02.5	204 57.1	38.1	289 17.9	23.4	328 35.9	29.0
18	305 05.3	92 44.1	S12 03.7	219 59.4	N23 38.2	304 20.6	S 1 23.5	343 38.4	S16 29.0
19	320 07.8	107 43.5	04.8	235 01.7	38.3	319 23.3	23.6	358 40.8	29.0
20	335 10.3	122 43.0	05.9	250 04.0	38.4	334 26.0	23.7	13 43.3	29.0
21	350 12.7	137 42.5	07.0	265 06.4	38.5	349 28.6	23.7	28 45.7	29.0
22	5 15.2	152 42.0	08.1	280 08.7	38.6	4 31.3	23.8	43 48.2	29.0
23	20 17.6	167 41.4	09.3	295 11.0	38.7	19 34.0	23.9	58 50.6	29.0
27 00	35 20.1	182 40.9	S12 10.4	310 13.4	N23 38.8	34 36.7	S 1 24.0	73 53.1	S16 29.0
01	50 22.6	197 40.4	11.5	325 15.7	39.0	49 39.3	24.1	88 55.5	28.9
02	65 25.0	212 39.8	12.6	340 18.0	39.1	64 42.0	24.1	103 58.0	28.9
03	80 27.5	227 39.3	13.7	355 20.4	39.2	79 44.7	24.2	119 00.4	28.9
04	95 30.0	242 38.8	14.9	10 22.7	39.3	94 47.4	24.3	134 02.9	28.9
05	110 32.4	257 38.2	16.0	25 25.0	39.4	109 50.0	24.4	149 05.3	28.9
06	125 34.9	272 37.7	S12 17.1	40 27.4	N23 39.5	124 52.7	S 1 24.5	164 07.8	S16 28.9
07	140 37.4	287 37.2	18.2	55 29.7	39.6	139 55.4	24.6	179 10.2	28.9
J 08	155 39.8	302 36.6	19.3	70 32.1	39.7	154 58.1	24.6	194 12.7	28.9
U 09	170 42.3	317 36.1	20.4	85 34.4	39.9	170 00.7	24.7	209 15.1	28.9
E 10	185 44.8	332 35.6	21.6	100 36.7	40.0	185 03.4	24.8	224 17.6	28.9
V 11	200 47.2	347 35.0	22.7	115 39.1	40.1	200 06.1	24.9	239 20.0	28.9
E 12	215 49.7	2 34.5	S12 23.8	130 41.4	N23 40.2	215 08.7	S 1 25.0	254 22.5	S16 28.9
S 13	230 52.1	17 34.0	24.9	145 43.8	40.3	230 11.4	25.0	269 24.9	28.9
14	245 54.6	32 33.4	26.0	160 46.1	40.4	245 14.1	25.1	284 27.3	28.8
15	260 57.1	47 32.9	27.1	175 48.5	40.5	260 16.8	25.2	299 29.8	28.8
16	275 59.5	62 32.4	28.2	190 50.9	40.6	275 19.4	25.3	314 32.2	28.8
17	291 02.0	77 31.8	29.3	205 53.2	40.8	290 22.1	25.4	329 34.7	28.8
18	306 04.5	92 31.3	S12 30.5	220 55.6	N23 40.9	305 24.8	S 1 25.4	344 37.1	S16 28.8
19	321 06.9	107 30.7	31.6	235 57.9	41.0	320 27.4	25.5	359 39.6	28.8
20	336 09.4	122 30.2	32.7	251 00.3	41.1	335 30.1	25.6	14 42.0	28.8
21	351 11.9	137 29.7	33.8	266 02.7	41.2	350 32.8	25.7	29 44.5	28.8
22	6 14.3	152 29.1	34.9	281 05.0	41.3	5 35.4	25.8	44 46.9	28.8
23	21 16.8	167 28.6	36.0	296 07.4	41.4	20 38.1	25.8	59 49.4	28.8
	h m								
Paso Mer.	21 39.0	*v* −0.5	*d* 1.1	*v* 2.3	*d* 0.1	*v* 2.7	*d* 0.1	*v* 2.5	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.8	S40 12.7
Achernar	335 21.0	S57 07.3
Acrux	173 02.8	S63 13.3
Adhara	255 07.2	S28 59.9
Aldebaran	290 41.5	N16 33.3
Alioth	166 15.1	N55 50.2
Alkaid	152 54.0	N49 12.1
Alnair	27 35.0	S46 51.2
Alnilam	275 39.4	S 1 11.1
Alphard	217 49.7	S 8 45.2
Alphecca	126 05.7	N26 38.5
Alpheratz	357 36.4	N29 13.1
Altair	62 01.8	N 8 55.8
Ankaa	353 08.6	S42 11.0
Antares	112 18.4	S26 28.9
Arcturus	145 50.0	N19 04.0
Atria	107 14.7	S69 04.2
Avior	234 15.5	S59 34.5
Bellatrix	278 24.6	N 6 22.3
Betelgeuse	270 53.9	N 7 24.8
Canopus	263 53.0	S52 42.1
Capella	280 24.3	N46 01.1
Deneb	49 27.0	N45 21.9
Denebola	182 27.1	N14 26.8
Diphda	348 48.8	S17 51.7
Dubhe	193 43.7	N61 37.6
Elnath	278 04.0	N28 37.6
Eltanin	90 43.4	N51 29.4
Enif	33 40.5	N 9 58.9
Fomalhaut	15 16.3	S29 30.2
Gacrux	171 54.2	S57 14.2
Gienah	175 45.8	S17 39.9
Hadar	148 39.3	S60 28.8
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.5
Kochab	137 20.9	N74 03.8
Markab	13 31.5	N15 19.8
Menkar	314 07.8	N 4 10.8
Menkent	148 00.2	S36 28.7
Miaplacidus	221 38.9	S69 48.2
Mirfak	308 30.4	N49 56.5
Nunki	75 50.2	S26 16.1
Peacock	53 08.6	S56 39.9
Pollux	243 19.5	N27 58.2
Procyon	244 52.7	N 5 10.1
Rasalhague	96 00.5	N12 32.8
Regulus	207 36.6	N11 51.5
Rigel	281 05.4	S 8 10.4
Rigil Kent.	139 43.5	S60 55.6
Sabik	102 05.2	S15 45.1
Schedar	349 32.6	N56 39.8
Shaula	96 13.2	S37 07.2
Sirius	258 27.7	S16 44.6
Spica	158 24.6	S11 16.6
Suhail	222 47.8	S43 31.1
Vega	80 34.7	N38 48.5
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	148 32.5	11 49
Marte	274 56.9	3 22
Júpiter	359 11.5	21 42
Saturno	38 33.3	19 05

UT (HmGr)	SOL AHGr	SOL Dec	LUNA AHGr	LUNA v	LUNA Dec	LUNA d	LUNA Ph
d h	° ′	° ′	° ′	′	° ′	′	′
25 00	183 58.1	S12 00.8	188 49.2	12.5	S 8 30.1	15.1	58.0
01	198 58.1	01.7	203 20.7	12.4	8 45.2	15.0	58.0
02	213 58.2	02.5	217 52.1	12.3	9 00.2	15.1	58.0
03	228 58.3	03.4	232 23.4	12.3	9 15.3	15.0	58.1
04	243 58.4	04.3	246 54.7	12.1	9 30.3	14.9	58.1
05	258 58.4	05.1	261 25.8	12.1	S 9 45.2	15.0	58.1
06	273 58.5	S12 06.0					
07	288 58.6	06.8					
08	303 58.6	07.7					
09	318 58.7	08.6					
10	333 58.8	09.4					
11	348 58.9	10.3					
12	3 58.9	S12 11.1	3 01.9	11.6	S11 28.9	14.7	58.3
13	18 59.0	12.0	17 32.5	11.5	11 43.6	14.6	58.3
14	33 59.1	12.9	32 03.0	11.3	11 58.2	14.5	58.3
15	48 59.1	13.7	46 33.3	11.3	12 12.7	14.5	58.4
16	63 59.2	14.6	61 03.6	11.2	12 27.2	14.5	58.4
17	78 59.3	15.4	75 33.8	11.2	12 41.7	14.4	58.4
18	93 59.3	S12 16.3	90 04.0	11.0	S12 56.1	14.3	58.4
19	108 59.4	17.2	104 34.0	11.0	13 10.4	14.3	58.5
20	123 59.5	18.0	119 04.0	10.8	13 24.7	14.2	58.5
21	138 59.5	18.9	133 33.8	10.8	13 38.9	14.2	58.5
22	153 59.6	19.7	148 03.6	10.7	13 53.1	14.1	58.5
23	168 59.7	20.6	162 33.3	10.5	14 07.2	14.0	58.6
26 00	183 59.8	S12 21.4	177 02.8	10.5	S14 21.2	14.0	58.6
01	198 59.8	22.3	191 32.3	10.4	14 35.2	13.9	58.6
02	213 59.9	23.1	206 01.7	10.3	14 49.1	13.8	58.6
03	229 00.0	24.0	220 31.0	10.2	15 02.9	13.8	58.6
04	244 00.0	24.9	235 00.2	10.2	15 16.7	13.7	58.7
05	259 00.1	25.7	249 29.4	10.0	15 30.4	13.6	58.7
06	274 00.1	S12 26.6	263 58.4	9.9	S15 44.0	13.6	58.7
07	289 00.2	27.4	278 27.3	9.8	15 57.6	13.4	58.7
08	304 00.3	28.3	292 56.1	9.7	16 11.0	13.4	58.7
09	319 00.3	29.1	307 24.8	9.6	16 24.4	13.3	58.8
10	334 00.4	30.0	321 53.4	9.6	16 37.7	13.3	58.8
11	349 00.5	30.8	336 22.0	9.4	16 51.0	13.1	58.8
12	4 00.5	S12 31.7	350 50.4	9.3	S17 04.1	13.0	58.8
13	19 00.6	32.5	5 18.7	9.2	17 17.1	13.0	58.8
14	34 00.7	33.4	19 46.9	9.1	17 30.1	12.9	58.9
15	49 00.7	34.2	34 15.0	9.0	17 43.0	12.8	58.9
16	64 00.8	35.1	48 43.0	9.0	17 55.8	12.7	58.9
17	79 00.8	35.9	63 11.0	8.8	18 08.5	12.6	58.9
18	94 00.9	S12 36.8	77 38.8	8.7	S18 21.1	12.4	58.9
19	109 01.0	37.6	92 06.5	8.6	18 33.5	12.4	59.0
20	124 01.0	38.5	106 34.1	8.5	18 45.9	12.3	59.0
21	139 01.1	39.3	121 01.6	8.4	18 58.2	12.2	59.0
22	154 01.1	40.2	135 29.0	8.2	19 10.4	12.1	59.0
23	169 01.2	41.0	149 56.2	8.2	19 22.5	12.0	59.0
27 00	184 01.3	S12 41.9	164 23.4	8.1	S19 34.5	11.9	59.0
01	199 01.3	42.7	178 50.5	8.0	19 46.4	11.7	59.1
02	214 01.4	43.6	193 17.5	7.8	19 58.1	11.7	59.1
03	229 01.4	44.4	207 44.3	7.8	20 09.8	11.5	59.1
04	244 01.5	45.3	222 11.1	7.6	20 21.3	11.4	59.1
05	259 01.6	46.1	236 37.7	7.6	20 32.7	11.3	59.1
06	274 01.6	S12 47.0	251 04.3	7.4	S20 44.0	11.2	59.1
07	289 01.7	47.8	265 30.7	7.4	20 55.2	11.1	59.1
08	304 01.7	48.6	279 57.1	7.2	21 06.3	10.9	59.2
09	319 01.8	49.5	294 23.3	7.1	21 17.2	10.8	59.2
10	334 01.8	50.3	308 49.4	7.1	21 28.0	10.7	59.2
11	349 01.9	51.2	323 15.5	6.9	21 38.7	10.6	59.2
12	4 02.0	S12 52.0	337 41.4	6.8	S21 49.3	10.4	59.2
13	19 02.0	52.9	352 07.2	6.7	21 59.7	10.3	59.2
14	34 02.1	53.7	6 32.9	6.6	22 10.0	10.2	59.2
15	49 02.1	54.6	20 58.5	6.6	22 20.2	10.0	59.3
16	64 02.2	55.4	35 24.1	6.4	22 30.2	9.9	59.3
17	79 02.2	56.2	49 49.5	6.3	22 40.1	9.7	59.3
18	94 02.3	S12 57.1	64 14.8	6.2	S22 49.8	9.6	59.3
19	109 02.3	57.9	78 40.0	6.1	22 59.4	9.5	59.3
20	124 02.4	58.8	93 05.1	6.0	23 08.9	9.3	59.3
21	139 02.4	12 59.6	107 30.1	5.9	23 18.2	9.2	59.3
22	154 02.5	13 00.4	121 55.0	5.8	23 27.4	9.0	59.3
23	169 02.5	S13 01.3	136 19.8	5.8	S23 36.4	8.9	59.3
	S/D 16.1	*d* 0.9	S/D	15.9		16.0	16.1

Un eclipse parcial de Sol se produce en esta fecha. Ver página 5.

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 25	Orto Luna 26	Orto Luna 27	Orto Luna 28
°	h m	h m	h m	h m	h m	h m	h m
N 72	05 42	07 02	08 21	08 02	11 19	▬	▬
N 70	05 40	06 52	08 01	07 43	10 18	▬	▬
68	05 39	06 44	07 46	07 28	09 44	▬	▬
66	05 38	06 38	07 34	07 17	09 20	11 48	▬
64	05 36	06 32	07 23	07 07	09 01	11 08	13 52
62	05 35	06 27	07 14	06 59	08 45	10 41	12 44
60	05 34	06 23	07 07	06 52	08 33	10 20	12 09
N 58	05 33	06 19	07 00	06 46	08 22	10 02	11 44
56	05 32	06 15	06 54	06 40	08 12	09 48	11 23
54	05 31	06 12	06 49	06 35	08 04	09 36	11 07
52	05 29	06 09	06 44	06 31	07 56	09 25	10 53
50	05 28	06 06	06 40	06 27	07 50	09 15	10 40
45	05 26	06 00	06 30	06 19	07 35	08 55	10 14
N 40	05 23	05 54	06 22	06 12	07 24	08 39	09 54
35	05 20	05 49	06 15	06 06	07 14	08 25	09 37
30	05 17	05 45	06 09	06 00	07 05	08 13	09 23
20	05 10	05 36	05 59	05 51	06 50	07 53	08 58
N 10	05 03	05 28	05 49	05 43	06 38	07 35	08 37
0	04 55	05 19	05 41	05 36	06 26	07 19	08 17
S 10	04 45	05 10	05 32	05 29	06 14	07 03	07 58
20	04 33	04 59	05 22	05 21	06 01	06 46	07 37
30	04 16	04 46	05 11	05 12	05 47	06 27	07 13
35	04 06	04 38	05 04	05 07	05 39	06 15	06 59
40	03 54	04 28	04 57	05 02	05 30	06 03	06 43
45	03 38	04 17	04 48	04 55	05 19	05 47	06 24
S 50	03 18	04 02	04 38	04 48	05 06	05 29	06 00
52	03 09	03 56	04 33	04 44	05 00	05 20	05 49
54	02 57	03 48	04 27	04 40	04 53	05 11	05 36
56	02 44	03 39	04 21	04 36	04 46	05 00	05 21
58	02 28	03 29	04 15	04 31	04 38	04 47	05 04
S 60	02 09	03 18	04 07	04 26	04 28	04 33	04 43

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 25	Ocaso Luna 26	Ocaso Luna 27	Ocaso Luna 28
°	h m	h m	h m	h m	h m	h m	h m
N 72	15 05	16 24	17 44	15 04	13 33	▬	▬
N 70	15 25	16 34	17 46	15 25	14 35	▬	▬
68	15 41	16 42	17 47	15 42	15 11	▬	▬
66	15 53	16 49	17 49	15 55	15 37	15 02	▬
64	16 04	16 55	17 50	16 07	15 57	15 43	15 02
62	16 13	17 00	17 52	16 16	16 14	16 11	16 11
60	16 20	17 04	17 53	16 25	16 27	16 33	16 47
N 58	16 27	17 08	17 54	16 32	16 39	16 51	17 13
56	16 33	17 12	17 55	16 38	16 50	17 06	17 33
54	16 38	17 15	17 56	16 44	16 59	17 19	17 50
52	16 43	17 18	17 58	16 50	17 07	17 31	18 05
50	16 48	17 21	17 59	16 54	17 15	17 41	18 18
45	16 57	17 27	18 02	17 05	17 30	18 02	18 44
N 40	17 05	17 33	18 05	17 14	17 44	18 20	19 05
35	17 12	17 38	18 08	17 21	17 55	18 35	19 23
30	17 18	17 43	18 11	17 28	18 05	18 47	19 38
20	17 29	17 51	18 17	17 39	18 22	19 09	20 03
N 10	17 38	18 00	18 25	17 50	18 37	19 29	20 26
0	17 47	18 09	18 33	17 59	18 51	19 46	20 46
S 10	17 56	18 18	18 43	18 09	19 05	20 04	21 07
20	18 06	18 29	18 56	18 19	19 20	20 24	21 30
30	18 18	18 43	19 12	18 31	19 37	20 46	21 56
35	18 24	18 51	19 23	18 38	19 47	20 59	22 11
40	18 32	19 00	19 35	18 46	19 59	21 15	22 29
45	18 41	19 12	19 51	18 55	20 13	21 33	22 50
S 50	18 51	19 27	20 11	19 06	20 30	21 55	23 17
52	18 56	19 34	20 21	19 11	20 38	22 06	23 31
54	19 02	19 42	20 33	19 17	20 47	22 19	23 46
56	19 08	19 50	20 46	19 23	20 57	22 33	24 04
58	19 15	20 00	21 02	19 30	21 09	22 50	24 26
S 60	19 23	20 12	21 22	19 39	21 22	23 10	24 55

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
25	15 52	15 56	11 44	11 47	24 12	00 0	
26	15 59	16 02	11 44	12 38	00 12	01 1	
27	16 05	16 08	11 44	13 33	01 05	02 5	●

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·2		JÚPITER −2·8		SATURNO +0·6		ESTRELLAS		
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec	Nombre	AHS	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′		° ′	° ′
28 00	36 19.3	182 28.1	S12 37.1	311 09.8	N23 41.5	35 40.8	S 1 25.9	74 51.8	S16 28.8	Acamar	315 12.8	S40 12.7
01	51 21.7	197 27.5	38.2	326 12.1	41.7	50 43.4	26.0	89 54.2	28.7	Achernar	335 21.0	S57 07.3
02	66 24.2	212 27.0	39.3	341 14.5	41.8	65 46.1	26.1	104 56.7	28.7	Acrux	173 02.7	S63 13.3
03	81 26.6	227 26.4	. . 40.4	356 16.9	. . 41.9	80 48.8	. . 26.2	119 59.1	. . 28.7	Adhara	255 07.2	S28 59.9
04	96 29.1	242 25.9	41.5	11 19.2	42.0	95 51.4	26.2	135 01.6	28.7	Aldebaran	290 41.4	N16 33.3
05	111 31.6	257 25.3	42.6	26 21.6	42.1	110 54.1	26.3	150 04.0	28.7			
06	126 34.0	272 24.8	S12 43.7	41 24.0	N23 42.2	125 56.8	S 1 26.4	165 06.5	S16 28.7	Alioth	166 15.1	N55 50.2
07	141 36.5	287 24.3	44.9	56 26.4	42.3	140 59.4	26.5	180 08.9	28.7	Alkaid	152 54.0	N49 12.0
08	156 39.0	302 23.7	46.0	71 28.8	42.4	156 02.1	26.5	195 11.3	28.7	Alnair	27 35.0	S46 51.2
V 09	171 41.4	317 23.2	. . 47.1	86 31.1	. . 42.6	171 04.8	. . 26.6	210 13.8	. . 28.7	Alnilam	275 39.4	S 1 11.1
I 10	186 43.9	332 22.6	48.2	101 33.5	42.7	186 07.4	26.7	225 16.2	28.7	Alphard	217 49.6	S 8 45.2
E 11	201 46.4	347 22.1	49.3	116 35.9	42.8	201 10.1	26.8	240 18.7	28.7			
R 12	216 48.8	2 21.5	S12 50.4	131 38.3	N23 42.9	216 12.8	S 1 26.9	255 21.1	S16 28.6	Alphecca	126 05.7	N26 38.4
N 13	231 51.3	17 21.0	51.5	146 40.7	43.0	231 15.4	26.9	270 23.6	28.6	Alpheratz	357 36.4	N29 13.1
E 14	246 53.8	32 20.5	52.6	161 43.1	43.1	246 18.1	27.0	285 26.0	28.6	Altair	62 01.8	N 8 55.8
S 15	261 56.2	47 19.9	. . 53.7	176 45.5	. . 43.2	261 20.8	. . 27.1	300 28.4	. . 28.6	Ankaa	353 08.6	S42 11.0
16	276 58.7	62 19.4	54.8	191 47.9	43.3	276 23.4	27.2	315 30.9	28.6	Antares	112 18.4	S26 28.9
17	292 01.1	77 18.8	55.9	206 50.3	43.5	291 26.1	27.2	330 33.3	28.6			
18	307 03.6	92 18.3	S12 57.0	221 52.6	N23 43.6	306 28.7	S 1 27.3	345 35.8	S16 28.6	Arcturus	145 49.9	N19 04.0
19	322 06.1	107 17.7	58.1	236 55.0	43.7	321 31.4	27.4	0 38.2	28.6	Atria	107 14.7	S69 04.2
20	337 08.5	122 17.2	12 59.2	251 57.4	43.8	336 34.1	27.5	15 40.6	28.6	Avior	234 15.4	S59 34.5
21	352 11.0	137 16.6	13 00.2	266 59.9	. . 43.9	351 36.7	. . 27.6	30 43.1	. . 28.6	Bellatrix	278 24.6	N 6 22.3
22	7 13.5	152 16.1	01.3	282 02.3	44.0	6 39.4	27.6	45 45.5	28.5	Betelgeuse	270 53.9	N 7 24.8
23	22 15.9	167 15.5	02.4	297 04.7	44.1	21 42.1	27.7	60 48.0	28.5			
29 00	37 18.4	182 15.0	S13 03.5	312 07.1	N23 44.3	36 44.7	S 1 27.8	75 50.4	S16 28.5	Canopus	263 52.9	S52 42.1
01	52 20.9	197 14.4	04.6	327 09.5	44.4	51 47.4	27.9	90 52.8	28.5	Capella	280 24.3	N46 01.1
02	67 23.3	212 13.9	05.7	342 11.9	44.5	66 50.0	27.9	105 55.3	28.5	Deneb	49 27.0	N45 21.9
03	82 25.8	227 13.3	. . 06.8	357 14.3	. . 44.6	81 52.7	. . 28.0	120 57.7	. . 28.5	Denebola	182 27.1	N14 26.8
04	97 28.2	242 12.8	07.9	12 16.7	44.7	96 55.4	28.1	136 00.2	28.5	Diphda	348 48.8	S17 51.7
05	112 30.7	257 12.2	09.0	27 19.1	44.8	111 58.0	28.2	151 02.6	28.5			
06	127 33.2	272 11.7	S13 10.1	42 21.5	N23 44.9	127 00.7	S 1 28.2	166 05.0	S16 28.5	Dubhe	193 43.7	N61 37.6
07	142 35.6	287 11.1	11.2	57 24.0	45.0	142 03.3	28.3	181 07.5	28.5	Elnath	278 03.9	N28 37.6
S 08	157 38.1	302 10.5	12.3	72 26.4	45.2	157 06.0	28.4	196 09.9	28.4	Eltanin	90 43.4	N51 29.4
Á 09	172 40.6	317 10.0	. . 13.4	87 28.8	. . 45.3	172 08.7	. . 28.5	211 12.4	. . 28.4	Enif	33 40.5	N 9 58.9
B 10	187 43.0	332 09.4	14.4	102 31.2	45.4	187 11.3	28.5	226 14.8	28.4	Fomalhaut	15 16.3	S29 30.2
A 11	202 45.5	347 08.9	15.5	117 33.6	45.5	202 14.0	28.6	241 17.2	28.4			
D 12	217 48.0	2 08.3	S13 16.6	132 36.1	N23 45.6	217 16.6	S 1 28.7	256 19.7	S16 28.4	Gacrux	171 54.2	S57 14.2
O 13	232 50.4	17 07.8	17.7	147 38.5	45.7	232 19.3	28.8	271 22.1	28.4	Gienah	175 45.8	S17 39.9
14	247 52.9	32 07.2	18.8	162 40.9	45.8	247 22.0	28.8	286 24.6	28.4	Hadar	148 39.3	S60 28.8
15	262 55.4	47 06.7	. . 19.9	177 43.4	. . 46.0	262 24.6	. . 28.9	301 27.0	. . 28.4	Hamal	327 52.9	N23 34.3
16	277 57.8	62 06.1	21.0	192 45.8	46.1	277 27.3	29.0	316 29.4	28.4	Kaus Aust.	83 35.2	S34 22.5
17	293 00.3	77 05.5	22.1	207 48.2	46.2	292 29.9	29.1	331 31.9	28.3			
18	308 02.7	92 05.0	S13 23.1	222 50.7	N23 46.3	307 32.6	S 1 29.1	346 34.3	S16 28.3	Kochab	137 21.0	N74 03.8
19	323 05.2	107 04.4	24.2	237 53.1	46.4	322 35.2	29.2	1 36.7	28.3	Markab	13 31.5	N15 19.8
20	338 07.7	122 03.9	25.3	252 55.5	46.5	337 37.9	29.3	16 39.2	28.3	Menkar	314 07.8	N 4 10.8
21	353 10.1	137 03.3	. . 26.4	267 58.0	. . 46.6	352 40.6	. . 29.4	31 41.6	. . 28.3	Menkent	148 00.2	S36 28.7
22	8 12.6	152 02.7	27.5	283 00.4	46.7	7 43.2	29.4	46 44.0	28.3	Miaplacidus	221 38.8	S69 48.2
23	23 15.1	167 02.2	28.6	298 02.9	46.9	22 45.9	29.5	61 46.5	28.3			
30 00	38 17.5	182 01.6	S13 29.6	313 05.3	N23 47.0	37 48.5	S 1 29.6	76 48.9	S16 28.3	Mirfak	308 30.4	N49 56.5
01	53 20.0	197 01.1	30.7	328 07.8	47.1	52 51.2	29.7	91 51.4	28.3	Nunki	75 50.2	S26 16.1
02	68 22.5	212 00.5	31.8	343 10.2	47.2	67 53.8	29.7	106 53.8	28.2	Peacock	53 08.7	S56 39.9
03	83 24.9	226 59.9	. . 32.9	358 12.7	. . 47.3	82 56.5	. . 29.8	121 56.2	. . 28.2	Pollux	243 19.5	N27 58.2
04	98 27.4	241 59.4	34.0	13 15.1	47.4	97 59.1	29.9	136 58.7	28.2	Procyon	244 52.7	N 5 10.1
05	113 29.9	256 58.8	35.0	28 17.6	47.5	113 01.8	29.9	152 01.1	28.2			
06	128 32.3	271 58.2	S13 36.1	43 20.0	N23 47.7	128 04.4	S 1 30.0	167 03.5	S16 28.2	Rasalhague	96 00.5	N12 32.8
07	143 34.8	286 57.7	37.2	58 22.5	47.8	143 07.1	30.1	182 06.0	28.2	Regulus	207 36.5	N11 51.5
D 08	158 37.2	301 57.1	38.3	73 24.9	47.9	158 09.7	30.2	197 08.4	28.2	Rigel	281 05.4	S 8 10.4
O 09	173 39.7	316 56.5	. . 39.3	88 27.4	. . 48.0	173 12.4	. . 30.2	212 10.8	. . 28.2	Rigil Kent.	139 43.5	S60 55.6
M 10	188 42.2	331 56.0	40.4	103 29.9	48.1	188 15.1	30.3	227 13.3	28.1	Sabik	102 05.2	S15 45.1
I 11	203 44.6	346 55.4	41.5	118 32.3	48.2	203 17.7	30.4	242 15.7	28.1			
N 12	218 47.1	1 54.8	S13 42.6	133 34.8	N23 48.3	218 20.4	S 1 30.4	257 18.1	S16 28.1	Schedar	349 32.6	N56 39.9
G 13	233 49.6	16 54.3	43.6	148 37.3	48.4	233 23.0	30.5	272 20.6	28.1	Shaula	96 13.2	S37 07.2
O 14	248 52.0	31 53.7	44.7	163 39.7	48.6	248 25.7	30.6	287 23.0	28.1	Sirius	258 27.7	S16 44.6
15	263 54.5	46 53.1	. . 45.8	178 42.2	. . 48.7	263 28.3	. . 30.7	302 25.4	. . 28.1	Spica	158 24.6	S11 16.6
16	278 57.0	61 52.6	46.9	193 44.7	48.8	278 31.0	30.7	317 27.9	28.1	Suhail	222 47.7	S43 31.1
17	293 59.4	76 52.0	47.9	208 47.1	48.9	293 33.6	30.8	332 30.3	28.1			
18	309 01.9	91 51.4	S13 49.0	223 49.6	N23 49.0	308 36.3	S 1 30.9	347 32.7	S16 28.0	Vega	80 34.7	N38 48.5
19	324 04.4	106 50.9	50.1	238 52.1	49.1	323 38.9	30.9	2 35.2	28.0	Zuben'ubi	136 58.4	S16 08.0
20	339 06.8	121 50.3	51.1	253 54.6	49.2	338 41.6	31.0	17 37.6	28.0		AHS	Paso Mer.
21	354 09.3	136 49.7	. . 52.2	268 57.0	. . 49.4	353 44.2	. . 31.1	32 40.0	. . 28.0		° ′	h m
22	9 11.7	151 49.2	53.3	283 59.5	49.5	8 46.9	31.2	47 42.5	28.0	Venus	144 56.6	11 51
23	24 14.2	166 48.6	54.3	299 02.0	49.6	23 49.5	31.2	62 44.9	28.0	Marte	274 48.7	3 11
	h m									Júpiter	359 26.3	21 29
Paso Mer.	21 27.2	*v* −0.6	*d* 1.1	*v* 2.4	*d* 0.1	*v* 2.7	*d* 0.1	*v* 2.4	*d* 0.0	Saturno	38 32.0	18 54

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph	
d h	°	′	°	′	°	′	°	′	′	′
28 00	184	02.6	S13	02.1	150	44.6	5.6	S23	45.3	8.7	59.4
01	199	02.6		03.0	165	09.2	5.5	23	54.0	8.6	59.4
02	214	02.7		03.8	179	33.7	5.5	24	02.6	8.4	59.4
03	229	02.7	. .	04.6	193	58.2	5.3	24	11.0	8.3	59.4
04	244	02.8		05.5	208	22.5	5.3	24	19.3	8.1	59.4
05	259	02.8		06.3	222	46.8	5.1	24	27.4	7.9	59.4
06	274	02.9	S13	07.2	237	10.9	5.1	S24	35.3	7.8	59.4
07	289	02.9		08.0	251	35.0	5.0	24	43.1	7.7	59.4
V 08	304	03.0		08.8	265	59.0	4.9	24	50.8	7.4	59.4
I 09	319	03.0	. .	09.7	280	22.9	4.8	24	58.2	7.3	59.4
E 10	334	03.1		10.5	294	46.7	4.8	25	05.5	7.2	59.4
11	349	03.1		11.3	309	10.5	4.6	25	12.7	6.9	59.4
R 12	4	03.2	S13	12.2	323	34.1	4.6	S25	19.6	6.8	59.5
N 13	19	03.2		13.0	337	57.7	4.5	25	26.4	6.7	59.5
E 14	34	03.3		13.8	352	21.2	4.4	25	33.1	6.4	59.5
S 15	49	03.3	. .	14.7	6	44.6	4.4	25	39.5	6.3	59.5
16	64	03.4		15.5	21	08.0	4.3	25	45.8	6.1	59.5
17	79	03.4		16.3	35	31.3	4.2	25	51.9	6.0	59.5
18	94	03.5	S13	17.2	49	54.5	4.1	S25	57.9	5.7	59.5
19	109	03.5		18.0	64	17.6	4.1	26	03.6	5.6	59.5
20	124	03.6		18.8	78	40.7	4.0	26	09.2	5.4	59.5
21	139	03.6	. .	19.7	93	03.7	3.9	26	14.6	5.2	59.5
22	154	03.6		20.5	107	26.6	3.9	26	19.8	5.1	59.5
23	169	03.7		21.3	121	49.5	3.8	26	24.9	4.8	59.5
29 00	184	03.7	S13	22.2	136	12.3	3.8	S26	29.7	4.7	59.5
01	199	03.8		23.0	150	35.1	3.7	26	34.4	4.5	59.5
02	214	03.8		23.8	164	57.8	3.7	26	38.9	4.3	59.5
03	229	03.9	. .	24.7	179	20.5	3.6	26	43.2	4.2	59.5
04	244	03.9		25.5	193	43.1	3.6	26	47.4	3.9	59.5
05	259	03.9		26.3	208	05.7	3.5	26	51.3	3.8	59.5
06	274	04.0	S13	27.1	222	28.2	3.5	S26	55.1	3.5	59.5
07	289	04.0		28.0	236	50.7	3.4	26	58.6	3.4	59.5
S 08	304	04.1		28.8	251	13.1	3.4	27	02.0	3.2	59.5
Á 09	319	04.1	. .	29.6	265	35.5	3.3	27	05.2	3.0	59.5
B 10	334	04.2		30.5	279	57.8	3.4	27	08.2	2.8	59.5
A 11	349	04.2		31.3	294	20.2	3.3	27	11.0	2.6	59.5
D 12	4	04.2	S13	32.1	308	42.5	3.2	S27	13.6	2.5	59.5
O 13	19	04.3		32.9	323	04.7	3.3	27	16.1	2.2	59.5
14	34	04.3		33.8	337	27.0	3.2	27	18.3	2.0	59.5
15	49	04.4	. .	34.6	351	49.2	3.2	27	20.3	1.9	59.5
16	64	04.4		35.4	6	11.4	3.2	27	22.2	1.7	59.5
17	79	04.4		36.2	20	33.6	3.2	27	23.9	1.4	59.5
18	94	04.5	S13	37.1	34	55.8	3.1	S27	25.3	1.3	59.5
19	109	04.5		37.9	49	17.9	3.1	27	26.6	1.1	59.5
20	124	04.5		38.7	63	40.0	3.2	27	27.7	0.9	59.5
21	139	04.6	. .	39.5	78	02.2	3.1	27	28.6	0.7	59.5
22	154	04.6		40.3	92	24.3	3.1	27	29.3	0.5	59.5
23	169	04.7		41.2	106	46.4	3.2	27	29.8	0.3	59.5
30 00	184	04.7	S13	42.0	121	08.6	3.1	S27	30.1	0.1	59.5
01	199	04.7		42.8	135	30.7	3.1	27	30.2	0.1	59.5
02	214	04.8		43.6	149	52.8	3.2	27	30.1	0.3	59.5
03	229	04.8	. .	44.5	164	15.0	3.1	27	29.8	0.5	59.5
04	244	04.8		45.3	178	37.1	3.2	27	29.3	0.6	59.5
05	259	04.9		46.1	192	59.3	3.2	27	28.7	0.9	59.5
06	274	04.9	S13	46.9	207	21.5	3.2	S27	27.8	1.0	59.5
07	289	04.9		47.7	221	43.7	3.2	27	26.8	1.3	59.5
D 08	304	05.0		48.6	236	05.9	3.3	27	25.5	1.4	59.5
O 09	319	05.0	. .	49.4	250	28.2	3.2	27	24.1	1.6	59.5
M 10	334	05.0		50.2	264	50.4	3.3	27	22.5	1.8	59.5
I 11	349	05.1		51.0	279	12.7	3.4	27	20.7	2.0	59.5
N 12	4	05.1	S13	51.8	293	35.1	3.4	S27	18.7	2.2	59.5
G 13	19	05.1		52.6	307	57.5	3.4	27	16.5	2.4	59.5
O 14	34	05.2		53.5	322	19.9	3.4	27	14.1	2.6	59.5
15	49	05.2	. .	54.3	336	42.3	3.5	27	11.5	2.8	59.5
16	64	05.2		55.1	351	04.8	3.5	27	08.7	2.9	59.5
17	79	05.3		55.9	5	27.3	3.6	27	05.8	3.2	59.5
18	94	05.3	S13	56.7	19	49.9	3.6	S27	02.6	3.3	59.5
19	109	05.3		57.5	34	12.5	3.7	26	59.3	3.5	59.5
20	124	05.3		58.4	48	35.2	3.7	26	55.8	3.7	59.4
21	139	05.4	13	59.2	62	57.9	3.8	26	52.1	3.9	59.4
22	154	05.4	14	00.0	77	20.7	3.8	26	48.2	4.1	59.4
23	169	05.4	S14	00.8	91	43.5	3.9	S26	44.1	4.2	59.4
	S/D	16.1	*d*	0.8	S/D		16.2		16.2		16.2

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			28	29	30	31
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	05	54	07	15	08 38	▬	▬	▬	▬
N 70	05	51	07	04	08 16	▬	▬	▬	▬
68	05	49	06	55	07 58	▬	▬	▬	▬
66	05	46	06	47	07 44	▬	▬	▬	▬
64	05	44	06	41	07 33	13 52	▬	▬	16 36
62	05	42	06	35	07 23	12 44	14 44	15 40	15 45
60	05	41	06	30	07 14	12 09	13 46	14 47	15 14
N 58	05	39	06	25	07 07	11 44	13 13	14 15	14 50
56	05	37	06	21	07 00	11 23	12 48	13 51	14 31
54	05	36	06	17	06 55	11 07	12 29	13 32	14 15
52	05	34	06	14	06 49	10 53	12 12	13 15	14 01
50	05	33	06	11	06 44	10 40	11 58	13 01	13 48
45	05	29	06	04	06 34	10 14	11 29	12 32	13 23
N 40	05	26	05	58	06 26	09 54	11 06	12 10	13 03
35	05	22	05	52	06 18	09 37	10 47	11 51	12 46
30	05	19	05	47	06 12	09 23	10 31	11 35	12 31
20	05	11	05	37	06 00	08 58	10 04	11 08	12 06
N 10	05	03	05	28	05 50	08 37	09 41	10 44	11 44
0	04	54	05	19	05 40	08 17	09 19	10 22	11 24
S 10	04	44	05	09	05 31	07 58	08 58	10 00	11 04
20	04	30	04	57	05 20	07 37	08 34	09 37	10 42
30	04	13	04	43	05 08	07 13	08 08	09 10	10 17
35	04	02	04	34	05 01	06 59	07 52	08 54	10 02
40	03	49	04	24	04 53	06 43	07 34	08 35	09 45
45	03	33	04	12	04 43	06 24	07 12	08 12	09 24
S 50	03	11	03	56	04 32	06 00	06 44	07 43	08 57
52	03	01	03	49	04 27	05 49	06 31	07 29	08 45
54	02	49	03	41	04 21	05 36	06 15	07 13	08 30
56	02	34	03	31	04 14	05 21	05 57	06 53	08 13
58	02	17	03	21	04 07	05 04	05 34	06 29	07 52
S 60	01	55	03	08	03 58	04 43	05 05	05 57	07 25

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	28	29	30	31
°	h m	h m	h m	h m	h m	h m	h m
N 72	14 48	16 10	17 32	▬	▬	▬	▬
N 70	15 10	16 22	17 35	▬	▬	▬	▬
68	15 28	16 31	17 37	▬	▬	▬	▬
66	15 42	16 39	17 40	▬	▬	▬	▬
64	15 54	16 46	17 42	15 02	▬	▬	18 52
62	16 04	16 51	17 44	16 11	16 21	17 38	19 41
60	16 12	16 57	17 46	16 47	17 20	18 31	20 12
N 58	16 20	17 01	17 47	17 13	17 53	19 03	20 36
56	16 26	17 05	17 49	17 33	18 18	19 27	20 54
54	16 32	17 09	17 51	17 50	18 38	19 46	21 10
52	16 37	17 13	17 52	18 05	18 54	20 02	21 24
50	16 42	17 16	17 54	18 18	19 09	20 16	21 35
45	16 53	17 23	17 58	18 44	19 38	20 44	22 00
N 40	17 01	17 29	18 01	19 05	20 01	21 07	22 19
35	17 09	17 35	18 05	19 23	20 20	21 25	22 36
30	17 16	17 40	18 08	19 38	20 36	21 41	22 50
20	17 27	17 50	18 16	20 03	21 04	22 08	23 13
N 10	17 37	17 59	18 24	20 26	21 27	22 31	23 34
0	17 47	18 08	18 33	20 46	21 49	22 52	23 53
S 10	17 57	18 19	18 44	21 07	22 11	23 13	24 11
20	18 08	18 30	18 57	21 30	22 35	23 36	24 31
30	18 20	18 45	19 15	21 56	23 02	24 02	00 02
35	18 27	18 54	19 26	22 11	23 18	24 18	00 18
40	18 35	19 04	19 39	22 29	23 37	24 36	00 36
45	18 45	19 17	19 56	22 50	24 00	00 00	00 57
S 50	18 56	19 32	20 18	23 17	24 29	00 29	01 24
52	19 02	19 40	20 28	23 31	24 43	00 43	01 37
54	19 08	19 48	20 41	23 46	24 59	00 59	01 52
56	19 15	19 58	20 56	24 04	00 04	01 19	02 10
58	19 22	20 09	21 13	24 26	00 26	01 43	02 31
S 60	19 31	20 22	21 36	24 55	00 55	02 15	02 58

Día	SOL				LUNA				
	Ec. Tiempo				Paso Mer.	Paso Mer.		Edad	Fase
	00h		12h			Sup.	Inf.		
d	m	s	m	s	h m	h m	h m	d	%
28	16	10	16	13	11 44	14 32	02 02	03	12
29	16	15	16	17	11 44	15 34	03 03	04	20
30	16	19	16	20	11 44	16 37	04 06	05	30

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·2		JÚPITER −2·8		SATURNO +0·6		ESTRELLAS		
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec	Nombre	AHS	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′		° ′	° ′
31 00	39 16.7	181 48.0	S13 55.4	314 04.5	N23 49.7	38 52.2	S 1 31.3	77 47.3	S16 28.0	Acamar	315 12.7	S40 12.7
01	54 19.1	196 47.4	56.5	329 07.0	49.8	53 54.8	31.4	92 49.8	28.0	Achernar	335 21.0	S57 07.3
02	69 21.6	211 46.9	57.5	344 09.5	49.9	68 57.5	31.4	107 52.2	27.9	Acrux	173 02.7	S63 13.2
03	84 24.1	226 46.3	58.6	359 12.0	50.0	84 00.1	31.5	122 54.6	27.9	Adhara	255 07.1	S28 59.9
04	99 26.5	241 45.7	13 59.7	14 14.5	50.1	99 02.7	31.6	137 57.0	27.9	Aldebaran	290 41.4	N16 33.3
05	114 29.0	256 45.1	14 00.7	29 16.9	50.3	114 05.4	31.6	152 59.5	27.9			
06	129 31.5	271 44.6	S14 01.8	44 19.4	N23 50.4	129 08.0	S 1 31.7	168 01.9	S16 27.9	Alioth	166 15.1	N55 50.2
07	144 33.9	286 44.0	02.9	59 21.9	50.5	144 10.7	31.8	183 04.3	27.9	Alkaid	152 53.9	N49 12.0
08	159 36.4	301 43.4	03.9	74 24.4	50.6	159 13.3	31.9	198 06.8	27.9	Alnair	27 35.0	S46 51.2
L 09	174 38.9	316 42.8	05.0	89 26.9	50.7	174 16.0	31.9	213 09.2	27.9	Alnilam	275 39.4	S 1 11.1
U 10	189 41.3	331 42.3	06.0	104 29.4	50.8	189 18.6	32.0	228 11.6	27.8	Alphard	217 49.6	S 8 45.2
N 11	204 43.8	346 41.7	07.1	119 31.9	50.9	204 21.3	32.1	243 14.1	27.8			
E 12	219 46.2	1 41.1	S14 08.2	134 34.4	N23 51.1	219 23.9	S 1 32.1	258 16.5	S16 27.8	Alphecca	126 05.7	N26 38.4
S 13	234 48.7	16 40.5	09.2	149 36.9	51.2	234 26.6	32.2	273 18.9	27.8	Alpheratz	357 36.4	N29 13.1
14	249 51.2	31 39.9	10.3	164 39.5	51.3	249 29.2	32.3	288 21.3	27.8	Altair	62 01.8	N 8 55.8
15	264 53.6	46 39.4	11.3	179 42.0	51.4	264 31.9	32.3	303 23.8	27.8	Ankaa	353 08.6	S42 11.0
16	279 56.1	61 38.8	12.4	194 44.5	51.5	279 34.5	32.4	318 26.2	27.8	Antares	112 18.4	S26 28.9
17	294 58.6	76 38.2	13.5	209 47.0	51.6	294 37.1	32.5	333 28.6	27.7			
18	310 01.0	91 37.6	S14 14.5	224 49.5	N23 51.7	309 39.8	S 1 32.5	348 31.1	S16 27.7	Arcturus	145 49.9	N19 04.0
19	325 03.5	106 37.0	15.6	239 52.0	51.9	324 42.4	32.6	3 33.5	27.7	Atria	107 14.7	S69 04.2
20	340 06.0	121 36.5	16.6	254 54.5	52.0	339 45.1	32.7	18 35.9	27.7	Avior	234 15.4	S59 34.5
21	355 08.4	136 35.9	17.7	269 57.1	52.1	354 47.7	32.7	33 38.3	27.7	Bellatrix	278 24.6	N 6 22.3
22	10 10.9	151 35.3	18.7	284 59.6	52.2	9 50.4	32.8	48 40.8	27.7	Betelgeuse	270 53.8	N 7 24.8
23	25 13.4	166 34.7	19.8	300 02.1	52.3	24 53.0	32.9	63 43.2	27.7			
1 00	40 15.8	181 34.1	S14 20.8	315 04.6	N23 52.4	39 55.6	S 1 32.9	78 45.6	S16 27.6	Canopus	263 52.9	S52 42.1
01	55 18.3	196 33.5	21.9	330 07.2	52.5	54 58.3	33.0	93 48.1	27.6	Capella	280 24.2	N46 01.1
02	70 20.7	211 33.0	22.9	345 09.7	52.7	70 00.9	33.1	108 50.5	27.6	Deneb	49 27.1	N45 21.9
03	85 23.2	226 32.4	24.0	0 12.2	52.8	85 03.6	33.1	123 52.9	27.6	Denebola	182 27.1	N14 26.8
04	100 25.7	241 31.8	25.0	15 14.7	52.9	100 06.2	33.2	138 55.3	27.6	Diphda	348 48.8	S17 51.7
05	115 28.1	256 31.2	26.1	30 17.3	53.0	115 08.8	33.3	153 57.8	27.6			
06	130 30.6	271 30.6	S14 27.1	45 19.8	N23 53.1	130 11.5	S 1 33.3	169 00.2	S16 27.6	Dubhe	193 43.7	N61 37.6
07	145 33.1	286 30.0	28.2	60 22.3	53.2	145 14.1	33.4	184 02.6	27.5	Elnath	278 03.9	N28 37.6
M 08	160 35.5	301 29.4	29.2	75 24.9	53.3	160 16.8	33.5	199 05.0	27.5	Eltanin	90 43.4	N51 29.4
A 09	175 38.0	316 28.9	30.3	90 27.4	53.4	175 19.4	33.5	214 07.5	27.5	Enif	33 40.5	N 9 58.9
R 10	190 40.5	331 28.3	31.3	105 30.0	53.6	190 22.0	33.6	229 09.9	27.5	Fomalhaut	15 16.3	S29 30.2
T 11	205 42.9	346 27.7	32.4	120 32.5	53.7	205 24.7	33.7	244 12.3	27.5			
E 12	220 45.4	1 27.1	S14 33.4	135 35.0	N23 53.8	220 27.3	S 1 33.7	259 14.7	S16 27.5	Gacrux	171 54.2	S57 14.2
S 13	235 47.8	16 26.5	34.5	150 37.6	53.9	235 30.0	33.8	274 17.2	27.5	Gienah	175 45.7	S17 39.9
14	250 50.3	31 25.9	35.5	165 40.1	54.0	250 32.6	33.9	289 19.6	27.4	Hadar	148 39.3	S60 28.8
15	265 52.8	46 25.3	36.5	180 42.7	54.1	265 35.2	33.9	304 22.0	27.4	Hamal	327 52.9	N23 34.3
16	280 55.2	61 24.7	37.6	195 45.2	54.2	280 37.9	34.0	319 24.4	27.4	Kaus Aust.	83 35.2	S34 22.5
17	295 57.7	76 24.1	38.6	210 47.8	54.4	295 40.5	34.1	334 26.9	27.4			
18	311 00.2	91 23.5	S14 39.7	225 50.3	N23 54.5	310 43.1	S 1 34.1	349 29.3	S16 27.4	Kochab	137 21.0	N74 03.7
19	326 02.6	106 23.0	40.7	240 52.9	54.6	325 45.8	34.2	4 31.7	27.4	Markab	13 31.5	N15 19.8
20	341 05.1	121 22.4	41.7	255 55.5	54.7	340 48.4	34.3	19 34.1	27.3	Menkar	314 07.7	N 4 10.8
21	356 07.6	136 21.8	42.8	270 58.0	54.8	355 51.1	34.3	34 36.6	27.3	Menkent	148 00.2	S36 28.7
22	11 10.0	151 21.2	43.8	286 00.6	54.9	10 53.7	34.4	49 39.0	27.3	Miaplacidus	221 38.7	S69 48.2
23	26 12.5	166 20.6	44.9	301 03.1	55.0	25 56.3	34.5	64 41.4	27.3			
2 00	41 15.0	181 20.0	S14 45.9	316 05.7	N23 55.2	40 59.0	S 1 34.5	79 43.8	S16 27.3	Mirfak	308 30.4	N49 56.5
01	56 17.4	196 19.4	46.9	331 08.3	55.3	56 01.6	34.6	94 46.3	27.3	Nunki	75 50.2	S26 16.1
02	71 19.9	211 18.8	48.0	346 10.8	55.4	71 04.2	34.6	109 48.7	27.3	Peacock	53 08.7	S56 39.9
03	86 22.3	226 18.2	49.0	1 13.4	55.5	86 06.9	34.7	124 51.1	27.2	Pollux	243 19.5	N27 58.2
04	101 24.8	241 17.6	50.0	16 16.0	55.6	101 09.5	34.8	139 53.5	27.2	Procyon	244 52.7	N 5 10.1
05	116 27.3	256 17.0	51.1	31 18.5	55.7	116 12.1	34.8	154 55.9	27.2			
06	131 29.7	271 16.4	S14 52.1	46 21.1	N23 55.8	131 14.8	S 1 34.9	169 58.4	S16 27.2	Rasalhague	96 00.5	N12 32.7
07	146 32.2	286 15.8	53.1	61 23.7	56.0	146 17.4	35.0	185 00.8	27.2	Regulus	207 36.5	N11 51.5
M 08	161 34.7	301 15.2	54.2	76 26.3	56.1	161 20.0	35.0	200 03.2	27.2	Rigel	281 05.4	S 8 10.4
I 09	176 37.1	316 14.6	55.2	91 28.9	56.2	176 22.7	35.1	215 05.6	27.1	Rigil Kent.	139 43.5	S60 55.6
É 10	191 39.6	331 14.0	56.2	106 31.4	56.3	191 25.3	35.2	230 08.1	27.1	Sabik	102 05.2	S15 45.1
R 11	206 42.1	346 13.4	57.3	121 34.0	56.4	206 27.9	35.2	245 10.5	27.1			
C 12	221 44.5	1 12.8	S14 58.3	136 36.6	N23 56.5	221 30.6	S 1 35.3	260 12.9	S16 27.1	Schedar	349 32.6	N56 39.9
O 13	236 47.0	16 12.2	14 59.3	151 39.2	56.6	236 33.2	35.3	275 15.3	27.1	Shaula	96 13.2	S37 07.2
L 14	251 49.5	31 11.6	15 00.3	166 41.8	56.8	251 35.8	35.4	290 17.7	27.1	Sirius	258 27.7	S16 44.6
E 15	266 51.9	46 11.0	01.4	181 44.4	56.9	266 38.4	35.5	305 20.2	27.0	Spica	158 24.5	S11 16.6
S 16	281 54.4	61 10.4	02.4	196 47.0	57.0	281 41.1	35.5	320 22.6	27.0	Suhail	222 47.7	S43 31.1
17	296 56.8	76 09.8	03.4	211 49.5	57.1	296 43.7	35.6	335 25.0	27.0			
18	311 59.3	91 09.2	S15 04.5	226 52.1	N23 57.2	311 46.3	S 1 35.7	350 27.4	S16 27.0	Vega	80 34.7	N38 48.5
19	327 01.8	106 08.6	05.5	241 54.7	57.3	326 49.0	35.7	5 29.8	27.0	Zuben'ubi	136 58.4	S16 08.0
20	342 04.2	121 08.0	06.5	256 57.3	57.4	341 51.6	35.8	20 32.3	27.0			
21	357 06.7	136 07.4	07.5	271 59.9	57.6	356 54.2	35.8	35 34.7	26.9		AHS	Paso Mer.
22	12 09.2	151 06.8	08.5	287 02.5	57.7	11 56.9	35.9	50 37.1	26.9		° ′	h m
23	27 11.6	166 06.2	09.6	302 05.1	57.8	26 59.5	36.0	65 39.5	26.9	Venus	141 18.3	11 54
	h m									Marte	274 48.8	2 59
Paso Mer.	21 15.5	*v* −0.6	*d* 1.0	*v* 2.5	*d* 0.1	*v* 2.6	*d* 0.1	*v* 2.4	*d* 0.0	Júpiter	359 39.8	21 17
										Saturno	38 29.8	18 42

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	°	′	′	
31 00	184	05.5	S14	01.6	106	06.4	3.9	S26	39.9	4.4	59.4
01	199	05.5		02.4	120	29.3	4.0	26	35.5	4.6	59.4
02	214	05.5		03.2	134	52.3	4.1	26	30.9	4.8	59.4
03	229	05.5	. .	04.0	149	15.4	4.2	26	26.1	5.0	59.4
04	244	05.6		04.9	163	38.6	4.2	26	21.1	5.1	59.4
05	259	05.6		05.7	178	01.8	4.3	26	16.0	5.4	59.4
06	274	05.6	S14	06.5	192	25.1	4.3	S26	10.6	5.4	59.4
07	289	05.6		07.3	206	48.4	4.4	26	05.2	5.7	59.4
L 08	304	05.7		08.1	221	11.8	4.5	25	59.5	5.9	59.4
U 09	319	05.7	. .	08.9	235	35.3	4.6	25	53.6	6.0	59.4
N 10	334	05.7		09.7	249	58.9	4.7	25	47.6	6.2	59.3
E 11	349	05.7		10.5	264	22.6	4.7	25	41.4	6.3	59.3
S 12	4	05.8	S14	11.3	278	46.3	4.8	S25	35.1	6.5	59.3
13	19	05.8		12.1	293	10.1	4.9	25	28.6	6.7	59.3
14	34	05.8		12.9	307	34.0	5.0	25	21.9	6.9	59.3
15	49	05.8	. .	13.7	321	58.0	5.1	25	15.0	7.0	59.3
16	64	05.9		14.6	336	22.1	5.2	25	08.0	7.1	59.3
17	79	05.9		15.4	350	46.3	5.2	25	00.9	7.4	59.3
18	94	05.9	S14	16.2	5	10.5	5.3	S24	53.5	7.5	59.3
19	109	05.9		17.0	19	34.8	5.5	24	46.0	7.6	59.3
20	124	05.9		17.8	33	59.3	5.5	24	38.4	7.8	59.3
21	139	06.0	. .	18.6	48	23.8	5.6	24	30.6	8.0	59.3
22	154	06.0		19.4	62	48.4	5.7	24	22.6	8.1	59.2
23	169	06.0		20.2	77	13.1	5.8	24	14.5	8.3	59.2
1 00	184	06.0	S14	21.0	91	37.9	5.9	S24	06.2	8.4	59.2
01	199	06.0		21.8	106	02.8	6.0	23	57.8	8.6	59.2
02	214	06.1		22.6	120	27.8	6.0	23	49.2	8.7	59.2
03	229	06.1	. .	23.4	134	52.8	6.2	23	40.5	8.9	59.2
04	244	06.1		24.2	149	18.0	6.3	23	31.6	9.0	59.2
05	259	06.1		25.0	163	43.3	6.4	23	22.6	9.1	59.2
06	274	06.1	S14	25.8	178	08.7	6.4	S23	13.5	9.3	59.2
07	289	06.2		26.6	192	34.1	6.6	23	04.2	9.4	59.1
M 08	304	06.2		27.4	206	59.7	6.7	22	54.8	9.6	59.1
A 09	319	06.2	. .	28.2	221	25.4	6.8	22	45.2	9.7	59.1
R 10	334	06.2		29.0	235	51.2	6.8	22	35.5	9.9	59.1
T 11	349	06.2		29.8	250	17.0	7.0	22	25.6	9.9	59.1
E 12	4	06.2	S14	30.6	264	43.0	7.1	S22	15.7	10.1	59.1
S 13	19	06.3		31.4	279	09.1	7.2	22	05.6	10.3	59.1
14	34	06.3		32.2	293	35.3	7.2	21	55.3	10.3	59.1
15	49	06.3	. .	33.0	308	01.5	7.4	21	45.0	10.5	59.1
16	64	06.3		33.8	322	27.9	7.5	21	34.5	10.7	59.0
17	79	06.3		34.6	336	54.4	7.6	21	23.8	10.7	59.0
18	94	06.3	S14	35.4	351	21.0	7.7	S21	13.1	10.9	59.0
19	109	06.3		36.2	5	47.7	7.7	21	02.2	10.9	59.0
20	124	06.4		37.0	20	14.4	7.9	20	51.3	11.1	59.0
21	139	06.4	. .	37.8	34	41.3	8.0	20	40.2	11.3	59.0
22	154	06.4		38.6	49	08.3	8.1	20	28.9	11.3	59.0
23	169	06.4		39.4	63	35.4	8.2	20	17.6	11.4	59.0
2 00	184	06.4	S14	40.1	78	02.6	8.3	S20	06.2	11.6	58.9
01	199	06.4		40.9	92	29.9	8.4	19	54.6	11.7	58.9
02	214	06.4		41.7	106	57.3	8.4	19	42.9	11.7	58.9
03	229	06.4	. .	42.5	121	24.7	8.6	19	31.2	11.9	58.9
04	244	06.5		43.3	135	52.3	8.7	19	19.3	12.0	58.9
05	259	06.5		44.1	150	20.0	8.8	19	07.3	12.1	58.9
06	274	06.5	S14	44.9	164	47.8	8.9	S18	55.2	12.2	58.9
07	289	06.5		45.7	179	15.7	9.0	18	43.0	12.3	58.9
M 08	304	06.5		46.5	193	43.7	9.0	18	30.7	12.4	58.8
I 09	319	06.5	. .	47.3	208	11.7	9.2	18	18.3	12.5	58.8
É 10	334	06.5		48.1	222	39.9	9.3	18	05.8	12.6	58.8
R 11	349	06.5		48.8	237	08.2	9.4	17	53.2	12.6	58.8
C 12	4	06.5	S14	49.6	251	36.6	9.4	S17	40.6	12.8	58.8
O 13	19	06.5		50.4	266	05.0	9.6	17	27.8	12.9	58.8
L 14	34	06.5		51.2	280	33.6	9.6	17	14.9	12.9	58.8
E 15	49	06.5	. .	52.0	295	02.2	9.8	17	02.0	13.1	58.8
S 16	64	06.6		52.8	309	31.0	9.8	16	48.9	13.1	58.7
17	79	06.6		53.6	323	59.8	9.9	16	35.8	13.2	58.7
18	94	06.6	S14	54.4	338	28.7	10.0	S16	22.6	13.3	58.7
19	109	06.6		55.1	352	57.7	10.1	16	09.3	13.4	58.7
20	124	06.6		55.9	7	26.8	10.2	15	55.9	13.4	58.7
21	139	06.6	. .	56.7	21	56.0	10.3	15	42.5	13.5	58.7
22	154	06.6		57.5	36	25.3	10.4	15	29.0	13.6	58.7
23	169	06.6		58.3	50	54.7	10.4	S15	15.4	13.7	58.6
	S/D	16.1	d	0.8	S/D		16.2		16.1		16.0

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			31	1	2	3
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	06	06	07	29	08 56	▬	▬	17 51	16 42
N 70	06	02	07	16	08 30	▬	▬	17 07	16 24
68	05	58	07	05	08 11	▬	17 39	16 37	16 10
66	05	55	06	57	07 55	▬	16 43	16 15	15 58
64	05	52	06	49	07 42	16 36	16 09	15 57	15 48
62	05	50	06	43	07 31	15 45	15 44	15 42	15 39
60	05	47	06	37	07 22	15 14	15 25	15 30	15 32
N 58	05	45	06	32	07 14	14 50	15 08	15 19	15 25
56	05	43	06	27	07 07	14 31	14 54	15 09	15 20
54	05	41	06	23	07 00	14 15	14 42	15 01	15 14
52	05	39	06	19	06 55	14 01	14 31	14 53	15 10
50	05	37	06	16	06 49	13 48	14 22	14 46	15 05
45	05	33	06	08	06 38	13 23	14 02	14 32	14 56
N 40	05	29	06	01	06 29	13 03	13 45	14 19	14 48
35	05	25	05	55	06 21	12 46	13 31	14 09	14 41
30	05	21	05	49	06 14	12 31	13 19	14 00	14 35
20	05	13	05	39	06 01	12 06	12 58	13 44	14 25
N 10	05	04	05	29	05 50	11 44	12 40	13 30	14 16
0	04	54	05	19	05 40	11 24	12 23	13 17	14 07
S 10	04	43	05	08	05 30	11 04	12 05	13 04	13 58
20	04	28	04	55	05 18	10 42	11 47	12 50	13 49
30	04	10	04	40	05 05	10 17	11 26	12 33	13 39
35	03	59	04	31	04 58	10 02	11 13	12 24	13 32
40	03	45	04	20	04 49	09 45	10 59	12 13	13 25
45	03	27	04	07	04 39	09 24	10 41	12 00	13 17
S 50	03	05	03	50	04 27	08 57	10 20	11 44	13 07
52	02	53	03	43	04 21	08 45	10 10	11 37	13 03
54	02	40	03	34	04 14	08 30	09 58	11 29	12 57
56	02	24	03	24	04 07	08 13	09 45	11 20	12 52
58	02	05	03	12	03 59	07 52	09 29	11 09	12 45
S 60	01	40	02	58	03 50	07 25	09 11	10 57	12 38

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 31	1	2	3
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	14	29	15	57	17 19	▬	▬	21 33	24 26
N 70	14	56	16	10	17 24	▬	▬	22 15	24 41
68	15	15	16	20	17 27	▬	19 50	22 43	24 53
66	15	31	16	29	17 31	▬	20 45	23 04	25 03
64	15	44	16	37	17 34	18 52	21 18	23 20	25 11
62	15	55	16	44	17 36	19 41	21 42	23 34	25 18
60	16	04	16	49	17 39	20 12	22 01	23 45	25 24
N 58	16	12	16	55	17 41	20 36	22 16	23 55	25 30
56	16	20	16	59	17 43	20 54	22 29	24 04	00 04
54	16	26	17	03	17 45	21 10	22 41	24 11	00 11
52	16	32	17	07	17 47	21 24	22 51	24 18	00 18
50	16	37	17	11	17 49	21 35	23 00	24 24	00 24
45	16	48	17	19	17 54	22 00	23 19	24 37	00 37
N 40	16	58	17	26	17 58	22 19	23 34	24 48	00 48
35	17	06	17	32	18 02	22 36	23 47	24 57	00 57
30	17	13	17	38	18 06	22 50	23 58	25 05	01 05
20	17	26	17	48	18 14	23 13	24 17	00 17	01 18
N 10	17	37	17	58	18 23	23 34	24 34	00 34	01 30
0	17	47	18	08	18 33	23 53	24 49	00 49	01 41
S 10	17	58	18	19	18 45	24 11	00 11	01 04	01 52
20	18	09	18	32	18 59	24 31	00 31	01 20	02 04
30	18	22	18	47	19 18	00 02	00 54	01 39	02 17
35	18	30	18	57	19 29	00 18	01 08	01 49	02 24
40	18	39	19	08	19 43	00 36	01 23	02 01	02 33
45	18	49	19	21	20 01	00 57	01 41	02 16	02 43
S 50	19	02	19	38	20 24	01 24	02 04	02 33	02 54
52	19	07	19	46	20 36	01 37	02 15	02 41	03 00
54	19	14	19	55	20 49	01 52	02 27	02 50	03 06
56	19	21	20	05	21 05	02 10	02 41	03 00	03 12
58	19	29	20	17	21 25	02 31	02 57	03 11	03 20
S 60	19	39	20	31	21 51	02 58	03 16	03 24	03 28

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
31	16 22	16 23	11 44	17 38	05 08	06 41	
1	16 24	16 25	11 44	18 36	06 08	07 53	
2	16 26	16 26	11 44	19 29	07 03	08 64	

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·3		JÚPITER −2·8		SATURNO +0·6	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
3 00	42 14.1	181 05.5	S15 10.6	317 07.7	N23 57.9	42 02.1	S 1 36.0	80 41.9	S16 26.9
01	57 16.6	196 04.9	11.6	332 10.3	58.0	57 04.7	36.1	95 44.4	26.9
02	72 19.0	211 04.3	12.6	347 13.0	58.1	72 07.4	36.1	110 46.8	26.9
03	87 21.5	226 03.7	13.6	2 15.6	58.2	87 10.0	36.2	125 49.2	26.8
04	102 23.9	241 03.1	14.7	17 18.2	58.3	102 12.6	36.3	140 51.6	26.8
05	117 26.4	256 02.5	15.7	32 20.8	58.5	117 15.2	36.3	155 54.0	26.8
06	132 28.9	271 01.9	S15 16.7	47 23.4	N23 58.6	132 17.9	S 1 36.4	170 56.4	S16 26.8
07	147 31.3	286 01.3	17.7	62 26.0	58.7	147 20.5	36.4	185 58.9	26.8
08	162 33.8	301 00.7	18.7	77 28.6	58.8	162 23.1	36.5	201 01.3	26.8
J 09	177 36.3	316 00.1	19.7	92 31.2	58.9	177 25.8	36.6	216 03.7	26.7
U 10	192 38.7	330 59.4	20.8	107 33.9	59.0	192 28.4	36.6	231 06.1	26.7
E 11	207 41.2	345 58.8	21.8	122 36.5	59.1	207 31.0	36.7	246 08.5	26.7
V 12	222 43.7	0 58.2	S15 22.8	137 39.1	N23 59.3	222 33.6	S 1 36.7	261 11.0	S16 26.7
E 13	237 46.1	15 57.6	23.8	152 41.7	59.4	237 36.3	36.8	276 13.4	26.7
S 14	252 48.6	30 57.0	24.8	167 44.4	59.5	252 38.9	36.9	291 15.8	26.7
15	267 51.1	45 56.4	25.8	182 47.0	59.6	267 41.5	36.9	306 18.2	26.6
16	282 53.5	60 55.8	26.8	197 49.6	59.7	282 44.1	37.0	321 20.6	26.6
17	297 56.0	75 55.2	27.8	212 52.3	59.8	297 46.7	37.0	336 23.0	26.6
18	312 58.4	90 54.5	S15 28.9	227 54.9	N23 59.9	312 49.4	S 1 37.1	351 25.4	S16 26.6
19	328 00.9	105 53.9	29.9	242 57.5	24 00.1	327 52.0	37.2	6 27.9	26.6
20	343 03.4	120 53.3	30.9	258 00.2	00.2	342 54.6	37.2	21 30.3	26.5
21	358 05.8	135 52.7	31.9	273 02.8	00.3	357 57.2	37.3	36 32.7	26.5
22	13 08.3	150 52.1	32.9	288 05.4	00.4	12 59.9	37.3	51 35.1	26.5
23	28 10.8	165 51.4	33.9	303 08.1	00.5	28 02.5	37.4	66 37.5	26.5
4 00	43 13.2	180 50.8	S15 34.9	318 10.7	N24 00.6	43 05.1	S 1 37.4	81 39.9	S16 26.5
01	58 15.7	195 50.2	35.9	333 13.4	00.7	58 07.7	37.5	96 42.4	26.5
02	73 18.2	210 49.6	36.9	348 16.0	00.9	73 10.3	37.6	111 44.8	26.4
03	88 20.6	225 49.0	37.9	3 18.7	01.0	88 13.0	37.6	126 47.2	26.4
04	103 23.1	240 48.3	38.9	18 21.3	01.1	103 15.6	37.7	141 49.6	26.4
05	118 25.6	255 47.7	39.9	33 24.0	01.2	118 18.2	37.7	156 52.0	26.4
06	133 28.0	270 47.1	S15 40.9	48 26.6	N24 01.3	133 20.8	S 1 37.8	171 54.4	S16 26.4
07	148 30.5	285 46.5	41.9	63 29.3	01.4	148 23.4	37.8	186 56.8	26.3
V 08	163 32.9	300 45.9	42.9	78 31.9	01.5	163 26.1	37.9	201 59.3	26.3
I 09	178 35.4	315 45.2	43.9	93 34.6	01.7	178 28.7	38.0	217 01.7	26.3
E 10	193 37.9	330 44.6	44.9	108 37.3	01.8	193 31.3	38.0	232 04.1	26.3
R 11	208 40.3	345 44.0	45.9	123 39.9	01.9	208 33.9	38.1	247 06.5	26.3
N 12	223 42.8	0 43.4	S15 46.9	138 42.6	N24 02.0	223 36.5	S 1 38.1	262 08.9	S16 26.3
E 13	238 45.3	15 42.7	47.9	153 45.3	02.1	238 39.1	38.2	277 11.3	26.2
S 14	253 47.7	30 42.1	48.9	168 47.9	02.2	253 41.8	38.2	292 13.7	26.2
15	268 50.2	45 41.5	49.9	183 50.6	02.3	268 44.4	38.3	307 16.1	26.2
16	283 52.7	60 40.9	50.9	198 53.3	02.5	283 47.0	38.3	322 18.6	26.2
17	298 55.1	75 40.2	51.9	213 55.9	02.6	298 49.6	38.4	337 21.0	26.2
18	313 57.6	90 39.6	S15 52.9	228 58.6	N24 02.7	313 52.2	S 1 38.5	352 23.4	S16 26.1
19	329 00.0	105 39.0	53.9	244 01.3	02.8	328 54.8	38.5	7 25.8	26.1
20	344 02.5	120 38.3	54.8	259 04.0	02.9	343 57.5	38.6	22 28.2	26.1
21	359 05.0	135 37.7	55.8	274 06.6	03.0	359 00.1	38.6	37 30.6	26.1
22	14 07.4	150 37.1	56.8	289 09.3	03.1	14 02.7	38.7	52 33.0	26.1
23	29 09.9	165 36.5	57.8	304 12.0	03.2	29 05.3	38.7	67 35.4	26.0
5 00	44 12.4	180 35.8	S15 58.8	319 14.7	N24 03.4	44 07.9	S 1 38.8	82 37.8	S16 26.0
01	59 14.8	195 35.2	15 59.8	334 17.4	03.5	59 10.5	38.8	97 40.3	26.0
02	74 17.3	210 34.6	16 00.8	349 20.1	03.6	74 13.1	38.9	112 42.7	26.0
03	89 19.8	225 33.9	01.8	4 22.8	03.7	89 15.8	38.9	127 45.1	26.0
04	104 22.2	240 33.3	02.7	19 25.4	03.8	104 18.4	39.0	142 47.5	25.9
05	119 24.7	255 32.7	03.7	34 28.1	03.9	119 21.0	39.1	157 49.9	25.9
06	134 27.2	270 32.0	S16 04.7	49 30.8	N24 04.0	134 23.6	S 1 39.1	172 52.3	S16 25.9
07	149 29.6	285 31.4	05.7	64 33.5	04.2	149 26.2	39.2	187 54.7	25.9
S 08	164 32.1	300 30.8	06.7	79 36.2	04.3	164 28.8	39.2	202 57.1	25.9
Á 09	179 34.5	315 30.1	07.7	94 38.9	04.4	179 31.4	39.3	217 59.5	25.8
B 10	194 37.0	330 29.5	08.6	109 41.6	04.5	194 34.0	39.3	233 01.9	25.8
A 11	209 39.5	345 28.8	09.6	124 44.3	04.6	209 36.7	39.4	248 04.3	25.8
D 12	224 41.9	0 28.2	S16 10.6	139 47.0	N24 04.7	224 39.3	S 1 39.4	263 06.8	S16 25.8
O 13	239 44.4	15 27.6	11.6	154 49.7	04.8	239 41.9	39.5	278 09.2	25.8
14	254 46.9	30 26.9	12.6	169 52.4	05.0	254 44.5	39.5	293 11.6	25.7
15	269 49.3	45 26.3	13.5	184 55.2	05.1	269 47.1	39.6	308 14.0	25.7
16	284 51.8	60 25.7	14.5	199 57.9	05.2	284 49.7	39.6	323 16.4	25.7
17	299 54.3	75 25.0	15.5	215 00.6	05.3	299 52.3	39.7	338 18.8	25.7
18	314 56.7	90 24.4	S16 16.5	230 03.3	N24 05.4	314 54.9	S 1 39.7	353 21.2	S16 25.7
19	329 59.2	105 23.7	17.4	245 06.0	05.5	329 57.5	39.8	8 23.6	25.6
20	345 01.6	120 23.1	18.4	260 08.7	05.6	345 00.1	39.8	23 26.0	25.6
21	0 04.1	135 22.4	19.4	275 11.4	05.8	0 02.7	39.9	38 28.4	25.6
22	15 06.6	150 21.8	20.4	290 14.2	05.9	15 05.4	39.9	53 30.8	25.6
23	30 09.0	165 21.2	21.3	305 16.9	06.0	30 08.0	40.0	68 33.2	25.6
	h m								
Paso Mer.	21 03.7	*v* −0.6	*d* 1.0	*v* 2.7	*d* 0.1	*v* 2.6	*d* 0.1	*v* 2.4	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.7	S40 12.8
Achernar	335 21.0	S57 07.4
Acrux	173 02.7	S63 13.2
Adhara	255 07.1	S28 59.9
Aldebaran	290 41.4	N16 33.3
Alioth	166 15.1	N55 50.1
Alkaid	152 53.9	N49 12.0
Alnair	27 35.1	S46 51.3
Alnilam	275 39.3	S 1 11.1
Alphard	217 49.6	S 8 45.2
Alphecca	126 05.7	N26 38.4
Alpheratz	357 36.4	N29 13.1
Altair	62 01.8	N 8 55.8
Ankaa	353 08.6	S42 11.1
Antares	112 18.4	S26 28.9
Arcturus	145 49.9	N19 03.9
Atria	107 14.8	S69 04.2
Avior	234 15.4	S59 34.5
Bellatrix	278 24.6	N 6 22.3
Betelgeuse	270 53.8	N 7 24.8
Canopus	263 52.9	S52 42.1
Capella	280 24.2	N46 01.2
Deneb	49 27.1	N45 21.9
Denebola	182 27.0	N14 26.8
Diphda	348 48.8	S17 51.7
Dubhe	193 43.6	N61 37.6
Elnath	278 03.9	N28 37.6
Eltanin	90 43.4	N51 29.3
Enif	33 40.5	N 9 58.9
Fomalhaut	15 16.3	S29 30.2
Gacrux	171 54.2	S57 14.2
Gienah	175 45.7	S17 39.9
Hadar	148 39.3	S60 28.8
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.5
Kochab	137 21.0	N74 03.7
Markab	13 31.5	N15 19.8
Menkar	314 07.7	N 4 10.8
Menkent	148 00.2	S36 28.7
Miaplacidus	221 38.7	S69 48.2
Mirfak	308 30.4	N49 56.5
Nunki	75 50.2	S26 16.1
Peacock	53 08.7	S56 39.9
Pollux	243 19.4	N27 58.2
Procyon	244 52.6	N 5 10.1
Rasalhague	96 00.5	N12 32.7
Regulus	207 36.5	N11 51.4
Rigel	281 05.4	S 8 10.4
Rigil Kent.	139 43.5	S60 55.6
Sabik	102 05.2	S15 45.1
Schedar	349 32.6	N56 39.9
Shaula	96 13.2	S37 07.2
Sirius	258 27.7	S16 44.6
Spica	158 24.5	S11 16.6
Suhail	222 47.7	S43 31.1
Vega	80 34.7	N38 48.5
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	137 37.6	11 57
Marte	274 57.5	2 47
Júpiter	359 51.9	21 04
Saturno	38 26.7	18 30

UT (HmGr)	SOL AHGr	SOL Dec	LUNA AHGr	LUNA v	LUNA Dec	LUNA d	LUNA Ph
d h	° ′	° ′	° ′	′	° ′	′	′
3 00	184 06.6	S14 59.1	65 24.1	10.6	S15 01.7	13.8	58.6
01	199 06.6	14 59.8	79 53.7	10.6	14 47.9	13.8	58.6
02	214 06.6	15 00.6	94 23.3	10.7	14 34.1	13.9	58.6
03	229 06.6	01.4	108 53.0	10.8	14 20.2	14.0	58.6
04	244 06.6	02.2	123 22.8	10.9	14 06.2	14.0	58.6
05	259 06.6	03.0	137 52.7	10.9	13 52.2	14.1	58.5
06	274 06.6	S15 03.7	152 22.6	11.1	S13 38.1	14.1	58.5
07	289 06.6	04.5	166 52.7	11.1	13 24.0	14.3	58.5
J 08	304 06.6	05.3	181 22.8	11.2	13 09.7	14.3	58.5
U 09	319 06.6	06.1	195 53.0	11.2	12 55.4	14.3	58.5
E 10	334 06.6	06.9	210 23.2	11.4	12 41.1	14.4	58.5
V 11	349 06.6	07.6	224 53.6	11.4	12 26.7	14.5	58.5
E 12	4 06.6	S15 08.4	239 24.0	11.5	S12 12.2	14.5	58.4
S 13	19 06.6	09.2	253 54.5	11.5	11 57.7	14.5	58.4
14	34 06.6	10.0	268 25.0	11.7	11 43.2	14.6	58.4
15	49 06.6	10.8	282 55.7	11.7	11 28.6	14.7	58.4
16	64 06.6	11.5	297 26.4	11.7	11 13.9	14.7	58.4
17	79 06.6	12.3	311 57.1	11.9	10 59.2	14.8	58.4
18	94 06.6	S15 13.1	326 28.0	11.9	S10 44.4	14.8	58.3
19	109 06.6	13.9	340 58.9	11.9	10 29.6	14.8	58.3
20	124 06.6	14.6	355 29.8	12.1	10 14.8	14.9	58.3
21	139 06.6	15.4	10 00.9	12.1	9 59.9	15.0	58.3
22	154 06.6	16.2	24 32.0	12.1	9 44.9	15.0	58.3
23	169 06.6	17.0	39 03.1	12.2	9 29.9	15.0	58.3
4 00	184 06.6	S15 17.7	53 34.3	12.3	S 9 14.9	15.0	58.2
01	199 06.6	18.5	68 05.6	12.4	8 59.9	15.1	58.2
02	214 06.6	19.3	82 37.0	12.4	8 44.8	15.2	58.2
03	229 06.6	20.0	97 08.4	12.4	8 29.6	15.1	58.2
04	244 06.6	20.8	111 39.8	12.5	8 14.5	15.2	58.2
05	259 06.6	21.6	126 11.3	12.6	7 59.3	15.2	58.2
06	274 06.5	S15 22.4	140 42.9	12.6	S 7 44.1	15.3	58.1
07	289 06.5	23.1	155 14.5	12.7	7 28.8	15.3	58.1
V 08	304 06.5	23.9	169 46.2	12.7	7 13.5	15.3	58.1
I 09	319 06.5	24.7	184 17.9	12.8	6 58.2	15.3	58.1
E 10	334 06.5	25.4	198 49.7	12.8	6 42.9	15.4	58.1
R 11	349 06.5	26.2	213 21.5	12.8	6 27.5	15.3	58.1
N 12	4 06.5	S15 27.0	227 53.3	12.9	S 6 12.2	15.4	58.0
E 13	19 06.5	27.7	242 25.2	13.0	5 56.8	15.4	58.0
S 14	34 06.5	28.5	256 57.2	13.0	5 41.4	15.5	58.0
15	49 06.5	29.3	271 29.2	13.0	5 25.9	15.4	58.0
16	64 06.5	30.0	286 01.2	13.1	5 10.5	15.5	58.0
17	79 06.4	30.8	300 33.3	13.1	4 55.0	15.5	58.0
18	94 06.4	S15 31.6	315 05.4	13.2	S 4 39.5	15.5	57.9
19	109 06.4	32.3	329 37.6	13.2	4 24.0	15.5	57.9
20	124 06.4	33.1	344 09.8	13.2	4 08.5	15.5	57.9
21	139 06.4	33.9	358 42.0	13.2	3 53.0	15.6	57.9
22	154 06.4	34.6	13 14.2	13.3	3 37.4	15.5	57.9
23	169 06.4	35.4	27 46.5	13.4	3 21.9	15.5	57.8
5 00	184 06.4	S15 36.1	42 18.9	13.3	S 3 06.4	15.6	57.8
01	199 06.3	36.9	56 51.2	13.4	2 50.8	15.6	57.8
02	214 06.3	37.7	71 23.6	13.5	2 35.2	15.5	57.8
03	229 06.3	38.4	85 56.1	13.4	2 19.7	15.6	57.8
04	244 06.3	39.2	100 28.5	13.5	2 04.1	15.5	57.8
05	259 06.3	39.9	115 01.0	13.5	1 48.6	15.6	57.7
06	274 06.3	S15 40.7	129 33.5	13.5	S 1 33.0	15.6	57.7
07	289 06.3	41.5	144 06.0	13.5	1 17.4	15.5	57.7
S 08	304 06.2	42.2	158 38.5	13.6	1 01.9	15.6	57.7
Á 09	319 06.2	43.0	173 11.1	13.6	0 46.3	15.5	57.7
B 10	334 06.2	43.7	187 43.7	13.6	0 30.8	15.6	57.6
A 11	349 06.2	44.5	202 16.3	13.6	S 0 15.2	15.5	57.6
D 12	4 06.2	S15 45.3	216 48.9	13.7	N 0 00.3	15.5	57.6
O 13	19 06.2	46.0	231 21.6	13.7	0 15.8	15.5	57.6
14	34 06.1	46.8	245 54.3	13.6	0 31.3	15.5	57.6
15	49 06.1	47.5	260 26.9	13.7	0 46.8	15.5	57.5
16	64 06.1	48.3	274 59.6	13.7	1 02.3	15.5	57.5
17	79 06.1	49.0	289 32.3	13.7	1 17.8	15.5	57.5
18	94 06.1	S15 49.8	304 05.0	13.8	N 1 33.3	15.4	57.5
19	109 06.0	50.5	318 37.8	13.7	1 48.7	15.4	57.5
20	124 06.0	51.3	333 10.5	13.8	2 04.1	15.4	57.5
21	139 06.0	52.0	347 43.3	13.7	2 19.5	15.4	57.4
22	154 06.0	52.8	2 16.0	13.8	2 34.9	15.4	57.4
23	169 06.0	53.5	16 48.8	13.7	N 2 50.3	15.3	57.4
	S/D 16.2	d 0.8	S/D	15.9		15.8	15.7

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 3	Orto Luna 4	Orto Luna 5	Orto Luna 6
°	h m	h m	h m	h m	h m	h m	h m
N 72	06 18	07 43	09 16	16 42	16 02	15 30	14 57
N 70	06 12	07 28	08 46	16 24	15 55	15 31	15 06
68	06 08	07 16	08 23	16 10	15 49	15 32	15 14
66	06 04	07 06	08 06	15 58	15 44	15 32	15 20
64	06 00	06 57	07 52	15 48	15 40	15 33	15 26
62	05 57	06 50	07 40	15 39	15 36	15 33	15 30
60	05 54	06 44	07 30	15 32	15 33	15 34	15 35
N 58	05 51	06 38	07 21	15 25	15 30	15 34	15 38
56	05 49	06 33	07 13	15 20	15 28	15 35	15 42
54	05 46	06 28	07 06	15 14	15 25	15 35	15 45
52	05 44	06 24	07 00	15 10	15 23	15 35	15 48
50	05 42	06 20	06 54	15 05	15 21	15 36	15 50
45	05 37	06 12	06 42	14 56	15 17	15 36	15 56
N 40	05 32	06 04	06 32	14 48	15 13	15 37	16 00
35	05 27	05 57	06 24	14 41	15 10	15 37	16 04
30	05 23	05 51	06 16	14 35	15 07	15 38	16 08
20	05 14	05 40	06 03	14 25	15 03	15 39	16 14
N 10	05 04	05 29	05 51	14 16	14 58	15 39	16 20
0	04 54	05 19	05 40	14 07	14 54	15 40	16 25
S 10	04 42	05 07	05 29	13 58	14 50	15 41	16 30
20	04 27	04 54	05 17	13 49	14 46	15 41	16 36
30	04 07	04 38	05 03	13 39	14 41	15 42	16 42
35	03 55	04 28	04 55	13 32	14 39	15 43	16 46
40	03 40	04 16	04 46	13 25	14 35	15 43	16 51
45	03 22	04 02	04 35	13 17	14 32	15 44	16 56
S 50	02 58	03 45	04 21	13 07	14 27	15 45	17 02
52	02 46	03 36	04 15	13 03	14 25	15 45	17 05
54	02 31	03 27	04 08	12 57	14 23	15 46	17 08
56	02 14	03 16	04 01	12 52	14 20	15 46	17 11
58	01 53	03 03	03 52	12 45	14 18	15 47	17 15
S 60	01 24	02 49	03 42	12 38	14 14	15 48	17 19

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 3	Ocaso Luna 4	Ocaso Luna 5	Ocaso Luna 6
°	h m	h m	h m	h m	h m	h m	h m
N 72	14 10	15 43	17 08	24 26	00 26	02 44	04 56
N 70	14 40	15 58	17 13	24 41	00 41	02 48	04 50
68	15 03	16 10	17 18	24 53	00 53	02 51	04 45
66	15 20	16 20	17 22	25 03	01 03	02 54	04 41
64	15 34	16 29	17 26	25 11	01 11	02 56	04 37
62	15 46	16 36	17 29	25 18	01 18	02 57	04 34
60	15 57	16 42	17 32	25 24	01 24	02 59	04 31
N 58	16 05	16 48	17 35	25 30	01 30	03 00	04 29
56	16 13	16 53	17 38	00 04	01 34	03 02	04 27
54	16 20	16 58	17 40	00 11	01 38	03 03	04 25
52	16 26	17 02	17 42	00 18	01 42	03 04	04 23
50	16 32	17 06	17 45	00 24	01 46	03 05	04 22
45	16 44	17 15	17 50	00 37	01 53	03 06	04 18
N 40	16 54	17 23	17 55	00 48	01 59	03 08	04 16
35	17 03	17 29	17 59	00 57	02 04	03 09	04 13
30	17 11	17 36	18 04	01 05	02 09	03 11	04 11
20	17 24	17 47	18 13	01 18	02 17	03 13	04 08
N 10	17 36	17 58	18 23	01 30	02 24	03 15	04 04
0	17 47	18 08	18 33	01 41	02 30	03 16	04 01
S 10	17 58	18 20	18 46	01 52	02 36	03 18	03 58
20	18 10	18 34	19 01	02 04	02 43	03 20	03 55
30	18 25	18 50	19 20	02 17	02 50	03 21	03 52
35	18 33	19 00	19 33	02 24	02 55	03 23	03 49
40	18 42	19 12	19 48	02 33	02 59	03 24	03 47
45	18 53	19 26	20 06	02 43	03 05	03 25	03 44
S 50	19 07	19 44	20 31	02 54	03 12	03 27	03 41
52	19 13	19 52	20 44	03 00	03 15	03 28	03 40
54	19 20	20 02	20 58	03 06	03 18	03 28	03 38
56	19 28	20 13	21 16	03 12	03 22	03 29	03 36
58	19 37	20 26	21 38	03 20	03 26	03 30	03 34
S 60	19 47	20 41	22 08	03 28	03 30	03 31	03 32

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
3	16 26	16 26	11 44	20 19	07 54	09 74	
4	16 26	16 26	11 44	21 05	08 42	10 83	
5	16 25	16 25	11 44	21 51	09 28	11 91	

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·4		JÚPITER −2·8		SATURNO +0·6	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
6 00	45 11.5	180 20.5	S16 22.3	320 19.6	N24 06.1	45 10.6	S 1 40.1	83 35.6	S16 25.5
01	60 14.0	195 19.9	23.3	335 22.3	06.2	60 13.2	40.1	98 38.1	25.5
02	75 16.4	210 19.2	24.2	350 25.1	06.3	75 15.8	40.2	113 40.5	25.5
03	90 18.9	225 18.6	25.2	5 27.8	06.4	90 18.4	40.2	128 42.9	25.5
04	105 21.4	240 17.9	26.2	20 30.5	06.5	105 21.0	40.3	143 45.3	25.5
05	120 23.8	255 17.3	27.1	35 33.3	06.7	120 23.6	40.3	158 47.7	25.4
06	135 26.3	270 16.6	S16 28.1	50 36.0	N24 06.8	135 26.2	S 1 40.4	173 50.1	S16 25.4
07	150 28.8	285 16.0	29.1	65 38.7	06.9	150 28.8	40.4	188 52.5	25.4
08	165 31.2	300 15.4	30.0	80 41.5	07.0	165 31.4	40.5	203 54.9	25.4
D 09	180 33.7	315 14.7	31.0	95 44.2	07.1	180 34.0	40.5	218 57.3	25.3
O 10	195 36.1	330 14.1	32.0	110 46.9	07.2	195 36.6	40.6	233 59.7	25.3
M 11	210 38.6	345 13.4	32.9	125 49.7	07.3	210 39.2	40.6	249 02.1	25.3
I 12	225 41.1	0 12.8	S16 33.9	140 52.4	N24 07.5	225 41.8	S 1 40.7	264 04.5	S16 25.3
N 13	240 43.5	15 12.1	34.8	155 55.2	07.6	240 44.4	40.7	279 06.9	25.3
G 14	255 46.0	30 11.5	35.8	170 57.9	07.7	255 47.0	40.8	294 09.3	25.2
O 15	270 48.5	45 10.8	36.8	186 00.7	07.8	270 49.6	40.8	309 11.7	25.2
16	285 50.9	60 10.2	37.7	201 03.4	07.9	285 52.2	40.9	324 14.1	25.2
17	300 53.4	75 09.5	38.7	216 06.2	08.0	300 54.8	40.9	339 16.5	25.2
18	315 55.9	90 08.8	S16 39.6	231 08.9	N24 08.1	315 57.4	S 1 40.9	354 18.9	S16 25.2
19	330 58.3	105 08.2	40.6	246 11.7	08.2	331 00.0	41.0	9 21.3	25.1
20	346 00.8	120 07.5	41.5	261 14.4	08.4	346 02.6	41.0	24 23.7	25.1
21	1 03.3	135 06.9	42.5	276 17.2	08.5	1 05.2	41.1	39 26.1	25.1
22	16 05.7	150 06.2	43.5	291 20.0	08.6	16 07.8	41.1	54 28.5	25.1
23	31 08.2	165 05.6	44.4	306 22.7	08.7	31 10.4	41.2	69 30.9	25.0
7 00	46 10.6	180 04.9	S16 45.4	321 25.5	N24 08.8	46 13.0	S 1 41.2	84 33.3	S16 25.0
01	61 13.1	195 04.3	46.3	336 28.3	08.9	61 15.6	41.3	99 35.7	25.0
02	76 15.6	210 03.6	47.3	351 31.0	09.0	76 18.2	41.3	114 38.2	25.0
03	91 18.0	225 02.9	48.2	6 33.8	09.1	91 20.8	41.4	129 40.6	25.0
04	106 20.5	240 02.3	49.2	21 36.6	09.3	106 23.4	41.4	144 43.0	24.9
05	121 23.0	255 01.6	50.1	36 39.3	09.4	121 26.0	41.5	159 45.4	24.9
06	136 25.4	270 01.0	S16 51.1	51 42.1	N24 09.5	136 28.6	S 1 41.5	174 47.8	S16 24.9
07	151 27.9	285 00.3	52.0	66 44.9	09.6	151 31.2	41.6	189 50.2	24.9
L 08	166 30.4	299 59.7	53.0	81 47.7	09.7	166 33.8	41.6	204 52.6	24.8
U 09	181 32.8	314 59.0	53.9	96 50.5	09.8	181 36.4	41.7	219 55.0	24.8
N 10	196 35.3	329 58.3	54.8	111 53.2	09.9	196 39.0	41.7	234 57.4	24.8
E 11	211 37.7	344 57.7	55.8	126 56.0	10.1	211 41.6	41.8	249 59.8	24.8
S 12	226 40.2	359 57.0	S16 56.7	141 58.8	N24 10.2	226 44.2	S 1 41.8	265 02.2	S16 24.7
13	241 42.7	14 56.3	57.7	157 01.6	10.3	241 46.8	41.8	280 04.6	24.7
14	256 45.1	29 55.7	58.6	172 04.4	10.4	256 49.4	41.9	295 07.0	24.7
15	271 47.6	44 55.0	16 59.6	187 07.2	10.5	271 52.0	41.9	310 09.4	24.7
16	286 50.1	59 54.4	17 00.5	202 10.0	10.6	286 54.6	42.0	325 11.8	24.7
17	301 52.5	74 53.7	01.4	217 12.8	10.7	301 57.2	42.0	340 14.2	24.6
18	316 55.0	89 53.0	S17 02.4	232 15.5	N24 10.8	316 59.8	S 1 42.1	355 16.6	S16 24.6
19	331 57.5	104 52.4	03.3	247 18.3	11.0	332 02.4	42.1	10 19.0	24.6
20	346 59.9	119 51.7	04.3	262 21.1	11.1	347 05.0	42.2	25 21.4	24.6
21	2 02.4	134 51.0	05.2	277 23.9	11.2	2 07.6	42.2	40 23.8	24.5
22	17 04.9	149 50.4	06.1	292 26.7	11.3	17 10.2	42.3	55 26.2	24.5
23	32 07.3	164 49.7	07.1	307 29.5	11.4	32 12.8	42.3	70 28.6	24.5
8 00	47 09.8	179 49.0	S17 08.0	322 32.4	N24 11.5	47 15.3	S 1 42.3	85 31.0	S16 24.5
01	62 12.2	194 48.3	08.9	337 35.2	11.6	62 17.9	42.4	100 33.3	24.4
02	77 14.7	209 47.7	09.9	352 38.0	11.7	77 20.5	42.4	115 35.7	24.4
03	92 17.2	224 47.0	10.8	7 40.8	11.9	92 23.1	42.5	130 38.1	24.4
04	107 19.6	239 46.3	11.7	22 43.6	12.0	107 25.7	42.5	145 40.5	24.4
05	122 22.1	254 45.7	12.7	37 46.4	12.1	122 28.3	42.6	160 42.9	24.4
06	137 24.6	269 45.0	S17 13.6	52 49.2	N24 12.2	137 30.9	S 1 42.6	175 45.3	S16 24.3
07	152 27.0	284 44.3	14.5	67 52.0	12.3	152 33.5	42.7	190 47.7	24.3
M 08	167 29.5	299 43.6	15.4	82 54.9	12.4	167 36.1	42.7	205 50.1	24.3
A 09	182 32.0	314 43.0	16.4	97 57.7	12.5	182 38.7	42.7	220 52.5	24.3
R 10	197 34.4	329 42.3	17.3	113 00.5	12.6	197 41.3	42.8	235 54.9	24.2
T 11	212 36.9	344 41.6	18.2	128 03.3	12.8	212 43.8	42.8	250 57.3	24.2
E 12	227 39.3	359 41.0	S17 19.1	143 06.1	N24 12.9	227 46.4	S 1 42.9	265 59.7	S16 24.2
S 13	242 41.8	14 40.3	20.1	158 09.0	13.0	242 49.0	42.9	281 02.1	24.2
14	257 44.3	29 39.6	21.0	173 11.8	13.1	257 51.6	43.0	296 04.5	24.1
15	272 46.7	44 38.9	21.9	188 14.6	13.2	272 54.2	43.0	311 06.9	24.1
16	287 49.2	59 38.2	22.8	203 17.5	13.3	287 56.8	43.0	326 09.3	24.1
17	302 51.7	74 37.6	23.8	218 20.3	13.4	302 59.4	43.1	341 11.7	24.1
18	317 54.1	89 36.9	S17 24.7	233 23.1	N24 13.5	318 02.0	S 1 43.1	356 14.1	S16 24.0
19	332 56.6	104 36.2	25.6	248 26.0	13.6	333 04.5	43.2	11 16.5	24.0
20	347 59.1	119 35.5	26.5	263 28.8	13.8	348 07.1	43.2	26 18.9	24.0
21	3 01.5	134 34.9	27.4	278 31.6	13.9	3 09.7	43.2	41 21.3	24.0
22	18 04.0	149 34.2	28.3	293 34.5	14.0	18 12.3	43.3	56 23.7	23.9
23	33 06.5	164 33.5	29.3	308 37.3	14.1	33 14.9	43.3	71 26.1	23.9
	h m								
Paso Mer.	20 51.9	*v* −0.7	*d* 0.9	*v* 2.8	*d* 0.1	*v* 2.6	*d* 0.0	*v* 2.4	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.7	S40 12.8
Achernar	335 21.0	S57 07.4
Acrux	173 02.6	S63 13.2
Adhara	255 07.1	S28 59.9
Aldebaran	290 41.4	N16 33.3
Alioth	166 15.1	N55 50.1
Alkaid	152 53.9	N49 12.0
Alnair	27 35.1	S46 51.3
Alnilam	275 39.3	S 1 11.1
Alphard	217 49.6	S 8 45.2
Alphecca	126 05.7	N26 38.4
Alpheratz	357 36.4	N29 13.1
Altair	62 01.9	N 8 55.8
Ankaa	353 08.6	S42 11.1
Antares	112 18.4	S26 28.9
Arcturus	145 49.9	N19 03.9
Atria	107 14.8	S69 04.1
Avior	234 15.3	S59 34.5
Bellatrix	278 24.6	N 6 22.3
Betelgeuse	270 53.8	N 7 24.7
Canopus	263 52.8	S52 42.2
Capella	280 24.2	N46 01.2
Deneb	49 27.1	N45 21.9
Denebola	182 27.0	N14 26.8
Diphda	348 48.9	S17 51.7
Dubhe	193 43.6	N61 37.5
Elnath	278 03.9	N28 37.6
Eltanin	90 43.4	N51 29.3
Enif	33 40.5	N 9 58.9
Fomalhaut	15 16.4	S29 30.2
Gacrux	171 54.1	S57 14.1
Gienah	175 45.7	S17 39.9
Hadar	148 39.2	S60 28.8
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.5
Kochab	137 21.0	N74 03.7
Markab	13 31.6	N15 19.8
Menkar	314 07.7	N 4 10.8
Menkent	148 00.2	S36 28.7
Miaplacidus	221 38.6	S69 48.2
Mirfak	308 30.4	N49 56.5
Nunki	75 50.2	S26 16.1
Peacock	53 08.7	S56 39.9
Pollux	243 19.4	N27 58.2
Procyon	244 52.6	N 5 10.1
Rasalhague	96 00.5	N12 32.7
Regulus	207 36.5	N11 51.4
Rigel	281 05.3	S 8 10.4
Rigil Kent.	139 43.5	S60 55.6
Sabik	102 05.2	S15 45.1
Schedar	349 32.6	N56 39.9
Shaula	96 13.2	S37 07.2
Sirius	258 27.6	S16 44.6
Spica	158 24.5	S11 16.6
Suhail	222 47.6	S43 31.1
Vega	80 34.7	N38 48.5
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	133 54.3	12 00
Marte	275 14.9	2 34
Júpiter	0 02.4	20 52
Saturno	38 22.7	18 19

UT (HmGr)	SOL				LUNA							
	AHGr		Dec		AHGr	v		Dec		d	Ph	
d h	°	′	°	′	°	′	′	°	′	′	′	
6 00	184	05.9	S15	54.3	31	21.5	13.8	N 3	05.6	15.4	57.4	
01	199	05.9		55.0	45	54.3	13.8	3	21.0	15.3	57.4	
02	214	05.9		55.8	60	27.1	13.7	3	36.3	15.2	57.3	
03	229	05.9	. .	56.5	74	59.8	13.8	3	51.5	15.3	57.3	
04	244	05.9		57.3	89	32.6	13.8	4	06.8	15.2	57.3	
05	259	05.8		58.0	104	05.4	13.8	4	22.0	15.2	57.3	
06	274	05.8	S15	58.8	118	38.2	13.7	N 4	37.2	15.1	57.3	
07	289	05.8	15	59.5	133	10.9	13.8	4	52.3	15.2	57.2	
D 08	304	05.8	16	00.3	147	43.7	13.8	5	07.5	15.1	57.2	
O 09	319	05.7	. .	01.0	162	16.5	13.7	5	22.6	15.0	57.2	
M 10	334	05.7		01.8	176	49.2	13.8	5	37.6	15.0	57.2	
I 11	349	05.7		02.5	191	22.0	13.7	5	52.6	15.0	57.2	
N 12	4	05.7	S16	03.3	205	54.7	13.8	N 6	07.6	15.0	57.1	
G 13	19	05.6		04.0	220	27.5	13.7	6	22.6	14.9	57.1	
O 14	34	05.6		04.8	235	00.2	13.7	6	37.5	14.9	57.1	
15	49	05.6	. .	05.5	249	32.9	13.7	6	52.4	14.8	57.1	
16	64	05.5		06.3	264	05.6	13.7	7	07.2	14.8	57.0	
17	79	05.5		07.0	278	38.3	13.7	7	22.0	14.7	57.0	
18	94	05.5	S16	07.7	293	11.0	13.6	N 7	36.7	14.8	57.0	
19	109	05.5		08.5	307	43.6	13.7	7	51.5	14.6	57.0	
20	124	05.4		09.2	322	16.3	13.6	8	06.1	14.6	57.0	
21	139	05.4	. .	10.0	336	48.9	13.6	8	20.7	14.6	56.9	
22	154	05.4		10.7	351	21.5	13.7	8	35.3	14.5	56.9	
23	169	05.3		11.4	5	54.2	13.5	8	49.8	14.5	56.9	
7 00	184	05.3	S16	12.2	20	26.7	13.6	N 9	04.3	14.4	56.9	
01	199	05.3		12.9	34	59.3	13.5	9	18.7	14.4	56.9	
02	214	05.3		13.7	49	31.8	13.6	9	33.1	14.3	56.8	
03	229	05.2	. .	14.4	64	04.4	13.5	9	47.4	14.2	56.8	
04	244	05.2		15.1	78	36.9	13.4	10	01.6	14.3	56.8	
05	259	05.2		15.9	93	09.3	13.5	10	15.9	14.1	56.8	
06	274	05.1	S16	16.6	107	41.8	13.4	N10	30.0	14.1	56.8	
07	289	05.1		17.4	122	14.2	13.4	10	44.1	14.0	56.7	
L 08	304	05.1		18.1	136	46.6	13.4	10	58.1	14.0	56.7	
U 09	319	05.0	. .	18.8	151	19.0	13.3	11	12.1	13.9	56.7	
N 10	334	05.0		19.6	165	51.3	13.4	11	26.0	13.9	56.7	
E 11	349	05.0		20.3	180	23.7	13.3	11	39.9	13.8	56.6	
S 12	4	04.9	S16	21.0	194	56.0	13.2	N11	53.7	13.7	56.6	
13	19	04.9		21.8	209	28.2	13.3	12	07.4	13.7	56.6	
14	34	04.9		22.5	224	00.5	13.2	12	21.1	13.6	56.6	
15	49	04.8	. .	23.2	238	32.7	13.1	12	34.7	13.5	56.6	
16	64	04.8		24.0	253	04.8	13.2	12	48.2	13.5	56.5	
17	79	04.7		24.7	267	37.0	13.1	13	01.7	13.4	56.5	
18	94	04.7	S16	25.4	282	09.1	13.1	N13	15.1	13.3	56.5	
19	109	04.7		26.2	296	41.2	13.0	13	28.4	13.2	56.5	
20	124	04.6		26.9	311	13.2	13.0	13	41.6	13.2	56.5	
21	139	04.6	. .	27.6	325	45.2	13.0	13	54.8	13.1	56.4	
22	154	04.6		28.4	340	17.2	12.9	14	07.9	13.1	56.4	
23	169	04.5		29.1	354	49.1	12.9	14	21.0	12.9	56.4	
8 00	184	04.5	S16	29.8	9	21.0	12.9	N14	33.9	12.9	56.4	
01	199	04.4		30.5	23	52.9	12.8	14	46.8	12.8	56.3	
02	214	04.4		31.3	38	24.7	12.8	14	59.6	12.8	56.3	
03	229	04.4	. .	32.0	52	56.5	12.8	15	12.4	12.6	56.3	
04	244	04.3		32.7	67	28.3	12.7	15	25.0	12.6	56.3	
05	259	04.3		33.4	82	00.0	12.7	15	37.6	12.5	56.3	
06	274	04.2	S16	34.2	96	31.7	12.6	N15	50.1	12.4	56.2	
07	289	04.2		34.9	111	03.3	12.6	16	02.5	12.3	56.2	
M 08	304	04.2		35.6	125	34.9	12.6	16	14.8	12.2	56.2	
A 09	319	04.1	. .	36.3	140	06.5	12.5	16	27.0	12.2	56.2	
R 10	334	04.1		37.1	154	38.0	12.4	16	39.2	12.1	56.2	
T 11	349	04.0		37.8	169	09.4	12.5	16	51.3	12.0	56.1	
E 12	4	04.0	S16	38.5	183	40.9	12.4	N17	03.3	11.9	56.1	
S 13	19	03.9		39.2	198	12.3	12.3	17	15.2	11.8	56.1	
14	34	03.9		40.0	212	43.6	12.3	17	27.0	11.7	56.1	
15	49	03.9	. .	40.7	227	14.9	12.3	17	38.7	11.6	56.0	
16	64	03.8		41.4	241	46.2	12.2	17	50.3	11.5	56.0	
17	79	03.8		42.1	256	17.4	12.1	18	01.8	11.5	56.0	
18	94	03.7	S16	42.8	270	48.5	12.2	N18	13.3	11.3	56.0	
19	109	03.7		43.6	285	19.7	12.1	18	24.6	11.3	56.0	
20	124	03.6		44.3	299	50.8	12.0	18	35.9	11.1	55.9	
21	139	03.6	. .	45.0	314	21.8	12.0	18	47.0	11.1	55.9	
22	154	03.5		45.7	328	52.8	11.9	18	58.1	11.0	55.9	
23	169	03.5		46.4	343	23.7	11.9	N19	09.1	10.8	55.9	
	S/D	16.2	d	0.7	S/D	15.6		15.4			15.3	

Lat.	Aurora				Orto Sol		Orto Luna							
	Náut.		Civil				6		7		8		9	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	06	29	07	56	09	37	14	57	14	16	13	01		
N 70	06	23	07	40	09	01	15	06	14	37	13	53		
68	06	17	07	26	08	36	15	14	14	53	14	26	13	27
66	06	12	07	15	08	17	15	20	15	07	14	50	14	25
64	06	08	07	06	08	01	15	26	15	18	15	10	14	59
62	06	04	06	58	07	48	15	30	15	28	15	25	15	24
60	06	00	06	51	07	37	15	35	15	36	15	39	15	43
N 58	05	57	06	44	07	28	15	38	15	43	15	50	16	00
56	05	54	06	39	07	20	15	42	15	50	16	00	16	14
54	05	51	06	34	07	12	15	45	15	56	16	09	16	26
52	05	49	06	29	07	05	15	48	16	01	16	17	16	37
50	05	46	06	25	06	59	15	50	16	06	16	24	16	46
45	05	40	06	15	06	46	15	56	16	16	16	39	17	07
N 40	05	35	06	07	06	36	16	00	16	25	16	52	17	23
35	05	30	06	00	06	27	16	04	16	32	17	03	17	37
30	05	25	05	53	06	18	16	08	16	39	17	12	17	49
20	05	15	05	41	06	04	16	14	16	50	17	29	18	10
N 10	05	05	05	30	05	52	16	20	17	01	17	43	18	29
0	04	54	05	19	05	40	16	25	17	10	17	57	18	46
S 10	04	41	05	06	05	28	16	30	17	20	18	11	19	03
20	04	25	04	52	05	16	16	36	17	30	18	26	19	22
30	04	05	04	35	05	01	16	42	17	43	18	43	19	43
35	03	52	04	25	04	52	16	46	17	50	18	53	19	56
40	03	36	04	13	04	42	16	51	17	58	19	04	20	11
45	03	17	03	58	04	31	16	56	18	07	19	18	20	28
S 50	02	51	03	39	04	17	17	02	18	18	19	35	20	50
52	02	38	03	30	04	10	17	05	18	24	19	43	21	00
54	02	23	03	20	04	03	17	08	18	29	19	51	21	12
56	02	04	03	08	03	54	17	11	18	36	20	01	21	26
58	01	40	02	55	03	45	17	15	18	43	20	13	21	42
S 60	01	06	02	39	03	34	17	19	18	52	20	26	22	01

Lat.	Ocaso Sol		Crepúsculo				Ocaso Luna							
			Civil		Náut.		6		7		8		9	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N 72	13	49	15	29	16	56	04	56	07	13	10	07		
N 70	14	25	15	46	17	03	04	50	06	54	09	16		
68	14	50	16	00	17	09	04	45	06	40	08	44	11	24
66	15	09	16	11	17	14	04	41	06	28	08	21	10	27
64	15	25	16	21	17	19	04	37	06	19	08	03	09	54
62	15	38	16	29	17	22	04	34	06	10	07	49	09	30
60	15	49	16	36	17	26	04	31	06	03	07	36	09	11
N 58	15	59	16	42	17	29	04	29	05	57	07	26	08	55
56	16	07	16	48	17	32	04	27	05	52	07	17	08	42
54	16	15	16	53	17	35	04	25	05	47	07	09	08	30
52	16	21	16	58	17	38	04	23	05	42	07	01	08	20
50	16	27	17	02	17	40	04	22	05	38	06	55	08	11
45	16	40	17	11	17	46	04	18	05	30	06	41	07	52
N 40	16	51	17	20	17	52	04	16	05	23	06	30	07	36
35	17	00	17	27	17	57	04	13	05	17	06	20	07	23
30	17	09	17	34	18	02	04	11	05	11	06	11	07	12
20	17	23	17	46	18	12	04	08	05	02	05	57	06	53
N 10	17	35	17	57	18	22	04	04	04	54	05	44	06	36
0	17	47	18	09	18	34	04	01	04	46	05	33	06	20
S 10	17	59	18	21	18	47	03	58	04	39	05	21	06	05
20	18	12	18	35	19	03	03	55	04	31	05	08	05	48
30	18	27	18	53	19	23	03	52	04	22	04	54	05	29
35	18	36	19	03	19	36	03	49	04	17	04	46	05	18
40	18	46	19	15	19	52	03	47	04	11	04	37	05	06
45	18	57	19	30	20	12	03	44	04	04	04	26	04	51
S 50	19	12	19	49	20	38	03	41	03	56	04	13	04	33
52	19	19	19	59	20	51	03	40	03	52	04	07	04	24
54	19	26	20	09	21	07	03	38	03	48	04	00	04	15
56	19	34	20	21	21	26	03	36	03	44	03	53	04	04
58	19	44	20	35	21	51	03	34	03	39	03	44	03	52
S 60	19	55	20	51	22	28	03	32	03	33	03	35	03	38

Día	SOL						LUNA					
	Ec. Tiempo				Paso Mer.		Paso Mer.				Edad	Fase
	00^h		12^h				Sup.		Inf.			
d	m	s	m	s	h	m	h	m	h	m	d	%
6	16	24	16	23	11	44	22	36	10	13	12	96
7	16	21	16	20	11	44	23	21	10	58	13	99
8	16	18	16	16	11	44	24	09	11	45	14	100

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·4		JÚPITER −2·7		SATURNO +0·6	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
9 00	48 08.9	179 32.8	S17 30.2	323 40.2	N24 14.2	48 17.5	S 1 43.4	86 28.5	S16 23.9
01	63 11.4	194 32.1	31.1	338 43.0	14.3	63 20.1	43.4	101 30.8	23.9
02	78 13.8	209 31.4	32.0	353 45.9	14.4	78 22.6	43.5	116 33.2	23.8
03	93 16.3	224 30.8	32.9	8 48.7	14.5	93 25.2	43.5	131 35.6	23.8
04	108 18.8	239 30.1	33.8	23 51.6	14.7	108 27.8	43.5	146 38.0	23.8
05	123 21.2	254 29.4	34.7	38 54.4	14.8	123 30.4	43.6	161 40.4	23.8
06	138 23.7	269 28.7	S17 35.6	53 57.3	N24 14.9	138 33.0	S 1 43.6	176 42.8	S16 23.7
07	153 26.2	284 28.0	36.6	69 00.1	15.0	153 35.6	43.7	191 45.2	23.7
08	168 28.6	299 27.3	37.5	84 03.0	15.1	168 38.1	43.7	206 47.6	23.7
M 09	183 31.1	314 26.7	38.4	99 05.9	15.2	183 40.7	43.7	221 50.0	23.7
I 10	198 33.6	329 26.0	39.3	114 08.7	15.3	198 43.3	43.8	236 52.4	23.6
É 11	213 36.0	344 25.3	40.2	129 11.6	15.4	213 45.9	43.8	251 54.8	23.6
R 12	228 38.5	359 24.6	S17 41.1	144 14.5	N24 15.5	228 48.5	S 1 43.9	266 57.2	S16 23.6
C 13	243 41.0	14 23.9	42.0	159 17.3	15.7	243 51.1	43.9	281 59.6	23.6
O 14	258 43.4	29 23.2	42.9	174 20.2	15.8	258 53.6	43.9	297 02.0	23.5
L 15	273 45.9	44 22.5	43.8	189 23.1	15.9	273 56.2	44.0	312 04.3	23.5
E 16	288 48.3	59 21.8	44.7	204 25.9	16.0	288 58.8	44.0	327 06.7	23.5
S 17	303 50.8	74 21.1	45.6	219 28.8	16.1	304 01.4	44.1	342 09.1	23.5
18	318 53.3	89 20.5	S17 46.5	234 31.7	N24 16.2	319 04.0	S 1 44.1	357 11.5	S16 23.4
19	333 55.7	104 19.8	47.4	249 34.6	16.3	334 06.5	44.1	12 13.9	23.4
20	348 58.2	119 19.1	48.3	264 37.4	16.4	349 09.1	44.2	27 16.3	23.4
21	4 00.7	134 18.4	49.2	279 40.3	16.5	4 11.7	44.2	42 18.7	23.4
22	19 03.1	149 17.7	50.1	294 43.2	16.7	19 14.3	44.2	57 21.1	23.3
23	34 05.6	164 17.0	51.0	309 46.1	16.8	34 16.8	44.3	72 23.5	23.3
10 00	49 08.1	179 16.3	S17 51.9	324 49.0	N24 16.9	49 19.4	S 1 44.3	87 25.9	S16 23.3
01	64 10.5	194 15.6	52.8	339 51.9	17.0	64 22.0	44.4	102 28.3	23.2
02	79 13.0	209 14.9	53.7	354 54.7	17.1	79 24.6	44.4	117 30.6	23.2
03	94 15.5	224 14.2	54.6	9 57.6	17.2	94 27.2	44.4	132 33.0	23.2
04	109 17.9	239 13.5	55.5	25 00.5	17.3	109 29.7	44.5	147 35.4	23.2
05	124 20.4	254 12.8	56.4	40 03.4	17.4	124 32.3	44.5	162 37.8	23.1
06	139 22.8	269 12.1	S17 57.2	55 06.3	N24 17.5	139 34.9	S 1 44.5	177 40.2	S16 23.1
07	154 25.3	284 11.4	58.1	70 09.2	17.6	154 37.5	44.6	192 42.6	23.1
08	169 27.8	299 10.7	59.0	85 12.1	17.8	169 40.0	44.6	207 45.0	23.1
J 09	184 30.2	314 10.0	17 59.9	100 15.0	17.9	184 42.6	44.7	222 47.4	23.0
U 10	199 32.7	329 09.3	18 00.8	115 17.9	18.0	199 45.2	44.7	237 49.8	23.0
E 11	214 35.2	344 08.6	01.7	130 20.8	18.1	214 47.8	44.7	252 52.1	23.0
V 12	229 37.6	359 07.9	S18 02.6	145 23.7	N24 18.2	229 50.3	S 1 44.8	267 54.5	S16 23.0
E 13	244 40.1	14 07.2	03.5	160 26.6	18.3	244 52.9	44.8	282 56.9	22.9
S 14	259 42.6	29 06.5	04.3	175 29.5	18.4	259 55.5	44.8	297 59.3	22.9
15	274 45.0	44 05.8	05.2	190 32.4	18.5	274 58.1	44.9	313 01.7	22.9
16	289 47.5	59 05.1	06.1	205 35.4	18.6	290 00.6	44.9	328 04.1	22.9
17	304 49.9	74 04.4	07.0	220 38.3	18.7	305 03.2	44.9	343 06.5	22.8
18	319 52.4	89 03.7	S18 07.9	235 41.2	N24 18.9	320 05.8	S 1 45.0	358 08.9	S16 22.8
19	334 54.9	104 03.0	08.7	250 44.1	19.0	335 08.3	45.0	13 11.2	22.8
20	349 57.3	119 02.3	09.6	265 47.0	19.1	350 10.9	45.0	28 13.6	22.7
21	4 59.8	134 01.6	10.5	280 49.9	19.2	5 13.5	45.1	43 16.0	22.7
22	20 02.3	149 00.9	11.4	295 52.9	19.3	20 16.1	45.1	58 18.4	22.7
23	35 04.7	164 00.2	12.3	310 55.8	19.4	35 18.6	45.2	73 20.8	22.7
11 00	50 07.2	178 59.5	S18 13.1	325 58.7	N24 19.5	50 21.2	S 1 45.2	88 23.2	S16 22.6
01	65 09.7	193 58.8	14.0	341 01.6	19.6	65 23.8	45.2	103 25.6	22.6
02	80 12.1	208 58.1	14.9	356 04.6	19.7	80 26.3	45.3	118 27.9	22.6
03	95 14.6	223 57.4	15.8	11 07.5	19.8	95 28.9	45.3	133 30.3	22.6
04	110 17.1	238 56.6	16.6	26 10.4	20.0	110 31.5	45.3	148 32.7	22.5
05	125 19.5	253 55.9	17.5	41 13.4	20.1	125 34.0	45.4	163 35.1	22.5
06	140 22.0	268 55.2	S18 18.4	56 16.3	N24 20.2	140 36.6	S 1 45.4	178 37.5	S16 22.5
07	155 24.4	283 54.5	19.2	71 19.2	20.3	155 39.2	45.4	193 39.9	22.4
V 08	170 26.9	298 53.8	20.1	86 22.2	20.4	170 41.7	45.5	208 42.2	22.4
I 09	185 29.4	313 53.1	21.0	101 25.1	20.5	185 44.3	45.5	223 44.6	22.4
E 10	200 31.8	328 52.4	21.8	116 28.1	20.6	200 46.9	45.5	238 47.0	22.4
R 11	215 34.3	343 51.7	22.7	131 31.0	20.7	215 49.4	45.6	253 49.4	22.3
N 12	230 36.8	358 51.0	S18 23.6	146 33.9	N24 20.8	230 52.0	S 1 45.6	268 51.8	S16 22.3
E 13	245 39.2	13 50.2	24.4	161 36.9	20.9	245 54.6	45.6	283 54.2	22.3
S 14	260 41.7	28 49.5	25.3	176 39.8	21.0	260 57.1	45.7	298 56.6	22.2
15	275 44.2	43 48.8	26.2	191 42.8	21.2	275 59.7	45.7	313 58.9	22.2
16	290 46.6	58 48.1	27.0	206 45.7	21.3	291 02.3	45.7	329 01.3	22.2
17	305 49.1	73 47.4	27.9	221 48.7	21.4	306 04.8	45.8	344 03.7	22.2
18	320 51.6	88 46.7	S18 28.7	236 51.7	N24 21.5	321 07.4	S 1 45.8	359 06.1	S16 22.1
19	335 54.0	103 45.9	29.6	251 54.6	21.6	336 10.0	45.8	14 08.5	22.1
20	350 56.5	118 45.2	30.5	266 57.6	21.7	351 12.5	45.8	29 10.9	22.1
21	5 58.9	133 44.5	31.3	282 00.5	21.8	6 15.1	45.9	44 13.2	22.0
22	21 01.4	148 43.8	32.2	297 03.5	21.9	21 17.7	45.9	59 15.6	22.0
23	36 03.9	163 43.1	33.0	312 06.5	22.0	36 20.2	45.9	74 18.0	22.0
	h m								
Paso Mer.	20 40.1	*v* −0.7	*d* 0.9	*v* 2.9	*d* 0.1	*v* 2.6	*d* 0.0	*v* 2.4	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.7	S40 12.8
Achernar	335 21.0	S57 07.4
Acrux	173 02.6	S63 13.2
Adhara	255 07.1	S28 59.9
Aldebaran	290 41.4	N16 33.3
Alioth	166 15.1	N55 50.1
Alkaid	152 53.9	N49 12.0
Alnair	27 35.1	S46 51.3
Alnilam	275 39.3	S 1 11.1
Alphard	217 49.6	S 8 45.2
Alphecca	126 05.7	N26 38.4
Alpheratz	357 36.4	N29 13.1
Altair	62 01.9	N 8 55.8
Ankaa	353 08.6	S42 11.1
Antares	112 18.4	S26 28.9
Arcturus	145 49.9	N19 03.9
Atria	107 14.8	S69 04.1
Avior	234 15.3	S59 34.6
Bellatrix	278 24.5	N 6 22.3
Betelgeuse	270 53.8	N 7 24.7
Canopus	263 52.8	S52 42.2
Capella	280 24.2	N46 01.2
Deneb	49 27.1	N45 21.9
Denebola	182 27.0	N14 26.8
Diphda	348 48.9	S17 51.7
Dubhe	193 43.6	N61 37.5
Elnath	278 03.8	N28 37.6
Eltanin	90 43.4	N51 29.3
Enif	33 40.5	N 9 58.9
Fomalhaut	15 16.4	S29 30.2
Gacrux	171 54.1	S57 14.1
Gienah	175 45.7	S17 39.9
Hadar	148 39.2	S60 28.8
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.5
Kochab	137 21.0	N74 03.7
Markab	13 31.6	N15 19.8
Menkar	314 07.7	N 4 10.8
Menkent	148 00.2	S36 28.7
Miaplacidus	221 38.6	S69 48.2
Mirfak	308 30.3	N49 56.5
Nunki	75 50.2	S26 16.1
Peacock	53 08.7	S56 39.9
Pollux	243 19.4	N27 58.2
Procyon	244 52.6	N 5 10.1
Rasalhague	96 00.5	N12 32.7
Regulus	207 36.5	N11 51.4
Rigel	281 05.3	S 8 10.4
Rigil Kent.	139 43.5	S60 55.6
Sabik	102 05.2	S15 45.1
Schedar	349 32.6	N56 39.9
Shaula	96 13.2	S37 07.2
Sirius	258 27.6	S16 44.7
Spica	158 24.5	S11 16.6
Suhail	222 47.6	S43 31.1
Vega	80 34.7	N38 48.5
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	130 08.2	12 03
Marte	275 40.9	2 20
Júpiter	0 11.4	20 39
Saturno	38 17.8	18 07

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	°	′	′	
9 00	184	03.4	S16	47.2	357	54.6	11.9	N19	19.9	10.8	55.8
01	199	03.4		47.9	12	25.5	11.8	19	30.7	10.7	55.8
02	214	03.3		48.6	26	56.3	11.8	19	41.4	10.5	55.8
03	229	03.3	. .	49.3	41	27.1	11.7	19	51.9	10.5	55.8
04	244	03.2		50.0	55	57.8	11.7	20	02.4	10.4	55.8
05	259	03.2		50.7	70	28.5	11.6	20	12.8	10.2	55.7
06	274	03.1	S16	51.4	84	59.1	11.6	N20	23.0	10.2	55.7
07	289	03.1		52.2	99	29.7	11.6	20	33.2	10.0	55.7
M 08	304	03.0		52.9	114	00.3	11.5	20	43.2	10.0	55.7
I 09	319	03.0	. .	53.6	128	30.8	11.4	20	53.2	9.8	55.7
É 10	334	02.9		54.3	143	01.2	11.4	21	03.0	9.7	55.6
R 11	349	02.9		55.0	157	31.6	11.4	21	12.7	9.6	55.6
C 12	4	02.8	S16	55.7	172	02.0	11.3	N21	22.3	9.5	55.6
O 13	19	02.8		56.4	186	32.3	11.3	21	31.8	9.4	55.6
L 14	34	02.7		57.1	201	02.6	11.2	21	41.2	9.3	55.6
E 15	49	02.7	. .	57.8	215	32.8	11.2	21	50.5	9.2	55.5
S 16	64	02.6		58.6	230	03.0	11.1	21	59.7	9.1	55.5
17	79	02.6	16	59.3	244	33.1	11.1	22	08.8	8.9	55.5
18	94	02.5	S17	00.0	259	03.2	11.1	N22	17.7	8.9	55.5
19	109	02.5		00.7	273	33.3	11.0	22	26.6	8.7	55.5
20	124	02.4		01.4	288	03.3	11.0	22	35.3	8.6	55.4
21	139	02.4	. .	02.1	302	33.3	10.9	22	43.9	8.5	55.4
22	154	02.3		02.8	317	03.2	10.9	22	52.4	8.4	55.4
23	169	02.2		03.5	331	33.1	10.8	23	00.8	8.2	55.4
10 00	184	02.2	S17	04.2	346	02.9	10.8	N23	09.0	8.1	55.4
01	199	02.1		04.9	0	32.7	10.8	23	17.1	8.1	55.3
02	214	02.1		05.6	15	02.5	10.7	23	25.2	7.9	55.3
03	229	02.0	. .	06.3	29	32.2	10.7	23	33.1	7.7	55.3
04	244	02.0		07.0	44	01.9	10.6	23	40.8	7.7	55.3
05	259	01.9		07.7	58	31.5	10.6	23	48.5	7.5	55.3
06	274	01.8	S17	08.4	73	01.1	10.6	N23	56.0	7.4	55.2
07	289	01.8		09.1	87	30.7	10.5	24	03.4	7.3	55.2
J 08	304	01.7		09.8	102	00.2	10.5	24	10.7	7.2	55.2
U 09	319	01.7	. .	10.5	116	29.7	10.4	24	17.9	7.0	55.2
E 10	334	01.6		11.2	130	59.1	10.5	24	24.9	7.0	55.2
V 11	349	01.5		11.9	145	28.6	10.3	24	31.9	6.8	55.1
E 12	4	01.5	S17	12.6	159	57.9	10.4	N24	38.7	6.6	55.1
S 13	19	01.4		13.3	174	27.3	10.3	24	45.3	6.6	55.1
14	34	01.4		14.0	188	56.6	10.3	24	51.9	6.4	55.1
15	49	01.3	. .	14.7	203	25.9	10.2	24	58.3	6.3	55.1
16	64	01.2		15.4	217	55.1	10.2	25	04.6	6.1	55.0
17	79	01.2		16.1	232	24.3	10.2	25	10.7	6.0	55.0
18	94	01.1	S17	16.8	246	53.5	10.1	N25	16.7	5.9	55.0
19	109	01.0		17.5	261	22.6	10.2	25	22.6	5.8	55.0
20	124	01.0		18.2	275	51.8	10.1	25	28.4	5.6	55.0
21	139	00.9	. .	18.9	290	20.9	10.0	25	34.0	5.6	55.0
22	154	00.8		19.6	304	49.9	10.1	25	39.6	5.3	54.9
23	169	00.8		20.3	319	19.0	10.0	25	44.9	5.3	54.9
11 00	184	00.7	S17	21.0	333	48.0	10.0	N25	50.2	5.1	54.9
01	199	00.7		21.7	348	17.0	9.9	25	55.3	5.0	54.9
02	214	00.6		22.4	2	45.9	9.9	26	00.3	4.8	54.9
03	229	00.5	. .	23.1	17	14.8	10.0	26	05.1	4.8	54.9
04	244	00.5		23.7	31	43.8	9.9	26	09.9	4.6	54.8
05	259	00.4		24.4	46	12.7	9.8	26	14.5	4.4	54.8
06	274	00.3	S17	25.1	60	41.5	9.9	N26	18.9	4.3	54.8
07	289	00.2		25.8	75	10.4	9.8	26	23.2	4.2	54.8
V 08	304	00.2		26.5	89	39.2	9.8	26	27.4	4.1	54.8
I 09	319	00.1	. .	27.2	104	08.0	9.8	26	31.5	3.9	54.8
E 10	334	00.0		27.9	118	36.8	9.8	26	35.4	3.8	54.7
R 11	349	00.0		28.6	133	05.6	9.8	26	39.2	3.6	54.7
N 12	3	59.9	S17	29.3	147	34.4	9.7	N26	42.8	3.5	54.7
E 13	18	59.8		29.9	162	03.1	9.8	26	46.3	3.4	54.7
S 14	33	59.8		30.6	176	31.9	9.7	26	49.7	3.3	54.7
15	48	59.7	. .	31.3	191	00.6	9.7	26	53.0	3.1	54.7
16	63	59.6		32.0	205	29.3	9.7	26	56.1	2.9	54.6
17	78	59.5		32.7	219	58.0	9.7	26	59.0	2.9	54.6
18	93	59.5	S17	33.4	234	26.7	9.7	N27	01.9	2.7	54.6
19	108	59.4		34.0	248	55.4	9.7	27	04.6	2.5	54.6
20	123	59.3		34.7	263	24.1	9.7	27	07.1	2.5	54.6
21	138	59.3	. .	35.4	277	52.8	9.7	27	09.6	2.3	54.6
22	153	59.2		36.1	292	21.5	9.7	27	11.9	2.1	54.6
23	168	59.1		36.8	306	50.2	9.7	N27	14.0	2.0	54.5
	S/D	16.2	d	0.7	S/D		15.1		15.0		14.9

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			9	10	11	12
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	06	41	08	10	10 02				
N 70	06	33	07	52	09 18				
68	06	26	07	37	08 50	13 27			
66	06	20	07	24	08 28	14 25			
64	06	15	07	14	08 11	14 59	14 39		
62	06	11	07	05	07 57	15 24	15 24	15 29	15 59
60	06	07	06	58	07 45	15 43	15 53	16 14	16 55
N 58	06	03	06	51	07 35	16 00	16 16	16 43	17 27
56	06	00	06	45	07 26	16 14	16 34	17 05	17 51
54	05	56	06	39	07 18	16 26	16 50	17 24	18 11
52	05	53	06	34	07 11	16 37	17 03	17 39	18 27
50	05	51	06	29	07 04	16 46	17 15	17 53	18 41
45	05	44	06	19	06 51	17 07	17 40	18 21	19 10
N 40	05	38	06	11	06 39	17 23	18 00	18 43	19 33
35	05	32	06	03	06 29	17 37	18 16	19 01	19 51
30	05	27	05	56	06 21	17 49	18 31	19 17	20 07
20	05	16	05	43	06 06	18 10	18 55	19 43	20 34
N 10	05	06	05	31	05 53	18 29	19 16	20 06	20 58
0	04	54	05	19	05 40	18 46	19 36	20 28	21 20
S 10	04	40	05	06	05 28	19 03	19 56	20 49	21 41
20	04	23	04	51	05 14	19 22	20 18	21 12	22 05
30	04	02	04	33	04 59	19 43	20 43	21 39	22 32
35	03	49	04	22	04 50	19 56	20 57	21 55	22 48
40	03	33	04	09	04 39	20 11	21 15	22 14	23 07
45	03	12	03	54	04 27	20 28	21 35	22 36	23 29
S 50	02	45	03	34	04 12	20 50	22 01	23 05	23 58
52	02	31	03	24	04 05	21 00	22 14	23 19	24 12
54	02	14	03	14	03 57	21 12	22 29	23 36	24 29
56	01	53	03	01	03 48	21 26	22 46	23 55	24 48
58	01	26	02	47	03 38	21 42	23 06	24 19	00 19
S 60	00	43	02	29	03 27	22 01	23 33	24 52	00 52

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 9	10	11	12
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	13	25	15	16	16 46				
N 70	14	08	15	35	16 54				
68	14	37	15	50	17 01	11 24			
66	14	59	16	02	17 06	10 27			
64	15	16	16	13	17 12	09 54	11 58		
62	15	30	16	22	17 16	09 30	11 14	12 55	14 13
60	15	42	16	29	17 20	09 11	10 45	12 11	13 18
N 58	15	52	16	36	17 24	08 55	10 22	11 42	12 46
56	16	01	16	42	17 27	08 42	10 04	11 20	12 21
54	16	09	16	48	17 31	08 30	09 49	11 01	12 02
52	16	16	16	53	17 34	08 20	09 36	10 46	11 45
50	16	23	16	58	17 37	08 11	09 25	10 33	11 31
45	16	37	17	08	17 43	07 52	09 01	10 05	11 02
N 40	16	48	17	17	17 49	07 36	08 42	09 44	10 40
35	16	58	17	25	17 55	07 23	08 26	09 26	10 21
30	17	07	17	32	18 00	07 12	08 12	09 10	10 05
20	17	22	17	45	18 11	06 53	07 49	08 44	09 38
N 10	17	35	17	57	18 22	06 36	07 29	08 22	09 15
0	17	47	18	09	18 34	06 20	07 10	08 01	08 53
S 10	18	00	18	22	18 48	06 05	06 51	07 40	08 31
20	18	14	18	37	19 05	05 48	06 31	07 18	08 08
30	18	29	18	55	19 26	05 29	06 08	06 52	07 40
35	18	39	19	06	19 40	05 18	05 55	06 37	07 24
40	18	49	19	19	19 56	05 06	05 39	06 19	07 06
45	19	02	19	35	20 17	04 51	05 21	05 58	06 43
S 50	19	17	19	55	20 45	04 33	04 58	05 31	06 14
52	19	24	20	05	20 59	04 24	04 47	05 18	06 00
54	19	32	20	16	21 16	04 15	04 35	05 03	05 43
56	19	41	20	28	21 38	04 04	04 21	04 46	05 24
58	19	51	20	43	22 06	03 52	04 04	04 25	05 00
S 60	20	03	21	01	22 54	03 38	03 45	03 58	04 27

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d %	
9	16 14	16 11	11 44	00 09	12 33	15 99	
10	16 09	16 06	11 44	00 58	13 23	16 96	○
11	16 03	16 00	11 44	01 49	14 14	17 91	

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·5		JÚPITER −2·7		SATURNO +0·6	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
12 00	51 06.3	178 42.4	S18 33.9	327 09.4	N24 22.1	51 22.8	S 1 46.0	89 20.4	S16 22.0
01	66 08.8	193 41.6	34.7	342 12.4	22.2	66 25.3	46.0	104 22.8	21.9
02	81 11.3	208 40.9	35.6	357 15.4	22.3	81 27.9	46.0	119 25.1	21.9
03	96 13.7	223 40.2	36.4	12 18.3	22.5	96 30.5	46.1	134 27.5	21.9
04	111 16.2	238 39.5	37.3	27 21.3	22.6	111 33.0	46.1	149 29.9	21.8
05	126 18.7	253 38.7	38.1	42 24.3	22.7	126 35.6	46.1	164 32.3	21.8
06	141 21.1	268 38.0	S18 39.0	57 27.2	N24 22.8	141 38.2	S 1 46.2	179 34.7	S16 21.8
07	156 23.6	283 37.3	39.8	72 30.2	22.9	156 40.7	46.2	194 37.0	21.8
08	171 26.1	298 36.6	40.7	87 33.2	23.0	171 43.3	46.2	209 39.4	21.7
S 09	186 28.5	313 35.9	41.5	102 36.2	23.1	186 45.8	46.2	224 41.8	21.7
Á 10	201 31.0	328 35.1	42.4	117 39.2	23.2	201 48.4	46.3	239 44.2	21.7
B 11	216 33.4	343 34.4	43.2	132 42.1	23.3	216 50.9	46.3	254 46.6	21.6
A 12	231 35.9	358 33.7	S18 44.1	147 45.1	N24 23.4	231 53.5	S 1 46.3	269 48.9	S16 21.6
D 13	246 38.4	13 32.9	44.9	162 48.1	23.5	246 56.1	46.4	284 51.3	21.6
O 14	261 40.8	28 32.2	45.8	177 51.1	23.6	261 58.6	46.4	299 53.7	21.6
15	276 43.3	43 31.5	46.6	192 54.1	23.7	277 01.2	46.4	314 56.1	21.5
16	291 45.8	58 30.8	47.4	207 57.1	23.8	292 03.7	46.4	329 58.5	21.5
17	306 48.2	73 30.0	48.3	223 00.1	24.0	307 06.3	46.5	345 00.8	21.5
18	321 50.7	88 29.3	S18 49.1	238 03.1	N24 24.1	322 08.9	S 1 46.5	0 03.2	S16 21.4
19	336 53.2	103 28.6	50.0	253 06.1	24.2	337 11.4	46.5	15 05.6	21.4
20	351 55.6	118 27.8	50.8	268 09.1	24.3	352 14.0	46.6	30 08.0	21.4
21	6 58.1	133 27.1	51.6	283 12.1	24.4	7 16.5	46.6	45 10.4	21.3
22	22 00.6	148 26.4	52.5	298 15.1	24.5	22 19.1	46.6	60 12.7	21.3
23	37 03.0	163 25.6	53.3	313 18.1	24.6	37 21.6	46.6	75 15.1	21.3
13 00	52 05.5	178 24.9	S18 54.1	328 21.1	N24 24.7	52 24.2	S 1 46.7	90 17.5	S16 21.3
01	67 07.9	193 24.2	55.0	343 24.1	24.8	67 26.7	46.7	105 19.9	21.2
02	82 10.4	208 23.4	55.8	358 27.1	24.9	82 29.3	46.7	120 22.2	21.2
03	97 12.9	223 22.7	56.6	13 30.1	25.0	97 31.9	46.8	135 24.6	21.2
04	112 15.3	238 22.0	57.5	28 33.1	25.1	112 34.4	46.8	150 27.0	21.1
05	127 17.8	253 21.2	58.3	43 36.1	25.2	127 37.0	46.8	165 29.4	21.1
06	142 20.3	268 20.5	S18 59.1	58 39.1	N24 25.3	142 39.5	S 1 46.8	180 31.8	S16 21.1
07	157 22.7	283 19.8	18 59.9	73 42.1	25.4	157 42.1	46.9	195 34.1	21.0
D 08	172 25.2	298 19.0	19 00.8	88 45.2	25.5	172 44.6	46.9	210 36.5	21.0
O 09	187 27.7	313 18.3	01.6	103 48.2	25.7	187 47.2	46.9	225 38.9	21.0
M 10	202 30.1	328 17.6	02.4	118 51.2	25.8	202 49.7	46.9	240 41.3	21.0
I 11	217 32.6	343 16.8	03.2	133 54.2	25.9	217 52.3	47.0	255 43.6	20.9
N 12	232 35.1	358 16.1	S19 04.1	148 57.2	N24 26.0	232 54.8	S 1 47.0	270 46.0	S16 20.9
G 13	247 37.5	13 15.3	04.9	164 00.3	26.1	247 57.4	47.0	285 48.4	20.9
O 14	262 40.0	28 14.6	05.7	179 03.3	26.2	262 59.9	47.0	300 50.8	20.8
15	277 42.4	43 13.9	06.5	194 06.3	26.3	278 02.5	47.1	315 53.1	20.8
16	292 44.9	58 13.1	07.3	209 09.4	26.4	293 05.0	47.1	330 55.5	20.8
17	307 47.4	73 12.4	08.2	224 12.4	26.5	308 07.6	47.1	345 57.9	20.7
18	322 49.8	88 11.6	S19 09.0	239 15.4	N24 26.6	323 10.1	S 1 47.1	1 00.3	S16 20.7
19	337 52.3	103 10.9	09.8	254 18.5	26.7	338 12.7	47.2	16 02.6	20.7
20	352 54.8	118 10.1	10.6	269 21.5	26.8	353 15.2	47.2	31 05.0	20.6
21	7 57.2	133 09.4	11.4	284 24.5	26.9	8 17.8	47.2	46 07.4	20.6
22	22 59.7	148 08.7	12.2	299 27.6	27.0	23 20.3	47.2	61 09.8	20.6
23	38 02.2	163 07.9	13.0	314 30.6	27.1	38 22.9	47.3	76 12.1	20.5
14 00	53 04.6	178 07.2	S19 13.9	329 33.7	N24 27.2	53 25.4	S 1 47.3	91 14.5	S16 20.5
01	68 07.1	193 06.4	14.7	344 36.7	27.3	68 28.0	47.3	106 16.9	20.5
02	83 09.5	208 05.7	15.5	359 39.7	27.4	83 30.5	47.3	121 19.3	20.5
03	98 12.0	223 04.9	16.3	14 42.8	27.5	98 33.1	47.4	136 21.6	20.4
04	113 14.5	238 04.2	17.1	29 45.8	27.6	113 35.6	47.4	151 24.0	20.4
05	128 16.9	253 03.4	17.9	44 48.9	27.8	128 38.1	47.4	166 26.4	20.4
06	143 19.4	268 02.7	S19 18.7	59 51.9	N24 27.9	143 40.7	S 1 47.4	181 28.7	S16 20.3
07	158 21.9	283 01.9	19.5	74 55.0	28.0	158 43.2	47.5	196 31.1	20.3
L 08	173 24.3	298 01.2	20.3	89 58.1	28.1	173 45.8	47.5	211 33.5	20.3
U 09	188 26.8	313 00.4	21.1	105 01.1	28.2	188 48.3	47.5	226 35.9	20.2
N 10	203 29.3	327 59.7	21.9	120 04.2	28.3	203 50.9	47.5	241 38.2	20.2
E 11	218 31.7	342 58.9	22.7	135 07.2	28.4	218 53.4	47.6	256 40.6	20.2
S 12	233 34.2	357 58.2	S19 23.5	150 10.3	N24 28.5	233 56.0	S 1 47.6	271 43.0	S16 20.1
13	248 36.7	12 57.4	24.3	165 13.4	28.6	248 58.5	47.6	286 45.3	20.1
14	263 39.1	27 56.7	25.1	180 16.4	28.7	264 01.0	47.6	301 47.7	20.1
15	278 41.6	42 55.9	25.9	195 19.5	28.8	279 03.6	47.6	316 50.1	20.0
16	293 44.0	57 55.2	26.7	210 22.6	28.9	294 06.1	47.7	331 52.5	20.0
17	308 46.5	72 54.4	27.5	225 25.6	29.0	309 08.7	47.7	346 54.8	20.0
18	323 49.0	87 53.7	S19 28.3	240 28.7	N24 29.1	324 11.2	S 1 47.7	1 57.2	S16 19.9
19	338 51.4	102 52.9	29.1	255 31.8	29.2	339 13.8	47.7	16 59.6	19.9
20	353 53.9	117 52.1	29.9	270 34.8	29.3	354 16.3	47.8	32 01.9	19.9
21	8 56.4	132 51.4	30.7	285 37.9	29.4	9 18.8	47.8	47 04.3	19.8
22	23 58.8	147 50.6	31.5	300 41.0	29.5	24 21.4	47.8	62 06.7	19.8
23	39 01.3	162 49.9	32.3	315 44.1	29.6	39 23.9	47.8	77 09.1	19.8
	h m								
Paso Mer.	20 28.3	*v* −0.7	*d* 0.8	*v* 3.0	*d* 0.1	*v* 2.6	*d* 0.0	*v* 2.4	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.7	S40 12.8
Achernar	335 21.0	S57 07.4
Acrux	173 02.6	S63 13.2
Adhara	255 07.0	S28 59.9
Aldebaran	290 41.4	N16 33.3
Alioth	166 15.0	N55 50.1
Alkaid	152 53.9	N49 12.0
Alnair	27 35.1	S46 51.3
Alnilam	275 39.3	S 1 11.2
Alphard	217 49.5	S 8 45.3
Alphecca	126 05.7	N26 38.4
Alpheratz	357 36.4	N29 13.1
Altair	62 01.9	N 8 55.8
Ankaa	353 08.6	S42 11.1
Antares	112 18.4	S26 28.9
Arcturus	145 49.9	N19 03.9
Atria	107 14.8	S69 04.1
Avior	234 15.3	S59 34.6
Bellatrix	278 24.5	N 6 22.3
Betelgeuse	270 53.8	N 7 24.7
Canopus	263 52.8	S52 42.2
Capella	280 24.1	N46 01.2
Deneb	49 27.1	N45 21.9
Denebola	182 27.0	N14 26.8
Diphda	348 48.9	S17 51.7
Dubhe	193 43.5	N61 37.5
Elnath	278 03.8	N28 37.6
Eltanin	90 43.5	N51 29.3
Enif	33 40.6	N 9 58.9
Fomalhaut	15 16.4	S29 30.2
Gacrux	171 54.1	S57 14.1
Gienah	175 45.7	S17 39.9
Hadar	148 39.2	S60 28.8
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.5
Kochab	137 21.0	N74 03.7
Markab	13 31.6	N15 19.8
Menkar	314 07.7	N 4 10.8
Menkent	148 00.1	S36 28.7
Miaplacidus	221 38.5	S69 48.2
Mirfak	308 30.3	N49 56.5
Nunki	75 50.2	S26 16.1
Peacock	53 08.8	S56 39.9
Pollux	243 19.4	N27 58.2
Procyon	244 52.6	N 5 10.1
Rasalhague	96 00.5	N12 32.7
Regulus	207 36.4	N11 51.4
Rigel	281 05.3	S 8 10.4
Rigil Kent.	139 43.5	S60 55.6
Sabik	102 05.2	S15 45.1
Schedar	349 32.6	N56 39.9
Shaula	96 13.2	S37 07.2
Sirius	258 27.6	S16 44.7
Spica	158 24.5	S11 16.6
Suhail	222 47.6	S43 31.1
Vega	80 34.7	N38 48.5
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	126 19.4	12 07
Marte	276 15.6	2 06
Júpiter	0 18.7	20 27
Saturno	38 12.0	17 56

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	°	′	′	′
12 00	183	59.0	S17	37.5	321	18.9	9.6	N27	16.0	1.9	54.5
01	198	59.0		38.1	335	47.5	9.7	27	17.9	1.8	54.5
02	213	58.9		38.8	350	16.2	9.7	27	19.7	1.6	54.5
03	228	58.8	. .	39.5	4	44.9	9.7	27	21.3	1.4	54.5
04	243	58.7		40.2	19	13.6	9.7	27	22.7	1.4	54.5
05	258	58.7		40.8	33	42.3	9.6	27	24.1	1.2	54.5
06	273	58.6	S17	41.5	48	10.9	9.7	N27	25.3	1.0	54.5
07	288	58.5		42.2	62	39.6	9.8	27	26.3	1.0	54.4
S 08	303	58.4		42.9	77	08.4	9.7	27	27.3	0.8	54.4
Á 09	318	58.3	. .	43.6	91	37.1	9.7	27	28.1	0.6	54.4
B 10	333	58.3		44.2	106	05.8	9.7	27	28.7	0.5	54.4
A 11	348	58.2		44.9	120	34.5	9.8	27	29.2	0.4	54.4
D 12	3	58.1	S17	45.6	135	03.3	9.7	N27	29.6	0.3	54.4
O 13	18	58.0		46.3	149	32.0	9.8	27	29.9	0.1	54.4
14	33	58.0		46.9	164	00.8	9.8	27	30.0	0.0	54.4
15	48	57.9	. .	47.6	178	29.6	9.8	27	30.0	0.2	54.4
16	63	57.8		48.3	192	58.4	9.8	27	29.8	0.3	54.4
17	78	57.7		48.9	207	27.2	9.9	27	29.5	0.4	54.3
18	93	57.6	S17	49.6	221	56.1	9.8	N27	29.1	0.6	54.3
19	108	57.5		50.3	236	24.9	9.9	27	28.5	0.7	54.3
20	123	57.5		51.0	250	53.8	9.9	27	27.8	0.8	54.3
21	138	57.4	. .	51.6	265	22.7	10.0	27	27.0	0.9	54.3
22	153	57.3		52.3	279	51.7	9.9	27	26.1	1.1	54.3
23	168	57.2		53.0	294	20.6	10.0	27	25.0	1.3	54.3
13 00	183	57.1	S17	53.6	308	49.6	10.0	N27	23.7	1.3	54.3
01	198	57.1		54.3	323	18.6	10.0	27	22.4	1.5	54.3
02	213	57.0		55.0	337	47.6	10.1	27	20.9	1.6	54.3
03	228	56.9	. .	55.6	352	16.7	10.1	27	19.3	1.8	54.3
04	243	56.8		56.3	6	45.8	10.1	27	17.5	1.9	54.2
05	258	56.7		57.0	21	14.9	10.1	27	15.6	2.0	54.2
06	273	56.6	S17	57.6	35	44.0	10.2	N27	13.6	2.2	54.2
07	288	56.5		58.3	50	13.2	10.2	27	11.4	2.2	54.2
D 08	303	56.5		58.9	64	42.4	10.3	27	09.2	2.4	54.2
O 09	318	56.4	17	59.6	79	11.7	10.2	27	06.8	2.6	54.2
M 10	333	56.3	18	00.3	93	40.9	10.4	27	04.2	2.7	54.2
I 11	348	56.2		00.9	108	10.3	10.3	27	01.5	2.8	54.2
N 12	3	56.1	S18	01.6	122	39.6	10.4	N26	58.7	2.9	54.2
G 13	18	56.0		02.3	137	09.0	10.4	26	55.8	3.0	54.2
O 14	33	55.9		02.9	151	38.4	10.5	26	52.8	3.2	54.2
15	48	55.8	. .	03.6	166	07.9	10.5	26	49.6	3.3	54.2
16	63	55.8		04.2	180	37.4	10.5	26	46.3	3.4	54.2
17	78	55.7		04.9	195	06.9	10.6	26	42.9	3.6	54.2
18	93	55.6	S18	05.6	209	36.5	10.6	N26	39.3	3.7	54.2
19	108	55.5		06.2	224	06.1	10.7	26	35.6	3.8	54.2
20	123	55.4		06.9	238	35.8	10.7	26	31.8	3.9	54.2
21	138	55.3	. .	07.5	253	05.5	10.8	26	27.9	4.1	54.2
22	153	55.2		08.2	267	35.3	10.8	26	23.8	4.2	54.2
23	168	55.1		08.8	282	05.1	10.8	26	19.6	4.3	54.2
14 00	183	55.0	S18	09.5	296	34.9	10.9	N26	15.3	4.4	54.2
01	198	54.9		10.1	311	04.8	11.0	26	10.9	4.5	54.2
02	213	54.8		10.8	325	34.8	10.9	26	06.4	4.7	54.2
03	228	54.7	. .	11.4	340	04.7	11.1	26	01.7	4.8	54.2
04	243	54.7		12.1	354	34.8	11.0	25	56.9	4.9	54.2
05	258	54.6		12.8	9	04.8	11.2	25	52.0	5.0	54.2
06	273	54.5	S18	13.4	23	35.0	11.1	N25	47.0	5.2	54.2
07	288	54.4		14.1	38	05.1	11.3	25	41.8	5.2	54.2
L 08	303	54.3		14.7	52	35.4	11.2	25	36.6	5.4	54.2
U 09	318	54.2	. .	15.4	67	05.6	11.4	25	31.2	5.5	54.2
N 10	333	54.1		16.0	81	36.0	11.3	25	25.7	5.6	54.2
E 11	348	54.0		16.7	96	06.3	11.5	25	20.1	5.7	54.2
S 12	3	53.9	S18	17.3	110	36.8	11.4	N25	14.4	5.9	54.2
13	18	53.8		17.9	125	07.2	11.6	25	08.5	5.9	54.2
14	33	53.7		18.6	139	37.8	11.5	25	02.6	6.1	54.2
15	48	53.6	. .	19.2	154	08.3	11.7	24	56.5	6.2	54.2
16	63	53.5		19.9	168	39.0	11.7	24	50.3	6.3	54.2
17	78	53.4		20.5	183	09.7	11.7	24	44.0	6.4	54.2
18	93	53.3	S18	21.2	197	40.4	11.8	N24	37.6	6.5	54.2
19	108	53.2		21.8	212	11.2	11.8	24	31.1	6.6	54.2
20	123	53.1		22.5	226	42.0	11.9	24	24.5	6.8	54.2
21	138	53.0	. .	23.1	241	12.9	12.0	24	17.7	6.8	54.2
22	153	52.9		23.8	255	43.9	12.0	24	10.9	7.0	54.2
23	168	52.8		24.4	270	14.9	12.0	N24	03.9	7.0	54.2
	S/D	16.2	d	0.7	S/D		14.8		14.8		14.8

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			12	13	14	15
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	06	52	08	24	10 32				
N 70	06	43	08	03	09 36				
68	06	35	07	47	09 03				18 34
66	06	28	07	33	08 39				19 36
64	06	22	07	22	08 21			18 13	20 10
62	06	17	07	13	08 05	15 59	17 19	18 56	20 34
60	06	13	07	04	07 53	16 55	18 02	19 25	20 54
N 58	06	09	06	57	07 42	17 27	18 30	19 47	21 10
56	06	05	06	50	07 32	17 51	18 53	20 05	21 23
54	06	01	06	44	07 24	18 11	19 11	20 20	21 35
52	05	58	06	39	07 16	18 27	19 26	20 34	21 45
50	05	55	06	34	07 09	18 41	19 39	20 45	21 54
45	05	48	06	23	06 55	19 10	20 07	21 09	22 14
N 40	05	41	06	14	06 43	19 33	20 28	21 28	22 29
35	05	35	06	06	06 32	19 51	20 46	21 44	22 43
30	05	29	05	58	06 23	20 07	21 01	21 57	22 54
20	05	18	05	44	06 08	20 34	21 27	22 21	23 14
N 10	05	06	05	32	05 54	20 58	21 50	22 41	23 30
0	04	54	05	19	05 41	21 20	22 10	22 59	23 46
S 10	04	39	05	05	05 28	21 41	22 31	23 18	24 02
20	04	22	04	50	05 13	22 05	22 53	23 38	24 19
30	04	00	04	31	04 57	22 32	23 19	24 01	00 01
35	03	46	04	20	04 47	22 48	23 34	24 14	00 14
40	03	29	04	06	04 36	23 07	23 52	24 30	00 30
45	03	07	03	50	04 23	23 29	24 13	00 13	00 48
S 50	02	38	03	29	04 07	23 58	24 39	00 39	01 11
52	02	23	03	19	04 00	24 12	00 12	00 52	01 22
54	02	05	03	07	03 52	24 29	00 29	01 07	01 34
56	01	42	02	54	03 42	24 48	00 48	01 24	01 48
58	01	11	02	38	03 32	00 19	01 12	01 45	02 04
S 60	00	04	02	19	03 19	00 52	01 45	02 12	02 24

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 12	13	14	15
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	12	55	15	03	16 35				
N 70	13	51	15	24	16 45				
68	14	24	15	41	16 52				16 48
66	14	48	15	54	16 59				15 46
64	15	07	16	05	17 05			15 30	15 11
62	15	22	16	15	17 10	14 13	14 41	14 46	14 46
60	15	35	16	23	17 15	13 18	13 57	14 16	14 26
N 58	15	46	16	31	17 19	12 46	13 28	13 54	14 09
56	15	56	16	37	17 23	12 21	13 06	13 35	13 55
54	16	04	16	43	17 27	12 02	12 48	13 20	13 43
52	16	12	16	49	17 30	11 45	12 32	13 07	13 32
50	16	19	16	54	17 33	11 31	12 18	12 55	13 22
45	16	33	17	05	17 40	11 02	11 51	12 30	13 02
N 40	16	45	17	14	17 47	10 40	11 29	12 10	12 45
35	16	56	17	23	17 53	10 21	11 11	11 54	12 31
30	17	05	17	30	17 59	10 05	10 55	11 40	12 19
20	17	21	17	44	18 10	09 38	10 29	11 15	11 58
N 10	17	35	17	57	18 22	09 15	10 06	10 54	11 39
0	17	48	18	10	18 35	08 53	09 44	10 34	11 22
S 10	18	01	18	23	18 49	08 31	09 23	10 14	11 05
20	18	15	18	39	19 07	08 08	09 00	09 53	10 46
30	18	32	18	58	19 29	07 40	08 33	09 28	10 25
35	18	42	19	09	19 43	07 24	08 17	09 14	10 12
40	18	53	19	23	20 01	07 06	07 59	08 56	09 57
45	19	06	19	40	20 22	06 43	07 36	08 36	09 40
S 50	19	22	20	01	20 52	06 14	07 08	08 10	09 18
52	19	30	20	11	21 07	06 00	06 54	07 57	09 07
54	19	38	20	23	21 26	05 43	06 37	07 43	08 56
56	19	48	20	36	21 49	05 24	06 18	07 26	08 42
58	19	58	20	52	22 23	05 00	05 54	07 05	08 26
S 60	20	11	21	12	////	04 27	05 21	06 39	08 07

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		SOL Paso Mer.	LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		LUNA Edad	LUNA Fase
d	m	s	m	s	h m	h	m	h	m	d	%
12	15	56	15	53	11 44	02	40	15	06	18	85
13	15	49	15	45	11 44	03	32	15	57	19	77
14	15	40	15	36	11 44	04	22	16	47	20	69

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·6		JÚPITER −2·7		SATURNO +0·6	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
15 00	54 03.8	177 49.1	S19 33.1	330 47.2	N24 29.7	54 26.5	S 1 47.8	92 11.4	S16 19.8
01	69 06.2	192 48.4	33.9	345 50.2	29.8	69 29.0	47.9	107 13.8	19.7
02	84 08.7	207 47.6	34.6	0 53.3	29.9	84 31.5	47.9	122 16.2	19.7
03	99 11.2	222 46.8	35.4	15 56.4	30.0	99 34.1	47.9	137 18.5	19.7
04	114 13.6	237 46.1	36.2	30 59.5	30.1	114 36.6	47.9	152 20.9	19.6
05	129 16.1	252 45.3	37.0	46 02.6	30.2	129 39.1	47.9	167 23.3	19.6
06	144 18.5	267 44.6	S19 37.8	61 05.7	N24 30.3	144 41.7	S 1 48.0	182 25.6	S16 19.6
07	159 21.0	282 43.8	38.6	76 08.8	30.4	159 44.2	48.0	197 28.0	19.5
08	174 23.5	297 43.0	39.3	91 11.9	30.5	174 46.8	48.0	212 30.4	19.5
M 09	189 25.9	312 42.3	40.1	106 15.0	30.6	189 49.3	48.0	227 32.7	19.5
A 10	204 28.4	327 41.5	40.9	121 18.1	30.7	204 51.8	48.0	242 35.1	19.4
R 11	219 30.9	342 40.7	41.7	136 21.2	30.8	219 54.4	48.1	257 37.5	19.4
T 12	234 33.3	357 40.0	S19 42.5	151 24.3	N24 30.9	234 56.9	S 1 48.1	272 39.8	S16 19.4
E 13	249 35.8	12 39.2	43.2	166 27.4	31.0	249 59.4	48.1	287 42.2	19.3
S 14	264 38.3	27 38.4	44.0	181 30.5	31.1	265 02.0	48.1	302 44.6	19.3
15	279 40.7	42 37.7	44.8	196 33.6	31.2	280 04.5	48.1	317 47.0	19.3
16	294 43.2	57 36.9	45.6	211 36.7	31.3	295 07.0	48.1	332 49.3	19.2
17	309 45.7	72 36.1	46.3	226 39.8	31.4	310 09.6	48.2	347 51.7	19.2
18	324 48.1	87 35.4	S19 47.1	241 42.9	N24 31.5	325 12.1	S 1 48.2	2 54.1	S16 19.2
19	339 50.6	102 34.6	47.9	256 46.0	31.6	340 14.6	48.2	17 56.4	19.1
20	354 53.0	117 33.8	48.7	271 49.1	31.7	355 17.2	48.2	32 58.8	19.1
21	9 55.5	132 33.1	49.4	286 52.2	31.8	10 19.7	48.2	48 01.2	19.1
22	24 58.0	147 32.3	50.2	301 55.3	31.9	25 22.2	48.3	63 03.5	19.0
23	40 00.4	162 31.5	51.0	316 58.5	32.0	40 24.8	48.3	78 05.9	19.0
16 00	55 02.9	177 30.8	S19 51.7	332 01.6	N24 32.1	55 27.3	S 1 48.3	93 08.2	S16 19.0
01	70 05.4	192 30.0	52.5	347 04.7	32.2	70 29.8	48.3	108 10.6	18.9
02	85 07.8	207 29.2	53.3	2 07.8	32.3	85 32.4	48.3	123 13.0	18.9
03	100 10.3	222 28.4	54.0	17 10.9	32.4	100 34.9	48.3	138 15.3	18.9
04	115 12.8	237 27.7	54.8	32 14.1	32.5	115 37.4	48.4	153 17.7	18.8
05	130 15.2	252 26.9	55.5	47 17.2	32.6	130 40.0	48.4	168 20.1	18.8
06	145 17.7	267 26.1	S19 56.3	62 20.3	N24 32.7	145 42.5	S 1 48.4	183 22.4	S16 18.8
07	160 20.1	282 25.3	57.1	77 23.5	32.8	160 45.0	48.4	198 24.8	18.7
M 08	175 22.6	297 24.6	57.8	92 26.6	32.9	175 47.6	48.4	213 27.2	18.7
I 09	190 25.1	312 23.8	58.6	107 29.7	33.0	190 50.1	48.4	228 29.5	18.7
É 10	205 27.5	327 23.0	19 59.3	122 32.9	33.1	205 52.6	48.5	243 31.9	18.6
R 11	220 30.0	342 22.2	20 00.1	137 36.0	33.2	220 55.1	48.5	258 34.3	18.6
C 12	235 32.5	357 21.5	S20 00.9	152 39.1	N24 33.3	235 57.7	S 1 48.5	273 36.6	S16 18.5
O 13	250 34.9	12 20.7	01.6	167 42.3	33.4	251 00.2	48.5	288 39.0	18.5
L 14	265 37.4	27 19.9	02.4	182 45.4	33.5	266 02.7	48.5	303 41.4	18.5
E 15	280 39.9	42 19.1	03.1	197 48.5	33.6	281 05.2	48.5	318 43.7	18.4
S 16	295 42.3	57 18.3	03.9	212 51.7	33.7	296 07.8	48.5	333 46.1	18.4
17	310 44.8	72 17.6	04.6	227 54.8	33.8	311 10.3	48.6	348 48.4	18.4
18	325 47.3	87 16.8	S20 05.4	242 58.0	N24 33.9	326 12.8	S 1 48.6	3 50.8	S16 18.3
19	340 49.7	102 16.0	06.1	258 01.1	34.0	341 15.4	48.6	18 53.2	18.3
20	355 52.2	117 15.2	06.9	273 04.3	34.1	356 17.9	48.6	33 55.5	18.3
21	10 54.6	132 14.4	07.6	288 07.4	34.2	11 20.4	48.6	48 57.9	18.2
22	25 57.1	147 13.7	08.4	303 10.6	34.3	26 22.9	48.6	64 00.3	18.2
23	40 59.6	162 12.9	09.1	318 13.7	34.4	41 25.5	48.7	79 02.6	18.2
17 00	56 02.0	177 12.1	S20 09.8	333 16.9	N24 34.5	56 28.0	S 1 48.7	94 05.0	S16 18.1
01	71 04.5	192 11.3	10.6	348 20.0	34.6	71 30.5	48.7	109 07.3	18.1
02	86 07.0	207 10.5	11.3	3 23.2	34.7	86 33.0	48.7	124 09.7	18.1
03	101 09.4	222 09.7	12.1	18 26.4	34.8	101 35.5	48.7	139 12.1	18.0
04	116 11.9	237 08.9	12.8	33 29.5	34.9	116 38.1	48.7	154 14.4	18.0
05	131 14.4	252 08.2	13.5	48 32.7	35.0	131 40.6	48.7	169 16.8	18.0
06	146 16.8	267 07.4	S20 14.3	63 35.8	N24 35.1	146 43.1	S 1 48.7	184 19.1	S16 17.9
07	161 19.3	282 06.6	15.0	78 39.0	35.2	161 45.6	48.8	199 21.5	17.9
J 08	176 21.8	297 05.8	15.8	93 42.2	35.3	176 48.2	48.8	214 23.9	17.8
U 09	191 24.2	312 05.0	16.5	108 45.4	35.4	191 50.7	48.8	229 26.2	17.8
E 10	206 26.7	327 04.2	17.2	123 48.5	35.5	206 53.2	48.8	244 28.6	17.8
V 11	221 29.1	342 03.4	18.0	138 51.7	35.6	221 55.7	48.8	259 30.9	17.7
E 12	236 31.6	357 02.6	S20 18.7	153 54.9	N24 35.7	236 58.2	S 1 48.8	274 33.3	S16 17.7
S 13	251 34.1	12 01.9	19.4	168 58.0	35.8	252 00.8	48.8	289 35.7	17.7
14	266 36.5	27 01.1	20.1	184 01.2	35.9	267 03.3	48.8	304 38.0	17.6
15	281 39.0	42 00.3	20.9	199 04.4	35.9	282 05.8	48.9	319 40.4	17.6
16	296 41.5	56 59.5	21.6	214 07.6	36.0	297 08.3	48.9	334 42.7	17.6
17	311 43.9	71 58.7	22.3	229 10.8	36.1	312 10.8	48.9	349 45.1	17.5
18	326 46.4	86 57.9	S20 23.1	244 13.9	N24 36.2	327 13.4	S 1 48.9	4 47.5	S16 17.5
19	341 48.9	101 57.1	23.8	259 17.1	36.3	342 15.9	48.9	19 49.8	17.5
20	356 51.3	116 56.3	24.5	274 20.3	36.4	357 18.4	48.9	34 52.2	17.4
21	11 53.8	131 55.5	25.2	289 23.5	36.5	12 20.9	48.9	49 54.5	17.4
22	26 56.2	146 54.7	25.9	304 26.7	36.6	27 23.4	48.9	64 56.9	17.3
23	41 58.7	161 53.9	26.7	319 29.9	36.7	42 25.9	48.9	79 59.3	17.3
	h m								
Paso Mer.	20 16.5	*v* −0.8	*d* 0.8	*v* 3.1	*d* 0.1	*v* 2.5	*d* 0.0	*v* 2.4	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.7	S40 12.8
Achernar	335 21.0	S57 07.4
Acrux	173 02.5	S63 13.2
Adhara	255 07.0	S29 00.0
Aldebaran	290 41.3	N16 33.3
Alioth	166 15.0	N55 50.1
Alkaid	152 53.9	N49 11.9
Alnair	27 35.1	S46 51.3
Alnilam	275 39.3	S 1 11.2
Alphard	217 49.5	S 8 45.3
Alphecca	126 05.6	N26 38.4
Alpheratz	357 36.4	N29 13.1
Altair	62 01.9	N 8 55.8
Ankaa	353 08.6	S42 11.1
Antares	112 18.4	S26 28.9
Arcturus	145 49.9	N19 03.9
Atria	107 14.8	S69 04.1
Avior	234 15.2	S59 34.6
Bellatrix	278 24.5	N 6 22.3
Betelgeuse	270 53.8	N 7 24.7
Canopus	263 52.8	S52 42.2
Capella	280 24.1	N46 01.2
Deneb	49 27.2	N45 21.9
Denebola	182 27.0	N14 26.7
Diphda	348 48.9	S17 51.7
Dubhe	193 43.5	N61 37.5
Elnath	278 03.8	N28 37.6
Eltanin	90 43.5	N51 29.3
Enif	33 40.6	N 9 58.9
Fomalhaut	15 16.4	S29 30.2
Gacrux	171 54.1	S57 14.1
Gienah	175 45.7	S17 39.9
Hadar	148 39.2	S60 28.7
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.5
Kochab	137 21.0	N74 03.6
Markab	13 31.6	N15 19.8
Menkar	314 07.7	N 4 10.8
Menkent	148 00.1	S36 28.7
Miaplacidus	221 38.5	S69 48.2
Mirfak	308 30.3	N49 56.5
Nunki	75 50.2	S26 16.1
Peacock	53 08.8	S56 39.9
Pollux	243 19.3	N27 58.2
Procyon	244 52.5	N 5 10.1
Rasalhague	96 00.5	N12 32.7
Regulus	207 36.4	N11 51.4
Rigel	281 05.3	S 8 10.4
Rigil Kent.	139 43.4	S60 55.5
Sabik	102 05.2	S15 45.1
Schedar	349 32.7	N56 39.9
Shaula	96 13.2	S37 07.2
Sirius	258 27.6	S16 44.7
Spica	158 24.5	S11 16.6
Suhail	222 47.6	S43 31.1
Vega	80 34.8	N38 48.5
Zuben'ubi	136 58.4	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	122 27.9	12 11
Marte	276 58.7	1 52
Júpiter	0 24.4	20 15
Saturno	38 05.3	17 45

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph		
d h	°	′	°	′	°	′	°	′	′	′	
15 00	183	52.7	S18	25.0	284	45.9	12.1	N23	56.9	7.2	54.2
01	198	52.6		25.7	299	17.0	12.2	23	49.7	7.3	54.2
02	213	52.5		26.3	313	48.2	12.2	23	42.4	7.4	54.2
03	228	52.4	. .	27.0	328	19.4	12.3	23	35.0	7.5	54.2
04	243	52.3		27.6	342	50.7	12.3	23	27.5	7.6	54.2
05	258	52.2		28.2	357	22.0	12.4	23	19.9	7.7	54.2
06	273	52.1	S18	28.9	11	53.4	12.4	N23	12.2	7.8	54.2
07	288	52.0		29.5	26	24.8	12.5	23	04.4	7.9	54.2
M 08	303	51.9		30.1	40	56.3	12.5	22	56.5	8.0	54.2
A 09	318	51.8	. .	30.8	55	27.8	12.6	22	48.5	8.1	54.3
R 10	333	51.7		31.4	69	59.4	12.7	22	40.4	8.2	54.3
T 11	348	51.6		32.1	84	31.1	12.7	22	32.2	8.3	54.3
E 12	3	51.4	S18	32.7	99	02.8	12.7	N22	23.9	8.4	54.3
S 13	18	51.3		33.3	113	34.5	12.8	22	15.5	8.5	54.3
14	33	51.2		34.0	128	06.3	12.9	22	07.0	8.6	54.3
15	48	51.1	. .	34.6	142	38.2	12.9	21	58.4	8.7	54.3
16	63	51.0		35.2	157	10.1	12.9	21	49.7	8.8	54.3
17	78	50.9		35.9	171	42.0	13.0	21	40.9	8.9	54.3
18	93	50.8	S18	36.5	186	14.0	13.1	N21	32.0	9.0	54.3
19	108	50.7		37.1	200	46.1	13.1	21	23.0	9.1	54.3
20	123	50.6		37.7	215	18.2	13.2	21	13.9	9.2	54.4
21	138	50.5	. .	38.4	229	50.4	13.2	21	04.7	9.2	54.4
22	153	50.4		39.0	244	22.6	13.3	20	55.5	9.4	54.4
23	168	50.3		39.6	258	54.9	13.3	20	46.1	9.4	54.4
16 00	183	50.2	S18	40.3	273	27.2	13.4	N20	36.7	9.6	54.4
01	198	50.0		40.9	287	59.6	13.4	20	27.1	9.6	54.4
02	213	49.9		41.5	302	32.0	13.4	20	17.5	9.7	54.4
03	228	49.8	. .	42.1	317	04.4	13.5	20	07.8	9.9	54.4
04	243	49.7		42.8	331	36.9	13.6	19	57.9	9.9	54.5
05	258	49.6		43.4	346	09.5	13.6	19	48.0	10.0	54.5
06	273	49.5	S18	44.0	0	42.1	13.7	N19	38.0	10.0	54.5
07	288	49.4		44.6	15	14.8	13.7	19	28.0	10.2	54.5
M 08	303	49.3		45.3	29	47.5	13.7	19	17.8	10.2	54.5
I 09	318	49.1	. .	45.9	44	20.2	13.8	19	07.6	10.4	54.5
É 10	333	49.0		46.5	58	53.0	13.9	18	57.2	10.4	54.5
R 11	348	48.9		47.1	73	25.9	13.8	18	46.8	10.5	54.6
C 12	3	48.8	S18	47.7	87	58.7	14.0	N18	36.3	10.6	54.6
O 13	18	48.7		48.4	102	31.7	13.9	18	25.7	10.6	54.6
L 14	33	48.6		49.0	117	04.6	14.0	18	15.1	10.8	54.6
E 15	48	48.5	. .	49.6	131	37.6	14.1	18	04.3	10.8	54.6
S 16	63	48.3		50.2	146	10.7	14.1	17	53.5	10.9	54.6
17	78	48.2		50.8	160	43.8	14.1	17	42.6	11.0	54.7
18	93	48.1	S18	51.5	175	16.9	14.2	N17	31.6	11.1	54.7
19	108	48.0		52.1	189	50.1	14.2	17	20.5	11.1	54.7
20	123	47.9		52.7	204	23.3	14.3	17	09.4	11.3	54.7
21	138	47.7	. .	53.3	218	56.6	14.3	16	58.1	11.3	54.7
22	153	47.6		53.9	233	29.9	14.3	16	46.8	11.3	54.7
23	168	47.5		54.5	248	03.2	14.4	16	35.5	11.5	54.8
17 00	183	47.4	S18	55.2	262	36.6	14.4	N16	24.0	11.5	54.8
01	198	47.3		55.8	277	10.0	14.4	16	12.5	11.6	54.8
02	213	47.2		56.4	291	43.4	14.5	16	00.9	11.7	54.8
03	228	47.0	. .	57.0	306	16.9	14.5	15	49.2	11.8	54.8
04	243	46.9		57.6	320	50.4	14.6	15	37.4	11.8	54.9
05	258	46.8		58.2	335	24.0	14.5	15	25.6	11.9	54.9
06	273	46.7	S18	58.8	349	57.5	14.6	N15	13.7	11.9	54.9
07	288	46.5	18	59.4	4	31.1	14.7	15	01.8	12.1	54.9
J 08	303	46.4	19	00.0	19	04.8	14.6	14	49.7	12.1	54.9
U 09	318	46.3	. .	00.7	33	38.4	14.7	14	37.6	12.1	55.0
E 10	333	46.2		01.3	48	12.1	14.8	14	25.5	12.3	55.0
V 11	348	46.1		01.9	62	45.9	14.7	14	13.2	12.3	55.0
E 12	3	45.9	S19	02.5	77	19.6	14.8	N14	00.9	12.4	55.0
S 13	18	45.8		03.1	91	53.4	14.8	13	48.5	12.4	55.1
14	33	45.7		03.7	106	27.2	14.8	13	36.1	12.5	55.1
15	48	45.6	. .	04.3	121	01.0	14.9	13	23.6	12.6	55.1
16	63	45.4		04.9	135	34.9	14.9	13	11.0	12.6	55.1
17	78	45.3		05.5	150	08.8	14.9	12	58.4	12.7	55.2
18	93	45.2	S19	06.1	164	42.7	14.9	N12	45.7	12.8	55.2
19	108	45.1		06.7	179	16.6	14.9	12	32.9	12.8	55.2
20	123	44.9		07.3	193	50.5	15.0	12	20.1	12.9	55.2
21	138	44.8	. .	07.9	208	24.5	15.0	12	07.2	12.9	55.3
22	153	44.7		08.5	222	58.5	15.0	11	54.3	13.1	55.3
23	168	44.5		09.1	237	32.5	15.0	N11	41.2	13.0	55.3
	S/D	16.2	*d*	0.6	S/D	14.8		14.9		15.0	

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			15	16	17	18
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	07	03	08	39	11 28	▭	19 35	22 31	24 43
N 70	06	52	08	15	09 56	▭	20 36	22 52	24 51
68	06	43	07	57	09 17	18 34	21 11	23 09	24 58
66	06	36	07	42	08 51	19 36	21 35	23 22	25 04
64	06	30	07	30	08 30	20 10	21 54	23 33	25 09
62	06	24	07	20	08 14	20 34	22 09	23 42	25 13
60	06	19	07	11	08 00	20 54	22 22	23 50	25 16
N 58	06	14	07	03	07 49	21 10	22 33	23 56	25 20
56	06	10	06	56	07 38	21 23	22 43	24 02	00 02
54	06	06	06	50	07 29	21 35	22 51	24 08	00 08
52	06	02	06	44	07 21	21 45	22 59	24 13	00 13
50	05	59	06	39	07 14	21 54	23 06	24 17	00 17
45	05	51	06	27	06 59	22 14	23 20	24 27	00 27
N 40	05	44	06	17	06 46	22 29	23 32	24 34	00 34
35	05	38	06	08	06 35	22 43	23 42	24 41	00 41
30	05	31	06	00	06 26	22 54	23 51	24 47	00 47
20	05	19	05	46	06 09	23 14	24 06	00 06	00 57
N 10	05	07	05	33	05 55	23 30	24 19	00 19	01 06
0	04	54	05	19	05 41	23 46	24 31	00 31	01 14
S 10	04	39	05	05	05 27	24 02	00 02	00 43	01 22
20	04	21	04	49	05 13	24 19	00 19	00 56	01 31
30	03	58	04	29	04 55	00 01	00 38	01 11	01 41
35	03	43	04	17	04 45	00 14	00 49	01 19	01 47
40	03	25	04	03	04 34	00 30	01 02	01 29	01 53
45	03	03	03	46	04 20	00 48	01 17	01 40	02 01
S 50	02	32	03	24	04 03	01 11	01 35	01 54	02 10
52	02	16	03	14	03 56	01 22	01 43	02 00	02 14
54	01	57	03	01	03 47	01 34	01 53	02 07	02 18
56	01	31	02	47	03 37	01 48	02 04	02 15	02 23
58	00	53	02	30	03 25	02 04	02 16	02 23	02 29
S 60	////		02	10	03 12	02 24	02 30	02 33	02 35

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 15	16	17	18
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	12	00	14	50	16 25	▭	17 24	16 00	15 19
N 70	13	33	15	13	16 36	▭	16 22	15 37	15 08
68	14	11	15	31	16 45	16 48	15 46	15 19	14 59
66	14	38	15	46	16 52	15 46	15 20	15 04	14 51
64	14	58	15	58	16 59	15 11	15 00	14 52	14 44
62	15	15	16	09	17 05	14 46	14 44	14 41	14 39
60	15	29	16	18	17 10	14 26	14 30	14 32	14 34
N 58	15	40	16	26	17 14	14 09	14 18	14 25	14 29
56	15	50	16	33	17 19	13 55	14 08	14 18	14 25
54	15	59	16	39	17 23	13 43	13 59	14 11	14 22
52	16	08	16	45	17 26	13 32	13 51	14 06	14 18
50	16	15	16	50	17 30	13 22	13 43	14 01	14 15
45	16	30	17	02	17 38	13 02	13 28	13 49	14 09
N 40	16	43	17	12	17 45	12 45	13 15	13 40	14 03
35	16	54	17	21	17 51	12 31	13 03	13 32	13 59
30	17	03	17	29	17 58	12 19	12 54	13 25	13 55
20	17	20	17	43	18 10	11 58	12 37	13 13	13 47
N 10	17	35	17	57	18 22	11 39	12 22	13 02	13 41
0	17	48	18	10	18 36	11 22	12 08	12 52	13 35
S 10	18	02	18	25	18 51	11 05	11 54	12 41	13 28
20	18	17	18	41	19 09	10 46	11 39	12 30	13 22
30	18	34	19	01	19 32	10 25	11 21	12 18	13 14
35	18	45	19	13	19 47	10 12	11 11	12 10	13 10
40	18	56	19	27	20 05	09 57	10 59	12 02	13 05
45	19	10	19	44	20 28	09 40	10 46	11 52	12 59
S 50	19	27	20	06	20 59	09 18	10 28	11 40	12 52
52	19	35	20	17	21 15	09 07	10 20	11 34	12 48
54	19	44	20	30	21 35	08 56	10 11	11 28	12 45
56	19	54	20	44	22 02	08 42	10 01	11 21	12 41
58	20	06	21	01	22 42	08 26	09 50	11 13	12 36
S 60	20	19	21	23	////	08 07	09 36	11 04	12 31

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		Paso Mer.	LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		Edad	Fase
d	m	s	m	s	h m	h	m	h	m	d	%
15	15	31	15	26	11 45	05	11	17	34	21	60
16	15	21	15	15	11 45	05	57	18	19	22	51
17	15	10	15	04	11 45	06	41	19	03	23	41

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·6		JÚPITER −2·7		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
18 00	57 01.2	176 53.1	S20 27.4	334 33.1	N24 36.8	57 28.5	S 1 49.0	95 01.6	S16 17.3
01	72 03.6	191 52.3	28.1	349 36.3	36.9	72 31.0	49.0	110 04.0	17.2
02	87 06.1	206 51.5	28.8	4 39.4	37.0	87 33.5	49.0	125 06.3	17.2
03	102 08.6	221 50.7	29.5	19 42.6	37.1	102 36.0	49.0	140 08.7	17.2
04	117 11.0	236 49.9	30.3	34 45.8	37.2	117 38.5	49.0	155 11.0	17.1
05	132 13.5	251 49.1	31.0	49 49.0	37.3	132 41.0	49.0	170 13.4	17.1
06	147 16.0	266 48.3	S20 31.7	64 52.2	N24 37.4	147 43.5	S 1 49.0	185 15.8	S16 17.1
07	162 18.4	281 47.5	32.4	79 55.4	37.5	162 46.1	49.0	200 18.1	17.0
08	177 20.9	296 46.7	33.1	94 58.6	37.5	177 48.6	49.0	215 20.5	17.0
V 09	192 23.4	311 45.9	33.8	110 01.8	37.6	192 51.1	49.0	230 22.8	16.9
I 10	207 25.8	326 45.1	34.5	125 05.0	37.7	207 53.6	49.1	245 25.2	16.9
E 11	222 28.3	341 44.3	35.2	140 08.3	37.8	222 56.1	49.1	260 27.5	16.9
R 12	237 30.7	356 43.5	S20 35.9	155 11.5	N24 37.9	237 58.6	S 1 49.1	275 29.9	S16 16.8
N 13	252 33.2	11 42.7	36.7	170 14.7	38.0	253 01.1	49.1	290 32.2	16.8
E 14	267 35.7	26 41.9	37.4	185 17.9	38.1	268 03.6	49.1	305 34.6	16.8
S 15	282 38.1	41 41.1	38.1	200 21.1	38.2	283 06.2	49.1	320 37.0	16.7
16	297 40.6	56 40.3	38.8	215 24.3	38.3	298 08.7	49.1	335 39.3	16.7
17	312 43.1	71 39.5	39.5	230 27.5	38.4	313 11.2	49.1	350 41.7	16.6
18	327 45.5	86 38.7	S20 40.2	245 30.7	N24 38.5	328 13.7	S 1 49.1	5 44.0	S16 16.6
19	342 48.0	101 37.9	40.9	260 34.0	38.6	343 16.2	49.1	20 46.4	16.6
20	357 50.5	116 37.1	41.6	275 37.2	38.7	358 18.7	49.1	35 48.7	16.5
21	12 52.9	131 36.3	42.3	290 40.4	38.7	13 21.2	49.1	50 51.1	16.5
22	27 55.4	146 35.5	43.0	305 43.6	38.8	28 23.7	49.1	65 53.4	16.5
23	42 57.9	161 34.7	43.7	320 46.9	38.9	43 26.2	49.2	80 55.8	16.4
19 00	58 00.3	176 33.9	S20 44.4	335 50.1	N24 39.0	58 28.7	S 1 49.2	95 58.1	S16 16.4
01	73 02.8	191 33.0	45.1	350 53.3	39.1	73 31.3	49.2	111 00.5	16.4
02	88 05.2	206 32.2	45.7	5 56.5	39.2	88 33.8	49.2	126 02.9	16.3
03	103 07.7	221 31.4	46.4	20 59.8	39.3	103 36.3	49.2	141 05.2	16.3
04	118 10.2	236 30.6	47.1	36 03.0	39.4	118 38.8	49.2	156 07.6	16.2
05	133 12.6	251 29.8	47.8	51 06.2	39.5	133 41.3	49.2	171 09.9	16.2
06	148 15.1	266 29.0	S20 48.5	66 09.5	N24 39.6	148 43.8	S 1 49.2	186 12.3	S16 16.2
07	163 17.6	281 28.2	49.2	81 12.7	39.6	163 46.3	49.2	201 14.6	16.1
S 08	178 20.0	296 27.4	49.9	96 15.9	39.7	178 48.8	49.2	216 17.0	16.1
Á 09	193 22.5	311 26.6	50.6	111 19.2	39.8	193 51.3	49.2	231 19.3	16.0
B 10	208 25.0	326 25.7	51.3	126 22.4	39.9	208 53.8	49.2	246 21.7	16.0
A 11	223 27.4	341 24.9	51.9	141 25.7	40.0	223 56.3	49.2	261 24.0	16.0
D 12	238 29.9	356 24.1	S20 52.6	156 28.9	N24 40.1	238 58.8	S 1 49.2	276 26.4	S16 15.9
O 13	253 32.3	11 23.3	53.3	171 32.1	40.2	254 01.3	49.2	291 28.7	15.9
14	268 34.8	26 22.5	54.0	186 35.4	40.3	269 03.8	49.2	306 31.1	15.9
15	283 37.3	41 21.7	54.7	201 38.6	40.4	284 06.3	49.2	321 33.4	15.8
16	298 39.7	56 20.9	55.3	216 41.9	40.4	299 08.8	49.3	336 35.8	15.8
17	313 42.2	71 20.0	56.0	231 45.1	40.5	314 11.3	49.3	351 38.1	15.7
18	328 44.7	86 19.2	S20 56.7	246 48.4	N24 40.6	329 13.8	S 1 49.3	6 40.5	S16 15.7
19	343 47.1	101 18.4	57.4	261 51.6	40.7	344 16.3	49.3	21 42.8	15.7
20	358 49.6	116 17.6	58.1	276 54.9	40.8	359 18.8	49.3	36 45.2	15.6
21	13 52.1	131 16.8	58.7	291 58.1	40.9	14 21.3	49.3	51 47.5	15.6
22	28 54.5	146 15.9	20 59.4	307 01.4	41.0	29 23.8	49.3	66 49.9	15.5
23	43 57.0	161 15.1	21 00.1	322 04.7	41.1	44 26.3	49.3	81 52.2	15.5
20 00	58 59.5	176 14.3	S21 00.7	337 07.9	N24 41.2	59 28.8	S 1 49.3	96 54.6	S16 15.5
01	74 01.9	191 13.5	01.4	352 11.2	41.2	74 31.3	49.3	111 56.9	15.4
02	89 04.4	206 12.7	02.1	7 14.4	41.3	89 33.8	49.3	126 59.3	15.4
03	104 06.8	221 11.8	02.7	22 17.7	41.4	104 36.3	49.3	142 01.6	15.4
04	119 09.3	236 11.0	03.4	37 21.0	41.5	119 38.8	49.3	157 04.0	15.3
05	134 11.8	251 10.2	04.1	52 24.2	41.6	134 41.3	49.3	172 06.3	15.3
06	149 14.2	266 09.4	S21 04.7	67 27.5	N24 41.7	149 43.8	S 1 49.3	187 08.7	S16 15.2
07	164 16.7	281 08.5	05.4	82 30.8	41.8	164 46.3	49.3	202 11.0	15.2
D 08	179 19.2	296 07.7	06.1	97 34.0	41.8	179 48.8	49.3	217 13.4	15.2
O 09	194 21.6	311 06.9	06.7	112 37.3	41.9	194 51.3	49.3	232 15.7	15.1
M 10	209 24.1	326 06.1	07.4	127 40.6	42.0	209 53.8	49.3	247 18.1	15.1
I 11	224 26.6	341 05.2	08.0	142 43.8	42.1	224 56.3	49.3	262 20.4	15.0
N 12	239 29.0	356 04.4	S21 08.7	157 47.1	N24 42.2	239 58.8	S 1 49.3	277 22.8	S16 15.0
G 13	254 31.5	11 03.6	09.4	172 50.4	42.3	255 01.3	49.3	292 25.1	15.0
O 14	269 33.9	26 02.8	10.0	187 53.7	42.4	270 03.8	49.3	307 27.5	14.9
15	284 36.4	41 01.9	10.7	202 57.0	42.4	285 06.3	49.3	322 29.8	14.9
16	299 38.9	56 01.1	11.3	218 00.2	42.5	300 08.8	49.3	337 32.2	14.8
17	314 41.3	71 00.3	12.0	233 03.5	42.6	315 11.3	49.3	352 34.5	14.8
18	329 43.8	85 59.4	S21 12.6	248 06.8	N24 42.7	330 13.8	S 1 49.3	7 36.9	S16 14.8
19	344 46.3	100 58.6	13.3	263 10.1	42.8	345 16.3	49.3	22 39.2	14.7
20	359 48.7	115 57.8	13.9	278 13.4	42.9	0 18.8	49.3	37 41.6	14.7
21	14 51.2	130 57.0	14.6	293 16.7	42.9	15 21.3	49.3	52 43.9	14.6
22	29 53.7	145 56.1	15.2	308 19.9	43.0	30 23.8	49.3	67 46.2	14.6
23	44 56.1	160 55.3	15.9	323 23.2	43.1	45 26.3	49.3	82 48.6	14.6
	h m								
Paso Mer.	20 04.7	*v* −0.8	*d* 0.7	*v* 3.2	*d* 0.1	*v* 2.5	*d* 0.0	*v* 2.4	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.7	S40 12.8
Achernar	335 21.0	S57 07.4
Acrux	173 02.5	S63 13.2
Adhara	255 07.0	S29 00.0
Aldebaran	290 41.3	N16 33.3
Alioth	166 15.0	N55 50.1
Alkaid	152 53.9	N49 11.9
Alnair	27 35.1	S46 51.3
Alnilam	275 39.2	S 1 11.2
Alphard	217 49.5	S 8 45.3
Alphecca	126 05.6	N26 38.3
Alpheratz	357 36.4	N29 13.1
Altair	62 01.9	N 8 55.8
Ankaa	353 08.7	S42 11.1
Antares	112 18.4	S26 28.9
Arcturus	145 49.9	N19 03.9
Atria	107 14.8	S69 04.1
Avior	234 15.2	S59 34.6
Bellatrix	278 24.5	N 6 22.3
Betelgeuse	270 53.7	N 7 24.7
Canopus	263 52.7	S52 42.2
Capella	280 24.1	N46 01.2
Deneb	49 27.2	N45 21.9
Denebola	182 26.9	N14 26.7
Diphda	348 48.9	S17 51.8
Dubhe	193 43.4	N61 37.5
Elnath	278 03.8	N28 37.6
Eltanin	90 43.5	N51 29.3
Enif	33 40.6	N 9 58.8
Fomalhaut	15 16.4	S29 30.2
Gacrux	171 54.0	S57 14.1
Gienah	175 45.6	S17 39.9
Hadar	148 39.2	S60 28.7
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.5
Kochab	137 21.0	N74 03.6
Markab	13 31.6	N15 19.8
Menkar	314 07.7	N 4 10.8
Menkent	148 00.1	S36 28.7
Miaplacidus	221 38.4	S69 48.2
Mirfak	308 30.3	N49 56.6
Nunki	75 50.3	S26 16.1
Peacock	53 08.8	S56 39.9
Pollux	243 19.3	N27 58.2
Procyon	244 52.5	N 5 10.1
Rasalhague	96 00.5	N12 32.7
Regulus	207 36.4	N11 51.4
Rigel	281 05.3	S 8 10.4
Rigil Kent.	139 43.4	S60 55.5
Sabik	102 05.2	S15 45.1
Schedar	349 32.7	N56 39.9
Shaula	96 13.2	S37 07.2
Sirius	258 27.6	S16 44.7
Spica	158 24.5	S11 16.7
Suhail	222 47.5	S43 31.1
Vega	80 34.8	N38 48.4
Zuben'ubi	136 58.3	S16 08.0

	AHS	Paso Mer.
	° ′	h m
Venus	118 33.5	12 14
Marte	277 49.8	1 36
Júpiter	0 28.4	20 03
Saturno	37 57.8	17 33

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v		Dec		d	Ph
d h	°	′	°	′	°	′	′	°	′	′	′
18 00	183	44.4	S19	09.7	252	06.5	15.0	N11	28.2	13.1	55.3
01	198	44.3		10.3	266	40.5	15.0	11	15.1	13.2	55.4
02	213	44.2		10.9	281	14.5	15.1	11	01.9	13.3	55.4
03	228	44.0		11.5	295	48.6	15.1	10	48.6	13.3	55.4
04	243	43.9		12.1	310	22.7	15.1	10	35.3	13.3	55.4
05	258	43.8		12.7	324	56.8	15.1	10	22.0	13.4	55.5
06	273	43.6	S19	13.3	339	30.9	15.1	N10	08.6	13.5	55.5
07	288	43.5		13.9	354	05.0	15.1	9	55.1	13.5	55.5
08	303	43.4		14.5	8	39.1	15.1	9	41.6	13.6	55.5
09	318	43.3		15.1	23	13.2	15.1	9	28.0	13.6	55.6
10	333	43.1		15.7	37	47.3	15.2	9	14.4	13.7	55.6
11	348	43.0		16.3	52	21.5	15.1	9	00.7	13.7	55.6
12	3	42.9	S19	16.9	66	55.6	15.1	N 8	47.0	13.8	55.7
13	18	42.7		17.5	81	29.7	15.2	8	33.2	13.8	55.7
14	33	42.6		18.1	96	03.9	15.1	8	19.4	13.9	55.7
15	48	42.5		18.6	110	38.0	15.2	8	05.5	13.9	55.7
16	63	42.3		19.2	125	12.2	15.1	7	51.6	14.0	55.8
17	78	42.2		19.8	139	46.3	15.2	7	37.6	14.0	55.8
18	93	42.1	S19	20.4	154	20.5	15.1	N 7	23.6	14.1	55.8
19	108	41.9		21.0	168	54.6	15.2	7	09.5	14.1	55.9
20	123	41.8		21.6	183	28.8	15.1	6	55.4	14.1	55.9
21	138	41.6		22.2	198	02.9	15.1	6	41.3	14.2	55.9
22	153	41.5		22.8	212	37.0	15.1	6	27.1	14.2	56.0
23	168	41.4		23.3	227	11.1	15.2	6	12.9	14.3	56.0
19 00	183	41.2	S19	23.9	241	45.3	15.1	N 5	58.6	14.4	56.0
01	198	41.1		24.5	256	19.4	15.1	5	44.2	14.3	56.1
02	213	41.0		25.1	270	53.5	15.0	5	29.9	14.4	56.1
03	228	40.8		25.7	285	27.5	15.1	5	15.5	14.5	56.1
04	243	40.7		26.3	300	01.6	15.1	5	01.0	14.4	56.2
05	258	40.5		26.9	314	35.7	15.0	4	46.6	14.6	56.2
06	273	40.4	S19	27.4	329	09.7	15.0	N 4	32.0	14.5	56.2
07	288	40.3		28.0	343	43.7	15.0	4	17.5	14.6	56.2
08	303	40.1		28.6	358	17.7	15.0	4	02.9	14.6	56.3
09	318	40.0		29.2	12	51.7	15.0	3	48.3	14.7	56.3
10	333	39.8		29.8	27	25.7	15.0	3	33.6	14.7	56.3
11	348	39.7		30.3	41	59.7	14.9	3	18.9	14.7	56.4
12	3	39.6	S19	30.9	56	33.6	14.9	N 3	04.2	14.7	56.4
13	18	39.4		31.5	71	07.5	14.9	2	49.5	14.8	56.4
14	33	39.3		32.1	85	41.4	14.8	2	34.7	14.8	56.5
15	48	39.1		32.6	100	15.2	14.9	2	19.9	14.9	56.5
16	63	39.0		33.2	114	49.1	14.8	2	05.0	14.8	56.6
17	78	38.9		33.8	129	22.9	14.7	1	50.2	14.9	56.6
18	93	38.7	S19	34.4	143	56.6	14.8	N 1	35.3	15.0	56.6
19	108	38.6		34.9	158	30.4	14.7	1	20.3	14.9	56.7
20	123	38.4		35.5	173	04.1	14.7	1	05.4	15.0	56.7
21	138	38.3		36.1	187	37.8	14.6	0	50.4	15.0	56.7
22	153	38.1		36.7	202	11.4	14.6	0	35.4	15.0	56.8
23	168	38.0		37.2	216	45.0	14.6	0	20.4	15.0	56.8
20 00	183	37.8	S19	37.8	231	18.6	14.5	N 0	05.4	15.1	56.8
01	198	37.7		38.4	245	52.1	14.5	S 0	09.7	15.1	56.9
02	213	37.5		38.9	260	25.6	14.5	0	24.8	15.1	56.9
03	228	37.4		39.5	274	59.1	14.4	0	39.9	15.1	56.9
04	243	37.3		40.1	289	32.5	14.3	0	55.0	15.1	57.0
05	258	37.1		40.6	304	05.8	14.4	1	10.1	15.1	57.0
06	273	37.0	S19	41.2	318	39.2	14.2	S 1	25.2	15.2	57.0
07	288	36.8		41.8	333	12.4	14.3	1	40.4	15.2	57.1
08	303	36.7		42.3	347	45.7	14.2	1	55.6	15.2	57.1
09	318	36.5		42.9	2	18.9	14.1	2	10.8	15.1	57.1
10	333	36.4		43.5	16	52.0	14.1	2	25.9	15.2	57.2
11	348	36.2		44.0	31	25.1	14.0	2	41.1	15.3	57.2
12	3	36.1	S19	44.6	45	58.1	14.0	S 2	56.4	15.2	57.3
13	18	35.9		45.2	60	31.1	13.9	3	11.6	15.2	57.3
14	33	35.8		45.7	75	04.0	13.9	3	26.8	15.2	57.3
15	48	35.6		46.3	89	36.9	13.8	3	42.0	15.3	57.4
16	63	35.5		46.9	104	09.7	13.8	3	57.3	15.2	57.4
17	78	35.3		47.4	118	42.5	13.7	4	12.5	15.2	57.4
18	93	35.2	S19	48.0	133	15.2	13.6	S 4	27.7	15.3	57.5
19	108	35.0		48.5	147	47.8	13.6	4	43.0	15.2	57.5
20	123	34.9		49.1	162	20.4	13.5	4	58.2	15.2	57.5
21	138	34.7		49.7	176	52.9	13.5	5	13.4	15.3	57.6
22	153	34.5		50.2	191	25.4	13.3	5	28.7	15.2	57.6
23	168	34.4		50.8	205	57.7	13.4	S 5	43.9	15.2	57.7
	S/D	16.2	d	0.6	S/D		15.2		15.4		15.6

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			18	19	20	21
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	07	13	08	53	▬	24 43	00 43	02 49	05 02
N 70	07	02	08	27	10 18	24 51	00 51	02 48	04 50
68	06	52	08	07	09 32	24 58	00 58	02 47	04 41
66	06	44	07	51	09 02	25 04	01 04	02 46	04 33
64	06	37	07	38	08 40	25 09	01 09	02 46	04 27
62	06	30	07	27	08 22	25 13	01 13	02 45	04 21
60	06	25	07	17	08 08	25 16	01 16	02 45	04 17
N 58	06	20	07	09	07 55	25 20	01 20	02 44	04 13
56	06	15	07	01	07 44	00 02	01 22	02 44	04 09
54	06	11	06	55	07 35	00 08	01 25	02 44	04 06
52	06	07	06	49	07 27	00 13	01 27	02 43	04 03
50	06	03	06	43	07 19	00 17	01 29	02 43	04 00
45	05	55	06	31	07 03	00 27	01 34	02 43	03 54
N 40	05	47	06	20	06 49	00 34	01 38	02 42	03 49
35	05	40	06	11	06 38	00 41	01 41	02 42	03 45
30	05	34	06	03	06 28	00 47	01 44	02 41	03 42
20	05	21	05	48	06 11	00 57	01 48	02 41	03 35
N 10	05	08	05	34	05 56	01 06	01 53	02 40	03 30
0	04	54	05	20	05 42	01 14	01 57	02 40	03 25
S 10	04	39	05	05	05 27	01 22	02 01	02 40	03 20
20	04	20	04	48	05 12	01 31	02 05	02 39	03 15
30	03	56	04	28	04 54	01 41	02 10	02 39	03 09
35	03	41	04	15	04 44	01 47	02 13	02 38	03 05
40	03	22	04	01	04 32	01 53	02 16	02 38	03 01
45	02	59	03	43	04 17	02 01	02 19	02 38	02 57
S 50	02	26	03	20	04 00	02 10	02 24	02 37	02 52
52	02	09	03	09	03 51	02 14	02 26	02 37	02 50
54	01	48	02	56	03 42	02 18	02 28	02 37	02 47
56	01	19	02	41	03 32	02 23	02 30	02 37	02 44
58	00	32	02	23	03 20	02 29	02 33	02 37	02 41
S 60	////		02	00	03 06	02 35	02 36	02 36	02 37

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 18	19	20	21
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	▬		14	37	16 16	15 19	14 47	14 15	13 39
N 70	13	12	15	03	16 28	15 08	14 44	14 20	13 53
68	13	58	15	23	16 38	14 59	14 41	14 24	14 05
66	14	28	15	39	16 46	14 51	14 39	14 27	14 14
64	14	50	15	52	16 53	14 44	14 37	14 30	14 22
62	15	08	16	03	17 00	14 39	14 36	14 33	14 30
60	15	22	16	13	17 05	14 34	14 34	14 35	14 36
N 58	15	35	16	21	17 10	14 29	14 33	14 37	14 41
56	15	46	16	29	17 15	14 25	14 32	14 39	14 46
54	15	55	16	36	17 19	14 22	14 31	14 40	14 50
52	16	04	16	42	17 23	14 18	14 30	14 42	14 54
50	16	11	16	47	17 27	14 15	14 29	14 43	14 58
45	16	27	17	00	17 35	14 09	14 27	14 46	15 06
N 40	16	41	17	10	17 43	14 03	14 26	14 48	15 13
35	16	52	17	19	17 50	13 59	14 24	14 50	15 18
30	17	02	17	28	17 57	13 55	14 23	14 52	15 23
20	17	19	17	43	18 10	13 47	14 21	14 55	15 32
N 10	17	35	17	57	18 23	13 41	14 19	14 58	15 40
0	17	49	18	11	18 36	13 35	14 17	15 01	15 47
S 10	18	03	18	26	18 52	13 28	14 15	15 04	15 55
20	18	19	18	43	19 11	13 22	14 13	15 07	16 02
30	18	37	19	03	19 35	13 14	14 11	15 10	16 11
35	18	48	19	16	19 50	13 10	14 10	15 12	16 17
40	19	00	19	31	20 09	13 05	14 08	15 14	16 23
45	19	14	19	49	20 33	12 59	14 07	15 16	16 30
S 50	19	32	20	12	21 06	12 52	14 04	15 19	16 38
52	19	40	20	23	21 24	12 48	14 03	15 21	16 42
54	19	50	20	36	21 45	12 45	14 02	15 22	16 46
56	20	00	20	52	22 15	12 41	14 01	15 24	16 51
58	20	13	21	10	23 09	12 36	14 00	15 26	16 56
S 60	20	27	21	34	////	12 31	13 58	15 28	17 02

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		SOL Paso Mer.	LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		LUNA Edad	LUNA Fase
d	m	s	m	s	h m	h	m	h	m	d	%
18	14	58	14	52	11 45	07	24	19	46	24	32
19	14	45	14	39	11 45	08	07	20	29	25	23
20	14	32	14	25	11 46	08	50	21	13	26	14

VIERNES

SÁBADO

DOMINGO

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·7		JÚPITER −2·6		SATURNO +0·7	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
21 00	59 58.6	175 54.5	S21 16.5	338 26.5	N24 43.2	60 28.8	S 1 49.3	97 50.9	S16 14.5
01	75 01.1	190 53.6	17.2	353 29.8	43.3	75 31.3	49.3	112 53.3	14.5
02	90 03.5	205 52.8	17.8	8 33.1	43.4	90 33.7	49.3	127 55.6	14.4
03	105 06.0	220 52.0	18.5	23 36.4	43.4	105 36.2	49.3	142 58.0	14.4
04	120 08.4	235 51.1	19.1	38 39.7	43.5	120 38.7	49.3	158 00.3	14.4
05	135 10.9	250 50.3	19.7	53 43.0	43.6	135 41.2	49.3	173 02.7	14.3
06	150 13.4	265 49.5	S21 20.4	68 46.3	N24 43.7	150 43.7	S 1 49.3	188 05.0	S16 14.3
07	165 15.8	280 48.6	21.0	83 49.6	43.8	165 46.2	49.3	203 07.4	14.2
08	180 18.3	295 47.8	21.6	98 52.9	43.9	180 48.7	49.3	218 09.7	14.2
L 09	195 20.8	310 46.9	22.3	113 56.2	43.9	195 51.2	49.3	233 12.0	14.2
U 10	210 23.2	325 46.1	22.9	128 59.5	44.0	210 53.7	49.3	248 14.4	14.1
N 11	225 25.7	340 45.3	23.6	144 02.8	44.1	225 56.2	49.3	263 16.7	14.1
E 12	240 28.2	355 44.4	S21 24.2	159 06.1	N24 44.2	240 58.6	S 1 49.3	278 19.1	S16 14.0
S 13	255 30.6	10 43.6	24.8	174 09.4	44.3	256 01.1	49.3	293 21.4	14.0
14	270 33.1	25 42.8	25.4	189 12.7	44.3	271 03.6	49.3	308 23.8	14.0
15	285 35.6	40 41.9	26.1	204 16.0	44.4	286 06.1	49.3	323 26.1	13.9
16	300 38.0	55 41.1	26.7	219 19.4	44.5	301 08.6	49.3	338 28.5	13.9
17	315 40.5	70 40.2	27.3	234 22.7	44.6	316 11.1	49.3	353 30.8	13.8
18	330 42.9	85 39.4	S21 28.0	249 26.0	N24 44.7	331 13.6	S 1 49.3	8 33.1	S16 13.8
19	345 45.4	100 38.6	28.6	264 29.3	44.7	346 16.1	49.3	23 35.5	13.8
20	0 47.9	115 37.7	29.2	279 32.6	44.8	1 18.5	49.3	38 37.8	13.7
21	15 50.3	130 36.9	29.8	294 35.9	44.9	16 21.0	49.3	53 40.2	13.7
22	30 52.8	145 36.0	30.5	309 39.3	45.0	31 23.5	49.3	68 42.5	13.6
23	45 55.3	160 35.2	31.1	324 42.6	45.1	46 26.0	49.3	83 44.9	13.6
22 00	60 57.7	175 34.3	S21 31.7	339 45.9	N24 45.1	61 28.5	S 1 49.3	98 47.2	S16 13.5
01	76 00.2	190 33.5	32.3	354 49.2	45.2	76 31.0	49.3	113 49.5	13.5
02	91 02.7	205 32.6	32.9	9 52.5	45.3	91 33.5	49.3	128 51.9	13.5
03	106 05.1	220 31.8	33.5	24 55.9	45.4	106 35.9	49.3	143 54.2	13.4
04	121 07.6	235 31.0	34.2	39 59.2	45.5	121 38.4	49.3	158 56.6	13.4
05	136 10.0	250 30.1	34.8	55 02.5	45.5	136 40.9	49.3	173 58.9	13.3
06	151 12.5	265 29.3	S21 35.4	70 05.9	N24 45.6	151 43.4	S 1 49.3	189 01.2	S16 13.3
07	166 15.0	280 28.4	36.0	85 09.2	45.7	166 45.9	49.3	204 03.6	13.3
M 08	181 17.4	295 27.6	36.6	100 12.5	45.8	181 48.3	49.2	219 05.9	13.2
A 09	196 19.9	310 26.7	37.2	115 15.8	45.9	196 50.8	49.2	234 08.3	13.2
R 10	211 22.4	325 25.9	37.8	130 19.2	45.9	211 53.3	49.2	249 10.6	13.1
T 11	226 24.8	340 25.0	38.4	145 22.5	46.0	226 55.8	49.2	264 13.0	13.1
E 12	241 27.3	355 24.2	S21 39.0	160 25.9	N24 46.1	241 58.3	S 1 49.2	279 15.3	S16 13.0
S 13	256 29.8	10 23.3	39.7	175 29.2	46.2	257 00.8	49.2	294 17.6	13.0
14	271 32.2	25 22.5	40.3	190 32.5	46.2	272 03.2	49.2	309 20.0	13.0
15	286 34.7	40 21.6	40.9	205 35.9	46.3	287 05.7	49.2	324 22.3	12.9
16	301 37.2	55 20.8	41.5	220 39.2	46.4	302 08.2	49.2	339 24.7	12.9
17	316 39.6	70 19.9	42.1	235 42.5	46.5	317 10.7	49.2	354 27.0	12.8
18	331 42.1	85 19.1	S21 42.7	250 45.9	N24 46.5	332 13.1	S 1 49.2	9 29.3	S16 12.8
19	346 44.5	100 18.2	43.3	265 49.2	46.6	347 15.6	49.2	24 31.7	12.8
20	1 47.0	115 17.4	43.9	280 52.6	46.7	2 18.1	49.2	39 34.0	12.7
21	16 49.5	130 16.5	44.5	295 55.9	46.8	17 20.6	49.2	54 36.3	12.7
22	31 51.9	145 15.7	45.1	310 59.3	46.8	32 23.1	49.2	69 38.7	12.6
23	46 54.4	160 14.8	45.7	326 02.6	46.9	47 25.5	49.2	84 41.0	12.6
23 00	61 56.9	175 13.9	S21 46.2	341 06.0	N24 47.0	62 28.0	S 1 49.2	99 43.4	S16 12.5
01	76 59.3	190 13.1	46.8	356 09.3	47.1	77 30.5	49.1	114 45.7	12.5
02	92 01.8	205 12.2	47.4	11 12.7	47.1	92 33.0	49.1	129 48.0	12.5
03	107 04.3	220 11.4	48.0	26 16.0	47.2	107 35.4	49.1	144 50.4	12.4
04	122 06.7	235 10.5	48.6	41 19.4	47.3	122 37.9	49.1	159 52.7	12.4
05	137 09.2	250 09.7	49.2	56 22.7	47.4	137 40.4	49.1	174 55.1	12.3
06	152 11.7	265 08.8	S21 49.8	71 26.1	N24 47.4	152 42.9	S 1 49.1	189 57.4	S16 12.3
07	167 14.1	280 07.9	50.4	86 29.5	47.5	167 45.3	49.1	204 59.7	12.2
M 08	182 16.6	295 07.1	51.0	101 32.8	47.6	182 47.8	49.1	220 02.1	12.2
I 09	197 19.0	310 06.2	51.5	116 36.2	47.7	197 50.3	49.1	235 04.4	12.2
É 10	212 21.5	325 05.4	52.1	131 39.5	47.7	212 52.8	49.1	250 06.7	12.1
R 11	227 24.0	340 04.5	52.7	146 42.9	47.8	227 55.2	49.1	265 09.1	12.1
C 12	242 26.4	355 03.6	S21 53.3	161 46.3	N24 47.9	242 57.7	S 1 49.1	280 11.4	S16 12.0
O 13	257 28.9	10 02.8	53.9	176 49.6	47.9	258 00.2	49.0	295 13.7	12.0
L 14	272 31.4	25 01.9	54.4	191 53.0	48.0	273 02.6	49.0	310 16.1	11.9
E 15	287 33.8	40 01.1	55.0	206 56.4	48.1	288 05.1	49.0	325 18.4	11.9
S 16	302 36.3	55 00.2	55.6	221 59.7	48.2	303 07.6	49.0	340 20.8	11.9
17	317 38.8	69 59.3	56.2	237 03.1	48.2	318 10.1	49.0	355 23.1	11.8
18	332 41.2	84 58.5	S21 56.7	252 06.5	N24 48.3	333 12.5	S 1 49.0	10 25.4	S16 11.8
19	347 43.7	99 57.6	57.3	267 09.9	48.4	348 15.0	49.0	25 27.8	11.7
20	2 46.2	114 56.7	57.9	282 13.2	48.5	3 17.5	49.0	40 30.1	11.7
21	17 48.6	129 55.9	58.5	297 16.6	48.5	18 19.9	49.0	55 32.4	11.6
22	32 51.1	144 55.0	59.0	312 20.0	48.6	33 22.4	49.0	70 34.8	11.6
23	47 53.5	159 54.1	59.6	327 23.4	48.7	48 24.9	48.9	85 37.1	11.6
	h m								
Paso Mer.	19 52.9	*v* −0.8	*d* 0.6	*v* 3.3	*d* 0.1	*v* 2.5	*d* 0.0	*v* 2.3	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.7	S40 12.8
Achernar	335 21.1	S57 07.4
Acrux	173 02.5	S63 13.2
Adhara	255 07.0	S29 00.0
Aldebaran	290 41.3	N16 33.3
Alioth	166 15.0	N55 50.0
Alkaid	152 53.9	N49 11.9
Alnair	27 35.2	S46 51.3
Alnilam	275 39.2	S 1 11.2
Alphard	217 49.5	S 8 45.3
Alphecca	126 05.6	N26 38.3
Alpheratz	357 36.4	N29 13.1
Altair	62 01.9	N 8 55.8
Ankaa	353 08.7	S42 11.1
Antares	112 18.4	S26 28.9
Arcturus	145 49.9	N19 03.9
Atria	107 14.8	S69 04.1
Avior	234 15.2	S59 34.6
Bellatrix	278 24.5	N 6 22.3
Betelgeuse	270 53.7	N 7 24.7
Canopus	263 52.7	S52 42.2
Capella	280 24.1	N46 01.2
Deneb	49 27.2	N45 21.9
Denebola	182 26.9	N14 26.7
Diphda	348 48.9	S17 51.8
Dubhe	193 43.4	N61 37.5
Elnath	278 03.8	N28 37.6
Eltanin	90 43.5	N51 29.3
Enif	33 40.6	N 9 58.8
Fomalhaut	15 16.4	S29 30.2
Gacrux	171 54.0	S57 14.1
Gienah	175 45.6	S17 39.9
Hadar	148 39.1	S60 28.7
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.5
Kochab	137 20.9	N74 03.6
Markab	13 31.6	N15 19.8
Menkar	314 07.7	N 4 10.8
Menkent	148 00.1	S36 28.7
Miaplacidus	221 38.4	S69 48.2
Mirfak	308 30.3	N49 56.6
Nunki	75 50.3	S26 16.1
Peacock	53 08.8	S56 39.9
Pollux	243 19.3	N27 58.2
Procyon	244 52.5	N 5 10.1
Rasalhague	96 00.5	N12 32.7
Regulus	207 36.4	N11 51.4
Rigel	281 05.3	S 8 10.4
Rigil Kent.	139 43.4	S60 55.5
Sabik	102 05.2	S15 45.1
Schedar	349 32.7	N56 39.9
Shaula	96 13.2	S37 07.2
Sirius	258 27.5	S16 44.7
Spica	158 24.5	S11 16.7
Suhail	222 47.5	S43 31.1
Vega	80 34.8	N38 48.4
Zuben'ubi	136 58.3	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	114 36.6	12 18
Marte	278 48.2	1 21
Júpiter	0 30.8	19 51
Saturno	37 49.5	17 22

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	*v*		Dec	*d*		Ph
d h	°	′	°	′	°	′	′	°	′	′	′
21 00	183	34.2	S19	51.3	220	30.1	13.2	S 5	59.1	15.2	57.7
01	198	34.1		51.9	235	02.3	13.2	6	14.3	15.2	57.7
02	213	33.9		52.4	249	34.5	13.1	6	29.5	15.2	57.8
03	228	33.8	. .	53.0	264	06.6	13.0	6	44.7	15.2	57.8
04	243	33.6		53.5	278	38.6	13.0	6	59.9	15.2	57.8
05	258	33.5		54.1	293	10.6	12.9	7	15.1	15.2	57.9
06	273	33.3	S19	54.6	307	42.5	12.8	S 7	30.3	15.1	57.9
07	288	33.1		55.2	322	14.3	12.7	7	45.4	15.1	57.9
L 08	303	33.0		55.7	336	46.0	12.7	8	00.5	15.1	58.0
U 09	318	32.8	. .	56.3	351	17.7	12.6	8	15.6	15.1	58.0
N 10	333	32.7		56.8	5	49.3	12.4	8	30.7	15.1	58.0
E 11	348	32.5		57.4	20	20.7	12.5	8	45.8	15.0	58.1
S 12	3	32.4	S19	57.9	34	52.2	12.3	S 9	00.8	15.0	58.1
13	18	32.2		58.5	49	23.5	12.2	9	15.8	15.0	58.2
14	33	32.0		59.0	63	54.7	12.2	9	30.8	15.0	58.2
15	48	31.9	19	59.6	78	25.9	12.1	9	45.8	14.9	58.2
16	63	31.7	20	00.1	92	57.0	11.9	10	00.7	14.9	58.3
17	78	31.6		00.7	107	27.9	11.9	10	15.6	14.9	58.3
18	93	31.4	S20	01.2	121	58.8	11.8	S10	30.5	14.9	58.3
19	108	31.2		01.8	136	29.6	11.7	10	45.4	14.8	58.4
20	123	31.1		02.3	151	00.3	11.7	11	00.2	14.7	58.4
21	138	30.9	. .	02.9	165	31.0	11.5	11	14.9	14.8	58.4
22	153	30.8		03.4	180	01.5	11.4	11	29.7	14.7	58.5
23	168	30.6		03.9	194	31.9	11.3	11	44.4	14.6	58.5
22 00	183	30.4	S20	04.5	209	02.2	11.3	S11	59.0	14.6	58.5
01	198	30.3		05.0	223	32.5	11.1	12	13.6	14.6	58.6
02	213	30.1		05.6	238	02.6	11.0	12	28.2	14.5	58.6
03	228	29.9	. .	06.1	252	32.6	11.0	12	42.7	14.5	58.6
04	243	29.8		06.6	267	02.6	10.8	12	57.2	14.4	58.7
05	258	29.6		07.2	281	32.4	10.7	13	11.6	14.3	58.7
06	273	29.4	S20	07.7	296	02.1	10.7	S13	25.9	14.4	58.7
07	288	29.3		08.2	310	31.8	10.5	13	40.3	14.2	58.8
M 08	303	29.1		08.8	325	01.3	10.4	13	54.5	14.2	58.8
A 09	318	29.0	. .	09.3	339	30.7	10.3	14	08.7	14.1	58.8
R 10	333	28.8		09.8	354	00.0	10.2	14	22.8	14.1	58.9
T 11	348	28.6		10.4	8	29.2	10.1	14	36.9	14.0	58.9
E 12	3	28.5	S20	10.9	22	58.3	9.9	S14	50.9	14.0	58.9
S 13	18	28.3		11.4	37	27.2	9.9	15	04.9	13.9	59.0
14	33	28.1		12.0	51	56.1	9.8	15	18.8	13.8	59.0
15	48	27.9	. .	12.5	66	24.9	9.6	15	32.6	13.7	59.0
16	63	27.8		13.0	80	53.5	9.5	15	46.3	13.7	59.1
17	78	27.6		13.6	95	22.0	9.5	16	00.0	13.6	59.1
18	93	27.4	S20	14.1	109	50.5	9.2	S16	13.6	13.5	59.1
19	108	27.3		14.6	124	18.7	9.2	16	27.1	13.5	59.2
20	123	27.1		15.2	138	46.9	9.1	16	40.6	13.3	59.2
21	138	26.9	. .	15.7	153	15.0	8.9	16	53.9	13.3	59.2
22	153	26.8		16.2	167	42.9	8.9	17	07.2	13.2	59.2
23	168	26.6		16.7	182	10.8	8.7	17	20.4	13.1	59.3
23 00	183	26.4	S20	17.3	196	38.5	8.6	S17	33.5	13.0	59.3
01	198	26.3		17.8	211	06.1	8.5	17	46.5	13.0	59.3
02	213	26.1		18.3	225	33.6	8.3	17	59.5	12.8	59.4
03	228	25.9	. .	18.8	240	00.9	8.2	18	12.3	12.7	59.4
04	243	25.7		19.4	254	28.1	8.2	18	25.0	12.7	59.4
05	258	25.6		19.9	268	55.3	7.9	18	37.7	12.5	59.4
06	273	25.4	S20	20.4	283	22.2	7.9	S18	50.2	12.5	59.5
07	288	25.2		20.9	297	49.1	7.8	19	02.7	12.3	59.5
M 08	303	25.0		21.4	312	15.9	7.6	19	15.0	12.3	59.5
I 09	318	24.9	. .	22.0	326	42.5	7.5	19	27.3	12.1	59.6
É 10	333	24.7		22.5	341	09.0	7.4	19	39.4	12.0	59.6
R 11	348	24.5		23.0	355	35.4	7.2	19	51.4	11.9	59.6
C 12	3	24.3	S20	23.5	10	01.6	7.2	S20	03.3	11.8	59.6
O 13	18	24.2		24.0	24	27.8	7.0	20	15.1	11.7	59.7
L 14	33	24.0		24.6	38	53.8	6.9	20	26.8	11.6	59.7
E 15	48	23.8	. .	25.1	53	19.7	6.7	20	38.4	11.4	59.7
S 16	63	23.6		25.6	67	45.4	6.7	20	49.8	11.4	59.7
17	78	23.5		26.1	82	11.1	6.5	21	01.2	11.2	59.8
18	93	23.3	S20	26.6	96	36.6	6.4	S21	12.4	11.0	59.8
19	108	23.1		27.1	111	02.0	6.3	21	23.4	11.0	59.8
20	123	22.9		27.6	125	27.3	6.1	21	34.4	10.8	59.8
21	138	22.8	. .	28.1	139	52.4	6.1	21	45.2	10.7	59.8
22	153	22.6		28.7	154	17.5	5.9	21	55.9	10.6	59.9
23	168	22.4		29.2	168	42.4	5.8	S22	06.5	10.4	59.9
	S/D	16.2	*d*	0.5	S/D	15.8			16.1		16.2

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			21	22	23	24
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	07	23	09	07	▬	05 02	07 39	▬	▬
N 70	07	10	08	38	10 44	04 50	07 09	▬	▬
68	07	00	08	17	09 47	04 41	06 47	09 23	▬
66	06	51	08	00	09 13	04 33	06 30	08 44	▬
64	06	43	07	46	08 49	04 27	06 16	08 17	10 40
62	06	36	07	34	08 30	04 21	06 04	07 57	10 00
60	06	30	07	24	08 15	04 17	05 55	07 40	09 32
N 58	06	25	07	15	08 02	04 13	05 46	07 26	09 11
56	06	20	07	07	07 50	04 09	05 39	07 14	08 53
54	06	15	07	00	07 40	04 06	05 32	07 04	08 38
52	06	11	06	53	07 32	04 03	05 26	06 54	08 25
50	06	07	06	47	07 24	04 00	05 21	06 46	08 14
45	05	58	06	34	07 07	03 54	05 09	06 29	07 51
N 40	05	50	06	23	06 53	03 49	05 00	06 15	07 32
35	05	43	06	14	06 41	03 45	04 52	06 03	07 17
30	05	36	06	05	06 31	03 42	04 45	05 52	07 03
20	05	23	05	49	06 13	03 35	04 33	05 35	06 40
N 10	05	09	05	35	05 57	03 30	04 23	05 19	06 21
0	04	55	05	20	05 42	03 25	04 13	05 05	06 03
S 10	04	39	05	05	05 28	03 20	04 03	04 51	05 45
20	04	19	04	48	05 12	03 15	03 53	04 36	05 25
30	03	55	04	27	04 53	03 09	03 42	04 19	05 03
35	03	39	04	14	04 42	03 05	03 35	04 09	04 50
40	03	20	03	58	04 30	03 01	03 27	03 58	04 36
45	02	55	03	40	04 15	02 57	03 19	03 45	04 18
S 50	02	21	03	16	03 56	02 52	03 08	03 29	03 57
52	02	02	03	04	03 48	02 50	03 04	03 22	03 47
54	01	39	02	51	03 38	02 47	02 58	03 14	03 35
56	01	07	02	35	03 27	02 44	02 53	03 05	03 22
58	////		02	15	03 14	02 41	02 46	02 54	03 07
S 60	////		01	50	02 59	02 37	02 39	02 43	02 50

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 21	22	23	24
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	▬		14	24	16 08	13 39	12 43	▬	▬
N 70	12	47	14	53	16 21	13 53	13 16	▬	▬
68	13	45	15	15	16 31	14 05	13 40	12 54	▬
66	14	18	15	32	16 40	14 14	13 59	13 35	▬
64	14	42	15	46	16 48	14 22	14 14	14 03	13 42
62	15	01	15	58	16 55	14 30	14 27	14 24	14 23
60	15	17	16	08	17 01	14 36	14 38	14 42	14 51
N 58	15	30	16	17	17 07	14 41	14 47	14 57	15 14
56	15	41	16	25	17 12	14 46	14 56	15 10	15 32
54	15	51	16	32	17 16	14 50	15 03	15 21	15 47
52	16	00	16	39	17 20	14 54	15 10	15 31	16 00
50	16	08	16	45	17 24	14 58	15 16	15 40	16 12
45	16	25	16	57	17 34	15 06	15 29	15 58	16 36
N 40	16	39	17	08	17 42	15 13	15 40	16 14	16 56
35	16	51	17	18	17 49	15 18	15 50	16 27	17 12
30	17	01	17	27	17 56	15 23	15 58	16 39	17 27
20	17	19	17	43	18 09	15 32	16 13	16 58	17 51
N 10	17	35	17	57	18 23	15 40	16 25	17 16	18 12
0	17	50	18	12	18 37	15 47	16 37	17 32	18 32
S 10	18	05	18	27	18 54	15 55	16 49	17 48	18 51
20	18	21	18	45	19 13	16 02	17 02	18 06	19 13
30	18	40	19	06	19 38	16 11	17 17	18 26	19 37
35	18	51	19	19	19 54	16 17	17 25	18 38	19 52
40	19	03	19	34	20 13	16 23	17 35	18 51	20 09
45	19	18	19	53	20 38	16 30	17 47	19 07	20 29
S 50	19	37	20	17	21 13	16 38	18 01	19 28	20 54
52	19	45	20	29	21 32	16 42	18 07	19 37	21 07
54	19	55	20	43	21 55	16 46	18 15	19 48	21 21
56	20	07	20	59	22 29	16 51	18 23	20 00	21 37
58	20	19	21	19	////	16 56	18 32	20 14	21 57
S 60	20	35	21	45	////	17 02	18 43	20 31	22 22

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		SOL Paso Mer.	LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		LUNA Edad	LUNA Fase
d	m	s	m	s	h m	h	m	h	m	d	%
21	14	17	14	10	11 46	09	36	22	00	27	8
22	14	02	13	54	11 46	10	25	22	51	28	3
23	13	46	13	38	11 46	11	18	23	47	29	0

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·8		JÚPITER −2·6		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
24 00	62 56.0	174 53.3	S22 00.2	342 26.7	N24 48.7	63 27.4	S 1 48.9	100 39.4	S16 11.5
01	77 58.5	189 52.4	00.7	357 30.1	48.8	78 29.8	48.9	115 41.8	11.5
02	93 00.9	204 51.5	01.3	12 33.5	48.9	93 32.3	48.9	130 44.1	11.4
03	108 03.4	219 50.7	01.9	27 36.9	48.9	108 34.8	48.9	145 46.4	11.4
04	123 05.9	234 49.8	02.4	42 40.3	49.0	123 37.2	48.9	160 48.8	11.3
05	138 08.3	249 48.9	03.0	57 43.6	49.1	138 39.7	48.9	175 51.1	11.3
06	153 10.8	264 48.1	S22 03.5	72 47.0	N24 49.2	153 42.2	S 1 48.9	190 53.4	S16 11.2
07	168 13.3	279 47.2	04.1	87 50.4	49.2	168 44.6	48.9	205 55.8	11.2
08	183 15.7	294 46.3	04.7	102 53.8	49.3	183 47.1	48.8	220 58.1	11.2
J 09	198 18.2	309 45.5	05.2	117 57.2	49.4	198 49.6	48.8	236 00.4	11.1
U 10	213 20.6	324 44.6	05.8	133 00.6	49.4	213 52.0	48.8	251 02.8	11.1
E 11	228 23.1	339 43.7	06.3	148 04.0	49.5	228 54.5	48.8	266 05.1	11.0
V 12	243 25.6	354 42.9	S22 06.9	163 07.3	N24 49.6	243 56.9	S 1 48.8	281 07.4	S16 11.0
E 13	258 28.0	9 42.0	07.4	178 10.7	49.6	258 59.4	48.8	296 09.8	10.9
S 14	273 30.5	24 41.1	08.0	193 14.1	49.7	274 01.9	48.8	311 12.1	10.9
15	288 33.0	39 40.2	08.5	208 17.5	49.8	289 04.3	48.8	326 14.4	10.8
16	303 35.4	54 39.4	09.1	223 20.9	49.8	304 06.8	48.7	341 16.8	10.8
17	318 37.9	69 38.5	09.6	238 24.3	49.9	319 09.3	48.7	356 19.1	10.8
18	333 40.4	84 37.6	S22 10.2	253 27.7	N24 50.0	334 11.7	S 1 48.7	11 21.4	S16 10.7
19	348 42.8	99 36.7	10.7	268 31.1	50.0	349 14.2	48.7	26 23.8	10.7
20	3 45.3	114 35.9	11.3	283 34.5	50.1	4 16.7	48.7	41 26.1	10.6
21	18 47.8	129 35.0	11.8	298 37.9	50.2	19 19.1	48.7	56 28.4	10.6
22	33 50.2	144 34.1	12.4	313 41.3	50.2	34 21.6	48.7	71 30.8	10.5
23	48 52.7	159 33.2	12.9	328 44.7	50.3	49 24.0	48.7	86 33.1	10.5
25 00	63 55.1	174 32.4	S22 13.4	343 48.1	N24 50.4	64 26.5	S 1 48.6	101 35.4	S16 10.4
01	78 57.6	189 31.5	14.0	358 51.5	50.4	79 29.0	48.6	116 37.8	10.4
02	94 00.1	204 30.6	14.5	13 54.9	50.5	94 31.4	48.6	131 40.1	10.4
03	109 02.5	219 29.7	15.1	28 58.3	50.6	109 33.9	48.6	146 42.4	10.3
04	124 05.0	234 28.9	15.6	44 01.7	50.6	124 36.3	48.6	161 44.7	10.3
05	139 07.5	249 28.0	16.1	59 05.1	50.7	139 38.8	48.6	176 47.1	10.2
06	154 09.9	264 27.1	S22 16.7	74 08.5	N24 50.7	154 41.3	S 1 48.6	191 49.4	S16 10.2
07	169 12.4	279 26.2	17.2	89 12.0	50.8	169 43.7	48.5	206 51.7	10.1
V 08	184 14.9	294 25.3	17.7	104 15.4	50.9	184 46.2	48.5	221 54.1	10.1
I 09	199 17.3	309 24.5	18.2	119 18.8	50.9	199 48.6	48.5	236 56.4	10.0
E 10	214 19.8	324 23.6	18.8	134 22.2	51.0	214 51.1	48.5	251 58.7	10.0
R 11	229 22.3	339 22.7	19.3	149 25.6	51.1	229 53.5	48.5	267 01.1	09.9
N 12	244 24.7	354 21.8	S22 19.8	164 29.0	N24 51.1	244 56.0	S 1 48.5	282 03.4	S16 09.9
E 13	259 27.2	9 20.9	20.4	179 32.4	51.2	259 58.5	48.4	297 05.7	09.9
S 14	274 29.6	24 20.0	20.9	194 35.9	51.3	275 00.9	48.4	312 08.0	09.8
15	289 32.1	39 19.2	21.4	209 39.3	51.3	290 03.4	48.4	327 10.4	09.8
16	304 34.6	54 18.3	21.9	224 42.7	51.4	305 05.8	48.4	342 12.7	09.7
17	319 37.0	69 17.4	22.4	239 46.1	51.4	320 08.3	48.4	357 15.0	09.7
18	334 39.5	84 16.5	S22 23.0	254 49.5	N24 51.5	335 10.7	S 1 48.4	12 17.4	S16 09.6
19	349 42.0	99 15.6	23.5	269 53.0	51.6	350 13.2	48.3	27 19.7	09.6
20	4 44.4	114 14.7	24.0	284 56.4	51.6	5 15.6	48.3	42 22.0	09.5
21	19 46.9	129 13.9	24.5	299 59.8	51.7	20 18.1	48.3	57 24.3	09.5
22	34 49.4	144 13.0	25.0	315 03.2	51.7	35 20.5	48.3	72 26.7	09.4
23	49 51.8	159 12.1	25.5	330 06.6	51.8	50 23.0	48.3	87 29.0	09.4
26 00	64 54.3	174 11.2	S22 26.1	345 10.1	N24 51.9	65 25.5	S 1 48.3	102 31.3	S16 09.3
01	79 56.8	189 10.3	26.6	0 13.5	51.9	80 27.9	48.2	117 33.6	09.3
02	94 59.2	204 09.4	27.1	15 16.9	52.0	95 30.4	48.2	132 36.0	09.3
03	110 01.7	219 08.5	27.6	30 20.4	52.1	110 32.8	48.2	147 38.3	09.2
04	125 04.1	234 07.6	28.1	45 23.8	52.1	125 35.3	48.2	162 40.6	09.2
05	140 06.6	249 06.8	28.6	60 27.2	52.2	140 37.7	48.2	177 42.9	09.1
06	155 09.1	264 05.9	S22 29.1	75 30.6	N24 52.2	155 40.2	S 1 48.1	192 45.3	S16 09.1
07	170 11.5	279 05.0	29.6	90 34.1	52.3	170 42.6	48.1	207 47.6	09.0
S 08	185 14.0	294 04.1	30.1	105 37.5	52.3	185 45.1	48.1	222 49.9	09.0
Á 09	200 16.5	309 03.2	30.6	120 40.9	52.4	200 47.5	48.1	237 52.3	08.9
B 10	215 18.9	324 02.3	31.1	135 44.4	52.5	215 50.0	48.1	252 54.6	08.9
A 11	230 21.4	339 01.4	31.6	150 47.8	52.5	230 52.4	48.1	267 56.9	08.8
D 12	245 23.9	354 00.5	S22 32.1	165 51.3	N24 52.6	245 54.9	S 1 48.0	282 59.2	S16 08.8
O 13	260 26.3	8 59.6	32.6	180 54.7	52.6	260 57.3	48.0	298 01.6	08.7
14	275 28.8	23 58.7	33.1	195 58.1	52.7	275 59.8	48.0	313 03.9	08.7
15	290 31.3	38 57.9	33.6	211 01.6	52.8	291 02.2	48.0	328 06.2	08.6
16	305 33.7	53 57.0	34.1	226 05.0	52.8	306 04.6	48.0	343 08.5	08.6
17	320 36.2	68 56.1	34.6	241 08.5	52.9	321 07.1	47.9	358 10.9	08.6
18	335 38.6	83 55.2	S22 35.1	256 11.9	N24 52.9	336 09.5	S 1 47.9	13 13.2	S16 08.5
19	350 41.1	98 54.3	35.6	271 15.3	53.0	351 12.0	47.9	28 15.5	08.5
20	5 43.6	113 53.4	36.1	286 18.8	53.0	6 14.4	47.9	43 17.8	08.4
21	20 46.0	128 52.5	36.6	301 22.2	53.1	21 16.9	47.9	58 20.1	08.4
22	35 48.5	143 51.6	37.0	316 25.7	53.1	36 19.3	47.8	73 22.5	08.3
23	50 51.0	158 50.7	37.5	331 29.1	53.2	51 21.8	47.8	88 24.8	08.3
	h m								
Paso Mer.	19 41.1	*v* −0.9	*d* 0.5	*v* 3.4	*d* 0.1	*v* 2.5	*d* 0.0	*v* 2.3	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.7	S40 12.8
Achernar	335 21.1	S57 07.5
Acrux	173 02.4	S63 13.2
Adhara	255 07.0	S29 00.0
Aldebaran	290 41.3	N16 33.3
Alioth	166 14.9	N55 50.0
Alkaid	152 53.8	N49 11.9
Alnair	27 35.2	S46 51.3
Alnilam	275 39.2	S 1 11.2
Alphard	217 49.4	S 8 45.3
Alphecca	126 05.6	N26 38.3
Alpheratz	357 36.4	N29 13.1
Altair	62 01.9	N 8 55.8
Ankaa	353 08.7	S42 11.1
Antares	112 18.4	S26 28.9
Arcturus	145 49.9	N19 03.9
Atria	107 14.8	S69 04.1
Avior	234 15.1	S59 34.6
Bellatrix	278 24.5	N 6 22.3
Betelgeuse	270 53.7	N 7 24.7
Canopus	263 52.7	S52 42.2
Capella	280 24.0	N46 01.2
Deneb	49 27.2	N45 21.9
Denebola	182 26.9	N14 26.7
Diphda	348 48.9	S17 51.8
Dubhe	193 43.3	N61 37.5
Elnath	278 03.8	N28 37.6
Eltanin	90 43.5	N51 29.3
Enif	33 40.6	N 9 58.8
Fomalhaut	15 16.4	S29 30.2
Gacrux	171 54.0	S57 14.1
Gienah	175 45.6	S17 39.9
Hadar	148 39.1	S60 28.7
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.5
Kochab	137 20.9	N74 03.6
Markab	13 31.6	N15 19.8
Menkar	314 07.7	N 4 10.8
Menkent	148 00.1	S36 28.7
Miaplacidus	221 38.3	S69 48.2
Mirfak	308 30.3	N49 56.6
Nunki	75 50.3	S26 16.1
Peacock	53 08.8	S56 39.9
Pollux	243 19.3	N27 58.2
Procyon	244 52.5	N 5 10.0
Rasalhague	96 00.5	N12 32.7
Regulus	207 36.3	N11 51.4
Rigel	281 05.2	S 8 10.5
Rigil Kent.	139 43.4	S60 55.5
Sabik	102 05.2	S15 45.1
Schedar	349 32.7	N56 40.0
Shaula	96 13.2	S37 07.2
Sirius	258 27.5	S16 44.7
Spica	158 24.4	S11 16.7
Suhail	222 47.5	S43 31.2
Vega	80 34.8	N38 48.4
Zuben'ubi	136 58.3	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	110 37.2	12 23
Marte	279 53.0	1 05
Júpiter	0 31.3	19 39
Saturno	37 40.3	17 11

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	°	′	′	
24 00	183	22.2	S20	29.7	183	07.2	5.7	S22	16.9	10.3	59.9
01	198	22.0		30.2	197	31.9	5.5	22	27.2	10.1	59.9
02	213	21.9		30.7	211	56.4	5.5	22	37.3	10.0	59.9
03	228	21.7	. .	31.2	226	20.9	5.3	22	47.3	9.8	60.0
04	243	21.5		31.7	240	45.2	5.2	22	57.1	9.7	60.0
05	258	21.3		32.2	255	09.4	5.1	23	06.8	9.6	60.0
06	273	21.1	S20	32.7	269	33.5	5.0	S23	16.4	9.4	60.0
07	288	21.0		33.2	283	57.5	4.8	23	25.8	9.3	60.0
J 08	303	20.8		33.7	298	21.3	4.8	23	35.1	9.1	60.1
U 09	318	20.6	. .	34.2	312	45.1	4.6	23	44.2	8.9	60.1
E 10	333	20.4		34.7	327	08.7	4.5	23	53.1	8.8	60.1
V 11	348	20.2		35.2	341	32.2	4.4	24	01.9	8.6	60.1
E 12	3	20.0	S20	35.7	355	55.6	4.4	S24	10.5	8.5	60.1
S 13	18	19.9		36.2	10	19.0	4.2	24	19.0	8.3	60.1
14	33	19.7		36.7	24	42.2	4.1	24	27.3	8.1	60.2
15	48	19.5	. .	37.2	39	05.3	4.0	24	35.4	8.0	60.2
16	63	19.3		37.7	53	28.3	3.8	24	43.4	7.8	60.2
17	78	19.1		38.2	67	51.1	3.8	24	51.2	7.6	60.2
18	93	18.9	S20	38.7	82	13.9	3.7	S24	58.8	7.5	60.2
19	108	18.7		39.2	96	36.6	3.6	25	06.3	7.3	60.2
20	123	18.6		39.7	110	59.2	3.5	25	13.6	7.1	60.2
21	138	18.4	. .	40.2	125	21.7	3.5	25	20.7	6.9	60.3
22	153	18.2		40.7	139	44.2	3.3	25	27.6	6.7	60.3
23	168	18.0		41.2	154	06.5	3.2	25	34.3	6.6	60.3
25 00	183	17.8	S20	41.7	168	28.7	3.2	S25	40.9	6.4	60.3
01	198	17.6		42.2	182	50.9	3.0	25	47.3	6.2	60.3
02	213	17.4		42.7	197	12.9	3.0	25	53.5	6.0	60.3
03	228	17.3	. .	43.2	211	34.9	2.9	25	59.5	5.8	60.3
04	243	17.1		43.7	225	56.8	2.8	26	05.3	5.7	60.3
05	258	16.9		44.2	240	18.6	2.8	26	11.0	5.4	60.3
06	273	16.7	S20	44.7	254	40.4	2.7	S26	16.4	5.3	60.4
07	288	16.5		45.2	269	02.1	2.6	26	21.7	5.1	60.4
V 08	303	16.3		45.6	283	23.7	2.5	26	26.8	4.9	60.4
I 09	318	16.1	. .	46.1	297	45.2	2.5	26	31.7	4.6	60.4
E 10	333	15.9		46.6	312	06.7	2.4	26	36.3	4.5	60.4
R 11	348	15.7		47.1	326	28.1	2.4	26	40.8	4.3	60.4
N 12	3	15.5	S20	47.6	340	49.5	2.3	S26	45.1	4.1	60.4
E 13	18	15.4		48.1	355	10.8	2.2	26	49.2	3.9	60.4
S 14	33	15.2		48.6	9	32.0	2.2	26	53.1	3.7	60.4
15	48	15.0	. .	49.0	23	53.2	2.1	26	56.8	3.5	60.4
16	63	14.8		49.5	38	14.3	2.1	27	00.3	3.3	60.4
17	78	14.6		50.0	52	35.4	2.1	27	03.6	3.1	60.4
18	93	14.4	S20	50.5	66	56.5	2.0	S27	06.7	2.9	60.4
19	108	14.2		51.0	81	17.5	2.0	27	09.6	2.7	60.4
20	123	14.0		51.5	95	38.5	2.0	27	12.3	2.4	60.4
21	138	13.8	. .	51.9	109	59.5	1.9	27	14.7	2.3	60.4
22	153	13.6		52.4	124	20.4	1.9	27	17.0	2.1	60.4
23	168	13.4		52.9	138	41.3	1.9	27	19.1	1.9	60.4
26 00	183	13.2	S20	53.4	153	02.2	1.8	S27	21.0	1.6	60.4
01	198	13.0		53.8	167	23.0	1.8	27	22.6	1.5	60.4
02	213	12.8		54.3	181	43.8	1.9	27	24.1	1.2	60.4
03	228	12.6	. .	54.8	196	04.7	1.8	27	25.3	1.1	60.4
04	243	12.4		55.3	210	25.5	1.8	27	26.4	0.8	60.4
05	258	12.2		55.7	224	46.3	1.8	27	27.2	0.6	60.4
06	273	12.1	S20	56.2	239	07.1	1.8	S27	27.8	0.5	60.4
07	288	11.9		56.7	253	27.9	1.8	27	28.3	0.2	60.4
S 08	303	11.7		57.2	267	48.7	1.8	27	28.5	0.0	60.4
Á 09	318	11.5	. .	57.6	282	09.5	1.8	27	28.5	0.2	60.4
B 10	333	11.3		58.1	296	30.3	1.8	27	28.3	0.4	60.4
A 11	348	11.1		58.6	310	51.1	1.8	27	27.9	0.6	60.4
D 12	3	10.9	S20	59.0	325	11.9	1.9	S27	27.3	0.8	60.4
O 13	18	10.7	20	59.5	339	32.8	1.9	27	26.5	1.0	60.4
14	33	10.5	21	00.0	353	53.7	1.9	27	25.5	1.3	60.4
15	48	10.3	. .	00.5	8	14.6	1.9	27	24.2	1.4	60.4
16	63	10.1		00.9	22	35.5	1.9	27	22.8	1.6	60.4
17	78	09.9		01.4	36	56.4	2.0	27	21.2	1.9	60.4
18	93	09.7	S21	01.8	51	17.4	2.1	S27	19.3	2.0	60.4
19	108	09.5		02.3	65	38.5	2.0	27	17.3	2.3	60.4
20	123	09.3		02.8	79	59.5	2.1	27	15.0	2.4	60.4
21	138	09.1	. .	03.2	94	20.6	2.2	27	12.6	2.7	60.4
22	153	08.9		03.7	108	41.8	2.2	27	09.9	2.8	60.3
23	168	08.7		04.2	123	03.0	2.2	S27	07.1	3.1	60.3
	S/D	16.2	d	0.5	S/D		16.4		16.5		16.5

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			24	25	26	27
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	07	33	09	22	▬	▬	▬	▬	▬
N 70	07	19	08	49	11 31	▬	▬	▬	▬
68	07	07	08	26	10 02	▬	▬	▬	▬
66	06	58	08	08	09 25	▬	▬	▬	▬
64	06	49	07	53	08 59	10 40	▬	▬	▬
62	06	42	07	40	08 38	10 00	12 08	13 41	13 57
60	06	36	07	30	08 22	09 32	11 21	12 41	13 19
N 58	06	30	07	20	08 08	09 11	10 50	12 07	12 52
56	06	25	07	12	07 56	08 53	10 27	11 42	12 31
54	06	20	07	04	07 46	08 38	10 08	11 22	12 14
52	06	15	06	58	07 36	08 25	09 52	11 05	11 59
50	06	11	06	51	07 28	08 14	09 38	10 51	11 46
45	06	02	06	38	07 11	07 51	09 11	10 21	11 19
N 40	05	53	06	26	06 56	07 32	08 49	09 58	10 57
35	05	45	06	16	06 44	07 17	08 30	09 39	10 40
30	05	38	06	07	06 33	07 03	08 15	09 23	10 24
20	05	24	05	51	06 15	06 40	07 48	08 56	09 58
N 10	05	10	05	36	05 59	06 21	07 26	08 32	09 36
0	04	55	05	21	05 43	06 03	07 05	08 10	09 15
S 10	04	39	05	05	05 28	05 45	06 44	07 48	08 54
20	04	19	04	47	05 11	05 25	06 22	07 24	08 31
30	03	53	04	26	04 52	05 03	05 56	06 57	08 05
35	03	37	04	12	04 41	04 50	05 41	06 41	07 49
40	03	17	03	56	04 28	04 36	05 23	06 22	07 31
45	02	51	03	37	04 12	04 18	05 02	06 00	07 10
S 50	02	16	03	12	03 53	03 57	04 36	05 31	06 42
52	01	56	03	00	03 44	03 47	04 23	05 17	06 29
54	01	31	02	46	03 34	03 35	04 09	05 00	06 13
56	00	54	02	29	03 23	03 22	03 52	04 41	05 55
58	////		02	08	03 09	03 07	03 31	04 17	05 32
S 60	////		01	41	02 54	02 50	03 06	03 45	05 03

Lat.	Ocaso Sol		Crepúsculo			Ocaso Luna			
			Civil		Náut.	24	25	26	27
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	▬		14	11	16 00	▬	▬	▬	▬
N 70	12	02	14	44	16 14	▬	▬	▬	▬
68	13	31	15	07	16 26	▬	▬	▬	▬
66	14	08	15	25	16 35	▬	▬	▬	▬
64	14	35	15	40	16 44	13 42	▬	▬	▬
62	14	55	15	53	16 51	14 23	14 27	15 11	17 11
60	15	12	16	04	16 58	14 51	15 15	16 12	17 48
N 58	15	25	16	13	17 03	15 14	15 46	16 45	18 15
56	15	37	16	22	17 09	15 32	16 09	17 10	18 35
54	15	48	16	29	17 14	15 47	16 28	17 30	18 52
52	15	57	16	36	17 18	16 00	16 44	17 47	19 07
50	16	05	16	42	17 22	16 12	16 58	18 01	19 20
45	16	23	16	56	17 32	16 36	17 27	18 31	19 46
N 40	16	37	17	07	17 40	16 56	17 49	18 53	20 07
35	16	50	17	17	17 48	17 12	18 08	19 12	20 24
30	17	00	17	26	17 56	17 27	18 24	19 28	20 38
20	17	19	17	43	18 10	17 51	18 51	19 56	21 03
N 10	17	35	17	58	18 24	18 12	19 14	20 19	21 25
0	17	51	18	13	18 38	18 32	19 36	20 41	21 45
S 10	18	06	18	29	18 55	18 51	19 57	21 03	22 04
20	18	23	18	47	19 15	19 13	20 21	21 26	22 26
30	18	42	19	09	19 41	19 37	20 48	21 53	22 50
35	18	53	19	22	19 57	19 52	21 04	22 09	23 04
40	19	07	19	38	20 17	20 09	21 22	22 27	23 20
45	19	22	19	58	20 43	20 29	21 45	22 49	23 40
S 50	19	41	20	23	21 20	20 54	22 14	23 17	24 04
52	19	50	20	35	21 40	21 07	22 28	23 31	24 16
54	20	01	20	50	22 06	21 21	22 44	23 47	24 29
56	20	12	21	07	22 45	21 37	23 03	24 06	00 06
58	20	26	21	28	////	21 57	23 27	24 28	00 28
S 60	20	42	21	56	////	22 22	23 59	24 58	00 58

Día	SOL					LUNA					
	Ec. Tiempo				Paso Mer.	Paso Mer.				Edad	Fase
	00h		12h			Sup.		Inf.			
d	m	s	m	s	h m	h	m	h	m	d	%
24	13	29	13	21	11 47	12	17	24	48	01	0
25	13	12	13	03	11 47	13	20	00	48	02	3
26	12	53	12	44	11 47	14	26	01	53	03	9

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·8		JÚPITER −2·6		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
27 00	65 53.4	173 49.8	S22 38.0	346 32.6	N24 53.3	66 24.2	S 1 47.8	103 27.1	S16 08.2
01	80 55.9	188 48.9	38.5	1 36.0	53.3	81 26.7	47.8	118 29.4	08.2
02	95 58.4	203 48.0	39.0	16 39.5	53.4	96 29.1	47.7	133 31.8	08.1
03	111 00.8	218 47.1	39.5	31 42.9	53.4	111 31.5	47.7	148 34.1	08.1
04	126 03.3	233 46.2	39.9	46 46.4	53.5	126 34.0	47.7	163 36.4	08.0
05	141 05.8	248 45.3	40.4	61 49.8	53.5	141 36.4	47.7	178 38.7	08.0
06	156 08.2	263 44.4	S22 40.9	76 53.3	N24 53.6	156 38.9	S 1 47.7	193 41.1	S16 07.9
07	171 10.7	278 43.5	41.4	91 56.7	53.6	171 41.3	47.6	208 43.4	07.9
08	186 13.1	293 42.6	41.9	107 00.2	53.7	186 43.8	47.6	223 45.7	07.8
D 09	201 15.6	308 41.7	42.3	122 03.6	53.7	201 46.2	47.6	238 48.0	07.8
O 10	216 18.1	323 40.8	42.8	137 07.1	53.8	216 48.6	47.6	253 50.3	07.7
M 11	231 20.5	338 39.9	43.3	152 10.5	53.9	231 51.1	47.5	268 52.7	07.7
I 12	246 23.0	353 39.0	S22 43.7	167 14.0	N24 53.9	246 53.5	S 1 47.5	283 55.0	S16 07.7
N 13	261 25.5	8 38.1	44.2	182 17.5	54.0	261 56.0	47.5	298 57.3	07.6
G 14	276 27.9	23 37.2	44.7	197 20.9	54.0	276 58.4	47.5	313 59.6	07.6
O 15	291 30.4	38 36.3	45.2	212 24.4	54.1	292 00.8	47.5	329 02.0	07.5
16	306 32.9	53 35.4	45.6	227 27.8	54.1	307 03.3	47.4	344 04.3	07.5
17	321 35.3	68 34.5	46.1	242 31.3	54.2	322 05.7	47.4	359 06.6	07.4
18	336 37.8	83 33.6	S22 46.6	257 34.8	N24 54.2	337 08.2	S 1 47.4	14 08.9	S16 07.4
19	351 40.3	98 32.7	47.0	272 38.2	54.3	352 10.6	47.4	29 11.2	07.3
20	6 42.7	113 31.8	47.5	287 41.7	54.3	7 13.0	47.3	44 13.6	07.3
21	21 45.2	128 30.9	47.9	302 45.1	54.4	22 15.5	47.3	59 15.9	07.2
22	36 47.6	143 30.0	48.4	317 48.6	54.4	37 17.9	47.3	74 18.2	07.2
23	51 50.1	158 29.1	48.9	332 52.1	54.5	52 20.4	47.3	89 20.5	07.1
28 00	66 52.6	173 28.2	S22 49.3	347 55.5	N24 54.5	67 22.8	S 1 47.2	104 22.8	S16 07.1
01	81 55.0	188 27.3	49.8	2 59.0	54.6	82 25.2	47.2	119 25.2	07.0
02	96 57.5	203 26.4	50.2	18 02.5	54.6	97 27.7	47.2	134 27.5	07.0
03	112 00.0	218 25.5	50.7	33 05.9	54.7	112 30.1	47.2	149 29.8	06.9
04	127 02.4	233 24.5	51.1	48 09.4	54.7	127 32.5	47.1	164 32.1	06.9
05	142 04.9	248 23.6	51.6	63 12.9	54.8	142 35.0	47.1	179 34.4	06.8
06	157 07.4	263 22.7	S22 52.0	78 16.4	N24 54.8	157 37.4	S 1 47.1	194 36.7	S16 06.8
07	172 09.8	278 21.8	52.5	93 19.8	54.9	172 39.8	47.1	209 39.1	06.7
L 08	187 12.3	293 20.9	52.9	108 23.3	54.9	187 42.3	47.0	224 41.4	06.7
U 09	202 14.8	308 20.0	53.4	123 26.8	55.0	202 44.7	47.0	239 43.7	06.6
N 10	217 17.2	323 19.1	53.8	138 30.2	55.0	217 47.1	47.0	254 46.0	06.6
E 11	232 19.7	338 18.2	54.3	153 33.7	55.1	232 49.6	47.0	269 48.3	06.5
S 12	247 22.1	353 17.3	S22 54.7	168 37.2	N24 55.1	247 52.0	S 1 46.9	284 50.7	S16 06.5
13	262 24.6	8 16.4	55.1	183 40.7	55.2	262 54.4	46.9	299 53.0	06.4
14	277 27.1	23 15.5	55.6	198 44.1	55.2	277 56.9	46.9	314 55.3	06.4
15	292 29.5	38 14.5	56.0	213 47.6	55.2	292 59.3	46.9	329 57.6	06.3
16	307 32.0	53 13.6	56.5	228 51.1	55.3	308 01.7	46.8	344 59.9	06.3
17	322 34.5	68 12.7	56.9	243 54.6	55.3	323 04.2	46.8	0 02.2	06.2
18	337 36.9	83 11.8	S22 57.3	258 58.1	N24 55.4	338 06.6	S 1 46.8	15 04.6	S16 06.2
19	352 39.4	98 10.9	57.8	274 01.5	55.4	353 09.0	46.7	30 06.9	06.1
20	7 41.9	113 10.0	58.2	289 05.0	55.5	8 11.5	46.7	45 09.2	06.1
21	22 44.3	128 09.1	58.6	304 08.5	55.5	23 13.9	46.7	60 11.5	06.0
22	37 46.8	143 08.2	59.1	319 12.0	55.6	38 16.3	46.7	75 13.8	06.0
23	52 49.2	158 07.2	59.5	334 15.5	55.6	53 18.7	46.6	90 16.1	05.9
29 00	67 51.7	173 06.3	S22 59.9	349 18.9	N24 55.7	68 21.2	S 1 46.6	105 18.5	S16 05.9
01	82 54.2	188 05.4	23 00.3	4 22.4	55.7	83 23.6	46.6	120 20.8	05.8
02	97 56.6	203 04.5	00.8	19 25.9	55.7	98 26.0	46.5	135 23.1	05.8
03	112 59.1	218 03.6	01.2	34 29.4	55.8	113 28.5	46.5	150 25.4	05.7
04	128 01.6	233 02.7	01.6	49 32.9	55.8	128 30.9	46.5	165 27.7	05.7
05	143 04.0	248 01.8	02.0	64 36.4	55.9	143 33.3	46.5	180 30.0	05.6
06	158 06.5	263 00.8	S23 02.5	79 39.8	N24 55.9	158 35.7	S 1 46.4	195 32.4	S16 05.6
07	173 09.0	277 59.9	02.9	94 43.3	56.0	173 38.2	46.4	210 34.7	05.5
M 08	188 11.4	292 59.0	03.3	109 46.8	56.0	188 40.6	46.4	225 37.0	05.5
A 09	203 13.9	307 58.1	03.7	124 50.3	56.0	203 43.0	46.3	240 39.3	05.4
R 10	218 16.4	322 57.2	04.1	139 53.8	56.1	218 45.4	46.3	255 41.6	05.4
T 11	233 18.8	337 56.3	04.6	154 57.3	56.1	233 47.9	46.3	270 43.9	05.3
E 12	248 21.3	352 55.3	S23 05.0	170 00.8	N24 56.2	248 50.3	S 1 46.3	285 46.2	S16 05.3
S 13	263 23.7	7 54.4	05.4	185 04.3	56.2	263 52.7	46.2	300 48.6	05.2
14	278 26.2	22 53.5	05.8	200 07.8	56.3	278 55.1	46.2	315 50.9	05.2
15	293 28.7	37 52.6	06.2	215 11.3	56.3	293 57.6	46.2	330 53.2	05.1
16	308 31.1	52 51.7	06.6	230 14.7	56.3	309 00.0	46.1	345 55.5	05.1
17	323 33.6	67 50.7	07.0	245 18.2	56.4	324 02.4	46.1	0 57.8	05.0
18	338 36.1	82 49.8	S23 07.4	260 21.7	N24 56.4	339 04.8	S 1 46.1	16 00.1	S16 05.0
19	353 38.5	97 48.9	07.8	275 25.2	56.5	354 07.3	46.0	31 02.4	04.9
20	8 41.0	112 48.0	08.2	290 28.7	56.5	9 09.7	46.0	46 04.8	04.9
21	23 43.5	127 47.1	08.6	305 32.2	56.5	24 12.1	46.0	61 07.1	04.8
22	38 45.9	142 46.1	09.0	320 35.7	56.6	39 14.5	45.9	76 09.4	04.8
23	53 48.4	157 45.2	09.4	335 39.2	56.6	54 16.9	45.9	91 11.7	04.7
	h m								
Paso Mer.	19 29.3	*v* −0.9	*d* 0.4	*v* 3.5	*d* 0.0	*v* 2.4	*d* 0.0	*v* 2.3	*d* 0.0

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.7	S40 12.9
Achernar	335 21.1	S57 07.5
Acrux	173 02.4	S63 13.2
Adhara	255 06.9	S29 00.0
Aldebaran	290 41.3	N16 33.3
Alioth	166 14.9	N55 50.0
Alkaid	152 53.8	N49 11.9
Alnair	27 35.2	S46 51.3
Alnilam	275 39.2	S 1 11.2
Alphard	217 49.4	S 8 45.3
Alphecca	126 05.6	N26 38.3
Alpheratz	357 36.4	N29 13.1
Altair	62 01.9	N 8 55.8
Ankaa	353 08.7	S42 11.1
Antares	112 18.4	S26 28.9
Arcturus	145 49.8	N19 03.8
Atria	107 14.8	S69 04.1
Avior	234 15.1	S59 34.6
Bellatrix	278 24.4	N 6 22.3
Betelgeuse	270 53.7	N 7 24.7
Canopus	263 52.7	S52 42.3
Capella	280 24.0	N46 01.2
Deneb	49 27.2	N45 21.9
Denebola	182 26.9	N14 26.7
Diphda	348 48.9	S17 51.8
Dubhe	193 43.3	N61 37.5
Elnath	278 03.7	N28 37.6
Eltanin	90 43.5	N51 29.2
Enif	33 40.6	N 9 58.8
Fomalhaut	15 16.4	S29 30.2
Gacrux	171 53.9	S57 14.1
Gienah	175 45.6	S17 39.9
Hadar	148 39.1	S60 28.7
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.5
Kochab	137 20.9	N74 03.6
Markab	13 31.6	N15 19.8
Menkar	314 07.7	N 4 10.8
Menkent	148 00.0	S36 28.7
Miaplacidus	221 38.3	S69 48.3
Mirfak	308 30.3	N49 56.6
Nunki	75 50.3	S26 16.1
Peacock	53 08.8	S56 39.9
Pollux	243 19.2	N27 58.2
Procyon	244 52.5	N 5 10.0
Rasalhague	96 00.5	N12 32.7
Regulus	207 36.3	N11 51.4
Rigel	281 05.2	S 8 10.5
Rigil Kent.	139 43.3	S60 55.5
Sabik	102 05.2	S15 45.1
Schedar	349 32.7	N56 40.0
Shaula	96 13.2	S37 07.2
Sirius	258 27.5	S16 44.7
Spica	158 24.4	S11 16.7
Suhail	222 47.4	S43 31.2
Vega	80 34.8	N38 48.4
Zuben'ubi	136 58.3	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	106 35.6	12 27
Marte	281 03.0	0 48
Júpiter	0 30.2	19 27
Saturno	37 30.3	17 00

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	° ′		° ′		° ′	′	° ′	′	′	
27 00	183 08.5		S21 04.6		137 24.2	2.3	S27 04.0	3.2	60.3	
01	198 08.3		05.1		151 45.5	2.4	27 00.8	3.5	60.3	
02	213 08.0		05.5		166 06.9	2.4	26 57.3	3.6	60.3	
03	228 07.8	. .	06.0		180 28.3	2.5	26 53.7	3.9	60.3	
04	243 07.6		06.5		194 49.8	2.6	26 49.8	4.0	60.3	
05	258 07.4		06.9		209 11.4	2.6	26 45.8	4.2	60.3	
06	273 07.2		S21 07.4		223 33.0	2.7	S26 41.6	4.4	60.3	
07	288 07.0		07.8		237 54.7	2.7	26 37.2	4.7	60.3	
D 08	303 06.8		08.3		252 16.4	2.9	26 32.5	4.8	60.3	
O 09	318 06.6	. .	08.7		266 38.3	2.9	26 27.7	4.9	60.2	
M 10	333 06.4		09.2		281 00.2	3.0	26 22.8	5.2	60.2	
I 11	348 06.2		09.7		295 22.2	3.0	26 17.6	5.4	60.2	
N 12	3 06.0		S21 10.1		309 44.2	3.2	S26 12.2	5.5	60.2	
G 13	18 05.8		10.6		324 06.4	3.2	26 06.7	5.8	60.2	
O 14	33 05.6		11.0		338 28.6	3.4	26 00.9	5.9	60.2	
15	48 05.4	. .	11.5		352 51.0	3.4	25 55.0	6.1	60.2	
16	63 05.2		11.9		7 13.4	3.5	25 48.9	6.3	60.1	
17	78 05.0		12.4		21 35.9	3.6	25 42.6	6.4	60.1	
18	93 04.8		S21 12.8		35 58.5	3.7	S25 36.2	6.7	60.1	
19	108 04.6		13.3		50 21.2	3.8	25 29.5	6.8	60.1	
20	123 04.3		13.7		64 44.0	3.9	25 22.7	6.9	60.1	
21	138 04.1	. .	14.2		79 06.9	4.0	25 15.8	7.2	60.1	
22	153 03.9		14.6		93 29.9	4.1	25 08.6	7.3	60.1	
23	168 03.7		15.0		107 53.0	4.1	25 01.3	7.5	60.0	
28 00	183 03.5		S21 15.5		122 16.1	4.4	S24 53.8	7.7	60.0	
01	198 03.3		15.9		136 39.5	4.4	24 46.1	7.8	60.0	
02	213 03.1		16.4		151 02.9	4.5	24 38.3	8.0	60.0	
03	228 02.9	. .	16.8		165 26.4	4.6	24 30.3	8.1	60.0	
04	243 02.7		17.3		179 50.0	4.7	24 22.2	8.3	60.0	
05	258 02.5		17.7		194 13.7	4.9	24 13.9	8.5	59.9	
06	273 02.2		S21 18.1		208 37.6	4.9	S24 05.4	8.6	59.9	
07	288 02.0		18.6		223 01.5	5.1	23 56.8	8.7	59.9	
L 08	303 01.8		19.0		237 25.6	5.2	23 48.1	9.0	59.9	
U 09	318 01.6	. .	19.5		251 49.8	5.3	23 39.1	9.0	59.9	
N 10	333 01.4		19.9		266 14.1	5.4	23 30.1	9.2	59.8	
E 11	348 01.2		20.3		280 38.5	5.5	23 20.9	9.4	59.8	
S 12	3 01.0		S21 20.8		295 03.0	5.6	S23 11.5	9.5	59.8	
13	18 00.8		21.2		309 27.6	5.8	23 02.0	9.7	59.8	
14	33 00.5		21.6		323 52.4	5.9	22 52.3	9.8	59.8	
15	48 00.3	. .	22.1		338 17.3	6.0	22 42.5	9.9	59.7	
16	63 00.1		22.5		352 42.3	6.1	22 32.6	10.1	59.7	
17	77 59.9		22.9		7 07.4	6.2	22 22.5	10.2	59.7	
18	92 59.7		S21 23.4		21 32.6	6.4	S22 12.3	10.3	59.7	
19	107 59.5		23.8		35 58.0	6.4	22 02.0	10.5	59.7	
20	122 59.2		24.2		50 23.4	6.6	21 51.5	10.6	59.6	
21	137 59.0	. .	24.7		64 49.0	6.7	21 40.9	10.7	59.6	
22	152 58.8		25.1		79 14.7	6.8	21 30.2	10.8	59.6	
23	167 58.6		25.5		93 40.5	7.0	21 19.4	11.0	59.6	
29 00	182 58.4		S21 26.0		108 06.5	7.0	S21 08.4	11.1	59.6	
01	197 58.2		26.4		122 32.5	7.2	20 57.3	11.2	59.5	
02	212 57.9		26.8		136 58.7	7.3	20 46.1	11.3	59.5	
03	227 57.7	. .	27.2		151 25.0	7.4	20 34.8	11.5	59.5	
04	242 57.5		27.7		165 51.4	7.6	20 23.3	11.5	59.5	
05	257 57.3		28.1		180 18.0	7.6	20 11.8	11.7	59.4	
06	272 57.1		S21 28.5		194 44.6	7.8	S20 00.1	11.8	59.4	
07	287 56.9		28.9		209 11.4	7.9	19 48.3	11.9	59.4	
M 08	302 56.6		29.3		223 38.3	8.0	19 36.4	12.0	59.4	
A 09	317 56.4	. .	29.8		238 05.3	8.1	19 24.4	12.1	59.4	
R 10	332 56.2		30.2		252 32.4	8.3	19 12.3	12.2	59.3	
T 11	347 56.0		30.6		266 59.7	8.3	19 00.1	12.3	59.3	
E 12	2 55.8		S21 31.0		281 27.0	8.5	S18 47.8	12.4	59.3	
S 13	17 55.5		31.4		295 54.5	8.6	18 35.4	12.5	59.3	
14	32 55.3		31.9		310 22.1	8.7	18 22.9	12.6	59.2	
15	47 55.1	. .	32.3		324 49.8	8.8	18 10.3	12.7	59.2	
16	62 54.9		32.7		339 17.6	8.9	17 57.6	12.8	59.2	
17	77 54.7		33.1		353 45.5	9.0	17 44.8	12.8	59.2	
18	92 54.4		S21 33.5		8 13.5	9.2	S17 32.0	13.0	59.1	
19	107 54.2		33.9		22 41.7	9.2	17 19.0	13.0	59.1	
20	122 54.0		34.4		37 09.9	9.4	17 06.0	13.2	59.1	
21	137 53.8	. .	34.8		51 38.3	9.5	16 52.8	13.2	59.1	
22	152 53.5		35.2		66 06.8	9.5	16 39.6	13.3	59.0	
23	167 53.3		35.6		80 35.3	9.7	S16 26.3	13.3	59.0	
	S/D 16.2		d 0.4		S/D	16.4		16.3		16.2

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			27	28	29	30
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	07	42	09	36	▬	▬	▬	17 00	15 09
N 70	07	27	09	00	▬	▬	▬	15 40	14 46
68	07	15	08	35	10 19	▬	▬	15 01	14 29
66	07	04	08	16	09 36	▬	15 12	14 33	14 14
64	06	55	08	00	09 07	▬	14 27	14 12	14 03
62	06	48	07	47	08 46	13 57	13 57	13 55	13 52
60	06	41	07	35	08 28	13 19	13 34	13 41	13 44
N 58	06	35	07	25	08 14	12 52	13 16	13 28	13 36
56	06	29	07	17	08 02	12 31	13 00	13 18	13 29
54	06	24	07	09	07 51	12 14	12 47	13 08	13 23
52	06	19	07	02	07 41	11 59	12 35	13 00	13 17
50	06	15	06	55	07 32	11 46	12 24	12 52	13 12
45	06	05	06	41	07 14	11 19	12 02	12 35	13 01
N 40	05	56	06	30	06 59	10 57	11 45	12 22	12 52
35	05	48	06	19	06 47	10 40	11 30	12 10	12 45
30	05	40	06	10	06 36	10 24	11 17	12 00	12 38
20	05	26	05	53	06 17	09 58	10 54	11 43	12 26
N 10	05	12	05	37	06 00	09 36	10 35	11 28	12 15
0	04	56	05	22	05 44	09 15	10 16	11 13	12 05
S 10	04	39	05	06	05 28	08 54	09 58	10 59	11 55
20	04	19	04	47	05 11	08 31	09 38	10 43	11 44
30	03	52	04	25	04 52	08 05	09 16	10 25	11 32
35	03	36	04	11	04 40	07 49	09 02	10 15	11 25
40	03	15	03	55	04 27	07 31	08 47	10 03	11 17
45	02	48	03	35	04 11	07 10	08 28	09 49	11 07
S 50	02	11	03	09	03 51	06 42	08 05	09 31	10 55
52	01	50	02	56	03 41	06 29	07 54	09 23	10 50
54	01	23	02	41	03 31	06 13	07 41	09 14	10 44
56	00	38	02	24	03 19	05 55	07 27	09 03	10 37
58	////		02	01	03 05	05 32	07 09	08 51	10 30
S 60	////		01	32	02 48	05 03	06 48	08 37	10 21

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	27	28	29	30
°	h m	h m	h m	h m	h m	h m	h m
N 72	▬	13 59	15 53	▬	▬	18 16	21 53
N 70	▬	14 35	16 08	▬	▬	19 34	22 14
68	13 17	15 00	16 20	▬	▬	20 11	22 29
66	13 59	15 20	16 31	▬	18 04	20 38	22 42
64	14 28	15 36	16 40	▬	18 48	20 57	22 52
62	14 49	15 49	16 48	17 11	19 17	21 14	23 01
60	15 07	16 00	16 54	17 48	19 39	21 27	23 08
N 58	15 21	16 10	17 01	18 15	19 57	21 38	23 15
56	15 34	16 19	17 06	18 35	20 12	21 48	23 20
54	15 45	16 27	17 11	18 52	20 24	21 57	23 26
52	15 54	16 34	17 16	19 07	20 36	22 05	23 30
50	16 03	16 40	17 21	19 20	20 46	22 12	23 34
45	16 21	16 54	17 31	19 46	21 06	22 26	23 43
N 40	16 36	17 06	17 39	20 07	21 23	22 38	23 51
35	16 49	17 16	17 48	20 24	21 37	22 49	23 57
30	17 00	17 26	17 55	20 38	21 49	22 58	24 03
20	17 19	17 43	18 10	21 03	22 10	23 13	24 12
N 10	17 36	17 58	18 24	21 25	22 28	23 26	24 21
0	17 52	18 14	18 40	21 45	22 44	23 38	24 28
S 10	18 08	18 30	18 57	22 04	23 00	23 51	24 36
20	18 25	18 49	19 17	22 26	23 18	24 03	00 03
30	18 45	19 11	19 44	22 50	23 38	24 18	00 18
35	18 56	19 25	20 01	23 04	23 49	24 27	00 27
40	19 10	19 42	20 21	23 20	24 02	00 02	00 36
45	19 26	20 02	20 48	23 40	24 18	00 18	00 47
S 50	19 46	20 28	21 26	24 04	00 04	00 37	01 01
52	19 55	20 41	21 48	24 16	00 16	00 46	01 07
54	20 06	20 56	22 16	24 29	00 29	00 56	01 14
56	20 18	21 14	23 04	00 06	00 44	01 07	01 21
58	20 32	21 36	////	00 28	01 02	01 20	01 30
S 60	20 49	22 07	////	00 58	01 23	01 34	01 40

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
27	12 34	12 24	11 48	15 30	02 58	04 17	
28	12 14	12 04	11 48	16 30	04 01	05 27	
29	11 54	11 43	11 48	17 26	04 59	06 38	

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·9		JÚPITER −2·6		SATURNO +0·7	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
30 00	68 50.9	172 44.3	S23 09.8	350 42.7	N24 56.7	69 19.4	S 1 45.9	106 14.0	S16 04.7
01	83 53.3	187 43.4	10.2	5 46.2	56.7	84 21.8	45.9	121 16.3	04.6
02	98 55.8	202 42.4	10.6	20 49.7	56.7	99 24.2	45.8	136 18.6	04.6
03	113 58.2	217 41.5	11.0	35 53.2	56.8	114 26.6	45.8	151 20.9	04.5
04	129 00.7	232 40.6	11.4	50 56.7	56.8	129 29.0	45.8	166 23.3	04.5
05	144 03.2	247 39.7	11.8	66 00.2	56.8	144 31.5	45.7	181 25.6	04.4
06	159 05.6	262 38.7	S23 12.2	81 03.7	N24 56.9	159 33.9	S 1 45.7	196 27.9	S16 04.4
07	174 08.1	277 37.8	12.6	96 07.2	56.9	174 36.3	45.7	211 30.2	04.3
08	189 10.6	292 36.9	13.0	111 10.7	57.0	189 38.7	45.6	226 32.5	04.3
M 09	204 13.0	307 36.0	13.4	126 14.2	57.0	204 41.1	45.6	241 34.8	04.2
I 10	219 15.5	322 35.0	13.8	141 17.7	57.0	219 43.5	45.6	256 37.1	04.2
É 11	234 18.0	337 34.1	14.2	156 21.2	57.1	234 46.0	45.5	271 39.4	04.1
R 12	249 20.4	352 33.2	S23 14.5	171 24.7	N24 57.1	249 48.4	S 1 45.5	286 41.7	S16 04.1
C 13	264 22.9	7 32.3	14.9	186 28.2	57.1	264 50.8	45.5	301 44.1	04.0
O 14	279 25.4	22 31.3	15.3	201 31.7	57.2	279 53.2	45.4	316 46.4	04.0
L 15	294 27.8	37 30.4	15.7	216 35.2	57.2	294 55.6	45.4	331 48.7	03.9
E 16	309 30.3	52 29.5	16.1	231 38.7	57.2	309 58.0	45.4	346 51.0	03.9
S 17	324 32.7	67 28.6	16.4	246 42.2	57.3	325 00.5	45.3	1 53.3	03.8
18	339 35.2	82 27.6	S23 16.8	261 45.7	N24 57.3	340 02.9	S 1 45.3	16 55.6	S16 03.8
19	354 37.7	97 26.7	17.2	276 49.3	57.3	355 05.3	45.3	31 57.9	03.7
20	9 40.1	112 25.8	17.6	291 52.8	57.4	10 07.7	45.2	47 00.2	03.7
21	24 42.6	127 24.8	18.0	306 56.3	57.4	25 10.1	45.2	62 02.5	03.6
22	39 45.1	142 23.9	18.3	321 59.8	57.4	40 12.5	45.2	77 04.8	03.6
23	54 47.5	157 23.0	18.7	337 03.3	57.5	55 14.9	45.1	92 07.2	03.5
1 00	69 50.0	172 22.1	S23 19.1	352 06.8	N24 57.5	70 17.4	S 1 45.1	107 09.5	S16 03.5
01	84 52.5	187 21.1	19.4	7 10.3	57.5	85 19.8	45.1	122 11.8	03.4
02	99 54.9	202 20.2	19.8	22 13.8	57.6	100 22.2	45.0	137 14.1	03.4
03	114 57.4	217 19.3	20.2	37 17.3	57.6	115 24.6	45.0	152 16.4	03.3
04	129 59.8	232 18.3	20.5	52 20.8	57.6	130 27.0	44.9	167 18.7	03.2
05	145 02.3	247 17.4	20.9	67 24.3	57.7	145 29.4	44.9	182 21.0	03.2
06	160 04.8	262 16.5	S23 21.3	82 27.9	N24 57.7	160 31.8	S 1 44.9	197 23.3	S16 03.1
07	175 07.2	277 15.5	21.6	97 31.4	57.7	175 34.2	44.8	212 25.6	03.1
J 08	190 09.7	292 14.6	22.0	112 34.9	57.8	190 36.7	44.8	227 27.9	03.0
U 09	205 12.2	307 13.7	22.3	127 38.4	57.8	205 39.1	44.8	242 30.2	03.0
E 10	220 14.6	322 12.7	22.7	142 41.9	57.8	220 41.5	44.7	257 32.5	02.9
V 11	235 17.1	337 11.8	23.1	157 45.4	57.9	235 43.9	44.7	272 34.9	02.9
E 12	250 19.6	352 10.9	S23 23.4	172 48.9	N24 57.9	250 46.3	S 1 44.7	287 37.2	S16 02.8
S 13	265 22.0	7 09.9	23.8	187 52.5	57.9	265 48.7	44.6	302 39.5	02.8
14	280 24.5	22 09.0	24.1	202 56.0	58.0	280 51.1	44.6	317 41.8	02.7
15	295 27.0	37 08.1	24.5	217 59.5	58.0	295 53.5	44.5	332 44.1	02.7
16	310 29.4	52 07.1	24.8	233 03.0	58.0	310 55.9	44.5	347 46.4	02.6
17	325 31.9	67 06.2	25.2	248 06.5	58.0	325 58.3	44.5	2 48.7	02.6
18	340 34.3	82 05.3	S23 25.5	263 10.0	N24 58.1	341 00.7	S 1 44.4	17 51.0	S16 02.5
19	355 36.8	97 04.3	25.9	278 13.6	58.1	356 03.1	44.4	32 53.3	02.5
20	10 39.3	112 03.4	26.2	293 17.1	58.1	11 05.5	44.4	47 55.6	02.4
21	25 41.7	127 02.5	26.6	308 20.6	58.2	26 08.0	44.3	62 57.9	02.4
22	40 44.2	142 01.5	26.9	323 24.1	58.2	41 10.4	44.3	78 00.2	02.3
23	55 46.7	157 00.6	27.2	338 27.6	58.2	56 12.8	44.2	93 02.5	02.2
2 00	70 49.1	171 59.6	S23 27.6	353 31.1	N24 58.2	71 15.2	S 1 44.2	108 04.8	S16 02.2
01	85 51.6	186 58.7	27.9	8 34.7	58.3	86 17.6	44.2	123 07.1	02.1
02	100 54.1	201 57.8	28.3	23 38.2	58.3	101 20.0	44.1	138 09.4	02.1
03	115 56.5	216 56.8	28.6	38 41.7	58.3	116 22.4	44.1	153 11.8	02.0
04	130 59.0	231 55.9	28.9	53 45.2	58.3	131 24.8	44.1	168 14.1	02.0
05	146 01.5	246 55.0	29.3	68 48.7	58.4	146 27.2	44.0	183 16.4	01.9
06	161 03.9	261 54.0	S23 29.6	83 52.3	N24 58.4	161 29.6	S 1 44.0	198 18.7	S16 01.9
07	176 06.4	276 53.1	29.9	98 55.8	58.4	176 32.0	43.9	213 21.0	01.8
V 08	191 08.8	291 52.1	30.3	113 59.3	58.5	191 34.4	43.9	228 23.3	01.8
I 09	206 11.3	306 51.2	30.6	129 02.8	58.5	206 36.8	43.9	243 25.6	01.7
E 10	221 13.8	321 50.3	30.9	144 06.4	58.5	221 39.2	43.8	258 27.9	01.7
R 11	236 16.2	336 49.3	31.3	159 09.9	58.5	236 41.6	43.8	273 30.2	01.6
N 12	251 18.7	351 48.4	S23 31.6	174 13.4	N24 58.6	251 44.0	S 1 43.7	288 32.5	S16 01.6
E 13	266 21.2	6 47.4	31.9	189 16.9	58.6	266 46.4	43.7	303 34.8	01.5
S 14	281 23.6	21 46.5	32.2	204 20.4	58.6	281 48.8	43.7	318 37.1	01.4
15	296 26.1	36 45.6	32.6	219 24.0	58.6	296 51.2	43.6	333 39.4	01.4
16	311 28.6	51 44.6	32.9	234 27.5	58.6	311 53.6	43.6	348 41.7	01.3
17	326 31.0	66 43.7	33.2	249 31.0	58.7	326 56.0	43.5	3 44.0	01.3
18	341 33.5	81 42.7	S23 33.5	264 34.5	N24 58.7	341 58.4	S 1 43.5	18 46.3	S16 01.2
19	356 35.9	96 41.8	33.8	279 38.1	58.7	357 00.8	43.5	33 48.6	01.2
20	11 38.4	111 40.9	34.1	294 41.6	58.7	12 03.2	43.4	48 50.9	01.1
21	26 40.9	126 39.9	34.5	309 45.1	58.8	27 05.6	43.4	63 53.2	01.1
22	41 43.3	141 39.0	34.8	324 48.6	58.8	42 08.0	43.3	78 55.5	01.0
23	56 45.8	156 38.0	35.1	339 52.2	58.8	57 10.4	43.3	93 57.8	01.0
	h m								
Paso Mer.	19 17.5	*v* −0.9	*d* 0.4	*v* 3.5	*d* 0.0	*v* 2.4	*d* 0.0	*v* 2.3	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.7	S40 12.9
Achernar	335 21.1	S57 07.5
Acrux	173 02.3	S63 13.2
Adhara	255 06.9	S29 00.0
Aldebaran	290 41.3	N16 33.3
Alioth	166 14.9	N55 50.0
Alkaid	152 53.8	N49 11.8
Alnair	27 35.2	S46 51.3
Alnilam	275 39.2	S 1 11.2
Alphard	217 49.4	S 8 45.3
Alphecca	126 05.6	N26 38.3
Alpheratz	357 36.4	N29 13.1
Altair	62 01.9	N 8 55.8
Ankaa	353 08.7	S42 11.1
Antares	112 18.4	S26 28.9
Arcturus	145 49.8	N19 03.8
Atria	107 14.8	S69 04.1
Avior	234 15.1	S59 34.6
Bellatrix	278 24.4	N 6 22.3
Betelgeuse	270 53.7	N 7 24.7
Canopus	263 52.7	S52 42.3
Capella	280 24.0	N46 01.2
Deneb	49 27.2	N45 21.9
Denebola	182 26.9	N14 26.7
Diphda	348 48.9	S17 51.8
Dubhe	193 43.2	N61 37.4
Elnath	278 03.7	N28 37.6
Eltanin	90 43.5	N51 29.2
Enif	33 40.6	N 9 58.8
Fomalhaut	15 16.4	S29 30.3
Gacrux	171 53.9	S57 14.1
Gienah	175 45.5	S17 39.9
Hadar	148 39.0	S60 28.7
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.5
Kochab	137 20.9	N74 03.5
Markab	13 31.6	N15 19.8
Menkar	314 07.7	N 4 10.8
Menkent	148 00.0	S36 28.7
Miaplacidus	221 38.2	S69 48.3
Mirfak	308 30.3	N49 56.6
Nunki	75 50.3	S26 16.1
Peacock	53 08.9	S56 39.9
Pollux	243 19.2	N27 58.2
Procyon	244 52.4	N 5 10.0
Rasalhague	96 00.5	N12 32.7
Regulus	207 36.3	N11 51.4
Rigel	281 05.2	S 8 10.5
Rigil Kent.	139 43.3	S60 55.5
Sabik	102 05.2	S15 45.1
Schedar	349 32.7	N56 40.0
Shaula	96 13.2	S37 07.2
Sirius	258 27.5	S16 44.7
Spica	158 24.4	S11 16.7
Suhail	222 47.4	S43 31.2
Vega	80 34.8	N38 48.4
Zuben'ubi	136 58.3	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	102 32.1	12 31
Marte	282 16.8	0 31
Júpiter	0 27.4	19 16
Saturno	37 19.5	16 49

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	*v*		Dec		*d*	Ph
d h	°	′	°	′	°	′	′	°	′	′	′
30 00	182	53.1	S21	36.0	95	04.0	9.8	S16	13.0	13.5	59.0
01	197	52.9		36.4	109	32.8	9.9	15	59.5	13.5	59.0
02	212	52.6		36.8	124	01.7	10.0	15	46.0	13.6	58.9
03	227	52.4	. .	37.2	138	30.7	10.1	15	32.4	13.7	58.9
04	242	52.2		37.6	152	59.8	10.2	15	18.7	13.7	58.9
05	257	52.0		38.0	167	29.0	10.3	15	05.0	13.8	58.9
06	272	51.7	S21	38.5	181	58.3	10.4	S14	51.2	13.9	58.8
07	287	51.5		38.9	196	27.7	10.5	14	37.3	13.9	58.8
08	302	51.3		39.3	210	57.2	10.6	14	23.4	14.1	58.8
09	317	51.1	. .	39.7	225	26.8	10.7	14	09.3	14.0	58.8
10	332	50.8		40.1	239	56.5	10.8	13	55.3	14.1	58.7
11	347	50.6		40.5	254	26.3	10.8	13	41.2	14.2	58.7
12	2	50.4	S21	40.9	268	56.1	11.0	S13	27.0	14.3	58.7
13	17	50.2		41.3	283	26.1	11.1	13	12.7	14.3	58.7
14	32	49.9		41.7	297	56.2	11.1	12	58.4	14.3	58.6
15	47	49.7	. .	42.1	312	26.3	11.3	12	44.1	14.4	58.6
16	62	49.5		42.5	326	56.6	11.3	12	29.7	14.5	58.6
17	77	49.2		42.9	341	26.9	11.4	12	15.2	14.5	58.6
18	92	49.0	S21	43.3	355	57.3	11.5	S12	00.7	14.6	58.5
19	107	48.8		43.7	10	27.8	11.6	11	46.1	14.6	58.5
20	122	48.6		44.1	24	58.4	11.7	11	31.5	14.6	58.5
21	137	48.3	. .	44.5	39	29.1	11.7	11	16.9	14.7	58.5
22	152	48.1		44.9	53	59.8	11.8	11	02.2	14.7	58.4
23	167	47.9		45.3	68	30.6	11.9	10	47.5	14.8	58.4
1 00	182	47.6	S21	45.6	83	01.5	12.0	S10	32.7	14.8	58.4
01	197	47.4		46.0	97	32.5	12.1	10	17.9	14.9	58.4
02	212	47.2		46.4	112	03.6	12.1	10	03.0	14.9	58.3
03	227	46.9	. .	46.8	126	34.7	12.2	9	48.1	14.9	58.3
04	242	46.7		47.2	141	05.9	12.3	9	33.2	15.0	58.3
05	257	46.5		47.6	155	37.2	12.4	9	18.2	14.9	58.3
06	272	46.3	S21	48.0	170	08.6	12.4	S 9	03.3	15.1	58.2
07	287	46.0		48.4	184	40.0	12.5	8	48.2	15.0	58.2
08	302	45.8		48.8	199	11.5	12.6	8	33.2	15.1	58.2
09	317	45.6	. .	49.2	213	43.1	12.6	8	18.1	15.1	58.2
10	332	45.3		49.5	228	14.7	12.7	8	03.0	15.1	58.1
11	347	45.1		49.9	242	46.4	12.7	7	47.9	15.2	58.1
12	2	44.9	S21	50.3	257	18.1	12.8	S 7	32.7	15.2	58.1
13	17	44.6		50.7	271	49.9	12.9	7	17.5	15.2	58.1
14	32	44.4		51.1	286	21.8	12.9	7	02.3	15.2	58.0
15	47	44.2	. .	51.5	300	53.7	13.0	6	47.1	15.2	58.0
16	62	43.9		51.8	315	25.7	13.1	6	31.9	15.3	58.0
17	77	43.7		52.2	329	57.8	13.1	6	16.6	15.2	58.0
18	92	43.4	S21	52.6	344	29.9	13.1	S 6	01.4	15.3	57.9
19	107	43.2		53.0	359	02.0	13.2	5	46.1	15.3	57.9
20	122	43.0		53.4	13	34.2	13.3	5	30.8	15.3	57.9
21	137	42.7	. .	53.7	28	06.5	13.3	5	15.5	15.4	57.9
22	152	42.5		54.1	42	38.8	13.4	5	00.1	15.3	57.8
23	167	42.3		54.5	57	11.2	13.4	4	44.8	15.3	57.8
2 00	182	42.0	S21	54.9	71	43.6	13.4	S 4	29.5	15.4	57.8
01	197	41.8		55.2	86	16.0	13.5	4	14.1	15.4	57.8
02	212	41.6		55.6	100	48.5	13.5	3	58.7	15.3	57.7
03	227	41.3	. .	56.0	115	21.0	13.6	3	43.4	15.4	57.7
04	242	41.1		56.4	129	53.6	13.6	3	28.0	15.4	57.7
05	257	40.8		56.7	144	26.2	13.7	3	12.6	15.3	57.7
06	272	40.6	S21	57.1	158	58.9	13.7	S 2	57.3	15.4	57.6
07	287	40.4		57.5	173	31.6	13.7	2	41.9	15.4	57.6
08	302	40.1		57.9	188	04.3	13.8	2	26.5	15.4	57.6
09	317	39.9	. .	58.2	202	37.1	13.8	2	11.1	15.3	57.6
10	332	39.6		58.6	217	09.9	13.8	1	55.8	15.4	57.5
11	347	39.4		59.0	231	42.7	13.9	1	40.4	15.4	57.5
12	2	39.2	S21	59.3	246	15.6	13.9	S 1	25.0	15.3	57.5
13	17	38.9	21	59.7	260	48.5	13.9	1	09.7	15.4	57.5
14	32	38.7	22	00.1	275	21.4	13.9	0	54.3	15.3	57.4
15	47	38.4	. .	00.4	289	54.3	14.0	0	39.0	15.3	57.4
16	62	38.2		00.8	304	27.3	14.0	0	23.7	15.4	57.4
17	77	38.0		01.2	319	00.3	14.0	S 0	08.3	15.3	57.4
18	92	37.7	S22	01.5	333	33.3	14.1	N 0	07.0	15.3	57.3
19	107	37.5		01.9	348	06.4	14.1	0	22.3	15.2	57.3
20	122	37.2		02.2	2	39.5	14.0	0	37.5	15.3	57.3
21	137	37.0	. .	02.6	17	12.5	14.1	0	52.8	15.3	57.3
22	152	36.8		03.0	31	45.6	14.2	1	08.1	15.2	57.2
23	167	36.5		03.3	46	18.8	14.1	N 1	23.3	15.2	57.2
	S/D	16.2	*d*	0.4	S/D		16.0		15.8		15.7

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			30	1	2	3
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	07	51	09	50	▬	15 09	14 25	13 52	13 20
N 70	07	35	09	11	▬	14 46	14 15	13 50	13 26
68	07	21	08	44	10 36	14 29	14 07	13 49	13 32
66	07	10	08	23	09 47	14 14	14 00	13 48	13 36
64	07	01	08	06	09 16	14 03	13 55	13 47	13 40
62	06	53	07	52	08 53	13 52	13 50	13 47	13 44
60	06	46	07	41	08 35	13 44	13 45	13 46	13 47
N 58	06	39	07	30	08 20	13 36	13 41	13 45	13 49
56	06	33	07	21	08 07	13 29	13 38	13 45	13 52
54	06	28	07	13	07 55	13 23	13 34	13 44	13 54
52	06	23	07	06	07 45	13 17	13 32	13 44	13 56
50	06	18	06	59	07 37	13 12	13 29	13 44	13 58
45	06	08	06	45	07 18	13 01	13 23	13 43	14 02
N 40	05	59	06	32	07 02	12 52	13 18	13 42	14 05
35	05	50	06	22	06 49	12 45	13 14	13 41	14 08
30	05	43	06	12	06 38	12 38	13 10	13 41	14 10
20	05	28	05	55	06 19	12 26	13 04	13 40	14 15
N 10	05	13	05	39	06 01	12 15	12 58	13 39	14 19
0	04	57	05	23	05 45	12 05	12 53	13 38	14 23
S 10	04	40	05	06	05 29	11 55	12 48	13 38	14 27
20	04	19	04	47	05 12	11 44	12 42	13 37	14 31
30	03	52	04	24	04 51	11 32	12 35	13 36	14 35
35	03	35	04	10	04 39	11 25	12 32	13 36	14 38
40	03	13	03	54	04 25	11 17	12 27	13 35	14 41
45	02	46	03	33	04 09	11 07	12 22	13 34	14 45
S 50	02	07	03	06	03 49	10 55	12 16	13 34	14 49
52	01	45	02	53	03 39	10 50	12 13	13 33	14 51
54	01	15	02	37	03 28	10 44	12 10	13 33	14 54
56	00	17	02	19	03 15	10 37	12 07	13 33	14 56
58	////		01	55	03 01	10 30	12 03	13 32	14 59
S 60	////		01	23	02 44	10 21	11 59	13 32	15 02

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 30	1	2	3
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	▬		13	47	15 46	21 53	24 17	00 17	02 27
N 70	▬		14	27	16 03	22 14	24 23	00 23	02 24
68	13	02	14	54	16 16	22 29	24 29	00 29	02 22
66	13	51	15	15	16 27	22 42	24 33	00 33	02 20
64	14	22	15	31	16 36	22 52	24 37	00 37	02 18
62	14	44	15	45	16 45	23 01	24 41	00 41	02 16
60	15	03	15	57	16 52	23 08	24 43	00 43	02 15
N 58	15	18	16	07	16 58	23 15	24 46	00 46	02 14
56	15	31	16	16	17 04	23 20	24 48	00 48	02 13
54	15	42	16	24	17 10	23 26	24 50	00 50	02 12
52	15	52	16	32	17 15	23 30	24 52	00 52	02 11
50	16	01	16	39	17 19	23 34	24 54	00 54	02 10
45	16	20	16	53	17 30	23 43	24 57	00 57	02 08
N 40	16	35	17	05	17 39	23 51	25 00	01 00	02 07
35	16	48	17	16	17 47	23 57	25 02	01 02	02 06
30	17	00	17	26	17 55	24 03	00 03	01 05	02 05
20	17	19	17	43	18 10	24 12	00 12	01 08	02 03
N 10	17	37	17	59	18 25	24 21	00 21	01 12	02 01
0	17	53	18	15	18 41	24 28	00 28	01 15	02 00
S 10	18	09	18	32	18 59	24 36	00 36	01 18	01 58
20	18	27	18	51	19 20	00 03	00 44	01 21	01 56
30	18	47	19	14	19 47	00 18	00 53	01 25	01 54
35	18	59	19	28	20 04	00 27	00 58	01 27	01 53
40	19	13	19	45	20 25	00 36	01 04	01 29	01 52
45	19	29	20	06	20 53	00 47	01 11	01 32	01 51
S 50	19	50	20	33	21 33	01 01	01 19	01 35	01 49
52	20	00	20	46	21 55	01 07	01 23	01 36	01 48
54	20	11	21	02	22 26	01 14	01 27	01 38	01 47
56	20	24	21	21	23 32	01 21	01 31	01 39	01 46
58	20	38	21	45	////	01 30	01 36	01 41	01 45
S 60	20	56	22	18	////	01 40	01 42	01 43	01 44

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		SOL Paso Mer.	LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		LUNA Edad	LUNA Fase
d	m	s	m	s	h m	h	m	h	m	d	%
30	11	33	11	22	11 49	18	17	05	52	07	49
1	11	11	11	00	11 49	19	04	06	41	08	60
2	10	49	10	37	11 49	19	49	07	27	09	70

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·9		JÚPITER −2·5		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
3 00	71 48.3	171 37.1	S23 35.4	354 55.7	N24 58.8	72 12.8	S 1 43.2	109 00.1	S16 00.9
01	86 50.7	186 36.1	35.7	9 59.2	58.9	87 15.2	43.2	124 02.4	00.9
02	101 53.2	201 35.2	36.0	25 02.8	58.9	102 17.6	43.2	139 04.7	00.8
03	116 55.7	216 34.2	36.3	40 06.3	58.9	117 20.0	43.1	154 07.0	00.7
04	131 58.1	231 33.3	36.6	55 09.8	58.9	132 22.4	43.1	169 09.3	00.7
05	147 00.6	246 32.4	36.9	70 13.3	58.9	147 24.8	43.0	184 11.6	00.6
06	162 03.1	261 31.4	S23 37.2	85 16.9	N24 59.0	162 27.2	S 1 43.0	199 13.9	S16 00.6
07	177 05.5	276 30.5	37.5	100 20.4	59.0	177 29.6	42.9	214 16.2	00.5
08	192 08.0	291 29.5	37.8	115 23.9	59.0	192 32.0	42.9	229 18.5	00.5
S 09	207 10.4	306 28.6	38.1	130 27.4	59.0	207 34.4	42.9	244 20.8	00.4
Á 10	222 12.9	321 27.6	38.4	145 31.0	59.0	222 36.7	42.8	259 23.1	00.4
B 11	237 15.4	336 26.7	38.7	160 34.5	59.1	237 39.1	42.8	274 25.4	00.3
A 12	252 17.8	351 25.7	S23 39.0	175 38.0	N24 59.1	252 41.5	S 1 42.7	289 27.7	S16 00.3
D 13	267 20.3	6 24.8	39.3	190 41.6	59.1	267 43.9	42.7	304 30.0	00.2
O 14	282 22.8	21 23.8	39.6	205 45.1	59.1	282 46.3	42.6	319 32.3	00.1
15	297 25.2	36 22.9	39.9	220 48.6	59.1	297 48.7	42.6	334 34.6	00.1
16	312 27.7	51 21.9	40.2	235 52.2	59.1	312 51.1	42.6	349 36.9	00.0
17	327 30.2	66 21.0	40.5	250 55.7	59.2	327 53.5	42.5	4 39.2	16 00.0
18	342 32.6	81 20.0	S23 40.8	265 59.2	N24 59.2	342 55.9	S 1 42.5	19 41.5	S15 59.9
19	357 35.1	96 19.1	41.1	281 02.7	59.2	357 58.3	42.4	34 43.8	59.9
20	12 37.5	111 18.2	41.4	296 06.3	59.2	13 00.7	42.4	49 46.1	59.8
21	27 40.0	126 17.2	41.6	311 09.8	59.2	28 03.1	42.3	64 48.4	59.8
22	42 42.5	141 16.3	41.9	326 13.3	59.2	43 05.5	42.3	79 50.7	59.7
23	57 44.9	156 15.3	42.2	341 16.9	59.3	58 07.8	42.2	94 53.0	59.6
4 00	72 47.4	171 14.4	S23 42.5	356 20.4	N24 59.3	73 10.2	S 1 42.2	109 55.3	S15 59.6
01	87 49.9	186 13.4	42.8	11 23.9	59.3	88 12.6	42.2	124 57.6	59.5
02	102 52.3	201 12.5	43.0	26 27.5	59.3	103 15.0	42.1	139 59.9	59.5
03	117 54.8	216 11.5	43.3	41 31.0	59.3	118 17.4	42.1	155 02.2	59.4
04	132 57.3	231 10.6	43.6	56 34.5	59.3	133 19.8	42.0	170 04.5	59.4
05	147 59.7	246 09.6	43.9	71 38.1	59.4	148 22.2	42.0	185 06.8	59.3
06	163 02.2	261 08.7	S23 44.2	86 41.6	N24 59.4	163 24.6	S 1 41.9	200 09.1	S15 59.3
07	178 04.7	276 07.7	44.4	101 45.1	59.4	178 26.9	41.9	215 11.4	59.2
D 08	193 07.1	291 06.7	44.7	116 48.7	59.4	193 29.3	41.8	230 13.7	59.1
O 09	208 09.6	306 05.8	45.0	131 52.2	59.4	208 31.7	41.8	245 16.0	59.1
M 10	223 12.0	321 04.8	45.2	146 55.7	59.4	223 34.1	41.7	260 18.3	59.0
I 11	238 14.5	336 03.9	45.5	161 59.3	59.4	238 36.5	41.7	275 20.6	59.0
N 12	253 17.0	351 02.9	S23 45.8	177 02.8	N24 59.5	253 38.9	S 1 41.7	290 22.9	S15 58.9
G 13	268 19.4	6 02.0	46.0	192 06.3	59.5	268 41.3	41.6	305 25.2	58.9
O 14	283 21.9	21 01.0	46.3	207 09.9	59.5	283 43.6	41.6	320 27.5	58.8
15	298 24.4	36 00.1	46.6	222 13.4	59.5	298 46.0	41.5	335 29.8	58.8
16	313 26.8	50 59.1	46.8	237 16.9	59.5	313 48.4	41.5	350 32.1	58.7
17	328 29.3	65 58.2	47.1	252 20.5	59.5	328 50.8	41.4	5 34.4	58.6
18	343 31.8	80 57.2	S23 47.3	267 24.0	N24 59.5	343 53.2	S 1 41.4	20 36.7	S15 58.6
19	358 34.2	95 56.3	47.6	282 27.5	59.5	358 55.6	41.3	35 39.0	58.5
20	13 36.7	110 55.3	47.9	297 31.1	59.5	13 58.0	41.3	50 41.3	58.5
21	28 39.2	125 54.4	48.1	312 34.6	59.6	29 00.3	41.2	65 43.6	58.4
22	43 41.6	140 53.4	48.4	327 38.1	59.6	44 02.7	41.2	80 45.9	58.4
23	58 44.1	155 52.5	48.6	342 41.7	59.6	59 05.1	41.1	95 48.2	58.3
5 00	73 46.5	170 51.5	S23 48.9	357 45.2	N24 59.6	74 07.5	S 1 41.1	110 50.5	S15 58.2
01	88 49.0	185 50.5	49.1	12 48.7	59.6	89 09.9	41.0	125 52.8	58.2
02	103 51.5	200 49.6	49.4	27 52.3	59.6	104 12.2	41.0	140 55.1	58.1
03	118 53.9	215 48.6	49.6	42 55.8	59.6	119 14.6	40.9	155 57.3	58.1
04	133 56.4	230 47.7	49.9	57 59.3	59.6	134 17.0	40.9	170 59.6	58.0
05	148 58.9	245 46.7	50.1	73 02.9	59.6	149 19.4	40.8	186 01.9	58.0
06	164 01.3	260 45.8	S23 50.3	88 06.4	N24 59.6	164 21.8	S 1 40.8	201 04.2	S15 57.9
07	179 03.8	275 44.8	50.6	103 09.9	59.7	179 24.1	40.7	216 06.5	57.9
L 08	194 06.3	290 43.8	50.8	118 13.5	59.7	194 26.5	40.7	231 08.8	57.8
U 09	209 08.7	305 42.9	51.1	133 17.0	59.7	209 28.9	40.6	246 11.1	57.7
N 10	224 11.2	320 41.9	51.3	148 20.5	59.7	224 31.3	40.6	261 13.4	57.7
E 11	239 13.6	335 41.0	51.5	163 24.1	59.7	239 33.7	40.5	276 15.7	57.6
S 12	254 16.1	350 40.0	S23 51.8	178 27.6	N24 59.7	254 36.0	S 1 40.5	291 18.0	S15 57.6
13	269 18.6	5 39.1	52.0	193 31.2	59.7	269 38.4	40.4	306 20.3	57.5
14	284 21.0	20 38.1	52.2	208 34.7	59.7	284 40.8	40.4	321 22.6	57.5
15	299 23.5	35 37.1	52.5	223 38.2	59.7	299 43.2	40.3	336 24.9	57.4
16	314 26.0	50 36.2	52.7	238 41.8	59.7	314 45.5	40.3	351 27.2	57.3
17	329 28.4	65 35.2	52.9	253 45.3	59.7	329 47.9	40.2	6 29.5	57.3
18	344 30.9	80 34.3	S23 53.2	268 48.8	N24 59.7	344 50.3	S 1 40.2	21 31.8	S15 57.2
19	359 33.4	95 33.3	53.4	283 52.4	59.7	359 52.7	40.1	36 34.0	57.2
20	14 35.8	110 32.4	53.6	298 55.9	59.7	14 55.0	40.1	51 36.3	57.1
21	29 38.3	125 31.4	53.8	313 59.4	59.8	29 57.4	40.0	66 38.6	57.1
22	44 40.8	140 30.4	54.1	329 03.0	59.8	44 59.8	40.0	81 40.9	57.0
23	59 43.2	155 29.5	54.3	344 06.5	59.8	60 02.2	39.9	96 43.2	56.9
	h m								
Paso Mer.	19 05.7	*v* −1.0	*d* 0.3	*v* 3.5	*d* 0.0	*v* 2.4	*d* 0.0	*v* 2.3	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.7	S40 12.9
Achernar	335 21.1	S57 07.5
Acrux	173 02.3	S63 13.2
Adhara	255 06.9	S29 00.0
Aldebaran	290 41.3	N16 33.3
Alioth	166 14.8	N55 50.0
Alkaid	152 53.8	N49 11.8
Alnair	27 35.2	S46 51.3
Alnilam	275 39.2	S 1 11.2
Alphard	217 49.4	S 8 45.3
Alphecca	126 05.6	N26 38.3
Alpheratz	357 36.5	N29 13.1
Altair	62 01.9	N 8 55.8
Ankaa	353 08.7	S42 11.1
Antares	112 18.4	S26 28.9
Arcturus	145 49.8	N19 03.8
Atria	107 14.8	S69 04.0
Avior	234 15.0	S59 34.6
Bellatrix	278 24.4	N 6 22.2
Betelgeuse	270 53.7	N 7 24.7
Canopus	263 52.7	S52 42.3
Capella	280 24.0	N46 01.2
Deneb	49 27.3	N45 21.9
Denebola	182 26.8	N14 26.7
Diphda	348 48.9	S17 51.8
Dubhe	193 43.2	N61 37.4
Elnath	278 03.7	N28 37.6
Eltanin	90 43.5	N51 29.2
Enif	33 40.6	N 9 58.8
Fomalhaut	15 16.5	S29 30.3
Gacrux	171 53.9	S57 14.1
Gienah	175 45.5	S17 39.9
Hadar	148 39.0	S60 28.7
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.4
Kochab	137 20.9	N74 03.5
Markab	13 31.6	N15 19.8
Menkar	314 07.7	N 4 10.8
Menkent	148 00.0	S36 28.7
Miaplacidus	221 38.2	S69 48.3
Mirfak	308 30.3	N49 56.6
Nunki	75 50.3	S26 16.1
Peacock	53 08.9	S56 39.9
Pollux	243 19.2	N27 58.2
Procyon	244 52.4	N 5 10.0
Rasalhague	96 00.5	N12 32.7
Regulus	207 36.2	N11 51.4
Rigel	281 05.2	S 8 10.5
Rigil Kent.	139 43.3	S60 55.5
Sabik	102 05.2	S15 45.1
Schedar	349 32.8	N56 40.0
Shaula	96 13.2	S37 07.2
Sirius	258 27.5	S16 44.7
Spica	158 24.4	S11 16.7
Suhail	222 47.4	S43 31.2
Vega	80 34.8	N38 48.4
Zuben'ubi	136 58.3	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	98 26.9	12 36
Marte	283 33.0	0 15
Júpiter	0 22.8	19 04
Saturno	37 07.9	16 38

UT (HmGr)	SOL				LUNA							
	AHGr		Dec		AHGr	v		Dec		d	Ph	
d h	°	′	°	′	°	′	′	°	′	′	′	
3 00	182	36.3	S22	03.7	60	51.9	14.2	N 1	38.5	15.2	57.2	
01	197	36.0		04.0	75	25.1	14.1	1	53.7	15.2	57.2	
02	212	35.8		04.4	89	58.2	14.2	2	08.9	15.2	57.2	
03	227	35.5	. .	04.7	104	31.4	14.2	2	24.1	15.1	57.1	
04	242	35.3		05.1	119	04.6	14.2	2	39.2	15.1	57.1	
05	257	35.1		05.5	133	37.8	14.2	2	54.3	15.1	57.1	
06	272	34.8	S22	05.8	148	11.0	14.2	N 3	09.4	15.1	57.1	
07	287	34.6		06.2	162	44.2	14.2	3	24.5	15.0	57.0	
S 08	302	34.3		06.5	177	17.4	14.3	3	39.5	15.0	57.0	
Á 09	317	34.1	. .	06.9	191	50.7	14.2	3	54.5	15.0	57.0	
B 10	332	33.8		07.2	206	23.9	14.2	4	09.5	15.0	57.0	
A 11	347	33.6		07.6	220	57.1	14.3	4	24.5	14.9	56.9	
D 12	2	33.3	S22	07.9	235	30.4	14.2	N 4	39.4	14.9	56.9	
O 13	17	33.1		08.3	250	03.6	14.3	4	54.3	14.9	56.9	
14	32	32.8		08.6	264	36.9	14.2	5	09.2	14.8	56.9	
15	47	32.6	. .	09.0	279	10.1	14.2	5	24.0	14.8	56.9	
16	62	32.3		09.3	293	43.3	14.2	5	38.8	14.7	56.8	
17	77	32.1		09.7	308	16.5	14.3	5	53.5	14.8	56.8	
18	92	31.9	S22	10.0	322	49.8	14.2	N 6	08.3	14.6	56.8	
19	107	31.6		10.3	337	23.0	14.2	6	22.9	14.7	56.8	
20	122	31.4		10.7	351	56.2	14.2	6	37.6	14.6	56.7	
21	137	31.1	. .	11.0	6	29.4	14.2	6	52.2	14.6	56.7	
22	152	30.9		11.4	21	02.6	14.2	7	06.8	14.5	56.7	
23	167	30.6		11.7	35	35.8	14.1	7	21.3	14.5	56.7	
4 00	182	30.4	S22	12.1	50	08.9	14.2	N 7	35.8	14.4	56.6	
01	197	30.1		12.4	64	42.1	14.2	7	50.2	14.4	56.6	
02	212	29.9		12.7	79	15.3	14.1	8	04.6	14.4	56.6	
03	227	29.6	. .	13.1	93	48.4	14.1	8	19.0	14.3	56.6	
04	242	29.4		13.4	108	21.5	14.1	8	33.3	14.3	56.6	
05	257	29.1		13.7	122	54.6	14.1	8	47.6	14.2	56.5	
06	272	28.9	S22	14.1	137	27.7	14.0	N 9	01.8	14.1	56.5	
07	287	28.6		14.4	152	00.7	14.1	9	15.9	14.1	56.5	
D 08	302	28.4		14.7	166	33.8	14.0	9	30.0	14.1	56.5	
O 09	317	28.1	. .	15.1	181	06.8	14.0	9	44.1	14.0	56.5	
M 10	332	27.9		15.4	195	39.8	14.0	9	58.1	14.0	56.4	
I 11	347	27.6		15.7	210	12.8	13.9	10	12.1	13.9	56.4	
N 12	2	27.4	S22	16.1	224	45.7	14.0	N10	26.0	13.8	56.4	
G 13	17	27.1		16.4	239	18.7	13.9	10	39.8	13.8	56.4	
O 14	32	26.8		16.7	253	51.6	13.9	10	53.6	13.8	56.3	
15	47	26.6	. .	17.1	268	24.5	13.8	11	07.4	13.7	56.3	
16	62	26.3		17.4	282	57.3	13.8	11	21.1	13.6	56.3	
17	77	26.1		17.7	297	30.1	13.8	11	34.7	13.5	56.3	
18	92	25.8	S22	18.1	312	02.9	13.8	N11	48.2	13.6	56.3	
19	107	25.6		18.4	326	35.7	13.8	12	01.8	13.4	56.2	
20	122	25.3		18.7	341	08.5	13.7	12	15.2	13.4	56.2	
21	137	25.1	. .	19.0	355	41.2	13.6	12	28.6	13.3	56.2	
22	152	24.8		19.4	10	13.8	13.7	12	41.9	13.2	56.2	
23	167	24.6		19.7	24	46.5	13.6	12	55.1	13.2	56.2	
5 00	182	24.3	S22	20.0	39	19.1	13.6	N13	08.3	13.1	56.1	
01	197	24.1		20.3	53	51.7	13.5	13	21.4	13.1	56.1	
02	212	23.8		20.6	68	24.2	13.5	13	34.5	13.0	56.1	
03	227	23.5	. .	21.0	82	56.7	13.5	13	47.5	12.9	56.1	
04	242	23.3		21.3	97	29.2	13.4	14	00.4	12.8	56.1	
05	257	23.0		21.6	112	01.6	13.4	14	13.2	12.8	56.0	
06	272	22.8	S22	21.9	126	34.0	13.4	N14	26.0	12.7	56.0	
07	287	22.5		22.2	141	06.4	13.3	14	38.7	12.7	56.0	
L 08	302	22.3		22.6	155	38.7	13.3	14	51.4	12.5	56.0	
U 09	317	22.0	. .	22.9	170	11.0	13.2	15	03.9	12.5	56.0	
N 10	332	21.7		23.2	184	43.2	13.2	15	16.4	12.4	55.9	
E 11	347	21.5		23.5	199	15.4	13.2	15	28.8	12.3	55.9	
S 12	2	21.2	S22	23.8	213	47.6	13.1	N15	41.1	12.3	55.9	
13	17	21.0		24.1	228	19.7	13.0	15	53.4	12.2	55.9	
14	32	20.7		24.4	242	51.7	13.1	16	05.6	12.1	55.9	
15	47	20.5	. .	24.7	257	23.8	13.0	16	17.7	12.0	55.8	
16	62	20.2		25.1	271	55.8	12.9	16	29.7	11.9	55.8	
17	77	19.9		25.4	286	27.7	12.9	16	41.6	11.9	55.8	
18	92	19.7	S22	25.7	300	59.6	12.9	N16	53.5	11.7	55.8	
19	107	19.4		26.0	315	31.5	12.8	17	05.2	11.7	55.8	
20	122	19.2		26.3	330	03.3	12.7	17	16.9	11.6	55.7	
21	137	18.9	. .	26.6	344	35.0	12.7	17	28.5	11.5	55.7	
22	152	18.6		26.9	359	06.7	12.7	17	40.0	11.4	55.7	
23	167	18.4		27.2	13	38.4	12.6	N17	51.4	11.4	55.7	
	S/D	16.3	d	0.3	S/D	15.5		15.4			15.2	

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			3	4	5	6
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	07	59	10	04	▬	13 20	12 43	11 49	▭
N 70	07	41	09	20	▬	13 26	13 00	12 24	10 52
68	07	28	08	51	10 55	13 32	13 13	12 49	12 10
66	07	16	08	30	09 57	13 36	13 24	13 09	12 49
64	07	06	08	12	09 24	13 40	13 33	13 25	13 15
62	06	58	07	58	09 00	13 44	13 41	13 38	13 36
60	06	50	07	46	08 41	13 47	13 48	13 50	13 54
N 58	06	43	07	35	08 25	13 49	13 54	14 00	14 08
56	06	37	07	25	08 11	13 52	13 59	14 08	14 20
54	06	32	07	17	08 00	13 54	14 04	14 16	14 31
52	06	27	07	10	07 50	13 56	14 08	14 23	14 41
50	06	22	07	03	07 40	13 58	14 12	14 29	14 50
45	06	11	06	48	07 21	14 02	14 21	14 43	15 08
N 40	06	01	06	35	07 05	14 05	14 28	14 54	15 23
35	05	53	06	24	06 52	14 08	14 35	15 04	15 36
30	05	45	06	14	06 40	14 10	14 40	15 12	15 47
20	05	29	05	57	06 20	14 15	14 50	15 27	16 07
N 10	05	14	05	40	06 03	14 19	14 59	15 40	16 24
0	04	58	05	24	05 46	14 23	15 07	15 53	16 40
S 10	04	40	05	07	05 30	14 27	15 15	16 05	16 56
20	04	19	04	48	05 12	14 31	15 24	16 18	17 13
30	03	51	04	24	04 51	14 35	15 34	16 34	17 33
35	03	34	04	10	04 39	14 38	15 40	16 42	17 45
40	03	12	03	53	04 25	14 41	15 47	16 53	17 58
45	02	44	03	32	04 08	14 45	15 55	17 05	18 14
S 50	02	03	03	04	03 47	14 49	16 05	17 20	18 34
52	01	40	02	50	03 37	14 51	16 09	17 27	18 44
54	01	07	02	34	03 26	14 54	16 14	17 34	18 55
56	////		02	15	03 13	14 56	16 19	17 43	19 07
58	////		01	50	02 58	14 59	16 26	17 53	19 21
S 60	////		01	14	02 39	15 02	16 33	18 04	19 38

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	3	4	5	6
°	h m	h m	h m	h m	h m	h m	h m
N 72	▬	13 36	15 41	02 27	04 38	07 08	▭
N 70	▬	14 19	15 58	02 24	04 25	06 35	09 45
68	12 45	14 48	16 12	02 22	04 14	06 11	08 28
66	13 43	15 10	16 24	02 20	04 05	05 53	07 51
64	14 16	15 28	16 34	02 18	03 57	05 38	07 25
62	14 40	15 42	16 42	02 16	03 51	05 26	07 05
60	14 59	15 54	16 50	02 15	03 45	05 16	06 48
N 58	15 15	16 05	16 57	02 14	03 40	05 07	06 35
56	15 29	16 14	17 03	02 13	03 36	04 59	06 23
54	15 40	16 23	17 08	02 12	03 32	04 52	06 13
52	15 50	16 30	17 13	02 11	03 29	04 46	06 04
50	16 00	16 37	17 18	02 10	03 25	04 40	05 56
45	16 19	16 52	17 29	02 08	03 19	04 28	05 38
N 40	16 35	17 05	17 39	02 07	03 13	04 19	05 24
35	16 48	17 16	17 47	02 06	03 08	04 10	05 12
30	17 00	17 26	17 55	02 05	03 04	04 03	05 02
20	17 20	17 44	18 11	02 03	02 56	03 50	04 45
N 10	17 37	18 00	18 26	02 01	02 50	03 39	04 29
0	17 54	18 16	18 42	02 00	02 44	03 29	04 15
S 10	18 11	18 33	19 00	01 58	02 38	03 18	04 01
20	18 29	18 53	19 22	01 56	02 31	03 07	03 46
30	18 49	19 16	19 49	01 54	02 24	02 55	03 28
35	19 02	19 31	20 07	01 53	02 20	02 48	03 18
40	19 16	19 48	20 29	01 52	02 15	02 40	03 07
45	19 33	20 09	20 57	01 51	02 10	02 30	02 54
S 50	19 54	20 37	21 38	01 49	02 03	02 19	02 37
52	20 04	20 51	22 02	01 48	02 00	02 14	02 30
54	20 15	21 07	22 36	01 47	01 57	02 08	02 21
56	20 28	21 27	////	01 46	01 53	02 02	02 12
58	20 44	21 52	////	01 45	01 49	01 54	02 01
S 60	21 02	22 29	////	01 44	01 45	01 46	01 49

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
3	10 26	10 14	11 50	20 33	08 11	10 79	
4	10 02	09 50	11 50	21 18	08 55	11 87	
5	09 38	09 25	11 51	22 04	09 41	12 93	

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·9		JÚPITER −2·5		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
6 00	74 45.7	170 28.5	S23 54.5	359 10.0	N24 59.8	75 04.5	S 1 39.9	111 45.5	S15 56.9
01	89 48.1	185 27.6	54.7	14 13.6	59.8	90 06.9	39.8	126 47.8	56.8
02	104 50.6	200 26.6	54.9	29 17.1	59.8	105 09.3	39.8	141 50.1	56.8
03	119 53.1	215 25.6 . .	55.2	44 20.6 . .	59.8	120 11.7 . .	39.7	156 52.4 . .	56.7
04	134 55.5	230 24.7	55.4	59 24.2	59.8	135 14.0	39.7	171 54.7	56.6
05	149 58.0	245 23.7	55.6	74 27.7	59.8	150 16.4	39.6	186 57.0	56.6
06	165 00.5	260 22.8	S23 55.8	89 31.2	N24 59.8	165 18.8	S 1 39.6	201 59.3	S15 56.5
07	180 02.9	275 21.8	56.0	104 34.8	59.8	180 21.2	39.5	217 01.5	56.5
08	195 05.4	290 20.8	56.2	119 38.3	59.8	195 23.5	39.5	232 03.8	56.4
M 09	210 07.9	305 19.9 . .	56.4	134 41.8 . .	59.8	210 25.9 . .	39.4	247 06.1 . .	56.4
A 10	225 10.3	320 18.9	56.6	149 45.4	59.8	225 28.3	39.3	262 08.4	56.3
R 11	240 12.8	335 17.9	56.8	164 48.9	59.8	240 30.6	39.3	277 10.7	56.2
T 12	255 15.3	350 17.0	S23 57.1	179 52.4	N24 59.8	255 33.0	S 1 39.2	292 13.0	S15 56.2
E 13	270 17.7	5 16.0	57.3	194 56.0	59.8	270 35.4	39.2	307 15.3	56.1
S 14	285 20.2	20 15.1	57.5	209 59.5	59.8	285 37.7	39.1	322 17.6	56.1
15	300 22.6	35 14.1 . .	57.7	225 03.1 . .	59.8	300 40.1 . .	39.1	337 19.9 . .	56.0
16	315 25.1	50 13.1	57.9	240 06.6	59.8	315 42.5	39.0	352 22.2	56.0
17	330 27.6	65 12.2	58.1	255 10.1	59.8	330 44.9	39.0	7 24.5	55.9
18	345 30.0	80 11.2	S23 58.3	270 13.7	N24 59.8	345 47.2	S 1 38.9	22 26.7	S15 55.8
19	0 32.5	95 10.2	58.5	285 17.2	59.8	0 49.6	38.9	37 29.0	55.8
20	15 35.0	110 09.3	58.7	300 20.7	59.8	15 52.0	38.8	52 31.3	55.7
21	30 37.4	125 08.3 . .	58.8	315 24.3 . .	59.8	30 54.3 . .	38.8	67 33.6 . .	55.7
22	45 39.9	140 07.4	59.0	330 27.8	59.8	45 56.7	38.7	82 35.9	55.6
23	60 42.4	155 06.4	59.2	345 31.3	59.8	60 59.1	38.6	97 38.2	55.5
7 00	75 44.8	170 05.4	S23 59.4	0 34.9	N24 59.8	76 01.4	S 1 38.6	112 40.5	S15 55.5
01	90 47.3	185 04.5	59.6	15 38.4	59.8	91 03.8	38.5	127 42.8	55.4
02	105 49.8	200 03.5	23 59.8	30 41.9	59.8	106 06.2	38.5	142 45.1	55.4
03	120 52.2	215 02.5	24 00.0	45 45.4 . .	59.8	121 08.5 . .	38.4	157 47.3 . .	55.3
04	135 54.7	230 01.6	00.2	60 49.0	59.8	136 10.9	38.4	172 49.6	55.3
05	150 57.1	245 00.6	00.3	75 52.5	59.8	151 13.3	38.3	187 51.9	55.2
06	165 59.6	259 59.6	S24 00.5	90 56.0	N24 59.8	166 15.6	S 1 38.3	202 54.2	S15 55.1
07	181 02.1	274 58.7	00.7	105 59.6	59.8	181 18.0	38.2	217 56.5	55.1
M 08	196 04.5	289 57.7	00.9	121 03.1	59.8	196 20.3	38.1	232 58.8	55.0
I 09	211 07.0	304 56.7 . .	01.1	136 06.6 . .	59.8	211 22.7 . .	38.1	248 01.1 . .	55.0
É 10	226 09.5	319 55.8	01.2	151 10.2	59.8	226 25.1	38.0	263 03.4	54.9
R 11	241 11.9	334 54.8	01.4	166 13.7	59.8	241 27.4	38.0	278 05.6	54.8
C 12	256 14.4	349 53.8	S24 01.6	181 17.2	N24 59.8	256 29.8	S 1 37.9	293 07.9	S15 54.8
O 13	271 16.9	4 52.9	01.8	196 20.8	59.8	271 32.2	37.9	308 10.2	54.7
L 14	286 19.3	19 51.9	01.9	211 24.3	59.8	286 34.5	37.8	323 12.5	54.7
E 15	301 21.8	34 50.9 . .	02.1	226 27.8 . .	59.8	301 36.9 . .	37.7	338 14.8 . .	54.6
S 16	316 24.3	49 50.0	02.3	241 31.4	59.8	316 39.2	37.7	353 17.1	54.5
17	331 26.7	64 49.0	02.5	256 34.9	59.8	331 41.6	37.6	8 19.4	54.5
18	346 29.2	79 48.0	S24 02.6	271 38.4	N24 59.8	346 44.0	S 1 37.6	23 21.7	S15 54.4
19	1 31.6	94 47.1	02.8	286 41.9	59.7	1 46.3	37.5	38 23.9	54.4
20	16 34.1	109 46.1	03.0	301 45.5	59.7	16 48.7	37.5	53 26.2	54.3
21	31 36.6	124 45.1 . .	03.1	316 49.0 . .	59.7	31 51.0 . .	37.4	68 28.5 . .	54.2
22	46 39.0	139 44.2	03.3	331 52.5	59.7	46 53.4	37.3	83 30.8	54.2
23	61 41.5	154 43.2	03.4	346 56.1	59.7	61 55.8	37.3	98 33.1	54.1
8 00	76 44.0	169 42.2	S24 03.6	1 59.6	N24 59.7	76 58.1	S 1 37.2	113 35.4	S15 54.1
01	91 46.4	184 41.3	03.8	17 03.1	59.7	92 00.5	37.2	128 37.7	54.0
02	106 48.9	199 40.3	03.9	32 06.7	59.7	107 02.8	37.1	143 39.9	53.9
03	121 51.4	214 39.3 . .	04.1	47 10.2 . .	59.7	122 05.2 . .	37.1	158 42.2 . .	53.9
04	136 53.8	229 38.4	04.2	62 13.7	59.7	137 07.6	37.0	173 44.5	53.8
05	151 56.3	244 37.4	04.4	77 17.2	59.7	152 09.9	36.9	188 46.8	53.8
06	166 58.7	259 36.4	S24 04.5	92 20.8	N24 59.7	167 12.3	S 1 36.9	203 49.1	S15 53.7
07	182 01.2	274 35.5	04.7	107 24.3	59.7	182 14.6	36.8	218 51.4	53.6
J 08	197 03.7	289 34.5	04.8	122 27.8	59.7	197 17.0	36.8	233 53.6	53.6
U 09	212 06.1	304 33.5 . .	05.0	137 31.3 . .	59.6	212 19.3 . .	36.7	248 55.9 . .	53.5
E 10	227 08.6	319 32.6	05.1	152 34.9	59.6	227 21.7	36.6	263 58.2	53.5
V 11	242 11.1	334 31.6	05.3	167 38.4	59.6	242 24.0	36.6	279 00.5	53.4
E 12	257 13.5	349 30.6	S24 05.4	182 41.9	N24 59.6	257 26.4	S 1 36.5	294 02.8	S15 53.3
S 13	272 16.0	4 29.7	05.6	197 45.4	59.6	272 28.8	36.5	309 05.1	53.3
14	287 18.5	19 28.7	05.7	212 49.0	59.6	287 31.1	36.4	324 07.3	53.2
15	302 20.9	34 27.7 . .	05.8	227 52.5 . .	59.6	302 33.5 . .	36.3	339 09.6 . .	53.2
16	317 23.4	49 26.7	06.0	242 56.0	59.6	317 35.8	36.3	354 11.9	53.1
17	332 25.9	64 25.8	06.1	257 59.5	59.6	332 38.2	36.2	9 14.2	53.0
18	347 28.3	79 24.8	S24 06.2	273 03.1	N24 59.6	347 40.5	S 1 36.2	24 16.5	S15 53.0
19	2 30.8	94 23.8	06.4	288 06.6	59.6	2 42.9	36.1	39 18.8	52.9
20	17 33.2	109 22.9	06.5	303 10.1	59.5	17 45.2	36.0	54 21.0	52.9
21	32 35.7	124 21.9 . .	06.6	318 13.6 . .	59.5	32 47.6 . .	36.0	69 23.3 . .	52.8
22	47 38.2	139 20.9	06.8	333 17.2	59.5	47 49.9	35.9	84 25.6	52.7
23	62 40.6	154 20.0	06.9	348 20.7	59.5	62 52.3	35.8	99 27.9	52.7
	h m								
Paso Mer.	18 53.9	*v* −1.0	*d* 0.2	*v* 3.5	*d* 0.0	*v* 2.4	*d* 0.1	*v* 2.3	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.7	S40 12.9
Achernar	335 21.1	S57 07.5
Acrux	173 02.3	S63 13.2
Adhara	255 06.9	S29 00.0
Aldebaran	290 41.3	N16 33.3
Alioth	166 14.8	N55 50.0
Alkaid	152 53.7	N49 11.8
Alnair	27 35.2	S46 51.3
Alnilam	275 39.2	S 1 11.2
Alphard	217 49.3	S 8 45.3
Alphecca	126 05.6	N26 38.3
Alpheratz	357 36.5	N29 13.1
Altair	62 01.9	N 8 55.8
Ankaa	353 08.7	S42 11.1
Antares	112 18.4	S26 28.9
Arcturus	145 49.8	N19 03.8
Atria	107 14.7	S69 04.0
Avior	234 15.0	S59 34.7
Bellatrix	278 24.4	N 6 22.2
Betelgeuse	270 53.6	N 7 24.7
Canopus	263 52.6	S52 42.3
Capella	280 24.0	N46 01.2
Deneb	49 27.3	N45 21.9
Denebola	182 26.8	N14 26.7
Diphda	348 48.9	S17 51.8
Dubhe	193 43.2	N61 37.4
Elnath	278 03.7	N28 37.6
Eltanin	90 43.5	N51 29.2
Enif	33 40.6	N 9 58.8
Fomalhaut	15 16.5	S29 30.3
Gacrux	171 53.8	S57 14.1
Gienah	175 45.5	S17 39.9
Hadar	148 39.0	S60 28.7
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.4
Kochab	137 20.8	N74 03.5
Markab	13 31.6	N15 19.8
Menkar	314 07.7	N 4 10.8
Menkent	148 00.0	S36 28.7
Miaplacidus	221 38.1	S69 48.3
Mirfak	308 30.3	N49 56.6
Nunki	75 50.3	S26 16.1
Peacock	53 08.9	S56 39.9
Pollux	243 19.2	N27 58.2
Procyon	244 52.4	N 5 10.0
Rasalhague	96 00.5	N12 32.6
Regulus	207 36.2	N11 51.3
Rigel	281 05.2	S 8 10.5
Rigil Kent.	139 43.3	S60 55.5
Sabik	102 05.1	S15 45.1
Schedar	349 32.8	N56 40.0
Shaula	96 13.2	S37 07.2
Sirius	258 27.5	S16 44.8
Spica	158 24.3	S11 16.7
Suhail	222 47.4	S43 31.2
Vega	80 34.8	N38 48.4
Zuben'ubi	136 58.3	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	94 20.6	12 40
Marte	284 50.0	23 52
Júpiter	0 16.6	18 53
Saturno	36 55.7	16 27

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	°	′	′	
6 00	182	18.1	S22	27.5	28	10.0	12.6	N18	02.8	11.2	55.7
01	197	17.9		27.8	42	41.6	12.5	18	14.0	11.2	55.6
02	212	17.6		28.1	57	13.1	12.5	18	25.2	11.0	55.6
03	227	17.3	. .	28.4	71	44.6	12.4	18	36.2	11.0	55.6
04	242	17.1		28.7	86	16.0	12.4	18	47.2	10.9	55.6
05	257	16.8		29.0	100	47.4	12.3	18	58.1	10.8	55.6
06	272	16.6	S22	29.3	115	18.7	12.3	N19	08.9	10.7	55.5
07	287	16.3		29.6	129	50.0	12.3	19	19.6	10.6	55.5
M 08	302	16.0		29.9	144	21.3	12.2	19	30.2	10.5	55.5
A 09	317	15.8	. .	30.2	158	52.5	12.1	19	40.7	10.4	55.5
R 10	332	15.5		30.5	173	23.6	12.1	19	51.1	10.3	55.5
11	347	15.2		30.8	187	54.7	12.0	20	01.4	10.2	55.5
T 12	2	15.0	S22	31.1	202	25.7	12.0	N20	11.6	10.1	55.4
E 13	17	14.7		31.4	216	56.7	11.9	20	21.7	10.1	55.4
S 14	32	14.4		31.7	231	27.6	11.9	20	31.8	9.9	55.4
15	47	14.2	. .	32.0	245	58.5	11.9	20	41.7	9.8	55.4
16	62	13.9		32.3	260	29.4	11.8	20	51.5	9.7	55.4
17	77	13.7		32.6	275	00.2	11.7	21	01.2	9.6	55.4
18	92	13.4	S22	32.9	289	30.9	11.7	N21	10.8	9.5	55.3
19	107	13.1		33.1	304	01.6	11.6	21	20.3	9.4	55.3
20	122	12.9		33.4	318	32.2	11.6	21	29.7	9.3	55.3
21	137	12.6	. .	33.7	333	02.8	11.5	21	39.0	9.1	55.3
22	152	12.3		34.0	347	33.3	11.5	21	48.1	9.1	55.3
23	167	12.1		34.3	2	03.8	11.5	21	57.2	9.0	55.2
7 00	182	11.8	S22	34.6	16	34.3	11.4	N22	06.2	8.8	55.2
01	197	11.5		34.9	31	04.7	11.3	22	15.0	8.8	55.2
02	212	11.3		35.2	45	35.0	11.3	22	23.8	8.6	55.2
03	227	11.0	. .	35.4	60	05.3	11.2	22	32.4	8.5	55.2
04	242	10.7		35.7	74	35.5	11.2	22	40.9	8.4	55.2
05	257	10.5		36.0	89	05.7	11.2	22	49.3	8.3	55.1
06	272	10.2	S22	36.3	103	35.9	11.1	N22	57.6	8.2	55.1
07	287	09.9		36.6	118	06.0	11.0	23	05.8	8.1	55.1
M 08	302	09.7		36.8	132	36.0	11.1	23	13.9	7.9	55.1
I 09	317	09.4	. .	37.1	147	06.1	10.9	23	21.8	7.9	55.1
É 10	332	09.1		37.4	161	36.0	10.9	23	29.7	7.7	55.1
R 11	347	08.9		37.7	176	05.9	10.9	23	37.4	7.6	55.0
C 12	2	08.6	S22	38.0	190	35.8	10.8	N23	45.0	7.4	55.0
O 13	17	08.3		38.2	205	05.6	10.8	23	52.4	7.4	55.0
L 14	32	08.1		38.5	219	35.4	10.8	23	59.8	7.2	55.0
E 15	47	07.8	. .	38.8	234	05.2	10.7	24	07.0	7.2	55.0
S 16	62	07.5		39.1	248	34.9	10.6	24	14.2	7.0	55.0
17	77	07.2		39.3	263	04.5	10.6	24	21.2	6.8	55.0
18	92	07.0	S22	39.6	277	34.1	10.6	N24	28.0	6.8	54.9
19	107	06.7		39.9	292	03.7	10.5	24	34.8	6.6	54.9
20	122	06.4		40.1	306	33.2	10.5	24	41.4	6.5	54.9
21	137	06.2	. .	40.4	321	02.7	10.5	24	47.9	6.4	54.9
22	152	05.9		40.7	335	32.2	10.4	24	54.3	6.3	54.9
23	167	05.6		41.0	350	01.6	10.3	25	00.6	6.1	54.9
8 00	182	05.4	S22	41.2	4	30.9	10.4	N25	06.7	6.0	54.8
01	197	05.1		41.5	19	00.3	10.3	25	12.7	5.9	54.8
02	212	04.8		41.8	33	29.6	10.2	25	18.6	5.7	54.8
03	227	04.5	. .	42.0	47	58.8	10.3	25	24.3	5.7	54.8
04	242	04.3		42.3	62	28.1	10.2	25	30.0	5.5	54.8
05	257	04.0		42.5	76	57.3	10.1	25	35.5	5.3	54.8
06	272	03.7	S22	42.8	91	26.4	10.2	N25	40.8	5.3	54.8
07	287	03.5		43.1	105	55.6	10.1	25	46.1	5.1	54.7
J 08	302	03.2		43.3	120	24.7	10.0	25	51.2	4.9	54.7
U 09	317	02.9	. .	43.6	134	53.7	10.1	25	56.1	4.9	54.7
E 10	332	02.6		43.9	149	22.8	10.0	26	01.0	4.7	54.7
V 11	347	02.4		44.1	163	51.8	10.0	26	05.7	4.6	54.7
E 12	2	02.1	S22	44.4	178	20.8	9.9	N26	10.3	4.5	54.7
S 13	17	01.8		44.6	192	49.7	10.0	26	14.8	4.3	54.7
14	32	01.5		44.9	207	18.7	9.9	26	19.1	4.2	54.6
15	47	01.3	. .	45.1	221	47.6	9.9	26	23.3	4.0	54.6
16	62	01.0		45.4	236	16.5	9.8	26	27.3	3.9	54.6
17	77	00.7		45.7	250	45.3	9.9	26	31.2	3.8	54.6
18	92	00.4	S22	45.9	265	14.2	9.8	N26	35.0	3.7	54.6
19	107	00.2		46.2	279	43.0	9.8	26	38.7	3.5	54.6
20	121	59.9		46.4	294	11.8	9.8	26	42.2	3.4	54.6
21	136	59.6	. .	46.7	308	40.6	9.8	26	45.6	3.3	54.6
22	151	59.3		46.9	323	09.4	9.7	26	48.9	3.1	54.5
23	166	59.1		47.2	337	38.1	9.8	N26	52.0	3.0	54.5
	S/D	16.3	d	0.3	S/D		15.1		15.0		14.9

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			6	7	8	9
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	08	06	10	17	▬	▭	▭	▭	▭
N 70	07	48	09	29	▬	10 52	▭	▭	▭
68	07	33	08	59	11 18	12 10	▭	▭	▭
66	07	21	08	36	10 07	12 49	11 59	▭	▭
64	07	11	08	18	09 31	13 15	13 01	▭	▭
62	07	02	08	03	09 06	13 36	13 36	13 39	13 57
60	06	54	07	50	08 46	13 54	14 01	14 17	14 49
N 58	06	47	07	39	08 30	14 08	14 21	14 44	15 21
56	06	41	07	29	08 16	14 20	14 38	15 05	15 45
54	06	35	07	21	08 04	14 31	14 52	15 22	16 04
52	06	30	07	13	07 53	14 41	15 05	15 37	16 20
50	06	25	07	06	07 44	14 50	15 16	15 50	16 34
45	06	14	06	51	07 24	15 08	15 39	16 17	17 03
N 40	06	04	06	38	07 08	15 23	15 57	16 38	17 25
35	05	55	06	27	06 55	15 36	16 13	16 56	17 44
30	05	47	06	16	06 43	15 47	16 27	17 11	18 00
20	05	31	05	58	06 22	16 07	16 50	17 37	18 27
N 10	05	16	05	42	06 04	16 24	17 10	17 59	18 50
0	04	59	05	25	05 48	16 40	17 29	18 20	19 12
S 10	04	41	05	08	05 31	16 56	17 48	18 41	19 34
20	04	19	04	48	05 13	17 13	18 09	19 04	19 57
30	03	51	04	24	04 51	17 33	18 32	19 30	20 24
35	03	33	04	10	04 39	17 45	18 46	19 46	20 40
40	03	11	03	52	04 24	17 58	19 03	20 04	20 59
45	02	42	03	31	04 07	18 14	19 22	20 26	21 22
S 50	02	00	03	02	03 46	18 34	19 47	20 54	21 51
52	01	36	02	48	03 36	18 44	19 59	21 07	22 05
54	01	00	02	32	03 24	18 55	20 12	21 23	22 22
56	////		02	11	03 11	19 07	20 28	21 42	22 41
58	////		01	45	02 55	19 21	20 47	22 05	23 06
S 60	////		01	06	02 36	19 38	21 11	22 35	23 39

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 6	7	8	9
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	▬		13	25	15 37	▭	▭	▭	▭
N 70	▬		14	13	15 55	09 45	▭	▭	▭
68	12	24	14	44	16 09	08 28	▭	▭	▭
66	13	36	15	07	16 21	07 51	10 22	▭	▭
64	14	11	15	25	16 32	07 25	09 20	▭	▭
62	14	37	15	40	16 40	07 05	08 46	10 29	11 59
60	14	57	15	52	16 48	06 48	08 22	09 51	11 07
N 58	15	13	16	03	16 55	06 35	08 02	09 25	10 35
56	15	27	16	13	17 02	06 23	07 46	09 04	10 11
54	15	39	16	22	17 07	06 13	07 32	08 47	09 52
52	15	49	16	29	17 13	06 04	07 20	08 32	09 36
50	15	59	16	37	17 18	05 56	07 09	08 20	09 22
45	16	18	16	52	17 29	05 38	06 47	07 53	08 53
N 40	16	35	17	05	17 39	05 24	06 30	07 33	08 31
35	16	48	17	16	17 48	05 12	06 15	07 15	08 13
30	17	00	17	26	17 56	05 02	06 02	07 01	07 57
20	17	20	17	44	18 12	04 45	05 40	06 35	07 30
N 10	17	38	18	01	18 27	04 29	05 21	06 14	07 07
0	17	55	18	18	18 44	04 15	05 03	05 54	06 45
S 10	18	12	18	35	19 02	04 01	04 46	05 33	06 24
20	18	30	18	55	19 24	03 46	04 27	05 12	06 01
30	18	52	19	19	19 52	03 28	04 05	04 47	05 34
35	19	04	19	34	20 10	03 18	03 53	04 32	05 18
40	19	19	19	51	20 32	03 07	03 38	04 16	04 59
45	19	36	20	13	21 01	02 54	03 21	03 55	04 37
S 50	19	58	20	41	21 44	02 37	03 00	03 30	04 09
52	20	08	20	55	22 09	02 30	02 50	03 18	03 55
54	20	20	21	12	22 45	02 21	02 39	03 04	03 39
56	20	33	21	33	////	02 12	02 26	02 48	03 20
58	20	49	21	59	////	02 01	02 12	02 28	02 57
S 60	21	08	22	39	////	01 49	01 54	02 05	02 27

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		SOL Paso Mer.	LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		LUNA Edad	LUNA Fase
d	m	s	m	s	h m	h	m	h	m	d	%
6	09	13	09	00	11 51	22	51	10	27	13	97
7	08	48	08	35	11 51	23	41	11	16	14	100
8	08	22	08	09	11 52	24	33	12	07	15	100

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·9		JÚPITER −2·5		SATURNO +0·7	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
9 00	77 43.1	169 19.0	S24 07.0	3 24.2	N24 59.5	77 54.6	S 1 35.8	114 30.2	S15 52.6
01	92 45.6	184 18.0	07.2	18 27.7	59.5	92 57.0	35.7	129 32.5	52.6
02	107 48.0	199 17.0	07.3	33 31.3	59.5	107 59.3	35.7	144 34.7	52.5
03	122 50.5	214 16.1	07.4	48 34.8	59.5	123 01.7	35.6	159 37.0	52.4
04	137 53.0	229 15.1	07.5	63 38.3	59.4	138 04.0	35.5	174 39.3	52.4
05	152 55.4	244 14.1	07.7	78 41.8	59.4	153 06.4	35.5	189 41.6	52.3
06	167 57.9	259 13.2	S24 07.8	93 45.3	N24 59.4	168 08.7	S 1 35.4	204 43.9	S15 52.3
07	183 00.4	274 12.2	07.9	108 48.9	59.4	183 11.1	35.3	219 46.1	52.2
08	198 02.8	289 11.2	08.0	123 52.4	59.4	198 13.4	35.3	234 48.4	52.1
V 09	213 05.3	304 10.2	08.1	138 55.9	59.4	213 15.8	35.2	249 50.7	52.1
I 10	228 07.7	319 09.3	08.2	153 59.4	59.4	228 18.1	35.2	264 53.0	52.0
E 11	243 10.2	334 08.3	08.4	169 02.9	59.4	243 20.5	35.1	279 55.3	51.9
R 12	258 12.7	349 07.3	S24 08.5	184 06.5	N24 59.3	258 22.8	S 1 35.0	294 57.6	S15 51.9
N 13	273 15.1	4 06.4	08.6	199 10.0	59.3	273 25.2	35.0	309 59.8	51.8
E 14	288 17.6	19 05.4	08.7	214 13.5	59.3	288 27.5	34.9	325 02.1	51.8
S 15	303 20.1	34 04.4	08.8	229 17.0	59.3	303 29.9	34.8	340 04.4	51.7
16	318 22.5	49 03.4	08.9	244 20.5	59.3	318 32.2	34.8	355 06.7	51.6
17	333 25.0	64 02.5	09.0	259 24.0	59.3	333 34.6	34.7	10 09.0	51.6
18	348 27.5	79 01.5	S24 09.1	274 27.6	N24 59.3	348 36.9	S 1 34.7	25 11.2	S15 51.5
19	3 29.9	94 00.5	09.2	289 31.1	59.2	3 39.3	34.6	40 13.5	51.5
20	18 32.4	108 59.6	09.3	304 34.6	59.2	18 41.6	34.5	55 15.8	51.4
21	33 34.9	123 58.6	09.4	319 38.1	59.2	33 43.9	34.5	70 18.1	51.3
22	48 37.3	138 57.6	09.5	334 41.6	59.2	48 46.3	34.4	85 20.4	51.3
23	63 39.8	153 56.6	09.6	349 45.1	59.2	63 48.6	34.3	100 22.6	51.2
10 00	78 42.2	168 55.7	S24 09.7	4 48.6	N24 59.2	78 51.0	S 1 34.3	115 24.9	S15 51.1
01	93 44.7	183 54.7	09.8	19 52.2	59.1	93 53.3	34.2	130 27.2	51.1
02	108 47.2	198 53.7	09.9	34 55.7	59.1	108 55.7	34.1	145 29.5	51.0
03	123 49.6	213 52.7	10.0	49 59.2	59.1	123 58.0	34.1	160 31.7	51.0
04	138 52.1	228 51.8	10.1	65 02.7	59.1	139 00.3	34.0	175 34.0	50.9
05	153 54.6	243 50.8	10.2	80 06.2	59.1	154 02.7	33.9	190 36.3	50.8
06	168 57.0	258 49.8	S24 10.3	95 09.7	N24 59.0	169 05.0	S 1 33.9	205 38.6	S15 50.8
07	183 59.5	273 48.8	10.4	110 13.2	59.0	184 07.4	33.8	220 40.9	50.7
08	199 02.0	288 47.9	10.5	125 16.7	59.0	199 09.7	33.7	235 43.1	50.6
S 09	214 04.4	303 46.9	10.5	140 20.2	59.0	214 12.1	33.7	250 45.4	50.6
Á 10	229 06.9	318 45.9	10.6	155 23.8	59.0	229 14.4	33.6	265 47.7	50.5
B 11	244 09.4	333 45.0	10.7	170 27.3	59.0	244 16.7	33.5	280 50.0	50.5
A 12	259 11.8	348 44.0	S24 10.8	185 30.8	N24 58.9	259 19.1	S 1 33.5	295 52.3	S15 50.4
D 13	274 14.3	3 43.0	10.9	200 34.3	58.9	274 21.4	33.4	310 54.5	50.3
O 14	289 16.7	18 42.0	11.0	215 37.8	58.9	289 23.8	33.3	325 56.8	50.3
15	304 19.2	33 41.1	11.0	230 41.3	58.9	304 26.1	33.3	340 59.1	50.2
16	319 21.7	48 40.1	11.1	245 44.8	58.9	319 28.4	33.2	356 01.4	50.2
17	334 24.1	63 39.1	11.2	260 48.3	58.8	334 30.8	33.1	11 03.6	50.1
18	349 26.6	78 38.1	S24 11.3	275 51.8	N24 58.8	349 33.1	S 1 33.1	26 05.9	S15 50.0
19	4 29.1	93 37.2	11.3	290 55.3	58.8	4 35.4	33.0	41 08.2	50.0
20	19 31.5	108 36.2	11.4	305 58.8	58.8	19 37.8	32.9	56 10.5	49.9
21	34 34.0	123 35.2	11.5	321 02.3	58.8	34 40.1	32.9	71 12.7	49.8
22	49 36.5	138 34.2	11.5	336 05.8	58.7	49 42.5	32.8	86 15.0	49.8
23	64 38.9	153 33.3	11.6	351 09.3	58.7	64 44.8	32.7	101 17.3	49.7
11 00	79 41.4	168 32.3	S24 11.7	6 12.8	N24 58.7	79 47.1	S 1 32.7	116 19.6	S15 49.6
01	94 43.9	183 31.3	11.7	21 16.3	58.7	94 49.5	32.6	131 21.8	49.6
02	109 46.3	198 30.3	11.8	36 19.8	58.6	109 51.8	32.5	146 24.1	49.5
03	124 48.8	213 29.4	11.9	51 23.3	58.6	124 54.1	32.5	161 26.4	49.5
04	139 51.2	228 28.4	11.9	66 26.8	58.6	139 56.5	32.4	176 28.7	49.4
05	154 53.7	243 27.4	12.0	81 30.3	58.6	154 58.8	32.3	191 31.0	49.3
06	169 56.2	258 26.4	S24 12.1	96 33.8	N24 58.6	170 01.1	S 1 32.3	206 33.2	S15 49.3
07	184 58.6	273 25.5	12.1	111 37.3	58.5	185 03.5	32.2	221 35.5	49.2
D 08	200 01.1	288 24.5	12.2	126 40.8	58.5	200 05.8	32.1	236 37.8	49.1
O 09	215 03.6	303 23.5	12.2	141 44.3	58.5	215 08.1	32.1	251 40.1	49.1
M 10	230 06.0	318 22.5	12.3	156 47.8	58.5	230 10.5	32.0	266 42.3	49.0
I 11	245 08.5	333 21.6	12.3	171 51.3	58.4	245 12.8	31.9	281 44.6	49.0
N 12	260 11.0	348 20.6	S24 12.4	186 54.8	N24 58.4	260 15.1	S 1 31.8	296 46.9	S15 48.9
G 13	275 13.4	3 19.6	12.4	201 58.3	58.4	275 17.5	31.8	311 49.1	48.8
O 14	290 15.9	18 18.6	12.5	217 01.8	58.4	290 19.8	31.7	326 51.4	48.8
15	305 18.3	33 17.7	12.5	232 05.3	58.3	305 22.1	31.6	341 53.7	48.7
16	320 20.8	48 16.7	12.6	247 08.8	58.3	320 24.5	31.6	356 56.0	48.6
17	335 23.3	63 15.7	12.6	262 12.3	58.3	335 26.8	31.5	11 58.2	48.6
18	350 25.7	78 14.7	S24 12.7	277 15.8	N24 58.3	350 29.1	S 1 31.4	27 00.5	S15 48.5
19	5 28.2	93 13.8	12.7	292 19.3	58.2	5 31.5	31.4	42 02.8	48.4
20	20 30.7	108 12.8	12.7	307 22.8	58.2	20 33.8	31.3	57 05.1	48.4
21	35 33.1	123 11.8	12.8	322 26.3	58.2	35 36.1	31.2	72 07.3	48.3
22	50 35.6	138 10.8	12.8	337 29.8	58.2	50 38.4	31.1	87 09.6	48.3
23	65 38.1	153 09.9	12.9	352 33.3	58.1	65 40.8	31.1	102 11.9	48.2
	h m								
Paso Mer.	18 42.1	*v* −1.0	*d* 0.1	*v* 3.5	*d* 0.0	*v* 2.3	*d* 0.1	*v* 2.3	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.7	S40 12.9
Achernar	335 21.1	S57 07.5
Acrux	173 02.2	S63 13.2
Adhara	255 06.9	S29 00.1
Aldebaran	290 41.3	N16 33.3
Alioth	166 14.8	N55 49.9
Alkaid	152 53.7	N49 11.8
Alnair	27 35.3	S46 51.3
Alnilam	275 39.2	S 1 11.2
Alphard	217 49.3	S 8 45.3
Alphecca	126 05.6	N26 38.2
Alpheratz	357 36.5	N29 13.1
Altair	62 01.9	N 8 55.8
Ankaa	353 08.7	S42 11.2
Antares	112 18.3	S26 28.9
Arcturus	145 49.8	N19 03.8
Atria	107 14.7	S69 04.0
Avior	234 15.0	S59 34.7
Bellatrix	278 24.4	N 6 22.2
Betelgeuse	270 53.6	N 7 24.7
Canopus	263 52.6	S52 42.3
Capella	280 24.0	N46 01.2
Deneb	49 27.3	N45 21.9
Denebola	182 26.8	N14 26.6
Diphda	348 48.9	S17 51.8
Dubhe	193 43.1	N61 37.4
Elnath	278 03.7	N28 37.6
Eltanin	90 43.5	N51 29.2
Enif	33 40.6	N 9 58.8
Fomalhaut	15 16.5	S29 30.3
Gacrux	171 53.8	S57 14.1
Gienah	175 45.5	S17 40.0
Hadar	148 38.9	S60 28.7
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.4
Kochab	137 20.8	N74 03.5
Markab	13 31.6	N15 19.8
Menkar	314 07.7	N 4 10.8
Menkent	148 00.0	S36 28.7
Miaplacidus	221 38.1	S69 48.3
Mirfak	308 30.3	N49 56.6
Nunki	75 50.3	S26 16.1
Peacock	53 08.9	S56 39.9
Pollux	243 19.1	N27 58.2
Procyon	244 52.4	N 5 10.0
Rasalhague	96 00.5	N12 32.6
Regulus	207 36.2	N11 51.3
Rigel	281 05.2	S 8 10.5
Rigil Kent.	139 43.2	S60 55.5
Sabik	102 05.1	S15 45.1
Schedar	349 32.8	N56 40.0
Shaula	96 13.2	S37 07.2
Sirius	258 27.4	S16 44.8
Spica	158 24.3	S11 16.7
Suhail	222 47.3	S43 31.2
Vega	80 34.8	N38 48.4
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	90 13.4	12 45
Marte	286 06.4	23 35
Júpiter	0 08.7	18 42
Saturno	36 42.7	16 16

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	v	Dec	d	Ph	
d h	°	′	°	′	°	′	°	′	′	
9 00	181	58.8	S22	47.4	352	06.9	9.7	N26	55.0	2.8	54.5
01	196	58.5		47.7	6	35.6	9.7	26	57.8	2.7	54.5
02	211	58.2		47.9	21	04.3	9.8	27	00.5	2.6	54.5
03	226	58.0	. .	48.2	35	33.1	9.7	27	03.1	2.4	54.5
04	241	57.7		48.4	50	01.8	9.6	27	05.5	2.3	54.5
05	256	57.4		48.6	64	30.4	9.7	27	07.8	2.2	54.5
06	271	57.1	S22	48.9	78	59.1	9.7	N27	10.0	2.0	54.4
07	286	56.9		49.1	93	27.8	9.7	27	12.0	1.9	54.4
08	301	56.6		49.4	107	56.5	9.7	27	13.9	1.8	54.4
09	316	56.3	. .	49.6	122	25.2	9.6	27	15.7	1.6	54.4
10	331	56.0		49.9	136	53.8	9.7	27	17.3	1.5	54.4
11	346	55.7		50.1	151	22.5	9.7	27	18.8	1.4	54.4
12	1	55.5	S22	50.3	165	51.2	9.6	N27	20.2	1.2	54.4
13	16	55.2		50.6	180	19.8	9.7	27	21.4	1.1	54.4
14	31	54.9		50.8	194	48.5	9.7	27	22.5	0.9	54.4
15	46	54.6	. .	51.1	209	17.2	9.7	27	23.4	0.8	54.3
16	61	54.3		51.3	223	45.9	9.7	27	24.2	0.7	54.3
17	76	54.1		51.5	238	14.6	9.7	27	24.9	0.5	54.3
18	91	53.8	S22	51.8	252	43.3	9.7	N27	25.4	0.4	54.3
19	106	53.5		52.0	267	12.0	9.7	27	25.8	0.3	54.3
20	121	53.2		52.2	281	40.7	9.7	27	26.1	0.1	54.3
21	136	52.9	. .	52.5	296	09.4	9.8	27	26.2	0.0	54.3
22	151	52.7		52.7	310	38.2	9.8	27	26.2	0.1	54.3
23	166	52.4		52.9	325	07.0	9.7	27	26.1	0.3	54.3
10 00	181	52.1	S22	53.2	339	35.7	9.8	N27	25.8	0.4	54.3
01	196	51.8		53.4	354	04.5	9.8	27	25.4	0.6	54.3
02	211	51.5		53.6	8	33.3	9.9	27	24.8	0.7	54.2
03	226	51.3	. .	53.8	23	02.2	9.8	27	24.1	0.8	54.2
04	241	51.0		54.1	37	31.0	9.9	27	23.3	0.9	54.2
05	256	50.7		54.3	51	59.9	9.9	27	22.4	1.1	54.2
06	271	50.4	S22	54.5	66	28.8	9.9	N27	21.3	1.2	54.2
07	286	50.1		54.7	80	57.7	9.9	27	20.1	1.4	54.2
08	301	49.9		55.0	95	26.6	10.0	27	18.7	1.5	54.2
09	316	49.6	. .	55.2	109	55.6	10.0	27	17.2	1.6	54.2
10	331	49.3		55.4	124	24.6	10.0	27	15.6	1.8	54.2
11	346	49.0		55.6	138	53.6	10.1	27	13.8	1.8	54.2
12	1	48.7	S22	55.9	153	22.7	10.1	N27	12.0	2.1	54.2
13	16	48.4		56.1	167	51.8	10.1	27	09.9	2.1	54.2
14	31	48.2		56.3	182	20.9	10.2	27	07.8	2.3	54.1
15	46	47.9	. .	56.5	196	50.1	10.1	27	05.5	2.4	54.1
16	61	47.6		56.7	211	19.2	10.3	27	03.1	2.5	54.1
17	76	47.3		57.0	225	48.5	10.2	27	00.6	2.7	54.1
18	91	47.0	S22	57.2	240	17.7	10.3	N26	57.9	2.8	54.1
19	106	46.7		57.4	254	47.0	10.3	26	55.1	2.9	54.1
20	121	46.5		57.6	269	16.3	10.4	26	52.2	3.0	54.1
21	136	46.2	. .	57.8	283	45.7	10.4	26	49.2	3.2	54.1
22	151	45.9		58.0	298	15.1	10.5	26	46.0	3.3	54.1
23	166	45.6		58.2	312	44.6	10.5	26	42.7	3.5	54.1
11 00	181	45.3	S22	58.5	327	14.1	10.5	N26	39.2	3.5	54.1
01	196	45.0		58.7	341	43.6	10.6	26	35.7	3.7	54.1
02	211	44.8		58.9	356	13.2	10.6	26	32.0	3.8	54.1
03	226	44.5	. .	59.1	10	42.8	10.7	26	28.2	3.9	54.1
04	241	44.2		59.3	25	12.5	10.7	26	24.3	4.1	54.1
05	256	43.9		59.5	39	42.2	10.7	26	20.2	4.2	54.1
06	271	43.6	S22	59.7	54	11.9	10.8	N26	16.0	4.3	54.1
07	286	43.3	22	59.9	68	41.7	10.9	26	11.7	4.4	54.1
08	301	43.0	23	00.1	83	11.6	10.9	26	07.3	4.5	54.1
09	316	42.8	. .	00.3	97	41.5	11.0	26	02.8	4.7	54.1
10	331	42.5		00.5	112	11.5	11.0	25	58.1	4.8	54.0
11	346	42.2		00.7	126	41.5	11.0	25	53.3	4.9	54.0
12	1	41.9	S23	00.9	141	11.5	11.1	N25	48.4	5.0	54.0
13	16	41.6		01.1	155	41.6	11.2	25	43.4	5.2	54.0
14	31	41.3		01.3	170	11.8	11.2	25	38.2	5.2	54.0
15	46	41.0	. .	01.5	184	42.0	11.2	25	33.0	5.4	54.0
16	61	40.7		01.7	199	12.2	11.4	25	27.6	5.5	54.0
17	76	40.5		01.9	213	42.6	11.3	25	22.1	5.6	54.0
18	91	40.2	S23	02.1	228	12.9	11.5	N25	16.5	5.7	54.0
19	106	39.9		02.3	242	43.4	11.4	25	10.8	5.9	54.0
20	121	39.6		02.5	257	13.8	11.6	25	04.9	5.9	54.0
21	136	39.3	. .	02.7	271	44.4	11.6	24	59.0	6.1	54.0
22	151	39.0		02.9	286	15.0	11.6	24	52.9	6.1	54.0
23	166	38.7		03.1	300	45.6	11.7	N24	46.8	6.3	54.0
	S/D	16.3	d	0.2	S/D	14.8		14.8			14.7

VIERNES — SÁBADO — DOMINGO

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		9	10	11	12
°	h m	h m	h m	h m	h m	h m	h m
N 72	08 12	10 29	▬	▭	▭	▭	▭
N 70	07 53	09 37	▬	▭	▭	▭	▭
68	07 38	09 05	▬	▭	▭	▭	▭
66	07 26	08 41	10 15	▭	▭	▭	16 56
64	07 15	08 22	09 38	▭	▭	15 35	17 41
62	07 06	08 07	09 11	13 57	14 59	16 33	18 11
60	06 58	07 54	08 51	14 49	15 47	17 06	18 33
N 58	06 51	07 43	08 34	15 21	16 18	17 30	18 51
56	06 44	07 33	08 20	15 45	16 41	17 50	19 06
54	06 38	07 24	08 08	16 04	16 59	18 06	19 19
52	06 33	07 16	07 57	16 20	17 15	18 20	19 30
50	06 28	07 09	07 47	16 34	17 29	18 32	19 40
45	06 16	06 53	07 27	17 03	17 57	18 57	20 01
N 40	06 06	06 40	07 11	17 25	18 19	19 17	20 18
35	05 57	06 29	06 57	17 44	18 37	19 34	20 32
30	05 49	06 19	06 45	18 00	18 53	19 48	20 45
20	05 33	06 00	06 24	18 27	19 19	20 13	21 06
N 10	05 17	05 43	06 06	18 50	19 42	20 34	21 24
0	05 00	05 27	05 49	19 12	20 03	20 53	21 41
S 10	04 42	05 09	05 32	19 34	20 25	21 13	21 57
20	04 20	04 49	05 13	19 57	20 47	21 34	22 15
30	03 51	04 25	04 52	20 24	21 14	21 58	22 36
35	03 33	04 10	04 39	20 40	21 29	22 12	22 48
40	03 11	03 52	04 24	20 59	21 47	22 28	23 02
45	02 41	03 30	04 07	21 22	22 09	22 47	23 18
S 50	01 58	03 01	03 45	21 51	22 37	23 11	23 38
52	01 32	02 47	03 35	22 05	22 50	23 23	23 47
54	00 53	02 30	03 23	22 22	23 05	23 36	23 58
56	////	02 09	03 09	22 41	23 24	23 51	24 10
58	////	01 41	02 53	23 06	23 46	24 09	00 09
S 60	////	00 59	02 34	23 39	24 14	00 14	00 31

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	9	10	11	12
°	h m	h m	h m	h m	h m	h m	h m
N 72	▬	13 16	15 33	▭	▭	▭	▭
N 70	▬	14 08	15 52	▭	▭	▭	▭
68	▬	14 40	16 07	▭	▭	▭	▭
66	13 30	15 04	16 20	▭	▭	▭	14 13
64	14 08	15 23	16 30	▭	▭	13 54	13 27
62	14 34	15 38	16 39	11 59	12 44	12 55	12 57
60	14 55	15 51	16 47	11 07	11 56	12 22	12 34
N 58	15 11	16 02	16 55	10 35	11 26	11 57	12 15
56	15 26	16 12	17 01	10 11	11 02	11 37	12 00
54	15 38	16 21	17 07	09 52	10 43	11 20	11 46
52	15 49	16 29	17 12	09 36	10 27	11 06	11 35
50	15 58	16 36	17 18	09 22	10 14	10 54	11 24
45	16 18	16 52	17 29	08 53	09 45	10 28	11 02
N 40	16 35	17 05	17 39	08 31	09 23	10 07	10 44
35	16 48	17 16	17 48	08 13	09 05	09 50	10 29
30	17 01	17 27	17 57	07 57	08 49	09 35	10 16
20	17 21	17 45	18 13	07 30	08 22	09 10	09 54
N 10	17 39	18 02	18 28	07 07	07 59	08 48	09 35
0	17 56	18 19	18 45	06 45	07 37	08 28	09 16
S 10	18 14	18 37	19 04	06 24	07 15	08 07	08 58
20	18 32	18 57	19 26	06 01	06 52	07 45	08 38
30	18 54	19 21	19 54	05 34	06 25	07 19	08 16
35	19 07	19 36	20 13	05 18	06 09	07 04	08 02
40	19 21	19 54	20 35	04 59	05 50	06 47	07 47
45	19 39	20 16	21 05	04 37	05 28	06 25	07 28
S 50	20 01	20 45	21 49	04 09	04 59	05 58	07 05
52	20 11	20 59	22 15	03 55	04 45	05 45	06 53
54	20 23	21 17	22 54	03 39	04 28	05 30	06 40
56	20 37	21 38	////	03 20	04 08	05 12	06 26
58	20 53	22 06	////	02 57	03 44	04 50	06 08
S 60	21 13	22 49	////	02 27	03 11	04 22	05 47

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d %	
9	07 56	07 42	11 52	00 33	12 59	16 98	
10	07 29	07 15	11 53	01 25	13 50	17 95	
11	07 02	06 48	11 53	02 16	14 41	18 90	

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·8		JÚPITER −2·5		SATURNO +0·7	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
12 00	80 40.5	168 08.9	S24 12.9	7 36.8	N24 58.1	80 43.1	S 1 31.0	117 14.2	S15 48.1
01	95 43.0	183 07.9	12.9	22 40.2	58.1	95 45.4	30.9	132 16.4	48.1
02	110 45.5	198 06.9	13.0	37 43.7	58.1	110 47.8	30.9	147 18.7	48.0
03	125 47.9	213 06.0	13.0	52 47.2	58.0	125 50.1	30.8	162 21.0	47.9
04	140 50.4	228 05.0	13.0	67 50.7	58.0	140 52.4	30.7	177 23.2	47.9
05	155 52.8	243 04.0	13.0	82 54.2	58.0	155 54.7	30.6	192 25.5	47.8
06	170 55.3	258 03.0	S24 13.1	97 57.7	N24 58.0	170 57.1	S 1 30.6	207 27.8	S15 47.7
07	185 57.8	273 02.1	13.1	113 01.2	57.9	185 59.4	30.5	222 30.1	47.7
08	201 00.2	288 01.1	13.1	128 04.7	57.9	201 01.7	30.4	237 32.3	47.6
L 09	216 02.7	303 00.1	13.1	143 08.1	57.9	216 04.0	30.3	252 34.6	47.6
U 10	231 05.2	317 59.1	13.2	158 11.6	57.8	231 06.4	30.3	267 36.9	47.5
N 11	246 07.6	332 58.2	13.2	173 15.1	57.8	246 08.7	30.2	282 39.2	47.4
E 12	261 10.1	347 57.2	S24 13.2	188 18.6	N24 57.8	261 11.0	S 1 30.1	297 41.4	S15 47.4
S 13	276 12.6	2 56.2	13.2	203 22.1	57.8	276 13.3	30.1	312 43.7	47.3
14	291 15.0	17 55.2	13.2	218 25.6	57.7	291 15.7	30.0	327 46.0	47.2
15	306 17.5	32 54.3	13.3	233 29.0	57.7	306 18.0	29.9	342 48.2	47.2
16	321 20.0	47 53.3	13.3	248 32.5	57.7	321 20.3	29.8	357 50.5	47.1
17	336 22.4	62 52.3	13.3	263 36.0	57.6	336 22.6	29.8	12 52.8	47.0
18	351 24.9	77 51.3	S24 13.3	278 39.5	N24 57.6	351 25.0	S 1 29.7	27 55.0	S15 47.0
19	6 27.3	92 50.4	13.3	293 42.9	57.6	6 27.3	29.6	42 57.3	46.9
20	21 29.8	107 49.4	13.3	308 46.4	57.6	21 29.6	29.5	57 59.6	46.8
21	36 32.3	122 48.4	13.3	323 49.9	57.5	36 31.9	29.5	73 01.9	46.8
22	51 34.7	137 47.4	13.3	338 53.4	57.5	51 34.3	29.4	88 04.1	46.7
23	66 37.2	152 46.5	13.3	353 56.9	57.5	66 36.6	29.3	103 06.4	46.6
13 00	81 39.7	167 45.5	S24 13.3	9 00.3	N24 57.4	81 38.9	S 1 29.2	118 08.7	S15 46.6
01	96 42.1	182 44.5	13.3	24 03.8	57.4	96 41.2	29.2	133 10.9	46.5
02	111 44.6	197 43.5	13.3	39 07.3	57.4	111 43.5	29.1	148 13.2	46.5
03	126 47.1	212 42.6	13.3	54 10.7	57.3	126 45.9	29.0	163 15.5	46.4
04	141 49.5	227 41.6	13.3	69 14.2	57.3	141 48.2	28.9	178 17.7	46.3
05	156 52.0	242 40.6	13.3	84 17.7	57.3	156 50.5	28.9	193 20.0	46.3
06	171 54.5	257 39.6	S24 13.3	99 21.2	N24 57.2	171 52.8	S 1 28.8	208 22.3	S15 46.2
07	186 56.9	272 38.7	13.3	114 24.6	57.2	186 55.1	28.7	223 24.6	46.1
M 08	201 59.4	287 37.7	13.3	129 28.1	57.2	201 57.5	28.6	238 26.8	46.1
A 09	217 01.8	302 36.7	13.3	144 31.6	57.2	216 59.8	28.6	253 29.1	46.0
R 10	232 04.3	317 35.7	13.3	159 35.0	57.1	232 02.1	28.5	268 31.4	45.9
T 11	247 06.8	332 34.8	13.3	174 38.5	57.1	247 04.4	28.4	283 33.6	45.9
E 12	262 09.2	347 33.8	S24 13.3	189 42.0	N24 57.1	262 06.7	S 1 28.3	298 35.9	S15 45.8
S 13	277 11.7	2 32.8	13.3	204 45.4	57.0	277 09.1	28.3	313 38.2	45.7
14	292 14.2	17 31.8	13.3	219 48.9	57.0	292 11.4	28.2	328 40.4	45.7
15	307 16.6	32 30.8	13.2	234 52.4	57.0	307 13.7	28.1	343 42.7	45.6
16	322 19.1	47 29.9	13.2	249 55.8	56.9	322 16.0	28.0	358 45.0	45.5
17	337 21.6	62 28.9	13.2	264 59.3	56.9	337 18.3	28.0	13 47.2	45.5
18	352 24.0	77 27.9	S24 13.2	280 02.8	N24 56.9	352 20.6	S 1 27.9	28 49.5	S15 45.4
19	7 26.5	92 26.9	13.2	295 06.2	56.8	7 22.9	27.8	43 51.8	45.3
20	22 29.0	107 26.0	13.2	310 09.7	56.8	22 25.3	27.7	58 54.0	45.3
21	37 31.4	122 25.0	13.1	325 13.1	56.8	37 27.6	27.7	73 56.3	45.2
22	52 33.9	137 24.0	13.1	340 16.6	56.7	52 29.9	27.6	88 58.6	45.1
23	67 36.3	152 23.0	13.1	355 20.1	56.7	67 32.2	27.5	104 00.8	45.1
14 00	82 38.8	167 22.1	S24 13.0	10 23.5	N24 56.7	82 34.5	S 1 27.4	119 03.1	S15 45.0
01	97 41.3	182 21.1	13.0	25 27.0	56.6	97 36.8	27.3	134 05.4	44.9
02	112 43.7	197 20.1	13.0	40 30.4	56.6	112 39.1	27.3	149 07.6	44.9
03	127 46.2	212 19.1	13.0	55 33.9	56.5	127 41.5	27.2	164 09.9	44.8
04	142 48.7	227 18.2	12.9	70 37.3	56.5	142 43.8	27.1	179 12.2	44.7
05	157 51.1	242 17.2	12.9	85 40.8	56.5	157 46.1	27.0	194 14.4	44.7
06	172 53.6	257 16.2	S24 12.9	100 44.2	N24 56.4	172 48.4	S 1 27.0	209 16.7	S15 44.6
07	187 56.1	272 15.2	12.8	115 47.7	56.4	187 50.7	26.9	224 19.0	44.6
M 08	202 58.5	287 14.3	12.8	130 51.2	56.4	202 53.0	26.8	239 21.2	44.5
I 09	218 01.0	302 13.3	12.7	145 54.6	56.3	217 55.3	26.7	254 23.5	44.4
É 10	233 03.4	317 12.3	12.7	160 58.1	56.3	232 57.6	26.6	269 25.8	44.4
R 11	248 05.9	332 11.3	12.7	176 01.5	56.3	248 00.0	26.6	284 28.0	44.3
C 12	263 08.4	347 10.4	S24 12.6	191 04.9	N24 56.2	263 02.3	S 1 26.5	299 30.3	S15 44.2
O 13	278 10.8	2 09.4	12.6	206 08.4	56.2	278 04.6	26.4	314 32.6	44.2
L 14	293 13.3	17 08.4	12.5	221 11.8	56.2	293 06.9	26.3	329 34.8	44.1
E 15	308 15.8	32 07.4	12.5	236 15.3	56.1	308 09.2	26.2	344 37.1	44.0
S 16	323 18.2	47 06.5	12.4	251 18.7	56.1	323 11.5	26.2	359 39.4	44.0
17	338 20.7	62 05.5	12.4	266 22.2	56.0	338 13.8	26.1	14 41.6	43.9
18	353 23.2	77 04.5	S24 12.3	281 25.6	N24 56.0	353 16.1	S 1 26.0	29 43.9	S15 43.8
19	8 25.6	92 03.5	12.3	296 29.1	56.0	8 18.4	25.9	44 46.2	43.8
20	23 28.1	107 02.6	12.2	311 32.5	55.9	23 20.7	25.8	59 48.4	43.7
21	38 30.6	122 01.6	12.2	326 35.9	55.9	38 23.0	25.8	74 50.7	43.6
22	53 33.0	137 00.6	12.1	341 39.4	55.9	53 25.4	25.7	89 52.9	43.6
23	68 35.5	151 59.7	12.1	356 42.8	55.8	68 27.7	25.6	104 55.2	43.5
	h m								
Paso Mer.	18 30.3	*v* −1.0	*d* 0.0	*v* 3.5	*d* 0.0	*v* 2.3	*d* 0.1	*v* 2.3	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.7	S40 12.9
Achernar	335 21.2	S57 07.5
Acrux	173 02.2	S63 13.2
Adhara	255 06.9	S29 00.1
Aldebaran	290 41.3	N16 33.3
Alioth	166 14.7	N55 49.9
Alkaid	152 53.7	N49 11.8
Alnair	27 35.3	S46 51.3
Alnilam	275 39.1	S 1 11.2
Alphard	217 49.3	S 8 45.4
Alphecca	126 05.5	N26 38.2
Alpheratz	357 36.5	N29 13.1
Altair	62 01.9	N 8 55.7
Ankaa	353 08.7	S42 11.2
Antares	112 18.3	S26 28.9
Arcturus	145 49.7	N19 03.8
Atria	107 14.7	S69 04.0
Avior	234 14.9	S59 34.7
Bellatrix	278 24.4	N 6 22.2
Betelgeuse	270 53.6	N 7 24.7
Canopus	263 52.6	S52 42.3
Capella	280 23.9	N46 01.2
Deneb	49 27.3	N45 21.9
Denebola	182 26.7	N14 26.6
Diphda	348 48.9	S17 51.8
Dubhe	193 43.1	N61 37.4
Elnath	278 03.7	N28 37.6
Eltanin	90 43.5	N51 29.2
Enif	33 40.6	N 9 58.8
Fomalhaut	15 16.5	S29 30.3
Gacrux	171 53.7	S57 14.1
Gienah	175 45.4	S17 40.0
Hadar	148 38.9	S60 28.7
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.4
Kochab	137 20.8	N74 03.5
Markab	13 31.6	N15 19.8
Menkar	314 07.7	N 4 10.8
Menkent	147 59.9	S36 28.7
Miaplacidus	221 38.1	S69 48.3
Mirfak	308 30.3	N49 56.6
Nunki	75 50.3	S26 16.1
Peacock	53 08.9	S56 39.9
Pollux	243 19.1	N27 58.2
Procyon	244 52.4	N 5 10.0
Rasalhague	96 00.5	N12 32.6
Regulus	207 36.2	N11 51.3
Rigel	281 05.2	S 8 10.5
Rigil Kent.	139 43.2	S60 55.5
Sabik	102 05.1	S15 45.1
Schedar	349 32.8	N56 40.0
Shaula	96 13.1	S37 07.2
Sirius	258 27.4	S16 44.8
Spica	158 24.3	S11 16.7
Suhail	222 47.3	S43 31.2
Vega	80 34.8	N38 48.3
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	86 05.8	12 50
Marte	287 20.7	23 19
Júpiter	359 59.2	18 31
Saturno	36 29.0	16 05

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	°	′	′	′	
12 00	181	38.4	S23	03.3	315	16.3	11.8	N24	40.5	6.4	54.0
01	196	38.1		03.5	329	47.1	11.8	24	34.1	6.5	54.0
02	211	37.9		03.7	344	17.9	11.9	24	27.6	6.7	54.0
03	226	37.6		03.9	358	48.8	11.9	24	20.9	6.7	54.0
04	241	37.3		04.1	13	19.7	12.0	24	14.2	6.8	54.0
05	256	37.0		04.2	27	50.7	12.0	24	07.4	7.0	54.0
06	271	36.7	S23	04.4	42	21.7	12.2	N24	00.4	7.0	54.0
07	286	36.4		04.6	56	52.9	12.1	23	53.4	7.2	54.0
08	301	36.1		04.8	71	24.0	12.2	23	46.2	7.2	54.0
09	316	35.8		05.0	85	55.2	12.3	23	39.0	7.4	54.0
10	331	35.5		05.2	100	26.5	12.4	23	31.6	7.4	54.0
11	346	35.2		05.4	114	57.9	12.4	23	24.2	7.6	54.0
12	1	35.0	S23	05.5	129	29.3	12.4	N23	16.6	7.7	54.0
13	16	34.7		05.7	144	00.7	12.6	23	08.9	7.7	54.0
14	31	34.4		05.9	158	32.3	12.5	23	01.2	7.9	54.0
15	46	34.1		06.1	173	03.8	12.7	22	53.3	8.0	54.0
16	61	33.8		06.3	187	35.5	12.7	22	45.3	8.1	54.1
17	76	33.5		06.4	202	07.2	12.7	22	37.2	8.1	54.1
18	91	33.2	S23	06.6	216	38.9	12.8	N22	29.1	8.3	54.1
19	106	32.9		06.8	231	10.7	12.9	22	20.8	8.4	54.1
20	121	32.6		07.0	245	42.6	13.0	22	12.4	8.4	54.1
21	136	32.3		07.2	260	14.6	12.9	22	04.0	8.6	54.1
22	151	32.0		07.3	274	46.5	13.1	21	55.4	8.6	54.1
23	166	31.7		07.5	289	18.6	13.1	21	46.8	8.8	54.1
13 00	181	31.5	S23	07.7	303	50.7	13.2	N21	38.0	8.8	54.1
01	196	31.2		07.9	318	22.9	13.2	21	29.2	8.9	54.1
02	211	30.9		08.0	332	55.1	13.3	21	20.3	9.0	54.1
03	226	30.6		08.2	347	27.4	13.3	21	11.3	9.1	54.1
04	241	30.3		08.4	1	59.7	13.4	21	02.2	9.2	54.1
05	256	30.0		08.5	16	32.1	13.5	20	53.0	9.3	54.1
06	271	29.7	S23	08.7	31	04.6	13.5	N20	43.7	9.4	54.1
07	286	29.4		08.9	45	37.1	13.5	20	34.3	9.5	54.1
08	301	29.1		09.0	60	09.6	13.7	20	24.8	9.5	54.1
09	316	28.8		09.2	74	42.3	13.6	20	15.3	9.7	54.2
10	331	28.5		09.4	89	14.9	13.8	20	05.6	9.7	54.2
11	346	28.2		09.5	103	47.7	13.7	19	55.9	9.8	54.2
12	1	27.9	S23	09.7	118	20.4	13.9	N19	46.1	9.9	54.2
13	16	27.6		09.9	132	53.3	13.9	19	36.2	9.9	54.2
14	31	27.3		10.0	147	26.2	13.9	19	26.3	10.1	54.2
15	46	27.0		10.2	161	59.1	14.0	19	16.2	10.1	54.2
16	61	26.8		10.3	176	32.1	14.1	19	06.1	10.3	54.2
17	76	26.5		10.5	191	05.2	14.1	18	55.8	10.3	54.2
18	91	26.2	S23	10.7	205	38.3	14.1	N18	45.5	10.3	54.2
19	106	25.9		10.8	220	11.4	14.2	18	35.2	10.5	54.2
20	121	25.6		11.0	234	44.6	14.3	18	24.7	10.5	54.3
21	136	25.3		11.1	249	17.9	14.3	18	14.2	10.6	54.3
22	151	25.0		11.3	263	51.2	14.3	18	03.6	10.7	54.3
23	166	24.7		11.5	278	24.5	14.4	17	52.9	10.8	54.3
14 00	181	24.4	S23	11.6	292	57.9	14.5	N17	42.1	10.8	54.3
01	196	24.1		11.8	307	31.4	14.5	17	31.3	11.0	54.3
02	211	23.8		11.9	322	04.9	14.5	17	20.3	10.9	54.3
03	226	23.5		12.1	336	38.4	14.6	17	09.4	11.1	54.3
04	241	23.2		12.2	351	12.0	14.6	16	58.3	11.1	54.4
05	256	22.9		12.4	5	45.6	14.7	16	47.2	11.2	54.4
06	271	22.6	S23	12.5	20	19.3	14.7	N16	36.0	11.3	54.4
07	286	22.3		12.7	34	53.0	14.8	16	24.7	11.4	54.4
08	301	22.0		12.8	49	26.8	14.8	16	13.3	11.4	54.4
09	316	21.7		13.0	64	00.6	14.8	16	01.9	11.5	54.4
10	331	21.4		13.1	78	34.4	14.9	15	50.4	11.5	54.4
11	346	21.1		13.3	93	08.3	15.0	15	38.9	11.6	54.4
12	1	20.8	S23	13.4	107	42.3	14.9	N15	27.3	11.7	54.5
13	16	20.5		13.5	122	16.2	15.0	15	15.6	11.8	54.5
14	31	20.2		13.7	136	50.2	15.1	15	03.8	11.8	54.5
15	46	19.9		13.8	151	24.3	15.0	14	52.0	11.9	54.5
16	61	19.6		14.0	165	58.3	15.2	14	40.1	11.9	54.5
17	76	19.3		14.1	180	32.5	15.1	14	28.2	12.0	54.5
18	91	19.0	S23	14.3	195	06.6	15.2	N14	16.2	12.1	54.6
19	106	18.7		14.4	209	40.8	15.2	14	04.1	12.2	54.6
20	121	18.4		14.5	224	15.0	15.3	13	51.9	12.1	54.6
21	136	18.1		14.7	238	49.3	15.2	13	39.8	12.3	54.6
22	151	17.8		14.8	253	23.5	15.4	13	27.5	12.3	54.6
23	166	17.5		14.9	267	57.9	15.3	N13	15.2	12.4	54.7
	S/D	16.3	d	0.2	S/D	14.7		14.8			14.8

Lat.	Aurora		Orto Sol	Orto Luna			
	Náut.	Civil		12	13	14	15
°	h m	h m	h m	h m	h m	h m	h m
N 72	08 17	10 40	▬	▭	▭	19 46	22 02
N 70	07 58	09 44	▬	▭	17 43	20 15	22 15
68	07 42	09 10	▬	▭	18 33	20 36	22 26
66	07 29	08 46	10 23	16 56	19 05	20 53	22 34
64	07 19	08 27	09 43	17 41	19 28	21 07	22 41
62	07 09	08 11	09 16	18 11	19 46	21 18	22 47
60	07 01	07 58	08 55	18 33	20 01	21 28	22 52
N 58	06 54	07 46	08 38	18 51	20 14	21 36	22 57
56	06 47	07 36	08 23	19 06	20 25	21 43	23 01
54	06 41	07 27	08 11	19 19	20 34	21 50	23 05
52	06 35	07 19	08 00	19 30	20 43	21 56	23 08
50	06 30	07 12	07 50	19 40	20 51	22 01	23 11
45	06 19	06 56	07 30	20 01	21 07	22 12	23 18
N 40	06 09	06 43	07 13	20 18	21 20	22 22	23 23
35	05 59	06 31	06 59	20 32	21 31	22 29	23 28
30	05 51	06 21	06 47	20 45	21 41	22 36	23 32
20	05 34	06 02	06 26	21 06	21 58	22 49	23 39
N 10	05 19	05 45	06 08	21 24	22 12	22 59	23 45
0	05 02	05 28	05 50	21 41	22 26	23 09	23 51
S 10	04 43	05 10	05 33	21 57	22 39	23 19	23 56
20	04 21	04 50	05 14	22 15	22 54	23 29	24 02
30	03 52	04 25	04 53	22 36	23 10	23 41	24 09
35	03 33	04 10	04 40	22 48	23 19	23 47	24 13
40	03 11	03 52	04 25	23 02	23 30	23 55	24 18
45	02 41	03 30	04 07	23 18	23 43	24 04	00 04
S 50	01 56	03 01	03 45	23 38	23 58	24 15	00 15
52	01 30	02 46	03 34	23 47	24 05	00 05	00 20
54	00 48	02 28	03 22	23 58	24 13	00 13	00 25
56	////	02 07	03 08	24 10	00 10	00 22	00 31
58	////	01 38	02 52	00 09	00 23	00 32	00 38
S 60	////	00 53	02 32	00 31	00 39	00 43	00 45

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	12	13	14	15
°	h m	h m	h m	h m	h m	h m	h m
N 72	▬	13 08	15 31	▭	▭	14 33	13 45
N 70	▬	14 04	15 50	▭	15 03	14 02	13 30
68	▬	14 38	16 06	▭	14 11	13 39	13 17
66	13 25	15 02	16 19	14 13	13 39	13 21	13 07
64	14 05	15 21	16 29	13 27	13 15	13 06	12 58
62	14 32	15 37	16 39	12 57	12 56	12 53	12 51
60	14 53	15 50	16 47	12 34	12 40	12 43	12 44
N 58	15 10	16 02	16 54	12 15	12 26	12 34	12 39
56	15 25	16 12	17 01	12 00	12 15	12 25	12 33
54	15 37	16 21	17 07	11 46	12 05	12 18	12 29
52	15 48	16 29	17 13	11 35	11 55	12 12	12 25
50	15 58	16 36	17 18	11 24	11 47	12 06	12 21
45	16 18	16 52	17 29	11 02	11 30	11 53	12 13
N 40	16 35	17 06	17 40	10 44	11 15	11 42	12 06
35	16 49	17 17	17 49	10 29	11 03	11 33	12 00
30	17 01	17 28	17 57	10 16	10 53	11 25	11 54
20	17 22	17 46	18 14	09 54	10 34	11 11	11 45
N 10	17 41	18 03	18 30	09 35	10 18	10 58	11 37
0	17 58	18 20	18 47	09 16	10 03	10 47	11 29
S 10	18 15	18 38	19 05	08 58	09 47	10 35	11 21
20	18 34	18 59	19 28	08 38	09 31	10 22	11 13
30	18 56	19 23	19 57	08 16	09 12	10 08	11 03
35	19 09	19 38	20 15	08 02	09 01	09 59	10 58
40	19 24	19 56	20 38	07 47	08 48	09 50	10 51
45	19 41	20 19	21 08	07 28	08 33	09 38	10 44
S 50	20 04	20 48	21 53	07 05	08 14	09 24	10 35
52	20 14	21 03	22 20	06 53	08 05	09 18	10 30
54	20 27	21 20	23 02	06 40	07 55	09 11	10 26
56	20 40	21 42	////	06 26	07 44	09 02	10 21
58	20 57	22 11	////	06 08	07 31	08 53	10 15
S 60	21 17	22 58	////	05 47	07 15	08 43	10 08

Día	SOL			LUNA			
	Ec. Tiempo		Paso Mer.	Paso Mer.		Edad	Fase
	00h	12h		Sup.	Inf.		
d	m s	m s	h m	h m	h m	d	%
12	06 34	06 20	11 54	03 05	15 29	19	84
13	06 06	05 52	11 54	03 52	16 14	20	76
14	05 38	05 24	11 55	04 36	16 58	21	68

LUNES MARTES MIÉRCOLES

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·7		JÚPITER −2·5		SATURNO +0·7	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
15 00	83 37.9	166 58.7	S24 12.0	11 46.3	N24 55.8	83 30.0	S 1 25.5	119 57.5	S15 43.4
01	98 40.4	181 57.7	11.9	26 49.7	55.7	98 32.3	25.4	134 59.7	43.4
02	113 42.9	196 56.7	11.9	41 53.1	55.7	113 34.6	25.4	150 02.0	43.3
03	128 45.3	211 55.8	11.8	56 56.6	55.7	128 36.9	25.3	165 04.3	43.2
04	143 47.8	226 54.8	11.8	72 00.0	55.6	143 39.2	25.2	180 06.5	43.2
05	158 50.3	241 53.8	11.7	87 03.4	55.6	158 41.5	25.1	195 08.8	43.1
06	173 52.7	256 52.8	S24 11.6	102 06.9	N24 55.5	173 43.8	S 1 25.0	210 11.1	S15 43.0
07	188 55.2	271 51.9	11.6	117 10.3	55.5	188 46.1	25.0	225 13.3	43.0
08	203 57.7	286 50.9	11.5	132 13.7	55.5	203 48.4	24.9	240 15.6	42.9
J 09	219 00.1	301 49.9	11.4	147 17.2	55.4	218 50.7	24.8	255 17.8	42.8
U 10	234 02.6	316 48.9	11.4	162 20.6	55.4	233 53.0	24.7	270 20.1	42.7
E 11	249 05.1	331 48.0	11.3	177 24.0	55.3	248 55.3	24.6	285 22.4	42.7
V 12	264 07.5	346 47.0	S24 11.2	192 27.5	N24 55.3	263 57.6	S 1 24.5	300 24.6	S15 42.6
E 13	279 10.0	1 46.0	11.1	207 30.9	55.3	278 59.9	24.5	315 26.9	42.5
S 14	294 12.4	16 45.0	11.1	222 34.3	55.2	294 02.2	24.4	330 29.2	42.5
15	309 14.9	31 44.1	11.0	237 37.7	55.2	309 04.5	24.3	345 31.4	42.4
16	324 17.4	46 43.1	10.9	252 41.2	55.1	324 06.8	24.2	0 33.7	42.3
17	339 19.8	61 42.1	10.8	267 44.6	55.1	339 09.1	24.1	15 35.9	42.3
18	354 22.3	76 41.2	S24 10.7	282 48.0	N24 55.1	354 11.4	S 1 24.1	30 38.2	S15 42.2
19	9 24.8	91 40.2	10.7	297 51.4	55.0	9 13.7	24.0	45 40.5	42.1
20	24 27.2	106 39.2	10.6	312 54.9	55.0	24 16.0	23.9	60 42.7	42.1
21	39 29.7	121 38.2	10.5	327 58.3	54.9	39 18.3	23.8	75 45.0	42.0
22	54 32.2	136 37.3	10.4	343 01.7	54.9	54 20.6	23.7	90 47.2	41.9
23	69 34.6	151 36.3	10.3	358 05.1	54.9	69 22.9	23.6	105 49.5	41.9
16 00	84 37.1	166 35.3	S24 10.2	13 08.5	N24 54.8	84 25.2	S 1 23.6	120 51.8	S15 41.8
01	99 39.5	181 34.3	10.1	28 12.0	54.8	99 27.5	23.5	135 54.0	41.7
02	114 42.0	196 33.4	10.0	43 15.4	54.7	114 29.8	23.4	150 56.3	41.7
03	129 44.5	211 32.4	09.9	58 18.8	54.7	129 32.1	23.3	165 58.6	41.6
04	144 46.9	226 31.4	09.8	73 22.2	54.6	144 34.4	23.2	181 00.8	41.5
05	159 49.4	241 30.5	09.7	88 25.6	54.6	159 36.7	23.1	196 03.1	41.5
06	174 51.9	256 29.5	S24 09.7	103 29.0	N24 54.6	174 39.0	S 1 23.0	211 05.3	S15 41.4
07	189 54.3	271 28.5	09.6	118 32.4	54.5	189 41.3	23.0	226 07.6	41.3
V 08	204 56.8	286 27.5	09.5	133 35.8	54.5	204 43.6	22.9	241 09.9	41.3
I 09	219 59.3	301 26.6	09.4	148 39.3	54.4	219 45.9	22.8	256 12.1	41.2
E 10	235 01.7	316 25.6	09.3	163 42.7	54.4	234 48.2	22.7	271 14.4	41.1
R 11	250 04.2	331 24.6	09.1	178 46.1	54.3	249 50.5	22.6	286 16.6	41.1
N 12	265 06.7	346 23.7	S24 09.0	193 49.5	N24 54.3	264 52.8	S 1 22.5	301 18.9	S15 41.0
E 13	280 09.1	1 22.7	08.9	208 52.9	54.3	279 55.1	22.5	316 21.1	40.9
S 14	295 11.6	16 21.7	08.8	223 56.3	54.2	294 57.4	22.4	331 23.4	40.8
15	310 14.0	31 20.7	08.7	238 59.7	54.2	309 59.7	22.3	346 25.7	40.8
16	325 16.5	46 19.8	08.6	254 03.1	54.1	325 02.0	22.2	1 27.9	40.7
17	340 19.0	61 18.8	08.5	269 06.5	54.1	340 04.3	22.1	16 30.2	40.6
18	355 21.4	76 17.8	S24 08.4	284 09.9	N24 54.0	355 06.6	S 1 22.0	31 32.4	S15 40.6
19	10 23.9	91 16.9	08.3	299 13.3	54.0	10 08.9	21.9	46 34.7	40.5
20	25 26.4	106 15.9	08.2	314 16.7	54.0	25 11.2	21.9	61 37.0	40.4
21	40 28.8	121 14.9	08.0	329 20.1	53.9	40 13.5	21.8	76 39.2	40.4
22	55 31.3	136 13.9	07.9	344 23.5	53.9	55 15.8	21.7	91 41.5	40.3
23	70 33.8	151 13.0	07.8	359 26.9	53.8	70 18.0	21.6	106 43.7	40.2
17 00	85 36.2	166 12.0	S24 07.7	14 30.3	N24 53.8	85 20.3	S 1 21.5	121 46.0	S15 40.2
01	100 38.7	181 11.0	07.6	29 33.7	53.7	100 22.6	21.4	136 48.3	40.1
02	115 41.2	196 10.1	07.4	44 37.1	53.7	115 24.9	21.3	151 50.5	40.0
03	130 43.6	211 09.1	07.3	59 40.5	53.6	130 27.2	21.2	166 52.8	40.0
04	145 46.1	226 08.1	07.2	74 43.9	53.6	145 29.5	21.2	181 55.0	39.9
05	160 48.5	241 07.2	07.1	89 47.2	53.6	160 31.8	21.1	196 57.3	39.8
06	175 51.0	256 06.2	S24 06.9	104 50.6	N24 53.5	175 34.1	S 1 21.0	211 59.5	S15 39.7
07	190 53.5	271 05.2	06.8	119 54.0	53.5	190 36.4	20.9	227 01.8	39.7
S 08	205 55.9	286 04.3	06.7	134 57.4	53.4	205 38.7	20.8	242 04.1	39.6
Á 09	220 58.4	301 03.3	06.5	150 00.8	53.4	220 41.0	20.7	257 06.3	39.5
B 10	236 00.9	316 02.3	06.4	165 04.2	53.3	235 43.2	20.6	272 08.6	39.5
A 11	251 03.3	331 01.3	06.3	180 07.6	53.3	250 45.5	20.5	287 10.8	39.4
D 12	266 05.8	346 00.4	S24 06.1	195 10.9	N24 53.2	265 47.8	S 1 20.5	302 13.1	S15 39.3
O 13	281 08.3	0 59.4	06.0	210 14.3	53.2	280 50.1	20.4	317 15.3	39.3
14	296 10.7	15 58.4	05.9	225 17.7	53.1	295 52.4	20.3	332 17.6	39.2
15	311 13.2	30 57.5	05.7	240 21.1	53.1	310 54.7	20.2	347 19.8	39.1
16	326 15.6	45 56.5	05.6	255 24.5	53.0	325 57.0	20.1	2 22.1	39.1
17	341 18.1	60 55.5	05.4	270 27.8	53.0	340 59.3	20.0	17 24.4	39.0
18	356 20.6	75 54.6	S24 05.3	285 31.2	N24 53.0	356 01.5	S 1 19.9	32 26.6	S15 38.9
19	11 23.0	90 53.6	05.1	300 34.6	52.9	11 03.8	19.8	47 28.9	38.8
20	26 25.5	105 52.6	05.0	315 38.0	52.9	26 06.1	19.7	62 31.1	38.8
21	41 28.0	120 51.7	04.8	330 41.3	52.8	41 08.4	19.7	77 33.4	38.7
22	56 30.4	135 50.7	04.7	345 44.7	52.8	56 10.7	19.6	92 35.6	38.6
23	71 32.9	150 49.7	04.5	0 48.1	52.7	71 13.0	19.5	107 37.9	38.6
	h m								
Paso Mer.	18 18.5	*v* −1.0	*d* 0.1	*v* 3.4	*d* 0.0	*v* 2.3	*d* 0.1	*v* 2.3	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.7	S40 12.9
Achernar	335 21.2	S57 07.5
Acrux	173 02.1	S63 13.2
Adhara	255 06.8	S29 00.1
Aldebaran	290 41.2	N16 33.3
Alioth	166 14.7	N55 49.9
Alkaid	152 53.7	N49 11.8
Alnair	27 35.3	S46 51.3
Alnilam	275 39.1	S 1 11.2
Alphard	217 49.3	S 8 45.4
Alphecca	126 05.5	N26 38.2
Alpheratz	357 36.5	N29 13.1
Altair	62 01.9	N 8 55.7
Ankaa	353 08.8	S42 11.2
Antares	112 18.3	S26 28.9
Arcturus	145 49.7	N19 03.8
Atria	107 14.7	S69 04.0
Avior	234 14.9	S59 34.7
Bellatrix	278 24.4	N 6 22.2
Betelgeuse	270 53.6	N 7 24.7
Canopus	263 52.6	S52 42.4
Capella	280 23.9	N46 01.3
Deneb	49 27.3	N45 21.8
Denebola	182 26.7	N14 26.6
Diphda	348 48.9	S17 51.8
Dubhe	193 43.0	N61 37.4
Elnath	278 03.7	N28 37.6
Eltanin	90 43.5	N51 29.1
Enif	33 40.7	N 9 58.8
Fomalhaut	15 16.5	S29 30.3
Gacrux	171 53.7	S57 14.1
Gienah	175 45.4	S17 40.0
Hadar	148 38.9	S60 28.7
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.4
Kochab	137 20.7	N74 03.5
Markab	13 31.7	N15 19.8
Menkar	314 07.7	N 4 10.8
Menkent	147 59.9	S36 28.7
Miaplacidus	221 38.0	S69 48.3
Mirfak	308 30.3	N49 56.6
Nunki	75 50.3	S26 16.1
Peacock	53 08.9	S56 39.9
Pollux	243 19.1	N27 58.2
Procyon	244 52.3	N 5 10.0
Rasalhague	96 00.5	N12 32.6
Regulus	207 36.1	N11 51.3
Rigel	281 05.2	S 8 10.5
Rigil Kent.	139 43.2	S60 55.5
Sabik	102 05.1	S15 45.1
Schedar	349 32.8	N56 40.0
Shaula	96 13.1	S37 07.2
Sirius	258 27.4	S16 44.8
Spica	158 24.3	S11 16.7
Suhail	222 47.3	S43 31.2
Vega	80 34.8	N38 48.3
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	81 58.2	12 54
Marte	288 31.5	23 02
Júpiter	359 48.2	18 20
Saturno	36 14.7	15 54

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v		Dec	d		Ph
d h	°	′	°	′	°	′	′	°	′	′	′
15 00	181	17.2	S23	15.1	282	32.2	15.4	N13	02.8	12.4	54.7
01	196	16.9		15.2	297	06.6	15.4	12	50.4	12.5	54.7
02	211	16.6		15.3	311	41.0	15.4	12	37.9	12.6	54.7
03	226	16.3	. .	15.5	326	15.4	15.5	12	25.3	12.6	54.7
04	241	16.0		15.6	340	49.9	15.4	12	12.7	12.6	54.7
05	256	15.7		15.7	355	24.3	15.5	12	00.1	12.8	54.8
06	271	15.4	S23	15.9	9	58.8	15.6	N11	47.3	12.7	54.8
07	286	15.1		16.0	24	33.4	15.5	11	34.6	12.9	54.8
J 08	301	14.8		16.1	39	07.9	15.6	11	21.7	12.8	54.8
U 09	316	14.5	. .	16.3	53	42.5	15.6	11	08.9	13.0	54.9
E 10	331	14.2		16.4	68	17.1	15.6	10	55.9	13.0	54.9
V 11	346	13.9		16.5	82	51.7	15.6	10	42.9	13.0	54.9
E 12	1	13.6	S23	16.6	97	26.3	15.7	N10	29.9	13.1	54.9
S 13	16	13.3		16.8	112	01.0	15.6	10	16.8	13.1	54.9
14	31	13.0		16.9	126	35.6	15.7	10	03.7	13.2	55.0
15	46	12.7	. .	17.0	141	10.3	15.7	9	50.5	13.2	55.0
16	61	12.4		17.1	155	45.0	15.7	9	37.3	13.3	55.0
17	76	12.1		17.2	170	19.7	15.7	9	24.0	13.3	55.0
18	91	11.8	S23	17.4	184	54.4	15.7	N 9	10.7	13.4	55.1
19	106	11.5		17.5	199	29.1	15.8	8	57.3	13.4	55.1
20	121	11.2		17.6	214	03.9	15.7	8	43.9	13.5	55.1
21	136	10.9	. .	17.7	228	38.6	15.8	8	30.4	13.5	55.1
22	151	10.6		17.8	243	13.4	15.8	8	16.9	13.6	55.2
23	166	10.3		18.0	257	48.2	15.7	8	03.3	13.6	55.2
16 00	181	10.0	S23	18.1	272	22.9	15.8	N 7	49.7	13.6	55.2
01	196	09.7		18.2	286	57.7	15.8	7	36.1	13.7	55.2
02	211	09.4		18.3	301	32.5	15.8	7	22.4	13.7	55.3
03	226	09.1	. .	18.4	316	07.3	15.7	7	08.7	13.8	55.3
04	241	08.8		18.5	330	42.0	15.8	6	54.9	13.8	55.3
05	256	08.5		18.6	345	16.8	15.8	6	41.1	13.8	55.3
06	271	08.2	S23	18.8	359	51.6	15.8	N 6	27.3	13.9	55.4
07	286	07.9		18.9	14	26.4	15.8	6	13.4	13.9	55.4
V 08	301	07.6		19.0	29	01.2	15.7	5	59.5	14.0	55.4
I 09	316	07.3	. .	19.1	43	35.9	15.8	5	45.5	14.0	55.4
E 10	331	07.0		19.2	58	10.7	15.8	5	31.5	14.0	55.5
R 11	346	06.7		19.3	72	45.5	15.7	5	17.5	14.1	55.5
N 12	1	06.4	S23	19.4	87	20.2	15.8	N 5	03.4	14.1	55.5
E 13	16	06.1		19.5	101	55.0	15.7	4	49.3	14.1	55.6
S 14	31	05.8		19.6	116	29.7	15.7	4	35.2	14.2	55.6
15	46	05.5	. .	19.7	131	04.4	15.7	4	21.0	14.2	55.6
16	61	05.2		19.8	145	39.1	15.7	4	06.8	14.2	55.6
17	76	04.9		19.9	160	13.8	15.7	3	52.6	14.2	55.7
18	91	04.6	S23	20.0	174	48.5	15.7	N 3	38.4	14.3	55.7
19	106	04.3		20.1	189	23.2	15.6	3	24.1	14.4	55.7
20	121	04.0		20.2	203	57.8	15.7	3	09.7	14.3	55.8
21	136	03.7	. .	20.3	218	32.5	15.6	2	55.4	14.4	55.8
22	151	03.3		20.4	233	07.1	15.6	2	41.0	14.4	55.8
23	166	03.0		20.5	247	41.7	15.5	2	26.6	14.4	55.9
17 00	181	02.7	S23	20.6	262	16.2	15.6	N 2	12.2	14.5	55.9
01	196	02.4		20.7	276	50.8	15.5	1	57.7	14.4	55.9
02	211	02.1		20.8	291	25.3	15.5	1	43.3	14.5	56.0
03	226	01.8	. .	20.9	305	59.8	15.5	1	28.8	14.6	56.0
04	241	01.5		21.0	320	34.3	15.4	1	14.2	14.5	56.0
05	256	01.2		21.1	335	08.7	15.4	0	59.7	14.6	56.1
06	271	00.9	S23	21.2	349	43.1	15.4	N 0	45.1	14.6	56.1
07	286	00.6		21.3	4	17.5	15.3	0	30.5	14.6	56.1
S 08	301	00.3		21.4	18	51.8	15.3	0	15.9	14.6	56.2
Á 09	316	00.0	. .	21.4	33	26.1	15.3	N 0	01.3	14.7	56.2
B 10	330	59.7		21.5	48	00.4	15.3	S 0	13.4	14.6	56.2
A 11	345	59.4		21.6	62	34.7	15.2	0	28.0	14.7	56.3
D 12	0	59.1	S23	21.7	77	08.9	15.1	S 0	42.7	14.7	56.3
O 13	15	58.8		21.8	91	43.0	15.1	0	57.4	14.7	56.3
14	30	58.5		21.9	106	17.1	15.1	1	12.1	14.7	56.4
15	45	58.2	. .	22.0	120	51.2	15.1	1	26.8	14.8	56.4
16	60	57.9		22.1	135	25.3	15.0	1	41.6	14.7	56.4
17	75	57.5		22.1	149	59.3	14.9	1	56.3	14.8	56.5
18	90	57.2	S23	22.2	164	33.2	14.9	S 2	11.1	14.8	56.5
19	105	56.9		22.3	179	07.1	14.9	2	25.9	14.7	56.5
20	120	56.6		22.4	193	41.0	14.8	2	40.6	14.8	56.6
21	135	56.3	. .	22.5	208	14.8	14.7	2	55.4	14.8	56.6
22	150	56.0		22.5	222	48.5	14.7	3	10.2	14.8	56.7
23	165	55.7		22.6	237	22.2	14.7	S 3	25.0	14.8	56.7
	S/D	16.3	d	0.1	S/D	15.0		15.1			15.3

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			15	16	17	18
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	08	21	10	49	▬	22 02	24 06	00 06	02 10
N 70	08	01	09	49	▬	22 15	24 09	00 09	02 04
68	07	46	09	14	▬	22 26	24 11	00 11	01 58
66	07	33	08	49	10 29	22 34	24 13	00 13	01 54
64	07	22	08	30	09 47	22 41	24 15	00 15	01 51
62	07	12	08	14	09 19	22 47	24 16	00 16	01 48
60	07	04	08	01	08 58	22 52	24 18	00 18	01 45
N 58	06	56	07	49	08 41	22 57	24 19	00 19	01 42
56	06	50	07	39	08 26	23 01	24 20	00 20	01 40
54	06	43	07	30	08 13	23 05	24 21	00 21	01 38
52	06	38	07	22	08 02	23 08	24 21	00 21	01 37
50	06	33	07	14	07 53	23 11	24 22	00 22	01 35
45	06	21	06	58	07 32	23 18	24 24	00 24	01 32
N 40	06	11	06	45	07 15	23 23	24 25	00 25	01 29
35	06	01	06	33	07 01	23 28	24 26	00 26	01 27
30	05	53	06	22	06 49	23 32	24 27	00 27	01 25
20	05	36	06	04	06 28	23 39	24 29	00 29	01 21
N 10	05	20	05	46	06 09	23 45	24 31	00 31	01 18
0	05	03	05	29	05 52	23 51	24 32	00 32	01 15
S 10	04	44	05	11	05 34	23 56	24 34	00 34	01 12
20	04	22	04	51	05 15	24 02	00 02	00 35	01 09
30	03	53	04	26	04 53	24 09	00 09	00 37	01 06
35	03	34	04	11	04 41	24 13	00 13	00 38	01 04
40	03	11	03	53	04 26	24 18	00 18	00 39	01 02
45	02	41	03	30	04 08	00 04	00 23	00 41	00 59
S 50	01	56	03	01	03 45	00 15	00 29	00 43	00 56
52	01	28	02	46	03 34	00 20	00 32	00 43	00 55
54	00	44	02	28	03 22	00 25	00 35	00 44	00 53
56	////		02	06	03 08	00 31	00 38	00 45	00 52
58	////		01	37	02 51	00 38	00 42	00 46	00 50
S 60	////		00	48	02 31	00 45	00 46	00 47	00 48

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	15	16	17	18
°	h m	h m	h m	h m	h m	h m	h m
N 72	▬	13 02	15 30	13 45	13 11	12 40	12 08
N 70	▬	14 02	15 50	13 30	13 05	12 42	12 17
68	▬	14 37	16 05	13 17	12 59	12 43	12 25
66	13 22	15 01	16 18	13 07	12 55	12 44	12 32
64	14 04	15 21	16 29	12 58	12 51	12 44	12 37
62	14 32	15 37	16 39	12 51	12 48	12 45	12 42
60	14 53	15 50	16 47	12 44	12 45	12 46	12 46
N 58	15 10	16 02	16 55	12 39	12 43	12 46	12 50
56	15 25	16 12	17 01	12 33	12 40	12 47	12 53
54	15 38	16 21	17 08	12 29	12 38	12 47	12 56
52	15 49	16 29	17 13	12 25	12 36	12 47	12 59
50	15 58	16 37	17 18	12 21	12 35	12 48	13 02
45	16 19	16 53	17 30	12 13	12 31	12 49	13 07
N 40	16 36	17 06	17 40	12 06	12 28	12 49	13 12
35	16 50	17 18	17 50	12 00	12 25	12 50	13 16
30	17 02	17 29	17 59	11 54	12 22	12 50	13 19
20	17 23	17 47	18 15	11 45	12 18	12 51	13 25
N 10	17 42	18 05	18 31	11 37	12 14	12 52	13 31
0	17 59	18 22	18 48	11 29	12 11	12 52	13 36
S 10	18 17	18 40	19 07	11 21	12 07	12 53	13 41
20	18 36	19 00	19 30	11 13	12 03	12 54	13 47
30	18 58	19 25	19 59	11 03	11 58	12 55	13 53
35	19 11	19 40	20 17	10 58	11 56	12 55	13 57
40	19 26	19 59	20 40	10 51	11 53	12 56	14 01
45	19 44	20 21	21 11	10 44	11 49	12 56	14 06
S 50	20 06	20 51	21 56	10 35	11 45	12 57	14 11
52	20 17	21 06	22 24	10 30	11 43	12 57	14 14
54	20 29	21 24	23 09	10 26	11 41	12 57	14 17
56	20 43	21 46	////	10 21	11 39	12 58	14 20
58	21 00	22 15	////	10 15	11 36	12 58	14 24
S 60	21 20	23 05	////	10 08	11 33	12 59	14 28

Día	SOL				Paso Mer.	LUNA					
	Ec. Tiempo					Paso Mer.				Edad	Fase
	00^h		12^h			Sup.		Inf.			
d	m	s	m	s	h m	h	m	h	m	d	%
15	05	10	04	55	11 55	05	19	17	40	22	59
16	04	41	04	26	11 56	06	01	18	21	23	49
17	04	12	03	57	11 56	06	42	19	04	24	39

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·6		JÚPITER −2·4		SATURNO +0·8	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
18 00	86 35.4	165 48.8	S24 04.4	15 51.5	N24 52.7	86 15.3	S 1 19.4	122 40.2	S15 38.5
01	101 37.8	180 47.8	04.2	30 54.8	52.6	101 17.5	19.3	137 42.4	38.4
02	116 40.3	195 46.8	04.1	45 58.2	52.6	116 19.8	19.2	152 44.7	38.4
03	131 42.8	210 45.9	03.9	61 01.6	52.5	131 22.1	19.1	167 46.9	38.3
04	146 45.2	225 44.9	03.8	76 04.9	52.5	146 24.4	19.0	182 49.2	38.2
05	161 47.7	240 43.9	03.6	91 08.3	52.4	161 26.7	18.9	197 51.4	38.1
06	176 50.1	255 43.0	S24 03.5	106 11.7	N24 52.4	176 29.0	S 1 18.8	212 53.7	S15 38.1
07	191 52.6	270 42.0	03.3	121 15.0	52.3	191 31.2	18.8	227 55.9	38.0
08	206 55.1	285 41.0	03.1	136 18.4	52.3	206 33.5	18.7	242 58.2	37.9
D 09	221 57.5	300 40.1	03.0	151 21.7	52.2	221 35.8	18.6	258 00.4	37.9
O 10	237 00.0	315 39.1	02.8	166 25.1	52.2	236 38.1	18.5	273 02.7	37.8
M 11	252 02.5	330 38.1	02.6	181 28.5	52.1	251 40.4	18.4	288 04.9	37.7
I 12	267 04.9	345 37.2	S24 02.5	196 31.8	N24 52.1	266 42.7	S 1 18.3	303 07.2	S15 37.7
N 13	282 07.4	0 36.2	02.3	211 35.2	52.0	281 44.9	18.2	318 09.5	37.6
G 14	297 09.9	15 35.2	02.1	226 38.5	52.0	296 47.2	18.1	333 11.7	37.5
O 15	312 12.3	30 34.3	02.0	241 41.9	52.0	311 49.5	18.0	348 14.0	37.4
16	327 14.8	45 33.3	01.8	256 45.2	51.9	326 51.8	17.9	3 16.2	37.4
17	342 17.2	60 32.4	01.6	271 48.6	51.9	341 54.1	17.8	18 18.5	37.3
18	357 19.7	75 31.4	S24 01.4	286 51.9	N24 51.8	356 56.3	S 1 17.7	33 20.7	S15 37.2
19	12 22.2	90 30.4	01.3	301 55.3	51.8	11 58.6	17.7	48 23.0	37.2
20	27 24.6	105 29.5	01.1	316 58.6	51.7	27 00.9	17.6	63 25.2	37.1
21	42 27.1	120 28.5	00.9	332 02.0	51.7	42 03.2	17.5	78 27.5	37.0
22	57 29.6	135 27.5	00.7	347 05.3	51.6	57 05.5	17.4	93 29.7	37.0
23	72 32.0	150 26.6	00.5	2 08.7	51.6	72 07.7	17.3	108 32.0	36.9
19 00	87 34.5	165 25.6	S24 00.4	17 12.0	N24 51.5	87 10.0	S 1 17.2	123 34.2	S15 36.8
01	102 37.0	180 24.6	00.2	32 15.4	51.5	102 12.3	17.1	138 36.5	36.7
02	117 39.4	195 23.7	24 00.0	47 18.7	51.4	117 14.6	17.0	153 38.7	36.7
03	132 41.9	210 22.7	23 59.8	62 22.1	51.4	132 16.8	16.9	168 41.0	36.6
04	147 44.4	225 21.8	59.6	77 25.4	51.3	147 19.1	16.8	183 43.2	36.5
05	162 46.8	240 20.8	59.4	92 28.7	51.3	162 21.4	16.7	198 45.5	36.5
06	177 49.3	255 19.8	S23 59.2	107 32.1	N24 51.2	177 23.7	S 1 16.6	213 47.8	S15 36.4
07	192 51.7	270 18.9	59.0	122 35.4	51.2	192 26.0	16.5	228 50.0	36.3
L 08	207 54.2	285 17.9	58.9	137 38.7	51.1	207 28.2	16.4	243 52.3	36.2
U 09	222 56.7	300 16.9	58.7	152 42.1	51.1	222 30.5	16.4	258 54.5	36.2
N 10	237 59.1	315 16.0	58.5	167 45.4	51.0	237 32.8	16.3	273 56.8	36.1
E 11	253 01.6	330 15.0	58.3	182 48.7	51.0	252 35.1	16.2	288 59.0	36.0
S 12	268 04.1	345 14.1	S23 58.1	197 52.1	N24 50.9	267 37.3	S 1 16.1	304 01.3	S15 36.0
13	283 06.5	0 13.1	57.9	212 55.4	50.9	282 39.6	16.0	319 03.5	35.9
14	298 09.0	15 12.1	57.7	227 58.7	50.8	297 41.9	15.9	334 05.8	35.8
15	313 11.5	30 11.2	57.5	243 02.1	50.8	312 44.2	15.8	349 08.0	35.7
16	328 13.9	45 10.2	57.3	258 05.4	50.7	327 46.4	15.7	4 10.3	35.7
17	343 16.4	60 09.3	57.1	273 08.7	50.7	342 48.7	15.6	19 12.5	35.6
18	358 18.9	75 08.3	S23 56.9	288 12.0	N24 50.6	357 51.0	S 1 15.5	34 14.8	S15 35.5
19	13 21.3	90 07.3	56.6	303 15.4	50.5	12 53.2	15.4	49 17.0	35.5
20	28 23.8	105 06.4	56.4	318 18.7	50.5	27 55.5	15.3	64 19.3	35.4
21	43 26.2	120 05.4	56.2	333 22.0	50.4	42 57.8	15.2	79 21.5	35.3
22	58 28.7	135 04.5	56.0	348 25.3	50.4	58 00.1	15.1	94 23.8	35.2
23	73 31.2	150 03.5	55.8	3 28.6	50.3	73 02.3	15.0	109 26.0	35.2
20 00	88 33.6	165 02.5	S23 55.6	18 31.9	N24 50.3	88 04.6	S 1 14.9	124 28.3	S15 35.1
01	103 36.1	180 01.6	55.4	33 35.3	50.2	103 06.9	14.8	139 30.5	35.0
02	118 38.6	195 00.6	55.2	48 38.6	50.2	118 09.1	14.7	154 32.8	35.0
03	133 41.0	209 59.7	54.9	63 41.9	50.1	133 11.4	14.6	169 35.0	34.9
04	148 43.5	224 58.7	54.7	78 45.2	50.1	148 13.7	14.5	184 37.3	34.8
05	163 46.0	239 57.8	54.5	93 48.5	50.0	163 16.0	14.4	199 39.5	34.7
06	178 48.4	254 56.8	S23 54.3	108 51.8	N24 50.0	178 18.2	S 1 14.3	214 41.8	S15 34.7
07	193 50.9	269 55.8	54.1	123 55.1	49.9	193 20.5	14.3	229 44.0	34.6
M 08	208 53.4	284 54.9	53.8	138 58.4	49.9	208 22.8	14.2	244 46.3	34.5
A 09	223 55.8	299 53.9	53.6	154 01.7	49.8	223 25.0	14.1	259 48.5	34.4
R 10	238 58.3	314 53.0	53.4	169 05.0	49.8	238 27.3	14.0	274 50.8	34.4
T 11	254 00.7	329 52.0	53.2	184 08.3	49.7	253 29.6	13.9	289 53.0	34.3
E 12	269 03.2	344 51.1	S23 52.9	199 11.7	N24 49.7	268 31.8	S 1 13.8	304 55.2	S15 34.2
S 13	284 05.7	359 50.1	52.7	214 15.0	49.6	283 34.1	13.7	319 57.5	34.2
14	299 08.1	14 49.1	52.5	229 18.3	49.6	298 36.4	13.6	334 59.7	34.1
15	314 10.6	29 48.2	52.2	244 21.5	49.5	313 38.6	13.5	350 02.0	34.0
16	329 13.1	44 47.2	52.0	259 24.8	49.5	328 40.9	13.4	5 04.2	33.9
17	344 15.5	59 46.3	51.8	274 28.1	49.4	343 43.2	13.3	20 06.5	33.9
18	359 18.0	74 45.3	S23 51.5	289 31.4	N24 49.4	358 45.4	S 1 13.2	35 08.7	S15 33.8
19	14 20.5	89 44.4	51.3	304 34.7	49.3	13 47.7	13.1	50 11.0	33.7
20	29 22.9	104 43.4	51.0	319 38.0	49.3	28 50.0	13.0	65 13.2	33.7
21	44 25.4	119 42.5	50.8	334 41.3	49.2	43 52.2	12.9	80 15.5	33.6
22	59 27.8	134 41.5	50.6	349 44.6	49.1	58 54.5	12.8	95 17.7	33.5
23	74 30.3	149 40.6	50.3	4 47.9	49.1	73 56.8	12.7	110 20.0	33.4
	h m								
Paso Mer.	18 06.7	*v* −1.0	*d* 0.2	*v* 3.3	*d* 0.1	*v* 2.3	*d* 0.1	*v* 2.3	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.8	S40 12.9
Achernar	335 21.2	S57 07.5
Acrux	173 02.1	S63 13.2
Adhara	255 06.8	S29 00.1
Aldebaran	290 41.2	N16 33.3
Alioth	166 14.7	N55 49.9
Alkaid	152 53.6	N49 11.7
Alnair	27 35.3	S46 51.3
Alnilam	275 39.1	S 1 11.2
Alphard	217 49.2	S 8 45.4
Alphecca	126 05.5	N26 38.2
Alpheratz	357 36.5	N29 13.1
Altair	62 01.9	N 8 55.7
Ankaa	353 08.8	S42 11.2
Antares	112 18.3	S26 28.9
Arcturus	145 49.7	N19 03.7
Atria	107 14.6	S69 04.0
Avior	234 14.9	S59 34.7
Bellatrix	278 24.4	N 6 22.2
Betelgeuse	270 53.6	N 7 24.7
Canopus	263 52.6	S52 42.4
Capella	280 23.9	N46 01.3
Deneb	49 27.3	N45 21.8
Denebola	182 26.7	N14 26.6
Diphda	348 48.9	S17 51.8
Dubhe	193 43.0	N61 37.4
Elnath	278 03.6	N28 37.6
Eltanin	90 43.5	N51 29.1
Enif	33 40.7	N 9 58.8
Fomalhaut	15 16.5	S29 30.3
Gacrux	171 53.7	S57 14.1
Gienah	175 45.4	S17 40.0
Hadar	148 38.8	S60 28.7
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.4
Kochab	137 20.7	N74 03.4
Markab	13 31.7	N15 19.7
Menkar	314 07.7	N 4 10.8
Menkent	147 59.9	S36 28.7
Miaplacidus	221 38.0	S69 48.3
Mirfak	308 30.3	N49 56.7
Nunki	75 50.3	S26 16.1
Peacock	53 08.9	S56 39.9
Pollux	243 19.1	N27 58.2
Procyon	244 52.3	N 5 10.0
Rasalhague	96 00.5	N12 32.6
Regulus	207 36.1	N11 51.3
Rigel	281 05.2	S 8 10.5
Rigil Kent.	139 43.1	S60 55.5
Sabik	102 05.1	S15 45.2
Schedar	349 32.8	N56 40.0
Shaula	96 13.1	S37 07.2
Sirius	258 27.4	S16 44.8
Spica	158 24.3	S11 16.7
Suhail	222 47.3	S43 31.3
Vega	80 34.8	N38 48.3
Zuben'ubi	136 58.2	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	77 51.1	12 59
Marte	289 37.5	22 46
Júpiter	359 35.5	18 09
Saturno	35 59.7	15 43

UT (HmGr)	SOL				LUNA							
	AHGr		Dec		AHGr	*v*		Dec	*d*		Ph	
d h	°	′	°	′	°	′	′	°	′	′	′	
18 00	180	55.4	S23	22.7	251	55.9	14.6	S 3	39.8	14.8	56.7	
01	195	55.1		22.8	266	29.5	14.5	3	54.6	14.9	56.8	
02	210	54.8		22.8	281	03.0	14.5	4	09.5	14.8	56.8	
03	225	54.5		22.9	295	36.5	14.4	4	24.3	14.8	56.8	
04	240	54.2		23.0	310	09.9	14.3	4	39.1	14.8	56.9	
05	255	53.9		23.1	324	43.2	14.3	4	53.9	14.9	56.9	
06	270	53.6	S23	23.1	339	16.5	14.3	S 5	08.8	14.8	57.0	
07	285	53.3		23.2	353	49.8	14.1	5	23.6	14.8	57.0	
08	300	52.9		23.3	8	22.9	14.1	5	38.4	14.8	57.0	
09	315	52.6		23.3	22	56.0	14.1	5	53.2	14.8	57.1	
10	330	52.3		23.4	37	29.1	13.9	6	08.0	14.8	57.1	
11	345	52.0		23.5	52	02.0	13.9	6	22.8	14.8	57.1	
12	0	51.7	S23	23.5	66	34.9	13.9	S 6	37.6	14.8	57.2	
13	15	51.4		23.6	81	07.8	13.7	6	52.4	14.8	57.2	
14	30	51.1		23.7	95	40.5	13.7	7	07.2	14.7	57.3	
15	45	50.8		23.7	110	13.2	13.6	7	21.9	14.8	57.3	
16	60	50.5		23.8	124	45.8	13.5	7	36.7	14.7	57.3	
17	75	50.2		23.9	139	18.3	13.4	7	51.4	14.8	57.4	
18	90	49.9	S23	23.9	153	50.7	13.4	S 8	06.2	14.7	57.4	
19	105	49.6		24.0	168	23.1	13.3	8	20.9	14.7	57.5	
20	120	49.2		24.1	182	55.4	13.2	8	35.6	14.6	57.5	
21	135	48.9		24.1	197	27.6	13.1	8	50.2	14.7	57.5	
22	150	48.6		24.2	211	59.7	13.0	9	04.9	14.6	57.6	
23	165	48.3		24.2	226	31.7	13.0	9	19.5	14.7	57.6	
19 00	180	48.0	S23	24.3	241	03.7	12.8	S 9	34.2	14.6	57.7	
01	195	47.7		24.3	255	35.5	12.8	9	48.8	14.5	57.7	
02	210	47.4		24.4	270	07.3	12.6	10	03.3	14.6	57.7	
03	225	47.1		24.5	284	38.9	12.6	10	17.9	14.5	57.8	
04	240	46.8		24.5	299	10.5	12.5	10	32.4	14.5	57.8	
05	255	46.5		24.6	313	42.0	12.4	10	46.9	14.4	57.9	
06	270	46.2	S23	24.6	328	13.4	12.3	S11	01.3	14.4	57.9	
07	285	45.9		24.7	342	44.7	12.2	11	15.7	14.4	57.9	
08	300	45.5		24.7	357	15.9	12.1	11	30.1	14.4	58.0	
09	315	45.2		24.8	11	47.0	12.0	11	44.5	14.3	58.0	
10	330	44.9		24.8	26	18.0	11.9	11	58.8	14.3	58.1	
11	345	44.6		24.9	40	48.9	11.7	12	13.1	14.2	58.1	
12	0	44.3	S23	24.9	55	19.6	11.7	S12	27.3	14.2	58.1	
13	15	44.0		25.0	69	50.3	11.6	12	41.5	14.2	58.2	
14	30	43.7		25.0	84	20.9	11.5	12	55.7	14.1	58.2	
15	45	43.4		25.1	98	51.4	11.3	13	09.8	14.1	58.3	
16	60	43.1		25.1	113	21.7	11.3	13	23.9	14.0	58.3	
17	75	42.8		25.1	127	52.0	11.1	13	37.9	13.9	58.3	
18	90	42.5	S23	25.2	142	22.1	11.0	S13	51.8	14.0	58.4	
19	105	42.1		25.2	156	52.1	11.0	14	05.8	13.8	58.4	
20	120	41.8		25.3	171	22.1	10.8	14	19.6	13.8	58.5	
21	135	41.5		25.3	185	51.9	10.6	14	33.4	13.8	58.5	
22	150	41.2		25.4	200	21.5	10.6	14	47.2	13.7	58.5	
23	165	40.9		25.4	214	51.1	10.5	15	00.9	13.6	58.6	
20 00	180	40.6	S23	25.4	229	20.6	10.3	S15	14.5	13.6	58.6	
01	195	40.3		25.5	243	49.9	10.2	15	28.1	13.5	58.7	
02	210	40.0		25.5	258	19.1	10.1	15	41.6	13.5	58.7	
03	225	39.7		25.5	272	48.2	9.9	15	55.1	13.4	58.7	
04	240	39.4		25.6	287	17.1	9.9	16	08.5	13.3	58.8	
05	255	39.0		25.6	301	46.0	9.7	16	21.8	13.2	58.8	
06	270	38.7	S23	25.6	316	14.7	9.6	S16	35.0	13.2	58.9	
07	285	38.4		25.7	330	43.3	9.5	16	48.2	13.1	58.9	
08	300	38.1		25.7	345	11.8	9.3	17	01.3	13.0	58.9	
09	315	37.8		25.7	359	40.1	9.2	17	14.3	13.0	59.0	
10	330	37.5		25.8	14	08.3	9.1	17	27.3	12.8	59.0	
11	345	37.2		25.8	28	36.4	8.9	17	40.1	12.8	59.1	
12	0	36.9	S23	25.8	43	04.3	8.8	S17	52.9	12.7	59.1	
13	15	36.6		25.8	57	32.1	8.7	18	05.6	12.6	59.1	
14	30	36.2		25.9	71	59.8	8.6	18	18.2	12.5	59.2	
15	45	35.9		25.9	86	27.4	8.4	18	30.7	12.5	59.2	
16	60	35.6		25.9	100	54.8	8.3	18	43.2	12.3	59.3	
17	75	35.3		25.9	115	22.1	8.1	18	55.5	12.3	59.3	
18	90	35.0	S23	26.0	129	49.2	8.1	S19	07.8	12.1	59.3	
19	105	34.7		26.0	144	16.3	7.8	19	19.9	12.1	59.4	
20	120	34.4		26.0	158	43.1	7.8	19	32.0	11.9	59.4	
21	135	34.1		26.0	173	09.9	7.6	19	43.9	11.9	59.4	
22	150	33.8		26.1	187	36.5	7.5	19	55.8	11.7	59.5	
23	165	33.4		26.1	202	03.0	7.3	S20	07.5	11.6	59.5	
	S/D	16.3	*d*	0.0	S/D		15.6		15.8		16.1	

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			18	19	20	21
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	08	24	10	55	▬	02 10	04 28	07 44	▬
N 70	08	04	09	53	▬	02 04	04 09	06 43	▬
68	07	48	09	18	▬	01 58	03 54	06 08	▬
66	07	35	08	52	10 33	01 54	03 42	05 44	08 14
64	07	24	08	33	09 51	01 51	03 32	05 25	07 33
62	07	14	08	16	09 22	01 48	03 24	05 09	07 05
60	07	06	08	03	09 01	01 45	03 17	04 56	06 44
N 58	06	58	07	51	08 43	01 42	03 11	04 45	06 27
56	06	52	07	41	08 28	01 40	03 05	04 36	06 12
54	06	46	07	32	08 16	01 38	03 00	04 28	06 00
52	06	40	07	24	08 05	01 37	02 56	04 20	05 49
50	06	35	07	16	07 55	01 35	02 52	04 13	05 39
45	06	23	07	00	07 34	01 32	02 43	03 59	05 19
N 40	06	12	06	46	07 17	01 29	02 36	03 47	05 03
35	06	03	06	35	07 03	01 27	02 30	03 37	04 49
30	05	54	06	24	06 51	01 25	02 25	03 29	04 37
20	05	38	06	05	06 29	01 21	02 15	03 14	04 17
N 10	05	22	05	48	06 11	01 18	02 07	03 01	03 59
0	05	05	05	31	05 53	01 15	02 00	02 49	03 43
S 10	04	46	05	13	05 36	01 12	01 53	02 37	03 27
20	04	23	04	52	05 17	01 09	01 45	02 25	03 10
30	03	54	04	27	04 55	01 06	01 36	02 10	02 50
35	03	35	04	12	04 42	01 04	01 31	02 02	02 39
40	03	12	03	54	04 27	01 02	01 25	01 53	02 26
45	02	41	03	31	04 09	00 59	01 19	01 42	02 11
S 50	01	56	03	01	03 46	00 56	01 11	01 29	01 53
52	01	28	02	46	03 35	00 55	01 07	01 23	01 44
54	00	41	02	28	03 23	00 53	01 04	01 16	01 34
56	////		02	06	03 09	00 52	00 59	01 09	01 23
58	////		01	36	02 52	00 50	00 54	01 01	01 11
S 60	////		00	45	02 31	00 48	00 49	00 51	00 56

Lat.	Ocaso Sol		Crepúsculo Civil		Crepúsculo Náut.	Ocaso Luna 18	19	20	21
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	▬		12	59	15 30	12 08	11 26	09 54	▬
N 70	▬		14	01	15 50	12 17	11 47	10 58	▬
68	▬		14	36	16 06	12 25	12 04	11 34	▬
66	13	21	15	02	16 19	12 32	12 18	12 00	11 25
64	14	03	15	21	16 30	12 37	12 29	12 20	12 06
62	14	32	15	38	16 40	12 42	12 39	12 37	12 35
60	14	53	15	51	16 48	12 46	12 48	12 50	12 57
N 58	15	11	16	03	16 56	12 50	12 55	13 02	13 15
56	15	26	16	13	17 02	12 53	13 02	13 13	13 30
54	15	38	16	22	17 08	12 56	13 07	13 22	13 43
52	15	49	16	30	17 14	12 59	13 13	13 30	13 55
50	15	59	16	38	17 19	13 02	13 18	13 38	14 05
45	16	20	16	54	17 31	13 07	13 28	13 54	14 26
N 40	16	37	17	08	17 42	13 12	13 37	14 07	14 44
35	16	51	17	19	17 51	13 16	13 45	14 18	14 59
30	17	04	17	30	18 00	13 19	13 51	14 28	15 12
20	17	25	17	49	18 16	13 25	14 03	14 45	15 34
N 10	17	43	18	06	18 33	13 31	14 13	15 00	15 53
0	18	01	18	23	18 50	13 36	14 23	15 14	16 11
S 10	18	18	18	41	19 09	13 41	14 32	15 28	16 29
20	18	37	19	02	19 31	13 47	14 43	15 43	16 48
30	18	59	19	27	20 00	13 53	14 55	16 01	17 11
35	19	12	19	42	20 19	13 57	15 02	16 11	17 24
40	19	28	20	00	20 42	14 01	15 10	16 23	17 39
45	19	46	20	23	21 13	14 06	15 19	16 37	17 58
S 50	20	08	20	53	21 59	14 11	15 30	16 54	18 20
52	20	19	21	08	22 26	14 14	15 35	17 02	18 31
54	20	31	21	26	23 13	14 17	15 41	17 11	18 44
56	20	46	21	48	////	14 20	15 47	17 21	18 58
58	21	02	22	18	////	14 24	15 55	17 32	19 15
S 60	21	23	23	09	////	14 28	16 03	17 46	19 36

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		SOL Paso Mer.	LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		LUNA Edad	LUNA Fase
d	m	s	m	s	h m	h	m	h	m	d	%
18	03	42	03	27	11 57	07	25	19	48	25	29
19	03	13	02	58	11 57	08	11	20	36	26	20
20	02	43	02	28	11 58	09	01	21	28	27	12

DOMINGO

LUNES

MARTES

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·5		JÚPITER −2·4		SATURNO +0·8	
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
21 00	89 32.8	164 39.6	S23 50.1	19 51.2	N24 49.0	88 59.0	S 1 12.6	125 22.2	S15 33.4
01	104 35.2	179 38.6	49.8	34 54.5	49.0	104 01.3	12.5	140 24.5	33.3
02	119 37.7	194 37.7	49.6	49 57.8	48.9	119 03.5	12.4	155 26.7	33.2
03	134 40.2	209 36.7	49.3	65 01.0	48.9	134 05.8	12.3	170 29.0	33.1
04	149 42.6	224 35.8	49.1	80 04.3	48.8	149 08.1	12.2	185 31.2	33.1
05	164 45.1	239 34.8	48.8	95 07.6	48.8	164 10.3	12.1	200 33.5	33.0
06	179 47.6	254 33.9	S23 48.6	110 10.9	N24 48.7	179 12.6	S 1 12.0	215 35.7	S15 32.9
07	194 50.0	269 32.9	48.3	125 14.2	48.7	194 14.9	11.9	230 37.9	32.9
08	209 52.5	284 32.0	48.1	140 17.4	48.6	209 17.1	11.8	245 40.2	32.8
M 09	224 55.0	299 31.0	47.8	155 20.7	48.6	224 19.4	11.7	260 42.4	32.7
I 10	239 57.4	314 30.1	47.6	170 24.0	48.5	239 21.6	11.6	275 44.7	32.6
É 11	254 59.9	329 29.1	47.3	185 27.3	48.5	254 23.9	11.5	290 46.9	32.6
R 12	270 02.3	344 28.2	S23 47.0	200 30.5	N24 48.4	269 26.2	S 1 11.4	305 49.2	S15 32.5
C 13	285 04.8	359 27.2	46.8	215 33.8	48.3	284 28.4	11.3	320 51.4	32.4
O 14	300 07.3	14 26.3	46.5	230 37.1	48.3	299 30.7	11.2	335 53.7	32.3
L 15	315 09.7	29 25.3	46.3	245 40.3	48.2	314 32.9	11.1	350 55.9	32.3
E 16	330 12.2	44 24.4	46.0	260 43.6	48.2	329 35.2	11.0	5 58.2	32.2
S 17	345 14.7	59 23.4	45.7	275 46.9	48.1	344 37.5	10.9	21 00.4	32.1
18	0 17.1	74 22.5	S23 45.5	290 50.1	N24 48.1	359 39.7	S 1 10.8	36 02.6	S15 32.0
19	15 19.6	89 21.5	45.2	305 53.4	48.0	14 42.0	10.7	51 04.9	32.0
20	30 22.1	104 20.6	44.9	320 56.7	48.0	29 44.2	10.6	66 07.1	31.9
21	45 24.5	119 19.6	44.7	335 59.9	47.9	44 46.5	10.5	81 09.4	31.8
22	60 27.0	134 18.7	44.4	351 03.2	47.9	59 48.8	10.4	96 11.6	31.8
23	75 29.5	149 17.7	44.1	6 06.4	47.8	74 51.0	10.3	111 13.9	31.7
22 00	90 31.9	164 16.8	S23 43.8	21 09.7	N24 47.8	89 53.3	S 1 10.2	126 16.1	S15 31.6
01	105 34.4	179 15.8	43.6	36 13.0	47.7	104 55.5	10.1	141 18.4	31.5
02	120 36.8	194 14.9	43.3	51 16.2	47.6	119 57.8	10.0	156 20.6	31.5
03	135 39.3	209 13.9	43.0	66 19.5	47.6	135 00.0	09.9	171 22.8	31.4
04	150 41.8	224 13.0	42.7	81 22.7	47.5	150 02.3	09.8	186 25.1	31.3
05	165 44.2	239 12.1	42.4	96 26.0	47.5	165 04.5	09.7	201 27.3	31.2
06	180 46.7	254 11.1	S23 42.2	111 29.2	N24 47.4	180 06.8	S 1 09.6	216 29.6	S15 31.2
07	195 49.2	269 10.2	41.9	126 32.5	47.4	195 09.1	09.5	231 31.8	31.1
J 08	210 51.6	284 09.2	41.6	141 35.7	47.3	210 11.3	09.4	246 34.1	31.0
U 09	225 54.1	299 08.3	41.3	156 38.9	47.3	225 13.6	09.3	261 36.3	30.9
E 10	240 56.6	314 07.3	41.0	171 42.2	47.2	240 15.8	09.2	276 38.5	30.9
V 11	255 59.0	329 06.4	40.7	186 45.4	47.2	255 18.1	09.1	291 40.8	30.8
E 12	271 01.5	344 05.4	S23 40.4	201 48.7	N24 47.1	270 20.3	S 1 09.0	306 43.0	S15 30.7
S 13	286 04.0	359 04.5	40.1	216 51.9	47.1	285 22.6	08.8	321 45.3	30.6
14	301 06.4	14 03.5	39.9	231 55.2	47.0	300 24.8	08.7	336 47.5	30.6
15	316 08.9	29 02.6	39.6	246 58.4	46.9	315 27.1	08.6	351 49.8	30.5
16	331 11.3	44 01.7	39.3	262 01.6	46.9	330 29.3	08.5	6 52.0	30.4
17	346 13.8	59 00.7	39.0	277 04.9	46.8	345 31.6	08.4	21 54.2	30.3
18	1 16.3	73 59.8	S23 38.7	292 08.1	N24 46.8	0 33.8	S 1 08.3	36 56.5	S15 30.3
19	16 18.7	88 58.8	38.4	307 11.3	46.7	15 36.1	08.2	51 58.7	30.2
20	31 21.2	103 57.9	38.1	322 14.6	46.7	30 38.3	08.1	67 01.0	30.1
21	46 23.7	118 56.9	37.8	337 17.8	46.6	45 40.6	08.0	82 03.2	30.1
22	61 26.1	133 56.0	37.5	352 21.0	46.6	60 42.9	07.9	97 05.5	30.0
23	76 28.6	148 55.1	37.2	7 24.2	46.5	75 45.1	07.8	112 07.7	29.9
23 00	91 31.1	163 54.1	S23 36.9	22 27.5	N24 46.5	90 47.4	S 1 07.7	127 09.9	S15 29.8
01	106 33.5	178 53.2	36.5	37 30.7	46.4	105 49.6	07.6	142 12.2	29.8
02	121 36.0	193 52.2	36.2	52 33.9	46.3	120 51.9	07.5	157 14.4	29.7
03	136 38.5	208 51.3	35.9	67 37.1	46.3	135 54.1	07.4	172 16.7	29.6
04	151 40.9	223 50.4	35.6	82 40.3	46.2	150 56.3	07.3	187 18.9	29.5
05	166 43.4	238 49.4	35.3	97 43.6	46.2	165 58.6	07.2	202 21.1	29.5
06	181 45.8	253 48.5	S23 35.0	112 46.8	N24 46.1	181 00.8	S 1 07.1	217 23.4	S15 29.4
07	196 48.3	268 47.5	34.7	127 50.0	46.1	196 03.1	07.0	232 25.6	29.3
V 08	211 50.8	283 46.6	34.4	142 53.2	46.0	211 05.3	06.9	247 27.9	29.2
I 09	226 53.2	298 45.7	34.1	157 56.4	46.0	226 07.6	06.8	262 30.1	29.2
E 10	241 55.7	313 44.7	33.7	172 59.6	45.9	241 09.8	06.6	277 32.3	29.1
R 11	256 58.2	328 43.8	33.4	188 02.8	45.9	256 12.1	06.5	292 34.6	29.0
N 12	272 00.6	343 42.8	S23 33.1	203 06.1	N24 45.8	271 14.3	S 1 06.4	307 36.8	S15 28.9
E 13	287 03.1	358 41.9	32.8	218 09.3	45.7	286 16.6	06.3	322 39.1	28.9
S 14	302 05.6	13 41.0	32.5	233 12.5	45.7	301 18.8	06.2	337 41.3	28.8
15	317 08.0	28 40.0	32.1	248 15.7	45.6	316 21.1	06.1	352 43.5	28.7
16	332 10.5	43 39.1	31.8	263 18.9	45.6	331 23.3	06.0	7 45.8	28.6
17	347 13.0	58 38.2	31.5	278 22.1	45.5	346 25.6	05.9	22 48.0	28.6
18	2 15.4	73 37.2	S23 31.1	293 25.3	N24 45.5	1 27.8	S 1 05.8	37 50.3	S15 28.5
19	17 17.9	88 36.3	30.8	308 28.5	45.4	16 30.1	05.7	52 52.5	28.4
20	32 20.3	103 35.3	30.5	323 31.7	45.4	31 32.3	05.6	67 54.7	28.3
21	47 22.8	118 34.4	30.2	338 34.9	45.3	46 34.5	05.5	82 57.0	28.3
22	62 25.3	133 33.5	29.8	353 38.1	45.2	61 36.8	05.4	97 59.2	28.2
23	77 27.7	148 32.5	29.5	8 41.3	45.2	76 39.0	05.3	113 01.5	28.1
	h m								
Paso Mer.	17 54.9	*v* −0.9	*d* 0.3	*v* 3.2	*d* 0.1	*v* 2.3	*d* 0.1	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.8	S40 13.0
Achernar	335 21.2	S57 07.5
Acrux	173 02.0	S63 13.2
Adhara	255 06.8	S29 00.1
Aldebaran	290 41.2	N16 33.3
Alioth	166 14.6	N55 49.9
Alkaid	152 53.6	N49 11.7
Alnair	27 35.3	S46 51.3
Alnilam	275 39.1	S 1 11.2
Alphard	217 49.2	S 8 45.4
Alphecca	126 05.5	N26 38.2
Alpheratz	357 36.5	N29 13.1
Altair	62 01.9	N 8 55.7
Ankaa	353 08.8	S42 11.2
Antares	112 18.3	S26 28.9
Arcturus	145 49.7	N19 03.7
Atria	107 14.6	S69 04.0
Avior	234 14.9	S59 34.7
Bellatrix	278 24.4	N 6 22.2
Betelgeuse	270 53.6	N 7 24.7
Canopus	263 52.6	S52 42.4
Capella	280 23.9	N46 01.3
Deneb	49 27.3	N45 21.8
Denebola	182 26.7	N14 26.6
Diphda	348 48.9	S17 51.8
Dubhe	193 42.9	N61 37.4
Elnath	278 03.6	N28 37.6
Eltanin	90 43.5	N51 29.1
Enif	33 40.7	N 9 58.8
Fomalhaut	15 16.5	S29 30.3
Gacrux	171 53.6	S57 14.1
Gienah	175 45.4	S17 40.0
Hadar	148 38.8	S60 28.7
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.4
Kochab	137 20.6	N74 03.4
Markab	13 31.7	N15 19.7
Menkar	314 07.7	N 4 10.8
Menkent	147 59.9	S36 28.7
Miaplacidus	221 37.9	S69 48.4
Mirfak	308 30.3	N49 56.7
Nunki	75 50.2	S26 16.1
Peacock	53 08.9	S56 39.9
Pollux	243 19.0	N27 58.2
Procyon	244 52.3	N 5 10.0
Rasalhague	96 00.5	N12 32.6
Regulus	207 36.1	N11 51.3
Rigel	281 05.2	S 8 10.5
Rigil Kent.	139 43.1	S60 55.5
Sabik	102 05.1	S15 45.2
Schedar	349 32.9	N56 40.0
Shaula	96 13.1	S37 07.2
Sirius	258 27.4	S16 44.8
Spica	158 24.2	S11 16.7
Suhail	222 47.2	S43 31.3
Vega	80 34.8	N38 48.3
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	73 44.9	13 04
Marte	290 37.8	22 30
Júpiter	359 21.3	17 58
Saturno	35 44.2	15 33

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph	
d h	°	′	°	′	°	′	°	′	′	
21 00	180	33.1	S23	26.1	216	29.3	7.2	S20	19.1	11.6	59.6
01	195	32.8		26.1	230	55.5	7.1	20	30.7	11.4	59.6
02	210	32.5		26.1	245	21.6	6.9	20	42.1	11.3	59.6
03	225	32.2	. .	26.1	259	47.5	6.8	20	53.4	11.2	59.7
04	240	31.9		26.2	274	13.3	6.6	21	04.6	11.0	59.7
05	255	31.6		26.2	288	38.9	6.5	21	15.6	11.0	59.7
06	270	31.3	S23	26.2	303	04.4	6.4	S21	26.6	10.8	59.8
07	285	31.0		26.2	317	29.8	6.3	21	37.4	10.7	59.8
M 08	300	30.6		26.2	331	55.1	6.1	21	48.1	10.6	59.8
I 09	315	30.3	. .	26.2	346	20.2	5.9	21	58.7	10.4	59.9
É 10	330	30.0		26.2	0	45.1	5.8	22	09.1	10.3	59.9
R 11	345	29.7		26.2	15	09.9	5.7	22	19.4	10.2	59.9
C 12	0	29.4	S23	26.2	29	34.6	5.6	S22	29.6	10.0	60.0
O 13	15	29.1		26.3	43	59.2	5.4	22	39.6	9.9	60.0
L 14	30	28.8		26.3	58	23.6	5.3	22	49.5	9.8	60.0
E 15	45	28.5	. .	26.3	72	47.9	5.1	22	59.3	9.6	60.1
S 16	60	28.2		26.3	87	12.0	5.0	23	08.9	9.5	60.1
17	75	27.8		26.3	101	36.0	4.9	23	18.4	9.3	60.1
18	90	27.5	S23	26.3	115	59.9	4.7	S23	27.7	9.2	60.2
19	105	27.2		26.3	130	23.6	4.6	23	36.9	9.0	60.2
20	120	26.9		26.3	144	47.2	4.5	23	45.9	8.9	60.2
21	135	26.6	. .	26.3	159	10.7	4.4	23	54.8	8.7	60.3
22	150	26.3		26.3	173	34.1	4.2	24	03.5	8.6	60.3
23	165	26.0		26.3	187	57.3	4.1	24	12.1	8.4	60.3
22 00	180	25.7	S23	26.3	202	20.4	4.0	S24	20.5	8.2	60.3
01	195	25.4		26.3	216	43.4	3.8	24	28.7	8.1	60.4
02	210	25.0		26.3	231	06.2	3.7	24	36.8	7.9	60.4
03	225	24.7	. .	26.3	245	28.9	3.6	24	44.7	7.8	60.4
04	240	24.4		26.3	259	51.5	3.5	24	52.5	7.5	60.5
05	255	24.1		26.3	274	14.0	3.4	25	00.0	7.4	60.5
06	270	23.8	S23	26.3	288	36.4	3.2	S25	07.4	7.3	60.5
07	285	23.5		26.3	302	58.6	3.1	25	14.7	7.0	60.5
J 08	300	23.2		26.2	317	20.7	3.1	25	21.7	6.9	60.6
U 09	315	22.9	. .	26.2	331	42.8	2.9	25	28.6	6.7	60.6
E 10	330	22.5		26.2	346	04.7	2.8	25	35.3	6.5	60.6
V 11	345	22.2		26.2	0	26.5	2.6	25	41.8	6.3	60.6
E 12	0	21.9	S23	26.2	14	48.1	2.6	S25	48.1	6.2	60.7
S 13	15	21.6		26.2	29	09.7	2.5	25	54.3	5.9	60.7
14	30	21.3		26.2	43	31.2	2.4	26	00.2	5.8	60.7
15	45	21.0	. .	26.2	57	52.6	2.3	26	06.0	5.6	60.7
16	60	20.7		26.2	72	13.9	2.2	26	11.6	5.4	60.8
17	75	20.4		26.1	86	35.1	2.0	26	17.0	5.1	60.8
18	90	20.1	S23	26.1	100	56.1	2.0	S26	22.1	5.0	60.8
19	105	19.7		26.1	115	17.1	2.0	26	27.1	4.8	60.8
20	120	19.4		26.1	129	38.1	1.8	26	31.9	4.6	60.8
21	135	19.1	. .	26.1	143	58.9	1.7	26	36.5	4.4	60.9
22	150	18.8		26.1	158	19.6	1.7	26	40.9	4.2	60.9
23	165	18.5		26.0	172	40.3	1.6	26	45.1	4.0	60.9
23 00	180	18.2	S23	26.0	187	00.9	1.5	S26	49.1	3.8	60.9
01	195	17.9		26.0	201	21.4	1.5	26	52.9	3.6	60.9
02	210	17.6		26.0	215	41.9	1.4	26	56.5	3.4	60.9
03	225	17.2	. .	25.9	230	02.3	1.3	26	59.9	3.2	61.0
04	240	16.9		25.9	244	22.6	1.2	27	03.1	2.9	61.0
05	255	16.6		25.9	258	42.8	1.2	27	06.0	2.8	61.0
06	270	16.3	S23	25.9	273	03.0	1.2	S27	08.8	2.5	61.0
07	285	16.0		25.8	287	23.2	1.1	27	11.3	2.4	61.0
V 08	300	15.7		25.8	301	43.3	1.0	27	13.7	2.1	61.0
I 09	315	15.4	. .	25.8	316	03.3	1.0	27	15.8	1.9	61.0
E 10	330	15.1		25.8	330	23.3	1.0	27	17.7	1.7	61.1
R 11	345	14.8		25.7	344	43.3	0.9	27	19.4	1.5	61.1
N 12	0	14.4	S23	25.7	359	03.2	0.9	S27	20.9	1.3	61.1
E 13	15	14.1		25.7	13	23.1	0.9	27	22.2	1.0	61.1
S 14	30	13.8		25.6	27	43.0	0.8	27	23.2	0.9	61.1
15	45	13.5	. .	25.6	42	02.8	0.8	27	24.1	0.6	61.1
16	60	13.2		25.6	56	22.6	0.8	27	24.7	0.4	61.1
17	75	12.9		25.5	70	42.4	0.8	27	25.1	0.2	61.1
18	90	12.6	S23	25.5	85	02.2	0.8	S27	25.3	0.1	61.1
19	105	12.3		25.5	99	22.0	0.7	27	25.2	0.2	61.2
20	120	11.9		25.4	113	41.7	0.8	27	25.0	0.5	61.2
21	135	11.6	. .	25.4	128	01.5	0.7	27	24.5	0.7	61.2
22	150	11.3		25.3	142	21.2	0.8	27	23.8	0.9	61.2
23	165	11.0		25.3	156	41.0	0.7	S27	22.9	1.1	61.2
	S/D	16.3	*d*	0.0	S/D	16.3		16.5			16.6

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			21	22	23	24
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	08	26	10	58	▬	▬	▬	▬	▬
N 70	08	06	09	55	▬	▬	▬	▬	▬
68	07	50	09	19	▬	▬	▬	▬	▬
66	07	37	08	54	10 35	08 14	▬	▬	▬
64	07	26	08	34	09 52	07 33	10 27	▬	▬
62	07	16	08	18	09 24	07 05	09 12	11 15	12 03
60	07	08	08	05	09 02	06 44	08 37	10 16	11 15
N 58	07	00	07	53	08 45	06 27	08 11	09 43	10 45
56	06	53	07	43	08 30	06 12	07 51	09 18	10 22
54	06	47	07	33	08 17	06 00	07 34	08 58	10 03
52	06	41	07	25	08 06	05 49	07 19	08 42	09 47
50	06	36	07	18	07 56	05 39	07 07	08 27	09 33
45	06	24	07	02	07 36	05 19	06 41	07 58	09 04
N 40	06	14	06	48	07 19	05 03	06 20	07 35	08 42
35	06	05	06	36	07 04	04 49	06 03	07 17	08 23
30	05	56	06	26	06 52	04 37	05 49	07 00	08 07
20	05	39	06	07	06 31	04 17	05 24	06 33	07 40
N 10	05	23	05	49	06 12	03 59	05 03	06 10	07 17
0	05	06	05	32	05 55	03 43	04 43	05 48	06 55
S 10	04	47	05	14	05 37	03 27	04 24	05 26	06 34
20	04	24	04	54	05 18	03 10	04 03	05 03	06 10
30	03	55	04	29	04 56	02 50	03 39	04 36	05 43
35	03	36	04	13	04 43	02 39	03 25	04 21	05 27
40	03	13	03	55	04 28	02 26	03 08	04 02	05 09
45	02	43	03	32	04 10	02 11	02 49	03 40	04 46
S 50	01	57	03	03	03 47	01 53	02 25	03 12	04 18
52	01	29	02	47	03 36	01 44	02 14	02 59	04 04
54	00	42	02	29	03 24	01 34	02 01	02 43	03 47
56	////		02	07	03 10	01 23	01 46	02 25	03 28
58	////		01	37	02 53	01 11	01 28	02 02	03 04
S 60	////		00	46	02 32	00 56	01 07	01 33	02 33

Lat.	Ocaso Sol	Crepúsculo		Ocaso Luna			
		Civil	Náut.	21	22	23	24
°	h m	h m	h m	h m	h m	h m	h m
N 72	▬	12 59	15 31	▬	▬	▬	▬
N 70	▬	14 02	15 51	▬	▬	▬	▬
68	▬	14 38	16 07	▬	▬	▬	▬
66	13 22	15 03	16 20	11 25	▬	▬	▬
64	14 05	15 23	16 31	12 06	11 20	▬	▬
62	14 33	15 39	16 41	12 35	12 35	12 51	14 25
60	14 55	15 52	16 49	12 57	13 12	13 50	15 12
N 58	15 12	16 04	16 57	13 15	13 38	14 23	15 42
56	15 27	16 14	17 04	13 30	13 59	14 48	16 05
54	15 40	16 24	17 10	13 43	14 16	15 08	16 24
52	15 51	16 32	17 16	13 55	14 31	15 25	16 40
50	16 01	16 39	17 21	14 05	14 44	15 39	16 54
45	16 22	16 55	17 33	14 26	15 10	16 09	17 21
N 40	16 38	17 09	17 43	14 44	15 31	16 32	17 43
35	16 53	17 21	17 52	14 59	15 49	16 51	18 01
30	17 05	17 31	18 01	15 12	16 04	17 07	18 17
20	17 26	17 50	18 18	15 34	16 30	17 34	18 43
N 10	17 45	18 08	18 34	15 53	16 53	17 58	19 06
0	18 02	18 25	18 51	16 11	17 13	18 20	19 27
S 10	18 20	18 43	19 10	16 29	17 34	18 42	19 48
20	18 39	19 03	19 33	16 48	17 57	19 05	20 10
30	19 01	19 28	20 02	17 11	18 23	19 33	20 36
35	19 14	19 44	20 21	17 24	18 38	19 49	20 51
40	19 29	20 02	20 44	17 39	18 56	20 08	21 08
45	19 47	20 25	21 14	17 58	19 18	20 30	21 29
S 50	20 10	20 54	22 00	18 20	19 45	20 59	21 55
52	20 21	21 10	22 28	18 31	19 59	21 13	22 08
54	20 33	21 28	23 15	18 44	20 14	21 29	22 22
56	20 47	21 50	////	18 58	20 32	21 49	22 39
58	21 04	22 20	////	19 15	20 54	22 13	22 59
S 60	21 25	23 11	////	19 36	21 23	22 44	23 24

Día	SOL				LUNA				
	Ec. Tiempo				Paso Mer.	Paso Mer.		Edad	Fase
	00h		12h			Sup.	Inf.		
d	m	s	m	s	h m	h m	h m	d	%
21	02	13	01	58	11 58	09 57	22 27	28	5
22	01	43	01	28	11 59	10 58	23 31	29	1
23	01	13	00	58	11 59	12 04	24 38	00	0



UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·4		JÚPITER −2·4		SATURNO +0·8		ESTRELLAS		
	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec	Nombre	AHS	Dec
d h	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′		° ′	° ′
24 00	92 30.2	163 31.6	S23 29.2	23 44.4	N24 45.1	91 41.3	S 1 05.2	128 03.7	S15 28.0	Acamar	315 12.8	S40 13.0
01	107 32.7	178 30.7	28.8	38 47.6	45.1	106 43.5	05.0	143 05.9	28.0	Achernar	335 21.2	S57 07.5
02	122 35.1	193 29.7	28.5	53 50.8	45.0	121 45.8	04.9	158 08.2	27.9	Acrux	173 02.0	S63 13.2
03	137 37.6	208 28.8	28.1	68 54.0	45.0	136 48.0	04.8	173 10.4	27.8	Adhara	255 06.8	S29 00.1
04	152 40.1	223 27.9	27.8	83 57.2	44.9	151 50.2	04.7	188 12.7	27.7	Aldebaran	290 41.2	N16 33.3
05	167 42.5	238 26.9	27.5	99 00.4	44.9	166 52.5	04.6	203 14.9	27.6			
06	182 45.0	253 26.0	S23 27.1	114 03.6	N24 44.8	181 54.7	S 1 04.5	218 17.1	S15 27.6	Alioth	166 14.6	N55 49.9
07	197 47.5	268 25.1	26.8	129 06.7	44.8	196 57.0	04.4	233 19.4	27.5	Alkaid	152 53.6	N49 11.7
08	212 49.9	283 24.1	26.4	144 09.9	44.7	211 59.2	04.3	248 21.6	27.4	Alnair	27 35.3	S46 51.3
S 09	227 52.4	298 23.2	26.1	159 13.1	44.6	227 01.4	04.2	263 23.8	27.3	Alnilam	275 39.1	S 1 11.3
Á 10	242 54.8	313 22.3	25.7	174 16.3	44.6	242 03.7	04.1	278 26.1	27.3	Alphard	217 49.2	S 8 45.4
B 11	257 57.3	328 21.3	25.4	189 19.5	44.5	257 05.9	04.0	293 28.3	27.2			
A 12	272 59.8	343 20.4	S23 25.0	204 22.6	N24 44.5	272 08.2	S 1 03.9	308 30.6	S15 27.1	Alphecca	126 05.5	N26 38.2
D 13	288 02.2	358 19.5	24.7	219 25.8	44.4	287 10.4	03.7	323 32.8	27.0	Alpheratz	357 36.5	N29 13.1
O 14	303 04.7	13 18.6	24.3	234 29.0	44.4	302 12.7	03.6	338 35.0	27.0	Altair	62 01.9	N 8 55.7
15	318 07.2	28 17.6	24.0	249 32.2	44.3	317 14.9	03.5	353 37.3	26.9	Ankaa	353 08.8	S42 11.2
16	333 09.6	43 16.7	23.6	264 35.3	44.3	332 17.1	03.4	8 39.5	26.8	Antares	112 18.3	S26 28.9
17	348 12.1	58 15.8	23.3	279 38.5	44.2	347 19.4	03.3	23 41.7	26.7			
18	3 14.6	73 14.8	S23 22.9	294 41.7	N24 44.2	2 21.6	S 1 03.2	38 44.0	S15 26.7	Arcturus	145 49.7	N19 03.7
19	18 17.0	88 13.9	22.5	309 44.8	44.1	17 23.8	03.1	53 46.2	26.6	Atria	107 14.6	S69 04.0
20	33 19.5	103 13.0	22.2	324 48.0	44.0	32 26.1	03.0	68 48.5	26.5	Avior	234 14.8	S59 34.8
21	48 22.0	118 12.1	21.8	339 51.1	44.0	47 28.3	02.9	83 50.7	26.4	Bellatrix	278 24.4	N 6 22.2
22	63 24.4	133 11.1	21.5	354 54.3	43.9	62 30.6	02.8	98 52.9	26.4	Betelgeuse	270 53.6	N 7 24.7
23	78 26.9	148 10.2	21.1	9 57.5	43.9	77 32.8	02.6	113 55.2	26.3			
25 00	93 29.3	163 09.3	S23 20.7	25 00.6	N24 43.8	92 35.0	S 1 02.5	128 57.4	S15 26.2	Canopus	263 52.6	S52 42.4
01	108 31.8	178 08.3	20.4	40 03.8	43.8	107 37.3	02.4	143 59.6	26.1	Capella	280 23.9	N46 01.3
02	123 34.3	193 07.4	20.0	55 06.9	43.7	122 39.5	02.3	159 01.9	26.1	Deneb	49 27.3	N45 21.8
03	138 36.7	208 06.5	19.6	70 10.1	43.7	137 41.7	02.2	174 04.1	26.0	Denebola	182 26.6	N14 26.6
04	153 39.2	223 05.6	19.3	85 13.2	43.6	152 44.0	02.1	189 06.3	25.9	Diphda	348 48.9	S17 51.8
05	168 41.7	238 04.6	18.9	100 16.4	43.6	167 46.2	02.0	204 08.6	25.8			
06	183 44.1	253 03.7	S23 18.5	115 19.5	N24 43.5	182 48.4	S 1 01.9	219 10.8	S15 25.7	Dubhe	193 42.9	N61 37.4
07	198 46.6	268 02.8	18.1	130 22.7	43.4	197 50.7	01.8	234 13.1	25.7	Elnath	278 03.6	N28 37.6
D 08	213 49.1	283 01.9	17.8	145 25.8	43.4	212 52.9	01.7	249 15.3	25.6	Eltanin	90 43.5	N51 29.1
O 09	228 51.5	298 00.9	17.4	160 29.0	43.3	227 55.1	01.5	264 17.5	25.5	Enif	33 40.7	N 9 58.8
M 10	243 54.0	313 00.0	17.0	175 32.1	43.3	242 57.4	01.4	279 19.8	25.4	Fomalhaut	15 16.5	S29 30.3
I 11	258 56.5	327 59.1	16.6	190 35.3	43.2	257 59.6	01.3	294 22.0	25.4			
N 12	273 58.9	342 58.2	S23 16.3	205 38.4	N24 43.2	273 01.8	S 1 01.2	309 24.2	S15 25.3	Gacrux	171 53.6	S57 14.2
G 13	289 01.4	357 57.3	15.9	220 41.5	43.1	288 04.1	01.1	324 26.5	25.2	Gienah	175 45.3	S17 40.0
O 14	304 03.8	12 56.3	15.5	235 44.7	43.1	303 06.3	01.0	339 28.7	25.1	Hadar	148 38.7	S60 28.7
15	319 06.3	27 55.4	15.1	250 47.8	43.0	318 08.5	00.9	354 30.9	25.1	Hamal	327 52.9	N23 34.3
16	334 08.8	42 54.5	14.7	265 51.0	43.0	333 10.8	00.8	9 33.2	25.0	Kaus Aust.	83 35.2	S34 22.4
17	349 11.2	57 53.6	14.3	280 54.1	42.9	348 13.0	00.6	24 35.4	24.9			
18	4 13.7	72 52.6	S23 14.0	295 57.2	N24 42.8	3 15.2	S 1 00.5	39 37.6	S15 24.8	Kochab	137 20.6	N74 03.4
19	19 16.2	87 51.7	13.6	311 00.3	42.8	18 17.5	00.4	54 39.9	24.7	Markab	13 31.7	N15 19.7
20	34 18.6	102 50.8	13.2	326 03.5	42.7	33 19.7	00.3	69 42.1	24.7	Menkar	314 07.7	N 4 10.7
21	49 21.1	117 49.9	12.8	341 06.6	42.7	48 21.9	00.2	84 44.3	24.6	Menkent	147 59.8	S36 28.7
22	64 23.6	132 49.0	12.4	356 09.7	42.6	63 24.2	00.1	99 46.6	24.5	Miaplacidus	221 37.9	S69 48.4
23	79 26.0	147 48.1	12.0	11 12.9	42.6	78 26.4	1 00.0	114 48.8	24.4			
26 00	94 28.5	162 47.1	S23 11.6	26 16.0	N24 42.5	93 28.6	S 0 59.9	129 51.0	S15 24.4	Mirfak	308 30.3	N49 56.7
01	109 31.0	177 46.2	11.2	41 19.1	42.5	108 30.9	59.7	144 53.3	24.3	Nunki	75 50.2	S26 16.1
02	124 33.4	192 45.3	10.8	56 22.2	42.4	123 33.1	59.6	159 55.5	24.2	Peacock	53 08.9	S56 39.8
03	139 35.9	207 44.4	10.4	71 25.3	42.4	138 35.3	59.5	174 57.7	24.1	Pollux	243 19.0	N27 58.2
04	154 38.3	222 43.5	10.0	86 28.5	42.3	153 37.5	59.4	190 00.0	24.1	Procyon	244 52.3	N 5 10.0
05	169 40.8	237 42.5	09.6	101 31.6	42.2	168 39.8	59.3	205 02.2	24.0			
06	184 43.3	252 41.6	S23 09.2	116 34.7	N24 42.2	183 42.0	S 0 59.2	220 04.4	S15 23.9	Rasalhague	96 00.5	N12 32.6
07	199 45.7	267 40.7	08.8	131 37.8	42.1	198 44.2	59.1	235 06.7	23.8	Regulus	207 36.1	N11 51.3
L 08	214 48.2	282 39.8	08.4	146 40.9	42.1	213 46.5	58.9	250 08.9	23.7	Rigel	281 05.2	S 8 10.5
U 09	229 50.7	297 38.9	08.0	161 44.0	42.0	228 48.7	58.8	265 11.1	23.7	Rigil Kent.	139 43.0	S60 55.5
N 10	244 53.1	312 38.0	07.6	176 47.1	42.0	243 50.9	58.7	280 13.4	23.6	Sabik	102 05.1	S15 45.2
E 11	259 55.6	327 37.1	07.2	191 50.2	41.9	258 53.1	58.6	295 15.6	23.5			
S 12	274 58.1	342 36.1	S23 06.8	206 53.3	N24 41.9	273 55.4	S 0 58.5	310 17.8	S15 23.4	Schedar	349 32.9	N56 40.0
13	290 00.5	357 35.2	06.4	221 56.4	41.8	288 57.6	58.4	325 20.1	23.4	Shaula	96 13.1	S37 07.2
14	305 03.0	12 34.3	05.9	236 59.5	41.8	303 59.8	58.3	340 22.3	23.3	Sirius	258 27.4	S16 44.8
15	320 05.4	27 33.4	05.5	252 02.6	41.7	319 02.0	58.1	355 24.5	23.2	Spica	158 24.2	S11 16.8
16	335 07.9	42 32.5	05.1	267 05.7	41.7	334 04.3	58.0	10 26.8	23.1	Suhail	222 47.2	S43 31.3
17	350 10.4	57 31.6	04.7	282 08.8	41.6	349 06.5	57.9	25 29.0	23.0			
18	5 12.8	72 30.7	S23 04.3	297 11.9	N24 41.6	4 08.7	S 0 57.8	40 31.2	S15 23.0	Vega	80 34.8	N38 48.3
19	20 15.3	87 29.7	03.9	312 15.0	41.5	19 10.9	57.7	55 33.5	22.9	Zuben'ubi	136 58.1	S16 08.1
20	35 17.8	102 28.8	03.4	327 18.1	41.4	34 13.2	57.6	70 35.7	22.8			
21	50 20.2	117 27.9	03.0	342 21.2	41.4	49 15.4	57.4	85 37.9	22.7		AHS	Paso Mer.
22	65 22.7	132 27.0	02.6	357 24.3	41.3	64 17.6	57.3	100 40.2	22.7		° ′	h m
23	80 25.2	147 26.1	02.2	12 27.4	41.3	79 19.8	57.2	115 42.4	22.6	Venus	69 39.9	13 08
	h m									Marte	291 31.3	22 15
Paso Mer.	17 43.1	*v* −0.9	*d* 0.4	*v* 3.1	*d* 0.1	*v* 2.2	*d* 0.1	*v* 2.2	*d* 0.1	Júpiter	359 05.7	17 47
										Saturno	35 28.1	15 22

UT (HmGr)	SOL				LUNA						
	AHGr		Dec		AHGr	v	Dec	d	Ph		
d h	°	′	°	′	°	′	′	°	′	′	′
24 00	180	10.7	S23	25.3	171	00.7	0.8	S27	21.8	1.3	61.2
01	195	10.4		25.2	185	20.5	0.8	27	20.5	1.6	61.2
02	210	10.1		25.2	199	40.3	0.8	27	18.9	1.7	61.2
03	225	09.8	. .	25.1	214	00.1	0.8	27	17.2	2.0	61.2
04	240	09.5		25.1	228	19.9	0.9	27	15.2	2.2	61.2
05	255	09.1		25.0	242	39.8	0.9	27	13.0	2.4	61.2
06	270	08.8	S23	25.0	256	59.7	0.9	S27	10.6	2.6	61.2
07	285	08.5		25.0	271	19.6	0.9	27	08.0	2.9	61.2
S 08	300	08.2		24.9	285	39.5	1.0	27	05.1	3.0	61.2
Á 09	315	07.9	. .	24.9	299	59.5	1.0	27	02.1	3.3	61.2
B 10	330	07.6		24.8	314	19.5	1.1	26	58.8	3.5	61.2
A 11	345	07.3		24.8	328	39.6	1.1	26	55.3	3.7	61.2
D 12	0	07.0	S23	24.7	342	59.7	1.2	S26	51.6	3.9	61.2
O 13	15	06.6		24.7	357	19.9	1.2	26	47.7	4.1	61.2
14	30	06.3		24.6	11	40.1	1.3	26	43.6	4.3	61.2
15	45	06.0	. .	24.6	26	00.4	1.3	26	39.3	4.5	61.2
16	60	05.7		24.5	40	20.7	1.4	26	34.8	4.8	61.2
17	75	05.4		24.4	54	41.1	1.5	26	30.0	4.9	61.2
18	90	05.1	S23	24.4	69	01.6	1.5	S26	25.1	5.1	61.2
19	105	04.8		24.3	83	22.1	1.6	26	20.0	5.4	61.2
20	120	04.5		24.3	97	42.7	1.7	26	14.6	5.5	61.2
21	135	04.2	. .	24.2	112	03.4	1.8	26	09.1	5.8	61.2
22	150	03.8		24.2	126	24.2	1.9	26	03.3	5.9	61.2
23	165	03.5		24.1	140	45.1	1.9	25	57.4	6.1	61.1
25 00	180	03.2	S23	24.0	155	06.0	2.0	S25	51.3	6.3	61.1
01	195	02.9		24.0	169	27.0	2.1	25	45.0	6.6	61.1
02	210	02.6		23.9	183	48.1	2.2	25	38.4	6.7	61.1
03	225	02.3	. .	23.9	198	09.3	2.3	25	31.7	6.9	61.1
04	240	02.0		23.8	212	30.6	2.4	25	24.8	7.1	61.1
05	255	01.7		23.7	226	52.0	2.5	25	17.7	7.3	61.1
06	270	01.4	S23	23.7	241	13.5	2.6	S25	10.4	7.4	61.1
07	285	01.0		23.6	255	35.1	2.7	25	03.0	7.7	61.1
D 08	300	00.7		23.5	269	56.8	2.8	24	55.3	7.8	61.1
O 09	315	00.4	. .	23.5	284	18.6	2.9	24	47.5	8.0	61.0
M 10	330	00.1		23.4	298	40.5	3.1	24	39.5	8.2	61.0
I 11	344	59.8		23.3	313	02.6	3.1	24	31.3	8.3	61.0
N 12	359	59.5	S23	23.3	327	24.7	3.2	S24	23.0	8.6	61.0
G 13	14	59.2		23.2	341	46.9	3.4	24	14.4	8.7	61.0
O 14	29	58.9		23.1	356	09.3	3.4	24	05.7	8.8	61.0
15	44	58.6	. .	23.0	10	31.7	3.6	23	56.9	9.1	61.0
16	59	58.3		23.0	24	54.3	3.7	23	47.8	9.2	60.9
17	74	57.9		22.9	39	17.0	3.8	23	38.6	9.3	60.9
18	89	57.6	S23	22.8	53	39.8	4.0	S23	29.3	9.6	60.9
19	104	57.3		22.7	68	02.8	4.0	23	19.7	9.7	60.9
20	119	57.0		22.7	82	25.8	4.2	23	10.0	9.8	60.9
21	134	56.7	. .	22.6	96	49.0	4.3	23	00.2	10.0	60.8
22	149	56.4		22.5	111	12.3	4.4	22	50.2	10.1	60.8
23	164	56.1		22.4	125	35.7	4.6	22	40.1	10.3	60.8
26 00	179	55.8	S23	22.4	139	59.3	4.7	S22	29.8	10.5	60.8
01	194	55.5		22.3	154	23.0	4.8	22	19.3	10.6	60.8
02	209	55.1		22.2	168	46.8	4.9	22	08.7	10.7	60.7
03	224	54.8	. .	22.1	183	10.7	5.1	21	58.0	10.9	60.7
04	239	54.5		22.0	197	34.8	5.2	21	47.1	11.0	60.7
05	254	54.2		21.9	211	59.0	5.3	21	36.1	11.2	60.7
06	269	53.9	S23	21.9	226	23.3	5.4	S21	24.9	11.3	60.7
07	284	53.6		21.8	240	47.7	5.6	21	13.6	11.4	60.6
L 08	299	53.3		21.7	255	12.3	5.7	21	02.2	11.5	60.6
U 09	314	53.0	. .	21.6	269	37.0	5.8	20	50.7	11.7	60.6
N 10	329	52.7		21.5	284	01.8	6.0	20	39.0	11.8	60.6
E 11	344	52.4		21.4	298	26.8	6.1	20	27.2	11.9	60.5
S 12	359	52.1	S23	21.3	312	51.9	6.2	S20	15.3	12.1	60.5
13	14	51.7		21.2	327	17.1	6.4	20	03.2	12.1	60.5
14	29	51.4		21.1	341	42.5	6.4	19	51.1	12.3	60.5
15	44	51.1	. .	21.1	356	07.9	6.6	19	38.8	12.4	60.4
16	59	50.8		21.0	10	33.5	6.8	19	26.4	12.5	60.4
17	74	50.5		20.9	24	59.3	6.8	19	13.9	12.7	60.4
18	89	50.2	S23	20.8	39	25.1	7.0	S19	01.2	12.7	60.4
19	104	49.9		20.7	53	51.1	7.2	18	48.5	12.8	60.3
20	119	49.6		20.6	68	17.3	7.2	18	35.7	13.0	60.3
21	134	49.3	. .	20.5	82	43.5	7.4	18	22.7	13.0	60.3
22	149	49.0		20.4	97	09.9	7.5	18	09.7	13.1	60.3
23	164	48.7		20.3	111	36.4	7.6	S17	56.6	13.3	60.2
	S/D	16.3	*d*	0.1	S/D	16.7		16.6			16.5

Lat.	Aurora Náut.	Aurora Civil	Orto Sol	Orto Luna 24	Orto Luna 25	Orto Luna 26	Orto Luna 27
°	h m	h m	h m	h m	h m	h m	h m
N 72	08 27	10 57	▬	▬	▬	▬	13 41
N 70	08 07	09 55	▬	▬	▬	14 47	13 11
68	07 51	09 20	▬	▬	▬	13 32	12 49
66	07 38	08 55	10 35	▬	▬	12 54	12 31
64	07 27	08 35	09 53	▬	12 47	12 27	12 16
62	07 17	08 19	09 25	12 03	12 07	12 06	12 04
60	07 09	08 06	09 03	11 15	11 40	11 49	11 54
N 58	07 01	07 54	08 46	10 45	11 18	11 35	11 44
56	06 55	07 44	08 31	10 22	11 00	11 22	11 36
54	06 48	07 35	08 19	10 03	10 45	11 11	11 29
52	06 43	07 26	08 07	09 47	10 32	11 02	11 23
50	06 37	07 19	07 58	09 33	10 20	10 53	11 17
45	06 26	07 03	07 37	09 04	09 56	10 34	11 04
N 40	06 15	06 49	07 20	08 42	09 36	10 19	10 53
35	06 06	06 38	07 06	08 23	09 20	10 06	10 44
30	05 57	06 27	06 53	08 07	09 06	09 55	10 36
20	05 41	06 08	06 32	07 40	08 42	09 35	10 22
N 10	05 25	05 51	06 14	07 17	08 21	09 18	10 10
0	05 08	05 34	05 56	06 55	08 01	09 02	09 58
S 10	04 49	05 16	05 39	06 34	07 41	08 46	09 47
20	04 26	04 55	05 20	06 10	07 20	08 29	09 34
30	03 57	04 30	04 58	05 43	06 56	08 09	09 20
35	03 38	04 15	04 45	05 27	06 41	07 57	09 12
40	03 15	03 57	04 30	05 09	06 25	07 44	09 02
45	02 44	03 34	04 12	04 46	06 04	07 28	08 51
S 50	01 59	03 04	03 49	04 18	05 39	07 08	08 37
52	01 31	02 49	03 38	04 04	05 27	06 59	08 31
54	00 45	02 31	03 26	03 47	05 13	06 48	08 24
56	////	02 09	03 12	03 28	04 56	06 36	08 16
58	////	01 39	02 55	03 04	04 37	06 22	08 07
S 60	////	00 49	02 34	02 33	04 12	06 06	07 56

Lat.	Ocaso Sol	Crepúsculo Civil	Crepúsculo Náut.	Ocaso Luna 24	Ocaso Luna 25	Ocaso Luna 26	Ocaso Luna 27
°	h m	h m	h m	h m	h m	h m	h m
N 72	▬	13 03	15 33	▬	▬	▬	19 08
N 70	▬	14 05	15 53	▬	▬	16 07	19 36
68	▬	14 40	16 09	▬	▬	17 20	19 56
66	13 25	15 05	16 22	▬	▬	17 56	20 13
64	14 07	15 25	16 33	▬	15 57	18 22	20 26
62	14 35	15 41	16 43	14 25	16 36	18 42	20 36
60	14 57	15 54	16 51	15 12	17 04	18 58	20 46
N 58	15 14	16 06	16 59	15 42	17 25	19 12	20 54
56	15 29	16 16	17 06	16 05	17 42	19 23	21 01
54	15 42	16 25	17 12	16 24	17 57	19 33	21 07
52	15 53	16 34	17 17	16 40	18 09	19 42	21 13
50	16 03	16 41	17 23	16 54	18 20	19 51	21 18
45	16 23	16 57	17 34	17 21	18 44	20 08	21 29
N 40	16 40	17 11	17 45	17 43	19 02	20 21	21 38
35	16 54	17 22	17 54	18 01	19 17	20 33	21 45
30	17 07	17 33	18 03	18 17	19 31	20 43	21 52
20	17 28	17 52	18 19	18 43	19 53	21 01	22 04
N 10	17 46	18 09	18 36	19 06	20 13	21 16	22 14
0	18 04	18 26	18 53	19 27	20 31	21 30	22 23
S 10	18 21	18 44	19 12	19 48	20 49	21 43	22 32
20	18 40	19 05	19 34	20 10	21 08	21 58	22 42
30	19 02	19 30	20 03	20 36	21 30	22 15	22 53
35	19 15	19 45	20 22	20 51	21 42	22 24	22 59
40	19 30	20 03	20 45	21 08	21 57	22 35	23 06
45	19 48	20 26	21 15	21 29	22 14	22 48	23 14
S 50	20 11	20 55	22 01	21 55	22 35	23 03	23 24
52	20 22	21 11	22 29	22 08	22 45	23 10	23 29
54	20 34	21 28	23 15	22 22	22 56	23 18	23 34
56	20 48	21 51	////	22 39	23 09	23 27	23 39
58	21 05	22 20	////	22 59	23 24	23 37	23 45
S 60	21 25	23 10	////	23 24	23 41	23 49	23 52

Día	SOL Ec. Tiempo 00h	SOL Ec. Tiempo 12h	SOL Paso Mer.	LUNA Paso Mer. Sup.	LUNA Paso Mer. Inf.	LUNA Edad	LUNA Fase
d	m s	m s	h m	h m	h m	d	%
24	00 43	00 28	12 00	13 11	00 38	01	2
25	00 14	00 01	12 00	14 16	01 44	02	7
26	00 16	00 31	12 01	15 16	02 47	03	14



UT (HmGr)		ARIES	VENUS −3·9		MARTE −1·3		JÚPITER −2·4		SATURNO +0·8	
	d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
		° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
27	00	95 27.6	162 25.2	S23 01.8	27 30.5	N24 41.2	94 22.1	S 0 57.1	130 44.6	S15 22.5
	01	110 30.1	177 24.3	01.3	42 33.6	41.2	109 24.3	57.0	145 46.9	22.4
	02	125 32.6	192 23.4	00.9	57 36.6	41.1	124 26.5	56.9	160 49.1	22.3
	03	140 35.0	207 22.5	00.5	72 39.7	41.1	139 28.7	56.8	175 51.3	22.3
	04	155 37.5	222 21.6	23 00.1	87 42.8	41.0	154 31.0	56.6	190 53.6	22.2
	05	170 39.9	237 20.7	22 59.6	102 45.9	41.0	169 33.2	56.5	205 55.8	22.1
	06	185 42.4	252 19.7	S22 59.2	117 49.0	N24 40.9	184 35.4	S 0 56.4	220 58.0	S15 22.0
	07	200 44.9	267 18.8	58.8	132 52.0	40.9	199 37.6	56.3	236 00.2	22.0
	08	215 47.3	282 17.9	58.3	147 55.1	40.8	214 39.8	56.2	251 02.5	21.9
M	09	230 49.8	297 17.0	57.9	162 58.2	40.8	229 42.1	56.1	266 04.7	21.8
A	10	245 52.3	312 16.1	57.5	178 01.3	40.7	244 44.3	55.9	281 06.9	21.7
R	11	260 54.7	327 15.2	57.0	193 04.3	40.6	259 46.5	55.8	296 09.2	21.6
T	12	275 57.2	342 14.3	S22 56.6	208 07.4	N24 40.6	274 48.7	S 0 55.7	311 11.4	S15 21.6
E	13	290 59.7	357 13.4	56.1	223 10.5	40.5	289 50.9	55.6	326 13.6	21.5
S	14	306 02.1	12 12.5	55.7	238 13.5	40.5	304 53.2	55.5	341 15.9	21.4
	15	321 04.6	27 11.6	55.3	253 16.6	40.4	319 55.4	55.3	356 18.1	21.3
	16	336 07.1	42 10.7	54.8	268 19.7	40.4	334 57.6	55.2	11 20.3	21.2
	17	351 09.5	57 09.8	54.4	283 22.7	40.3	349 59.8	55.1	26 22.5	21.2
	18	6 12.0	72 08.9	S22 53.9	298 25.8	N24 40.3	5 02.0	S 0 55.0	41 24.8	S15 21.1
	19	21 14.4	87 08.0	53.5	313 28.8	40.2	20 04.3	54.9	56 27.0	21.0
	20	36 16.9	102 07.1	53.0	328 31.9	40.2	35 06.5	54.8	71 29.2	20.9
	21	51 19.4	117 06.2	52.6	343 35.0	40.1	50 08.7	54.6	86 31.5	20.9
	22	66 21.8	132 05.3	52.1	358 38.0	40.1	65 10.9	54.5	101 33.7	20.8
	23	81 24.3	147 04.4	51.7	13 41.1	40.0	80 13.1	54.4	116 35.9	20.7
28	00	96 26.8	162 03.5	S22 51.2	28 44.1	N24 40.0	95 15.3	S 0 54.3	131 38.2	S15 20.6
	01	111 29.2	177 02.6	50.8	43 47.2	39.9	110 17.6	54.2	146 40.4	20.5
	02	126 31.7	192 01.7	50.3	58 50.2	39.9	125 19.8	54.0	161 42.6	20.5
	03	141 34.2	207 00.8	49.9	73 53.2	39.8	140 22.0	53.9	176 44.8	20.4
	04	156 36.6	221 59.9	49.4	88 56.3	39.8	155 24.2	53.8	191 47.1	20.3
	05	171 39.1	236 59.0	48.9	103 59.3	39.7	170 26.4	53.7	206 49.3	20.2
	06	186 41.5	251 58.1	S22 48.5	119 02.4	N24 39.7	185 28.6	S 0 53.6	221 51.5	S15 20.1
	07	201 44.0	266 57.2	48.0	134 05.4	39.6	200 30.9	53.5	236 53.8	20.1
M	08	216 46.5	281 56.3	47.6	149 08.5	39.6	215 33.1	53.3	251 56.0	20.0
I	09	231 48.9	296 55.4	47.1	164 11.5	39.5	230 35.3	53.2	266 58.2	19.9
É	10	246 51.4	311 54.5	46.6	179 14.5	39.4	245 37.5	53.1	282 00.4	19.8
R	11	261 53.9	326 53.6	46.2	194 17.6	39.4	260 39.7	53.0	297 02.7	19.7
C	12	276 56.3	341 52.7	S22 45.7	209 20.6	N24 39.3	275 41.9	S 0 52.9	312 04.9	S15 19.7
O	13	291 58.8	356 51.8	45.2	224 23.6	39.3	290 44.1	52.7	327 07.1	19.6
L	14	307 01.3	11 50.9	44.8	239 26.7	39.2	305 46.4	52.6	342 09.4	19.5
E	15	322 03.7	26 50.0	44.3	254 29.7	39.2	320 48.6	52.5	357 11.6	19.4
S	16	337 06.2	41 49.1	43.8	269 32.7	39.1	335 50.8	52.4	12 13.8	19.4
	17	352 08.7	56 48.2	43.3	284 35.7	39.1	350 53.0	52.2	27 16.0	19.3
	18	7 11.1	71 47.3	S22 42.9	299 38.8	N24 39.0	5 55.2	S 0 52.1	42 18.3	S15 19.2
	19	22 13.6	86 46.4	42.4	314 41.8	39.0	20 57.4	52.0	57 20.5	19.1
	20	37 16.0	101 45.6	41.9	329 44.8	38.9	35 59.6	51.9	72 22.7	19.0
	21	52 18.5	116 44.7	41.4	344 47.8	38.9	51 01.8	51.8	87 24.9	19.0
	22	67 21.0	131 43.8	40.9	359 50.8	38.8	66 04.1	51.6	102 27.2	18.9
	23	82 23.4	146 42.9	40.5	14 53.8	38.8	81 06.3	51.5	117 29.4	18.8
29	00	97 25.9	161 42.0	S22 40.0	29 56.9	N24 38.7	96 08.5	S 0 51.4	132 31.6	S15 18.7
	01	112 28.4	176 41.1	39.5	44 59.9	38.7	111 10.7	51.3	147 33.9	18.6
	02	127 30.8	191 40.2	39.0	60 02.9	38.6	126 12.9	51.2	162 36.1	18.6
	03	142 33.3	206 39.3	38.5	75 05.9	38.6	141 15.1	51.0	177 38.3	18.5
	04	157 35.8	221 38.4	38.0	90 08.9	38.5	156 17.3	50.9	192 40.5	18.4
	05	172 38.2	236 37.5	37.6	105 11.9	38.5	171 19.5	50.8	207 42.8	18.3
	06	187 40.7	251 36.7	S22 37.1	120 14.9	N24 38.4	186 21.7	S 0 50.7	222 45.0	S15 18.2
	07	202 43.2	266 35.8	36.6	135 17.9	38.4	201 23.9	50.6	237 47.2	18.2
J	08	217 45.6	281 34.9	36.1	150 20.9	38.3	216 26.1	50.4	252 49.4	18.1
U	09	232 48.1	296 34.0	35.6	165 23.9	38.3	231 28.4	50.3	267 51.7	18.0
E	10	247 50.5	311 33.1	35.1	180 26.9	38.2	246 30.6	50.2	282 53.9	17.9
V	11	262 53.0	326 32.2	34.6	195 29.9	38.2	261 32.8	50.1	297 56.1	17.8
E	12	277 55.5	341 31.3	S22 34.1	210 32.9	N24 38.1	276 35.0	S 0 49.9	312 58.3	S15 17.8
S	13	292 57.9	356 30.5	33.6	225 35.9	38.1	291 37.2	49.8	328 00.6	17.7
	14	308 00.4	11 29.6	33.1	240 38.9	38.0	306 39.4	49.7	343 02.8	17.6
	15	323 02.9	26 28.7	32.6	255 41.9	38.0	321 41.6	49.6	358 05.0	17.5
	16	338 05.3	41 27.8	32.1	270 44.9	37.9	336 43.8	49.4	13 07.2	17.4
	17	353 07.8	56 26.9	31.6	285 47.9	37.9	351 46.0	49.3	28 09.5	17.4
	18	8 10.3	71 26.0	S22 31.1	300 50.8	N24 37.8	6 48.2	S 0 49.2	43 11.7	S15 17.3
	19	23 12.7	86 25.2	30.6	315 53.8	37.8	21 50.4	49.1	58 13.9	17.2
	20	38 15.2	101 24.3	30.1	330 56.8	37.7	36 52.6	49.0	73 16.1	17.1
	21	53 17.6	116 23.4	29.6	345 59.8	37.7	51 54.8	48.8	88 18.4	17.0
	22	68 20.1	131 22.5	29.1	1 02.8	37.6	66 57.0	48.7	103 20.6	17.0
	23	83 22.6	146 21.6	28.6	16 05.7	37.6	81 59.2	48.6	118 22.8	16.9
		h m								
Paso Mer.		17 31.3	*v* −0.9	*d* 0.5	*v* 3.0	*d* 0.1	*v* 2.2	*d* 0.1	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.8	S40 13.0
Achernar	335 21.3	S57 07.5
Acrux	173 01.9	S63 13.2
Adhara	255 06.8	S29 00.1
Aldebaran	290 41.2	N16 33.3
Alioth	166 14.5	N55 49.9
Alkaid	152 53.5	N49 11.7
Alnair	27 35.3	S46 51.3
Alnilam	275 39.1	S 1 11.3
Alphard	217 49.2	S 8 45.4
Alphecca	126 05.5	N26 38.1
Alpheratz	357 36.5	N29 13.1
Altair	62 01.9	N 8 55.7
Ankaa	353 08.8	S42 11.2
Antares	112 18.2	S26 28.9
Arcturus	145 49.6	N19 03.7
Atria	107 14.5	S69 03.9
Avior	234 14.8	S59 34.8
Bellatrix	278 24.3	N 6 22.2
Betelgeuse	270 53.6	N 7 24.7
Canopus	263 52.6	S52 42.4
Capella	280 23.9	N46 01.3
Deneb	49 27.3	N45 21.8
Denebola	182 26.6	N14 26.6
Diphda	348 49.0	S17 51.8
Dubhe	193 42.8	N61 37.4
Elnath	278 03.6	N28 37.6
Eltanin	90 43.5	N51 29.1
Enif	33 40.7	N 9 58.8
Fomalhaut	15 16.5	S29 30.3
Gacrux	171 53.5	S57 14.2
Gienah	175 45.3	S17 40.0
Hadar	148 38.7	S60 28.7
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.4
Kochab	137 20.5	N74 03.4
Markab	13 31.7	N15 19.7
Menkar	314 07.7	N 4 10.7
Menkent	147 59.8	S36 28.7
Miaplacidus	221 37.9	S69 48.4
Mirfak	308 30.3	N49 56.7
Nunki	75 50.2	S26 16.1
Peacock	53 08.9	S56 39.8
Pollux	243 19.0	N27 58.2
Procyon	244 52.3	N 5 10.0
Rasalhague	96 00.5	N12 32.6
Regulus	207 36.0	N11 51.3
Rigel	281 05.2	S 8 10.5
Rigil Kent.	139 43.0	S60 55.5
Sabik	102 05.1	S15 45.2
Schedar	349 32.9	N56 40.0
Shaula	96 13.1	S37 07.2
Sirius	258 27.4	S16 44.8
Spica	158 24.2	S11 16.8
Suhail	222 47.2	S43 31.3
Vega	80 34.8	N38 48.3
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	65 36.7	13 13
Marte	292 17.3	22 01
Júpiter	358 48.6	17 36
Saturno	35 11.4	15 11

UT (HmGr)	SOL				LUNA					
	AHGr		Dec		AHGr	*v*	Dec	*d*	Ph	
d h	°	′	°	′	°	′	°	′	′	
27 00	179	48.3	S23	20.2	126	03.0	7.8	S17	43.3	13.3	60.2
01	194	48.0		20.1	140	29.8	7.8	17	30.0	13.4	60.2
02	209	47.7		20.0	154	56.6	8.0	17	16.6	13.5	60.1
03	224	47.4		19.9	169	23.6	8.2	17	03.1	13.6	60.1
04	239	47.1		19.8	183	50.8	8.2	16	49.5	13.7	60.1
05	254	46.8		19.7	198	18.0	8.4	16	35.8	13.8	60.1
06	269	46.5	S23	19.6	212	45.4	8.5	S16	22.0	13.8	60.0
07	284	46.2		19.5	227	12.9	8.6	16	08.2	14.0	60.0
M 08	299	45.9		19.4	241	40.5	8.7	15	54.2	14.0	60.0
A 09	314	45.6		19.3	256	08.2	8.8	15	40.2	14.0	59.9
R 10	329	45.3		19.2	270	36.0	9.0	15	26.2	14.2	59.9
T 11	344	45.0		19.0	285	04.0	9.1	15	12.0	14.2	59.9
E 12	359	44.6	S23	18.9	299	32.1	9.2	S14	57.8	14.3	59.8
S 13	14	44.3		18.8	314	00.3	9.3	14	43.5	14.4	59.8
14	29	44.0		18.7	328	28.6	9.4	14	29.1	14.4	59.8
15	44	43.7		18.6	342	57.0	9.5	14	14.7	14.5	59.7
16	59	43.4		18.5	357	25.5	9.7	14	00.2	14.6	59.7
17	74	43.1		18.4	11	54.2	9.7	13	45.6	14.6	59.7
18	89	42.8	S23	18.3	26	22.9	9.9	S13	31.0	14.7	59.6
19	104	42.5		18.1	40	51.8	9.9	13	16.3	14.7	59.6
20	119	42.2		18.0	55	20.7	10.1	13	01.6	14.8	59.6
21	134	41.9		17.9	69	49.8	10.2	12	46.8	14.8	59.5
22	149	41.6		17.8	84	19.0	10.2	12	32.0	14.9	59.5
23	164	41.3		17.7	98	48.2	10.4	12	17.1	15.0	59.5
28 00	179	41.0	S23	17.6	113	17.6	10.5	S12	02.1	14.9	59.4
01	194	40.7		17.4	127	47.1	10.6	11	47.2	15.1	59.4
02	209	40.3		17.3	142	16.7	10.7	11	32.1	15.1	59.4
03	224	40.0		17.2	156	46.4	10.7	11	17.0	15.1	59.3
04	239	39.7		17.1	171	16.1	10.9	11	01.9	15.1	59.3
05	254	39.4		17.0	185	46.0	11.0	10	46.8	15.2	59.3
06	269	39.1	S23	16.8	200	16.0	11.0	S10	31.6	15.3	59.2
07	284	38.8		16.7	214	46.0	11.2	10	16.3	15.2	59.2
M 08	299	38.5		16.6	229	16.2	11.2	10	01.1	15.3	59.2
I 09	314	38.2		16.5	243	46.4	11.3	9	45.8	15.4	59.1
É 10	329	37.9		16.3	258	16.7	11.4	9	30.4	15.3	59.1
R 11	344	37.6		16.2	272	47.1	11.5	9	15.1	15.4	59.1
C 12	359	37.3	S23	16.1	287	17.6	11.6	S 8	59.7	15.4	59.0
O 13	14	37.0		15.9	301	48.2	11.7	8	44.3	15.5	59.0
L 14	29	36.7		15.8	316	18.9	11.7	8	28.8	15.4	59.0
E 15	44	36.4		15.7	330	49.6	11.9	8	13.4	15.5	58.9
S 16	59	36.1		15.5	345	20.5	11.9	7	57.9	15.5	58.9
17	74	35.8		15.4	359	51.4	12.0	7	42.4	15.6	58.9
18	89	35.5	S23	15.3	14	22.4	12.0	S 7	26.8	15.5	58.8
19	104	35.1		15.1	28	53.4	12.2	7	11.3	15.6	58.8
20	119	34.8		15.0	43	24.6	12.2	6	55.7	15.6	58.8
21	134	34.5		14.9	57	55.8	12.2	6	40.1	15.6	58.7
22	149	34.2		14.7	72	27.0	12.4	6	24.5	15.6	58.7
23	164	33.9		14.6	86	58.4	12.4	6	08.9	15.6	58.7
29 00	179	33.6	S23	14.5	101	29.8	12.5	S 5	53.3	15.6	58.6
01	194	33.3		14.3	116	01.3	12.5	5	37.7	15.6	58.6
02	209	33.0		14.2	130	32.8	12.7	5	22.1	15.7	58.5
03	224	32.7		14.0	145	04.5	12.6	5	06.4	15.6	58.5
04	239	32.4		13.9	159	36.1	12.8	4	50.8	15.7	58.5
05	254	32.1		13.8	174	07.9	12.8	4	35.1	15.6	58.4
06	269	31.8	S23	13.6	188	39.7	12.8	S 4	19.5	15.7	58.4
07	284	31.5		13.5	203	11.5	13.0	4	03.8	15.6	58.4
J 08	299	31.2		13.3	217	43.5	12.9	3	48.2	15.7	58.3
U 09	314	30.9		13.2	232	15.4	13.1	3	32.5	15.6	58.3
E 10	329	30.6		13.0	246	47.5	13.0	3	16.9	15.7	58.3
V 11	344	30.3		12.9	261	19.5	13.2	3	01.2	15.6	58.2
E 12	359	30.0	S23	12.7	275	51.7	13.2	S 2	45.6	15.7	58.2
S 13	14	29.7		12.6	290	23.9	13.2	2	29.9	15.6	58.2
14	29	29.4		12.4	304	56.1	13.3	2	14.3	15.6	58.1
15	44	29.1		12.3	319	28.4	13.3	1	58.7	15.6	58.1
16	59	28.8		12.1	334	00.7	13.4	1	43.1	15.6	58.1
17	74	28.5		12.0	348	33.1	13.4	1	27.5	15.6	58.0
18	89	28.2	S23	11.8	3	05.5	13.4	S 1	11.9	15.6	58.0
19	104	27.9		11.7	17	37.9	13.5	0	56.3	15.5	58.0
20	119	27.6		11.5	32	10.4	13.6	0	40.8	15.6	57.9
21	134	27.3		11.4	46	43.0	13.5	0	25.2	15.5	57.9
22	149	27.0		11.2	61	15.5	13.6	S 0	09.7	15.5	57.9
23	164	26.6		11.1	75	48.1	13.7	N 0	05.8	15.5	57.8
	S/D	16.3	*d*	0.1	S/D	16.3		16.1			15.9

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			27	28	29	30
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	08	26	10	53	▬	13 41	12 48	12 12	11 40
N 70	08	07	09	54	▬	13 11	12 35	12 08	11 44
68	07	51	09	20	▬	12 49	12 24	12 05	11 48
66	07	38	08	55	10 33	12 31	12 16	12 03	11 51
64	07	27	08	35	09 52	12 16	12 08	12 01	11 53
62	07	18	08	19	09 25	12 04	12 01	11 59	11 56
60	07	09	08	06	09 03	11 54	11 56	11 57	11 58
N 58	07	02	07	55	08 46	11 44	11 51	11 55	11 59
56	06	55	07	44	08 32	11 36	11 46	11 54	12 01
54	06	49	07	35	08 19	11 29	11 42	11 53	12 02
52	06	44	07	27	08 08	11 23	11 38	11 52	12 04
50	06	38	07	20	07 58	11 17	11 35	11 50	12 05
45	06	27	07	04	07 38	11 04	11 28	11 48	12 07
N 40	06	16	06	50	07 21	10 53	11 21	11 46	12 10
35	06	07	06	39	07 07	10 44	11 16	11 45	12 12
30	05	58	06	28	06 55	10 36	11 11	11 43	12 13
20	05	42	06	10	06 34	10 22	11 03	11 41	12 16
N 10	05	26	05	52	06 15	10 10	10 56	11 38	12 19
0	05	09	05	35	05 58	09 58	10 49	11 36	12 22
S 10	04	50	05	17	05 40	09 47	10 42	11 34	12 24
20	04	28	04	57	05 21	09 34	10 35	11 32	12 27
30	03	59	04	32	04 59	09 20	10 27	11 30	12 30
35	03	40	04	17	04 47	09 12	10 22	11 28	12 32
40	03	17	03	59	04 32	09 02	10 16	11 26	12 34
45	02	47	03	36	04 14	08 51	10 10	11 25	12 37
S 50	02	02	03	07	03 51	08 37	10 02	11 22	12 39
52	01	34	02	52	03 40	08 31	09 58	11 21	12 41
54	00	50	02	34	03 28	08 24	09 54	11 20	12 42
56	////		02	12	03 14	08 16	09 50	11 19	12 44
58	////		01	43	02 58	08 07	09 45	11 17	12 46
S 60	////		00	54	02 37	07 56	09 39	11 16	12 48

Lat.	Ocaso Sol	Crepúsculo Civil		Crepúsculo Náut.		Ocaso Luna			
						27	28	29	30
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	▬		13	11	15 37	19 08	21 46	24 01	00 01
N 70	▬		14	09	15 56	19 36	21 56	24 01	00 01
68	▬		14	44	16 12	19 56	22 04	24 01	00 01
66	13	30	15	08	16 25	20 13	22 11	24 01	00 01
64	14	11	15	28	16 36	20 26	22 17	24 00	00 00
62	14	38	15	44	16 45	20 36	22 22	24 00	00 00
60	15	00	15	57	16 54	20 46	22 26	24 00	00 00
N 58	15	17	16	09	17 01	20 54	22 29	24 00	00 00
56	15	32	16	19	17 08	21 01	22 33	24 00	00 00
54	15	44	16	28	17 14	21 07	22 36	24 00	00 00
52	15	55	16	36	17 20	21 13	22 38	24 00	00 00
50	16	05	16	43	17 25	21 18	22 41	23 59	25 16
45	16	25	16	59	17 36	21 29	22 46	23 59	25 10
N 40	16	42	17	13	17 47	21 38	22 50	23 59	25 06
35	16	56	17	24	17 56	21 45	22 54	23 59	25 02
30	17	08	17	35	18 05	21 52	22 57	23 59	24 59
20	17	30	17	54	18 21	22 04	23 03	23 59	24 53
N 10	17	48	18	11	18 37	22 14	23 07	23 58	24 48
0	18	05	18	28	18 54	22 23	23 12	23 58	24 43
S 10	18	23	18	46	19 13	22 32	23 16	23 58	24 38
20	18	42	19	06	19 35	22 42	23 21	23 57	24 33
30	19	03	19	31	20 04	22 53	23 26	23 57	24 27
35	19	16	19	46	20 23	22 59	23 29	23 57	24 24
40	19	31	20	04	20 46	23 06	23 33	23 57	24 20
45	19	49	20	26	21 16	23 14	23 37	23 56	24 16
S 50	20	11	20	56	22 01	23 24	23 41	23 56	24 10
52	20	22	21	11	22 28	23 29	23 43	23 56	24 08
54	20	34	21	29	23 12	23 34	23 46	23 56	24 05
56	20	48	21	50	////	23 39	23 48	23 56	24 03
58	21	05	22	19	////	23 45	23 51	23 55	24 00
S 60	21	25	23	07	////	23 52	23 54	23 55	23 56

Día	SOL Ec. Tiempo 00h		SOL Ec. Tiempo 12h		SOL Paso Mer.	LUNA Paso Mer. Sup.		LUNA Paso Mer. Inf.		LUNA Edad	LUNA Fase
d	m	s	m	s	h m	h	m	h	m	d	%
27	00	46	01	01	12 01	16	11	03	44	04	23
28	01	16	01	30	12 02	17	01	04	36	05	33
29	01	45	01	59	12 02	17	47	05	24	06	44

UT (HmGr)	ARIES	VENUS −3·9		MARTE −1·2		JÚPITER −2·4		SATURNO +0·8	
d h	AHGr	AHGr	Dec	AHGr	Dec	AHGr	Dec	AHGr	Dec
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
30 00	98 25.0	161 20.7	S22 28.1	31 08.7	N24 37.5	97 01.4	S 0 48.5	133 25.0	S15 16.8
01	113 27.5	176 19.9	27.6	46 11.7	37.5	112 03.6	48.3	148 27.3	16.7
02	128 30.0	191 19.0	27.0	61 14.7	37.4	127 05.9	48.2	163 29.5	16.6
03	143 32.4	206 18.1	26.5	76 17.6	37.4	142 08.1	48.1	178 31.7	16.6
04	158 34.9	221 17.2	26.0	91 20.6	37.3	157 10.3	48.0	193 33.9	16.5
05	173 37.4	236 16.4	25.5	106 23.6	37.3	172 12.5	47.8	208 36.2	16.4
06	188 39.8	251 15.5	S22 25.0	121 26.5	N24 37.3	187 14.7	S 0 47.7	223 38.4	S15 16.3
07	203 42.3	266 14.6	24.5	136 29.5	37.2	202 16.9	47.6	238 40.6	16.2
08	218 44.8	281 13.7	23.9	151 32.5	37.2	217 19.1	47.5	253 42.8	16.1
V 09	233 47.2	296 12.8	23.4	166 35.4	37.1	232 21.3	47.3	268 45.1	16.1
I 10	248 49.7	311 12.0	22.9	181 38.4	37.1	247 23.5	47.2	283 47.3	16.0
E 11	263 52.1	326 11.1	22.4	196 41.4	37.0	262 25.7	47.1	298 49.5	15.9
R 12	278 54.6	341 10.2	S22 21.9	211 44.3	N24 37.0	277 27.9	S 0 47.0	313 51.7	S15 15.8
N 13	293 57.1	356 09.3	21.3	226 47.3	36.9	292 30.1	46.8	328 54.0	15.7
E 14	308 59.5	11 08.5	20.8	241 50.2	36.9	307 32.3	46.7	343 56.2	15.7
S 15	324 02.0	26 07.6	20.3	256 53.2	36.8	322 34.5	46.6	358 58.4	15.6
16	339 04.5	41 06.7	19.7	271 56.1	36.8	337 36.7	46.5	14 00.6	15.5
17	354 06.9	56 05.9	19.2	286 59.1	36.7	352 38.9	46.3	29 02.8	15.4
18	9 09.4	71 05.0	S22 18.7	302 02.0	N24 36.7	7 41.1	S 0 46.2	44 05.1	S15 15.3
19	24 11.9	86 04.1	18.2	317 05.0	36.6	22 43.3	46.1	59 07.3	15.3
20	39 14.3	101 03.2	17.6	332 07.9	36.6	37 45.5	46.0	74 09.5	15.2
21	54 16.8	116 02.4	17.1	347 10.9	36.5	52 47.7	45.8	89 11.7	15.1
22	69 19.3	131 01.5	16.6	2 13.8	36.5	67 49.9	45.7	104 14.0	15.0
23	84 21.7	146 00.6	16.0	17 16.7	36.4	82 52.1	45.6	119 16.2	14.9
31 00	99 24.2	160 59.8	S22 15.5	32 19.7	N24 36.4	97 54.3	S 0 45.4	134 18.4	S15 14.9
01	114 26.6	175 58.9	14.9	47 22.6	36.3	112 56.5	45.3	149 20.6	14.8
02	129 29.1	190 58.0	14.4	62 25.6	36.3	127 58.7	45.2	164 22.8	14.7
03	144 31.6	205 57.2	13.9	77 28.5	36.3	143 00.9	45.1	179 25.1	14.6
04	159 34.0	220 56.3	13.3	92 31.4	36.2	158 03.1	44.9	194 27.3	14.5
05	174 36.5	235 55.4	12.8	107 34.4	36.2	173 05.3	44.8	209 29.5	14.4
06	189 39.0	250 54.6	S22 12.2	122 37.3	N24 36.1	188 07.4	S 0 44.7	224 31.7	S15 14.4
07	204 41.4	265 53.7	11.7	137 40.2	36.1	203 09.6	44.6	239 34.0	14.3
S 08	219 43.9	280 52.8	11.1	152 43.1	36.0	218 11.8	44.4	254 36.2	14.2
Á 09	234 46.4	295 52.0	10.6	167 46.1	36.0	233 14.0	44.3	269 38.4	14.1
B 10	249 48.8	310 51.1	10.0	182 49.0	35.9	248 16.2	44.2	284 40.6	14.0
A 11	264 51.3	325 50.2	09.5	197 51.9	35.9	263 18.4	44.0	299 42.8	14.0
D 12	279 53.7	340 49.4	S22 08.9	212 54.8	N24 35.8	278 20.6	S 0 43.9	314 45.1	S15 13.9
O 13	294 56.2	355 48.5	08.4	227 57.7	35.8	293 22.8	43.8	329 47.3	13.8
14	309 58.7	10 47.6	07.8	243 00.7	35.7	308 25.0	43.7	344 49.5	13.7
15	325 01.1	25 46.8	07.3	258 03.6	35.7	323 27.2	43.5	359 51.7	13.6
16	340 03.6	40 45.9	06.7	273 06.5	35.7	338 29.4	43.4	14 53.9	13.5
17	355 06.1	55 45.1	06.2	288 09.4	35.6	353 31.6	43.3	29 56.2	13.5
18	10 08.5	70 44.2	S22 05.6	303 12.3	N24 35.6	8 33.8	S 0 43.1	44 58.4	S15 13.4
19	25 11.0	85 43.3	05.0	318 15.2	35.5	23 36.0	43.0	60 00.6	13.3
20	40 13.5	100 42.5	04.5	333 18.1	35.5	38 38.2	42.9	75 02.8	13.2
21	55 15.9	115 41.6	03.9	348 21.0	35.4	53 40.4	42.8	90 05.1	13.1
22	70 18.4	130 40.8	03.3	3 23.9	35.4	68 42.6	42.6	105 07.3	13.1
23	85 20.9	145 39.9	02.8	18 26.8	35.3	83 44.7	42.5	120 09.5	13.0
1 00	100 23.3	160 39.0	S22 02.2	33 29.7	N24 35.3	98 46.9	S 0 42.4	135 11.7	S15 12.9
01	115 25.8	175 38.2	01.6	48 32.6	35.3	113 49.1	42.2	150 13.9	12.8
02	130 28.2	190 37.3	01.1	63 35.5	35.2	128 51.3	42.1	165 16.2	12.7
03	145 30.7	205 36.5	22 00.5	78 38.4	35.2	143 53.5	42.0	180 18.4	12.6
04	160 33.2	220 35.6	21 59.9	93 41.3	35.1	158 55.7	41.9	195 20.6	12.6
05	175 35.6	235 34.8	59.4	108 44.2	35.1	173 57.9	41.7	210 22.8	12.5
06	190 38.1	250 33.9	S21 58.8	123 47.1	N24 35.0	189 00.1	S 0 41.6	225 25.0	S15 12.4
07	205 40.6	265 33.0	58.2	138 50.0	35.0	204 02.3	41.5	240 27.3	12.3
D 08	220 43.0	280 32.2	57.6	153 52.9	34.9	219 04.5	41.3	255 29.5	12.2
O 09	235 45.5	295 31.3	57.1	168 55.8	34.9	234 06.7	41.2	270 31.7	12.1
M 10	250 48.0	310 30.5	56.5	183 58.7	34.9	249 08.8	41.1	285 33.9	12.1
I 11	265 50.4	325 29.6	55.9	199 01.6	34.8	264 11.0	40.9	300 36.1	12.0
N 12	280 52.9	340 28.8	S21 55.3	214 04.4	N24 34.8	279 13.2	S 0 40.8	315 38.3	S15 11.9
G 13	295 55.4	355 27.9	54.8	229 07.3	34.7	294 15.4	40.7	330 40.6	11.8
O 14	310 57.8	10 27.1	54.2	244 10.2	34.7	309 17.6	40.6	345 42.8	11.7
15	326 00.3	25 26.2	53.6	259 13.1	34.6	324 19.8	40.4	0 45.0	11.7
16	341 02.7	40 25.4	53.0	274 16.0	34.6	339 22.0	40.3	15 47.2	11.6
17	356 05.2	55 24.5	52.4	289 18.8	34.6	354 24.2	40.2	30 49.4	11.5
18	11 07.7	70 23.7	S21 51.8	304 21.7	N24 34.5	9 26.3	S 0 40.0	45 51.7	S15 11.4
19	26 10.1	85 22.8	51.3	319 24.6	34.5	24 28.5	39.9	60 53.9	11.3
20	41 12.6	100 22.0	50.7	334 27.4	34.4	39 30.7	39.8	75 56.1	11.2
21	56 15.1	115 21.1	50.1	349 30.3	34.4	54 32.9	39.6	90 58.3	11.2
22	71 17.5	130 20.3	49.5	4 33.2	34.3	69 35.1	39.5	106 00.5	11.1
23	86 20.0	145 19.4	48.9	19 36.0	34.3	84 37.3	39.4	121 02.8	11.0
	h m								
Paso Mer.	17 19.5	*v* −0.9	*d* 0.6	*v* 2.9	*d* 0.0	*v* 2.2	*d* 0.1	*v* 2.2	*d* 0.1

ESTRELLAS

Nombre	AHS	Dec
	° ′	° ′
Acamar	315 12.8	S40 13.0
Achernar	335 21.3	S57 07.5
Acrux	173 01.9	S63 13.2
Adhara	255 06.8	S29 00.2
Aldebaran	290 41.2	N16 33.3
Alioth	166 14.5	N55 49.9
Alkaid	152 53.5	N49 11.7
Alnair	27 35.3	S46 51.2
Alnilam	275 39.1	S 1 11.3
Alphard	217 49.2	S 8 45.4
Alphecca	126 05.4	N26 38.1
Alpheratz	357 36.5	N29 13.1
Altair	62 01.9	N 8 55.7
Ankaa	353 08.8	S42 11.2
Antares	112 18.2	S26 28.9
Arcturus	145 49.6	N19 03.7
Atria	107 14.5	S69 03.9
Avior	234 14.8	S59 34.8
Bellatrix	278 24.3	N 6 22.2
Betelgeuse	270 53.6	N 7 24.7
Canopus	263 52.6	S52 42.5
Capella	280 23.9	N46 01.3
Deneb	49 27.4	N45 21.8
Denebola	182 26.6	N14 26.6
Diphda	348 49.0	S17 51.8
Dubhe	193 42.8	N61 37.4
Elnath	278 03.6	N28 37.6
Eltanin	90 43.5	N51 29.1
Enif	33 40.7	N 9 58.8
Fomalhaut	15 16.5	S29 30.3
Gacrux	171 53.5	S57 14.2
Gienah	175 45.3	S17 40.0
Hadar	148 38.6	S60 28.7
Hamal	327 52.9	N23 34.3
Kaus Aust.	83 35.2	S34 22.4
Kochab	137 20.5	N74 03.4
Markab	13 31.7	N15 19.7
Menkar	314 07.7	N 4 10.7
Menkent	147 59.8	S36 28.7
Miaplacidus	221 37.8	S69 48.4
Mirfak	308 30.3	N49 56.7
Nunki	75 50.2	S26 16.1
Peacock	53 08.9	S56 39.8
Pollux	243 19.0	N27 58.2
Procyon	244 52.3	N 5 10.0
Rasalhague	96 00.4	N12 32.6
Regulus	207 36.0	N11 51.3
Rigel	281 05.2	S 8 10.5
Rigil Kent.	139 43.0	S60 55.5
Sabik	102 05.0	S15 45.2
Schedar	349 32.9	N56 40.0
Shaula	96 13.1	S37 07.2
Sirius	258 27.4	S16 44.9
Spica	158 24.1	S11 16.8
Suhail	222 47.2	S43 31.3
Vega	80 34.8	N38 48.2
Zuben'ubi	136 58.1	S16 08.1

	AHS	Paso Mer.
	° ′	h m
Venus	61 35.6	13 17
Marte	292 55.5	21 46
Júpiter	358 30.1	17 26
Saturno	34 54.2	15 01

UT (HmGr)		SOL				LUNA							
		AHGr		Dec		AHGr	v		Dec		d	Ph	
d	h	°	′	°	′	°	′	′	°	′	′	′	
30	00	179	26.3	S23	10.9	90	20.8	13.6	N 0	21.3	15.5	57.8	
	01	194	26.0		10.7	104	53.4	13.8	0	36.8	15.4	57.7	
	02	209	25.7		10.6	119	26.2	13.7	0	52.2	15.5	57.7	
	03	224	25.4	. .	10.4	133	58.9	13.8	1	07.7	15.4	57.7	
	04	239	25.1		10.3	148	31.7	13.8	1	23.1	15.3	57.6	
	05	254	24.8		10.1	163	04.5	13.8	1	38.4	15.4	57.6	
	06	269	24.5	S23	09.9	177	37.3	13.8	N 1	53.8	15.3	57.6	
	07	284	24.2		09.8	192	10.1	13.9	2	09.1	15.3	57.5	
V	08	299	23.9		09.6	206	43.0	13.9	2	24.4	15.3	57.5	
I	09	314	23.6	. .	09.4	221	15.9	13.9	2	39.7	15.2	57.5	
E	10	329	23.3		09.3	235	48.8	13.9	2	54.9	15.3	57.4	
R	11	344	23.0		09.1	250	21.7	14.0	3	10.2	15.1	57.4	
N	12	359	22.7	S23	08.9	264	54.7	14.0	N 3	25.3	15.2	57.4	
E	13	14	22.4		08.8	279	27.7	14.0	3	40.5	15.1	57.3	
S	14	29	22.1		08.6	294	00.7	14.0	3	55.6	15.1	57.3	
	15	44	21.8	. .	08.4	308	33.7	14.0	4	10.7	15.0	57.3	
	16	59	21.5		08.3	323	06.7	14.0	4	25.7	15.1	57.3	
	17	74	21.2		08.1	337	39.7	14.1	4	40.8	14.9	57.2	
	18	89	20.9	S23	07.9	352	12.8	14.0	N 4	55.7	15.0	57.2	
	19	104	20.6		07.8	6	45.8	14.1	5	10.7	14.9	57.2	
	20	119	20.3		07.6	21	18.9	14.1	5	25.6	14.8	57.1	
	21	134	20.0	. .	07.4	35	52.0	14.0	5	40.4	14.8	57.1	
	22	149	19.7		07.2	50	25.0	14.1	5	55.2	14.8	57.1	
	23	164	19.4		07.1	64	58.1	14.1	6	10.0	14.7	57.0	
31	00	179	19.1	S23	06.9	79	31.2	14.1	N 6	24.7	14.7	57.0	
	01	194	18.8		06.7	94	04.3	14.1	6	39.4	14.7	57.0	
	02	209	18.5		06.5	108	37.4	14.1	6	54.1	14.6	56.9	
	03	224	18.2	. .	06.3	123	10.5	14.1	7	08.7	14.5	56.9	
	04	239	17.9		06.2	137	43.6	14.1	7	23.2	14.5	56.9	
	05	254	17.6		06.0	152	16.7	14.0	7	37.7	14.5	56.8	
	06	269	17.3	S23	05.8	166	49.7	14.1	N 7	52.2	14.4	56.8	
	07	284	17.0		05.6	181	22.8	14.1	8	06.6	14.4	56.8	
S	08	299	16.7		05.4	195	55.9	14.1	8	21.0	14.3	56.8	
Á	09	314	16.4	. .	05.2	210	29.0	14.0	8	35.3	14.2	56.7	
B	10	329	16.1		05.1	225	02.0	14.1	8	49.5	14.2	56.7	
A	11	344	15.8		04.9	239	35.1	14.0	9	03.7	14.2	56.7	
D	12	359	15.6	S23	04.7	254	08.1	14.1	N 9	17.9	14.1	56.6	
O	13	14	15.3		04.5	268	41.2	14.0	9	32.0	14.0	56.6	
	14	29	15.0		04.3	283	14.2	14.0	9	46.0	14.0	56.6	
	15	44	14.7	. .	04.1	297	47.2	14.0	10	00.0	13.9	56.5	
	16	59	14.4		03.9	312	20.2	14.0	10	13.9	13.9	56.5	
	17	74	14.1		03.7	326	53.2	14.0	10	27.8	13.8	56.5	
	18	89	13.8	S23	03.5	341	26.2	13.9	N10	41.6	13.8	56.5	
	19	104	13.5		03.4	355	59.1	13.9	10	55.4	13.7	56.4	
	20	119	13.2		03.2	10	32.0	14.0	11	09.1	13.6	56.4	
	21	134	12.9	. .	03.0	25	05.0	13.9	11	22.7	13.6	56.4	
	22	149	12.6		02.8	39	37.9	13.8	11	36.3	13.5	56.3	
	23	164	12.3		02.6	54	10.7	13.9	11	49.8	13.4	56.3	
1	00	179	12.0	S23	02.4	68	43.6	13.8	N12	03.2	13.4	56.3	
	01	194	11.7		02.2	83	16.4	13.8	12	16.6	13.3	56.3	
	02	209	11.4		02.0	97	49.2	13.8	12	29.9	13.3	56.2	
	03	224	11.1	. .	01.8	112	22.0	13.8	12	43.2	13.1	56.2	
	04	239	10.8		01.6	126	54.8	13.7	12	56.3	13.2	56.2	
	05	254	10.5		01.4	141	27.5	13.7	13	09.5	13.0	56.2	
	06	269	10.2	S23	01.2	156	00.2	13.7	N13	22.5	13.0	56.1	
	07	284	09.9		01.0	170	32.9	13.6	13	35.5	12.9	56.1	
D	08	299	09.6		00.8	185	05.5	13.6	13	48.4	12.8	56.1	
O	09	314	09.3	. .	00.6	199	38.1	13.6	14	01.2	12.8	56.0	
M	10	329	09.0		00.4	214	10.7	13.6	14	14.0	12.7	56.0	
I	11	344	08.7		00.2	228	43.3	13.5	14	26.7	12.6	56.0	
N	12	359	08.4	S23	00.0	243	15.8	13.5	N14	39.3	12.5	56.0	
G	13	14	08.2	22	59.8	257	48.3	13.5	14	51.8	12.5	55.9	
O	14	29	07.9		59.6	272	20.8	13.4	15	04.3	12.4	55.9	
	15	44	07.6	. .	59.3	286	53.2	13.4	15	16.7	12.3	55.9	
	16	59	07.3		59.1	301	25.6	13.4	15	29.0	12.2	55.9	
	17	74	07.0		58.9	315	58.0	13.3	15	41.2	12.1	55.8	
	18	89	06.7	S22	58.7	330	30.3	13.3	N15	53.3	12.1	55.8	
	19	104	06.4		58.5	345	02.6	13.2	16	05.4	12.0	55.8	
	20	119	06.1		58.3	359	34.8	13.2	16	17.4	11.9	55.8	
	21	134	05.8	. .	58.1	14	07.0	13.2	16	29.3	11.9	55.8	
	22	149	05.5		57.9	28	39.2	13.1	16	41.2	11.7	55.7	
	23	164	05.2		57.6	43	11.3	13.1	N16	52.9	11.7	55.7	
		S/D	16.3	d	0.2	S/D	15.6			15.4		15.3	

Lat.	Aurora				Orto Sol	Orto Luna			
	Náut.		Civil			30	31	1	2
°	h	m	h	m	h m	h m	h m	h m	h m
N 72	08	25	10	46	▬	11 40	11 06	10 20	▭
N 70	08	06	09	51	▬	11 44	11 19	10 47	09 50
68	07	50	09	18	▬	11 48	11 30	11 08	10 36
66	07	38	08	54	10 30	11 51	11 39	11 25	11 07
64	07	27	08	35	09 51	11 53	11 46	11 39	11 30
62	07	18	08	19	09 24	11 56	11 53	11 50	11 48
60	07	09	08	06	09 03	11 58	11 59	12 00	12 03
N 58	07	02	07	54	08 46	11 59	12 04	12 09	12 16
56	06	56	07	44	08 31	12 01	12 08	12 17	12 28
54	06	50	07	36	08 19	12 02	12 12	12 24	12 38
52	06	44	07	28	08 08	12 04	12 16	12 30	12 47
50	06	39	07	20	07 59	12 05	12 19	12 35	12 55
45	06	27	07	04	07 38	12 07	12 27	12 48	13 12
N 40	06	17	06	51	07 22	12 10	12 33	12 58	13 26
35	06	08	06	40	07 08	12 12	12 38	13 07	13 38
30	05	59	06	29	06 56	12 13	12 43	13 14	13 48
20	05	43	06	11	06 35	12 16	12 52	13 28	14 06
N 10	05	27	05	54	06 16	12 19	12 59	13 40	14 22
0	05	11	05	37	05 59	12 22	13 06	13 51	14 37
S 10	04	52	05	19	05 42	12 24	13 13	14 02	14 52
20	04	30	04	59	05 23	12 27	13 21	14 14	15 08
30	04	01	04	34	05 01	12 30	13 29	14 28	15 27
35	03	42	04	19	04 49	12 32	13 34	14 36	15 38
40	03	20	04	01	04 34	12 34	13 40	14 45	15 51
45	02	50	03	39	04 16	12 37	13 47	14 56	16 05
S 50	02	05	03	10	03 54	12 39	13 55	15 10	16 24
52	01	39	02	55	03 43	12 41	13 59	15 16	16 33
54	00	57	02	37	03 31	12 42	14 03	15 23	16 42
56	////		02	16	03 17	12 44	14 08	15 31	16 54
58	////		01	47	03 01	12 46	14 13	15 39	17 06
S 60	////		01	02	02 41	12 48	14 19	15 49	17 22

Lat.	Ocaso Sol	Crepúsculo			Ocaso Luna			
		Civil		Náut.	30	31	1	2
°	h m	h	m	h m	h m	h m	h m	h m
N 72	▬	13	20	15 41	00 01	02 12	04 33	▭
N 70	▬	14	15	16 01	00 01	02 02	04 08	06 41
68	▬	14	48	16 16	00 01	01 53	03 49	05 56
66	13 37	15	13	16 29	00 01	01 46	03 33	05 27
64	14 16	15	32	16 39	00 00	01 41	03 21	05 05
62	14 43	15	47	16 49	00 00	01 36	03 11	04 47
60	15 03	16	00	16 57	00 00	01 31	03 02	04 33
N 58	15 20	16	12	17 04	00 00	01 27	02 54	04 21
56	15 35	16	22	17 11	00 00	01 24	02 47	04 10
54	15 47	16	31	17 17	00 00	01 21	02 41	04 01
52	15 58	16	39	17 22	00 00	01 18	02 36	03 53
50	16 08	16	46	17 27	25 16	01 16	02 31	03 45
45	16 28	17	02	17 39	25 10	01 10	02 20	03 30
N 40	16 44	17	15	17 49	25 06	01 06	02 11	03 17
35	16 58	17	26	17 58	25 02	01 02	02 04	03 06
30	17 10	17	37	18 07	24 59	00 59	01 57	02 56
20	17 31	17	55	18 23	24 53	00 53	01 46	02 40
N 10	17 50	18	12	18 39	24 48	00 48	01 36	02 26
0	18 07	18	29	18 55	24 43	00 43	01 27	02 13
S 10	18 24	18	47	19 14	24 38	00 38	01 18	02 00
20	18 43	19	07	19 36	24 33	00 33	01 08	01 46
30	19 04	19	32	20 05	24 27	00 27	00 57	01 30
35	19 17	19	47	20 23	24 24	00 24	00 51	01 21
40	19 32	20	05	20 46	24 20	00 20	00 44	01 10
45	19 50	20	27	21 16	24 16	00 16	00 36	00 58
S 50	20 12	20	56	22 00	24 10	00 10	00 26	00 43
52	20 22	21	10	22 26	24 08	00 08	00 21	00 36
54	20 34	21	28	23 07	24 05	00 05	00 16	00 28
56	20 48	21	49	////	24 03	00 03	00 10	00 20
58	21 04	22	17	////	24 00	00 00	00 04	00 10
S 60	21 24	23	01	////	23 56	23 57	23 59	24 04

Día	SOL				Paso Mer.	LUNA				
	Ec. Tiempo					Paso Mer.		Edad	Fase
	00h		12h			Sup.	Inf.		
d	m	s	m	s	h m	h m	h m	d	%
30	02	14	02	28	12 02	18 32	06 10	07	55
31	02	43	02	57	12 03	19 17	06 54	08	65
1	03	11	03	26	12 03	20 02	07 39	09	74

EXPLICACIÓN

FUNDAMENTO Y DISPOSICIÓN DE LOS DATOS

1. *Objetivo*. El objetivo de este Almanaque es proporcionar convenientemente los datos necesarios para la práctica de la navegación astronómica en el mar.

2. *Información.* El contenido principal del Almanaque comprende los datos a partir de los cuales pueden obtenerse los valores del *Ángulo Horario de Greenwich* (AHGr) y la *Declinación* (Dec) de todos los astros usados en la navegación, para cualquier instante del *Tiempo Universal* (UT), específicamente UT 1, o de la *Hora Media de Greenwich* (HmGr).

El *Ángulo Horario Local* (AHL) puede obtenerse mediante el uso de la fórmula:

$$\text{AHL} = \text{AHGr} \begin{matrix} - \text{ longitud W} \\ + \text{ longitud E} \end{matrix}$$

Los datos restantes se refieren a horas de orto y ocaso del Sol y de la Luna, y horas de los crepúsculos; datos de calendario, planeamientos misceláneos, tablas auxiliares, además de una lista de horas oficiales y correcciones que deben aplicarse a las alturas observadas.

Para el Sol, la Luna y los planetas, los valores del AHGr y la Dec, se encuentran tabulados directamente para cada hora de UT a través del año. Para las estrellas, se indican los valores del *Ángulo Horario Sidéreo* (AHS), pudiendo obtenerse el AHGr mediante la fórmula:

$$\text{AHGr Estrella} = \text{AHGr Aries} + \text{AHS Estrella}$$

El AHS y la Dec de las estrellas cambian de valor lentamente y pueden considerarse como constantes a lo largo de períodos de varios días. El AHGr de Aries, o el Ángulo Horario de Greenwich para el primer punto de Aries (Equinoccio Vernal), se encuentra tabulado para cada hora. Las tablas permanentes dan los incrementos y las correcciones apropiadas que deben aplicarse a los valores horarios tabulados del AHGr y la Dec para los minutos y segundos del UT.

Los seis volúmenes de la serie *"Sight Reduction Tables for Marine Navigation"* (publicados en los Estados Unidos de América como Pub. Nº 229 y en el Reino Unido como N.P. 401), han sido elaborados para resolver el triángulo de posición, usando el *Almanaque Náutico*.

En las páginas 262 a 270, se presentan métodos para el cálculo de Ac y Azv, los cuales solamente requieren el empleo de una calculadora científica o computadores estándares. Estos métodos están basados en la solución del triángulo de posición por aplicación de trigonometría esférica.

La exactitud tabulada es de 0',1 para todos los datos. El dato horario en las páginas diarias de este Almanaque es UT 1 indicado siempre por UT. Esta escala puede diferir de las señales horarias emitidas por radio, correspondientes a la Hora Universal Coordinada (UTC), en una cantidad que, si se ignora, introducirá un error de hasta 0',2 en la longitud determinada por observaciones astronómicas. La diferencia aparece porque el dato horario depende de la razón de la variable en la rotación de la Tierra, mientras que las señales horarias emitidas por radio, están basadas en una escala de tiempo atómico. Se hacen ajustes escalonados de exactamente 1 segundo, a las señales horarias cuando se requiera (normalmente a las 24 horas del 31 de diciembre y 30 de junio), de modo que la diferencia entre la señal horaria y el UT, que se usa en este Almanaque, no exceda de 0,9 segundo. Si se requiere reducir las observaciones a una precisión mejor de 1 segundo, deberá obtenerse la corrección (DUT 1) para la señal horaria mediante la codificación de señales u otras fuentes de información; la hora requerida está dada por UT 1 = UTC + DUT 1 a una precisión de 0,1 segundo. Alternativamente, cuando la longitud sea determinada por observaciones astronómicas, puede corregirse en la cantidad correspondiente que aparece en la siguiente tabla:

Corrección a las señales horarias	Corrección a la longitud
–0,9 s a –0,7 s	0',2 al E
–0,6 s a –0,3 s	0',1 al E
–0,2 s a +0,2 s	No corregir
+0,3 s a +0,6 s	0',1 al W
+0,7 s a +0,9 s	0',2 al W

EXPLICACIÓN

3. *Presentación.* Los datos correspondientes para tres días se presentan en dos páginas opuestas: la página de la izquierda contiene los datos referentes a los planetas y las estrellas; la página de la derecha contiene los datos relativos al Sol y la Luna, junto con las horas de los crepúsculos, ortos y ocasos del Sol y de la Luna.

Los datos restantes se encuentran dispuestos como siguen: para facilidad de referencia, las tablas de correcciones para las alturas se encuentran en las páginas A_2, A_3, A_4, xxxiv y xxxv; las fases de la Luna, el calendario, los gráficos de los eclipses y las notas acerca de los planetas (datos de interés general) anteceden a las tabulaciones principales. La Explicación es seguida por información sobre horas oficiales, cartas estelares y lista de posiciones de estrellas, procedimientos y tablas abreviadas para reducción de observaciones, tablas de incrementos y correcciones y otras tablas auxiliares de uso frecuente.

DATOS PRINCIPALES

4. *Páginas diarias.* Las páginas diarias entregan los valores del AHGr de Aries, el AHGr y la Dec del Sol, la Luna y los cuatro planetas empleados en navegación, para cada hora UT. Para la Luna también se han tabulado los valores de *v* y *d* para cada hora, con el fin de facilitar la corrección del AHGr y la Dec para valores intermedios. Los valores *v* y *d* correspondientes al Sol y los planetas cambian tan lentamente, que se encuentran anotados al pie de la columna respectiva, solamente una vez en cada página; *v* vale cero para Aries, y no es apreciable para el Sol, por lo tanto, se omite. También se dan los valores del AHS y la Dec correspondientes a las 57 estrellas seleccionadas, ordenadas alfabéticamente por su nombre propio.

5. *Estrellas.* En las páginas 278 a la 283, se han tabulado los valores mensuales del AHS y la Dec, correspondientes a 173 estrellas, incluyendo las 57 seleccionadas; no se necesita interpolación y los datos pueden usarse en la misma forma que se hace con los referentes a las 57 estrellas seleccionadas en las páginas diarias. Las estrellas se han ordenado conforme con su AHS.

La lista de 173 estrellas incluye todas aquellas hasta de magnitud 3,0; además de algunas menos brillantes para completar los espacios más grandes. Las 57 estrellas seleccionadas han sido elegidas de entre estas, tomando en cuenta su brillantez y distribución en el cielo, para satisfacer la mayoría de las observaciones.

Las 57 estrellas seleccionadas son conocidas por sus nombres propios, pero también están numeradas en orden descendente del AHS. En la lista de 173 estrellas, los nombres de las constelaciones están siempre indicados en la segunda columna de la página izquierda; cuando existen nombres bien conocidos de las estrellas, se señalan en la segunda columna de la página de la derecha. Los números de las estrellas seleccionadas están indicados en ambas columnas. En la página 275 se agrega una lista con los nombres latinos y españoles de las principales constelaciones.

En la página xxxiii, se encuentra un índice de las estrellas seleccionadas, tanto en orden alfabético como numérico, además del nombre de la constelación a la que pertenecen; el mismo índice se halla impreso en el marcador del libro.

6. *Incrementos y correcciones.* Estas tablas impresas en papel de color (páginas ii-xxxi) y que se ubican hacia el final del Almanaque, proporcionan los incrementos y correcciones por minutos y segundos, que deben aplicarse a los valores horarios del AHGr y la Dec. Consisten en sesenta tablas, una por cada minuto, separadas en dos partes: incrementos al AHGr para el Sol y los planetas, Aries y Luna por cada minuto y segundo de tiempo; y, por cada minuto, las correcciones que deben aplicarse al AHGr y a la Dec, correspondientes a los valores de *v* y *d* anotados en las páginas diarias.

Los incrementos están basados en las siguientes razones horarias adoptadas de incremento del AHGr: Sol y planetas, 15° exactos; Aries, 15° 02',46; Luna, 14° 19',0. Los valores de *v* en las páginas diarias corresponden al exceso de los movimientos horarios reales sobre los valores adoptados; los cuales son generalmente positivos, excepto para Venus. Los valores horarios tabulados del AHGr para el Sol, se han ajustado con el fin de reducir al mínimo el error que se ocasiona al considerar a *v* como despreciable. Los valores de *d*, consignados en las páginas diarias, son las diferencias horarias de la Dec. Para la Luna, se dan los valores verdaderos de *v* y *d* para cada hora; para el resto se dan valores medios para los tres días de cada página.

7. *Método de entrada*. El UT correspondiente a una observación se expresa en día y hora, seguido por una cantidad de minutos y segundos. Los valores tabulares del AHGr y la Dec, y los valores de *v* y *d* —cuando sea necesario— se toman directamente de las páginas diarias para el día y hora de UT. Esta hora es siempre *anterior* a la de la observación. Los valores de AHS y Dec de las estrellas seleccionadas se extraen también de las páginas diarias.

EXPLICACIÓN

A continuación, se busca la Tabla de Incrementos y Correcciones correspondientes para el minuto de UT. Para el AHGr, el incremento por minutos y segundos se toma de la columna apropiada frente al valor de los segundos de UT; la corrección *v* se extrae de la segunda parte de la misma tabla y se encuentra frente al valor de *v* dado en las páginas diarias. Tanto el incremento como la corrección de *v* deben sumarse al valor del AHGr, excepto en el caso de Venus, cuando *v* lleva signo menos, que significa que la corrección para *v* debe restarse. Para la Dec no hay incremento, pero se aplica una corrección para *d* en la misma forma que la corrección para *v*; *d* se encuentra sin signo en las páginas diarias; el signo de la corrección debe deducirse mediante inspección de la columna de la Dec. En muchos casos, la corrección puede aplicarse mentalmente.

8. *Ejemplos*.

(a) Sol y Luna. Determinar el AHGr y la Dec del Sol y de la Luna, para el 7 de febrero de 2022 a las $15^h\ 47^m\ 13^s$ UT.

		SOL			LUNA			
		AHGr	Dec	*d*	AHGr	*v*	Dec	*d*
		° ’	° ’	’	° ’	’	° ’	’
Página diaria, febrero $7^d\ 15^h$		41 28,5	15 11,2 S	0,8	326 15,1	14,6	12 39,1 N	12,1
Incrementos para	$47^m\ 13^s$	11 48,3			11 16,0			
Correcciones *v* o *d* para	47^m		– 0,6		+11,6		+9,6	
Suma para febrero	$7^d\ 15^h\ 47^m\ 13^s$	53 16,8	15 10,6 S		337 42,7		12 48,7 N	

(b) Planetas. Determinar el AHL y la Dec de: (i) Venus para el 7 de febrero de 2022 a las $11^h\ 14^m\ 29^s$ UT en longitud 86° 18’ W; (ii) Júpiter para el 7 de febrero de 2022 a las $7^h\ 37^m\ 34^s$ UT en longitud 165° 24’ E.

		VENUS				JÚPITER			
		AHGr	*v*	Dec	*d*	AHGr	*v*	Dec	*d*
		° ’	’	° ’	’	° ’	’	° ’	’
Página diaria, febrero 7^d	(11^h)	19 25,7	1,6	16 29,4 S	0,1	(7^h) 261 43,2	1,9	9 13,0 S	0,2
Incrementos (planetas)	($14^m\ 29^s$)	3 37,3				($37^m\ 34^s$) 9 23,5			
Correcciones *v* o *d*	(14^m)	+0,4		+0,0		(37^m) +1,2		– 0,1	
Suma = AHGr y Dec		23 03,4		16 29,4 S		271 07,9		9 12,9 S	
Longitud	(oeste)	– 86 18,0				(este) + 165 24,0			
Múltiplos de 360°		+ 360				– 360			
		296 45,4				76 31,9			

(c) Estrellas. Determinar el AHGr y la Dec de: (i) *Aldebarán* para el 7 de febrero de 2022 a las $20^h\ 20^m\ 22^s$ UT; (ii) *Vega* para el 7 de febrero de 2022 a las $7^h\ 30^m\ 27^s$ UT.

		Aldebarán			*Vega*		
		AHGr	Dec		AHGr	Dec	
		° ’	° ’		° ’	° ’	
Página diaria (AHS y Dec)		290 42,2	16 33,2 N		80 35,2	38 48,2 N	
Página diaria (AHGr de Aries)	(20^h)	77 55,0		(7^h)	242 23,0		
Incrementos (Aries)	($20^m\ 22^s$)	5 06,3		($30^m\ 27^s$)	7 38,0		
Suma = AHGr de las estrellas		373 43,5			330 36,2		
Múltiplos de 360°		–360					
AHGr de la estrella		13 43,5			330 36,2		

9. *Tablas de Polaris (Estrella Polar)*. Las tablas contenidas en las páginas 284 a la 286 entregan los valores de las correcciones que permiten calcular la latitud que puede deducirse de una observación de la altura de la estrella *Polaris* y también proporcionan su Azimut (Azv); su empleo se explica e ilustra en dichas páginas. Las tablas están basadas en la siguiente fórmula:

Latitud $-$ *Av* = $-\ \triangle \cos h + {}^1/_2 \triangle \operatorname{sen} \triangle \operatorname{sen}^2 h \operatorname{tg}$ (latitud)

En la que: *Av* = *Aap* (Altura aparente corregida por refracción)

$\triangle$ = distancia polar de la estrella *Polaris* = 90° – Dec

h = ángulo horario del lugar de *Polaris* = AHL de Aries + AHS

a_o, que es una función únicamente del AHL de Aries, es el valor de ambos términos de la fórmula anterior, calculada por valores promedios del AHS (314° 59’) y de la Dec (89° 21’,5 N) de la estrella *Polaris*, para una latitud media de 50° y ajustada mediante la suma de una constante (58’,8).

EXPLICACIÓN

a_1, que es una función del AHL de Aries y de la latitud, es el exceso del valor del segundo término sobre su valor medio para latitud de 50°, incrementado por una constante (0',6) con el fin de hacerlo siempre positivo.

a_2, que es una función del AHL de Aries y de la fecha, es la corrección aplicable al primer término por la variación de la estrella *Polaris* a partir de su posición media adoptada; este valor está incrementado por una constante (0',6) con el fin de hacerlo positivo.

La suma de las constantes agregadas es 1°, de manera que:

$$\text{Latitud} = \text{Altura aparente (corregida por refracción)} - 1° + a_o + a_1 + a_2$$

FENÓMENOS DE ORTO Y OCASO

10. *Generalidades.* En las páginas diarias del lado derecho de la publicación se encuentran las horas de orto y ocaso del Sol, inicio de las auroras náutica y civil, término de los crepúsculos civil y náutico, y las del orto y ocaso de la Luna para latitudes comprendidas entre 72° N y 60° S. Las horas de las páginas diarias, que se encuentran dadas al minuto más próximo, son estrictamente los UT en que ocurren los fenómenos sobre el meridiano de Greenwich; están dadas para cada día, para los fenómenos de orto y ocaso de la Luna, pero solamente para el día medio de los tres contenidos en cada página, para el caso del fenómeno solar.

Para las latitudes entre 60º S y 72º S se incluyen tablas especiales en las páginas 287 a la 315, cuyos valores fueron calculados utilizando como referencia el meridiano de Greenwich.

Estas horas son aproximadamente las Horas Medias Locales (Hml) de los fenómenos correspondientes sobre otros meridianos; pueden interpolarse si se desea. El UT de ocurrencia de un fenómeno se obtiene a partir de la Hml por medio de la siguiente fórmula:

$$\text{UT} = \text{Hml} \begin{matrix} + \text{ longitud W} \\ - \text{ longitud E} \end{matrix}$$

en la cual el valor de la longitud debe convertirse primero en tiempo, mediante el uso de la tabla contenida en la página "i" o de otra forma.

La interpolación por latitud puede hacerse mentalmente, o con ayuda de la Tabla I de la página xxxii.

Para indicar las condiciones bajo las cuales algunos de los fenómenos no ocurren en altas latitudes, se usan los siguientes símbolos:

▭ El Sol o la Luna permanecen continuamente sobre el horizonte;
▬ El Sol o la Luna permanecen continuamente por debajo del horizonte;
//// La aurora o el crepúsculo duran toda la noche.

Bases de la Tabulación. Para el orto y el ocaso del Sol, se adoptaron los valores de 16' para semidiámetro y 34' para refracción horizontal, de tal manera que, a las horas dadas, el limbo superior del Sol se encuentra sobre el horizonte visible; todas las horas se refieren a los fenómenos, tal como se ven desde el nivel del mar con horizonte claro.

A las horas dadas para el comienzo de las auroras y término de los crepúsculos, la distancia zenital del Sol es de 96° para el civil y de 102° para el náutico. A las horas dadas para la aurora y crepúsculo civil (en buenas condiciones meteorológicas y en ausencia de otra iluminación), el grado de iluminación es tal, que las estrellas más brillantes resultan visibles y el horizonte claramente definido. A las horas dadas para la aurora y crepúsculo náutico, por lo general el horizonte no es visible y está demasiado oscuro para efectuar alguna observación con sextante.

Las horas correspondientes a otras depresiones del Sol pueden obtenerse por interpolación, no resultando confiables las mayores de 12° mediante extrapolación; las horas obtenidas de esta forma estarán sujetas a considerable incertidumbre cerca de las condiciones extremas.

Para el orto y el ocaso de la Luna se considera un valor de 34' para el semidiámetro, paralaje y refracción, de tal manera que, a las horas dadas, el limbo superior de la Luna se encuentre sobre el horizonte visible, visto desde el nivel del mar.

11. *Orto, Ocaso del Sol; Auroras y Crepúsculos.* Las horas tabuladas pueden considerarse, sin errores serios, como la Hml de los fenómenos, en cualquiera de los tres días contenidos en la página y en cualquier longitud. Las horas precisas pueden obtenerse normalmente interpolando los valores tabulares por latitud y de acuerdo con el día y longitud correctos, considerando a esta última expresada como una fracción de un día dividiendo su valor por 360°, siendo positiva para las longitudes W y negativa para las longitudes E. En las condiciones extremas, cerca de los símbolos ▭, ▬ o ////, puede no ser posible la interpolación en una dirección, pero las horas exactas son de escasa significación en estas circunstancias.

EXPLICACIÓN

Ejemplos. Determinar el UT de: (a) el comienzo de las auroras y orto del Sol para el 13 de enero de 2022 en latitud 48° 55' S, longitud 75° 18' E; (b) el ocaso del Sol y término de los crepúsculos para el 15 de enero de 2022 en latitud 67° 10' N, longitud 168° 05' W.

	Aurora					Crepúsculo	
			Orto Sol		Ocaso Sol		
(a)	Náutica	Civil		(b)		Civil	Náutico
De pág. 19	d h m	d h m	d h m		d h m	d h m	d h m
Hml para Lat. 45° S	13 03 09	13 03 56	13 04 32	66º N	15 14 23	15 15 43	15 16 54
Correc. para 48° 55' S (pág. xxxii, Tabla I)	–27	–20	–16	67º 10` N	–22	–12	–6
Long. (pág. i) 75° 18' E	–5 01	–5 01	–5 01	168º 05` W	+11 12	+ 11 12	+11 12
UT	12 21 41	12 22 35	12 23 15		16 01 13	16 02 43	16 04 00

Las Hml son estrictamente para el 14 de enero (día del medio de la página) y 0° de longitud; para obtener la hora más precisa es necesario interpolar de la forma siguiente, pero los errores de aproximación pueden acumular alrededor de 2^m.

(a) Para enero $13^d - 75°/360° =$ enero $12{,}8^d$, o sea $^1/_3$ (1,2) = 0,4 hacia atrás del dato obtenido para la misma latitud interpolada en forma similar de la página 17; las correcciones son -3^m para la aurora náutica, -2^m para la aurora civil y -2^m para el orto del Sol.

(b) Para enero $15^d + 168°/360° =$ enero $15{,}5^d$, o sea $^1/_3$ (1,5) = 0,5 hacia adelante del dato obtenido para la misma latitud interpolada en forma similar de la página 21; las correcciones son $+7^m$ para el ocaso del Sol, $+4^m$ para el crepúsculo civil y $+4^m$ para el crepúsculo náutico.

12. *Orto y ocaso de la Luna.* Pocas veces se necesitan las horas exactas del orto y ocaso de la Luna; una mirada a las tablas generalmente dará suficiente indicación sobre sus condiciones de observación y sus horas de orto y ocaso. Si se necesitan, las horas exactas pueden obtenerse como sigue: interpolar por latitud, usando la Tabla I de la página xxxii, para el día requerido y también para el día anterior en longitudes E, o para el día siguiente en longitudes W; tomar la diferencia entre estas horas e interpolar por longitud aplicando a la hora del día requerido la corrección de la Tabla II de la página xxxii, de tal manera que la hora resultante quede entre las dos horas usadas. En condiciones extremas, cerca de los símbolos ▭ o ▬, la interpolación por latitud o longitud solamente es posible en una dirección; en estas circunstancias las horas exactas son de escaso valor.

Para facilitar esta interpolación, en cada página se encuentran registradas las horas de orto y ocaso de la Luna para cuatro días; cuando no hay ocurrencia del fenómeno durante un día particular (tal como acontece una vez al mes), la hora de ocurrencia del fenómeno para el día siguiente viene aumentada en 24^h. Debe tenerse mucho cuidado al interpolar entre dos valores, cuando uno de los cuales excede de 24^h. En la práctica, es suficiente emplear la diferencia diaria entre las horas para la latitud más próxima tabulada y, generalmente, entrar a la Tabla II con los argumentos tabulares más próximos, tal como se muestra a continuación:

Ejemplo. Determinar el UT del orto y ocaso de la Luna en latitud 47° 10' S y longitudes de 124° 00' E y 78° 31' W para el 9 de enero de 2022.

	Longitud 124° 00' E		Longitud 78° 31' W	
	Orto Luna	Ocaso Luna	Orto Luna	Ocaso Luna
	d h m	d h m	d h m	d h m
Hml para Lat. 45° S	9 12 02	9 23 46	9 12 02	9 23 46
Correc. por Lat. (pág. xxxii, Tabla I)	+02	–02	+02	–02
Correc. por Long. (pág. xxxii, Tabla II)	–23	–07	+16	+04
Hml corregida	9 11 41	9 23 37	9 12 20	9 23 48
Longitud (pág. i)	– 8 16	– 8 16	+ 5 14	+ 5 14
UT	9 03 25	9 15 21	9 17 34	10 05 02

TABLAS DE CORRECCIÓN DE ALTURAS

13. *Generalidades.* Comúnmente, se dan dos correcciones para aplicar a las alturas observadas con el sextante; se necesitan correcciones adicionales para Venus y Marte y también para alturas muy bajas.

EXPLICACIÓN

En las páginas A_2 y xxxiv se encuentran las tablas de corrección por depresión del horizonte, debido a la elevación del ojo del observador sobre el nivel del mar. Esta corrección debe aplicarse rigurosamente primero y restarse de la altura del sextante, para obtener la altura aparente, que es el argumento correcto de entrada para las otras tablas.

Se dan tablas separadas para obtener la segunda corrección para el Sol, estrellas y planetas (en las páginas A_2 y A_3) y para la Luna (en las páginas xxxiv y xxxv). En cuanto al Sol, se entregan valores para ambos limbos, superior e inferior, para dos períodos del año. Las tablas de estrellas se usan para los planetas, pero se necesita hacer otras correcciones por paralaje para Venus y Marte (página A_2). Las tablas de la Luna están divididas en dos partes: la corrección principal es solamente una función de la altura aparente, y está tabulada para el limbo inferior (deben restarse 30' para obtener la corrección del limbo superior); la otra corrección, que viene dada para limbos superior e inferior, depende también del paralaje horizontal, el que debe obtenerse de las páginas diarias.

Se requiere de otra corrección, entregada en la página A_4 para el cambio en la refracción, debido a las variaciones de presión y temperatura con respecto a las condiciones normales adoptadas; la que puede ignorarse generalmente para alturas mayores de 10°, excepto posiblemente en condiciones atmosféricas extremas. Las tablas de correcciones para el Sol, las estrellas y planetas, están presentadas en dos partes; solamente aquellas referentes a alturas mayores de 10° se han reimpreso en el marcador del libro.

14. *Tablas críticas*. Algunas de las tablas de correcciones de altura se han dispuesto como tablas críticas. En ellas, un intervalo de altura aparente (o elevación del ojo del observador) corresponde a un solo valor de la corrección; no se necesita interpolación. Para una entrada "crítica" se toma el valor superior de los dos posibles para la corrección. Por ejemplo, en la tabla de depresión, una corrección de –4',1 corresponde a todos los valores de elevación del ojo de 5,3 a 5,5 metros (17,5 a 18,3 pies) inclusive.

15. *Ejemplos.* Los siguientes ejemplos ilustran el uso de las tablas de corrección de alturas; se asume que las alturas del sextante fueron tomadas el 12 de marzo de 2022 con un sextante marino, con una elevación de ojo de 5,4 m (18 pies), temperatura de –3 °C y una presión de 982 hectopascales, observándose la Luna alrededor de las 10^h UT.

	SOL Limbo Inf.	SOL Limbo Sup.	LUNA Limbo Inf.	LUNA Limbo Sup.	VENUS	*Polaris*
	° '	° '	° '	° '	° '	° '
Altura del sextante	21 19,7	3 20,2	33 27,6	26 06,7	4 32,6	49 36,5
Depresión 5,4 m (18 pies)	–4,1	–4,1	–4,1	–4,1	–4,1	–4,1
Corrección principal	+13,8	–29,6	+57,4	+60,5	–10,8	–0,8
–30' limbo sup. (Luna)	–	–	–	–30,0	–	–
Corr. para Luna (limbos sup. e inf.)	–	–	+1,3	+1,6	–	–
Corr. adicional para Venus	–	–	–	–	+0,2	–
Corr. adicional por refracción	–0,1	–0,6	–0,1	–0,1	–0,5	0,0
Altura del sextante corregida	21 29,3	2 45,9	34 22,1	26 34,6	4 17,4	49 31,6

Las correcciones principales se han obtenido partiendo de la altura aparente (altura de sextante corregida por error de índice y depresión) como argumento, interpolando donde fue posible. Estas sutilezas raramente se necesitan.

16. *Componentes de las correcciones.* La tabla para la depresión del horizonte del mar está basada en la fórmula:

$$\text{Corrección por depresión} = -1',76 \sqrt{(\text{elevación del ojo en metros})} = -0',97 \sqrt{(\text{elevación del ojo en pies})}$$

La tabla de corrección para el Sol incluye los efectos de semidiámetro, paralaje y refracción media.

Las tablas de corrección para las estrellas y planetas consideran el efecto de refracción media.

La corrección de fase para Venus ha sido incorporada en la tabulación de AHGr y Dec y, por lo tanto, no se requiere efectuar corrección adicional por fase. Las correcciones adicionales para Venus y Marte consideran el efecto de paralaje. Alternativamente, la corrección por paralaje puede ser calculada de: $p \cos H$, donde p es el paralaje y H es la altura. Para el año 2022, los valores de p son:

	Ene. 1	Ene. 6	Ene. 10	Ene. 29	Feb. 13	Mar. 8	Abr. 28	Dic. 31
Venus	0',5	0',6	0',5	0',4	0',3	0',2	0',1	
	Ene. 1	Ago. 28	Nov. 9	Dic. 21	Dic. 31			
Marte	0',1	0',2	0',3	0',2				

EXPLICACIÓN

La tabla de corrección para la Luna incluye el efecto de semidiámetro, paralaje, aumento y refracción media.

La refracción media está calculada para una temperatura de 10 °C (50 °F) y una presión de 1.010 hectopascales (29,83 pulgadas), con una humedad del 80 % y una longitud de onda de 0,50169 µm.

17. *Observaciones con sextante de burbuja.* Cuando se observa con sextante de burbuja, no se requieren correcciones por depresión, semidiámetro o aumento. Las correcciones de altura para las estrellas y los planetas dados en la página A_2 y en el marcador del libro, deben usarse también para el Sol; para la Luna es más fácil tomar el valor medio de las correcciones para limbos superior e inferior y restar 15' de la altura; la corrección por depresión no debe aplicarse.

DATOS AUXILIARES Y DE PLANEAMIENTO

18. *Sol y Luna*. Las páginas diarias entregan: los valores de cada hora del paralaje horizontal de la Luna; los semidiámetros y las horas de paso del Sol y de la Luna por el meridiano de Greenwich; la ecuación del tiempo; la edad de la Luna, el porcentaje iluminado, junto con el símbolo indicativo de la fase. Las horas de las fases de la Luna se dan en UT en la página 4. Para la Luna, al pie de la columna, se dan los valores de los semidiámetros para cada uno de los tres días; para el Sol es suficiente un único valor. La Tabla II de la página xxxii puede ser usada para interpolar, por longitud, la hora de paso de la Luna por el meridiano. La ecuación del tiempo está dada para las 00^h y 12^h UT de cada día. El signo es *positivo* para valores no sombreados y *negativo* para valores sombreados. Para obtener la hora verdadera, se suma la ecuación del tiempo a la hora media, cuando el signo es *positivo*; mientras que se resta la ecuación del tiempo a la hora media, cuando el signo es *negativo*. A las 12^h UT, cuando el signo es *positivo*, el paso del Sol por el meridiano ocurre *antes* de las 12^h UT. En caso contrario, este sucede *después* de las 12^h UT.

19. *Planetas.* Las magnitudes de los planetas están indicadas inmediatamente a continuación de sus nombres en los encabezados de las páginas diarias; también se dan, en un recuadro al pie de la página, el AHS a las 00^h UT y la hora de paso por el meridiano, ambos para el día del medio de los tres días indicados en cada página.

Las notas respecto de los planetas y el diagrama de las páginas 8 y 9, proporcionan información descriptiva de la posibilidad de observación de los planetas durante el año, así como de sus posiciones y movimientos.

20. *Estrellas*. Las páginas diarias entregan la hora del paso del primer punto de Aries por sobre el meridiano de Greenwich, a $0{,}1^m$, para el día del medio de los tres de cada página. El intervalo entre pasos sucesivos por el meridiano es de $23^h\ 56{,}1^m$ (24^h menos $3{,}9^m$), de tal manera que pueden deducirse rápidamente las horas de paso para días intermedios, así como las de paso por otros meridianos. Si se necesita la hora exacta, puede determinarse encontrando el UT donde el AHL de Aries es cero.

El paso de una estrella por el meridiano ocurre cuando su AHL es cero, es decir, cuando el AHL de Aries + AHS = 360°. La hora aproximada puede obtenerse empleando el Diagrama Planetario de la página 9.

Las cartas estelares de las páginas 276 y 277 sirven para ayudar a la identificación. En ellas se muestra la posición relativa de las estrellas en el cielo tal como se ven desde la Tierra e incluyen las 173 estrellas usadas en el Almanaque, junto con otras más para completar la configuración de las principales constelaciones. El meridiano local a cualquier hora, puede ubicarse en la carta mediante su AHS, el cual es igual a 360° – AHL de Aries o longitud oeste – AHGr de Aries.

21. *Esfera Celeste*. Para emplear un globo estelar que tenga impresa una escala del AHL de Aries, primero se fija la esfera de acuerdo con la latitud y luego se hace girar alrededor del eje polar, hasta que se lea en la escala bajo el borde del círculo meridiano el AHL de Aries.

Para encontrar las posiciones del Sol, la Luna y los planetas sobre un globo estelar, tómese la diferencia AHGr de Aries – AHGr del astro y úsese esta diferencia a lo largo de la escala de AHL de Aries junto con la declinación, para establecer la posición del astro. La diferencia AHGr de Aries – AHGr del astro se facilita tomándola cuando el AHGr del astro es pequeño (menos de 15°), lo cual acontece una vez al día.

EXPLICACIÓN

22. *Calendario*. En la página 5 se encuentra un calendario Juliano, el cual incluye los días del mes y del año, así como el nombre correspondiente de los días de la semana.

Al pie de la página 5, se entregan breves detalles de los eclipses solares y lunares que se producirán durante el año; las horas se dan en UT. Las características principales se grafican en las páginas 6 y 7.

23. *Horas oficiales.* Las listas de las páginas 271 a la 274 dan las horas oficiales usadas en la mayoría de los países. En general, no se ha intentado dar detalles acerca del comienzo y término de la hora de verano, debido a que están sujetas a frecuentes cambios, avisados con poca anticipación. Para obtener información actualizada, deberá consultarse el *"Admiralty List of Radio Signals"*, Volumen 2 (NP 282), corregido por la Sección VI de la edición semanal del *"Admiralty Notices to Mariners"*.

La Línea Internacional de Cambio de Fecha es una línea arbitraria que determina una diferencia de un día entre cada uno de sus lados. Cuando se cruza con rumbo E, la fecha debe atrasarse un día; cuando se cruza con rumbo W, la fecha debe adelantarse un día. Esta línea es una modificación de la correspondiente al meridiano 180° y se ha trazado de modo que incluya, hasta donde sea posible, islas de un mismo grupo, etc., hacia el mismo lado de la línea. Puede trazarse comenzando en el polo Sur y uniendo los siguientes puntos:

	°	°	°	°	°	°	°
Lat.	51,0 S	45,0 S	15,0 S	5,0 S	48,0 N	53,0 N	65,5 N
Long.	180,0	172,5 W	172,5 W	180,0	180,0	170,0 E	169,0 W

de ahí, dividiendo las islas Diomede, llega hasta la Lat. 68°,0 N, Long. 169°,0 W, pasando al E de Ostrov Vrangelya (Isla Wrangel) en Lat. 75°,0 N, Long. 180°,0 y desde allí hacia el polo Norte.

EXACTITUD

24. *Datos principales*. Las cantidades tabuladas en este Almanaque están generalmente correctas al 0',1 más próximo; la excepción la constituye el AHGr del Sol, el cual está ajustado deliberadamente a 0',15 con el fin de reducir el error cometido al ignorar la corrección *v.* El AHGr y la Dec, para horas intermedias no pueden obtenerse con esta precisión, ya que al menos deben agregarse dos cantidades; por otra parte, las correcciones *v* y *d* están basadas en valores medios de *v* y *d* y se toman de las tablas al minuto entero solamente. El error más grande que puede ocurrir en el AHGr o la Dec de cualquier astro diferente del Sol o la Luna, es menos de 0',2. Puede llegar a 0',25 para el AHGr del Sol y a 0',3 para el de la Luna.

En la práctica, puede esperarse que solamente una tercera parte de los valores tomados del AHGr y la Dec, tengan errores mayores de 0',05 y menos de una décima parte tengan errores mayores de 0',1.

25. *Correcciones a las alturas.* Los errores en las correcciones de las alturas son nominalmente del mismo orden que los correspondientes al AHGr y la Dec, dado que son el resultado de la suma de varias cantidades, cada una de las cuales se ha redondeado correctamente al 0',1. En caso de condiciones atmosféricas extremas, los valores reales de la depresión y de la refracción, a bajas alturas, pueden diferir considerablemente de los valores medios empleados en las tablas.

USO DE ESTE ALMANAQUE DURANTE EL AÑO 2023

Este Almanaque puede usarse para el Sol y las estrellas en el 2023 de la siguiente manera:

Para el Sol, obtenga el AHGr y la Dec para la misma fecha, pero para un tiempo de $5^h\ 48^m\ 00^s$ *antes* del UT de la observación; agregue 87° 00' al AHGr así obtenido. El error, debido principalmente a perturbaciones planetarias de la Tierra, difícilmente excederá de 0',4.

Para las estrellas, calcule el AHGr y la Dec para la misma fecha y hora, pero *reste* 15´,1 al AHGr así obtenido. El error, debido a una incompleta corrección a la precesión y nutación, difícilmente excederá de 0',4. Si lo prefiere, se puede obtener el mismo resultado empleando un tiempo de $05^h\ 48^m\ 00^s$ *antes* del UT de la observación, (igual como para el Sol) y agregando 86° 59',2 al AHGr (o agregando 87°, al igual que para el Sol, y restando 0',8 para la precesión, del AHS de la estrella).

Este Almanaque no se puede usar para la Luna ni los planetas durante el año 2023.

PROCEDIMIENTOS DE REDUCCIÓN DE OBSERVACIONES

MÉTODOS Y FÓRMULAS PARA CÁLCULO DIRECTO

1. Introducción. Se entregan métodos y fórmulas para calcular la posición en el mar a partir de las alturas observadas obtenidas con un sextante marino usando un computador o calculadora electrónica.

El método utiliza conceptos análogos y terminología similar a la empleada en los métodos manuales de astronavegación, donde la posición se calcula trazando las líneas de posición en las cartas a partir de su intercepto y el azimut.

Los algoritmos se presentan en álgebra estándar adecuadamente para traducirlos al lenguaje computacional del computador del usuario. Los datos básicos de las efemérides pueden obtenerse directamente de las páginas tabulares principales de una versión actualizada de este Almanaque Náutico. Se entregan fórmulas para calcular la altura y el azimut del AHGr y la Dec de un cuerpo celeste y la posición estimada del observador. Las fórmulas que se entregan también sirven para reducir las observaciones hechas con el sextante a alturas verdaderas, aplicando las correcciones por error de índice, depresión del horizonte, refracción, paralaje y semidiámetro.

El intercepto y el azimut obtenidos de cada observación determina una línea de posición y el observador deberá permanecer cerca o en cada una de ellas. El método de los mínimos cuadrados se utiliza para calcular el punto observado donde la suma de los cuadrados de las distancias de las líneas de posición es un mínimo. El uso de los mínimos cuadrados tiene otras ventajas, como por ejemplo, el mejoramiento de la posición estimada en el momento del punto observado repitiendo el cálculo. También es posible incluir más observaciones a la solución y eliminar de ella las observaciones dudosas.

2. Abreviaturas

Aap = Altura aparente. Corresponde a la *Ai* corregida por el error de índice (*Ei*) y la depresión del horizonte (*Dip*).

Ac = Altura calculada. Sobre el horizonte es positiva, bajo él es negativa. Su rango varía de –90° en el nadir, hasta +90° en el zenit.

AHGr = Ángulo Horario de Greenwich. Su rango va de 0° a 360°, empezando con 0° en el meridiano de Greenwich e incrementándose al W hasta llegar nuevamente a dicho meridiano en los 360°.

AHL = Ángulo Horario Local = *AHGr* +Long. El *AHL* aumenta al W desde 0° en el meridiano local hasta 360°.

AHS = Ángulo Horario Sidéreo. Es el arco de Ecuador celeste medido en grados (de 0° a 360°), contado desde el punto Vernal de Aries hacia el W (como horario de 0 a 24 h), hasta el máximo de ascensión del astro.

Ai = Altura instrumental o del sextante.

Ao = Altura observada. Corresponde a la *Ai* corregida por el error de índice (*Ei*).

Av = Altura verdadera. Es la *Aap* corregida por refracción y, en los casos que corresponda, por paralaje y semidiámetro.

Azv = Azimut verdadero. Es el ángulo en el horizonte, desde el N verdadero al astro, por el E. Su rango va de 0° a 360°.

Dec = Declinación. Convencionalmente se empleará la declinación N como positiva y la S como negativa. El rango va de –90° en el polo celeste sur, a +90° en el polo celeste norte.

Dip = Depresión del horizonte.

Dv = Distancia verdadera.

Dz = Distancia cenital.

Ei = Error de índice o instrumental.

f = Constante.

G = Longitud. Por convención, el signo E será positivo y el W negativo. Su rango abarca de –180° a +180°.

I = Intercepto = *Av* – *Ac*. Hacia el astro es positivo, en sentido contrario es negativo.

L = Latitud. El signo N será convencionalmente positivo y el S negativo, con un rango de –90° a +90°.

P = Ángulo al Polo. Se mide desde el meridiano del observador al círculo horario del astro, hacia el E o hacia el W. Su rango abarca de –180° a +180°. Por convención el signo E será positivo y el W negativo.

Pa = Paralaje de altura del Sol, Luna, Venus o Marte.

Ph = Paralaje horizontal del Sol, Luna, Venus o Marte.

hPa = Presión Hectopascal.

$\triangle p$ = Distancia polar = 90° + *Dec* cuando la *Dec* del astro y la latitud del observador son de distinto signo, y 90° – *Dec* cuando son de igual signo. Su rango varía de 0° a 180°. Para el caso, se considera el valor absoluto de *Dec*.

Ref = Refracción atmosférica.

Rv = Rumbo verdadero. Medido como el *Azv*, desde el norte verdadero.

S/D = Semidiámetro del Sol y Luna.

V = Velocidad en nudos.

3. Ingreso de los datos básicos. Cuando se ingresen a la calculadora datos como el *AHGr*, que el Almanaque Náutico entrega en grados y minutos, es necesario convertirlos a grados y décimas de grado, dividiendo los minutos por 60 y sumándolos a los grados; por ejemplo, si el *AHGr* = 123° 45’,6; ingrese ambas cifras 123 y 45,6 a la memoria y haga *AHGr* = 123 + 45,6/60 = 123°,7600. Si bien 4 decimales de un grado son suficientes, se asume en los ejemplos que en la calculadora se mantiene precisión total.

La mayoría de las calculadoras científicas tienen una tecla especial para convertir grados, minutos y segundos a grados con decimales. En calculadoras programables o computadores frecuentemente es posible hacer una subrutina que haga la conversión automáticamente. Para valores como la *Dec*, que tienen un signo menos para las declinaciones S, es necesario cambiar el signo de + a –, después que el valor ha sido convertido a grados con decimales, por ejemplo, *Dec* = 0° 12’,3 S = 0°,2050 S = – 0°,2050. Otros valores que requieren conversión son el *S/D, Ph, G* y *L*.

4. Interpolación del AHGr y Dec. Para interpolar mediante la calculadora el *AHGr* y la *Dec* del Sol, Luna o planetas, al instante de la observación, proceda a calcular el factor de interpolación x = b/60 + c/3600, en donde b son los minutos y c los segundos del UT de la observación. Tome el valor tabular correspondiente a la hora precedente ($AHGr_0$) y la siguiente ($AHGr_1$), y el valor interpolado del *AHGr* será:

$$AHGr = AHGr_0 + x(AHGr_1 - AHGr_0)$$

Si entre los valores que se interpolarán está 360°, agregar 360° al $AHGr_1$ antes de hacer la operación anterior; si como consecuencia de ello el valor obtenido excede 360°, reste 360° a dicho valor.

Igualmente para la declinación, tome el valor de la tabla Dec_0 correspondiente a la hora precedente (a) y el valor de la tabla Dec_1, para la siguiente hora (a + 1), y el valor interpolado de la *Dec* será:

$$Dec = Dec_0 + x(Dec_1 - Dec_0)$$

Ejemplos.

(a): Obtener el *AHGr* y la *Dec* del Sol para el 7 de febrero de 2022, a las $11^h\ 47^m\ 13^s$ UT.

El factor de interpolación será x = 47/60 + 13/3600 = 0,7869 horas.

De pág. 35:

11^h *AHGr Aries*$_0$ = 341° 28',6 = 341°,4767
12^h *AHGr Aries*$_1$ = 356° 28',6 = 356°,4767
11^h,7869 *AHGr Aries* = 341°,4767 + 0,7869 (356°,4767 – 341°,4767) = 353°,2802
11^h *Dec*$_0$ = 15° 14',3 S = – 15°,2383
12^h *Dec*$_1$ = 15° 13',5 S = – 15°,2250
11^h,7869 *Dec* = –15°,2383 + 0,7869 (– 15°,2250 + 15°,2383) = – 15°,2278

Para la *Dec* y el *AHGr* de Aries, se procede de la forma antes indicada. Para las estrellas se obtiene la *Dec* y el *AHS* de las páginas diarias sin interpolar, este último se suma al *AHGr* de Aries interpolado al instante de la observación:

$$AHGr = AHGr \text{ Aries} + AHS$$

(b): Obtener el *AHGr* y la *Dec* de *Vega* para el 7 de febrero de 2022, a las $14^h\ 47^m\ 13^s$ UT.

El factor de interpolación será x = 0,7869 horas, como en el ejemplo anterior.

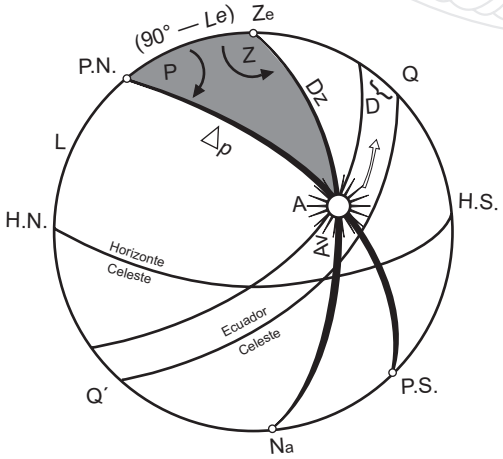
De pág. 34:

14^h *AHGr* Aries$_0$ = 347° 40',2 = 347°,6700
15^h *AHGr* Aries$_1$ = 2° 42',7 = 362°,7117 (se suma 360°)
14^h,7869 *AHGr* Aries = 347°,6700 + 0,7869 (362°,7117 – 347°,6700) = 359°,5026
AHS = 80° 35',2 = 80°,5867
AHGr = *AHGr* Aries + *AHS* = 80°,0936 (se resta 360º)
Dec = 38° 48',0 N = +38°,8000

5. Determinación de la Ac y el Azv:

a) Método Meger. Este método desarrolla la solución empleando el ángulo al polo (P), la distancia polar ($\triangle p$) y un valor auxiliar *K*.

Las fórmulas a emplear en este método se deducen de las relaciones trigonométricas fundamentales en un triángulo esférico rectángulo.



En triángulo PN, Ze, A, los elementos conocidos son :

(90º – *Le*) = Co – Latitud

P = Ángulo al Polo

$\triangle p$ = Distancia Polar

Paso 1. Calcular el ángulo al polo y la distancia polar:

si Ge > 0º (E) $P = 360º - (AHGr + Ge)$
si P > 180º entonces $P = P - 360º$
si Ge < 0º (W) $P = -(AHGr + Ge)$
si P < – 180º, entonces $P = 360º - P$
$\triangle p$ = 90º – | Dec | cuando Dec y L son de igual signo, o
$\triangle p$ = 90º + | Dec | cuando Dec y L son de distinto signo,
en este cálculo se considera el valor absoluto de Dec, Le y P.

Paso 2. Calcular el valor auxiliar K:

K = arc tg (tg $\triangle p$ cos P)
Si K es negativo sumar 180º

Paso 3. Calcular el ángulo al cenit Z:

Z = arc tg (sen K tg P) / cos (K + Le)
Si Z es negativo sumar 180º

Paso 4. Calcular el Azv:

Azv = Z si Le = N y P = E (> 0º)
Azv = 360º – Z si Le = N y P = W (< 0º)
Azv = 180º – Z si Le = S y P = E (> 0º)
Azv = 180º + Z si Le = S y P = W (< 0º)

Paso 5. Determinar la Ac:

Ac = arc sen (sen (K + Le) cos $\triangle p$ / cos K)

Ejemplo. Encontrar la altura calculada (Ac) y el azimut verdadero (Azv) cuando:

$AHGr$ = 53° Dec = 15° S Le = 32° N Ge = 16° W

Para el cálculo se hace:

$AHGr$ = 53° Dec = – 15° Le = +32° Ge = – 16°

Paso 1.

P = – [53° + (–16°)] = –37° = 37° E
$\triangle p$ = 90º + 15º = 105º

Paso 2.

tg K = tg $\triangle p$ cos P
tg K = tg 105º cos 37º
tg K = – 3,7320508 · 0,7986355
tg K = – 2,980529
K = arc tg – 2,980529
K = – 71º,4529 (suma 180º)
K = 108º,5470

Paso 3.

tg Z = (sen K tg P) / cos (K + Le)
tg Z = sen 108º,5470 tg 37º / cos (108º,5470 + 32)

$$\text{tg } Z = \frac{0{,}948063 \cdot 0{,}753554}{-\,0{,}772146}$$

tg Z = – 0,9252352
Z = arc tg – 0,9252352
Z = – 42º,7760 es decir
Z = 180º – 42º,7760
Z = N 137º,224 E

Paso 4.

Azv = 137º,224

Paso 5. sen *Ac*= sen (*K* + *Le*) cos $\triangle$p / cos *K*
sen *Ac*= sen (108º,5470 + 32º) cos 105º / cos 108º,5470
= 0,635445 (– 0,258819) / (–0,318082)

$$\text{sen } Ac = \frac{-0,164465}{-0,318082} = 0,517052$$

Ac = arc sen 0,517052
Ac = 31º,1347

b) Método de la Tangente de la mitad del Ángulo. Este método utiliza como argumentos de entrada el *AHL*, la *Dec* y la *Le*, debiendo tenerse presente que las latitudes N, declinaciones N y longitudes E se ingresan con signo positivo, mientras que las latitudes S, declinaciones S y longitudes W se expresan con signo negativo. Si el valor del Az resulta negativo, deberá sumársele 360º.

Paso 1. Cálculo de la *Ac*:

Se obtiene con la aplicación de la siguiente fórmula:

$$Ac = \text{arc sen } [\text{sen } (Le) \text{ sen } (Dec) + \cos (Le) \cos (Dec) \cos (AHL)]$$

Paso 2. Obtenida la *Ac*, se está en condiciones de calcular el *Az* mediante la relación

$$Azv = 2 \text{ arc tg } \left[\frac{-\cos (Le) \cos (Dec) \text{ sen } (AHL)}{[\cos (Ac + Le) + \text{sen } (Dec)]} \right]$$

Ejemplo. Encontrar la *Ac* y el *Azv* cuando:

AHGr = 53º *Dec* = 15º S *Le* = 32º N *Ge* = 16º W

Paso 1. Se debe conocer el *AHL*, para lo cual:

AHL = AHGr + Ge
AHL = 53º + (–16º) = 37º (Si el *AHL* resultare negativo deberá sumársele 360º),

luego,

Ac = arc sen [sen (32) sen (–15) + cos (32) cos (–15) cos (37)]
Ac = 31º,1178

Paso 2. Cálculo de *Az:*

$$Azv = 2 \text{ arc tg } \left[\frac{-\cos (32) \cos (-15) \text{ sen } (37)]}{[\cos (31º,1178 + 32) + \text{sen } (-15)]} \right]$$

$$Azv = 2 \text{ arc tg } \left[\frac{-0,84805 \text{ x } 0,96592 \text{ x } 0,60181}{0,45190 + (-0,25882)} \right]$$

Azv = 2 arc tg – 2,55327
Azv = –137º,218 (como *Azv* resulta negativo, deberá sumársele 360º)
Azv = 222º,8

6. Reducción de la altura instrumental a la altura verdadera. La altura instrumental o del sextante (*Ai*) se corrige por el error de índice (*Ei*) y la depresión del horizonte (*Dip*) para obtener la altura aparente (*Aap*); la altura verdadera (*Av*) se calcula corrigiendo la refracción (*Ref*) a la *Aap*. Para el Sol, la Luna, Venus y Marte se aplica también a la *Aap* una corrección por paralaje (*Pa*), y para el Sol y la Luna se requiere una corrección adicional por semidiámetro (*S/D*).

Las correcciones se obtienen como se indica:

Paso 1. Cálculo de la depresión del horizonte (*Dip*):

$$Dip = 0°,0293 \sqrt{h}$$

donde h es la elevación del ojo sobre el nivel del mar, en metros.

Paso 2. Cálculo de la altura aparente (*Aap*):

$$Aap = Ai + Ei - Dip$$

donde *Ei* es el error de índice del sextante.

Paso 3. Cálculo de la refracción *(Ref)*:

Para atmósfera estándar, 10 °C y 1.010 hPa:

$$Ref_0 = 0°,0167 / \text{tg}\,(Aap + 7,32 / (Aap + 4,32))$$

Si se conoce la temperatura *T* °C(*T*) y presión *hPa* (*P*):

$$Ref = f\,Ref_0, \qquad \text{donde} \qquad f = 0,28\,P / (T + 273)$$

En otro caso, $Ref = Ref_0$

Paso 4. Cálculo del paralaje de altura (*Pa*) a partir de paralaje horizontal (*Ph*) y la altura aparente (*Aap*) para el Sol, Luna, Venus y Marte como se indica a continuación:

$$Pa = Ph \cos Aap$$

Para el Sol, *Ph* = 0°,0024. Esta corrección es muy pequeña y puede ser ignorada.

Para la Luna, *Ph* se toma de la tabla diaria principal, en la hora más cercana, y se convierte en grados.

Para Venus y Marte, *Ph* se extrae de las tablas críticas al final de la pág. 259, y se convierte en grados.

Para las estrellas y los planetas restantes, Júpiter y Saturno, *Pa* = 0.

Si un error de 0’,2 es significativo, la expresión para el paralaje de altura de la Luna debe incluir una pequeña corrección por el achatamiento de la esfera terrestre (OB), como sigue:

$$Pa = Ph \cos Aap + \text{OB}$$

donde $\text{OB} = -0°,0032\ \text{sen}^2\, Le \cos Aap + 0°,0032\ \text{sen}^2\, Le \cos Azv \ \text{sen}\ Aap$ en latitudes medias y para alturas de la Luna menores de 60°, se puede aproximar

$$\text{OB} = -0°,0017 \cos Aap.$$

Paso 5. Calcular el semidiámetro (*S/D*) del Sol y la Luna:

Sol: *S/D* se toma de la tabla diaria principal y se convierte en grados.

Luna: *S/D* = 0°, 2724 *Ph*, donde *Ph* se extrae de la tabla diaria principal, en la hora más cercana, y se convierte en grados.

Paso 6. Calcular la altura observada (*Ao*):

$$Ao = Aap - Ref + Pa \pm S/D$$

donde se usa para el *S/D* el signo + cuando se observa el limbo inferior del Sol o Luna, y el signo – cuando se observa el limbo superior. La suma de las correcciones parciales *Ref, Pa* y *S/D* se conocen también como “corrección total” (*CT*).

Ejemplo. El siguiente ejemplo ilustra cómo usar la calculadora para reducir altura observada (*Ao*) en altura verdadera (*Av*); las *Ao* dadas, se asume, que fueron tomadas el 12 de marzo de 2022 con un sextante marino, un error de índice igual a 0, a una altura de 5,4 m, con una temperatura de – 3 °C y una presión de 982 hectopascales, las observaciones de la Luna se asume, fueron tomadas a las 10^h UT.

Cuerpo celeste limbo	Sol inf	Sol sup	Luna inf	Luna sup	Venus –	*Polaris* –
Altura observada:						
Ao	21,3283	3,3367	33,4600	26,1117	4,5433	49,6083
Paso 1. Depresión del horizonte:						
Dip = 0,0293 $\sqrt{h}$	0,0681	0,0681	0,0681	0,0681	0,0681	0,0681
Paso 2. Altura aparente:						
Aap = Ao – Dip	21,2602	3,2686	33,3919	26,0436	4,4752	49,5402
Paso 3. Refracción:						
Ref_0	0,0423	0,2256	0,0251	0,0338	0,1798	0,0142
f	1,0184	1,0184	1,0184	1,0184	1,0184	1,0184
Ref = f Ref_0	0,0431	0,2298	0,0256	0,0344	0,1831	0,0144
Paso 4. Paralaje horizontal:			(54',4)	(54',4)	(0',2)	
Ph	0,0024	0,0024	0,9067	0,9067	0,0033	–
Paralaje de altura:						
Pa = Ph cos Aap	0,0022	0,0024	0,7570	0,8146	0,0033	–
Paso 5. Semidiámetro:						
S/D Sol = 16,1/60	0,2683	0,2683	–	–	–	–
S/D Luna = 0,2724 Ph	–	–	0,2470	0,2470	–	–
Paso 6. Altura verdadera:						
Av = Aap – Ref + Pa ± S/D	21,4877	2,7729	34,3703	26,5768	4,2955	49,5258

Nótese que para la Luna, se ha omitido la corrección por achatamiento terrestre de –0°,0017 cos *Aap*, que equivale a –0°,0014 para el limbo inferior y a –0°,0015 para el limbo superior.

7. Posición con azimut e intercepto usando la carta. Se debe determinar la posición al momento de la observación, mediante navegación por estima desde el último punto observado. Por ejemplo, si el rumbo estimado (*Re*) y la velocidad estimada (*Ve*) del observador se mantienen constantes, entonces la longitud estimada (*Ge*) y la latitud estimada (*Le*) al momento de la observación, se calcula:

$$Le = Lo + t(Ve/60) \cos Re$$
$$Ge = Go + t(Ve/60) \operatorname{sen} Re / \cos Lo$$

donde *Lo* y *Go* corresponden a la latitud y longitud del último punto observado (*Po*) respectivamente, y *t* es el lapso en horas transcurrido entre dicho *Po* y el momento de la observación (si el momento de la observación es anterior al *Po*, *t* es negativo).

La recta de altura de una observación se plotea en la carta utilizando el intercepto ($I = Av - Ac$) y el *Azv*, con origen en el punto estimado (*Pe*, con *Le* y *Ge*) al momento de la observación, donde *Ac* y *Azv* se calculan mediante cualquiera de los métodos descritos en los párrafos 5a y 5b, precedentes. Partiendo de esa *Pe*, se dibuja en la carta una línea en la dirección del *Azv* al astro. Se convierte *I* en millas náuticas, multiplicándolo por 60. La recta de altura se dibuja en ángulo recto respecto de la línea de azimut, a una distancia *I* desde el *Pe*, hacia el astro si *I* es positivo, y en sentido opuesto si es negativo. Si no hay errores gruesos en los datos o cálculos, el navegante debería encontrarse en algún lugar sobre o muy cerca de la recta de altura, al momento de efectuar la observación. Se requieren dos o más rectas de altura para determinar un punto observado (*Po*).

8. Posición con azimut e intercepto usando la calculadora. Se puede calcular un punto observado (*Po*) con dos o más observaciones con sextante, como se indica:

Si I_1, Azv_1, son el intercepto y azimut de la primera observación, I_2, Azv_2, los de la segunda observación y así sucesivamente, haga las sumatorias:

$$\begin{aligned} A &= \cos^2 Azv_1 + \cos^2 Azv_2 + \ldots \\ B &= \cos Azv_1 \operatorname{sen} Azv_1 + \cos Azv_2 \operatorname{sen} Azv_2 + \ldots \\ C &= \operatorname{sen}^2 Azv_1 + \operatorname{sen}^2 Azv_2 + \ldots \\ D &= I_1 \cos Azv_1 + I_2 \cos Azv_2 + \ldots \\ E &= I_1 \operatorname{sen} Azv_1 + I_2 \operatorname{sen} Azv_2 + \ldots \end{aligned}$$

donde el número de términos de cada sumatoria es igual al número de observaciones efectuadas con sextante.

Al hacer $G = AC - B^2$, se puede obtener un mejoramiento de la posición estimada al momento de la observación (*Lm, Gm*) mediante:

$$\begin{aligned} Lm &= Le + (CD - BE)/G \\ Gm &= Ge + (AE - BD)/(G \cos Le) \end{aligned}$$

Calcule la distancia *d* entre la posición estimada inicial al momento de la observación (*Le, Ge*), y la posición mejorada (*Lm, Gm*) en millas náuticas mediante:

$$d = 60 \sqrt{((Gm - Ge)^2 \cos^2 Le + (Lm - Le)^2)}$$

Si *d* excede de unas 20 millas náuticas, utilice *Le* = *Lm, Ge* = *Gm* y repita los cálculos hasta que *d*, la distancia entre la estima previa y la estima mejorada, sea menor que unas 20 millas náuticas.

9. Ejemplo de cálculo directo. Usando el método descrito anteriormente, calcule la posición de un buque a las $21^h\ 00^m\ 00^s$ UT del 4 de julio de 2022, habiéndose observado las siguientes *Av* de tres estrellas (corregido *Ei, Dip y Ref)*: *Regulus* (Nº 26) 27º,0772 a las $20^h\ 39^m\ 23^s$ UT, *Antares* (Nº 42) 25º,9361 a las $20^h\ 45^m\ 47^s$ UT y *Kochab* (Nº 40) 47º,5563 a las $21^h\ 10^m\ 34^s$ UT. El buque navegaba al *Rv* 325° y a una velocidad constante de 20 nudos durante el período de observación; la *Pe* del buque a las $21^h\ 00^m\ 00^s$ UT solamente se conoce al grado entero más cercano (*Le* = 32° N *Ge* = 15° W).

A continuación, se muestran los valores intermedios de la primera iteración. El *AHGr* de Aries se interpoló del valor tabular más cercano en la pág. 132. Para la primera iteración considere *Le* = +32°,0000 y *Ge* = –15°,0000 a las $21^h\ 00^m\ 00^s$ UT.

	Primera iteración		
Estrella	*Regulus*	*Antares*	*Kochab*
Nº	26	42	40
hora observación	$20^h\ 39^m\ 23^s$	$20^h\ 45^m\ 47^s$	$21^h\ 10^m\ 34^s$
Av	27,0772	25,9361	47,5563
factor interpolación	0,6564	0,7631	0,1761
AHGr Aries	232,6798	234,2843	240,4973
AHS (pág. 132)	207,6150	112,3017	137,3200
AHGr	80,2948	346,5860	17,8173
Dec (pág. 132)	+11,8600	– 26,4817	+74,0683
t	– 0,3436	– 0,2369	+0,1761
Lat.	+31,9062	+31,9353	+32,0481
Long.	–14,9225	–14,9466	–15,0397
Azv	267,3563	151,8630	358,8619
Ac	27,0541	25,6303	47,9564
I	+0,0231	+0,3058	– 0,4001

$A = 1{,}7793 \quad B = -0{,}3896 \quad C = 1{,}2207 \quad D = -0{,}6707 \quad E = 0{,}1291 \quad G = 2{,}0202$

$(CD - BE)/G = -0{,}3804$; $(AE - BD) / (G \cos Le) = -0{,}0185$

Una estima mejorada de la posición a las $21^h\ 00^m\ 00^s$ UT es:

$Lm = Le - 0{,}3804 = +31{,}6196$ y $Gm = Ge - 0{,}0185 = -15{,}0185$

Como la distancia entre la posición estimada previa y la posición estimada mejorada $d = 22{,}8$ millas náuticas, considere $Le = +31{,}6196$ y $Ge = -15{,}0185$ y repita los cálculos. A continuación, se muestran los valores intermedios de la segunda iteración. En cada iteración los valores de *Av, AHGr, Dec* y *t* no cambian.

Segunda iteración

Estrella	*Regulus*	*Antares*	*Kochab*
Nº	26	42	40
Le	+31,5258	+31,5549	+31,6677
Ge	–14,9413	–14,9653	–15,0580
Azv	267,5403	151,7596	358,8776
Ac	27,0870	25,9581	47,5763
I	– 0,0098	– 0,0220	– 0,0201

$A = 1{,}7776 \quad B = -0{,}3936 \quad C = 1{,}2224 \quad D = -0{,}0003 \quad E = -0{,}0002 \quad G = 2{,}0181$

$(CD - BE)/G = -0{,}0002$, $(AE - BD)/(G \cos Le) = -0{,}0003$

Una estima mejorada de la posición a las $21^h\ 00^m\ 00^s$ UT es:

$Lm = Le - 0{,}0002 = +31{,}6194$ y $Gm = Ge - 0{,}0003 = -15{,}0188$

La distancia entre la posición estimada previa y la posición estimada mejorada, $d = 0{,}02$ milla náutica, es tan pequeña, que una tercera iteración, no producirá un mejoramiento apreciable de la posición estimada.

HORAS OFICIALES (Corregidas hasta diciembre de 2020)

Los datos astronómicos están expresados en hora universal (UT), la que también se conoce como Hora media Greenwich (HmGr), y corresponde a la hora estándar del meridiano de Greenwich (longitud 0º). Una hora expresada en UT puede ser convertida a hora media local sumando la longitud E o restando la longitud W, cuando la longitud del lugar está expresada en horas; la razón es de 1 hora por cada 15º. Las diferencias entre la hora estándar y la UT aparecen en estas tablas; la hora reloj local puede, sin embargo, diferir de estas horas estándares, especialmente en verano cuando los relojes suelen ser adelantados en una hora.

LISTA I - LUGARES CON HORA ADELANTADA AL UTC
(principalmente aquellos al E de Greenwich)

Las horas indicadas deben ser } *sumadas* al UTC para obtener la Hora Oficial
restadas a la Hora Oficial para obtener el UTC

	h m
Afganistán	04 30
Albania*	01
Alemania*†	01
Amirante, Islas	04
Andaman, Islas	05 30
Archipiélago de Chagos e	
isla Diego García	06
Argelia	01
Angola	01
Armenia	04
Arabia Saudita	03
Australia	
Cocos (Keeling), Islas	06 30
Navidad, Isla, océano Índico	07
Australia occidental	08
Norte y Sur de Australia*	09 30
Territorio Capital *,	
Nueva Gales del Sur*[1], Queensland,	
Tasmania*, Victoria*,	
Whitsunday, Islas	10
Lord Howe, Islas*	10 30
Norfolk, Isla	11
Austria*†	01
Azerbaiyán	04
Bahrein	03
Bangladesh	06
Bielorrusia	03
Bélgica*†	01
Benin	01
Bosnia y Herzegovina*	01
Botswana, República de	02
Brunei	08
Bulgaria*†	02
Birmania (Myanmar)	06 30
Burundi	02
Camboya (Kampuchea)	07
Camerún, República de	01
Centroafricana, República	01
Chad	01
China, República Popular de	08
Chipre†: Ercan*, Larnaca*	02
Comoro, Islas (Comores)	03
Congo, República Democrática del	
Occidental: Kinshasa, Equateur	01
Oriental: Orientale, Kasai, Kivu, Shaba	02
Congo, República del	01
Corea del Norte	09
Corea del Sur, República de	09
Córcega*†	01
Creta*†	02

	h m
Croacia*†	01
Checa, República*†	01
Dinamarca*†	01
Djibouti	03
Egipto, República Árabe de	02
Emiratos Árabes Unidos	04
Eritrea	03
Eslovaquia*†	01
Eslovenia*†	01
España*†	01
Posesiones españolas al N de África*	01
Baleares, Islas*†	01
Estados Unidos de América:	
Is. Palau	09
Is. Admiralty, Guam,	
Is. Mariana	10
Estonia*†	02
Etiopía	03
Fiji*	12
Filipinas, República de	08
Finlandia*†	02
Francia*†	01
Gabón	01
Georgia	04
Gibraltar*	01
Grecia*†	02
Guinea Ecuatorial, República de	01
Bioko	01
Holanda*†	01
Hong Kong	08
Hungría*†	01
India	05 30
Indonesia, República de	
Bangka, Billiton, Java, Kalimantan	
occ. y central, Madura, Sumatra	07
Bali, Flores, Kalimantan sur, norte y	
oriental, Lombok, Sulawesi,	
Sumba, Sumbawa, Timor occidental	08
Aru, Irian Jaya, Kai, Molucas,	
Tanimbar	09
Irak	03
Irán*	03 30
Israel*	02
Italia*†	01
Cerdeña, isla de	01
Japón	09
Jordania*	02
Kazajistán	
Occidental: Aktau, Uralsk, Atyrau	05
Oriental y central: Astana	06

* Estos lugares pueden emplear hora de verano.
† Para las fechas de hora de verano, véase el pie de nota de la lista II.
[1] Excepto el área de Broken Hill*, la cual mantiene $09^h\ 30^m$.

SERVICIO HIDROGRÁFICO Y OCEANOGRÁFICO ARMADA DE CHILE

	h m
Kenia	03
Kerguelen, Islas	05
Kiribati, República de	
Gilbert, Islas	12
Phoenix, Islas [2]	13
Line, Islas [2]	14
Kuwait	03
Kirguistán	06
Laccadive, Islas	05 30
Laos	07
Letonia*†	02
Líbano*	02
Lesoto	02
Libia	02
Liechtenstein*	01
Lituania*†	02
Luxemburgo*†	01
Macao (Portugal)	08
Macedonia*, antigua Yugoslavia	01
Madagascar, República Democrática de	03
Malawi	02
Malasia, Malaya, Sabah, Sarawak	08
Maldivas, República de Las	05
Malta*†	01
Marruecos	01
Marshall, Islas	12
Mauricio	04
Micronesia (Islas Carolina)	10
Pohnpei, Pingelap y Kosrae	11
Moldavia*	02
Mónaco*	01
Mongolia	08
Montenegro*	01
Mozambique	02
Namibia	02
Nauru	12
Nepal	05 45
Nicobar, Islas	05 30
Níger	01
Nigeria, República de	01
Noruega*	01
Jan Mayen, Isla*	01
Novaya Zemlya	03
Nueva Caledonia	11
Nueva Zelanda*	12
Is. Chatham*	12 45
Okinawa	09
Omán	04
Pagalu (Islas Annobon)	01
Pakistán	05
Papúa Nueva Guinea[1]	10
Pescadores, Islas	08
Polonia*†	01
Qatar	03
Reunión	04
Rumania*†	02
Rusia[3]	
Zona 1 Kaliningrado	02
Zona 2 Moscú, San Petersburgo, Arkhangelsk	03
Samara, Astrakhan, Saratov Volgograd	04
Zona 3 Ekaterinburg, Ufa, Perm, Novyy Port	05
Zona 4 Omsk	06
Zona 5 Norilsk, Kranoyarsk, Dikson, Novosibirsk, Tomsk	07
Zona 6 Irkutsk, Bratsk, Ulan-Ude	08
Zona 7 Tiksi, Yakutsk, Chita	09
Zona 8 Vladivostok, Khabarovsk, Okhotsk	10
Zona 9 Severo-Kurilsk, Magadan, isla Sakhalin	11
Zona 10 Petropavlosk-K., Anadyr	12
Ruanda	02
Ryukyu, Islas	09
Salomón, Islas	11
Samoa*	13
Santa Cruz, Islas	11
Schouten, Islas (Nueva Guinea)	09
Serbia*	01
Seychelles	04
Sicilia*†	01
Singapur	08
Siria* (República Árabe)	02
Socotra	03
Somalia, República	03
Spitsbergen, Isla (Arch. Svalbard)* (Noruega)	01
Sri Lanka	05 30
Sudáfrica, República de	02
Sudán del Sur	03
Sudán, República de	02
Suazilandia	02
Suecia*†	01
Suiza*	01
Tailandia	07
Taiwán	08
Tanzania	03
Tayikistán	05
Timor Oriental	09
Tonga, Reino de	13
Túnez	01
Turquía	03
Turkmenistán	05
Tuvalu	12
Ucrania*	02
Uganda	03
Uzbekistán	05
Vanuatu, República de	11
Vietnam, República Socialista de	07
Yemen	03
Zambia, República de	02
Zimbabue	02

* Estos lugares pueden emplear hora de verano.

[1] Excluyendo la Región Autónoma de Bougainville, la cual mantiene 11h.

[2] Las islas Line y Phoenix no forman parte de la República de Kiribati, las cuales mantienen otras zonas horarias.

[3] Los límites entre las zonas son irregulares; se listan las principales repúblicas y ciudades de cada zona.

LISTA II - LUGARES QUE MANTIENEN NORMALMENTE EL UTC

Arch. Tristán de Acuña (R. U.)	Irlanda, República de*†	Malí
Burkina-Faso	Islandia	Mauritania
Costa de Marfil	I. Ascensión (R. U.)	Portugal*†
Gambia	Is. Canal† (de la Mancha)	Príncipe
Ghana	Is. Canarias*† (España)	Santo Tomé
Gran Bretaña†	Is. Feroé* (Dinamarca)	Senegal
Guinea-Bisáu	I. Santa Elena (R. U.)	Sierra Leona
Guinea, República de	Liberia	Togo, República de
Irlanda del Norte†	Madeira*† (Portugal)	

* Estos lugares pueden mantener hora de verano.

† Hora de verano (horario de ahorro de luz diurna), una hora por adelantado del UTC, se mantendrá desde la 01^h del 27 de marzo hasta la 01^h del 30 de octubre de 2022 (Novena Directiva de la Hora de Verano de la Unión Europea). La ratificación por parte de los países miembros no se ha verificado.

LISTA III - LUGARES CON HORA ATRASADA AL UTC (AL W DE GREENWICH)

Las horas indicadas deben ser } *restadas* al UTC para obtener la Hora Oficial
sumadas a la Hora Oficial para obtener el UTC

	h m
Argentina	03
Azores, Islas*†	01
Bahamas*	05
Barbados	04
Belice	06
Bolivia	04
Brasil	
I. Fernando de Noronha, I. Trinidad, Is. Oceanic	02
N y NE estados costeros, Goiás, Brasilia, Minas Gerais, Tocantins, S y E estados costeros,	03
Mato Grosso del Sur, Amazonas[5], Rondonia, Mato Grosso, Roraima,	04
Acre	05
Cabo Verde, Islas	01
Canadá[1] ‡	
Terranova*	03 30
Labrador*, Nueva Brunswick*, Nueva Escocia*, I. Príncipe Eduardo*	04
Nunavut*	
al oriente de 85° W	05
entre 85° W y 102° W	06
al occ. de 102° W	07
Quebec, al oriente de 63º W	04
al occ. de 63º W*	05
Ontario, al oriente de 90º W*	05
al occ. de 90º W*	06
Manitoba*, Saskatchewan	06
Alberta*, Territorios del NW*, Yukón*	07
Columbia Británica*	08
Chile*[4]	04
Arch. de Juan Fernández	04
Is. Diego Ramírez	04
Is. San Félix y San Ambrosio	04
Región de Magallanes y Antártica Chilena	03
I. Salas y Gómez, I. de Pascua (Rapa Nui)	06
Colombia	05

	h m
Costa Rica	06
Cuba*	05
Ecuador	05
Is. Galápagos (Arch. Colón)	06
El Salvador	06
Estados Unidos de América‡	
Connecticut, Delaware, Distrito de Columbia, Florida[2], Georgia, Indiana[2], parte oriental de Kentucky, Maine, Maryland, Massachusetts, Michigan[2], Nueva Hampshire, Nueva Jersey, Nueva York, Carolina del Norte, Ohio, Pensilvania, Rhode Island, Carolina del Sur, parte oriental de Tennessee, Vermont, Washington D.C., Virginia, Virginia del Oeste	05
Alabama, Arkansas, Illinois, Iowa, Kansas[2], parte occ. de Kentucky, Louisiana, Minesota, Misisipi, Misuri, parte oriental de Nebraska, parte oriental de Dakota del Norte, Oklahoma, parte oriental de Dakota del Sur, parte occ. de Tennessee, Texas[2], Wisconsin	06
Arizona[3], Colorado, parte sur de Idaho, Montana, Nuevo México, parte occ. de Dakota del Sur, parte occ. de Dakota del Norte, parte occ. de Nebraska, Utah, Wyoming	07
California, parte norte de Idaho, Nevada, Oregón[2], Washington	08
Alaska,	
Is. Aleutianas, al oriente de 169° 30' W	09
Is. Aleutianas, al occ. de 169° 30' W, Hawai[3], I. Johnston	10
Is. Midway, Is. Samoa	11
Francia (Dependencias):	
Guayana Francesa, Is. San Pedro y Miguelón*	03
Guadalupe, Martinica	04

* Estos lugares pueden emplear hora de verano.

[1] Algunas áreas pueden mantener otra zona horaria.

[2] Una pequeña parte del estado está en otra zona horaria.

[3] Se eximen de mantener la hora de verano, excepto para una parte de Arizona.

	h	m
Polinesia Francesa:		
Is. Marquesas	09	30
Is. Australes (Tubuai)[6], Is. de la Sociedad, Arch. Tuamotu	10	
Granada	04	
Groenlandia (Dinamarca)*		
Danmarkshavn, Mesters Vig	00	
General*	03	
Scoresby Sound*	01	
Thule*, Pituffik*	04	
Guatemala	06	
Guyana, República Cooperativa de	04	
Haití*	05	
Holanda (Dependencias):		
Antillas (Isla Curazao)	04	
Honduras	06	
Jamaica	05	
Leeward, Islas (o de Sotavento)	04	
México		
General*	06	
Quintana Roo	05	
Sonora, Sinaloa*, Nayarit*, Chihuahua*, Distrito Sur de Baja California*	07	
Distrito Norte de Baja California*	08	
Nicaragua	06	
Niue	11	
Panamá, República de	05	
Paraguay*	04	
Perú	05	
Puerto Rico	04	
Reino Unido (Dependencias):		
Is. Georgia del Sur	02	
Is. Falkland o Malvinas	03	
Bermuda*, Is. Vírgenes	04	
Is. Caimán, Islas Turcas y Caicos*	05	
Is. Pitcairn	08	
Is. Cook	10	
República Dominicana	04	
Surinam	03	
Trinidad y Tobago	04	
Uruguay	03	
Venezuela	04	
Windward, Islas (o de Barlovento)	04	

* Estos lugares pueden mantener hora de verano.

‡ Horario de ahorro de luz diurna (verano), durante el 2022 se mantiene una hora adelantada sobre lo señalado por Almanaque, desde el 13 de marzo (segundo domingo) hasta el 6 de noviembre (primer domingo), cambiando, luego, a $02^h\ 00^m$ (hora local).

4 Las fechas del año en que se adelanta o atrasa en 60 minutos la Hora Oficial de Chile Continental y Territorio Chileno Antártico y de Chile Insular Occidental, son establecidas por el Ministerio del Interior y Seguridad Pública, mediante Decreto Supremo. Por lo anterior, el usuario debe consultar en el sitio *www.horaoficial.cl/aviso/index.html*, la corrección que debe aplicar a las horas de las predicciones en el momento que lo requiera.

5 Excepto las ciudades de Eirunepe, Benjamín Constant y Tabatinga que mantienen 05^h.

6 Esta es la hora estándar legal, pero generalmente se usa la hora local.

NOMBRE DE LAS CONSTELACIONES

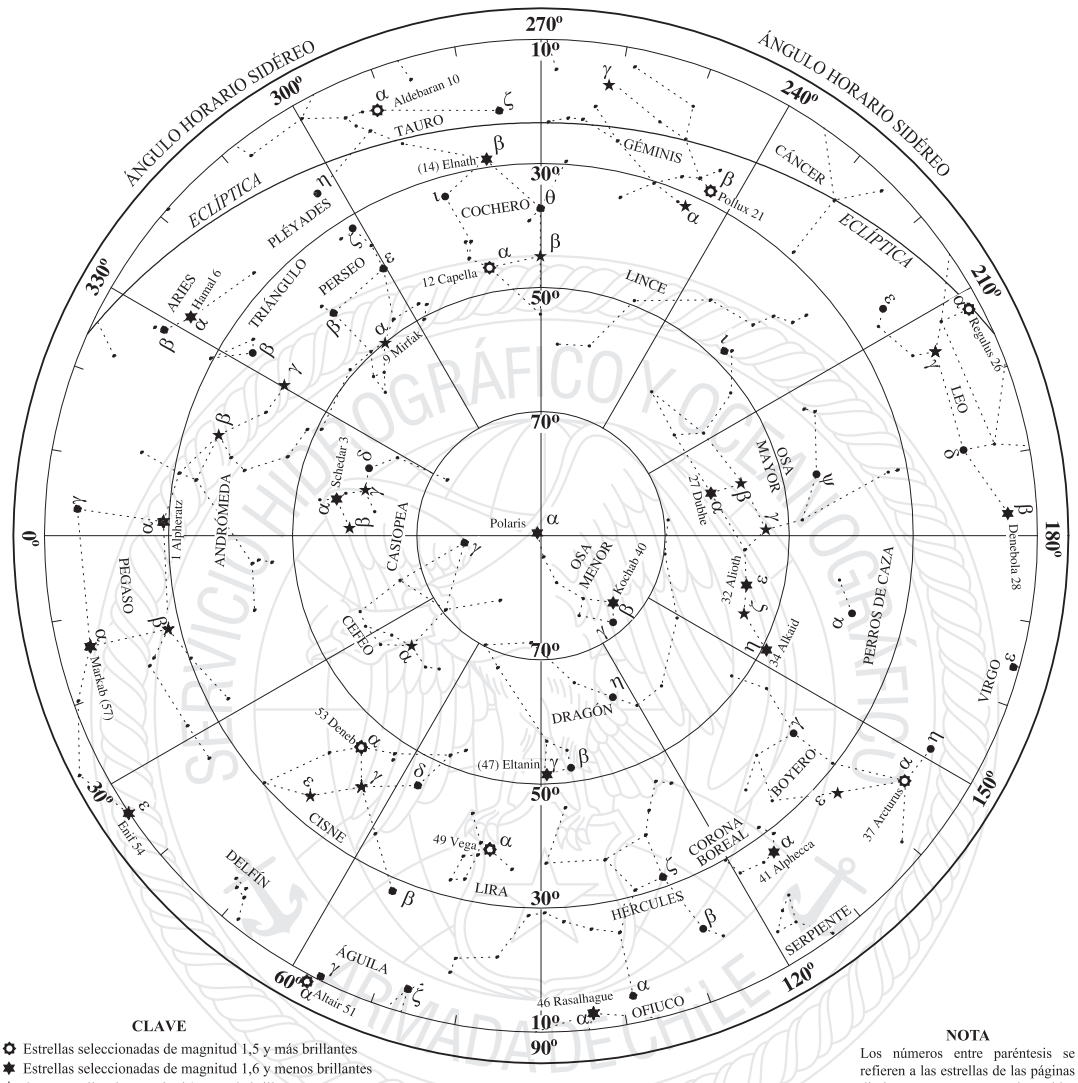
NOMBRE LATINO	NOMBRE COMÚN	NOMBRE LATINO	NOMBRE COMÚN
Andromedae	Andrómeda	*Lacertae* *	Lagarto
Antilae *	Máquina Neumática	*Leonis*	Leo o León
Apodis *	Ave del Paraíso	*Leonis Minoris* *	León Menor
Aquarii	Acuario o Aguador	*Leporis*	Liebre
Aquilae	Águila	*Librae*	Libra o Balanza
Arae	Ara o Altar	*Lupi*	Lobo
Arietis	Aries o Carnero	*Lyncis* *	Lince
Aurigae	Auriga o Cochero	*Lyrae*	Lira
Bootis	Bootes o Boyero	*Mensae* *	Monte de la Tabla
Coelis *	Buril	*Microscopii* *	Microscopio
Cacum Venaticorum	Jirafa	*Monocerotis* *	Unicornio
Camelopardalis *	Cáncer o Cangrejo	*Muscae*	Mosca
Cancri *	Perros de Caza	*Normae* *	Escuadra
Canis Majoris	Can Mayor	*Octantis* *	Octante
Canis Minoris	Can Menor	*Ophiuchi*	Ofiuco o Serpentario
Capricorni	Capricornio o Cabra	*Orionis*	Orión
Carinae	Quilla del Navío Argos	*Pavonis*	Pavón o Pavo Real
Cassiopeiae	Casiopea	*Pegasi*	Pegaso
Centauri	Centauro	*Persei*	Perseo
Cephei	Cefeo	*Phoenicis*	Fénix
Ceti	Ballena	*Pictoris* *	Caballete del Pintor
Circini *	Brújula	*Piscium* *	Piscis o Peces
Columbae	Paloma	*Piscis Austrini*	Pez Austral
Coronae Berenices *	Cabellera de Berenice	*Puppis*	Popa del Navío Argos
Coronae Australis *	Corona Austral	*Pyxidis* *	Brújula del Navío Argos
Coronae Borealis	Corona Boreal	*Reticuli* *	Retícula
Corvi	Cuervo	*Sagittae* *	Flecha
Crateris *	Copa	*Sagittarii*	Sagitario o Arquero
Crucis	Cruz (del Sur)	*Scorpii*	Escorpión
Cygni	Cisne	*Sculptoris* *	Taller del Escultor
Chamaeleonti *	Camaleón	*Scuti* *	Escudo
Delphini *	Delfín	*Serpentis*	Serpiente
Doradûs *	Dorada	*Sextantis* *	Sextante
Draconis	Dragón	*Tauri*	Tauro o Toro
Equulei *	Caballo Menor	*Telescopii* *	Telescopio
Eridani	Eridano	*Trianguli*	Triángulo
Fornacis *	Horno o Aparato Químico	*Trianguli Australis*	Triángulo Austral
Geminorum	Géminis o Gemelos	*Tucanae*	Tucán
Gruis	Grulla	*Ursae Majoris*	Osa Mayor
Herculis	Hércules	*Ursae Minoris*	Osa Menor
Horologii *	Reloj	*Velorum*	Vela del Navío Argos
Hydrae	Hidra Hembra	*Virginis*	Virgo o Virgen
Hydri	Hidra Macho	*Volantis* *	Pez volador
Indi	Indio	*Vulpeculae* *	Zorra

* Estas constelaciones no contienen estrellas seleccionadas para navegación.

SERVICIO HIDROGRÁFICO Y OCEANOGRÁFICO ARMADA DE CHILE

CARTAS ESTELARES

HEMISFERIO NORTE



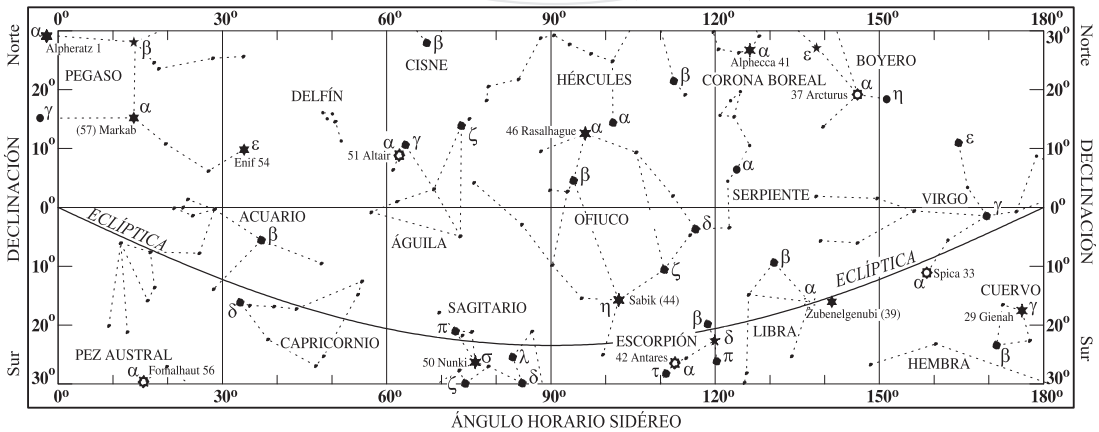
CLAVE

- Estrellas seleccionadas de magnitud 1,5 y más brillantes
- Estrellas seleccionadas de magnitud 1,6 y menos brillantes
- Otras estrellas de magnitud 2,5 y más brillantes
- Otras estrellas de magnitud 2,6 y menos brillantes
- Estrellas no tabuladas

NOTA

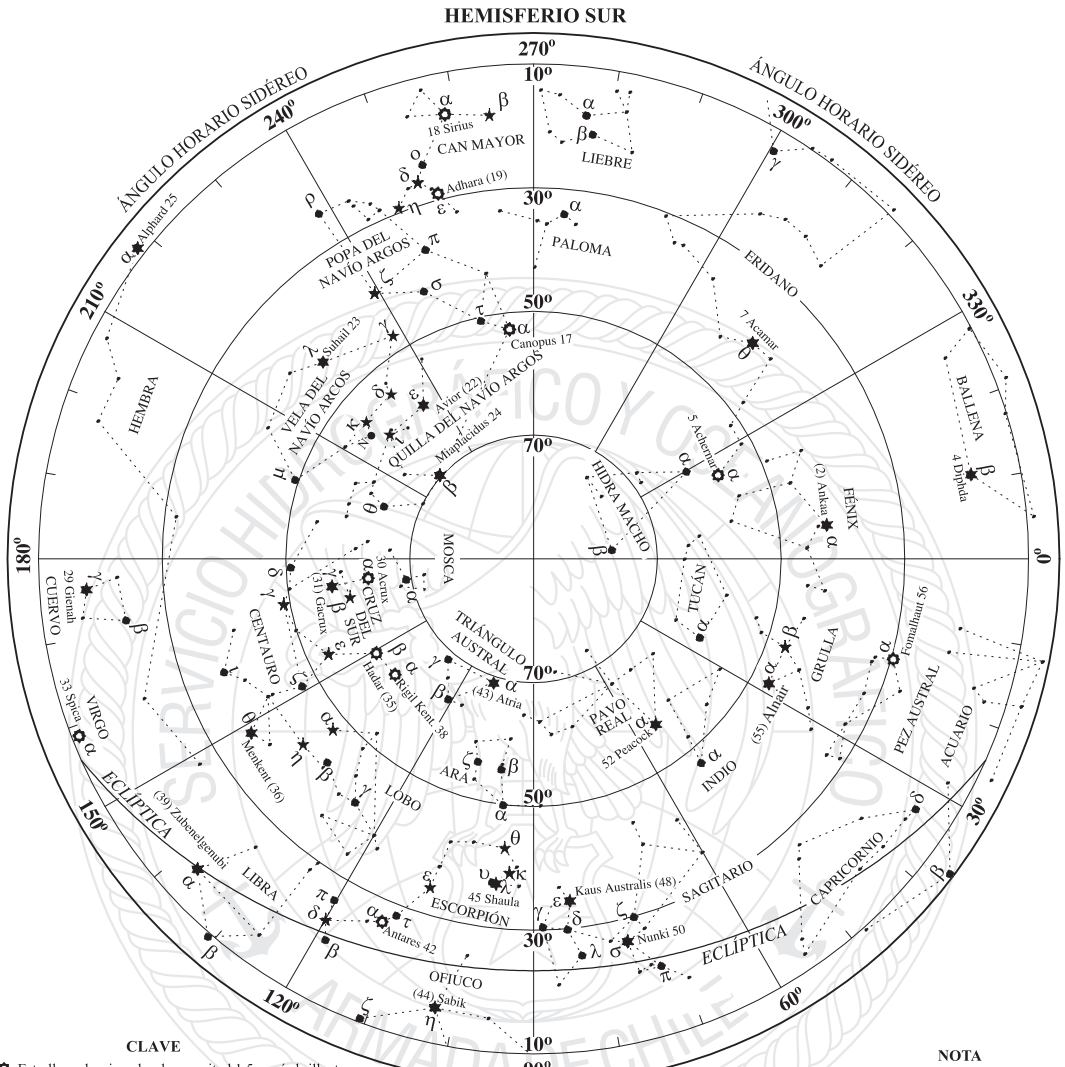
Los números entre paréntesis se refieren a las estrellas de las páginas diarias que no se usan en las Tablas de Reducción de Observaciones H.O. 249, A.P. 3270, N.P. 303.

ESTRELLAS ECUATORIALES (AHS 0° a 180°)



CARTAS ESTELARES

HEMISFERIO SUR



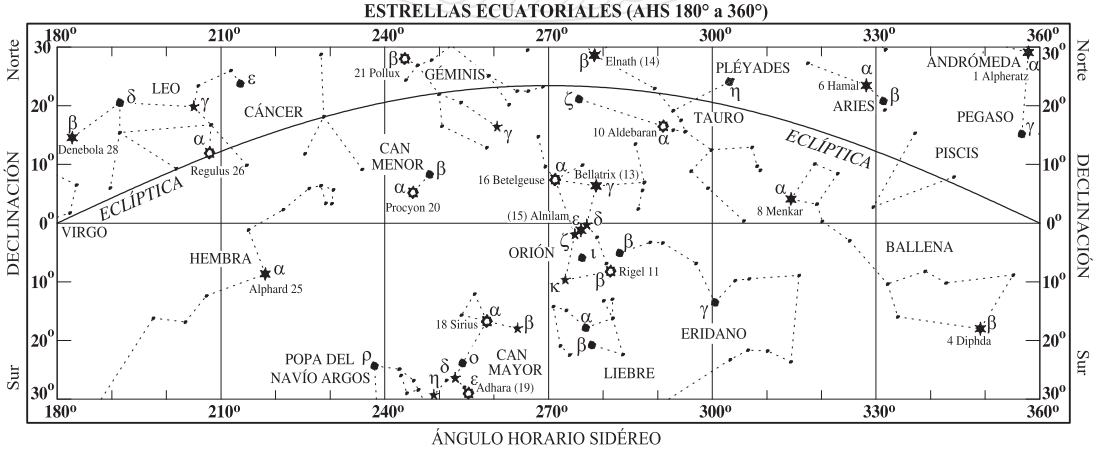
CLAVE

- Estrellas seleccionadas de magnitud 1,5 y más brillantes
- Estrellas seleccionadas de magnitud 1,6 y menos brillantes
- Otras estrellas de magnitud 2,5 y más brillantes
- Otras estrellas de magnitud 2,6 y menos brillantes
- Estrellas no tabuladas

NOTA

Los números entre paréntesis se refieren a las estrellas de las páginas diarias que no se usan en las Tablas de Reducción de Observaciones H.O. 249, A.P. 3270, N.P. 303.

ESTRELLAS ECUATORIALES (AHS 180° a 360°)



Mag.	Nombre y Número		AHS							Declinación						
				ENE.	FEB.	MAR.	ABR.	MAY.	JUN.		ENE.	FEB.	MAR.	ABR.	MAY.	JUN.
			°	′	′	′	′	′	′	°	′	′	′	′	′	′
3·2	γ Cephei		**4**	57·2	57·7	57·9	57·7	57·1	56·2	**N 77**	45·5	45·4	45·3	45·1	45·0	45·0
2·5	α Pegasi	57	**13**	32·5	32·6	32·5	32·4	32·2	32·0	**N 15**	19·4	19·3	19·3	19·2	19·3	19·4
2·4	β Pegasi		**13**	47·8	47·8	47·8	47·7	47·5	47·2	**N 28**	12·1	12·1	12·0	11·9	11·9	12·0
1·2	α Piscis Aust.	56	**15**	17·5	17·5	17·4	17·3	17·1	16·8	**S 29**	30·6	30·5	30·5	30·3	30·2	30·1
2·1	β Gruis		**19**	00·9	00·9	00·8	00·7	00·4	00·1	**S 46**	46·5	46·4	46·2	46·1	46·0	45·9
2·9	α Tucanæ		**24**	60·8	60·8	60·7	60·4	60·0	59·6	**S 60**	09·3	09·1	09·0	08·8	08·7	08·7
1·7	α Gruis	55	**27**	36·4	36·4	36·3	36·1	35·8	35·4	**S 46**	51·5	51·4	51·3	51·2	51·0	51·0
2·9	δ Capricorni		**32**	56·7	56·6	56·5	56·4	56·1	55·9	**S 16**	01·8	01·8	01·8	01·7	01·6	01·5
2·4	ε Pegasi	54	**33**	41·5	41·4	41·4	41·2	41·0	40·7	**N 9**	58·5	58·4	58·4	58·4	58·4	58·5
2·9	β Aquarii		**36**	49·7	49·7	49·6	49·4	49·2	48·9	**S 5**	28·6	28·6	28·6	28·6	28·5	28·4
2·4	α Cephei		**40**	14·3	14·3	14·2	13·9	13·5	13·1	**N 62**	40·8	40·6	40·5	40·4	40·4	40·5
2·5	ε Cygni		**48**	14·0	14·0	13·8	13·6	13·4	13·1	**N 34**	03·1	03·0	02·9	02·9	02·9	03·1
1·3	α Cygni	53	**49**	27·9	27·8	27·7	27·4	27·2	26·9	**N 45**	21·5	21·4	21·3	21·2	21·3	21·4
3·1	α Indi		**50**	14·1	14·0	13·8	13·5	13·2	12·8	**S 47**	13·0	12·9	12·8	12·7	12·7	12·6
1·9	α Pavonis	52	**53**	10·2	10·0	09·8	09·4	09·0	08·6	**S 56**	40·0	39·8	39·7	39·6	39·6	39·6
2·2	γ Cygni		**54**	15·3	15·2	15·1	14·8	14·6	14·3	**N 40**	19·6	19·4	19·3	19·3	19·4	19·5
0·8	α Aquilæ	51	**62**	02·7	02·6	02·4	02·2	02·0	01·7	**N 8**	55·5	55·4	55·4	55·4	55·5	55·6
2·7	γ Aquilæ		**63**	10·9	10·8	10·7	10·4	10·2	10·0	**N 10**	39·9	39·9	39·8	39·8	39·9	40·0
2·9	δ Cygni		**63**	35·7	35·6	35·4	35·1	34·8	34·6	**N 45**	11·0	10·8	10·7	10·7	10·8	10·9
3·1	β Cygni		**67**	06·4	06·3	06·1	05·9	05·6	05·4	**N 28**	00·3	00·2	00·1	00·1	00·2	00·3
2·9	π Sagittarii		**72**	14·5	14·3	14·1	13·9	13·6	13·4	**S 20**	59·3	59·3	59·3	59·3	59·3	59·2
3·0	ζ Aquilæ		**73**	24·2	24·1	23·9	23·6	23·4	23·2	**N 13**	53·7	53·6	53·6	53·6	53·6	53·7
2·6	ζ Sagittarii		**73**	60·5	60·3	60·0	59·8	59·5	59·3	**S 29**	50·9	50·9	50·9	50·8	50·8	50·8
2·0	σ Sagittarii	50	**75**	51·2	51·0	50·8	50·5	50·3	50·0	**S 26**	16·2	16·2	16·1	16·1	16·1	16·1
0·0	α Lyræ	49	**80**	35·3	35·1	34·9	34·6	34·4	34·2	**N 38**	48·1	48·0	47·9	47·9	48·0	48·2
2·8	λ Sagittarii		**82**	40·7	40·5	40·2	40·0	39·7	39·5	**S 25**	24·5	24·5	24·5	24·5	24·5	24·5
1·9	ε Sagittarii	48	**83**	36·2	35·9	35·7	35·4	35·1	34·9	**S 34**	22·4	22·4	22·4	22·4	22·4	22·4
2·7	δ Sagittarii		**84**	24·6	24·4	24·1	23·8	23·6	23·4	**S 29**	49·1	49·1	49·1	49·1	49·1	49·1
3·0	γ Sagittarii		**88**	12·3	12·0	11·8	11·5	11·3	11·1	**S 30**	25·4	25·4	25·4	25·4	25·4	25·4
2·2	γ Draconis	47	**90**	43·8	43·6	43·3	43·0	42·8	42·6	**N 51**	29·0	28·9	28·8	28·8	28·9	29·1
2·8	β Ophiuchi		**93**	52·1	51·9	51·7	51·4	51·3	51·1	**N 4**	33·4	33·4	33·3	33·3	33·4	33·5
2·4	κ Scorpii		**93**	60·5	60·2	59·9	59·6	59·4	59·2	**S 39**	02·4	02·3	02·3	02·4	02·4	02·4
1·9	θ Scorpii		**95**	17·1	16·9	16·6	16·3	16·0	15·8	**S 43**	00·6	00·5	00·5	00·6	00·6	00·7
2·1	α Ophiuchi	46	**96**	01·1	00·9	00·7	00·5	00·3	00·2	**N 12**	32·6	32·5	32·4	32·5	32·5	32·6
1·6	λ Scorpii	45	**96**	14·1	13·8	13·5	13·2	13·0	12·8	**S 37**	07·1	07·1	07·1	07·1	07·1	07·2
3·0	α Aræ		**96**	37·6	37·3	36·9	36·6	36·3	36·1	**S 49**	53·4	53·4	53·4	53·4	53·5	53·6
2·7	υ Scorpii		**96**	56·7	56·4	56·2	55·9	55·6	55·5	**S 37**	18·7	18·7	18·7	18·7	18·7	18·8
2·8	β Draconis		**97**	16·6	16·3	16·0	15·7	15·5	15·4	**N 52**	16·9	16·8	16·7	16·8	16·9	17·1
2·8	β Aræ		**98**	13·8	13·5	13·1	12·7	12·4	12·2	**S 55**	32·8	32·8	32·8	32·8	32·9	33·0
Var.‡	α Herculis		**101**	05·7	05·5	05·2	05·0	04·9	04·7	**N 14**	21·8	21·7	21·7	21·7	21·8	21·9
2·4	η Ophiuchi	44	**102**	05·9	05·6	05·4	05·2	05·0	04·9	**S 15**	45·1	45·1	45·2	45·2	45·2	45·1
3·1	ζ Aræ		**104**	54·1	53·7	53·3	53·0	52·7	52·5	**S 56**	01·2	01·2	01·2	01·3	01·4	01·5
2·3	ε Scorpii		**107**	06·7	06·4	06·1	05·9	05·7	05·6	**S 34**	19·8	19·9	19·9	19·9	20·0	20·0
1·9	α Triang. Aust.	43	**107**	16·0	15·4	14·8	14·3	13·9	13·6	**S 69**	03·8	03·7	03·7	03·8	03·9	04·1
2·8	ζ Herculis		**109**	28·7	28·4	28·2	28·0	27·8	27·8	**N 31**	33·6	33·5	33·5	33·5	33·6	33·8
2·6	ζ Ophiuchi		**110**	24·9	24·6	24·4	24·2	24·0	23·9	**S 10**	36·7	36·7	36·8	36·8	36·8	36·7
2·8	τ Scorpii		**110**	41·7	41·4	41·2	40·9	40·8	40·6	**S 28**	15·6	15·6	15·6	15·7	15·7	15·7
2·8	β Herculis		**112**	12·9	12·7	12·4	12·2	12·1	12·0	**N 21**	26·4	26·3	26·3	26·3	26·4	26·5
1·0	α Scorpii	42	**112**	19·1	18·8	18·6	18·4	18·2	18·1	**S 26**	28·7	28·8	28·8	28·8	28·9	28·9
2·7	η Draconis		**113**	56·1	55·7	55·3	55·0	54·8	54·8	**N 61**	27·6	27·5	27·5	27·6	27·7	27·9
2·7	δ Ophiuchi		**116**	07·9	07·7	07·4	07·2	07·1	07·0	**S 3**	45·0	45·1	45·2	45·2	45·1	45·1
2·6	β Scorpii		**118**	19·6	19·4	19·2	19·0	18·8	18·7	**S 19**	51·8	51·9	51·9	52·0	52·0	52·0
2·3	δ Scorpii		**119**	35·9	35·6	35·4	35·2	35·0	34·9	**S 22**	40·9	41·0	41·1	41·1	41·1	41·1
2·9	π Scorpii		**119**	57·7	57·4	57·1	56·9	56·8	56·7	**S 26**	10·5	10·6	10·6	10·7	10·7	10·7
2·8	β Trianguli Aust.		**120**	44·3	43·8	43·4	43·0	42·7	42·6	**S 63**	29·6	29·6	29·6	29·8	29·9	30·0
2·6	α Serpentis		**123**	40·1	39·8	39·6	39·4	39·3	39·3	**N 6**	21·4	21·3	21·2	21·2	21·3	21·4
2·8	γ Lupi		**125**	51·3	51·0	50·7	50·5	50·3	50·3	**S 41**	14·2	14·2	14·3	14·4	14·5	14·6
2·2	α Coronæ Bor.	41	**126**	06·0	05·8	05·5	05·4	05·3	05·2	**N 26**	38·3	38·2	38·2	38·3	38·4	38·5

‡ 2·9 — 3·6

Mag.	Nombre y Número		AHS							Declinación						
				JUL.	AGO.	SEP.	OCT.	NOV.	DIC.		JUL.	AGO.	SEP.	OCT.	NOV.	DIC.
			°	′	′	′	′	′	′	°	′	′	′	′	′	′
3·2	*Errai*		**4**	55·5	54·9	54·7	54·8	55·3	55·9	**N 77**	45·1	45·3	45·5	45·7	45·8	45·9
2·5	*Markab*	57	**13**	31·7	31·6	31·5	31·5	31·6	31·7	**N 15**	19·5	19·6	19·7	19·8	19·8	19·8
2·4	*Scheat*		**13**	47·0	46·8	46·7	46·7	46·8	46·9	**N 28**	12·1	12·3	12·4	12·5	12·5	12·5
1·2	*Fomalhaut*	56	**15**	16·5	16·4	16·3	16·3	16·4	16·5	**S 29**	30·1	30·1	30·1	30·2	30·2	30·3
2·1	*Tiaki*		**18**	59·8	59·5	59·5	59·5	59·6	59·8	**S 46**	45·8	45·9	46·0	46·1	46·2	46·2
2·9	α Tucanæ		**24**	59·2	59·0	58·9	59·0	59·2	59·5	**S 60**	08·7	08·7	08·9	09·0	09·0	09·0
1·7	*Alnair*	55	**27**	35·1	34·9	34·9	35·0	35·1	35·3	**S 46**	51·0	51·0	51·1	51·2	51·3	51·3
2·9	*Deneb Algedi*		**32**	55·7	55·5	55·5	55·6	55·7	55·8	**S 16**	01·5	01·4	01·4	01·5	01·5	01·5
2·4	*Enif*	54	**33**	40·5	40·4	40·4	40·5	40·6	40·6	**N 9**	58·7	58·8	58·8	58·9	58·9	58·8
2·9	*Sadalsuud*		**36**	48·7	48·6	48·6	48·7	48·8	48·9	**S 5**	28·3	28·3	28·2	28·2	28·3	28·3
2·4	*Alderamin*		**40**	12·8	12·8	12·9	13·1	13·5	13·8	**N 62**	40·7	40·8	41·0	41·1	41·2	41·1
2·5	*Aljanah*		**48**	12·9	12·9	12·9	13·1	13·2	13·3	**N 34**	03·2	03·3	03·5	03·5	03·5	03·5
1·3	*Deneb*	53	**49**	26·7	26·7	26·8	26·9	27·1	27·3	**N 45**	21·5	21·7	21·8	21·9	21·9	21·9
3·1	α Indi		**50**	12·6	12·5	12·5	12·7	12·8	12·9	**S 47**	12·7	12·8	12·8	12·9	12·9	12·9
1·9	*Peacock*	52	**53**	08·4	08·3	08·3	08·5	08·8	08·9	**S 56**	39·7	39·8	39·9	39·9	39·9	39·9
2·2	*Sadr*		**54**	14·2	14·2	14·3	14·4	14·6	14·7	**N 40**	19·7	19·8	19·9	20·0	20·0	19·9
0·8	*Altair*	51	**62**	01·6	01·6	01·6	01·8	01·9	01·9	**N 8**	55·7	55·8	55·8	55·8	55·8	55·7
2·7	γ Aquilæ		**63**	09·9	09·8	09·9	10·0	10·2	10·2	**N 10**	40·1	40·2	40·2	40·3	40·2	40·2
2·9	*Fawaris*		**63**	34·5	34·5	34·7	34·9	35·1	35·2	**N 45**	11·1	11·3	11·4	11·4	11·4	11·3
3·1	*Albireo*		**67**	05·3	05·3	05·4	05·6	05·7	05·8	**N 28**	00·4	00·5	00·6	00·6	00·6	00·5
2·9	*Albaldah*		**72**	13·3	13·3	13·4	13·5	13·6	13·6	**S 20**	59·2	59·2	59·2	59·3	59·3	59·3
3·0	ζ Aquilæ		**73**	23·1	23·1	23·2	23·4	23·5	23·5	**N 13**	53·9	53·9	54·0	54·0	54·0	53·9
2·6	*Ascella*		**73**	59·2	59·2	59·3	59·4	59·5	59·5	**S 29**	50·8	50·9	50·9	50·9	50·9	50·9
2·0	*Nunki*	50	**75**	49·9	49·9	50·0	50·1	50·2	50·3	**S 26**	16·1	16·1	16·1	16·1	16·1	16·1
0·0	*Vega*	49	**80**	34·2	34·2	34·4	34·6	34·7	34·8	**N 38**	48·3	48·5	48·5	48·5	48·5	48·3
2·8	*Kaus Borealis*		**82**	39·4	39·5	39·6	39·7	39·8	39·8	**S 25**	24·5	24·5	24·6	24·6	24·6	24·6
1·9	*Kaus Australis*	48	**83**	34·8	34·8	35·0	35·1	35·2	35·2	**S 34**	22·4	22·5	22·5	22·5	22·5	22·4
2·7	*Kaus Media*		**84**	23·3	23·3	23·4	23·6	23·7	23·7	**S 29**	49·1	49·1	49·1	49·1	49·1	49·1
3·0	*Alnasl*		**88**	11·0	11·0	11·2	11·3	11·4	11·4	**S 30**	25·4	25·4	25·5	25·5	25·4	25·4
2·2	*Eltanin*	47	**90**	42·6	42·8	43·0	43·3	43·5	43·5	**N 51**	29·3	29·4	29·4	29·4	29·3	29·1
2·8	*Cebalrai*		**93**	51·1	51·1	51·2	51·4	51·4	51·4	**N 4**	33·5	33·6	33·6	33·6	33·6	33·5
2·4	κ Scorpii		**93**	59·1	59·2	59·3	59·5	59·6	59·5	**S 39**	02·5	02·5	02·6	02·6	02·5	02·5
1·9	*Sargas*		**95**	15·8	15·8	16·0	16·1	16·2	16·2	**S 43**	00·7	00·8	00·8	00·8	00·7	00·7
2·1	*Rasalhague*	46	**96**	00·1	00·2	00·3	00·4	00·5	00·5	**N 12**	32·7	32·8	32·8	32·8	32·7	32·6
1·6	*Shaula*	45	**96**	12·8	12·8	13·0	13·1	13·2	13·1	**S 37**	07·2	07·3	07·3	07·3	07·2	07·2
3·0	α Araæ		**96**	36·0	36·1	36·3	36·5	36·6	36·5	**S 49**	53·7	53·7	53·8	53·7	53·7	53·6
2·7	*Lesath*		**96**	55·4	55·5	55·6	55·8	55·8	55·8	**S 37**	18·8	18·9	18·9	18·9	18·8	18·8
2·8	*Rastaban*		**97**	15·4	15·6	15·9	16·1	16·3	16·3	**N 52**	17·2	17·3	17·3	17·3	17·2	17·0
2·8	β Araæ		**98**	12·1	12·2	12·5	12·7	12·8	12·7	**S 55**	33·1	33·2	33·2	33·2	33·1	33·0
Var.‡	*Rasalgethi*		**101**	04·7	04·8	04·9	05·0	05·1	05·1	**N 14**	22·0	22·0	22·1	22·0	22·0	21·9
2·4	*Sabik*	44	**102**	04·8	04·9	05·0	05·1	05·2	05·1	**S 15**	45·1	45·1	45·1	45·1	45·1	45·1
3·1	ζ Araæ		**104**	52·5	52·6	52·8	53·0	53·1	53·0	**S 56**	01·6	01·7	01·7	01·6	01·5	01·5
2·3	*Larawag*		**107**	05·5	05·6	05·8	05·9	05·9	05·8	**S 34**	20·1	20·1	20·1	20·1	20·0	20·0
1·9	*Atria*	43	**107**	13·7	13·9	14·3	14·6	14·8	14·7	**S 69**	04·2	04·3	04·3	04·2	04·1	04·0
2·8	ζ Herculis		**109**	27·8	27·9	28·0	28·2	28·3	28·2	**N 31**	33·9	33·9	33·9	33·9	33·8	33·6
2·6	ζ Ophiuchi		**110**	23·9	24·0	24·1	24·2	24·2	24·2	**S 10**	36·7	36·7	36·7	36·7	36·7	36·7
2·8	*Paikauhale*		**110**	40·6	40·7	40·8	40·9	41·0	40·9	**S 28**	15·8	15·8	15·8	15·8	15·7	15·7
2·8	*Kornephoros*		**112**	12·0	12·1	12·3	12·4	12·4	12·4	**N 21**	26·6	26·6	26·6	26·6	26·5	26·4
1·0	*Antares*	42	**112**	18·1	18·1	18·3	18·4	18·4	18·3	**S 26**	28·9	28·9	28·9	28·9	28·9	28·9
2·7	*Athebyne*		**113**	55·0	55·2	55·6	55·9	56·1	56·1	**N 61**	28·0	28·1	28·0	28·0	27·8	27·6
2·7	*Yed Prior*		**116**	07·0	07·1	07·2	07·3	07·3	07·2	**S 3**	45·1	45·0	45·0	45·0	45·1	45·1
2·6	*Acrab*		**118**	18·7	18·8	18·9	19·0	19·0	18·9	**S 19**	52·0	52·0	52·0	52·0	52·0	52·0
2·3	*Dschubba*		**119**	34·9	35·0	35·2	35·3	35·3	35·1	**S 22**	41·1	41·1	41·1	41·1	41·1	41·1
2·9	*Fang*		**119**	56·7	56·8	56·9	57·0	57·0	56·9	**S 26**	10·7	10·7	10·7	10·7	10·7	10·7
2·8	β Trianguli Aust.		**120**	42·7	43·0	43·3	43·5	43·5	43·3	**S 63**	30·1	30·2	30·2	30·1	30·0	29·9
2·6	*Unukalhai*		**123**	39·3	39·4	39·5	39·6	39·6	39·5	**N 6**	21·4	21·4	21·4	21·4	21·3	21·2
2·8	γ Lupi		**125**	50·3	50·4	50·6	50·7	50·7	50·5	**S 41**	14·6	14·6	14·6	14·5	14·5	14·4
2·2	*Alphecca*	41	**126**	05·3	05·4	05·5	05·6	05·6	05·5	**N 26**	38·5	38·6	38·6	38·5	38·4	38·2

‡ 2·9 — 3·6

Mag.	Nombre y Número		AHS							Declinación							
				ENE.	FEB.	MAR.	ABR.	MAY.	JUN.		ENE.	FEB.	MAR.	ABR.	MAY.	JUN.
			°	′	′	′	′	′	′	°	′	′	′	′	′	′
2·9	γ Trianguli Aust.		**129**	45·9	45·4	44·8	44·4	44·2	44·2	**S 68**	45·3	45·3	45·4	45·5	45·7	45·8
3·1	γ Ursæ Minoris		**129**	49·7	49·1	48·6	48·2	48·1	48·3	**N 71**	45·0	45·0	45·0	45·1	45·3	45·4
2·6	β Libræ		**130**	27·4	27·2	27·0	26·8	26·7	26·7	**S 9**	27·8	27·9	27·9	27·9	27·9	27·9
2·7	β Lupi		**134**	60·7	60·4	60·1	59·9	59·8	59·8	**S 43**	13·1	13·2	13·2	13·4	13·4	13·5
2·8	α Libræ	39	**136**	58·8	58·6	58·4	58·2	58·1	58·1	**S 16**	07·9	08·0	08·0	08·1	08·1	08·1
2·1	β Ursæ Minoris	40	**137**	20·3	19·6	19·1	18·7	18·6	18·9	**N 74**	03·6	03·6	03·6	03·7	03·9	04·0
2·4	ε Bootis		**138**	31·0	30·8	30·6	30·4	30·4	30·4	**N 26**	58·8	58·7	58·7	58·8	58·9	59·0
2·3	α Lupi		**139**	09·4	09·1	08·8	08·6	08·5	08·5	**S 47**	28·7	28·7	28·8	29·0	29·1	29·2
−0·3	α Centauri	38	**139**	43·8	43·4	43·0	42·8	42·7	42·7	**S 60**	55·2	55·3	55·4	55·5	55·7	55·8
2·3	η Centauri		**140**	46·7	46·4	46·1	46·0	45·9	45·9	**S 42**	15·0	15·1	15·2	15·3	15·4	15·5
3·0	γ Bootis		**141**	45·8	45·5	45·3	45·1	45·1	45·1	**N 38**	12·5	12·5	12·5	12·6	12·7	12·8
0·0	α Bootis	37	**145**	50·2	50·0	49·8	49·7	49·6	49·6	**N 19**	04·0	03·9	03·9	03·9	04·0	04·1
2·1	θ Centauri	36	**147**	60·5	60·3	60·0	59·9	59·9	59·9	**S 36**	28·4	28·5	28·7	28·8	28·8	28·9
0·6	β Centauri	35	**148**	39·5	39·1	38·8	38·6	38·5	38·6	**S 60**	28·4	28·5	28·6	28·8	28·9	29·0
2·6	ζ Centauri		**150**	46·5	46·2	45·9	45·8	45·7	45·8	**S 47**	23·5	23·6	23·7	23·9	24·0	24·1
2·7	η Bootis		**151**	04·2	03·9	03·8	03·7	03·6	03·7	**N 18**	17·2	17·1	17·1	17·1	17·2	17·3
1·9	η Ursæ Majoris	34	**152**	54·0	53·7	53·5	53·3	53·3	53·4	**N 49**	12·0	11·9	12·0	12·1	12·2	12·4
2·3	ε Centauri		**154**	40·9	40·5	40·3	40·2	40·1	40·2	**S 53**	34·4	34·5	34·6	34·8	34·9	35·0
1·0	α Virginis	33	**158**	24·9	24·6	24·5	24·4	24·4	24·4	**S 11**	16·5	16·6	16·6	16·7	16·7	16·7
2·3	ζ Ursæ Majoris		**158**	47·9	47·6	47·3	47·2	47·2	47·4	**N 54**	48·4	48·4	48·4	48·6	48·7	48·8
2·8	ι Centauri		**159**	32·6	32·3	32·2	32·1	32·1	32·1	**S 36**	49·5	49·6	49·7	49·8	49·9	49·9
2·8	ε Virginis		**164**	11·0	10·8	10·7	10·6	10·6	10·6	**N 10**	50·4	50·3	50·3	50·3	50·4	50·4
2·9	α Canum Venat.		**165**	44·2	44·0	43·8	43·7	43·8	43·9	**N 38**	11·8	11·8	11·8	11·9	12·0	12·1
1·8	ε Ursæ Majoris	32	**166**	15·1	14·7	14·5	14·4	14·5	14·7	**N 55**	50·2	50·2	50·3	50·4	50·5	50·6
1·3	β Crucis		**167**	44·9	44·5	44·3	44·2	44·3	44·4	**S 59**	48·2	48·3	48·5	48·7	48·8	48·9
2·9	γ Virginis		**169**	18·5	18·3	18·1	18·1	18·1	18·1	**S 1**	34·2	34·3	34·3	34·3	34·3	34·3
2·2	γ Centauri		**169**	19·1	18·8	18·6	18·5	18·6	18·7	**S 49**	04·5	04·7	04·8	05·0	05·1	05·1
2·7	α Muscæ		**170**	22·4	21·9	21·7	21·6	21·7	22·0	**S 69**	15·0	15·2	15·3	15·5	15·7	15·8
2·7	β Corvi		**171**	06·9	06·7	06·6	06·5	06·5	06·6	**S 23**	30·9	31·1	31·2	31·3	31·3	31·3
1·6	γ Crucis	31	**171**	54·1	53·8	53·6	53·6	53·7	53·8	**S 57**	13·9	14·0	14·2	14·3	14·5	14·5
1·3	α Crucis	30	**173**	02·5	02·1	01·9	01·9	02·0	02·2	**S 63**	12·9	13·1	13·2	13·4	13·5	13·6
2·6	γ Corvi	29	**175**	46·0	45·8	45·6	45·6	45·7	45·7	**S 17**	39·7	39·8	39·9	40·0	40·0	40·0
2·6	δ Centauri		**177**	37·5	37·2	37·1	37·1	37·1	37·3	**S 50**	50·4	50·6	50·7	50·9	51·0	51·0
2·4	γ Ursæ Majoris		**181**	15·2	14·9	14·7	14·7	14·8	15·0	**N 53**	34·1	34·2	34·3	34·4	34·5	34·5
2·1	β Leonis	28	**182**	27·3	27·1	27·0	27·0	27·0	27·1	**N 14**	26·9	26·8	26·8	26·9	26·9	27·0
2·6	δ Leonis		**191**	10·8	10·6	10·5	10·6	10·6	10·7	**N 20**	24·1	24·1	24·1	24·1	24·2	24·2
3·0	ψ Ursæ Majoris		**192**	16·5	16·2	16·1	16·2	16·3	16·4	**N 44**	22·6	22·6	22·7	22·8	22·9	22·9
1·8	α Ursæ Majoris	27	**193**	43·7	43·3	43·2	43·3	43·5	43·8	**N 61**	37·7	37·8	37·9	38·1	38·1	38·2
2·4	β Ursæ Majoris		**194**	12·4	12·1	12·0	12·1	12·3	12·5	**N 56**	15·7	15·7	15·8	16·0	16·1	16·1
2·7	μ Velorum		**198**	04·1	03·9	03·9	04·0	04·1	04·3	**S 49**	32·0	32·1	32·3	32·4	32·5	32·5
2·8	θ Carinæ		**199**	03·5	03·3	03·3	03·5	03·7	04·0	**S 64**	30·3	30·5	30·7	30·8	30·9	30·9
2·3	γ Leonis		**204**	42·2	42·0	42·0	42·0	42·1	42·2	**N 19**	43·7	43·7	43·7	43·8	43·8	43·8
1·4	α Leonis	26	**207**	36·8	36·6	36·6	36·7	36·8	36·8	**N 11**	51·5	51·5	51·5	51·5	51·5	51·6
3·0	ε Leonis		**213**	13·4	13·3	13·3	13·4	13·5	13·5	**N 23**	40·3	40·3	40·3	40·4	40·4	40·4
3·1	*N* Velorum		**217**	01·3	01·2	01·3	01·5	01·7	02·0	**S 57**	07·7	07·9	08·1	08·2	08·2	08·2
2·0	α Hydræ	25	**217**	49·9	49·8	49·8	49·8	50·0	50·0	**S 8**	45·2	45·3	45·4	45·4	45·4	45·4
2·5	κ Velorum		**219**	17·7	17·6	17·7	17·9	18·2	18·4	**S 55**	06·1	06·3	06·5	06·6	06·6	06·5
2·2	ι Carinæ		**220**	34·4	34·3	34·5	34·7	35·0	35·2	**S 59**	21·9	22·1	22·2	22·3	22·4	22·3
1·7	β Carinæ	24	**221**	37·8	37·8	38·0	38·4	38·8	39·2	**S 69**	48·3	48·5	48·6	48·7	48·8	48·7
2·2	λ Velorum	23	**222**	47·7	47·6	47·7	47·8	48·0	48·1	**S 43**	31·2	31·3	31·5	31·6	31·6	31·5
3·1	ι Ursæ Majoris		**224**	49·2	49·0	49·1	49·2	49·4	49·5	**N 47**	57·2	57·3	57·4	57·4	57·5	57·4
2·0	δ Velorum		**228**	39·9	39·9	40·0	40·3	40·5	40·7	**S 54**	47·3	47·4	47·6	47·7	47·7	47·6
1·9	ε Carinæ	22	**234**	15·0	15·1	15·2	15·5	15·8	16·1	**S 59**	34·7	34·9	35·0	35·1	35·1	35·0
1·8	γ Velorum		**237**	26·5	26·5	26·6	26·8	27·0	27·2	**S 47**	24·0	24·2	24·3	24·4	24·3	24·3
2·8	ρ Puppis		**237**	52·6	52·5	52·6	52·8	52·9	53·0	**S 24**	22·1	22·2	22·3	22·3	22·3	22·2
2·3	ζ Puppis		**238**	54·3	54·3	54·5	54·6	54·8	54·9	**S 40**	03·9	04·0	04·1	04·2	04·2	04·1
1·1	β Geminorum	21	**243**	19·9	19·9	20·0	20·1	20·2	20·2	**N 27**	58·3	58·3	58·4	58·4	58·4	58·4
0·4	α Canis Minoris	20	**244**	53·1	53·0	53·1	53·2	53·3	53·4	**N 5**	10·1	10·0	10·0	10·0	10·0	10·1

Mag.	Nombre y Número		AHS							Declinación						
				JUL.	AGO.	SEP.	OCT.	NOV.	DIC.		JUL.	AGO.	SEP.	OCT.	NOV.	DIC.
			°	′	′	′	′	′	′	°	′	′	′	′	′	′
2·9	γ Trianguli Aust.		**129**	44·3	44·7	45·0	45·3	45·3	45·0	**S 68**	45·9	45·9	45·9	45·8	45·7	45·6
3·1	*Pherkad*		**129**	48·6	49·1	49·7	50·0	50·2	50·1	**N 71**	45·5	45·5	45·4	45·3	45·1	44·9
2·6	*Zubeneschamali*		**130**	26·7	26·8	26·9	27·0	26·9	26·8	**S 9**	27·9	27·9	27·9	27·9	27·9	28·0
2·7	β Lupi		**134**	59·8	60·0	60·1	60·2	60·2	60·0	**S 43**	13·6	13·6	13·5	13·5	13·4	13·4
2·8	*Zubenelgenubi*	39	**136**	58·1	58·2	58·4	58·4	58·4	58·2	**S 16**	08·1	08·1	08·0	08·0	08·0	08·1
2·1	*Kochab*	40	**137**	19·4	19·9	20·5	20·9	21·0	20·7	**N 74**	04·1	04·1	04·0	03·9	03·7	03·5
2·4	*Izar*		**138**	30·4	30·6	30·7	30·8	30·7	30·6	**N 26**	59·0	59·1	59·0	58·9	58·8	58·6
2·3	α Lupi		**139**	08·6	08·7	08·9	09·0	08·9	08·7	**S 47**	29·2	29·2	29·1	29·1	29·0	28·9
−0·3	*Rigil Kent.*	38	**139**	42·9	43·1	43·4	43·5	43·4	43·2	**S 60**	55·8	55·8	55·8	55·7	55·6	55·5
2·3	η Centauri		**140**	45·9	46·1	46·2	46·3	46·2	46·0	**S 42**	15·5	15·5	15·4	15·4	15·3	15·3
3·0	*Seginus*		**141**	45·2	45·3	45·5	45·6	45·5	45·4	**N 38**	12·9	12·9	12·8	12·7	12·5	12·4
0·0	*Arcturus*	37	**145**	49·7	49·8	49·9	50·0	49·9	49·7	**N 19**	04·1	04·1	04·1	04·0	03·9	03·8
2·1	*Menkent*	36	**147**	59·9	60·1	60·2	60·2	60·1	59·9	**S 36**	28·9	28·9	28·8	28·8	28·7	28·7
0·6	*Hadar*	35	**148**	38·8	39·0	39·2	39·3	39·2	38·9	**S 60**	29·1	29·1	29·0	28·9	28·8	28·7
2·6	ζ Centauri		**150**	45·9	46·0	46·2	46·2	46·1	45·9	**S 47**	24·1	24·1	24·0	23·9	23·8	23·8
2·7	*Muphrid*		**151**	03·7	03·8	03·9	03·9	03·9	03·7	**N 18**	17·3	17·3	17·3	17·2	17·1	16·9
1·9	*Alkaid*	34	**152**	53·6	53·8	53·9	54·0	53·9	53·7	**N 49**	12·4	12·4	12·3	12·1	11·9	11·8
2·3	ε Centauri		**154**	40·3	40·5	40·7	40·7	40·6	40·3	**S 53**	35·0	35·0	34·9	34·8	34·7	34·7
1·0	*Spica*	33	**158**	24·4	24·5	24·6	24·6	24·5	24·3	**S 11**	16·7	16·6	16·6	16·6	16·6	16·7
2·3	*Mizar*		**158**	47·6	47·8	47·9	48·0	47·8	47·6	**N 54**	48·8	48·8	48·7	48·5	48·3	48·1
2·8	ι Centauri		**159**	32·2	32·3	32·4	32·4	32·3	32·0	**S 36**	49·9	49·9	49·8	49·8	49·7	49·7
2·8	*Vindemiatrix*		**164**	10·7	10·8	10·8	10·8	10·7	10·5	**N 10**	50·5	50·5	50·5	50·4	50·3	50·2
2·9	*Cor Caroli*		**165**	44·0	44·1	44·2	44·1	44·0	43·8	**N 38**	12·1	12·1	12·0	11·9	11·7	11·5
1·8	*Alioth*	32	**166**	14·9	15·1	15·2	15·2	15·0	14·7	**N 55**	50·6	50·6	50·4	50·3	50·1	49·9
1·3	*Mimosa*		**167**	44·7	44·9	45·0	45·0	44·8	44·4	**S 59**	48·9	48·8	48·7	48·6	48·5	48·5
2·9	*Porrima*		**169**	18·2	18·3	18·3	18·3	18·1	17·9	**S 1**	34·3	34·3	34·2	34·3	34·3	34·4
2·2	*Muhlifain*		**169**	18·8	19·0	19·1	19·0	18·9	18·6	**S 49**	05·1	05·1	05·0	04·9	04·8	04·8
2·7	α Muscæ		**170**	22·3	22·7	22·9	22·9	22·6	22·1	**S 69**	15·8	15·7	15·6	15·5	15·4	15·3
2·7	*Kraz*		**171**	06·7	06·8	06·8	06·8	06·6	06·4	**S 23**	31·3	31·2	31·2	31·1	31·1	31·2
1·6	*Gacrux*	31	**171**	54·0	54·2	54·3	54·3	54·1	53·7	**S 57**	14·5	14·5	14·3	14·2	14·1	14·1
1·3	*Acrux*	30	**173**	02·5	02·7	02·9	02·8	02·6	02·1	**S 63**	13·6	13·6	13·4	13·3	13·2	13·2
2·6	*Gienah*	29	**175**	45·8	45·9	45·9	45·8	45·7	45·4	**S 17**	40·0	39·9	39·9	39·9	39·9	40·0
2·6	δ Centauri		**177**	37·4	37·6	37·7	37·6	37·4	37·0	**S 50**	51·0	50·9	50·8	50·7	50·6	50·7
2·4	*Phecda*		**181**	15·2	15·3	15·3	15·2	15·0	14·7	**N 53**	34·5	34·4	34·3	34·1	34·0	33·8
2·1	*Denebola*	28	**182**	27·2	27·2	27·2	27·2	27·0	26·7	**N 14**	27·0	27·0	26·9	26·9	26·7	26·6
2·6	*Zosma*		**191**	10·8	10·8	10·8	10·7	10·5	10·2	**N 20**	24·2	24·2	24·2	24·1	24·0	23·8
3·0	ψ Ursæ Majoris		**192**	16·5	16·6	16·6	16·4	16·2	15·9	**N 44**	22·9	22·8	22·7	22·5	22·4	22·3
1·8	*Dubhe*	27	**193**	44·0	44·1	44·0	43·8	43·5	43·0	**N 61**	38·1	38·0	37·8	37·7	37·5	37·4
2·4	*Merak*		**194**	12·6	12·7	12·7	12·5	12·2	11·8	**N 56**	16·0	15·9	15·8	15·6	15·5	15·4
2·7	μ Velorum		**198**	04·4	04·5	04·5	04·3	04·1	03·7	**S 49**	32·4	32·3	32·2	32·1	32·1	32·1
2·8	θ Carinæ		**199**	04·3	04·5	04·5	04·3	03·9	03·4	**S 64**	30·9	30·7	30·6	30·5	30·4	30·5
2·3	*Algieba*		**204**	42·2	42·2	42·2	42·0	41·8	41·5	**N 19**	43·8	43·8	43·8	43·7	43·6	43·5
1·4	*Regulus*	26	**207**	36·9	36·9	36·8	36·6	36·4	36·2	**N 11**	51·6	51·6	51·6	51·5	51·4	51·3
3·0	ε Leonis		**213**	13·6	13·5	13·4	13·3	13·0	12·7	**N 23**	40·4	40·4	40·3	40·2	40·1	40·1
3·1	*N* Velorum		**217**	02·1	02·2	02·1	01·8	01·5	01·1	**S 57**	08·1	07·9	07·8	07·7	07·7	07·8
2·0	*Alphard*	25	**217**	50·0	50·0	49·9	49·7	49·5	49·3	**S 8**	45·3	45·2	45·2	45·2	45·3	45·4
2·5	*Markeb*		**219**	18·5	18·6	18·4	18·2	17·8	17·5	**S 55**	06·4	06·3	06·2	06·1	06·1	06·2
2·2	*Aspidiske*		**220**	35·4	35·4	35·3	35·0	34·6	34·3	**S 59**	22·2	22·1	21·9	21·8	21·8	21·9
1·7	*Miaplacidus*	24	**221**	39·5	39·6	39·4	39·0	38·5	38·0	**S 69**	48·6	48·5	48·3	48·2	48·2	48·3
2·2	*Suhail*	23	**222**	48·2	48·2	48·1	47·9	47·6	47·3	**S 43**	31·4	31·3	31·1	31·1	31·1	31·2
3·1	*Talitha*		**224**	49·5	49·4	49·3	49·0	48·6	48·3	**N 47**	57·4	57·3	57·2	57·1	57·0	56·9
2·0	*Alsephina*		**228**	40·8	40·8	40·7	40·4	40·0	39·7	**S 54**	47·5	47·3	47·2	47·1	47·2	47·3
1·9	*Avior*	22	**234**	16·2	16·1	15·9	15·6	15·2	14·9	**S 59**	34·9	34·7	34·6	34·5	34·6	34·7
1·8	γ Velorum		**237**	27·2	27·2	27·0	26·7	26·4	26·2	**S 47**	24·1	24·0	23·9	23·8	23·9	24·0
2·8	*Tureis*		**237**	53·0	52·9	52·7	52·5	52·3	52·0	**S 24**	22·1	22·0	21·9	21·9	22·0	22·1
2·3	*Naos*		**238**	54·9	54·9	54·7	54·5	54·2	53·9	**S 40**	03·9	03·8	03·7	03·7	03·7	03·9
1·1	*Pollux*	21	**243**	20·2	20·1	19·9	19·6	19·3	19·1	**N 27**	58·4	58·3	58·3	58·3	58·2	58·2
0·4	*Procyon*	20	**244**	53·3	53·2	53·0	52·8	52·6	52·3	**N 5**	10·1	10·1	10·2	10·1	10·1	10·0

Mag.	Nombre y Número		AHS							Declinación							
				ENE.	FEB.	MAR.	ABR.	MAY.	JUN.		ENE.	FEB.	MAR.	ABR.	MAY.	JUN.
			°	′	′	′	′	′	′	°	′	′	′	′	′	′
1·6	α Geminorum		**245**	59·8	59·8	59·9	60·0	60·1	60·2	**N 31**	50·3	50·4	50·4	50·4	50·4	50·4
3·3	σ Puppis		**247**	30·7	30·8	30·9	31·1	31·3	31·4	**S 43**	20·8	20·9	21·0	21·0	21·0	20·9
2·9	β Canis Minoris		**247**	54·7	54·7	54·7	54·9	55·0	55·0	**N 8**	14·6	14·6	14·6	14·6	14·6	14·7
2·4	η Canis Majoris		**248**	45·3	45·3	45·4	45·6	45·7	45·8	**S 29**	20·8	20·9	21·0	21·0	21·0	20·9
2·7	π Puppis		**250**	30·9	30·9	31·1	31·3	31·4	31·5	**S 37**	08·2	08·4	08·5	08·5	08·4	08·3
1·8	δ Canis Majoris		**252**	40·5	40·5	40·6	40·8	40·9	40·9	**S 26**	25·7	25·9	25·9	25·9	25·9	25·8
3·0	ο Canis Majoris		**254**	00·6	00·7	00·8	00·9	01·0	01·1	**S 23**	52·0	52·1	52·1	52·1	52·1	52·0
1·5	ε Canis Majoris	19	**255**	07·4	07·4	07·6	07·7	07·9	07·9	**S 29**	00·2	00·3	00·4	00·4	00·3	00·2
2·9	τ Puppis		**257**	22·3	22·4	22·6	22·9	23·1	23·2	**S 50**	38·5	38·6	38·7	38·7	38·6	38·5
−1·5	α Canis Majoris	18	**258**	28·0	28·1	28·2	28·3	28·4	28·5	**S 16**	44·9	44·9	45·0	45·0	44·9	44·8
1·9	γ Geminorum		**260**	15·1	15·1	15·2	15·4	15·5	15·5	**N 16**	22·8	22·8	22·8	22·8	22·8	22·8
−0·7	α Carinæ	17	**263**	52·9	53·1	53·3	53·6	53·8	53·9	**S 52**	42·5	42·7	42·7	42·7	42·6	42·5
2·0	β Canis Majoris		**264**	04·8	04·8	04·9	05·1	05·2	05·2	**S 17**	58·1	58·2	58·2	58·2	58·2	58·1
2·6	θ Aurigæ		**269**	41·5	41·6	41·7	41·8	41·9	41·9	**N 37**	12·8	12·9	12·9	12·9	12·9	12·8
1·9	β Aurigæ		**269**	42·7	42·7	42·9	43·1	43·2	43·1	**N 44**	57·0	57·0	57·1	57·0	57·0	56·9
Var.‡	α Orionis	16	**270**	54·4	54·5	54·6	54·7	54·8	54·7	**N 7**	24·6	24·6	24·6	24·6	24·6	24·6
2·1	κ Orionis		**272**	47·8	47·9	48·0	48·1	48·2	48·2	**S 9**	39·8	39·9	39·9	39·9	39·8	39·7
1·9	ζ Orionis		**274**	31·8	31·9	32·0	32·1	32·2	32·1	**S 1**	56·0	56·0	56·0	56·0	55·9	55·9
2·6	α Columbæ		**274**	53·1	53·2	53·3	53·5	53·6	53·6	**S 34**	03·9	04·0	04·0	04·0	03·9	03·7
3·0	ζ Tauri		**275**	15·5	15·5	15·6	15·8	15·8	15·8	**N 21**	09·3	09·3	09·3	09·3	09·3	09·3
1·7	ε Orionis	15	**275**	39·9	40·0	40·1	40·2	40·3	40·2	**S 1**	11·4	11·4	11·4	11·4	11·4	11·3
2·8	ι Orionis		**275**	52·2	52·3	52·4	52·5	52·6	52·5	**S 5**	53·8	53·9	53·9	53·9	53·8	53·7
2·6	α Leporis		**276**	34·3	34·4	34·5	34·7	34·7	34·7	**S 17**	48·5	48·6	48·6	48·6	48·5	48·4
2·2	δ Orionis		**276**	42·9	43·0	43·1	43·2	43·3	43·2	**S 0**	17·1	17·1	17·1	17·1	17·1	17·0
2·8	β Leporis		**277**	42·0	42·1	42·2	42·4	42·4	42·4	**S 20**	44·7	44·7	44·7	44·7	44·6	44·5
1·7	β Tauri	14	**278**	04·6	04·7	04·8	04·9	05·0	04·9	**N 28**	37·5	37·6	37·6	37·6	37·5	37·5
1·6	γ Orionis	13	**278**	25·2	25·3	25·4	25·5	25·6	25·5	**N 6**	22·1	22·1	22·1	22·1	22·1	22·1
0·1	α Aurigæ	12	**280**	25·1	25·2	25·3	25·5	25·6	25·5	**N 46**	01·2	01·3	01·3	01·3	01·2	01·1
0·1	β Orionis	11	**281**	05·9	06·0	06·1	06·3	06·3	06·3	**S 8**	10·7	10·7	10·8	10·7	10·7	10·6
2·8	β Eridani		**282**	45·9	46·0	46·1	46·2	46·3	46·2	**S 5**	03·6	03·6	03·6	03·6	03·6	03·5
2·7	ι Aurigæ		**285**	23·5	23·5	23·7	23·8	23·9	23·8	**N 33**	12·0	12·1	12·1	12·1	12·0	12·0
0·9	α Tauri	10	**290**	42·2	42·2	42·4	42·5	42·5	42·4	**N 16**	33·2	33·2	33·1	33·1	33·1	33·2
2·9	ε Persei		**300**	09·9	10·1	10·2	10·3	10·3	10·2	**N 40**	04·5	04·5	04·5	04·4	04·4	04·3
3·0	γ Eridani		**300**	14·1	14·2	14·3	14·4	14·4	14·3	**S 13**	26·9	27·0	27·0	26·9	26·8	26·7
2·9	ζ Persei		**301**	07·2	07·3	07·4	07·5	07·5	07·4	**N 31**	57·0	57·0	56·9	56·9	56·9	56·8
2·9	η Tauri		**302**	48·1	48·2	48·3	48·4	48·4	48·2	**N 24**	10·4	10·4	10·4	10·3	10·3	10·3
1·8	α Persei	9	**308**	31·5	31·6	31·8	31·9	31·9	31·7	**N 49**	56·5	56·5	56·4	56·4	56·3	56·2
Var.§	β Persei		**312**	35·9	36·1	36·2	36·3	36·3	36·1	**N 41**	02·5	02·5	02·5	02·4	02·3	02·3
2·5	α Ceti	8	**314**	08·6	08·7	08·8	08·8	08·8	08·6	**N 4**	10·4	10·4	10·4	10·4	10·5	10·6
2·0	α Ursæ Minoris		**314**	59·3	72·6	84·9	92·4	91·6	83·6	**N 89**	21·7	21·7	21·6	21·5	21·4	21·3
3·2	θ Eridani	7	**315**	13·5	13·7	13·8	13·9	13·9	13·8	**S 40**	13·3	13·3	13·3	13·1	13·0	12·8
3·0	β Trianguli		**327**	17·3	17·4	17·5	17·5	17·5	17·2	**N 35**	05·5	05·5	05·5	05·4	05·3	05·4
2·0	α Arietis	6	**327**	53·9	54·0	54·1	54·1	54·0	53·8	**N 23**	34·0	34·0	33·9	33·9	33·9	33·9
2·3	γ Andromedæ		**328**	41·3	41·5	41·6	41·6	41·5	41·3	**N 42**	26·2	26·2	26·1	26·0	26·0	26·0
2·9	α Hydri		**330**	08·0	08·3	08·5	08·6	08·5	08·2	**S 61**	28·2	28·1	28·0	27·8	27·6	27·5
2·6	β Arietis		**331**	02·3	02·4	02·5	02·5	02·4	02·2	**N 20**	54·9	54·9	54·8	54·8	54·8	54·9
0·5	α Eridani	5	**335**	22·1	22·3	22·4	22·5	22·4	22·1	**S 57**	07·9	07·8	07·7	07·6	07·4	07·2
2·7	δ Cassiopeiæ		**338**	11·2	11·5	11·7	11·7	11·5	11·1	**N 60**	21·2	21·1	21·0	20·9	20·8	20·8
2·1	β Andromedæ		**342**	15·7	15·8	15·9	15·9	15·8	15·5	**N 35**	44·3	44·2	44·2	44·1	44·1	44·1
Var.‖	γ Cassiopeiæ		**345**	29·6	29·9	30·0	30·0	29·8	29·4	**N 60**	50·3	50·3	50·2	50·0	49·9	49·9
2·0	β Ceti	4	**348**	49·8	49·9	49·9	49·9	49·8	49·5	**S 17**	52·2	52·2	52·1	52·0	51·9	51·8
2·2	α Cassiopeiæ	3	**349**	33·9	34·1	34·2	34·2	33·9	33·6	**N 56**	39·6	39·6	39·5	39·3	39·3	39·3
2·4	α Phœnicis	2	**353**	09·7	09·8	09·9	09·8	09·6	09·4	**S 42**	11·5	11·5	11·4	11·2	11·1	10·9
2·8	β Hydri		**353**	17·1	17·6	17·8	17·7	17·3	16·6	**S 77**	08·2	08·1	07·9	07·7	07·6	07·4
2·8	γ Pegasi		**356**	24·7	24·8	24·8	24·8	24·6	24·4	**N 15**	18·3	18·3	18·2	18·2	18·2	18·3
2·3	β Cassiopeiæ		**357**	25·1	25·3	25·3	25·3	25·0	24·6	**N 59**	16·4	16·3	16·2	16·1	16·0	16·0
2·1	α Andromedæ	1	**357**	37·4	37·5	37·5	37·4	37·3	37·0	**N 29**	12·7	12·7	12·6	12·5	12·5	12·6

‡ 0·1 — 1·2 § 2·1 — 3·4 ‖ Variable Irregular: 2020 mag. 2 • 2

Mag.	Nombre y Número		AHS							Declinación						
				JUL.	AGO.	SEP.	OCT.	NOV.	DIC.		JUL.	AGO.	SEP.	OCT.	NOV.	DIC.
			°	′	′	′	′	′	′	°	′	′	′	′	′	′
1·6	*Castor*		**245**	60·1	60·0	59·8	59·5	59·2	59·0	**N 31**	50·4	50·3	50·3	50·2	50·2	50·2
3·3	σ Puppis		**247**	31·4	31·3	31·1	30·8	30·6	30·3	**S 43**	20·7	20·6	20·5	20·5	20·5	20·7
2·9	*Gomeisa*		**247**	54·9	54·8	54·6	54·4	54·2	54·0	**N 8**	14·7	14·7	14·7	14·7	14·7	14·6
2·4	*Aludra*		**248**	45·7	45·6	45·4	45·2	45·0	44·8	**S 29**	20·7	20·6	20·5	20·5	20·6	20·7
2·7	π Puppis		**250**	31·5	31·4	31·2	30·9	30·7	30·4	**S 37**	08·2	08·0	08·0	07·9	08·0	08·2
1·8	*Wezen*		**252**	40·9	40·8	40·6	40·4	40·1	39·9	**S 26**	25·7	25·5	25·5	25·5	25·5	25·7
3·0	*o* Canis Majoris		**254**	01·0	00·9	00·7	00·5	00·2	00·1	**S 23**	51·9	51·8	51·7	51·7	51·8	51·9
1·5	*Adhara*	19	**255**	07·8	07·7	07·5	07·3	07·0	06·9	**S 28**	60·1	59·9	59·9	59·9	59·9	60·1
2·9	τ Puppis		**257**	23·2	23·0	22·8	22·5	22·2	22·0	**S 50**	38·4	38·2	38·1	38·1	38·2	38·3
−1·5	*Sirius*	18	**258**	28·4	28·2	28·0	27·8	27·6	27·4	**S 16**	44·7	44·6	44·6	44·6	44·7	44·8
1·9	*Alhena*		**260**	15·4	15·2	15·0	14·7	14·5	14·3	**N 16**	22·8	22·8	22·8	22·8	22·8	22·8
−0·7	*Canopus*	17	**263**	53·8	53·7	53·4	53·1	52·8	52·6	**S 52**	42·3	42·2	42·1	42·1	42·2	42·4
2·0	*Mirzam*		**264**	05·1	04·9	04·7	04·5	04·3	04·1	**S 17**	57·9	57·8	57·8	57·8	57·9	58·0
2·6	*Mahasim*		**269**	41·8	41·5	41·3	41·0	40·7	40·5	**N 37**	12·8	12·8	12·7	12·8	12·8	12·8
1·9	*Menkalinan*		**269**	43·0	42·7	42·4	42·1	41·8	41·6	**N 44**	56·9	56·8	56·8	56·8	56·9	56·9
Var.‡	*Betelgeuse*	16	**270**	54·6	54·4	54·2	54·0	53·8	53·6	**N 7**	24·7	24·7	24·8	24·8	24·7	24·7
2·1	*Saiph*		**272**	48·1	47·9	47·7	47·5	47·3	47·1	**S 9**	39·6	39·5	39·5	39·5	39·6	39·7
1·9	*Alnitak*		**274**	32·0	31·8	31·6	31·4	31·2	31·1	**S 1**	55·8	55·7	55·7	55·7	55·7	55·8
2·6	*Phact*		**274**	53·5	53·3	53·1	52·8	52·6	52·5	**S 34**	03·6	03·5	03·4	03·4	03·5	03·7
3·0	*Tianguan*		**275**	15·6	15·4	15·2	14·9	14·7	14·6	**N 21**	09·3	09·4	09·4	09·4	09·4	09·4
1·7	*Alnilam*	15	**275**	40·1	39·9	39·7	39·5	39·3	39·1	**S 1**	11·2	11·1	11·1	11·1	11·2	11·2
2·8	*Hatysa*		**275**	52·4	52·2	52·0	51·8	51·6	51·5	**S 5**	53·7	53·6	53·5	53·5	53·6	53·7
2·6	*Arneb*		**276**	34·6	34·4	34·2	34·0	33·8	33·6	**S 17**	48·3	48·2	48·1	48·1	48·2	48·3
2·2	*Mintaka*		**276**	43·1	42·9	42·7	42·5	42·3	42·1	**S 0**	16·9	16·8	16·8	16·8	16·9	16·9
2·8	*Nihal*		**277**	42·3	42·1	41·9	41·6	41·4	41·3	**S 20**	44·4	44·3	44·2	44·2	44·3	44·4
1·7	*Elnath*	14	**278**	04·8	04·6	04·3	04·0	03·8	03·7	**N 28**	37·5	37·5	37·5	37·6	37·6	37·6
1·6	*Bellatrix*	13	**278**	25·4	25·2	24·9	24·7	24·5	24·4	**N 6**	22·2	22·3	22·3	22·3	22·3	22·2
0·1	*Capella*	12	**280**	25·3	25·0	24·7	24·4	24·1	23·9	**N 46**	01·1	01·1	01·1	01·1	01·2	01·3
0·1	*Rigel*	11	**281**	06·1	05·9	05·7	05·5	05·3	05·2	**S 8**	10·5	10·4	10·3	10·4	10·4	10·5
2·8	*Cursa*		**282**	46·1	45·9	45·6	45·4	45·2	45·1	**S 5**	03·4	03·3	03·3	03·3	03·3	03·4
2·7	*Hassaleh*		**285**	23·6	23·3	23·1	22·8	22·6	22·5	**N 33**	12·0	12·0	12·0	12·1	12·1	12·1
0·9	*Aldebaran*	10	**290**	42·2	42·0	41·8	41·5	41·4	41·3	**N 16**	33·2	33·3	33·3	33·3	33·3	33·3
2·9	ε Persei		**300**	10·0	09·7	09·4	09·1	08·9	08·8	**N 40**	04·3	04·4	04·4	04·5	04·6	04·6
3·0	*Zaurak*		**300**	14·1	13·9	13·7	13·5	13·4	13·3	**S 13**	26·6	26·5	26·5	26·5	26·6	26·6
2·9	ζ Persei		**301**	07·2	06·9	06·6	06·4	06·2	06·2	**N 31**	56·9	56·9	57·0	57·0	57·1	57·1
2·9	*Alcyone*		**302**	48·0	47·8	47·5	47·3	47·2	47·1	**N 24**	10·4	10·4	10·5	10·5	10·6	10·6
1·8	*Mirfak*	9	**308**	31·4	31·1	30·8	30·5	30·3	30·3	**N 49**	56·2	56·2	56·3	56·4	56·5	56·6
Var.§	*Algol*		**312**	35·8	35·5	35·2	35·0	34·9	34·8	**N 41**	02·3	02·4	02·5	02·5	02·6	02·7
2·5	*Menkar*	8	**314**	08·4	08·2	08·0	07·8	07·7	07·7	**N 4**	10·7	10·7	10·8	10·8	10·8	10·8
2·0	*Polaris*		**314**	70·5	55·0	40·5	29·6	24·6	27·9	**N 89**	21·2	21·2	21·3	21·5	21·6	21·8
3·2	*Acamar*	7	**315**	13·5	13·2	13·0	12·8	12·7	12·7	**S 40**	12·7	12·6	12·6	12·7	12·8	12·9
3·0	*β* Trianguli		**327**	17·0	16·7	16·5	16·3	16·2	16·2	**N 35**	05·4	05·5	05·6	05·7	05·8	05·8
2·0	*Hamal*	6	**327**	53·6	53·3	53·1	53·0	52·9	52·9	**N 23**	34·0	34·1	34·2	34·2	34·3	34·3
2·3	*Almach*		**328**	41·0	40·7	40·4	40·3	40·2	40·2	**N 42**	26·0	26·1	26·2	26·3	26·4	26·5
2·9	α Hydri		**330**	07·9	07·5	07·1	07·0	07·0	07·1	**S 61**	27·4	27·3	27·4	27·5	27·7	27·8
2·6	*Sheratan*		**331**	01·9	01·7	01·5	01·4	01·3	01·3	**N 20**	54·9	55·0	55·1	55·2	55·2	55·3
0·5	*Achernar*	5	**335**	21·8	21·4	21·1	21·0	21·0	21·2	**S 57**	07·1	07·1	07·1	07·3	07·4	07·5
2·7	*Ruchbah*		**338**	10·7	10·4	10·1	09·9	09·9	10·0	**N 60**	20·8	20·9	21·0	21·2	21·4	21·5
2·1	*Mirach*		**342**	15·2	15·0	14·8	14·7	14·7	14·7	**N 35**	44·2	44·3	44·4	44·5	44·6	44·7
Var.‖	*γ* Cassiopeiæ		**345**	29·0	28·6	28·4	28·3	28·3	28·4	**N 60**	50·0	50·1	50·3	50·4	50·6	50·7
2·0	*Diphda*	4	**348**	49·3	49·1	48·9	48·8	48·9	48·9	**S 17**	51·7	51·6	51·6	51·7	51·7	51·8
2·2	*Schedar*	3	**349**	33·2	32·9	32·7	32·6	32·7	32·8	**N 56**	39·3	39·5	39·6	39·8	39·9	40·0
2·4	*Ankaa*	2	**353**	09·1	08·8	08·6	08·6	08·6	08·8	**S 42**	10·8	10·8	10·9	11·0	11·1	11·2
2·8	*β* Hydri		**353**	15·8	15·0	14·6	14·5	14·9	15·5	**S 77**	07·4	07·4	07·6	07·7	07·8	07·9
2·8	*Algenib*		**356**	24·1	23·9	23·8	23·7	23·8	23·8	**N 15**	18·4	18·5	18·6	18·7	18·7	18·7
2·3	*Caph*		**357**	24·2	23·9	23·7	23·7	23·8	24·0	**N 59**	16·1	16·3	16·4	16·6	16·7	16·8
2·1	*Alpheratz*	1	**357**	36·7	36·5	36·4	36·4	36·4	36·5	**N 29**	12·7	12·8	13·0	13·1	13·1	13·1

‡ 0·1 — 1·2 § 2·1 — 3·4 ‖ Variable Irregular: 2020 mag. 2 • 2

TABLAS PARA LA ESTRELLA POLAR (POLARIS), 2022

DETERMINACIÓN DE LA LATITUD Y DEL Azv A PARTIR DE LA ALTURA DEL SEXTANTE

AHL ARIES	0° – 9°	10° – 19°	20° – 29°	30° – 39°	40° – 49°	50° – 59°	60° – 69°	70° – 79°	80° – 89°	90° – 99°	100° – 109°	110° – 119°
	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0
°	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
0	0 31·7	0 27·4	0 24·0	0 21·6	0 20·4	0 20·4	0 21·6	0 23·9	0 27·3	0 31·7	0 36·9	0 42·7
1	31·2	27·0	23·7	21·5	20·4	20·5	21·8	24·2	27·7	32·2	37·4	43·3
2	30·8	26·6	23·4	21·3	20·4	20·6	22·0	24·5	28·1	32·7	38·0	44·0
3	30·3	26·2	23·1	21·2	20·3	20·7	22·2	24·9	28·6	33·2	38·6	44·6
4	29·9	25·9	22·9	21·0	20·3	20·8	22·4	25·2	29·0	33·7	39·2	45·2
5	0 29·4	0 25·5	0 22·7	0 20·9	0 20·3	0 20·9	0 22·6	0 25·5	0 29·4	0 34·2	0 39·7	0 45·8
6	29·0	25·2	22·4	20·8	20·3	21·0	22·9	25·9	29·8	34·7	40·3	46·5
7	28·6	24·9	22·2	20·7	20·3	21·2	23·1	26·2	30·3	35·2	40·9	47·1
8	28·2	24·6	22·0	20·6	20·4	21·3	23·4	26·6	30·8	35·8	41·5	47·8
9	27·7	24·3	21·8	20·5	20·4	21·5	23·7	27·0	31·2	36·3	42·1	48·4
10	0 27·4	0 24·0	0 21·6	0 20·4	0 20·4	0 21·6	0 23·9	0 27·3	0 31·7	0 36·9	0 42·7	0 49·1

Lat.	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1
°	′	′	′	′	′	′	′	′	′	′	′	′
0	0·5	0·5	0·6	0·6	0·6	0·6	0·6	0·5	0·5	0·4	0·4	0·4
10	·5	·5	·6	·6	·6	·6	·6	·5	·5	·5	·4	·4
20	·5	·6	·6	·6	·6	·6	·6	·6	·5	·5	·5	·4
30	·5	·6	·6	·6	·6	·6	·6	·6	·5	·5	·5	·5
40	0·6	0·6	0·6	0·6	0·6	0·6	0·6	0·6	0·6	0·6	0·5	0·5
45	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6
50	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6
55	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6
60	·6	·6	·6	·6	·6	·6	·6	·6	·6	·7	·7	·7
62	0·7	0·6	0·6	0·6	0·6	0·6	0·6	0·6	0·7	0·7	0·7	0·7
64	·7	·6	·6	·6	·6	·6	·6	·6	·7	·7	·7	·8
66	·7	·7	·6	·6	·6	·6	·6	·7	·7	·7	·8	·8
68	0·7	0·7	0·6	0·6	0·6	0·6	0·6	0·7	0·7	0·8	0·8	0·8

Mes	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2
	′	′	′	′	′	′	′	′	′	′	′	′
Ene.	0·7	0·7	0·8	0·8	0·8	0·8	0·8	0·7	0·7	0·7	0·7	0·7
Feb.	·7	·7	·7	·8	·8	·8	·8	·8	·9	·8	·8	·8
Mar.	·5	·6	·6	·7	·7	·8	·8	·9	·9	·9	·9	0·9
Abr.	0·4	0·4	0·5	0·6	0·6	0·7	0·7	0·8	0·9	0·9	0·9	1·0
May.	·3	·3	·4	·4	·5	·5	·6	·7	·7	·8	·9	0·9
Jun.	·2	·2	·3	·3	·4	·4	·5	·5	·6	·7	·7	·8
Jul.	0·3	0·3	0·3	0·3	0·3	0·3	0·4	0·4	0·5	0·5	0·6	0·6
Ago.	·4	·4	·4	·3	·3	·3	·3	·3	·4	·4	·4	·5
Sep.	·6	·5	·5	·5	·4	·4	·4	·3	·3	·3	·3	·3
Oct.	0·8	0·7	0·7	0·6	0·6	0·5	0·5	0·4	0·4	0·3	0·3	0·3
Nov.	1·0	0·9	0·9	0·8	·7	·7	·6	·5	·5	·4	·3	·3
Dic.	1·1	1·1	1·0	1·0	0·9	0·9	0·8	0·7	0·6	0·5	0·5	0·4

Lat.	Azv											
°	°	°	°	°	°	°	°	°	°	°	°	°
0	0·4	0·3	0·2	0·1	0·0	359·9	359·8	359·7	359·6	359·5	359·4	359·4
20	0·4	0·3	0·2	0·1	0·0	359·9	359·8	359·7	359·6	359·5	359·4	359·4
40	0·5	0·4	0·3	0·1	0·0	359·9	359·7	359·6	359·5	359·4	359·3	359·2
50	0·6	0·5	0·3	0·2	0·0	359·8	359·7	359·5	359·4	359·2	359·1	359·1
55	0·7	0·6	0·4	0·2	0·0	359·8	359·6	359·4	359·3	359·1	359·0	358·9
60	0·8	0·7	0·4	0·2	0·0	359·8	359·6	359·3	359·2	359·0	358·9	358·8
65	1·0	0·8	0·5	0·3	0·0	359·7	359·5	359·2	359·0	358·8	358·7	358·6

Latitud = Altura verdadera (Av) $-1^{o} + a_0 + a_1 + a_2$

Se ingresa a la tabla con el AHL de Aries para determinar la columna que se debe usar; cada columna se refiere a un rango de 10º. a_0 se toma de la tabla superior, mediante interpolación mental, con las unidades del AHL de Aries en grados, como argumento; a_1, a_2 se toman de la segunda y tercera tabla sin interpolación, usando la latitud y el mes como argumento respectivamente; a_0, a_1, a_2 son siempre positivas.

La tabla final entrega el Azv de "*Polaris*", utilizando como argumentos de entrada el AHL de Aries y la latitud (Lat.).

SERVICIO HIDROGRÁFICO Y OCEANOGRÁFICO ARMADA DE CHILE

TABLAS PARA LA ESTRELLA POLAR (POLARIS), 2022

DETERMINACIÓN DE LA LATITUD Y DEL Azv A PARTIR DE LA ALTURA DEL SEXTANTE

AHL ARIES	120° – 129°	130° – 139°	140° – 149°	150° – 159°	160° – 169°	170° – 179°	180° – 189°	190° – 199°	200° – 209°	210° – 219°	220° – 229°	230° – 239°
	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0
°	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
0	0 49·1	0 55·7	1 02·4	1 09·0	1 15·3	1 21·0	1 26·1	1 30·4	1 33·7	1 36·0	1 37·2	1 37·2
1	49·7	56·4	03·1	09·6	15·9	21·6	26·6	30·8	34·0	36·2	37·2	37·1
2	50·4	57·0	03·7	10·3	16·5	22·1	27·1	31·2	34·3	36·3	37·2	37·0
3	51·0	57·7	04·4	10·9	17·1	22·7	27·5	31·5	34·5	36·5	37·3	36·9
4	51·7	58·4	05·1	11·6	17·7	23·2	28·0	31·9	34·8	36·6	37·3	36·8
5	0 52·4	0 59·0	1 05·7	1 12·2	1 18·2	1 23·7	1 28·4	1 32·2	1 35·0	1 36·7	1 37·3	1 36·7
6	53·0	0 59·7	06·4	12·8	18·8	24·2	28·8	32·5	35·2	36·8	37·3	36·6
7	53·7	1 00·4	07·0	13·4	19·4	24·7	29·2	32·8	35·4	36·9	37·3	36·5
8	54·4	01·1	07·7	14·1	19·9	25·2	29·6	33·2	35·6	37·0	37·2	36·3
9	55·0	01·7	08·3	14·7	20·5	25·7	30·0	33·4	35·8	37·1	37·2	36·2
10	0 55·7	1 02·4	1 09·0	1 15·3	1 21·0	1 26·1	1 30·4	1 33·7	1 36·0	1 37·2	1 37·2	1 36·0
Lat.	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1
°	′	′	′	′	′	′	′	′	′	′	′	′
0	0·4	0·3	0·4	0·4	0·4	0·4	0·5	0·5	0·6	0·6	0·6	0·6
10	·4	·4	·4	·4	·4	·5	·5	·5	·6	·6	·6	·6
20	·4	·4	·4	·4	·5	·5	·5	·6	·6	·6	·6	·6
30	·5	·5	·5	·5	·5	·5	·5	·6	·6	·6	·6	·6
40	0·5	0·5	0·5	0·5	0·5	0·6	0·6	0·6	0·6	0·6	0·6	0·6
45	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6
50	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6
55	·6	·7	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6
60	·7	·7	·7	·7	·7	·7	·6	·6	·6	·6	·6	·6
62	0·7	0·7	0·7	0·7	0·7	0·7	0·7	0·6	0·6	0·6	0·6	0·6
64	·8	·8	·8	·8	·7	·7	·7	·6	·6	·6	·6	·6
66	·8	·8	·8	·8	·8	·7	·7	·7	·6	·6	·6	·6
68	0·9	0·9	0·9	0·8	0·8	0·8	0·7	0·7	0·6	0·6	0·6	0·6
Mes	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2
	′	′	′	′	′	′	′	′	′	′	′	′
Ene.	0·6	0·6	0·6	0·5	0·5	0·5	0·5	0·5	0·4	0·4	0·4	0·4
Feb.	·8	·8	·7	·7	·6	·6	·5	·5	·5	·4	·4	·4
Mar.	0·9	0·9	0·9	·8	·8	·7	·7	·6	·6	·5	·5	·4
Abr.	1·0	1·0	1·0	0·9	0·9	0·9	0·8	0·8	0·7	0·6	0·6	0·5
May.	0·9	1·0	1·0	1·0	1·0	1·0	0·9	0·9	·8	·8	·7	·7
Jun.	·8	0·9	0·9	0·9	1·0	1·0	1·0	1·0	·9	·9	·8	·8
Jul.	0·7	0·7	0·8	0·8	0·9	0·9	0·9	0·9	0·9	0·9	0·9	0·9
Ago.	·5	·6	·6	·7	·7	·7	·8	·8	·8	·9	·9	·9
Sep.	·4	·4	·4	·5	·5	·6	·6	·7	·7	·7	·8	·8
Oct.	0·3	0·3	0·3	0·3	0·3	0·4	0·4	0·5	0·5	0·6	0·6	0·7
Nov.	·2	·2	·2	·2	·2	·2	·2	·3	·3	·4	·5	·5
Dic.	0·3	0·3	0·2	0·2	0·1	0·1	0·1	0·1	0·2	0·2	0·3	0·3
Lat.	Azv											
°	°	°	°	°	°	°	°	°	°	°	°	°
0	359·4	359·4	359·4	359·4	359·4	359·5	359·6	359·7	359·8	359·9	0·0	0·1
20	359·3	359·3	359·3	359·4	359·4	359·5	359·6	359·7	359·8	359·9	0·0	0·1
40	359·2	359·2	359·2	359·2	359·3	359·4	359·5	359·6	359·7	359·9	0·0	0·1
50	359·0	359·0	359·0	359·1	359·1	359·2	359·4	359·5	359·7	359·8	0·0	0·2
55	358·9	358·9	358·9	359·0	359·0	359·2	359·3	359·4	359·6	359·8	0·0	0·2
60	358·7	358·7	358·7	358·8	358·9	359·0	359·2	359·4	359·6	359·8	0·0	0·2
65	358·5	358·5	358·5	358·6	358·7	358·9	359·0	359·3	359·5	359·7	0·0	0·3

EJEMPLO

El 21 de abril de 2022 a las 23^h 18^m 56^s UT en longitud 37º 14' W la altura verdadera Av de *Polaris* fue: 49° 31',6.

De las páginas diarias:	°	′	
AHG de Aries (23^h)	194	59,5	
Incremento (18^m 56^s)	4	44,8	(pág. xi)
Longitud (oeste)	–37	14	
A.H.L. Aries	162	30	

	°	′
Av	49	31,6
a_0 (argumento 162° 30')	1	16,8
a_1 (Latitud 50° aprox.)		0,6
a_2 (abril)		0,9
Sum. –1° = Lat. =	49	49,9

Lat. = 49° 31',6 A.H.L. Aries = 162° 30' Azv = 359,1°

SERVICIO HIDROGRÁFICO Y OCEANOGRÁFICO ARMADA DE CHILE

TABLAS PARA LA ESTRELLA POLAR (POLARIS), 2022

DETERMINACIÓN DE LA LATITUD Y DEL Azv A PARTIR DE LA ALTURA DEL SEXTANTE

AHL ARIES	240° – 249°	250° – 259°	260° – 269°	270° – 279°	280° – 289°	290° – 299°	300° – 309°	310° – 319°	320° – 329°	330° – 339°	340° – 349°	350° – 359°
	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0
°	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
0	1 36·0	1 33·7	1 30·4	1 26·2	1 21·1	1 15·3	1 09·0	1 02·4	0 55·7	0 49·1	0 42·8	0 36·9
1	35·8	33·5	30·0	25·7	20·5	14·7	08·4	01·8	55·0	48·4	42·1	36·3
2	35·6	33·2	29·6	25·2	20·0	14·1	07·7	01·1	54·4	47·8	41·5	35·8
3	35·4	32·9	29·2	24·7	19·4	13·5	07·1	1 00·4	53·7	47·1	40·9	35·3
4	35·2	32·5	28·8	24·2	18·8	12·8	06·4	0 59·7	53·0	46·5	40·3	34·7
5	1 35·0	1 32·2	1 28·4	1 23·7	1 18·3	1 12·2	1 05·7	0 59·1	0 52·4	0 45·9	0 39·8	0 34·2
6	34·8	31·9	28·0	23·2	17·7	11·6	05·1	58·4	51·7	45·2	39·2	33·7
7	34·5	31·5	27·5	22·7	17·1	10·9	04·4	57·7	51·1	44·6	38·6	33·2
8	34·3	31·2	27·1	22·1	16·5	10·3	03·8	57·1	50·4	44·0	38·0	32·7
9	34·0	30·8	26·6	21·6	15·9	09·7	03·1	56·4	49·7	43·4	37·5	32·2
10	1 33·7	1 30·4	1 26·2	1 21·1	1 15·3	1 09·0	1 02·4	0 55·7	0 49·1	0 42·8	0 36·9	0 31·7
Lat.	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1
°	′	′	′	′	′	′	′	′	′	′	′	′
0	0·6	0·5	0·5	0·4	0·4	0·4	0·4	0·3	0·4	0·4	0·4	0·4
10	·6	·5	·5	·5	·4	·4	·4	·4	·4	·4	·4	·5
20	·6	·6	·5	·5	·5	·4	·4	·4	·4	·4	·5	·5
30	·6	·6	·5	·5	·5	·5	·5	·5	·5	·5	·5	·5
40	0·6	0·6	0·6	0·6	0·5	0·5	0·5	0·5	0·5	0·5	0·5	0·6
45	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6
50	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6
55	·6	·6	·6	·6	·6	·6	·6	·7	·6	·6	·6	·6
60	·6	·6	·6	·7	·7	·7	·7	·7	·7	·7	·7	·7
62	0·6	0·6	0·7	0·7	0·7	0·7	0·7	0·7	0·7	0·7	0·7	0·7
64	·6	·6	·7	·7	·7	·8	·8	·8	·8	·8	·7	·7
66	·6	·7	·7	·7	·8	·8	·8	·8	·8	·8	·8	·7
68	0·6	0·7	0·7	0·8	0·8	0·8	0·9	0·9	0·9	0·8	0·8	0·8
Mes	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2
	′	′	′	′	′	′	′	′	′	′	′	′
Ene.	0·4	0·5	0·5	0·5	0·5	0·5	0·6	0·6	0·6	0·7	0·7	0·7
Feb.	·4	·4	·3	·4	·4	·4	·4	·4	·5	·5	·6	·6
Mar.	·4	·3	·3	·3	·3	·3	·3	·3	·3	·4	·4	·5
Abr.	0·5	0·4	0·3	0·3	0·3	0·2	0·2	0·2	0·2	0·3	0·3	0·3
May.	·6	·5	·5	·4	·3	·3	·3	·2	·2	·2	·2	·2
Jun.	·7	·7	·6	·5	·5	·4	·4	·3	·3	·3	·2	·2
Jul.	0·8	0·8	0·7	0·7	0·6	0·6	0·5	0·5	0·4	0·4	0·3	0·3
Ago.	·9	·9	·8	·8	·8	·7	·7	·6	·6	·5	·5	·5
Sep.	·8	·9	·9	·9	·9	·9	·8	·8	·8	·7	·7	·6
Oct.	0·7	0·8	0·8	0·9	0·9	0·9	0·9	0·9	0·9	0·9	0·9	0·8
Nov.	·6	·7	·7	·8	·9	·9	1·0	1·0	1·0	1·0	1·0	1·0
Dic.	0·4	0·5	0·6	0·7	0·7	0·8	0·9	0·9	1·0	1·0	1·1	1·1
Lat.	Azv											
°	°	°	°	°	°	°	°	°	°	°	°	°
0	0·2	0·3	0·4	0·5	0·6	0·6	0·6	0·6	0·6	0·6	0·6	0·5
20	0·2	0·3	0·4	0·5	0·6	0·6	0·7	0·7	0·7	0·6	0·6	0·5
40	0·3	0·4	0·5	0·6	0·7	0·8	0·8	0·8	0·8	0·8	0·7	0·6
50	0·3	0·5	0·6	0·8	0·9	0·9	1·0	1·0	1·0	0·9	0·9	0·8
55	0·4	0·6	0·7	0·8	1·0	1·0	1·1	1·1	1·1	1·1	1·0	0·9
60	0·4	0·6	0·8	1·0	1·1	1·2	1·3	1·3	1·3	1·2	1·1	1·0
65	0·5	0·7	1·0	1·1	1·3	1·4	1·5	1·5	1·5	1·4	1·3	1·2

Latitud = Altura verdadera (Av) $-1^{o} + a_0 + a_1 + a_2$

Se ingresa a la tabla con el AHL de Aries para determinar la columna que se debe usar; cada columna se refiere a un rango de 10º. a_0 se toma de la tabla superior, mediante interpolación mental, con las unidades del AHL de Aries en grados, como argumento; a_1, a_2 se toman de la segunda y tercera tabla sin interpolación, usando la latitud y el mes como argumento respectivamente; a_0, a_1, a_2 son siempre positivas.

La tabla final entrega el Azv de "*Polaris*", utilizando como argumentos de entrada el AHL de Aries y la latitud (Lat.).

SERVICIO HIDROGRÁFICO Y OCEANOGRÁFICO ARMADA DE CHILE

AURORA Y CREPÚSCULO CIVIL, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

AURORA CIVIL

LAT. S	60°	62°	64°	66°	68°	69°	70°	71°	72º
	h m	h m	h m	h m	h m	h m	h m	h m	h m
ENE. 2	01 09	////	////	////	////	////	////	////	////
6	01 22	////	////	////	////	////	////	////	////
10	01 37	00 14	////	////	////	////	////	////	////
14	01 52	01 02	////	////	////	////	////	////	////
18	02 07	01 27	////	////	////	////	////	////	////
22	02 22	01 49	00 46	////	////	////	////	////	////
26	02 37	02 09	01 27	////	////	////	////	////	////
30	02 51	02 27	01 54	00 50	////	////	////	////	////
FEB. 3	03 05	02 44	02 17	01 36	////	////	////	////	////
7	03 19	03 01	02 38	02 06	01 11	////	////	////	////
11	03 32	03 16	02 57	02 31	01 53	01 24	////	////	////
15	03 45	03 31	03 14	02 53	02 23	02 04	01 38	00 52	////
19	03 58	03 45	03 31	03 12	02 49	02 34	02 16	01 52	01 17
23	04 10	03 59	03 46	03 31	03 11	02 59	02 45	02 28	02 07
27	04 22	04 12	04 01	03 48	03 32	03 22	03 11	02 57	02 42
MAR. 3	04 33	04 25	04 16	04 04	03 51	03 42	03 33	03 23	03 11
7	04 44	04 37	04 29	04 20	04 08	04 02	03 54	03 46	03 36
11	04 55	04 49	04 43	04 35	04 25	04 20	04 14	04 07	03 59
15	05 05	05 01	04 55	04 49	04 42	04 37	04 32	04 27	04 21
19	05 16	05 12	05 08	05 03	04 57	04 54	04 50	04 46	04 41
23	05 26	05 23	05 20	05 16	05 12	05 10	05 07	05 04	05 01
27	05 35	05 34	05 32	05 30	05 27	05 25	05 24	05 22	05 19
31	05 45	05 44	05 44	05 43	05 41	05 41	05 40	05 39	05 38

CREPÚSCULO CIVIL

	h m	h m	h m	h m	h m	h m	h m	h m	h m
ENE. 2	22 56	////	////	////	////	////	////	////	////
6	22 46	////	////	////	////	////	////	////	////
10	22 35	23 42*	////	////	////	////	////	////	////
14	22 23	23 10	////	////	////	////	////	////	////
18	22 11	22 49	////	////	////	////	////	////	////
22	21 58	22 30	23 25	////	////	////	////	////	////
26	21 46	22 12	22 52	////	////	////	////	////	////
30	21 33	21 56	22 27	23 23	////	////	////	////	///
FEB. 3	21 20	21 40	22 06	22 45	////	////	////	////	////
7	21 07	21 24	21 47	22 17	23 06	////	////	////	////
11	20 54	21 09	21 28	21 53	22 28	22 54	23 39	////	////
15	20 41	20 54	21 11	21 32	21 59	22 17	22 41	23 17	////
19	20 28	20 40	20 54	21 12	21 34	21 48	22 05	22 27	22 57
23	20 15	20 25	20 38	20 53	21 11	21 23	21 36	21 52	22 12
27	20 02	20 11	20 22	20 34	20 50	21 00	21 10	21 23	21 37
MAR. 3	19 49	19 57	20 06	20 17	20 30	20 38	20 46	20 56	21 08
7	19 36	19 43	19 50	20 00	20 11	20 17	20 24	20 32	20 41
11	19 23	19 29	19 35	19 43	19 52	19 57	20 03	20 09	20 17
15	19 11	19 15	19 20	19 26	19 34	19 38	19 42	19 48	19 53
19	18 58	19 02	19 06	19 10	19 16	19 19	19 23	19 27	19 31
23	18 46	18 48	18 51	18 55	18 59	19 01	19 03	19 06	19 10
27	18 34	18 35	18 37	18 39	18 42	18 43	18 45	18 47	18 49
31	18 22	18 22	18 23	18 24	18 25	18 26	18 26	18 27	18 28

(*) FENÓMENO DOBLE (Ver página 311)

AURORA Y CREPÚSCULO CIVIL, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

AURORA CIVIL

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
ABR.	4	05 55	05 55	05 55	05 55	05 55	05 55	05 55	05 56	05 56
	8	06 04	06 05	06 06	06 08	06 09	06 10	06 11	06 12	06 13
	12	06 13	06 15	06 17	06 20	06 23	06 25	06 26	06 28	06 30
	16	06 22	06 25	06 28	06 32	06 36	06 39	06 42	06 44	06 48
	20	06 31	06 35	06 39	06 44	06 50	06 53	06 57	07 00	07 05
	24	06 40	06 45	06 50	06 56	07 03	07 07	07 12	07 16	07 22
	28	06 49	06 54	07 01	07 08	07 16	07 21	07 27	07 32	07 39
MAY.	2	06 57	07 04	07 11	07 19	07 29	07 35	07 41	07 48	07 56
	6	07 06	07 13	07 21	07 31	07 42	07 49	07 56	08 04	08 14
	10	07 14	07 22	07 31	07 42	07 55	08 03	08 11	08 20	08 31
	14	07 22	07 31	07 41	07 53	08 07	08 16	08 25	08 36	08 48
	18	07 29	07 39	07 50	08 03	08 19	08 29	08 39	08 52	09 06
	22	07 36	07 47	07 59	08 13	08 31	08 41	08 53	09 07	09 23
	26	07 43	07 54	08 07	08 23	08 42	08 53	09 06	09 22	09 41
	30	07 49	08 01	08 15	08 31	08 52	09 04	09 19	09 36	09 58
JUN.	3	07 54	08 07	08 21	08 39	09 01	09 14	09 30	09 49	10 14
	7	07 59	08 12	08 27	08 45	09 08	09 23	09 40	10 01	10 30
	11	08 03	08 16	08 31	08 51	09 15	09 30	09 48	10 11	10 43
	15	08 05	08 19	08 35	08 54	09 19	09 35	09 54	10 18	10 54
	19	08 07	08 21	08 37	08 57	09 22	09 38	09 57	10 22	11 00
	23	08 08	08 22	08 38	08 58	09 23	09 39	09 58	10 23	11 01
	27	08 08	08 22	08 38	08 57	09 22	09 38	09 56	10 21	10 56
JUL.	1	08 07	08 20	08 36	08 55	09 19	09 34	09 52	10 15	10 47
	5	08 05	08 18	08 33	08 51	09 14	09 29	09 46	10 07	10 35

CREPÚSCULO CIVIL

		h m	h m	h m	h m	h m	h m	h m	h m	h m
ABR.	4	18 10	18 10	18 09	18 09	18 09	18 09	18 08	18 08	18 08
	8	17 59	17 57	17 56	17 54	17 53	17 52	17 51	17 50	17 48
	12	17 47	17 45	17 43	17 40	17 37	17 35	17 33	17 31	17 29
	16	17 36	17 33	17 30	17 26	17 22	17 19	17 16	17 13	17 10
	20	17 26	17 22	17 17	17 12	17 06	17 03	17 00	16 56	16 51
	24	17 15	17 10	17 05	16 59	16 52	16 48	16 43	16 38	16 33
	28	17 05	17 00	16 53	16 46	16 37	16 32	16 27	16 21	16 14
MAY.	2	16 56	16 49	16 42	16 33	16 23	16 18	16 11	16 04	15 56
	6	16 47	16 39	16 31	16 21	16 10	16 03	15 56	15 48	15 38
	10	16 38	16 30	16 21	16 10	15 57	15 49	15 41	15 31	15 21
	14	16 30	16 21	16 11	15 59	15 44	15 36	15 26	15 16	15 03
	18	16 23	16 13	16 02	15 49	15 33	15 23	15 12	15 00	14 46
	22	16 16	16 06	15 54	15 39	15 22	15 11	14 59	14 45	14 29
	26	16 11	16 00	15 46	15 31	15 12	15 00	14 47	14 31	14 13
	30	16 06	15 54	15 40	15 23	15 03	14 50	14 36	14 18	13 57
JUN.	3	16 02	15 49	15 35	15 17	14 55	14 42	14 26	14 07	13 42
	7	15 59	15 46	15 31	15 12	14 49	14 35	14 18	13 56	13 28
	11	15 57	15 43	15 28	15 09	14 44	14 29	14 11	13 48	13 16
	15	15 55	15 42	15 26	15 06	14 42	14 26	14 07	13 43	13 07
	19	15 55	15 42	15 26	15 06	14 41	14 25	14 05	13 40	13 02
	23	15 56	15 43	15 27	15 07	14 42	14 26	14 06	13 41	13 03
	27	15 58	15 45	15 29	15 09	14 44	14 29	14 10	13 46	13 10
JUL.	1	16 01	15 48	15 32	15 13	14 49	14 34	14 16	13 53	13 21
	5	16 05	15 52	15 37	15 19	14 55	14 41	14 24	14 03	13 35

AURORA Y CREPÚSCULO CIVIL, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

AURORA CIVIL

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
JUL.	9	08 02	08 14	08 28	08 46	09 08	09 21	09 37	09 56	10 21
	13	07 57	08 09	08 23	08 40	09 00	09 13	09 27	09 44	10 06
	17	07 52	08 03	08 17	08 32	08 51	09 03	09 16	09 31	09 50
	21	07 46	07 57	08 09	08 24	08 41	08 52	09 03	09 17	09 34
	25	07 40	07 50	08 01	08 14	08 30	08 40	08 50	09 02	09 17
	29	07 32	07 41	07 52	08 04	08 18	08 27	08 36	08 47	09 00
AGO.	2	07 24	07 33	07 42	07 53	08 06	08 13	08 22	08 31	08 42
	6	07 16	07 23	07 32	07 41	07 53	07 59	08 07	08 15	08 24
	10	07 07	07 13	07 21	07 29	07 39	07 45	07 51	07 59	08 06
	14	06 57	07 03	07 09	07 17	07 25	07 30	07 36	07 42	07 48
	18	06 47	06 52	06 57	07 04	07 11	07 15	07 20	07 25	07 30
	22	06 37	06 41	06 45	06 50	06 56	07 00	07 03	07 07	07 12
	26	06 26	06 29	06 33	06 37	06 41	06 44	06 46	06 49	06 53
	30	06 15	06 17	06 20	06 23	06 26	06 27	06 29	06 32	06 34
SEP.	3	06 04	06 05	06 07	06 08	06 10	06 11	06 12	06 13	06 15
	7	05 52	05 53	05 53	05 54	05 54	05 54	05 55	05 55	05 55
	11	05 40	05 40	05 39	05 39	05 38	05 37	05 37	05 36	05 35
	15	05 28	05 27	05 25	05 23	05 21	05 20	05 18	05 17	05 15
	19	05 16	05 14	05 11	05 08	05 04	05 02	05 00	04 57	04 54
	23	05 04	05 01	04 57	04 52	04 47	04 44	04 41	04 37	04 33
	27	04 51	04 47	04 42	04 36	04 29	04 25	04 21	04 16	04 11
OCT.	1	04 39	04 33	04 27	04 20	04 11	04 06	04 01	03 55	03 48
	5	04 26	04 20	04 12	04 03	03 53	03 47	03 40	03 32	03 23

CREPÚSCULO CIVIL

		h m	h m	h m	h m	h m	h m	h m	h m	h m
JUL.	9	16 09	15 57	15 43	15 25	15 03	14 50	14 34	14 15	13 50
	13	16 15	16 03	15 49	15 33	15 12	15 00	14 45	14 28	14 06
	17	16 21	16 09	15 56	15 41	15 22	15 10	14 57	14 42	14 23
	21	16 27	16 17	16 05	15 50	15 33	15 22	15 10	14 57	14 40
	25	16 34	16 24	16 13	16 00	15 44	15 34	15 24	15 12	14 57
	29	16 41	16 32	16 22	16 10	15 56	15 47	15 38	15 27	15 15
AGO.	2	16 49	16 41	16 32	16 21	16 08	16 00	15 52	15 43	15 32
	6	16 57	16 50	16 41	16 32	16 20	16 14	16 06	15 58	15 49
	10	17 05	16 58	16 51	16 43	16 33	16 27	16 21	16 14	16 06
	14	17 13	17 08	17 01	16 54	16 45	16 41	16 35	16 29	16 23
	18	17 22	17 17	17 11	17 05	16 58	16 54	16 50	16 45	16 39
	22	17 30	17 26	17 22	17 17	17 11	17 08	17 04	17 00	16 56
	26	17 39	17 36	17 32	17 29	17 24	17 22	17 19	17 16	17 13
	30	17 48	17 45	17 43	17 40	17 37	17 36	17 34	17 32	17 30
SEP.	3	17 56	17 55	17 54	17 52	17 51	17 50	17 49	17 48	17 46
	7	18 05	18 05	18 05	18 04	18 04	18 04	18 04	18 03	18 03
	11	18 14	18 15	18 16	18 16	18 18	18 18	18 19	18 20	18 21
	15	18 24	18 25	18 27	18 29	18 31	18 33	18 34	18 36	18 38
	19	18 33	18 35	18 38	18 42	18 46	18 48	18 50	18 53	18 56
	23	18 43	18 46	18 50	18 55	19 00	19 03	19 07	19 11	19 15
	27	18 52	18 57	19 02	19 08	19 15	19 19	19 24	19 29	19 35
OCT.	1	19 02	19 08	19 14	19 22	19 31	19 36	19 42	19 48	19 56
	5	19 13	19 19	19 27	19 36	19 47	19 53	20 01	20 09	20 18

AURORA Y CREPÚSCULO CIVIL, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

AURORA CIVIL

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
OCT.	9	04 13	04 06	03 57	03 46	03 34	03 26	03 18	03 08	02 57
	13	04 00	03 51	03 41	03 29	03 14	03 05	02 55	02 43	02 29
	17	03 47	03 37	03 25	03 11	02 53	02 42	02 29	02 15	01 57
	21	03 34	03 23	03 09	02 52	02 31	02 17	02 01	01 42	01 16
	25	03 21	03 08	02 52	02 32	02 06	01 50	01 28	00 59	////
	29	03 08	02 53	02 35	02 12	01 39	01 16	00 42	////	////
NOV.	2	02 55	02 38	02 17	01 49	01 05	00 25*	////	////	////
	6	02 42	02 23	01 58	01 23	00 05	////	////	////	////
	10	02 29	02 07	01 37	00 50	////	////	////	////	////
	14	02 16	01 51	01 14	////	////	////	////	////	////
	18	02 03	01 34	00 46	////	////	////	////	////	////
	22	01 50	01 15	////	////	////	////	////	////	////
	26	01 38	00 55	////	////	////	////	////	////	////
	30	01 26	00 29	////	////	////	////	////	////	////
DIC.	4	01 14	////	////	////	////	////	////	////	////
	8	01 04	////	////	////	////	////	////	////	////
	12	00 55	////	////	////	////	////	////	////	////
	16	00 48	////	////	////	////	////	////	////	////
	20	00 45	////	////	////	////	////	////	////	////
	24	00 47	////	////	////	////	////	////	////	////
	28	00 54	////	////	////	////	////	////	////	////

CREPÚSCULO CIVIL

		h m	h m	h m	h m	h m	h m	h m	h m	h m
OCT.	9	19 23	19 31	19 40	19 51	20 04	20 12	20 21	20 31	20 42
	13	19 34	19 43	19 54	20 07	20 22	20 32	20 42	20 55	21 09
	17	19 45	19 56	20 08	20 23	20 42	20 53	21 06	21 22	21 41
	21	19 57	20 09	20 23	20 41	21 03	21 17	21 34	21 55	22 24
	25	20 09	20 23	20 39	21 00	21 27	21 45	22 08	22 42	////
	29	20 22	20 37	20 56	21 20	21 55	22 20	23 02	////	////
NOV.	2	20 34	20 52	21 14	21 44	22 31	23 33	////	////	////
	6	20 48	21 08	21 33	22 11	////	////	////	////	////
	10	21 01	21 24	21 55	22 48	////	////	////	////	////
	14	21 15	21 42	22 20	////	////	////	////	////	////
	18	21 30	22 01	22 53	////	////	////	////	////	////
	22	21 45	22 21	////	////	////	////	////	////	////
	26	21 59	22 45	////	////	////	////	////	////	////
	30	22 14	23 17	////	////	////	////	////	////	////
DIC.	4	22 29	////	////	////	////	////	////	////	////
	8	22 42	////	////	////	////	////	////	////	////
	12	22 55	////	////	////	////	////	////	////	////
	16	23 05	////	////	////	////	////	////	////	////
	20	23 10	////	////	////	////	////	////	////	////
	24	23 11	////	////	////	////	////	////	////	////
	28	23 07	////	////	////	////	////	////	////	////

SERVICIO HIDROGRÁFICO Y OCEANOGRÁFICO ARMADA DE CHILE

(*) FENÓMENO DOBLE (Ver página 311)

AURORA Y CREPÚSCULO NÁUTICO, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

AURORA NÁUTICA

LAT. S	60°	62°	64°	66°	68°	69°	70°	71°	72º
	h m	h m	h m	h m	h m	h m	h m	h m	h m
ENE. 2	////	////	////	////	////	////	////	////	////
6	////	////	////	////	////	////	////	////	////
10	////	////	////	////	////	////	////	////	////
14	////	////	////	////	////	////	////	////	////
18	////	////	////	////	////	////	////	////	////
22	////	////	////	////	////	////	////	////	////
26	////	////	////	////	////	////	////	////	////
30	00 46	////	////	////	////	////	////	////	////
FEB. 3	01 27	////	////	////	////	////	////	////	////
7	01 54	01 04	////	////	////	////	////	////	////
11	02 16	01 42	////	////	////	////	////	////	////
15	02 35	02 08	01 27	////	////	////	////	////	////
19	02 52	02 30	02 00	01 08	////	////	////	////	////
23	03 08	02 49	02 25	01 51	00 34	////	////	////	////
27	03 23	03 07	02 47	02 21	01 41	01 07	////	////	////
MAR. 3	03 37	03 23	03 06	02 45	02 16	01 56	01 29	00 35	////
7	03 50	03 38	03 24	03 06	02 43	02 28	02 11	01 47	01 13
11	04 02	03 52	03 40	03 25	03 06	02 55	02 41	02 25	02 05
15	04 14	04 05	03 55	03 42	03 27	03 18	03 07	02 55	02 40
19	04 25	04 18	04 09	03 59	03 46	03 38	03 30	03 20	03 09
23	04 36	04 30	04 23	04 14	04 03	03 57	03 50	03 42	03 33
27	04 46	04 41	04 35	04 28	04 20	04 15	04 09	04 03	03 56
31	04 56	04 53	04 48	04 42	04 36	04 32	04 27	04 22	04 17
ABR. 4	05 06	05 03	05 00	04 56	04 50	04 47	04 44	04 40	04 36

CREPÚSCULO NÁUTICO

	h m	h m	h m	h m	h m	h m	h m	h m	h m
ENE. 2	////	////	////	////	////	////	////	////	////
6	////	////	////	////	////	////	////	////	////
10	////	////	////	////	////	////	////	////	////
14	////	////	////	////	////	////	////	////	////
18	////	////	////	////	////	////	////	////	////
22	////	////	////	////	////	////	////	////	////
26	////	////	////	////	////	////	////	////	////
30	23 28	////	////	////	////	////	////	////	////
FEB. 3	22 54	////	////	////	////	////	////	////	////
7	22 30	23 14	////	////	////	////	////	////	////
11	22 09	22 41	23 43	////	////	////	////	////	////
15	21 50	22 15	22 53	////	////	////	////	////	////
19	21 32	21 53	22 22	23 07	////	////	////	////	////
23	21 16	21 34	21 56	22 28	23 27	////	////	////	////
27	21 00	21 15	21 34	21 59	22 36	23 04	////	////	////
MAR. 3	20 45	20 58	21 14	21 34	22 02	22 20	22 44	23 21	////
7	20 30	20 41	20 55	21 12	21 34	21 48	22 04	22 25	22 54
11	20 16	20 26	20 37	20 52	21 09	21 20	21 33	21 48	22 07
15	20 02	20 10	20 20	20 32	20 47	20 56	21 06	21 18	21 32
19	19 48	19 56	20 04	20 14	20 26	20 34	20 42	20 51	21 02
23	19 35	19 41	19 48	19 57	20 07	20 13	20 19	20 27	20 35
27	19 23	19 27	19 33	19 40	19 48	19 53	19 58	20 04	20 11
31	19 10	19 14	19 18	19 24	19 30	19 34	19 38	19 43	19 48
ABR. 4	18 58	19 01	19 04	19 08	19 13	19 16	19 19	19 23	19 27

AURORA Y CREPÚSCULO NÁUTICO, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

AURORA NÁUTICA

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
ABR.	8	05 16	05 14	05 11	05 08	05 05	05 03	05 00	04 58	04 55
	12	05 25	05 24	05 22	05 21	05 19	05 17	05 16	05 14	05 12
	16	05 34	05 34	05 33	05 33	05 32	05 31	05 31	05 30	05 29
	20	05 43	05 43	05 44	05 44	05 45	05 45	05 45	05 45	05 45
	24	05 51	05 53	05 54	05 56	05 57	05 58	05 59	06 00	06 01
	28	05 59	06 02	06 04	06 07	06 09	06 11	06 13	06 15	06 16
MAY.	2	06 07	06 10	06 14	06 17	06 21	06 23	06 26	06 29	06 31
	6	06 15	06 19	06 23	06 27	06 33	06 36	06 39	06 42	06 46
	10	06 23	06 27	06 32	06 37	06 44	06 47	06 51	06 55	07 00
	14	06 30	06 35	06 40	06 47	06 54	06 58	07 03	07 08	07 13
	18	06 37	06 42	06 49	06 56	07 04	07 09	07 14	07 19	07 26
	22	06 43	06 49	06 56	07 04	07 13	07 19	07 24	07 31	07 38
	26	06 49	06 55	07 03	07 12	07 22	07 28	07 34	07 41	07 49
	30	06 54	07 01	07 09	07 19	07 30	07 36	07 43	07 50	07 59
JUN.	3	06 59	07 06	07 15	07 25	07 37	07 43	07 51	07 59	08 08
	7	07 03	07 11	07 20	07 30	07 42	07 49	07 57	08 06	08 16
	11	07 06	07 14	07 24	07 34	07 47	07 54	08 02	08 11	08 22
	15	07 09	07 17	07 27	07 38	07 51	07 58	08 06	08 16	08 26
	19	07 10	07 19	07 29	07 40	07 53	08 00	08 09	08 18	08 29
	23	07 11	07 20	07 29	07 41	07 54	08 01	08 10	08 19	08 30
	27	07 11	07 20	07 29	07 40	07 53	08 01	08 09	08 18	08 29
JUL.	1	07 11	07 19	07 28	07 39	07 51	07 59	08 07	08 16	08 26
	5	07 09	07 17	07 26	07 36	07 48	07 55	08 03	08 12	08 21

CREPÚSCULO NÁUTICO

		h m	h m	h m	h m	h m	h m	h m	h m	h m
ABR.	8	18 47	18 48	18 51	18 53	18 57	18 59	19 01	19 04	19 06
	12	18 35	18 36	18 37	18 39	18 41	18 42	18 44	18 45	18 47
	16	18 24	18 25	18 25	18 25	18 26	18 26	18 27	18 27	18 28
	20	18 14	18 13	18 13	18 12	18 11	18 11	18 11	18 11	18 10
	24	18 04	18 03	18 01	17 59	17 57	17 56	17 55	17 54	17 53
	28	17 55	17 52	17 50	17 47	17 44	17 42	17 41	17 39	17 37
MAY.	2	17 46	17 43	17 39	17 36	17 31	17 29	17 27	17 24	17 21
	6	17 37	17 33	17 29	17 25	17 19	17 16	17 13	17 10	17 06
	10	17 29	17 25	17 20	17 14	17 08	17 05	17 01	16 56	16 52
	14	17 22	17 17	17 11	17 05	16 58	16 53	16 49	16 44	16 38
	18	17 16	17 10	17 04	16 56	16 48	16 43	16 38	16 32	16 26
	22	17 10	17 04	16 57	16 49	16 39	16 34	16 28	16 22	16 15
	26	17 05	16 58	16 50	16 42	16 31	16 26	16 19	16 12	16 04
	30	17 01	16 53	16 45	16 36	16 25	16 19	16 12	16 04	15 55
JUN.	3	16 57	16 50	16 41	16 31	16 19	16 13	16 05	15 57	15 48
	7	16 55	16 47	16 38	16 27	16 15	16 08	16 00	15 52	15 42
	11	16 53	16 45	16 35	16 25	16 12	16 05	15 57	15 48	15 37
	15	16 52	16 44	16 34	16 23	16 10	16 03	15 55	15 45	15 35
	19	16 52	16 44	16 34	16 23	16 10	16 02	15 54	15 45	15 34
	23	16 53	16 45	16 35	16 24	16 11	16 03	15 55	15 46	15 35
	27	16 55	16 47	16 37	16 26	16 13	16 06	15 57	15 48	15 38
JUL.	1	16 58	16 49	16 40	16 29	16 17	16 09	16 01	15 52	15 42
	5	17 01	16 53	16 44	16 34	16 21	16 14	16 07	15 58	15 48

AURORA Y CREPÚSCULO NÁUTICO, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

AURORA NÁUTICA

LAT. S		60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
JUL.	9	07 06	07 14	07 22	07 32	07 44	07 51	07 58	08 06	08 15
	13	07 03	07 10	07 18	07 27	07 38	07 45	07 51	07 59	08 08
	17	06 58	07 05	07 13	07 21	07 32	07 37	07 44	07 51	07 59
	21	06 53	06 59	07 06	07 14	07 24	07 29	07 35	07 41	07 48
	25	06 47	06 53	06 59	07 07	07 15	07 20	07 25	07 30	07 37
	29	06 41	06 46	06 51	06 58	07 05	07 09	07 14	07 19	07 24
AGO.	2	06 33	06 38	06 43	06 48	06 55	06 58	07 02	07 06	07 11
	6	06 25	06 29	06 33	06 38	06 43	06 46	06 49	06 53	06 57
	10	06 17	06 20	06 23	06 27	06 31	06 34	06 36	06 39	06 42
	14	06 08	06 10	06 13	06 15	06 19	06 20	06 22	06 24	06 26
	18	05 58	06 00	06 02	06 03	06 05	06 06	06 07	06 08	06 10
	22	05 48	05 49	05 50	05 51	05 51	05 52	05 52	05 52	05 52
	26	05 38	05 38	05 38	05 37	05 37	05 36	05 36	05 35	05 35
	30	05 27	05 26	05 25	05 23	05 22	05 20	05 19	05 18	05 16
SEP.	3	05 16	05 14	05 12	05 09	05 06	05 04	05 02	04 59	04 57
	7	05 04	05 01	04 58	04 54	04 50	04 47	04 44	04 40	04 36
	11	04 52	04 48	04 44	04 39	04 33	04 29	04 25	04 20	04 15
	15	04 40	04 35	04 29	04 23	04 15	04 10	04 05	03 59	03 53
	19	04 27	04 21	04 14	04 06	03 57	03 51	03 44	03 37	03 29
	23	04 14	04 07	03 59	03 49	03 37	03 30	03 22	03 13	03 03
	27	04 00	03 52	03 43	03 31	03 17	03 08	02 58	02 47	02 34
OCT.	1	03 47	03 37	03 26	03 12	02 55	02 44	02 32	02 18	02 00
	5	03 32	03 21	03 08	02 52	02 31	02 18	02 02	01 43	01 17

CREPÚSCULO NÁUTICO

		h m	h m	h m	h m	h m	h m	h m	h m	h m
JUL.	9	17 05	16 57	16 49	16 39	16 27	16 21	16 13	16 05	15 56
	13	17 09	17 02	16 54	16 45	16 34	16 28	16 21	16 13	16 05
	17	17 15	17 08	17 00	16 52	16 42	16 36	16 30	16 23	16 15
	21	17 20	17 14	17 07	16 59	16 50	16 45	16 39	16 33	16 26
	25	17 27	17 21	17 15	17 07	16 59	16 55	16 49	16 44	16 38
	29	17 33	17 28	17 23	17 16	17 09	17 05	17 00	16 55	16 50
AGO.	2	17 40	17 36	17 31	17 25	17 19	17 16	17 12	17 08	17 03
	6	17 47	17 44	17 40	17 35	17 30	17 27	17 24	17 20	17 17
	10	17 55	17 52	17 49	17 45	17 41	17 39	17 36	17 34	17 31
	14	18 03	18 00	17 58	17 55	17 52	17 51	17 49	17 47	17 45
	18	18 10	18 09	18 07	18 06	18 04	18 03	18 02	18 01	18 00
	22	18 19	18 18	18 17	18 17	18 16	18 16	18 16	18 16	18 15
	26	18 27	18 27	18 28	18 28	18 29	18 29	18 30	18 31	18 31
	30	18 36	18 37	18 38	18 40	18 42	18 43	18 44	18 46	18 48
SEP.	3	18 45	18 46	18 49	18 52	18 55	18 57	18 59	19 02	19 05
	7	18 54	18 56	19 00	19 04	19 09	19 12	19 15	19 19	19 23
	11	19 03	19 07	19 11	19 17	19 23	19 27	19 31	19 36	19 41
	15	19 13	19 17	19 23	19 30	19 38	19 43	19 48	19 54	20 01
	19	19 22	19 28	19 35	19 44	19 54	20 00	20 07	20 14	20 23
	23	19 33	19 40	19 48	19 58	20 11	20 18	20 26	20 36	20 47
	27	19 44	19 52	20 02	20 14	20 29	20 38	20 48	21 00	21 14
OCT.	1	19 55	20 05	20 16	20 31	20 49	21 00	21 12	21 28	21 47
	5	20 07	20 18	20 32	20 49	21 11	21 25	21 41	22 02	22 32

AURORA Y CREPÚSCULO NÁUTICO, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

AURORA NÁUTICA

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
OCT.	9	03 18	03 05	02 50	02 30	02 04	01 47	01 26	00 55	////
	13	03 03	02 48	02 30	02 06	01 32	01 08	00 27	////	////
	17	02 47	02 30	02 08	01 38	00 49	////	////	////	////
	21	02 31	02 11	01 44	01 04	////	////	////	////	////
	25	02 14	01 50	01 15	////	////	////	////	////	////
	29	01 55	01 26	00 35	////	////	////	////	////	////
NOV.	2	01 35	00 56	////	////	////	////	////	////	////
	6	01 12	00 03	////	////	////	////	////	////	////
	10	00 43	////	////	////	////	////	////	////	////
	14	////	////	////	////	////	////	////	////	////
	18	////	////	////	////	////	////	////	////	////
	22	////	////	////	////	////	////	////	////	////
	26	////	////	////	////	////	////	////	////	////
	30	////	////	////	////	////	////	////	////	////
DIC.	4	////	////	////	////	////	////	////	////	////
	8	////	////	////	////	////	////	////	////	////
	12	////	////	////	////	////	////	////	////	////
	16	////	////	////	////	////	////	////	////	////
	20	////	////	////	////	////	////	////	////	////
	24	////	////	////	////	////	////	////	////	////
	28	////	////	////	////	////	////	////	////	////

CREPÚSCULO NÁUTICO

		h m	h m	h m	h m	h m	h m	h m	h m	h m
OCT.	9	20 19	20 32	20 48	21 09	21 36	21 55	22 19	22 56	////
	13	20 32	20 48	21 07	21 32	22 08	22 36	////	////	////
	17	20 46	21 04	21 27	21 59	22 56	////	////	////	////
	21	21 02	21 23	21 51	22 35	////	////	////	////	////
	25	21 18	21 43	22 20	////	////	////	////	////	////
	29	21 36	22 08	23 07	////	////	////	////	////	////
NOV.	2	21 57	22 39	////	////	////	////	////	////	////
	6	22 21	////	////	////	////	////	////	////	////
	10	22 54	////	////	////	////	////	////	////	////
	14	////	////	////	////	////	////	////	////	////
	18	////	////	////	////	////	////	////	////	////
	22	////	////	////	////	////	////	////	////	////
	26	////	////	////	////	////	////	////	////	////
	30	////	////	////	////	////	////	////	////	////
DIC.	4	////	////	////	////	////	////	////	////	////
	8	////	////	////	////	////	////	////	////	////
	12	////	////	////	////	////	////	////	////	////
	16	////	////	////	////	////	////	////	////	////
	20	////	////	////	////	////	////	////	////	////
	24	////	////	////	////	////	////	////	////	////
	28	////	////	////	////	////	////	////	////	////

SERVICIO HIDROGRÁFICO Y OCEANOGRÁFICO ARMADA DE CHILE

ORTO Y OCASO DE LA LUNA, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO LUNA

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
ENE.	1	00 56	00 31	23 46	▭	▭	▭	▭	▭	▭
	2	01 32	00 56	▭	▭	▭	▭	▭	▭	▭
	3	02 39	02 02	00 41	▭	▭	▭	▭	▭	▭
	4	04 15	03 49	03 11	01 36	▭	▭	▭	▭	▭
	5	06 00	05 43	05 22	04 53	04 12	03 37	▭	▭	▭
	6	07 42	07 32	07 19	07 04	06 44	06 33	06 19	06 03	05 43
	7	09 18	09 12	09 05	08 57	08 48	08 42	08 36	08 29	08 21
	8	10 47	10 45	10 43	10 41	10 38	10 36	10 35	10 33	10 31
	9	12 12	12 14	12 17	12 19	12 22	12 24	12 26	12 29	12 31
	10	13 36	13 42	13 48	13 56	14 06	14 11	14 17	14 24	14 32
	11	14 59	15 09	15 21	15 35	15 53	16 04	16 16	16 30	16 48
	12	16 23	16 39	16 57	17 21	17 53	18 15	18 47	▬	▬
	13	17 48	18 10	18 39	19 22	▬	▬	▬	▬	▬
	14	19 10	19 41	20 29	▬	▬	▬	▬	▬	▬
	15	20 22	21 01	▬	▬	▬	▬	▬	▬	▬
	16	21 14	21 53	▬	▬	▬	▬	▬	▬	▬
	17	21 46	22 16	23 03	▬	▬	▬	▬	▬	▬
	18	22 04	22 25	22 53	23 34	▬	▬	▬	▬	▬
	19	22 14	22 29	22 47	23 10	23 40	▬	▬	▬	▬
	20	22 20	22 30	22 42	22 56	23 13	00 00*	00 25*	01 05*	▬
	21	22 24	22 30	22 37	22 45	22 54	23 00	23 06	23 12	00 03*
	22	22 27	22 29	22 32	22 35	22 39	22 41	22 43	22 46	22 48
	23	22 30	22 29	22 27	22 26	22 24	22 23	22 22	22 21	22 20
	24	22 33	22 28	22 23	22 16	22 09	22 05	22 00	21 55	21 50

OCASO LUNA

		h m	h m	h m	h m	h m	h m	h m	h m	h m
ENE.	1	20 53	21 28	22 38	▭	▭	▭	▭	▭	▭
	2	22 05	22 42	▭	▭	▭	▭	▭	▭	▭
	3	22 44	23 11	00 03*	▭	▭	▭	▭	▭	▭
	4	23 03	23 22	23 44	01 26	▭	▭	▭	▭	▭
	5	23 13	23 25	23 39	00 13*	00 56	01 31	▭	▭	▭
	6	23 19	23 26	23 35	23 44	00 16*	00 29	00 43	01 00	01 21
	7	23 23	23 26	23 30	23 34	23 39	00 02*	00 09*	00 17*	00 26*
	8	23 26	23 26	23 26	23 25	23 25	23 25	23 25	23 25	23 25
	9	23 29	23 25	23 21	23 16	23 11	23 08	23 05	23 01	22 57
	10	23 31	23 24	23 16	23 07	22 56	22 49	22 42	22 34	22 25
	11	23 35	23 24	23 12	22 56	22 37	22 26	22 13	21 58	21 39
	12	23 42	23 26	23 06	22 42	22 08	21 46	21 14	▬	▬
	13	23 52	23 29	23 00	22 16	▬	▬	▬	▬	▬
	14	.. ..	23 39	22 50	▬	▬	▬	▬	▬	▬
	15	00 09	.. ..	▬	▬	▬	▬	▬	▬	▬
	16	00 41	00 03	▬	▬	▬	▬	▬	▬	▬
	17	01 35	00 57	▬	▬	▬	▬	▬	▬	▬
	18	02 50	02 20	01 34	▬	▬	▬	▬	▬	▬
	19	04 16	03 54	03 27	02 47	▬	▬	▬	▬	▬
	20	05 45	05 31	05 13	04 52	04 22	04 03	03 38	03 00	▬
	21	07 14	07 05	06 55	06 42	06 26	06 17	06 06	05 54	05 40
	22	08 43	08 38	08 33	08 26	08 19	08 14	08 09	08 04	07 58
	23	10 12	10 11	10 10	10 09	10 08	10 07	10 06	10 06	10 05
	24	11 42	11 45	11 49	11 53	11 58	12 01	12 05	12 08	12 12

(.. ..) INDICA QUE EL FENÓMENO OCURRE AL DÍA SIGUIENTE

(*) FENÓMENO DOBLE (Ver página 311)

ORTO Y OCASO DE LA LUNA, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO LUNA

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
ENE.	25	22 37	22 28	22 18	22 06	21 51	21 43	21 33	21 22	21 10
	26	22 44	22 30	22 13	21 52	21 25	21 08	20 47	20 19	19 34
	27	22 57	22 35	22 08	21 28	▭	▭	▭	▭	▭
	28	23 21	22 50	22 00	▭	▭	▭	▭	▭	▭
	29	.. ..	23 32	▭	▭	▭	▭	▭	▭	▭
	30	00 11	.. ..	▭	▭	▭	▭	▭	▭	▭
	31	01 33	01 01	00 07	▭	▭	▭	▭	▭	▭
FEB.	1	03 16	02 55	02 26	01 44	▭	▭	▭	▭	▭
	2	05 02	04 48	04 32	04 11	03 44	03 26	03 04	02 33	▭
	3	06 43	06 35	06 26	06 15	06 01	05 53	05 44	05 34	05 22
	4	08 18	08 14	08 10	08 06	08 00	07 57	07 53	07 49	07 45
	5	09 48	09 48	09 49	09 49	09 50	09 50	09 51	09 52	09 52
	6	11 14	11 19	11 24	11 29	11 37	11 41	11 45	11 50	11 56
	7	12 40	12 48	12 58	13 10	13 25	13 33	13 43	13 54	14 07
	8	14 05	14 19	14 35	14 55	15 21	15 38	15 59	16 27	17 17
	9	15 31	15 51	16 16	16 50	17 55	▬	▬	▬	▬
	10	16 55	17 23	18 04	▬	▬	▬	▬	▬	▬
	11	18 12	18 49	▬	▬	▬	▬	▬	▬	▬
	12	19 12	19 53	▬	▬	▬	▬	▬	▬	▬
	13	19 50	20 24	21 26	▬	▬	▬	▬	▬	▬
	14	20 11	20 36	21 09	22 06	▬	▬	▬	▬	▬
	15	20 23	20 40	21 01	21 29	22 08	22 37	23 37	▬	▬
	16	20 30	20 41	20 55	21 12	21 32	21 45	21 59	22 16	22 36

OCASO LUNA

		h m	h m	h m	h m	h m	h m	h m	h m	h m
ENE.	25	13 16	13 23	13 32	13 43	13 56	14 04	14 12	14 22	14 33
	26	14 55	15 08	15 24	15 44	16 10	16 26	16 46	17 13	17 58
	27	16 39	16 59	17 26	18 05	▭	▭	▭	▭	▭
	28	18 21	18 52	19 42	▭	▭	▭	▭	▭	▭
	29	19 46	20 25	▭	▭	▭	▭	▭	▭	▭
	30	20 39	21 12	22 06	▭	▭	▭	▭	▭	▭
	31	21 06	21 29	21 58	22 41	▭	▭	▭	▭	▭
FEB.	1	21 20	21 34	21 52	22 14	22 43	23 01	23 24	23 56	▭
	2	21 27	21 36	21 47	22 00	22 15	22 24	22 34	22 45	22 58
	3	21 32	21 37	21 42	21 49	21 57	22 01	22 06	22 11	22 17
	4	21 35	21 36	21 38	21 39	21 41	21 42	21 44	21 45	21 46
	5	21 37	21 35	21 33	21 30	21 27	21 25	21 23	21 21	21 18
	6	21 40	21 35	21 28	21 20	21 12	21 07	21 01	20 55	20 48
	7	21 44	21 34	21 23	21 10	20 54	20 45	20 34	20 22	20 08
	8	21 49	21 34	21 17	20 56	20 29	20 12	19 50	19 21	18 30
	9	21 57	21 37	21 11	20 35	19 30	▬	▬	▬	▬
	10	22 11	21 43	21 01	▬	▬	▬	▬	▬	▬
	11	22 37	21 59	▬	▬	▬	▬	▬	▬	▬
	12	23 22	22 41	▬	▬	▬	▬	▬	▬	▬
	13	.. ..	23 57	22 55	▬	▬	▬	▬	▬	▬
	14	00 31	.. ..	.. ..	▬	▬	▬	▬	▬	▬
	15	01 55	01 31	00 58	00 01	▬	▬	▬	▬	▬
	16	03 25	03 09	02 48	02 22	01 44	01 15	00 15	▬	▬

(.. ..) INDICA QUE EL FENÓMENO OCURRE AL DÍA SIGUIENTE

ORTO Y OCASO DE LA LUNA, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO LUNA

LAT. S		60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
FEB.	17	20 34	20 41	20 50	21 00	21 11	21 18	21 25	21 33	21 43
	18	20 37	20 41	20 45	20 49	20 54	20 57	21 01	21 04	21 08
	19	20 40	20 40	20 40	20 39	20 39	20 39	20 39	20 39	20 39
	20	20 43	20 39	20 35	20 30	20 24	20 21	20 17	20 13	20 09
	21	20 46	20 38	20 29	20 19	20 06	19 59	19 51	19 42	19 32
	22	20 52	20 39	20 24	20 06	19 43	19 29	19 12	18 52	18 27
	23	21 01	20 42	20 18	19 45	18 53	▭	▭	▭	▭
	24	21 20	20 51	20 09	▭	▭	▭	▭	▭	▭
	25	21 56	21 17	▭	▭	▭	▭	▭	▭	▭
	26	23 04	22 27	▭	▭	▭	▭	▭	▭	▭
	27	.. ..	.. ..	23 35	▭	▭	▭	▭	▭	▭
	28	00 39	00 13	.. ..	▭	▭	▭	▭	▭	▭
MAR.	1	02 24	02 07	01 45	01 17	00 35	00 01	▭	▭	▭
	2	04 07	03 56	03 43	03 28	03 09	02 58	02 45	02 29	02 09
	3	05 44	05 39	05 32	05 25	05 16	05 10	05 05	04 58	04 51
	4	07 17	07 16	07 14	07 13	07 10	07 09	07 08	07 07	07 05
	5	08 47	08 49	08 52	08 56	09 00	09 03	09 05	09 08	09 12
	6	10 14	10 21	10 29	10 38	10 50	10 56	11 03	11 12	11 21
	7	11 42	11 53	12 07	12 24	12 44	12 57	13 12	13 31	13 54
	8	13 10	13 27	13 48	14 17	14 59	15 34	▬	▬	▬
	9	14 37	15 02	15 36	16 41	▬	▬	▬	▬	▬
	10	15 59	16 34	17 45	▬	▬	▬	▬	▬	▬
	11	17 07	17 50	▬	▬	▬	▬	▬	▬	▬

OCASO LUNA

		h m	h m	h m	h m	h m	h m	h m	h m	h m
FEB.	17	04 56	04 46	04 33	04 18	03 59	03 47	03 34	03 17	02 58
	18	06 27	06 21	06 14	06 06	05 56	05 50	05 44	05 37	05 29
	19	07 57	07 55	07 53	07 51	07 48	07 46	07 44	07 42	07 40
	20	09 28	09 30	09 33	09 36	09 39	09 41	09 43	09 46	09 48
	21	11 01	11 08	11 16	11 24	11 35	11 41	11 48	11 56	12 05
	22	12 39	12 50	13 04	13 21	13 43	13 56	14 12	14 31	14 56
	23	14 20	14 39	15 02	15 34	16 25	▭	▭	▭	▭
	24	16 02	16 31	17 12	▭	▭	▭	▭	▭	▭
	25	17 33	18 12	▭	▭	▭	▭	▭	▭	▭
	26	18 37	19 15	▭	▭	▭	▭	▭	▭	▭
	27	19 10	19 37	20 16	▭	▭	▭	▭	▭	▭
	28	19 27	19 45	20 07	20 37	21 19	21 54	▭	▭	▭
MAR.	1	19 36	19 48	20 01	20 18	20 38	20 51	21 05	21 21	21 42
	2	19 41	19 48	19 56	20 05	20 16	20 22	20 29	20 37	20 46
	3	19 44	19 47	19 51	19 55	19 59	20 02	20 04	20 08	20 11
	4	19 47	19 46	19 45	19 45	19 44	19 43	19 43	19 42	19 41
	5	19 49	19 45	19 40	19 35	19 28	19 25	19 21	19 16	19 12
	6	19 52	19 44	19 35	19 24	19 11	19 04	18 56	18 46	18 36
	7	19 56	19 43	19 29	19 11	18 49	18 35	18 20	18 01	17 36
	8	20 02	19 44	19 22	18 53	18 10	17 34	▬	▬	▬
	9	20 13	19 47	19 12	18 06	▬	▬	▬	▬	▬
	10	20 32	19 57	18 45	▬	▬	▬	▬	▬	▬
	11	21 09	20 25	▬	▬	▬	▬	▬	▬	▬

(.. ..) INDICA QUE EL FENÓMENO OCURRE AL DÍA SIGUIENTE

ORTO Y OCASO DE LA LUNA, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO LUNA

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
MAR.	12	17 53	18 33	▬	▬	▬	▬	▬	▬	▬
	13	18 19	18 48	19 31	▬	▬	▬	▬	▬	▬
	14	18 32	18 53	19 19	19 55	21 02	▬	▬	▬	▬
	15	18 40	18 54	19 11	19 31	19 58	20 14	20 35	21 01	21 43
	16	18 45	18 54	19 04	19 17	19 32	19 40	19 50	20 01	20 14
	17	18 48	18 53	18 59	19 05	19 13	19 17	19 22	19 27	19 33
	18	18 51	18 52	18 53	18 55	18 57	18 58	18 59	19 00	19 01
	19	18 53	18 50	18 48	18 44	18 41	18 39	18 36	18 34	18 31
	20	18 56	18 49	18 42	18 33	18 23	18 17	18 11	18 04	17 56
	21	19 00	18 49	18 36	18 20	18 01	17 50	17 36	17 21	17 03
	22	19 08	18 50	18 29	18 01	17 22	16 52	15 51	▭	▭
	23	19 22	18 56	18 19	17 04	▭	▭	▭	▭	▭
	24	19 51	19 13	▭	▭	▭	▭	▭	▭	▭
	25	20 48	20 06	▭	▭	▭	▭	▭	▭	▭
	26	22 15	21 44	20 54	▭	▭	▭	▭	▭	▭
	27	23 57	23 36	23 09	22 32	20 57	▭	▭	▭	▭
	28	.. ..	.. ..	.. ..	.. ..	.. ..	▭	23 50	23 24	22 44
	29	01 38	01 25	01 10	00 50	00 25	00 09	.. ..	.. ..	.. ..
	30	03 16	03 09	03 00	02 49	02 37	02 29	02 21	02 12	02 01
	31	04 50	04 47	04 43	04 39	04 34	04 31	04 28	04 25	04 21
ABR.	1	06 20	06 21	06 22	06 23	06 24	06 25	06 26	06 27	06 28
	2	07 48	07 53	07 59	08 06	08 14	08 18	08 23	08 29	08 36

OCASO LUNA

		h m	h m	h m	h m	h m	h m	h m	h m	h m
MAR.	12	22 09	21 29	▬	▬	▬	▬	▬	▬	▬
	13	23 29	23 00	22 17	▬	▬	▬	▬	▬	▬
	14	.. ..	.. ..	.. ..	23 38	22 31	▬	▬	▬	▬
	15	00 58	00 38	00 13	.. ..	.. ..	▬	▬	▬	23 34
	16	02 30	02 17	02 01	01 42	01 17	01 01	00 41	00 15	.. ..
	17	04 02	03 54	03 45	03 34	03 21	03 13	03 04	02 54	02 43
	18	05 34	05 31	05 27	05 22	05 16	05 13	05 10	05 06	05 02
	19	07 07	07 07	07 08	07 09	07 10	07 11	07 12	07 12	07 13
	20	08 42	08 47	08 53	08 59	09 08	09 12	09 18	09 23	09 30
	21	10 20	10 31	10 42	10 57	11 14	11 25	11 37	11 52	12 09
	22	12 03	12 20	12 40	13 07	13 45	14 14	15 15	▭	▭
	23	13 48	14 14	14 50	16 05	▭	▭	▭	▭	▭
	24	15 25	16 03	▭	▭	▭	▭	▭	▭	▭
	25	16 37	17 20	▭	▭	▭	▭	▭	▭	▭
	26	17 17	17 49	18 40	▭	▭	▭	▭	▭	▭
	27	17 37	17 58	18 25	19 04	20 40	▭	▭	▭	▭
	28	17 47	18 01	18 17	18 38	19 05	19 21	19 42	20 08	20 49
	29	17 52	18 01	18 11	18 23	18 37	18 46	18 55	19 06	19 18
	30	17 55	18 00	18 05	18 11	18 18	18 22	18 27	18 32	18 37
	31	17 58	17 59	18 00	18 01	18 02	18 03	18 04	18 05	18 06
ABR.	1	18 00	17 57	17 54	17 51	17 47	17 44	17 42	17 39	17 36
	2	18 02	17 55	17 48	17 40	17 30	17 24	17 18	17 11	17 03

(.. ..) INDICA QUE EL FENÓMENO OCURRE AL DÍA SIGUIENTE

ORTO Y OCASO DE LA LUNA, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO LUNA

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
ABR.	3	09 16	09 26	09 37	09 50	10 07	10 16	10 27	10 40	10 56
	4	10 45	11 00	11 18	11 41	12 12	12 33	13 01	13 53	▬
	5	12 15	12 36	13 05	13 49	▬	▬	▬	▬	▬
	6	13 41	14 13	15 06	▬	▬	▬	▬	▬	▬
	7	14 57	15 40	▬	▬	▬	▬	▬	▬	▬
	8	15 52	16 38	▬	▬	▬	▬	▬	▬	▬
	9	16 25	17 00	18 06	▬	▬	▬	▬	▬	▬
	10	16 42	17 06	17 39	18 33	▬	▬	▬	▬	▬
	11	16 51	17 08	17 28	17 55	18 31	18 58	19 41	▬	▬
	12	16 56	17 08	17 21	17 37	17 56	18 08	18 21	18 37	18 56
	13	17 00	17 06	17 14	17 23	17 34	17 40	17 47	17 55	18 03
	14	17 02	17 05	17 08	17 12	17 17	17 19	17 22	17 25	17 28
	15	17 04	17 03	17 02	17 01	17 00	17 00	16 59	16 58	16 57
	16	17 06	17 02	16 56	16 50	16 43	16 39	16 35	16 30	16 24
	17	17 10	17 01	16 50	16 38	16 23	16 14	16 04	15 53	15 40
	18	17 16	17 01	16 43	16 21	15 52	15 33	15 10	14 36	▭
	19	17 27	17 04	16 33	15 47	▭	▭	▭	▭	▭
	20	17 49	17 14	16 08	▭	▭	▭	▭	▭	▭
	21	18 37	17 52	▭	▭	▭	▭	▭	▭	▭
	22	19 57	19 21	18 04	▭	▭	▭	▭	▭	▭
	23	21 37	21 13	20 41	19 48	▭	▭	▭	▭	▭
	24	23 19	23 04	22 45	22 22	21 49	21 27	20 55	▭	▭
	25	.. ..	.. ..	.. ..	.. ..	.. ..	23 59	23 48	23 35	23 20

OCASO LUNA

		h m	h m	h m	h m	h m	h m	h m	h m	h m
ABR.	3	18 05	17 54	17 42	17 27	17 10	16 59	16 47	16 33	16 17
	4	18 09	17 54	17 35	17 11	16 39	16 18	15 49	14 56	▬
	5	18 17	17 55	17 25	16 41	▬	▬	▬	▬	▬
	6	18 32	18 00	17 06	▬	▬	▬	▬	▬	▬
	7	19 00	18 16	▬	▬	▬	▬	▬	▬	▬
	8	19 50	19 04	▬	▬	▬	▬	▬	▬	▬
	9	21 02	20 28	19 22	▬	▬	▬	▬	▬	▬
	10	22 28	22 05	21 32	20 39	▬	▬	▬	▬	▬
	11	23 59	23 43	23 23	22 58	22 22	21 56	21 14	▬	▬
	12	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	23 58	23 40
	13	01 31	01 21	01 09	00 54	00 36	00 25	00 13	.. ..	.. ..
	14	03 03	02 57	02 51	02 44	02 35	02 29	02 24	02 17	02 10
	15	04 36	04 34	04 33	04 31	04 29	04 28	04 27	04 26	04 24
	16	06 11	06 14	06 17	06 21	06 26	06 29	06 32	06 36	06 39
	17	07 50	07 58	08 07	08 18	08 31	08 39	08 48	08 58	09 09
	18	09 35	09 49	10 05	10 26	10 54	11 12	11 35	12 07	▭
	19	11 23	11 46	12 15	13 01	▭	▭	▭	▭	▭
	20	13 09	13 43	14 49	▭	▭	▭	▭	▭	▭
	21	14 34	15 18	▭	▭	▭	▭	▭	▭	▭
	22	15 23	16 00	17 17	▭	▭	▭	▭	▭	▭
	23	15 47	16 11	16 44	17 38	▭	▭	▭	▭	▭
	24	15 58	16 15	16 34	16 59	17 33	17 56	18 28	▭	▭
	25	16 04	16 15	16 27	16 41	16 59	17 09	17 21	17 35	17 50

(.. ..) INDICA QUE EL FENÓMENO OCURRE AL DÍA SIGUIENTE

ORTO Y OCASO DE LA LUNA, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO LUNA

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
ABR.	26	00 57	00 48	00 37	00 24	00 08	.. ..	.. ..	.. ..	.. ..
	27	02 30	02 26	02 20	02 14	02 07	02 02	01 58	01 53	01 47
	28	04 00	03 59	03 58	03 58	03 57	03 57	03 56	03 55	03 55
	29	05 27	05 31	05 34	05 39	05 44	05 48	05 51	05 55	05 59
	30	06 54	07 02	07 11	07 21	07 34	07 42	07 50	08 00	08 11
MAY.	1	08 23	08 35	08 50	09 09	09 33	09 47	10 05	10 28	11 01
	2	09 52	10 11	10 35	11 08	12 03	▬	▬	▬	▬
	3	11 21	11 49	12 29	▬	▬	▬	▬	▬	▬
	4	12 43	13 23	▬	▬	▬	▬	▬	▬	▬
	5	13 48	14 36	▬	▬	▬	▬	▬	▬	▬
	6	14 28	15 09	▬	▬	▬	▬	▬	▬	▬
	7	14 50	15 18	16 00	▬	▬	▬	▬	▬	▬
	8	15 01	15 21	15 46	16 20	17 18	▬	▬	▬	▬
	9	15 07	15 21	15 37	15 57	16 22	16 38	16 57	17 21	17 56
	10	15 11	15 20	15 30	15 42	15 56	16 04	16 14	16 24	16 36
	11	15 13	15 18	15 23	15 30	15 37	15 41	15 46	15 51	15 57
	12	15 15	15 16	15 17	15 19	15 20	15 21	15 22	15 23	15 25
	13	15 17	15 15	15 12	15 08	15 04	15 02	14 59	14 56	14 53
	14	15 20	15 13	15 05	14 56	14 46	14 39	14 33	14 25	14 17
	15	15 25	15 13	14 59	14 42	14 21	14 09	13 54	13 37	13 17
	16	15 33	15 14	14 50	14 19	13 32	12 47	▭	▭	▭
	17	15 49	15 20	14 36	▭	▭	▭	▭	▭	▭
	18	16 25	15 43	▭	▭	▭	▭	▭	▭	▭

OCASO LUNA

		h m	h m	h m	h m	h m	h m	h m	h m	h m
ABR.	26	16 08	16 14	16 21	16 29	16 38	16 43	16 49	16 56	17 03
	27	16 10	16 12	16 15	16 18	16 21	16 23	16 25	16 27	16 30
	28	16 12	16 10	16 09	16 07	16 05	16 04	16 03	16 02	16 00
	29	16 13	16 08	16 03	15 57	15 49	15 45	15 40	15 35	15 29
	30	16 15	16 07	15 57	15 45	15 30	15 22	15 13	15 02	14 50
MAY.	1	16 19	16 06	15 50	15 30	15 05	14 49	14 31	14 07	13 33
	2	16 25	16 05	15 41	15 07	14 11	▬	▬	▬	▬
	3	16 36	16 08	15 26	▬	▬	▬	▬	▬	▬
	4	16 58	16 17	▬	▬	▬	▬	▬	▬	▬
	5	17 38	16 50	▬	▬	▬	▬	▬	▬	▬
	6	18 42	18 02	▬	▬	▬	▬	▬	▬	▬
	7	20 04	19 36	18 54	▬	▬	▬	▬	▬	▬
	8	21 32	21 13	20 49	20 16	19 18	▬	▬	▬	▬
	9	23 02	22 50	22 34	22 16	21 52	21 37	21 18	20 55	20 21
	10	.. ..	.. ..	.. ..	.. ..	23 52	23 45	23 36	23 27	23 16
	11	00 32	00 25	00 16	00 05	.. ..	.. ..	.. ..	.. ..	.. ..
	12	02 03	01 59	01 56	01 51	01 46	01 43	01 40	01 36	01 32
	13	03 35	03 36	03 37	03 38	03 40	03 40	03 41	03 42	03 43
	14	05 12	05 17	05 23	05 30	05 39	05 44	05 50	05 56	06 03
	15	06 54	07 05	07 18	07 33	07 52	08 04	08 17	08 33	08 53
	16	08 43	09 01	09 24	09 54	10 40	11 25	▭	▭	▭
	17	10 35	11 04	11 47	▭	▭	▭	▭	▭	▭
	18	12 15	12 57	▭	▭	▭	▭	▭	▭	▭

(.. ..) INDICA QUE EL FENÓMENO OCURRE AL DÍA SIGUIENTE

ORTO Y OCASO DE LA LUNA, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO LUNA

LAT. S	60°	62°	64°	66°	68°	69°	70°	71°	72º
	h m	h m	h m	h m	h m	h m	h m	h m	h m
MAY. 19	17 36	16 55	▭	▭	▭	▭	▭	▭	▭
20	19 14	18 47	18 06	▭	▭	▭	▭	▭	▭
21	20 59	20 42	20 20	19 50	19 06	18 26	▭	▭	▭
22	22 40	22 29	22 17	22 01	21 41	21 29	21 15	20 59	20 38
23	.. ..	.. ..	.. ..	23 54	23 45	23 39	23 33	23 26	23 18
24	00 15	00 09	00 03	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
25	01 45	01 44	01 42	01 39	01 36	01 35	01 33	01 31	01 29
26	03 12	03 14	03 17	03 20	03 23	03 25	03 27	03 30	03 32
27	04 38	04 45	04 52	05 00	05 10	05 16	05 23	05 30	05 38
28	06 05	06 16	06 29	06 44	07 03	07 15	07 29	07 45	08 05
29	07 33	07 50	08 10	08 37	09 15	09 43	10 42	▬	▬
30	09 02	09 26	10 00	10 57	▬	▬	▬	▬	▬
31	10 27	11 02	12 13	▬	▬	▬	▬	▬	▬
JUN. 1	11 39	12 26	▬	▬	▬	▬	▬	▬	▬
2	12 28	13 13	▬	▬	▬	▬	▬	▬	▬
3	12 56	13 28	14 21	▬	▬	▬	▬	▬	▬
4	13 10	13 32	14 01	14 45	▬	▬	▬	▬	▬
5	13 17	13 33	13 52	14 15	14 47	15 08	15 37	16 29	▬
6	13 21	13 32	13 44	13 59	14 16	14 27	14 39	14 53	15 09
7	13 24	13 30	13 38	13 46	13 56	14 02	14 08	14 15	14 23
8	13 26	13 29	13 32	13 35	13 39	13 41	13 44	13 47	13 50
9	13 28	13 27	13 26	13 25	13 23	13 22	13 21	13 21	13 19
10	13 30	13 25	13 20	13 14	13 06	13 02	12 58	12 53	12 47

OCASO LUNA

	h m	h m	h m	h m	h m	h m	h m	h m	h m
MAY. 19	13 21	14 03	▭	▭	▭	▭	▭	▭	▭
20	13 54	14 22	15 03	▭	▭	▭	▭	▭	▭
21	14 08	14 27	14 50	15 20	16 06	16 46	▭	▭	▭
22	14 16	14 28	14 42	14 59	15 20	15 33	15 47	16 05	16 27
23	14 20	14 27	14 35	14 45	14 56	15 03	15 10	15 19	15 28
24	14 22	14 25	14 29	14 34	14 39	14 42	14 45	14 48	14 52
25	14 24	14 24	14 23	14 23	14 23	14 23	14 22	14 22	14 22
26	14 25	14 22	14 17	14 13	14 07	14 04	14 00	13 57	13 52
27	14 27	14 20	14 11	14 01	13 50	13 43	13 35	13 27	13 17
28	14 30	14 18	14 05	13 48	13 28	13 15	13 01	12 44	12 23
29	14 35	14 18	13 57	13 29	12 51	12 21	11 22	▬	▬
30	14 44	14 19	13 45	12 47	▬	▬	▬	▬	▬
31	15 01	14 25	13 14	▬	▬	▬	▬	▬	▬
JUN. 1	15 34	14 47	▬	▬	▬	▬	▬	▬	▬
2	16 30	15 46	▬	▬	▬	▬	▬	▬	▬
3	17 46	17 15	16 22	▬	▬	▬	▬	▬	▬
4	19 13	18 51	18 22	17 39	▬	▬	▬	▬	▬
5	20 41	20 26	20 08	19 45	19 15	18 54	18 26	17 34	▬
6	22 09	21 59	21 48	21 35	21 19	21 09	20 58	20 45	20 29
7	23 37	23 32	23 26	23 19	23 11	23 06	23 01	22 55	22 49
8	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
9	01 05	01 04	01 03	01 02	01 00	00 59	00 58	00 57	00 56
10	02 37	02 40	02 44	02 48	02 53	02 56	02 59	03 03	03 07

(.. ..) INDICA QUE EL FENÓMENO OCURRE AL DÍA SIGUIENTE

ORTO Y OCASO DE LA LUNA, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO LUNA

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
JUN.	11	13 33	13 24	13 14	13 01	12 46	12 37	12 28	12 17	12 04
	12	13 39	13 24	13 07	12 44	12 15	11 57	11 33	11 00	▭
	13	13 51	13 28	12 57	12 10	▭	▭	▭	▭	▭
	14	14 16	13 40	12 28	▭	▭	▭	▭	▭	▭
	15	15 10	14 26	▭	▭	▭	▭	▭	▭	▭
	16	16 41	16 08	15 10	▭	▭	▭	▭	▭	▭
	17	18 29	18 08	17 40	17 00	▭	▭	▭	▭	▭
	18	20 16	20 03	19 47	19 28	19 02	18 46	18 26	18 00	17 19
	19	21 56	21 49	21 40	21 30	21 17	21 10	21 02	20 52	20 42
	20	23 30	23 27	23 23	23 19	23 14	23 12	23 09	23 05	23 02
	21	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
	22	00 58	00 59	01 01	01 02	01 03	01 04	01 05	01 06	01 08
	23	02 25	02 30	02 36	02 42	02 50	02 55	03 00	03 06	03 12
	24	03 51	04 01	04 12	04 25	04 41	04 50	05 01	05 14	05 29
	25	05 19	05 33	05 51	06 13	06 43	07 03	07 30	08 14	▬
	26	06 47	07 08	07 37	08 18	▬	▬	▬	▬	▬
	27	08 13	08 44	09 35	▬	▬	▬	▬	▬	▬
	28	09 30	10 13	▬	▬	▬	▬	▬	▬	▬
	29	10 27	11 13	▬	▬	▬	▬	▬	▬	▬
	30	11 00	11 35	12 47	▬	▬	▬	▬	▬	▬
JUL.	1	11 17	11 42	12 16	13 16	▬	▬	▬	▬	▬
	2	11 26	11 44	12 05	12 33	13 13	13 43	▬	▬	▬

OCASO LUNA

		h m	h m	h m	h m	h m	h m	h m	h m	h m
JUN.	11	04 14	04 22	04 31	04 42	04 55	05 03	05 12	05 22	05 33
	12	05 58	06 12	06 29	06 50	07 18	07 36	07 58	08 31	▭
	13	07 49	08 12	08 42	09 28	▭	▭	▭	▭	▭
	14	09 38	10 14	11 25	▭	▭	▭	▭	▭	▭
	15	11 05	11 49	▭	▭	▭	▭	▭	▭	▭
	16	11 53	12 26	13 25	▭	▭	▭	▭	▭	▭
	17	12 14	12 36	13 05	13 46	▭	▭	▭	▭	▭
	18	12 25	12 39	12 56	13 16	13 43	14 00	14 21	14 48	15 30
	19	12 30	12 39	12 49	13 01	13 15	13 23	13 32	13 43	13 55
	20	12 33	12 37	12 43	12 49	12 56	12 59	13 04	13 09	13 14
	21	12 35	12 36	12 37	12 38	12 39	12 40	12 41	12 42	12 43
	22	12 37	12 34	12 31	12 28	12 24	12 21	12 19	12 16	12 13
	23	12 39	12 32	12 25	12 17	12 07	12 01	11 55	11 48	11 40
	24	12 41	12 31	12 19	12 04	11 47	11 37	11 25	11 11	10 55
	25	12 45	12 30	12 11	11 48	11 17	10 56	10 29	09 44	▬
	26	12 53	12 31	12 02	11 19	▬	▬	▬	▬	▬
	27	13 07	12 35	11 44	▬	▬	▬	▬	▬	▬
	28	13 34	12 50	▬	▬	▬	▬	▬	▬	▬
	29	14 22	13 36	▬	▬	▬	▬	▬	▬	▬
	30	15 34	14 58	13 47	▬	▬	▬	▬	▬	▬
JUL.	1	16 58	16 33	16 00	15 01	▬	▬	▬	▬	▬
	2	18 26	18 09	17 48	17 22	16 43	16 13	▬	▬	▬

(.. ..) INDICA QUE EL FENÓMENO OCURRE AL DÍA SIGUIENTE

ORTO Y OCASO DE LA LUNA, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO LUNA

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
JUL.	3	11 31	11 43	11 57	12 14	12 35	12 48	13 02	13 20	13 42
	4	11 34	11 42	11 51	12 01	12 13	12 20	12 28	12 36	12 46
	5	11 36	11 40	11 45	11 50	11 55	11 59	12 02	12 06	12 11
	6	11 38	11 38	11 39	11 39	11 40	11 40	11 40	11 41	11 41
	7	11 40	11 37	11 33	11 29	11 24	11 21	11 18	11 15	11 11
	8	11 42	11 35	11 27	11 17	11 06	10 59	10 52	10 44	10 35
	9	11 47	11 35	11 20	11 03	10 42	10 29	10 14	09 56	09 34
	10	11 55	11 36	11 12	10 41	09 53	09 05	▭	▭	▭
	11	12 11	11 42	10 59	▭	▭	▭	▭	▭	▭
	12	12 48	12 06	▭	▭	▭	▭	▭	▭	▭
	13	14 02	13 22	▭	▭	▭	▭	▭	▭	▭
	14	15 47	15 20	14 43	▭	▭	▭	▭	▭	▭
	15	17 39	17 22	17 02	16 36	15 58	15 30	14 39	▭	▭
	16	19 26	19 16	19 04	18 51	18 34	18 24	18 12	17 59	17 43
	17	21 05	21 00	20 55	20 49	20 41	20 37	20 32	20 27	20 21
	18	22 38	22 38	22 38	22 37	22 37	22 36	22 36	22 35	22 35
	19	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
	20	00 08	00 12	00 16	00 21	00 27	00 30	00 34	00 38	00 43
	21	01 36	01 44	01 53	02 04	02 17	02 25	02 34	02 44	02 56
	22	03 04	03 17	03 32	03 52	04 16	04 32	04 51	05 16	05 54
	23	04 32	04 52	05 16	05 51	06 51	▬	▬	▬	▬
	24	06 00	06 28	07 10	▬	▬	▬	▬	▬	▬
	25	07 21	08 01	▬	▬	▬	▬	▬	▬	▬

OCASO LUNA

		h m	h m	h m	h m	h m	h m	h m	h m	h m
JUL.	3	19 53	19 42	19 29	19 13	18 54	18 42	18 28	18 11	17 50
	4	21 20	21 13	21 06	20 57	20 47	20 41	20 34	20 26	20 17
	5	22 46	22 43	22 41	22 38	22 34	22 32	22 29	22 27	22 24
	6	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
	7	00 13	00 15	00 17	00 19	00 21	00 23	00 24	00 26	00 28
	8	01 45	01 51	01 57	02 05	02 15	02 21	02 27	02 34	02 41
	9	03 22	03 33	03 47	04 02	04 22	04 34	04 48	05 05	05 26
	10	05 07	05 25	05 48	06 18	07 05	07 52	▭	▭	▭
	11	06 56	07 25	08 08	▭	▭	▭	▭	▭	▭
	12	08 36	09 18	▭	▭	▭	▭	▭	▭	▭
	13	09 43	10 24	▭	▭	▭	▭	▭	▭	▭
	14	10 16	10 43	11 21	▭	▭	▭	▭	▭	▭
	15	10 31	10 48	11 10	11 37	12 16	12 44	13 36	▭	▭
	16	10 38	10 49	11 02	11 17	11 36	11 46	11 59	12 13	12 31
	17	10 42	10 48	10 55	11 04	11 13	11 19	11 25	11 31	11 39
	18	10 45	10 47	10 49	10 52	10 56	10 57	10 59	11 02	11 04
	19	10 47	10 45	10 44	10 42	10 39	10 38	10 37	10 35	10 34
	20	10 49	10 43	10 38	10 31	10 23	10 19	10 14	10 08	10 02
	21	10 51	10 42	10 31	10 19	10 04	09 55	09 46	09 35	09 22
	22	10 55	10 41	10 24	10 04	09 38	09 22	09 02	08 36	07 57
	23	11 01	10 41	10 15	09 41	08 39	▬	▬	▬	▬
	24	11 12	10 43	10 01	▬	▬	▬	▬	▬	▬
	25	11 34	10 54	▬	▬	▬	▬	▬	▬	▬

(.. ..) INDICA QUE EL FENÓMENO OCURRE AL DÍA SIGUIENTE

ORTO Y OCASO DE LA LUNA, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO LUNA

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
JUL.	26	08 24	09 12	▬	▬	▬	▬	▬	▬	▬
	27	09 04	09 43	▬	▬	▬	▬	▬	▬	▬
	28	09 25	09 53	10 33	▬	▬	▬	▬	▬	▬
	29	09 35	09 55	10 19	10 52	11 46	▬	▬	▬	▬
	30	09 41	09 55	10 10	10 30	10 54	11 10	11 28	11 51	12 23
	31	09 45	09 53	10 03	10 15	10 29	10 38	10 47	10 57	11 09
AGO.	1	09 47	09 52	09 57	10 03	10 11	10 15	10 20	10 25	10 31
	2	09 48	09 50	09 51	09 53	09 55	09 56	09 57	09 58	10 00
	3	09 50	09 48	09 45	09 42	09 39	09 37	09 35	09 33	09 30
	4	09 52	09 46	09 39	09 31	09 22	09 17	09 11	09 04	08 57
	5	09 55	09 45	09 33	09 18	09 01	08 51	08 39	08 25	08 10
	6	10 01	09 44	09 25	09 00	08 26	08 03	07 31	▭	▭
	7	10 12	09 47	09 14	08 18	▭	▭	▭	▭	▭
	8	10 37	09 59	▭	▭	▭	▭	▭	▭	▭
	9	11 31	10 45	▭	▭	▭	▭	▭	▭	▭
	10	13 02	12 29	11 30	▭	▭	▭	▭	▭	▭
	11	14 53	14 32	14 05	13 25	▭	▭	▭	▭	▭
	12	16 44	16 32	16 16	15 58	15 33	15 18	15 00	14 36	14 01
	13	18 30	18 23	18 15	18 05	17 54	17 47	17 40	17 32	17 22
	14	20 08	20 06	20 04	20 01	19 57	19 55	19 53	19 51	19 48
	15	21 42	21 44	21 47	21 49	21 53	21 55	21 57	21 59	22 01
	16	23 14	23 20	23 27	23 36	23 46	23 52	23 59	.. ..	.. ..
	17	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	00 07	00 15

OCASO LUNA

		h m	h m	h m	h m	h m	h m	h m	h m	h m
JUL.	26	12 16	11 28	▬	▬	▬	▬	▬	▬	▬
	27	13 21	12 42	▬	▬	▬	▬	▬	▬	▬
	28	14 43	14 16	13 36	▬	▬	▬	▬	▬	▬
	29	16 11	15 53	15 29	14 57	14 04	▬	▬	▬	▬
	30	17 40	17 27	17 12	16 54	16 31	16 16	15 59	15 36	15 05
	31	19 07	18 59	18 50	18 40	18 27	18 20	18 12	18 02	17 51
AGO.	1	20 33	20 29	20 25	20 21	20 15	20 12	20 09	20 05	20 01
	2	21 59	21 59	22 00	22 01	22 01	22 02	22 02	22 03	22 03
	3	23 27	23 32	23 37	23 43	23 51	23 55	23 59	.. ..	.. ..
	4	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	00 04	00 10
	5	01 00	01 10	01 20	01 33	01 49	01 59	02 09	02 22	02 36
	6	02 40	02 55	03 14	03 37	04 10	04 32	05 04	▭	▭
	7	04 24	04 49	05 21	06 17	▭	▭	▭	▭	▭
	8	06 07	06 45	▭	▭	▭	▭	▭	▭	▭
	9	07 30	08 15	▭	▭	▭	▭	▭	▭	▭
	10	08 15	08 49	09 49	▭	▭	▭	▭	▭	▭
	11	08 36	08 58	09 26	10 07	▭	▭	▭	▭	▭
	12	08 46	09 00	09 16	09 36	10 02	10 18	10 38	11 02	11 38
	13	08 51	08 59	09 09	09 20	09 33	09 41	09 50	09 59	10 10
	14	08 54	08 58	09 02	09 08	09 13	09 17	09 21	09 25	09 29
	15	08 56	08 56	08 56	08 56	08 56	08 56	08 56	08 56	08 57
	16	08 58	08 54	08 50	08 45	08 40	08 36	08 33	08 29	08 25
	17	09 00	08 52	08 44	08 33	08 21	08 14	08 06	07 58	07 48

(.. ..) INDICA QUE EL FENÓMENO OCURRE AL DÍA SIGUIENTE

ORTO Y OCASO DE LA LUNA, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO LUNA

LAT. S	60°	62°	64°	66°	68°	69°	70°	71°	72º
	h m	h m	h m	h m	h m	h m	h m	h m	h m
AGO. 18	00 44	00 55	01 08	01 24	01 45	01 57	02 11	02 29	02 51
19	02 15	02 32	02 53	03 21	04 03	04 38	▬	▬	▬
20	03 44	04 10	04 46	05 58	▬	▬	▬	▬	▬
21	05 10	05 47	▬	▬	▬	▬	▬	▬	▬
22	06 21	07 10	▬	▬	▬	▬	▬	▬	▬
23	07 08	07 53	▬	▬	▬	▬	▬	▬	▬
24	07 33	08 05	08 58	▬	▬	▬	▬	▬	▬
25	07 46	08 08	08 36	09 18	▬	▬	▬	▬	▬
26	07 52	08 07	08 26	08 48	09 19	09 38	10 04	10 44	▬
27	07 56	08 06	08 18	08 31	08 48	08 58	09 10	09 23	09 38
28	07 58	08 04	08 11	08 19	08 28	08 33	08 39	08 46	08 53
29	07 59	08 02	08 04	08 07	08 11	08 13	08 15	08 17	08 20
30	08 00	07 59	07 58	07 56	07 54	07 53	07 52	07 51	07 50
31	08 02	07 57	07 51	07 45	07 38	07 33	07 29	07 23	07 18
SEP. 1	08 04	07 55	07 45	07 32	07 17	07 09	06 59	06 48	06 35
2	08 08	07 54	07 37	07 15	06 48	06 30	06 08	05 39	04 46
3	08 17	07 55	07 26	06 44	▭	▭	▭	▭	▭
4	08 34	08 00	07 00	▭	▭	▭	▭	▭	▭
5	09 13	08 25	▭	▭	▭	▭	▭	▭	▭
6	10 29	09 47	▭	▭	▭	▭	▭	▭	▭
7	12 12	11 46	11 08	▭	▭	▭	▭	▭	▭
8	14 03	13 47	13 26	13 00	12 23	11 55	11 06	▭	▭
9	15 50	15 41	15 30	15 16	15 00	14 50	14 38	14 25	14 09

OCASO LUNA

	h m	h m	h m	h m	h m	h m	h m	h m	h m
AGO. 18	09 03	08 51	08 36	08 19	07 58	07 44	07 29	07 11	06 48
19	09 08	08 50	08 27	07 58	07 16	06 40	▬	▬	▬
20	09 17	08 50	08 14	07 01	▬	▬	▬	▬	▬
21	09 34	08 56	▬	▬	▬	▬	▬	▬	▬
22	10 08	09 18	▬	▬	▬	▬	▬	▬	▬
23	11 06	10 21	▬	▬	▬	▬	▬	▬	▬
24	12 25	11 53	11 01	▬	▬	▬	▬	▬	▬
25	13 53	13 31	13 03	12 22	▬	▬	▬	▬	▬
26	15 23	15 08	14 51	14 29	14 00	13 41	13 16	12 37	▬
27	16 51	16 42	16 32	16 19	16 04	15 55	15 44	15 32	15 18
28	18 19	18 14	18 09	18 03	17 55	17 51	17 46	17 41	17 35
29	19 46	19 45	19 44	19 44	19 43	19 42	19 41	19 41	19 40
30	21 14	21 18	21 22	21 26	21 32	21 35	21 38	21 42	21 46
31	22 46	22 54	23 03	23 14	23 27	23 35	23 44	23 54	.. ..
SEP. 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	00 05
2	00 23	00 36	00 53	01 13	01 39	01 56	02 17	02 45	03 38
3	02 05	02 26	02 54	03 35	▭	▭	▭	▭	▭
4	03 48	04 22	05 21	▭	▭	▭	▭	▭	▭
5	05 18	06 06	▭	▭	▭	▭	▭	▭	▭
6	06 16	06 58	▭	▭	▭	▭	▭	▭	▭
7	06 43	07 10	07 48	▭	▭	▭	▭	▭	▭
8	06 55	07 12	07 34	08 01	08 39	09 07	09 58	▭	▭
9	07 01	07 12	07 24	07 39	07 58	08 08	08 21	08 35	08 52

(.. ..) INDICA QUE EL FENÓMENO OCURRE AL DÍA SIGUIENTE

ORTO Y OCASO DE LA LUNA, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO LUNA

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
SEP.	10	17 32	17 28	17 23	17 17	17 10	17 06	17 01	16 56	16 51
	11	19 09	19 09	19 10	19 10	19 10	19 10	19 10	19 10	19 10
	12	20 43	20 48	20 53	20 59	21 06	21 10	21 14	21 20	21 25
	13	22 16	22 26	22 36	22 49	23 04	23 14	23 24	23 36	23 51
	14	23 50	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	▬
	15	.. ..	00 04	00 22	00 45	01 15	01 36	02 04	02 53	▬
	16	01 23	01 45	02 15	03 00	▬	▬	▬	▬	▬
	17	02 53	03 26	04 28	▬	▬	▬	▬	▬	▬
	18	04 12	05 02	▬	▬	▬	▬	▬	▬	▬
	19	05 09	06 03	▬	▬	▬	▬	▬	▬	▬
	20	05 41	06 19	▬	▬	▬	▬	▬	▬	▬
	21	05 56	06 22	06 58	08 09	▬	▬	▬	▬	▬
	22	06 04	06 21	06 43	07 12	07 53	08 26	▬	▬	▬
	23	06 08	06 20	06 34	06 51	07 12	07 24	07 39	07 57	08 19
	24	06 10	06 17	06 26	06 36	06 48	06 55	07 02	07 11	07 20
	25	06 11	06 15	06 19	06 24	06 29	06 32	06 36	06 39	06 44
	26	06 12	06 12	06 12	06 12	06 12	06 12	06 12	06 12	06 12
	27	06 13	06 09	06 05	06 01	05 55	05 52	05 48	05 45	05 40
	28	06 15	06 07	05 58	05 48	05 35	05 28	05 20	05 11	05 01
	29	06 18	06 05	05 50	05 32	05 09	04 55	04 38	04 18	03 52
	30	06 24	06 04	05 39	05 06	04 09	▭	▭	▭	▭
OCT.	1	06 37	06 06	05 19	▭	▭	▭	▭	▭	▭
	2	07 07	06 19	▭	▭	▭	▭	▭	▭	▭

OCASO LUNA

		h m	h m	h m	h m	h m	h m	h m	h m	h m
SEP.	10	07 04	07 10	07 17	07 25	07 34	07 39	07 45	07 52	07 59
	11	07 06	07 08	07 10	07 13	07 15	07 17	07 19	07 21	07 23
	12	07 08	07 06	07 04	07 01	06 58	06 56	06 55	06 53	06 50
	13	07 09	07 03	06 57	06 49	06 40	06 35	06 29	06 23	06 16
	14	07 11	07 01	06 49	06 35	06 18	06 08	05 57	05 43	05 28
	15	07 15	06 59	06 40	06 17	05 45	05 24	04 56	04 06	▬
	16	07 21	06 58	06 28	05 42	▬	▬	▬	▬	▬
	17	07 34	07 00	05 58	▬	▬	▬	▬	▬	▬
	18	08 00	07 10	▬	▬	▬	▬	▬	▬	▬
	19	08 49	07 56	▬	▬	▬	▬	▬	▬	▬
	20	10 02	09 24	▬	▬	▬	▬	▬	▬	▬
	21	11 29	11 04	10 28	09 18	▬	▬	▬	▬	▬
	22	12 59	12 42	12 21	11 54	11 13	10 41	▬	▬	▬
	23	14 29	14 18	14 05	13 50	13 30	13 18	13 04	12 47	12 26
	24	15 58	15 52	15 45	15 36	15 26	15 20	15 14	15 06	14 58
	25	17 27	17 25	17 22	17 19	17 16	17 14	17 12	17 10	17 08
	26	18 56	18 58	19 00	19 03	19 06	19 08	19 10	19 12	19 15
	27	20 29	20 35	20 42	20 51	21 02	21 08	21 15	21 22	21 31
	28	22 06	22 17	22 31	22 48	23 10	23 23	23 39	23 58	.. ..
	29	23 48	.. ..	.. ..	.. ..	.. ..	▭	▭	▭	00 23
	30	.. ..	00 07	00 31	01 04	02 00	▭	▭	▭	▭
OCT.	1	01 33	02 03	02 51	▭	▭	▭	▭	▭	▭
	2	03 10	03 57	▭	▭	▭	▭	▭	▭	▭

(.. ..) INDICA QUE EL FENÓMENO OCURRE AL DÍA SIGUIENTE

ORTO Y OCASO DE LA LUNA, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO LUNA

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
OCT.	3	08 09	07 20	▭	▭	▭	▭	▭	▭	▭
	4	09 44	09 12	08 19	▭	▭	▭	▭	▭	▭
	5	11 32	11 12	10 46	10 10	09 00	▭	▭	▭	▭
	6	13 18	13 06	12 52	12 34	12 11	11 57	11 40	11 19	10 50
	7	15 00	14 54	14 46	14 37	14 26	14 20	14 13	14 05	13 56
	8	16 37	16 36	16 33	16 31	16 28	16 26	16 24	16 22	16 20
	9	18 12	18 14	18 17	18 20	18 24	18 26	18 29	18 31	18 34
	10	19 46	19 52	20 00	20 10	20 21	20 28	20 35	20 44	20 53
	11	21 20	21 32	21 46	22 04	22 26	22 40	22 57	23 18	23 46
	12	22 54	23 13	23 37	.. ..	.. ..	▬	▬	▬	▬
	13	.. ..	.. ..	.. ..	00 10	01 05	▬	▬	▬	▬
	14	00 28	00 57	01 41	▬	▬	▬	▬	▬	▬
	15	01 56	02 40	▬	▬	▬	▬	▬	▬	▬
	16	03 05	04 04	▬	▬	▬	▬	▬	▬	▬
	17	03 46	04 32	▬	▬	▬	▬	▬	▬	▬
	18	04 05	04 37	05 26	▬	▬	▬	▬	▬	▬
	19	04 15	04 36	05 03	05 41	07 11	▬	▬	▬	▬
	20	04 20	04 34	04 51	05 12	05 40	05 57	06 19	06 49	07 43
	21	04 22	04 31	04 42	04 55	05 11	05 20	05 30	05 41	05 55
	22	04 23	04 29	04 35	04 42	04 50	04 54	05 00	05 05	05 12
	23	04 24	04 26	04 28	04 30	04 32	04 33	04 35	04 37	04 38
	24	04 25	04 23	04 21	04 18	04 15	04 13	04 11	04 09	04 07
	25	04 26	04 20	04 13	04 05	03 56	03 51	03 45	03 38	03 31

OCASO LUNA

		h m	h m	h m	h m	h m	h m	h m	h m	h m
OCT.	3	04 18	05 07	▭	▭	▭	▭	▭	▭	▭
	4	04 51	05 24	06 18	▭	▭	▭	▭	▭	▭
	5	05 06	05 26	05 53	06 30	07 41	▭	▭	▭	▭
	6	05 13	05 26	05 41	06 01	06 25	06 40	06 57	07 19	07 49
	7	05 16	05 24	05 33	05 44	05 56	06 04	06 12	06 21	06 31
	8	05 18	05 21	05 26	05 30	05 36	05 39	05 42	05 46	05 50
	9	05 19	05 19	05 19	05 18	05 18	05 18	05 18	05 17	05 17
	10	05 20	05 16	05 11	05 06	05 00	04 57	04 53	04 49	04 44
	11	05 21	05 13	05 04	04 53	04 40	04 32	04 24	04 14	04 04
	12	05 24	05 11	04 55	04 36	04 13	03 58	03 40	03 19	02 50
	13	05 28	05 09	04 44	04 11	03 14	▬	▬	▬	▬
	14	05 37	05 08	04 24	▬	▬	▬	▬	▬	▬
	15	05 56	05 11	▬	▬	▬	▬	▬	▬	▬
	16	06 34	05 35	▬	▬	▬	▬	▬	▬	▬
	17	07 39	06 53	▬	▬	▬	▬	▬	▬	▬
	18	09 03	08 32	07 43	▬	▬	▬	▬	▬	▬
	19	10 32	10 12	09 46	09 08	07 39	▬	▬	▬	▬
	20	12 02	11 49	11 33	11 12	10 46	10 29	10 08	09 39	08 45
	21	13 31	13 23	13 13	13 02	12 48	12 40	12 30	12 20	12 07
	22	15 00	14 56	14 51	14 46	14 40	14 36	14 32	14 28	14 23
	23	16 29	16 29	16 30	16 30	16 30	16 30	16 31	16 31	16 31
	24	18 01	18 06	18 11	18 17	18 24	18 28	18 33	18 38	18 44
	25	19 39	19 48	19 59	20 13	20 29	20 39	20 50	21 03	21 18

(.. ..) INDICA QUE EL FENÓMENO OCURRE AL DÍA SIGUIENTE

SERVICIO HIDROGRÁFICO Y OCEANOGRÁFICO ARMADA DE CHILE

ORTO Y OCASO DE LA LUNA, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO LUNA

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
OCT.	26	04 28	04 18	04 05	03 51	03 32	03 22	03 10	02 56	02 39
	27	04 33	04 16	03 55	03 29	02 52	02 25	01 43	▭	▭
	28	04 43	04 16	03 39	02 20	▭	▭	▭	▭	▭
	29	05 05	04 23	▭	▭	▭	▭	▭	▭	▭
	30	05 57	05 03	▭	▭	▭	▭	▭	▭	▭
	31	07 25	06 47	▭	▭	▭	▭	▭	▭	▭
NOV.	1	09 11	08 47	08 16	07 26	▭	▭	▭	▭	▭
	2	10 57	10 42	10 25	10 03	09 34	09 14	08 49	08 08	▭
	3	12 38	12 30	12 20	12 08	11 54	11 46	11 37	11 26	11 13
	4	14 14	14 11	14 07	14 02	13 56	13 53	13 49	13 45	13 41
	5	15 48	15 48	15 49	15 50	15 51	15 52	15 52	15 53	15 54
	6	17 19	17 24	17 30	17 37	17 45	17 49	17 55	18 00	18 07
	7	18 52	19 02	19 13	19 27	19 44	19 54	20 06	20 19	20 36
	8	20 26	20 42	21 01	21 26	22 00	22 24	23 02	▬	▬
	9	22 01	22 25	22 58	23 54	▬	▬	▬	▬	▬
	10	23 33	.. ..	▬	▬	▬	▬	▬	▬	▬
	11	.. ..	00 10	▬	▬	▬	▬	▬	▬	▬
	12	00 52	01 48	▬	▬	▬	▬	▬	▬	▬
	13	01 45	02 40	▬	▬	▬	▬	▬	▬	▬
	14	02 12	02 49	▬	▬	▬	▬	▬	▬	▬
	15	02 24	02 49	03 22	04 20	▬	▬	▬	▬	▬
	16	02 30	02 47	03 08	03 34	04 12	04 39	05 25	▬	▬
	17	02 33	02 45	02 58	03 14	03 34	03 46	03 59	04 15	04 35

OCASO LUNA

		h m	h m	h m	h m	h m	h m	h m	h m	h m
OCT.	26	21 22	21 38	21 58	22 23	22 59	23 25	.. ..	▭	▭
	27	23 10	23 36	.. ..	.. ..	▭	▭	00 06	▭	▭
	28	.. ..	.. ..	00 13	01 31	▭	▭	▭	▭	▭
	29	00 55	01 37	▭	▭	▭	▭	▭	▭	▭
	30	02 15	03 09	▭	▭	▭	▭	▭	▭	▭
	31	02 58	03 36	▭	▭	▭	▭	▭	▭	▭
NOV.	1	03 16	03 40	04 12	05 03	▭	▭	▭	▭	▭
	2	03 24	03 40	03 58	04 21	04 52	05 12	05 39	06 19	▭
	3	03 28	03 38	03 49	04 02	04 18	04 27	04 38	04 49	05 03
	4	03 30	03 35	03 41	03 48	03 56	04 00	04 05	04 11	04 17
	5	03 31	03 33	03 34	03 36	03 37	03 38	03 40	03 41	03 42
	6	03 32	03 30	03 27	03 24	03 20	03 18	03 15	03 13	03 10
	7	03 33	03 27	03 19	03 11	03 01	02 55	02 49	02 42	02 34
	8	03 35	03 24	03 11	02 56	02 38	02 27	02 14	02 00	01 42
	9	03 38	03 22	03 01	02 36	02 00	01 35	00 57	▬	▬
	10	03 45	03 20	02 46	01 49	▬	▬	▬	▬	▬
	11	03 58	03 20	▬	▬	▬	▬	▬	▬	▬
	12	04 27	03 31	▬	▬	▬	▬	▬	▬	▬
	13	05 21	04 27	▬	▬	▬	▬	▬	▬	▬
	14	06 39	06 03	▬	▬	▬	▬	▬	▬	▬
	15	08 07	07 43	07 10	06 13	▬	▬	▬	▬	▬
	16	09 36	09 20	09 00	08 34	07 58	07 32	06 47	▬	▬
	17	11 04	10 54	10 41	10 27	10 08	09 57	09 44	09 29	09 11

(.. ..) INDICA QUE EL FENÓMENO OCURRE AL DÍA SIGUIENTE

ORTO Y OCASO DE LA LUNA, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO LUNA

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
NOV.	18	02 35	02 42	02 50	03 00	03 11	03 17	03 24	03 32	03 41
	19	02 36	02 39	02 43	02 47	02 52	02 55	02 58	03 02	03 05
	20	02 36	02 36	02 36	02 35	02 35	02 35	02 35	02 34	02 34
	21	02 37	02 33	02 29	02 24	02 18	02 14	02 10	02 06	02 01
	22	02 39	02 31	02 21	02 10	01 57	01 49	01 41	01 31	01 20*
	23	02 43	02 29	02 13	01 53	01 28	01 12	00 53	00 29	▭
	24	02 50	02 28	02 00	01 21	▭	▭	▭	▭	▭
	25	03 06	02 31	01 29	▭	▭	▭	▭	▭	▭
	26	03 45	02 53	▭	▭	▭	▭	▭	▭	▭
	27	05 03	04 19	▭	▭	▭	▭	▭	▭	▭
	28	06 48	06 21	05 42	▭	▭	▭	▭	▭	▭
	29	08 37	08 21	08 00	07 33	06 54	06 24	▭	▭	▭
	30	10 21	10 11	10 00	09 46	09 28	09 18	09 06	08 52	08 35
DIC.	1	11 59	11 54	11 48	11 42	11 34	11 29	11 24	11 19	11 12
	2	13 32	13 31	13 30	13 30	13 29	13 28	13 28	13 27	13 26
	3	15 02	15 06	15 10	15 15	15 20	15 24	15 27	15 31	15 36
	4	16 33	16 41	16 50	17 01	17 14	17 22	17 31	17 41	17 53
	5	18 04	18 18	18 34	18 54	19 20	19 36	19 57	20 25	21 14
	6	19 38	19 58	20 25	21 03	▬	▬	▬	▬	▬
	7	21 11	21 42	22 33	▬	▬	▬	▬	▬	▬
	8	22 35	23 23	▬	▬	▬	▬	▬	▬	▬
	9	23 39	.. ..	▬	▬	▬	▬	▬	▬	▬
	10	.. ..	00 37	▬	▬	▬	▬	▬	▬	▬

OCASO LUNA

		h m	h m	h m	h m	h m	h m	h m	h m	h m
NOV.	18	12 31	12 25	12 19	12 11	12 01	11 56	11 50	11 43	11 35
	19	13 58	13 57	13 55	13 52	13 50	13 48	13 46	13 45	13 42
	20	15 28	15 30	15 33	15 36	15 40	15 42	15 44	15 47	15 50
	21	17 02	17 09	17 17	17 27	17 38	17 45	17 52	18 00	18 10
	22	18 43	18 56	19 11	19 29	19 53	20 08	20 26	20 49	21 22
	23	20 31	20 52	21 19	21 58	▭	▭	▭	▭	▭
	24	22 22	22 56	23 58	▭	▭	▭	▭	▭	▭
	25	23 59	.. ..	▭	▭	▭	▭	▭	▭	▭
	26	.. ..	00 51	▭	▭	▭	▭	▭	▭	▭
	27	00 58	01 42	▭	▭	▭	▭	▭	▭	▭
	28	01 23	01 51	02 31	▭	▭	▭	▭	▭	▭
	29	01 34	01 52	02 14	02 42	03 22	03 52	▭	▭	▭
	30	01 40	01 51	02 04	02 19	02 38	02 49	03 02	03 17	03 35
DIC.	1	01 42	01 48	01 56	02 04	02 14	02 20	02 26	02 33	02 41
	2	01 43	01 46	01 48	01 51	01 55	01 57	01 59	02 02	02 04
	3	01 44	01 43	01 41	01 40	01 38	01 37	01 35	01 34	01 33
	4	01 45	01 40	01 34	01 28	01 20	01 15	01 11	01 05	00 59
	5	01 46	01 37	01 27	01 14	00 59	00 50	00 40*	00 29*	00 16*
	6	01 49	01 35	01 18	00 57	00 29	00 12	▬	▬	▬
	7	01 54	01 33	01 06	00 27	▬	▬	▬	▬	▬
	8	02 05	01 33	00 41	▬	▬	▬	▬	▬	▬
	9	02 27	01 38	▬	▬	▬	▬	▬	▬	▬
	10	03 11	02 13	▬	▬	▬	▬	▬	▬	▬

(.. ..) INDICA QUE EL FENÓMENO OCURRE AL DÍA SIGUIENTE

(*) FENÓMENO DOBLE (Ver página 311)

ORTO Y OCASO DE LA LUNA, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO LUNA

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
DIC.	11	00 14	00 57	▬	▬	▬	▬	▬	▬	▬
	12	00 31	01 00	01 41	▬	▬	▬	▬	▬	▬
	13	00 39	00 59	01 23	01 56	02 49	▬	▬	▬	▬
	14	00 43	00 57	01 12	01 31	01 56	02 11	02 29	02 51	03 22
	15	00 45	00 54	01 04	01 16	01 30	01 38	01 47	01 57	02 09
	16	00 46	00 51	00 57	01 03	01 10	01 15	01 19	01 24	01 30
	17	00 47	00 48	00 50	00 51	00 53	00 54	00 56	00 57	00 58
	18	00 48	00 46	00 43	00 40	00 37	00 35	00 33	00 30	00 28*
	19	00 49	00 43	00 36	00 28	00 18*	00 13*	00 07*	00 00*	23 01
	20	00 51	00 41	00 28	00 13*	23 15	22 48	22 05	▭	▭
	21	00 56	00 39	00 19	22 37	▭	▭	▭	▭	▭
	22	01 07	00 40	00 03	▭	▭	▭	▭	▭	▭
	23	01 33	00 50	▭	▭	▭	▭	▭	▭	▭
	24	02 33	01 42	▭	▭	▭	▭	▭	▭	▭
	25	04 12	03 39	02 40	▭	▭	▭	▭	▭	▭
	26	06 06	05 46	05 20	04 43	03 28	▭	▭	▭	▭
	27	07 56	07 44	07 30	07 12	06 50	06 36	06 19	05 59	05 31
	28	09 39	09 33	09 26	09 17	09 06	09 00	08 54	08 46	08 37
	29	11 16	11 14	11 12	11 10	11 07	11 05	11 03	11 01	10 59
	30	12 48	12 50	12 53	12 56	13 00	13 02	13 05	13 07	13 10
	31	14 19	14 25	14 33	14 42	14 53	15 00	15 07	15 15	15 24

OCASO LUNA

		h m	h m	h m	h m	h m	h m	h m	h m	h m
DIC.	11	04 22	03 39	▬	▬	▬	▬	▬	▬	▬
	12	05 47	05 19	04 38	▬	▬	▬	▬	▬	▬
	13	07 15	06 57	06 33	06 01	05 09	▬	▬	▬	▬
	14	08 43	08 30	08 16	07 58	07 34	07 20	07 03	06 41	06 11
	15	10 08	10 01	09 52	09 42	09 29	09 22	09 14	09 04	08 54
	16	11 33	11 30	11 26	11 21	11 16	11 13	11 09	11 06	11 01
	17	12 59	12 59	13 00	13 01	13 01	13 02	13 02	13 03	13 04
	18	14 28	14 33	14 38	14 44	14 52	14 56	15 01	15 06	15 12
	19	16 03	16 12	16 24	16 37	16 54	17 03	17 15	17 28	17 44
	20	17 46	18 02	18 22	18 47	19 23	19 49	20 32	▭	▭
	21	19 36	20 02	20 39	22 04	▭	▭	▭	▭	▭
	22	21 23	22 06	▭	▭	▭	▭	▭	▭	▭
	23	22 44	23 35	▭	▭	▭	▭	▭	▭	▭
	24	23 24	23 58	▭	▭	▭	▭	▭	▭	▭
	25	23 41	.. ..	00 58	▭	▭	▭	▭	▭	▭
	26	23 49	00 02	00 29	01 07	02 23	▭	▭	▭	▭
	27	23 52	00 02	00 17	00 36	01 00	01 15	01 33	01 54	02 23
	28	23 54	00 00*	00 09	00 19	00 32	00 39	00 47	00 56	01 06
	29	23 55	23 55	00 01*	00 06*	00 11*	00 14*	00 18*	00 21*	00 25*
	30	23 56	23 52	23 48	23 42	23 36	23 33	23 29	23 25	23 20
	31	23 57	23 49	23 40	23 29	23 17	23 09	23 01	22 52	22 41

(.. ..) INDICA QUE EL FENÓMENO OCURRE AL DÍA SIGUIENTE

(*) FENÓMENO DOBLE (Ver página 311)

FENÓMENOS DOBLES, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

AURORA CIVIL

LAT. S	69°	
	h m	h m
NOV. 02	23 53	00 25

CREPÚSCULO CIVIL

LAT. S	62°	
	h m	h m
ENE. 01	00 01	23 42

ORTO LUNA

LAT . S	64°		66°		68°		69°		70°		71°		72°	
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
ENE. 20	----	----	----	----	----	----	00 00	23 23	00 25	23 34	01 05	23 47	----	----
ENE. 21	----	----	----	----	----	----	----	----	----	----	----	----	00 03	23 20
NOV. 22	----	----	----	----	----	----	----	----	----	----	----	----	01 20	23 55
DIC. 18	----	----	----	----	----	----	----	----	----	----	----	----	00 28	23 53
DIC. 19	----	----	----	----	00 18	23 55	00 13	23 44	00 07	23 32	00 00	23 18	----	----
DIC. 20	----	----	00 13	23 52	----	----	----	----	----	----	----	----	----	----
DIC. 31	00 02	23 56	----	----	----	----	----	----	----	----	----	----	----	----

OCASO LUNA

LAT . S	62°		64°		66°		68°		69°		70°		71°		72°	
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
ENE. 03	----	----	00 03	23 50	----	----	----	----	----	----	----	----	----	----	----	----
ENE. 05	----	----	----	----	00 13	23 56	----	----	----	----	----	----	----	----	----	----
ENE. 06	----	----	----	----	----	----	00 16	23 55	----	----	----	----	----	----	----	----
ENE. 07	----	----	----	----	----	----	----	----	00 02	23 42	00 09	23 45	00 17	23 49	00 26	23 53
DIC. 05	----	----	----	----	----	----	----	----	----	----	00 40	23 51	00 29	23 22	00 16	22 32
DIC. 28	00 00	23 58	----	----	----	----	----	----	----	----	----	----	----	----	----	----
DIC. 29	----	----	00 01	23 55	00 06	23 54	00 11	23 54	00 14	23 54	00 18	23 53	00 21	23 53	00 25	23 53

SERVICIO HIDROGRÁFICO Y OCEANOGRÁFICO ARMADA DE CHILE

ORTO Y OCASO DEL SOL, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO SOL

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
ENE.	2	02 45	02 20	01 45	00 38	▭	▭	▭	▭	▭
	6	02 52	02 28	01 56	01 02	▭	▭	▭	▭	▭
	10	03 00	02 38	02 09	01 24	▭	▭	▭	▭	▭
	14	03 09	02 48	02 22	01 44	▭	▭	▭	▭	▭
	18	03 19	03 00	02 36	02 03	01 06	▭	▭	▭	▭
	22	03 29	03 12	02 50	02 22	01 39	01 01	▭	▭	▭
	26	03 40	03 24	03 05	02 40	02 05	01 40	01 00	▭	▭
	30	03 51	03 36	03 19	02 57	02 29	02 09	01 44	01 05	▭
FEB.	3	04 02	03 49	03 33	03 14	02 50	02 35	02 16	01 51	01 14
	7	04 13	04 01	03 48	03 31	03 10	02 57	02 42	02 24	02 01
	11	04 24	04 14	04 02	03 47	03 29	03 18	03 06	02 52	02 34
	15	04 35	04 26	04 15	04 03	03 47	03 38	03 28	03 16	03 02
	19	04 46	04 38	04 29	04 18	04 05	03 57	03 48	03 39	03 27
	23	04 56	04 49	04 42	04 32	04 21	04 15	04 08	04 00	03 51
	27	05 07	05 01	04 55	04 47	04 38	04 32	04 27	04 20	04 13
MAR.	3	05 17	05 13	05 07	05 01	04 53	04 49	04 45	04 39	04 33
	7	05 27	05 24	05 20	05 15	05 09	05 06	05 02	04 58	04 53
	11	05 38	05 35	05 32	05 28	05 24	05 22	05 19	05 16	05 13
	15	05 47	05 46	05 44	05 41	05 39	05 37	05 36	05 34	05 32
	19	05 57	05 57	05 56	05 55	05 53	05 53	05 52	05 51	05 50
	23	06 07	06 07	06 07	06 08	06 08	06 08	06 08	06 08	06 09
	27	06 17	06 18	06 19	06 21	06 22	06 23	06 24	06 26	06 27
	31	06 26	06 29	06 31	06 34	06 37	06 39	06 41	06 43	06 45
ABR.	4	06 36	06 39	06 43	06 47	06 51	06 54	06 57	07 00	07 03

OCASO SOL

		h m	h m	h m	h m	h m	h m	h m	h m	h m
ENE.	2	21 23	21 47	22 21	23 25	▭	▭	▭	▭	▭
	6	21 19	21 42	22 13	23 05	▭	▭	▭	▭	▭
	10	21 14	21 36	22 04	22 47	▭	▭	▭	▭	▭
	14	21 08	21 28	21 54	22 30	▭	▭	▭	▭	▭
	18	21 00	21 19	21 42	22 14	23 07	▭	▭	▭	▭
	22	20 52	21 09	21 30	21 58	22 38	23 12	▭	▭	▭
	26	20 44	20 59	21 18	21 42	22 15	22 38	23 12	▭	▭
	30	20 34	20 48	21 05	21 26	21 54	22 12	22 35	23 08	▭
FEB.	3	20 24	20 37	20 52	21 10	21 34	21 48	22 06	22 29	23 01
	7	20 14	20 25	20 38	20 54	21 14	21 27	21 41	21 58	22 20
	11	20 03	20 13	20 25	20 39	20 56	21 06	21 18	21 32	21 48
	15	19 52	20 00	20 11	20 23	20 38	20 47	20 56	21 08	21 21
	19	19 40	19 48	19 57	20 07	20 20	20 27	20 36	20 45	20 56
	23	19 29	19 35	19 43	19 52	20 02	20 09	20 15	20 23	20 32
	27	19 17	19 22	19 29	19 36	19 45	19 50	19 56	20 02	20 09
MAR.	3	19 05	19 10	19 15	19 21	19 28	19 32	19 36	19 41	19 47
	7	18 53	18 57	19 01	19 05	19 11	19 14	19 17	19 21	19 25
	11	18 41	18 44	18 46	18 50	18 54	18 56	18 59	19 01	19 04
	15	18 29	18 30	18 32	18 34	18 37	18 38	18 40	18 42	18 43
	19	18 17	18 17	18 18	18 19	18 20	18 21	18 21	18 22	18 23
	23	18 05	18 04	18 04	18 04	18 03	18 03	18 03	18 02	18 02
	27	17 53	17 51	17 50	17 48	17 47	17 45	17 44	17 43	17 42
	31	17 41	17 38	17 36	17 33	17 30	17 28	17 26	17 24	17 21
ABR.	4	17 29	17 26	17 22	17 18	17 13	17 10	17 07	17 04	17 00

ORTO Y OCASO DEL SOL, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO SOL

LAT. S	60°	62°	64°	66°	68°	69°	70°	71°	72º
	h m	h m	h m	h m	h m	h m	h m	h m	h m
ABR. 8	06 46	06 50	06 54	07 00	07 06	07 09	07 13	07 17	07 22
12	06 55	07 00	07 06	07 13	07 20	07 25	07 30	07 35	07 41
16	07 05	07 11	07 18	07 26	07 35	07 41	07 47	07 53	08 01
20	07 15	07 22	07 30	07 39	07 50	07 57	08 04	08 12	08 21
24	07 24	07 32	07 41	07 52	08 05	08 13	08 22	08 31	08 42
28	07 34	07 43	07 53	08 06	08 21	08 30	08 40	08 52	09 05
MAY. 2	07 43	07 53	08 05	08 19	08 37	08 47	08 59	09 13	09 30
6	07 53	08 04	08 17	08 33	08 53	09 05	09 19	09 36	09 57
10	08 02	08 14	08 29	08 47	09 10	09 24	09 41	10 02	10 31
14	08 11	08 25	08 41	09 01	09 27	09 44	10 05	10 33	11 26
18	08 20	08 34	08 52	09 15	09 45	10 05	10 32	11 19	▬
22	08 28	08 44	09 03	09 28	10 03	10 28	11 09	▬	▬
26	08 36	08 53	09 14	09 42	10 23	10 56	▬	▬	▬
30	08 43	09 01	09 24	09 55	10 43	11 46	▬	▬	▬
JUN. 3	08 50	09 09	09 33	10 07	11 07	▬	▬	▬	▬
7	08 55	09 15	09 41	10 18	11 41	▬	▬	▬	▬
11	09 00	09 20	09 48	10 27	▬	▬	▬	▬	▬
15	09 03	09 24	09 52	10 34	▬	▬	▬	▬	▬
19	09 05	09 27	09 55	10 38	▬	▬	▬	▬	▬
23	09 06	09 28	09 56	10 39	▬	▬	▬	▬	▬
27	09 06	09 27	09 55	10 36	▬	▬	▬	▬	▬
JUL. 1	09 04	09 25	09 52	10 31	▬	▬	▬	▬	▬
5	09 01	09 21	09 47	10 23	11 45	▬	▬	▬	▬

OCASO SOL

	h m	h m	h m	h m	h m	h m	h m	h m	h m
ABR. 8	17 17	17 13	17 08	17 03	16 56	16 53	16 49	16 45	16 40
12	17 05	17 00	16 54	16 48	16 40	16 35	16 30	16 25	16 19
16	16 54	16 48	16 41	16 33	16 23	16 18	16 12	16 05	15 57
20	16 42	16 35	16 27	16 18	16 06	16 00	15 53	15 44	15 35
24	16 31	16 23	16 14	16 03	15 50	15 42	15 33	15 24	15 12
28	16 20	16 11	16 01	15 48	15 33	15 24	15 14	15 02	14 48
MAY. 2	16 10	16 00	15 48	15 34	15 16	15 06	14 54	14 40	14 23
6	16 00	15 49	15 35	15 19	14 59	14 47	14 33	14 16	13 55
10	15 50	15 38	15 23	15 05	14 42	14 28	14 11	13 50	13 21
14	15 41	15 27	15 11	14 51	14 25	14 08	13 47	13 19	12 26
18	15 33	15 18	15 00	14 37	14 07	13 47	13 20	12 33	▬
22	15 25	15 09	14 49	14 24	13 49	13 24	12 44	▬	▬
26	15 18	15 01	14 39	14 12	13 31	12 57	▬	▬	▬
30	15 12	14 53	14 31	14 00	13 11	12 09	▬	▬	▬
JUN. 3	15 07	14 47	14 23	13 49	12 49	▬	▬	▬	▬
7	15 02	14 42	14 16	13 40	12 16	▬	▬	▬	▬
11	15 00	14 39	14 12	13 32	▬	▬	▬	▬	▬
15	14 58	14 37	14 09	13 27	▬	▬	▬	▬	▬
19	14 58	14 36	14 08	13 25	▬	▬	▬	▬	▬
23	14 59	14 37	14 09	13 26	▬	▬	▬	▬	▬
27	15 01	14 39	14 12	13 30	▬	▬	▬	▬	▬
JUL. 1	15 04	14 43	14 16	13 37	▬	▬	▬	▬	▬
5	15 09	14 49	14 23	13 46	12 25	▬	▬	▬	▬

ORTO Y OCASO DEL SOL, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO SOL

LAT.	S	60°	62°	64°	66°	68°	69°	70°	71°	72º
		h m	h m	h m	h m	h m	h m	h m	h m	h m
JUL.	9	08 57	09 16	09 40	10 14	11 13	▬	▬	▬	▬
	13	08 51	09 10	09 32	10 03	10 51	11 49	▬	▬	▬
	17	08 45	09 02	09 23	09 51	10 32	11 05	▬	▬	▬
	21	08 38	08 54	09 14	09 38	10 13	10 38	11 18	▬	▬
	25	08 30	08 45	09 03	09 25	09 55	10 16	10 42	11 29	▬
	29	08 22	08 35	08 52	09 12	09 38	09 55	10 16	10 44	11 36
AGO.	2	08 13	08 25	08 40	08 58	09 21	09 35	09 52	10 13	10 42
	6	08 03	08 14	08 27	08 44	09 04	09 16	09 30	09 47	10 08
	10	07 53	08 03	08 15	08 29	08 47	08 57	09 09	09 23	09 40
	14	07 42	07 51	08 02	08 15	08 30	08 39	08 49	09 01	09 14
	18	07 31	07 39	07 49	08 00	08 13	08 21	08 30	08 39	08 51
	22	07 20	07 27	07 35	07 45	07 56	08 03	08 10	08 19	08 28
	26	07 09	07 15	07 22	07 30	07 40	07 45	07 51	07 58	08 06
	30	06 57	07 02	07 08	07 15	07 23	07 28	07 33	07 38	07 45
SEP.	3	06 45	06 50	06 54	07 00	07 06	07 10	07 14	07 19	07 24
	7	06 34	06 37	06 40	06 45	06 50	06 52	06 56	06 59	07 03
	11	06 22	06 24	06 27	06 29	06 33	06 35	06 37	06 40	06 42
	15	06 10	06 11	06 12	06 14	06 16	06 17	06 19	06 20	06 22
	19	05 57	05 58	05 58	05 59	06 00	06 00	06 00	06 01	06 01
	23	05 45	05 45	05 44	05 44	05 43	05 42	05 42	05 41	05 41
	27	05 33	05 32	05 30	05 28	05 26	05 25	05 23	05 22	05 20
OCT.	1	05 21	05 19	05 16	05 13	05 09	05 07	05 05	05 02	04 59
	5	05 09	05 06	05 02	04 57	04 52	04 49	04 46	04 42	04 38

OCASO SOL

		h m	h m	h m	h m	h m	h m	h m	h m	h m
JUL.	9	15 14	14 55	14 31	13 57	12 58	▬	▬	▬	▬
	13	15 21	15 02	14 40	14 09	13 21	12 23	▬	▬	▬
	17	15 28	15 11	14 50	14 22	13 41	13 08	▬	▬	▬
	21	15 35	15 19	15 00	14 35	14 00	13 35	12 56	▬	▬
	25	15 44	15 29	15 11	14 49	14 19	13 58	13 32	12 45	▬
	29	15 52	15 38	15 22	15 02	14 36	14 19	13 58	13 30	12 38
AGO.	2	16 01	15 48	15 34	15 16	14 53	14 39	14 22	14 01	13 32
	6	16 10	15 59	15 45	15 29	15 09	14 57	14 43	14 26	14 05
	10	16 19	16 09	15 57	15 43	15 25	15 15	15 03	14 49	14 32
	14	16 28	16 19	16 09	15 56	15 41	15 32	15 22	15 10	14 56
	18	16 37	16 29	16 20	16 09	15 56	15 48	15 40	15 30	15 19
	22	16 47	16 40	16 32	16 22	16 11	16 04	15 57	15 49	15 39
	26	16 56	16 50	16 43	16 35	16 25	16 20	16 14	16 07	15 59
	30	17 05	17 00	16 54	16 48	16 40	16 35	16 30	16 25	16 19
SEP.	3	17 14	17 10	17 06	17 00	16 54	16 50	16 46	16 42	16 37
	7	17 24	17 21	17 17	17 13	17 08	17 05	17 02	16 59	16 55
	11	17 33	17 31	17 28	17 25	17 22	17 20	17 18	17 16	17 13
	15	17 42	17 41	17 39	17 38	17 36	17 35	17 34	17 32	17 31
	19	17 51	17 51	17 51	17 50	17 50	17 50	17 49	17 49	17 49
	23	18 01	18 01	18 02	18 03	18 04	18 04	18 05	18 06	18 06
	27	18 10	18 12	18 14	18 16	18 18	18 19	18 21	18 23	18 24
OCT.	1	18 20	18 22	18 25	18 29	18 32	18 35	18 37	18 40	18 43
	5	18 30	18 33	18 37	18 42	18 47	18 50	18 53	18 57	19 01

ORTO Y OCASO DEL SOL, 2022

TIEMPO UNIVERSAL PARA EL MERIDIANO DE GREENWICH

ORTO SOL

LAT. S	60°	62°	64°	66°	68°	69°	70°	71°	72º
	h m	h m	h m	h m	h m	h m	h m	h m	h m
OCT. 9	04 57	04 52	04 48	04 42	04 35	04 31	04 27	04 22	04 17
13	04 45	04 40	04 33	04 26	04 18	04 13	04 08	04 02	03 55
17	04 33	04 27	04 19	04 11	04 01	03 55	03 48	03 41	03 33
21	04 21	04 14	04 05	03 55	03 43	03 36	03 28	03 19	03 09
25	04 10	04 01	03 51	03 40	03 25	03 17	03 08	02 57	02 45
29	03 58	03 49	03 38	03 24	03 08	02 58	02 46	02 33	02 18
NOV. 2	03 47	03 37	03 24	03 08	02 49	02 38	02 24	02 08	01 48
6	03 37	03 25	03 10	02 53	02 30	02 16	02 00	01 39	01 12
10	03 27	03 13	02 57	02 37	02 11	01 54	01 33	01 04	00 08
14	03 17	03 02	02 44	02 21	01 50	01 29	01 00	▭	▭
18	03 08	02 51	02 31	02 05	01 27	00 59	▭	▭	▭
22	02 59	02 41	02 19	01 49	01 01	00 08	▭	▭	▭
26	02 52	02 32	02 07	01 33	00 25	▭	▭	▭	▭
30	02 45	02 24	01 56	01 16	▭	▭	▭	▭	▭
DIC. 4	02 39	02 17	01 47	00 59	▭	▭	▭	▭	▭
8	02 35	02 11	01 38	00 40	▭	▭	▭	▭	▭
12	02 32	02 07	01 32	00 17	▭	▭	▭	▭	▭
16	02 31	02 05	01 28	▭	▭	▭	▭	▭	▭
20	02 32	02 05	01 27	▭	▭	▭	▭	▭	▭
24	02 34	02 07	01 29	▭	▭	▭	▭	▭	▭
28	02 37	02 11	01 34	▭	▭	▭	▭	▭	▭

OCASO SOL

	h m	h m	h m	h m	h m	h m	h m	h m	h m
OCT. 9	18 39	18 44	18 49	18 55	19 02	19 06	19 10	19 15	19 21
13	18 49	18 55	19 01	19 08	19 17	19 22	19 28	19 34	19 41
17	18 59	19 06	19 13	19 22	19 33	19 39	19 46	19 53	20 02
21	19 10	19 17	19 26	19 36	19 49	19 56	20 04	20 14	20 24
25	19 20	19 29	19 39	19 51	20 06	20 14	20 24	20 35	20 48
29	19 31	19 41	19 52	20 06	20 23	20 33	20 45	20 59	21 15
NOV. 2	19 41	19 53	20 06	20 22	20 41	20 54	21 08	21 25	21 46
6	19 52	20 05	20 19	20 38	21 01	21 15	21 33	21 55	22 25
10	20 03	20 17	20 33	20 54	21 21	21 39	22 01	22 34	▭
14	20 14	20 29	20 47	21 11	21 44	22 06	22 39	▭	▭
18	20 24	20 41	21 02	21 29	22 08	22 40	▭	▭	▭
22	20 35	20 53	21 16	21 47	22 38	▭	▭	▭	▭
26	20 44	21 04	21 30	22 06	23 25	▭	▭	▭	▭
30	20 54	21 15	21 43	22 25	▭	▭	▭	▭	▭
DIC. 4	21 02	21 25	21 56	22 46	▭	▭	▭	▭	▭
8	21 09	21 34	22 07	23 09	▭	▭	▭	▭	▭
12	21 16	21 41	22 17	23 40	▭	▭	▭	▭	▭
16	21 20	21 47	22 24	▭	▭	▭	▭	▭	▭
20	21 24	21 50	22 28	▭	▭	▭	▭	▭	▭
24	21 25	21 52	22 30	▭	▭	▭	▭	▭	▭
28	21 25	21 51	22 28	▭	▭	▭	▭	▭	▭

SERVICIO HIDROGRÁFICO Y OCEANOGRÁFICO
ARMADA DE CHILE

CONVERSIÓN DE ARCO A TIEMPO

CONVERSIÓN DE ARCO A TIEMPO

0°–59°		60°–119°		120°–179°		180°–239°		240°–299°		300°–359°			0′.00	0′.25	0′.50	0′.75
°	h m	°	h m	°	h m	°	h m	°	h m	°	h m	′	m s	m s	m s	m s
0	0 00	**60**	4 00	**120**	8 00	**180**	12 00	**240**	16 00	**300**	20 00	**0**	0 00	0 01	0 02	0 03
1	0 04	**61**	4 04	**121**	8 04	**181**	12 04	**241**	16 04	**301**	20 04	**1**	0 04	0 05	0 06	0 07
2	0 08	**62**	4 08	**122**	8 08	**182**	12 08	**242**	16 08	**302**	20 08	**2**	0 08	0 09	0 10	0 11
3	0 12	**63**	4 12	**123**	8 12	**183**	12 12	**243**	16 12	**303**	20 12	**3**	0 12	0 13	0 14	0 15
4	0 16	**64**	4 16	**124**	8 16	**184**	12 16	**244**	16 16	**304**	20 16	**4**	0 16	0 17	0 18	0 19
5	0 20	**65**	4 20	**125**	8 20	**185**	12 20	**245**	16 20	**305**	20 20	**5**	0 20	0 21	0 22	0 23
6	0 24	**66**	4 24	**126**	8 24	**186**	12 24	**246**	16 24	**306**	20 24	**6**	0 24	0 25	0 26	0 27
7	0 28	**67**	4 28	**127**	8 28	**187**	12 28	**247**	16 28	**307**	20 28	**7**	0 28	0 29	0 30	0 31
8	0 32	**68**	4 32	**128**	8 32	**188**	12 32	**248**	16 32	**308**	20 32	**8**	0 32	0 33	0 34	0 35
9	0 36	**69**	4 36	**129**	8 36	**189**	12 36	**249**	16 36	**309**	20 36	**9**	0 36	0 37	0 38	0 39
10	0 40	**70**	4 40	**130**	8 40	**190**	12 40	**250**	16 40	**310**	20 40	**10**	0 40	0 41	0 42	0 43
11	0 44	**71**	4 44	**131**	8 44	**191**	12 44	**251**	16 44	**311**	20 44	**11**	0 44	0 45	0 46	0 47
12	0 48	**72**	4 48	**132**	8 48	**192**	12 48	**252**	16 48	**312**	20 48	**12**	0 48	0 49	0 50	0 51
13	0 52	**73**	4 52	**133**	8 52	**193**	12 52	**253**	16 52	**313**	20 52	**13**	0 52	0 53	0 54	0 55
14	0 56	**74**	4 56	**134**	8 56	**194**	12 56	**254**	16 56	**314**	20 56	**14**	0 56	0 57	0 58	0 59
15	1 00	**75**	5 00	**135**	9 00	**195**	13 00	**255**	17 00	**315**	21 00	**15**	1 00	1 01	1 02	1 03
16	1 04	**76**	5 04	**136**	9 04	**196**	13 04	**256**	17 04	**316**	21 04	**16**	1 04	1 05	1 06	1 07
17	1 08	**77**	5 08	**137**	9 08	**197**	13 08	**257**	17 08	**317**	21 08	**17**	1 08	1 09	1 10	1 11
18	1 12	**78**	5 12	**138**	9 12	**198**	13 12	**258**	17 12	**318**	21 12	**18**	1 12	1 13	1 14	1 15
19	1 16	**79**	5 16	**139**	9 16	**199**	13 16	**259**	17 16	**319**	21 16	**19**	1 16	1 17	1 18	1 19
20	1 20	**80**	5 20	**140**	9 20	**200**	13 20	**260**	17 20	**320**	21 20	**20**	1 20	1 21	1 22	1 23
21	1 24	**81**	5 24	**141**	9 24	**201**	13 24	**261**	17 24	**321**	21 24	**21**	1 24	1 25	1 26	1 27
22	1 28	**82**	5 28	**142**	9 28	**202**	13 28	**262**	17 28	**322**	21 28	**22**	1 28	1 29	1 30	1 31
23	1 32	**83**	5 32	**143**	9 32	**203**	13 32	**263**	17 32	**323**	21 32	**23**	1 32	1 33	1 34	1 35
24	1 36	**84**	5 36	**144**	9 36	**204**	13 36	**264**	17 36	**324**	21 36	**24**	1 36	1 37	1 38	1 39
25	1 40	**85**	5 40	**145**	9 40	**205**	13 40	**265**	17 40	**325**	21 40	**25**	1 40	1 41	1 42	1 43
26	1 44	**86**	5 44	**146**	9 44	**206**	13 44	**266**	17 44	**326**	21 44	**26**	1 44	1 45	1 46	1 47
27	1 48	**87**	5 48	**147**	9 48	**207**	13 48	**267**	17 48	**327**	21 48	**27**	1 48	1 49	1 50	1 51
28	1 52	**88**	5 52	**148**	9 52	**208**	13 52	**268**	17 52	**328**	21 52	**28**	1 52	1 53	1 54	1 55
29	1 56	**89**	5 56	**149**	9 56	**209**	13 56	**269**	17 56	**329**	21 56	**29**	1 56	1 57	1 58	1 59
30	2 00	**90**	6 00	**150**	10 00	**210**	14 00	**270**	18 00	**330**	22 00	**30**	2 00	2 01	2 02	2 03
31	2 04	**91**	6 04	**151**	10 04	**211**	14 04	**271**	18 04	**331**	22 04	**31**	2 04	2 05	2 06	2 07
32	2 08	**92**	6 08	**152**	10 08	**212**	14 08	**272**	18 08	**332**	22 08	**32**	2 08	2 09	2 10	2 11
33	2 12	**93**	6 12	**153**	10 12	**213**	14 12	**273**	18 12	**333**	22 12	**33**	2 12	2 13	2 14	2 15
34	2 16	**94**	6 16	**154**	10 16	**214**	14 16	**274**	18 16	**334**	22 16	**34**	2 16	2 17	2 18	2 19
35	2 20	**95**	6 20	**155**	10 20	**215**	14 20	**275**	18 20	**335**	22 20	**35**	2 20	2 21	2 22	2 23
36	2 24	**96**	6 24	**156**	10 24	**216**	14 24	**276**	18 24	**336**	22 24	**36**	2 24	2 25	2 26	2 27
37	2 28	**97**	6 28	**157**	10 28	**217**	14 28	**277**	18 28	**337**	22 28	**37**	2 28	2 29	2 30	2 31
38	2 32	**98**	6 32	**158**	10 32	**218**	14 32	**278**	18 32	**338**	22 32	**38**	2 32	2 33	2 34	2 35
39	2 36	**99**	6 36	**159**	10 36	**219**	14 36	**279**	18 36	**339**	22 36	**39**	2 36	2 37	2 38	2 39
40	2 40	**100**	6 40	**160**	10 40	**220**	14 40	**280**	18 40	**340**	22 40	**40**	2 40	2 41	2 42	2 43
41	2 44	**101**	6 44	**161**	10 44	**221**	14 44	**281**	18 44	**341**	22 44	**41**	2 44	2 45	2 46	2 47
42	2 48	**102**	6 48	**162**	10 48	**222**	14 48	**282**	18 48	**342**	22 48	**42**	2 48	2 49	2 50	2 51
43	2 52	**103**	6 52	**163**	10 52	**223**	14 52	**283**	18 52	**343**	22 52	**43**	2 52	2 53	2 54	2 55
44	2 56	**104**	6 56	**164**	10 56	**224**	14 56	**284**	18 56	**344**	22 56	**44**	2 56	2 57	2 58	2 59
45	3 00	**105**	7 00	**165**	11 00	**225**	15 00	**285**	19 00	**345**	23 00	**45**	3 00	3 01	3 02	3 03
46	3 04	**106**	7 04	**166**	11 04	**226**	15 04	**286**	19 04	**346**	23 04	**46**	3 04	3 05	3 06	3 07
47	3 08	**107**	7 08	**167**	11 08	**227**	15 08	**287**	19 08	**347**	23 08	**47**	3 08	3 09	3 10	3 11
48	3 12	**108**	7 12	**168**	11 12	**228**	15 12	**288**	19 12	**348**	23 12	**48**	3 12	3 13	3 14	3 15
49	3 16	**109**	7 16	**169**	11 16	**229**	15 16	**289**	19 16	**349**	23 16	**49**	3 16	3 17	3 18	3 19
50	3 20	**110**	7 20	**170**	11 20	**230**	15 20	**290**	19 20	**350**	23 20	**50**	3 20	3 21	3 22	3 23
51	3 24	**111**	7 24	**171**	11 24	**231**	15 24	**291**	19 24	**351**	23 24	**51**	3 24	3 25	3 26	3 27
52	3 28	**112**	7 28	**172**	11 28	**232**	15 28	**292**	19 28	**352**	23 28	**52**	3 28	3 29	3 30	3 31
53	3 32	**113**	7 32	**173**	11 32	**233**	15 32	**293**	19 32	**353**	23 32	**53**	3 32	3 33	3 34	3 35
54	3 36	**114**	7 36	**174**	11 36	**234**	15 36	**294**	19 36	**354**	23 36	**54**	3 36	3 37	3 38	3 39
55	3 40	**115**	7 40	**175**	11 40	**235**	15 40	**295**	19 40	**355**	23 40	**55**	3 40	3 41	3 42	3 43
56	3 44	**116**	7 44	**176**	11 44	**236**	15 44	**296**	19 44	**356**	23 44	**56**	3 44	3 45	3 46	3 47
57	3 48	**117**	7 48	**177**	11 48	**237**	15 48	**297**	19 48	**357**	23 48	**57**	3 48	3 49	3 50	3 51
58	3 52	**118**	7 52	**178**	11 52	**238**	15 52	**298**	19 52	**358**	23 52	**58**	3 52	3 53	3 54	3 55
59	3 56	**119**	7 56	**179**	11 56	**239**	15 56	**299**	19 56	**359**	23 56	**59**	3 56	3 57	3 58	3 59

La tabla anterior se usa para convertir expresiones en arco a sus equivalentes en tiempo; su uso principal en este almanaque es para la conversión de la longitud para aplicarse a la Hml (sumadas al W, restadas al E) para obtener UT o viceversa, particularmente en el caso de orto y ocaso del Sol, etc.

INCREMENTOS Y CORRECCIONES

INCREMENTOS Y CORRECCIONES

0m

m 0	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	0 00·0	0 00·0	0 00·0	0·0	0·0	6·0	0·1	12·0	0·1
01	0 00·3	0 00·3	0 00·2	0·1	0·0	6·1	0·1	12·1	0·1
02	0 00·5	0 00·5	0 00·5	0·2	0·0	6·2	0·1	12·2	0·1
03	0 00·8	0 00·8	0 00·7	0·3	0·0	6·3	0·1	12·3	0·1
04	0 01·0	0 01·0	0 01·0	0·4	0·0	6·4	0·1	12·4	0·1
05	0 01·3	0 01·3	0 01·2	0·5	0·0	6·5	0·1	12·5	0·1
06	0 01·5	0 01·5	0 01·4	0·6	0·0	6·6	0·1	12·6	0·1
07	0 01·8	0 01·8	0 01·7	0·7	0·0	6·7	0·1	12·7	0·1
08	0 02·0	0 02·0	0 01·9	0·8	0·0	6·8	0·1	12·8	0·1
09	0 02·3	0 02·3	0 02·1	0·9	0·0	6·9	0·1	12·9	0·1
10	0 02·5	0 02·5	0 02·4	1·0	0·0	7·0	0·1	13·0	0·1
11	0 02·8	0 02·8	0 02·6	1·1	0·0	7·1	0·1	13·1	0·1
12	0 03·0	0 03·0	0 02·9	1·2	0·0	7·2	0·1	13·2	0·1
13	0 03·3	0 03·3	0 03·1	1·3	0·0	7·3	0·1	13·3	0·1
14	0 03·5	0 03·5	0 03·3	1·4	0·0	7·4	0·1	13·4	0·1
15	0 03·8	0 03·8	0 03·6	1·5	0·0	7·5	0·1	13·5	0·1
16	0 04·0	0 04·0	0 03·8	1·6	0·0	7·6	0·1	13·6	0·1
17	0 04·3	0 04·3	0 04·1	1·7	0·0	7·7	0·1	13·7	0·1
18	0 04·5	0 04·5	0 04·3	1·8	0·0	7·8	0·1	13·8	0·1
19	0 04·8	0 04·8	0 04·5	1·9	0·0	7·9	0·1	13·9	0·1
20	0 05·0	0 05·0	0 04·8	2·0	0·0	8·0	0·1	14·0	0·1
21	0 05·3	0 05·3	0 05·0	2·1	0·0	8·1	0·1	14·1	0·1
22	0 05·5	0 05·5	0 05·2	2·2	0·0	8·2	0·1	14·2	0·1
23	0 05·8	0 05·8	0 05·5	2·3	0·0	8·3	0·1	14·3	0·1
24	0 06·0	0 06·0	0 05·7	2·4	0·0	8·4	0·1	14·4	0·1
25	0 06·3	0 06·3	0 06·0	2·5	0·0	8·5	0·1	14·5	0·1
26	0 06·5	0 06·5	0 06·2	2·6	0·0	8·6	0·1	14·6	0·1
27	0 06·8	0 06·8	0 06·4	2·7	0·0	8·7	0·1	14·7	0·1
28	0 07·0	0 07·0	0 06·7	2·8	0·0	8·8	0·1	14·8	0·1
29	0 07·3	0 07·3	0 06·9	2·9	0·0	8·9	0·1	14·9	0·1
30	0 07·5	0 07·5	0 07·2	3·0	0·0	9·0	0·1	15·0	0·1
31	0 07·8	0 07·8	0 07·4	3·1	0·0	9·1	0·1	15·1	0·1
32	0 08·0	0 08·0	0 07·6	3·2	0·0	9·2	0·1	15·2	0·1
33	0 08·3	0 08·3	0 07·9	3·3	0·0	9·3	0·1	15·3	0·1
34	0 08·5	0 08·5	0 08·1	3·4	0·0	9·4	0·1	15·4	0·1
35	0 08·8	0 08·8	0 08·4	3·5	0·0	9·5	0·1	15·5	0·1
36	0 09·0	0 09·0	0 08·6	3·6	0·0	9·6	0·1	15·6	0·1
37	0 09·3	0 09·3	0 08·8	3·7	0·0	9·7	0·1	15·7	0·1
38	0 09·5	0 09·5	0 09·1	3·8	0·0	9·8	0·1	15·8	0·1
39	0 09·8	0 09·8	0 09·3	3·9	0·0	9·9	0·1	15·9	0·1
40	0 10·0	0 10·0	0 09·5	4·0	0·0	10·0	0·1	16·0	0·1
41	0 10·3	0 10·3	0 09·8	4·1	0·0	10·1	0·1	16·1	0·1
42	0 10·5	0 10·5	0 10·0	4·2	0·0	10·2	0·1	16·2	0·1
43	0 10·8	0 10·8	0 10·3	4·3	0·0	10·3	0·1	16·3	0·1
44	0 11·0	0 11·0	0 10·5	4·4	0·0	10·4	0·1	16·4	0·1
45	0 11·3	0 11·3	0 10·7	4·5	0·0	10·5	0·1	16·5	0·1
46	0 11·5	0 11·5	0 11·0	4·6	0·0	10·6	0·1	16·6	0·1
47	0 11·8	0 11·8	0 11·2	4·7	0·0	10·7	0·1	16·7	0·1
48	0 12·0	0 12·0	0 11·5	4·8	0·0	10·8	0·1	16·8	0·1
49	0 12·3	0 12·3	0 11·7	4·9	0·0	10·9	0·1	16·9	0·1
50	0 12·5	0 12·5	0 11·9	5·0	0·0	11·0	0·1	17·0	0·1
51	0 12·8	0 12·8	0 12·2	5·1	0·0	11·1	0·1	17·1	0·1
52	0 13·0	0 13·0	0 12·4	5·2	0·0	11·2	0·1	17·2	0·1
53	0 13·3	0 13·3	0 12·6	5·3	0·0	11·3	0·1	17·3	0·1
54	0 13·5	0 13·5	0 12·9	5·4	0·0	11·4	0·1	17·4	0·1
55	0 13·8	0 13·8	0 13·1	5·5	0·0	11·5	0·1	17·5	0·1
56	0 14·0	0 14·0	0 13·4	5·6	0·0	11·6	0·1	17·6	0·1
57	0 14·3	0 14·3	0 13·6	5·7	0·0	11·7	0·1	17·7	0·1
58	0 14·5	0 14·5	0 13·8	5·8	0·0	11·8	0·1	17·8	0·1
59	0 14·8	0 14·8	0 14·1	5·9	0·0	11·9	0·1	17·9	0·1
60	0 15·0	0 15·0	0 14·3	6·0	0·1	12·0	0·1	18·0	0·2

1m

m 1	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	0 15·0	0 15·0	0 14·3	0·0	0·0	6·0	0·2	12·0	0·3
01	0 15·3	0 15·3	0 14·6	0·1	0·0	6·1	0·2	12·1	0·3
02	0 15·5	0 15·5	0 14·8	0·2	0·0	6·2	0·2	12·2	0·3
03	0 15·8	0 15·8	0 15·0	0·3	0·0	6·3	0·2	12·3	0·3
04	0 16·0	0 16·0	0 15·3	0·4	0·0	6·4	0·2	12·4	0·3
05	0 16·3	0 16·3	0 15·5	0·5	0·0	6·5	0·2	12·5	0·3
06	0 16·5	0 16·5	0 15·7	0·6	0·0	6·6	0·2	12·6	0·3
07	0 16·8	0 16·8	0 16·0	0·7	0·0	6·7	0·2	12·7	0·3
08	0 17·0	0 17·0	0 16·2	0·8	0·0	6·8	0·2	12·8	0·3
09	0 17·3	0 17·3	0 16·5	0·9	0·0	6·9	0·2	12·9	0·3
10	0 17·5	0 17·5	0 16·7	1·0	0·0	7·0	0·2	13·0	0·3
11	0 17·8	0 17·8	0 16·9	1·1	0·0	7·1	0·2	13·1	0·3
12	0 18·0	0 18·0	0 17·2	1·2	0·0	7·2	0·2	13·2	0·3
13	0 18·3	0 18·3	0 17·4	1·3	0·0	7·3	0·2	13·3	0·3
14	0 18·5	0 18·6	0 17·7	1·4	0·0	7·4	0·2	13·4	0·3
15	0 18·8	0 18·8	0 17·9	1·5	0·0	7·5	0·2	13·5	0·3
16	0 19·0	0 19·1	0 18·1	1·6	0·0	7·6	0·2	13·6	0·3
17	0 19·3	0 19·3	0 18·4	1·7	0·0	7·7	0·2	13·7	0·3
18	0 19·5	0 19·6	0 18·6	1·8	0·0	7·8	0·2	13·8	0·3
19	0 19·8	0 19·8	0 18·9	1·9	0·0	7·9	0·2	13·9	0·3
20	0 20·0	0 20·1	0 19·1	2·0	0·1	8·0	0·2	14·0	0·4
21	0 20·3	0 20·3	0 19·3	2·1	0·1	8·1	0·2	14·1	0·4
22	0 20·5	0 20·6	0 19·6	2·2	0·1	8·2	0·2	14·2	0·4
23	0 20·8	0 20·8	0 19·8	2·3	0·1	8·3	0·2	14·3	0·4
24	0 21·0	0 21·1	0 20·0	2·4	0·1	8·4	0·2	14·4	0·4
25	0 21·3	0 21·3	0 20·3	2·5	0·1	8·5	0·2	14·5	0·4
26	0 21·5	0 21·6	0 20·5	2·6	0·1	8·6	0·2	14·6	0·4
27	0 21·8	0 21·8	0 20·8	2·7	0·1	8·7	0·2	14·7	0·4
28	0 22·0	0 22·1	0 21·0	2·8	0·1	8·8	0·2	14·8	0·4
29	0 22·3	0 22·3	0 21·2	2·9	0·1	8·9	0·2	14·9	0·4
30	0 22·5	0 22·6	0 21·5	3·0	0·1	9·0	0·2	15·0	0·4
31	0 22·8	0 22·8	0 21·7	3·1	0·1	9·1	0·2	15·1	0·4
32	0 23·0	0 23·1	0 22·0	3·2	0·1	9·2	0·2	15·2	0·4
33	0 23·3	0 23·3	0 22·2	3·3	0·1	9·3	0·2	15·3	0·4
34	0 23·5	0 23·6	0 22·4	3·4	0·1	9·4	0·2	15·4	0·4
35	0 23·8	0 23·8	0 22·7	3·5	0·1	9·5	0·2	15·5	0·4
36	0 24·0	0 24·1	0 22·9	3·6	0·1	9·6	0·2	15·6	0·4
37	0 24·3	0 24·3	0 23·1	3·7	0·1	9·7	0·2	15·7	0·4
38	0 24·5	0 24·6	0 23·4	3·8	0·1	9·8	0·2	15·8	0·4
39	0 24·8	0 24·8	0 23·6	3·9	0·1	9·9	0·2	15·9	0·4
40	0 25·0	0 25·1	0 23·9	4·0	0·1	10·0	0·3	16·0	0·4
41	0 25·3	0 25·3	0 24·1	4·1	0·1	10·1	0·3	16·1	0·4
42	0 25·5	0 25·6	0 24·3	4·2	0·1	10·2	0·3	16·2	0·4
43	0 25·8	0 25·8	0 24·6	4·3	0·1	10·3	0·3	16·3	0·4
44	0 26·0	0 26·1	0 24·8	4·4	0·1	10·4	0·3	16·4	0·4
45	0 26·3	0 26·3	0 25·1	4·5	0·1	10·5	0·3	16·5	0·4
46	0 26·5	0 26·6	0 25·3	4·6	0·1	10·6	0·3	16·6	0·4
47	0 26·8	0 26·8	0 25·5	4·7	0·1	10·7	0·3	16·7	0·4
48	0 27·0	0 27·1	0 25·8	4·8	0·1	10·8	0·3	16·8	0·4
49	0 27·3	0 27·3	0 26·0	4·9	0·1	10·9	0·3	16·9	0·4
50	0 27·5	0 27·6	0 26·2	5·0	0·1	11·0	0·3	17·0	0·4
51	0 27·8	0 27·8	0 26·5	5·1	0·1	11·1	0·3	17·1	0·4
52	0 28·0	0 28·1	0 26·7	5·2	0·1	11·2	0·3	17·2	0·4
53	0 28·3	0 28·3	0 27·0	5·3	0·1	11·3	0·3	17·3	0·4
54	0 28·5	0 28·6	0 27·2	5·4	0·1	11·4	0·3	17·4	0·4
55	0 28·8	0 28·8	0 27·4	5·5	0·1	11·5	0·3	17·5	0·4
56	0 29·0	0 29·1	0 27·7	5·6	0·1	11·6	0·3	17·6	0·4
57	0 29·3	0 29·3	0 27·9	5·7	0·1	11·7	0·3	17·7	0·4
58	0 29·5	0 29·6	0 28·2	5·8	0·1	11·8	0·3	17·8	0·4
59	0 29·8	0 29·8	0 28·4	5·9	0·1	11·9	0·3	17·9	0·4
60	0 30·0	0 30·1	0 28·6	6·0	0·2	12·0	0·3	18·0	0·5

INCREMENTOS Y CORRECCIONES

2m

m 2	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	0 30·0	0 30·1	0 28·6	0·0	0·0	6·0	0·3	12·0	0·5
01	0 30·3	0 30·3	0 28·9	0·1	0·0	6·1	0·3	12·1	0·5
02	0 30·5	0 30·6	0 29·1	0·2	0·0	6·2	0·3	12·2	0·5
03	0 30·8	0 30·8	0 29·3	0·3	0·0	6·3	0·3	12·3	0·5
04	0 31·0	0 31·1	0 29·6	0·4	0·0	6·4	0·3	12·4	0·5
05	0 31·3	0 31·3	0 29·8	0·5	0·0	6·5	0·3	12·5	0·5
06	0 31·5	0 31·6	0 30·1	0·6	0·0	6·6	0·3	12·6	0·5
07	0 31·8	0 31·8	0 30·3	0·7	0·0	6·7	0·3	12·7	0·5
08	0 32·0	0 32·1	0 30·5	0·8	0·0	6·8	0·3	12·8	0·5
09	0 32·3	0 32·3	0 30·8	0·9	0·0	6·9	0·3	12·9	0·5
10	0 32·5	0 32·6	0 31·0	1·0	0·0	7·0	0·3	13·0	0·5
11	0 32·8	0 32·8	0 31·3	1·1	0·0	7·1	0·3	13·1	0·5
12	0 33·0	0 33·1	0 31·5	1·2	0·1	7·2	0·3	13·2	0·6
13	0 33·3	0 33·3	0 31·7	1·3	0·1	7·3	0·3	13·3	0·6
14	0 33·5	0 33·6	0 32·0	1·4	0·1	7·4	0·3	13·4	0·6
15	0 33·8	0 33·8	0 32·2	1·5	0·1	7·5	0·3	13·5	0·6
16	0 34·0	0 34·1	0 32·5	1·6	0·1	7·6	0·3	13·6	0·6
17	0 34·3	0 34·3	0 32·7	1·7	0·1	7·7	0·3	13·7	0·6
18	0 34·5	0 34·6	0 32·9	1·8	0·1	7·8	0·3	13·8	0·6
19	0 34·8	0 34·8	0 33·2	1·9	0·1	7·9	0·3	13·9	0·6
20	0 35·0	0 35·1	0 33·4	2·0	0·1	8·0	0·3	14·0	0·6
21	0 35·3	0 35·3	0 33·6	2·1	0·1	8·1	0·3	14·1	0·6
22	0 35·5	0 35·6	0 33·9	2·2	0·1	8·2	0·3	14·2	0·6
23	0 35·8	0 35·8	0 34·1	2·3	0·1	8·3	0·3	14·3	0·6
24	0 36·0	0 36·1	0 34·4	2·4	0·1	8·4	0·4	14·4	0·6
25	0 36·3	0 36·3	0 34·6	2·5	0·1	8·5	0·4	14·5	0·6
26	0 36·5	0 36·6	0 34·8	2·6	0·1	8·6	0·4	14·6	0·6
27	0 36·8	0 36·9	0 35·1	2·7	0·1	8·7	0·4	14·7	0·6
28	0 37·0	0 37·1	0 35·3	2·8	0·1	8·8	0·4	14·8	0·6
29	0 37·3	0 37·4	0 35·6	2·9	0·1	8·9	0·4	14·9	0·6
30	0 37·5	0 37·6	0 35·8	3·0	0·1	9·0	0·4	15·0	0·6
31	0 37·8	0 37·9	0 36·0	3·1	0·1	9·1	0·4	15·1	0·6
32	0 38·0	0 38·1	0 36·3	3·2	0·1	9·2	0·4	15·2	0·6
33	0 38·3	0 38·4	0 36·5	3·3	0·1	9·3	0·4	15·3	0·6
34	0 38·5	0 38·6	0 36·7	3·4	0·1	9·4	0·4	15·4	0·6
35	0 38·8	0 38·9	0 37·0	3·5	0·1	9·5	0·4	15·5	0·6
36	0 39·0	0 39·1	0 37·2	3·6	0·2	9·6	0·4	15·6	0·7
37	0 39·3	0 39·4	0 37·5	3·7	0·2	9·7	0·4	15·7	0·7
38	0 39·5	0 39·6	0 37·7	3·8	0·2	9·8	0·4	15·8	0·7
39	0 39·8	0 39·9	0 37·9	3·9	0·2	9·9	0·4	15·9	0·7
40	0 40·0	0 40·1	0 38·2	4·0	0·2	10·0	0·4	16·0	0·7
41	0 40·3	0 40·4	0 38·4	4·1	0·2	10·1	0·4	16·1	0·7
42	0 40·5	0 40·6	0 38·7	4·2	0·2	10·2	0·4	16·2	0·7
43	0 40·8	0 40·9	0 38·9	4·3	0·2	10·3	0·4	16·3	0·7
44	0 41·0	0 41·1	0 39·1	4·4	0·2	10·4	0·4	16·4	0·7
45	0 41·3	0 41·4	0 39·4	4·5	0·2	10·5	0·4	16·5	0·7
46	0 41·5	0 41·6	0 39·6	4·6	0·2	10·6	0·4	16·6	0·7
47	0 41·8	0 41·9	0 39·8	4·7	0·2	10·7	0·4	16·7	0·7
48	0 42·0	0 42·1	0 40·1	4·8	0·2	10·8	0·5	16·8	0·7
49	0 42·3	0 42·4	0 40·3	4·9	0·2	10·9	0·5	16·9	0·7
50	0 42·5	0 42·6	0 40·6	5·0	0·2	11·0	0·5	17·0	0·7
51	0 42·8	0 42·9	0 40·8	5·1	0·2	11·1	0·5	17·1	0·7
52	0 43·0	0 43·1	0 41·0	5·2	0·2	11·2	0·5	17·2	0·7
53	0 43·3	0 43·4	0 41·3	5·3	0·2	11·3	0·5	17·3	0·7
54	0 43·5	0 43·6	0 41·5	5·4	0·2	11·4	0·5	17·4	0·7
55	0 43·8	0 43·9	0 41·8	5·5	0·2	11·5	0·5	17·5	0·7
56	0 44·0	0 44·1	0 42·0	5·6	0·2	11·6	0·5	17·6	0·7
57	0 44·3	0 44·4	0 42·2	5·7	0·2	11·7	0·5	17·7	0·7
58	0 44·5	0 44·6	0 42·5	5·8	0·2	11·8	0·5	17·8	0·7
59	0 44·8	0 44·9	0 42·7	5·9	0·2	11·9	0·5	17·9	0·7
60	0 45·0	0 45·1	0 43·0	6·0	0·3	12·0	0·5	18·0	0·8

3m

m 3	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	0 45·0	0 45·1	0 43·0	0·0	0·0	6·0	0·4	12·0	0·7
01	0 45·3	0 45·4	0 43·2	0·1	0·0	6·1	0·4	12·1	0·7
02	0 45·5	0 45·6	0 43·4	0·2	0·0	6·2	0·4	12·2	0·7
03	0 45·8	0 45·9	0 43·7	0·3	0·0	6·3	0·4	12·3	0·7
04	0 46·0	0 46·1	0 43·9	0·4	0·0	6·4	0·4	12·4	0·7
05	0 46·3	0 46·4	0 44·1	0·5	0·0	6·5	0·4	12·5	0·7
06	0 46·5	0 46·6	0 44·4	0·6	0·0	6·6	0·4	12·6	0·7
07	0 46·8	0 46·9	0 44·6	0·7	0·0	6·7	0·4	12·7	0·7
08	0 47·0	0 47·1	0 44·9	0·8	0·0	6·8	0·4	12·8	0·7
09	0 47·3	0 47·4	0 45·1	0·9	0·1	6·9	0·4	12·9	0·8
10	0 47·5	0 47·6	0 45·3	1·0	0·1	7·0	0·4	13·0	0·8
11	0 47·8	0 47·9	0 45·6	1·1	0·1	7·1	0·4	13·1	0·8
12	0 48·0	0 48·1	0 45·8	1·2	0·1	7·2	0·4	13·2	0·8
13	0 48·3	0 48·4	0 46·1	1·3	0·1	7·3	0·4	13·3	0·8
14	0 48·5	0 48·6	0 46·3	1·4	0·1	7·4	0·4	13·4	0·8
15	0 48·8	0 48·9	0 46·5	1·5	0·1	7·5	0·4	13·5	0·8
16	0 49·0	0 49·1	0 46·8	1·6	0·1	7·6	0·4	13·6	0·8
17	0 49·3	0 49·4	0 47·0	1·7	0·1	7·7	0·4	13·7	0·8
18	0 49·5	0 49·6	0 47·2	1·8	0·1	7·8	0·5	13·8	0·8
19	0 49·8	0 49·9	0 47·5	1·9	0·1	7·9	0·5	13·9	0·8
20	0 50·0	0 50·1	0 47·7	2·0	0·1	8·0	0·5	14·0	0·8
21	0 50·3	0 50·4	0 48·0	2·1	0·1	8·1	0·5	14·1	0·8
22	0 50·5	0 50·6	0 48·2	2·2	0·1	8·2	0·5	14·2	0·8
23	0 50·8	0 50·9	0 48·4	2·3	0·1	8·3	0·5	14·3	0·8
24	0 51·0	0 51·1	0 48·7	2·4	0·1	8·4	0·5	14·4	0·8
25	0 51·3	0 51·4	0 48·9	2·5	0·1	8·5	0·5	14·5	0·8
26	0 51·5	0 51·6	0 49·2	2·6	0·2	8·6	0·5	14·6	0·9
27	0 51·8	0 51·9	0 49·4	2·7	0·2	8·7	0·5	14·7	0·9
28	0 52·0	0 52·1	0 49·6	2·8	0·2	8·8	0·5	14·8	0·9
29	0 52·3	0 52·4	0 49·9	2·9	0·2	8·9	0·5	14·9	0·9
30	0 52·5	0 52·6	0 50·1	3·0	0·2	9·0	0·5	15·0	0·9
31	0 52·8	0 52·9	0 50·3	3·1	0·2	9·1	0·5	15·1	0·9
32	0 53·0	0 53·1	0 50·6	3·2	0·2	9·2	0·5	15·2	0·9
33	0 53·3	0 53·4	0 50·8	3·3	0·2	9·3	0·5	15·3	0·9
34	0 53·5	0 53·6	0 51·1	3·4	0·2	9·4	0·5	15·4	0·9
35	0 53·8	0 53·9	0 51·3	3·5	0·2	9·5	0·6	15·5	0·9
36	0 54·0	0 54·1	0 51·5	3·6	0·2	9·6	0·6	15·6	0·9
37	0 54·3	0 54·4	0 51·8	3·7	0·2	9·7	0·6	15·7	0·9
38	0 54·5	0 54·6	0 52·0	3·8	0·2	9·8	0·6	15·8	0·9
39	0 54·8	0 54·9	0 52·3	3·9	0·2	9·9	0·6	15·9	0·9
40	0 55·0	0 55·2	0 52·5	4·0	0·2	10·0	0·6	16·0	0·9
41	0 55·3	0 55·4	0 52·7	4·1	0·2	10·1	0·6	16·1	0·9
42	0 55·5	0 55·7	0 53·0	4·2	0·2	10·2	0·6	16·2	0·9
43	0 55·8	0 55·9	0 53·2	4·3	0·3	10·3	0·6	16·3	1·0
44	0 56·0	0 56·2	0 53·4	4·4	0·3	10·4	0·6	16·4	1·0
45	0 56·3	0 56·4	0 53·7	4·5	0·3	10·5	0·6	16·5	1·0
46	0 56·5	0 56·7	0 53·9	4·6	0·3	10·6	0·6	16·6	1·0
47	0 56·8	0 56·9	0 54·2	4·7	0·3	10·7	0·6	16·7	1·0
48	0 57·0	0 57·2	0 54·4	4·8	0·3	10·8	0·6	16·8	1·0
49	0 57·3	0 57·4	0 54·6	4·9	0·3	10·9	0·6	16·9	1·0
50	0 57·5	0 57·7	0 54·9	5·0	0·3	11·0	0·6	17·0	1·0
51	0 57·8	0 57·9	0 55·1	5·1	0·3	11·1	0·6	17·1	1·0
52	0 58·0	0 58·2	0 55·4	5·2	0·3	11·2	0·7	17·2	1·0
53	0 58·3	0 58·4	0 55·6	5·3	0·3	11·3	0·7	17·3	1·0
54	0 58·5	0 58·7	0 55·8	5·4	0·3	11·4	0·7	17·4	1·0
55	0 58·8	0 58·9	0 56·1	5·5	0·3	11·5	0·7	17·5	1·0
56	0 59·0	0 59·2	0 56·3	5·6	0·3	11·6	0·7	17·6	1·0
57	0 59·3	0 59·4	0 56·6	5·7	0·3	11·7	0·7	17·7	1·0
58	0 59·5	0 59·7	0 56·8	5·8	0·3	11·8	0·7	17·8	1·0
59	0 59·8	0 59·9	0 57·0	5·9	0·3	11·9	0·7	17·9	1·0
60	1 00·0	1 00·2	0 57·3	6·0	0·4	12·0	0·7	18·0	1·1

INCREMENTOS Y CORRECCIONES

4m

m 4	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	1 00·0	1 00·2	0 57·3	0·0	0·0	6·0	0·5	12·0	0·9
01	1 00·3	1 00·4	0 57·5	0·1	0·0	6·1	0·5	12·1	0·9
02	1 00·5	1 00·7	0 57·7	0·2	0·0	6·2	0·5	12·2	0·9
03	1 00·8	1 00·9	0 58·0	0·3	0·0	6·3	0·5	12·3	0·9
04	1 01·0	1 01·2	0 58·2	0·4	0·0	6·4	0·5	12·4	0·9
05	1 01·3	1 01·4	0 58·5	0·5	0·0	6·5	0·5	12·5	0·9
06	1 01·5	1 01·7	0 58·7	0·6	0·0	6·6	0·5	12·6	0·9
07	1 01·8	1 01·9	0 58·9	0·7	0·1	6·7	0·5	12·7	1·0
08	1 02·0	1 02·2	0 59·2	0·8	0·1	6·8	0·5	12·8	1·0
09	1 02·3	1 02·4	0 59·4	0·9	0·1	6·9	0·5	12·9	1·0
10	1 02·5	1 02·7	0 59·7	1·0	0·1	7·0	0·5	13·0	1·0
11	1 02·8	1 02·9	0 59·9	1·1	0·1	7·1	0·5	13·1	1·0
12	1 03·0	1 03·2	1 00·1	1·2	0·1	7·2	0·5	13·2	1·0
13	1 03·3	1 03·4	1 00·4	1·3	0·1	7·3	0·5	13·3	1·0
14	1 03·5	1 03·7	1 00·6	1·4	0·1	7·4	0·6	13·4	1·0
15	1 03·8	1 03·9	1 00·8	1·5	0·1	7·5	0·6	13·5	1·0
16	1 04·0	1 04·2	1 01·1	1·6	0·1	7·6	0·6	13·6	1·0
17	1 04·3	1 04·4	1 01·3	1·7	0·1	7·7	0·6	13·7	1·0
18	1 04·5	1 04·7	1 01·6	1·8	0·1	7·8	0·6	13·8	1·0
19	1 04·8	1 04·9	1 01·8	1·9	0·1	7·9	0·6	13·9	1·0
20	1 05·0	1 05·2	1 02·0	2·0	0·2	8·0	0·6	14·0	1·1
21	1 05·3	1 05·4	1 02·3	2·1	0·2	8·1	0·6	14·1	1·1
22	1 05·5	1 05·7	1 02·5	2·2	0·2	8·2	0·6	14·2	1·1
23	1 05·8	1 05·9	1 02·8	2·3	0·2	8·3	0·6	14·3	1·1
24	1 06·0	1 06·2	1 03·0	2·4	0·2	8·4	0·6	14·4	1·1
25	1 06·3	1 06·4	1 03·2	2·5	0·2	8·5	0·6	14·5	1·1
26	1 06·5	1 06·7	1 03·5	2·6	0·2	8·6	0·6	14·6	1·1
27	1 06·8	1 06·9	1 03·7	2·7	0·2	8·7	0·7	14·7	1·1
28	1 07·0	1 07·2	1 03·9	2·8	0·2	8·8	0·7	14·8	1·1
29	1 07·3	1 07·4	1 04·2	2·9	0·2	8·9	0·7	14·9	1·1
30	1 07·5	1 07·7	1 04·4	3·0	0·2	9·0	0·7	15·0	1·1
31	1 07·8	1 07·9	1 04·7	3·1	0·2	9·1	0·7	15·1	1·1
32	1 08·0	1 08·2	1 04·9	3·2	0·2	9·2	0·7	15·2	1·1
33	1 08·3	1 08·4	1 05·1	3·3	0·2	9·3	0·7	15·3	1·1
34	1 08·5	1 08·7	1 05·4	3·4	0·3	9·4	0·7	15·4	1·2
35	1 08·8	1 08·9	1 05·6	3·5	0·3	9·5	0·7	15·5	1·2
36	1 09·0	1 09·2	1 05·9	3·6	0·3	9·6	0·7	15·6	1·2
37	1 09·3	1 09·4	1 06·1	3·7	0·3	9·7	0·7	15·7	1·2
38	1 09·5	1 09·7	1 06·3	3·8	0·3	9·8	0·7	15·8	1·2
39	1 09·8	1 09·9	1 06·6	3·9	0·3	9·9	0·7	15·9	1·2
40	1 10·0	1 10·2	1 06·8	4·0	0·3	10·0	0·8	16·0	1·2
41	1 10·3	1 10·4	1 07·0	4·1	0·3	10·1	0·8	16·1	1·2
42	1 10·5	1 10·7	1 07·3	4·2	0·3	10·2	0·8	16·2	1·2
43	1 10·8	1 10·9	1 07·5	4·3	0·3	10·3	0·8	16·3	1·2
44	1 11·0	1 11·2	1 07·8	4·4	0·3	10·4	0·8	16·4	1·2
45	1 11·3	1 11·4	1 08·0	4·5	0·3	10·5	0·8	16·5	1·2
46	1 11·5	1 11·7	1 08·2	4·6	0·3	10·6	0·8	16·6	1·2
47	1 11·8	1 11·9	1 08·5	4·7	0·4	10·7	0·8	16·7	1·3
48	1 12·0	1 12·2	1 08·7	4·8	0·4	10·8	0·8	16·8	1·3
49	1 12·3	1 12·4	1 09·0	4·9	0·4	10·9	0·8	16·9	1·3
50	1 12·5	1 12·7	1 09·2	5·0	0·4	11·0	0·8	17·0	1·3
51	1 12·8	1 12·9	1 09·4	5·1	0·4	11·1	0·8	17·1	1·3
52	1 13·0	1 13·2	1 09·7	5·2	0·4	11·2	0·8	17·2	1·3
53	1 13·3	1 13·5	1 09·9	5·3	0·4	11·3	0·8	17·3	1·3
54	1 13·5	1 13·7	1 10·2	5·4	0·4	11·4	0·9	17·4	1·3
55	1 13·8	1 14·0	1 10·4	5·5	0·4	11·5	0·9	17·5	1·3
56	1 14·0	1 14·2	1 10·6	5·6	0·4	11·6	0·9	17·6	1·3
57	1 14·3	1 14·5	1 10·9	5·7	0·4	11·7	0·9	17·7	1·3
58	1 14·5	1 14·7	1 11·1	5·8	0·4	11·8	0·9	17·8	1·3
59	1 14·8	1 15·0	1 11·3	5·9	0·4	11·9	0·9	17·9	1·3
60	1 15·0	1 15·2	1 11·6	6·0	0·5	12·0	0·9	18·0	1·4

5m

m 5	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	1 15·0	1 15·2	1 11·6	0·0	0·0	6·0	0·6	12·0	1·1
01	1 15·3	1 15·5	1 11·8	0·1	0·0	6·1	0·6	12·1	1·1
02	1 15·5	1 15·7	1 12·1	0·2	0·0	6·2	0·6	12·2	1·1
03	1 15·8	1 16·0	1 12·3	0·3	0·0	6·3	0·6	12·3	1·1
04	1 16·0	1 16·2	1 12·5	0·4	0·0	6·4	0·6	12·4	1·1
05	1 16·3	1 16·5	1 12·8	0·5	0·0	6·5	0·6	12·5	1·1
06	1 16·5	1 16·7	1 13·0	0·6	0·1	6·6	0·6	12·6	1·2
07	1 16·8	1 17·0	1 13·3	0·7	0·1	6·7	0·6	12·7	1·2
08	1 17·0	1 17·2	1 13·5	0·8	0·1	6·8	0·6	12·8	1·2
09	1 17·3	1 17·5	1 13·7	0·9	0·1	6·9	0·6	12·9	1·2
10	1 17·5	1 17·7	1 14·0	1·0	0·1	7·0	0·6	13·0	1·2
11	1 17·8	1 18·0	1 14·2	1·1	0·1	7·1	0·7	13·1	1·2
12	1 18·0	1 18·2	1 14·4	1·2	0·1	7·2	0·7	13·2	1·2
13	1 18·3	1 18·5	1 14·7	1·3	0·1	7·3	0·7	13·3	1·2
14	1 18·5	1 18·7	1 14·9	1·4	0·1	7·4	0·7	13·4	1·2
15	1 18·8	1 19·0	1 15·2	1·5	0·1	7·5	0·7	13·5	1·2
16	1 19·0	1 19·2	1 15·4	1·6	0·1	7·6	0·7	13·6	1·2
17	1 19·3	1 19·5	1 15·6	1·7	0·2	7·7	0·7	13·7	1·3
18	1 19·5	1 19·7	1 15·9	1·8	0·2	7·8	0·7	13·8	1·3
19	1 19·8	1 20·0	1 16·1	1·9	0·2	7·9	0·7	13·9	1·3
20	1 20·0	1 20·2	1 16·4	2·0	0·2	8·0	0·7	14·0	1·3
21	1 20·3	1 20·5	1 16·6	2·1	0·2	8·1	0·7	14·1	1·3
22	1 20·5	1 20·7	1 16·8	2·2	0·2	8·2	0·8	14·2	1·3
23	1 20·8	1 21·0	1 17·1	2·3	0·2	8·3	0·8	14·3	1·3
24	1 21·0	1 21·2	1 17·3	2·4	0·2	8·4	0·8	14·4	1·3
25	1 21·3	1 21·5	1 17·5	2·5	0·2	8·5	0·8	14·5	1·3
26	1 21·5	1 21·7	1 17·8	2·6	0·2	8·6	0·8	14·6	1·3
27	1 21·8	1 22·0	1 18·0	2·7	0·2	8·7	0·8	14·7	1·3
28	1 22·0	1 22·2	1 18·3	2·8	0·3	8·8	0·8	14·8	1·4
29	1 22·3	1 22·5	1 18·5	2·9	0·3	8·9	0·8	14·9	1·4
30	1 22·5	1 22·7	1 18·7	3·0	0·3	9·0	0·8	15·0	1·4
31	1 22·8	1 23·0	1 19·0	3·1	0·3	9·1	0·8	15·1	1·4
32	1 23·0	1 23·2	1 19·2	3·2	0·3	9·2	0·8	15·2	1·4
33	1 23·3	1 23·5	1 19·5	3·3	0·3	9·3	0·9	15·3	1·4
34	1 23·5	1 23·7	1 19·7	3·4	0·3	9·4	0·9	15·4	1·4
35	1 23·8	1 24·0	1 19·9	3·5	0·3	9·5	0·9	15·5	1·4
36	1 24·0	1 24·2	1 20·2	3·6	0·3	9·6	0·9	15·6	1·4
37	1 24·3	1 24·5	1 20·4	3·7	0·3	9·7	0·9	15·7	1·4
38	1 24·5	1 24·7	1 20·7	3·8	0·3	9·8	0·9	15·8	1·4
39	1 24·8	1 25·0	1 20·9	3·9	0·4	9·9	0·9	15·9	1·5
40	1 25·0	1 25·2	1 21·1	4·0	0·4	10·0	0·9	16·0	1·5
41	1 25·3	1 25·5	1 21·4	4·1	0·4	10·1	0·9	16·1	1·5
42	1 25·5	1 25·7	1 21·6	4·2	0·4	10·2	0·9	16·2	1·5
43	1 25·8	1 26·0	1 21·8	4·3	0·4	10·3	0·9	16·3	1·5
44	1 26·0	1 26·2	1 22·1	4·4	0·4	10·4	1·0	16·4	1·5
45	1 26·3	1 26·5	1 22·3	4·5	0·4	10·5	1·0	16·5	1·5
46	1 26·5	1 26·7	1 22·6	4·6	0·4	10·6	1·0	16·6	1·5
47	1 26·8	1 27·0	1 22·8	4·7	0·4	10·7	1·0	16·7	1·5
48	1 27·0	1 27·2	1 23·0	4·8	0·4	10·8	1·0	16·8	1·5
49	1 27·3	1 27·5	1 23·3	4·9	0·4	10·9	1·0	16·9	1·5
50	1 27·5	1 27·7	1 23·5	5·0	0·5	11·0	1·0	17·0	1·6
51	1 27·8	1 28·0	1 23·8	5·1	0·5	11·1	1·0	17·1	1·6
52	1 28·0	1 28·2	1 24·0	5·2	0·5	11·2	1·0	17·2	1·6
53	1 28·3	1 28·5	1 24·2	5·3	0·5	11·3	1·0	17·3	1·6
54	1 28·5	1 28·7	1 24·5	5·4	0·5	11·4	1·0	17·4	1·6
55	1 28·8	1 29·0	1 24·7	5·5	0·5	11·5	1·1	17·5	1·6
56	1 29·0	1 29·2	1 24·9	5·6	0·5	11·6	1·1	17·6	1·6
57	1 29·3	1 29·5	1 25·2	5·7	0·5	11·7	1·1	17·7	1·6
58	1 29·5	1 29·7	1 25·4	5·8	0·5	11·8	1·1	17·8	1·6
59	1 29·8	1 30·0	1 25·7	5·9	0·5	11·9	1·1	17·9	1·6
60	1 30·0	1 30·2	1 25·9	6·0	0·6	12·0	1·1	18·0	1·7

INCREMENTOS Y CORRECCIONES

6m

m 6	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	1 30·0	1 30·2	1 25·9	0·0	0·0	6·0	0·7	12·0	1·3
01	1 30·3	1 30·5	1 26·1	0·1	0·0	6·1	0·7	12·1	1·3
02	1 30·5	1 30·7	1 26·4	0·2	0·0	6·2	0·7	12·2	1·3
03	1 30·8	1 31·0	1 26·6	0·3	0·0	6·3	0·7	12·3	1·3
04	1 31·0	1 31·2	1 26·9	0·4	0·0	6·4	0·7	12·4	1·3
05	1 31·3	1 31·5	1 27·1	0·5	0·1	6·5	0·7	12·5	1·4
06	1 31·5	1 31·8	1 27·3	0·6	0·1	6·6	0·7	12·6	1·4
07	1 31·8	1 32·0	1 27·6	0·7	0·1	6·7	0·7	12·7	1·4
08	1 32·0	1 32·3	1 27·8	0·8	0·1	6·8	0·7	12·8	1·4
09	1 32·3	1 32·5	1 28·0	0·9	0·1	6·9	0·7	12·9	1·4
10	1 32·5	1 32·8	1 28·3	1·0	0·1	7·0	0·8	13·0	1·4
11	1 32·8	1 33·0	1 28·5	1·1	0·1	7·1	0·8	13·1	1·4
12	1 33·0	1 33·3	1 28·8	1·2	0·1	7·2	0·8	13·2	1·4
13	1 33·3	1 33·5	1 29·0	1·3	0·1	7·3	0·8	13·3	1·4
14	1 33·5	1 33·8	1 29·2	1·4	0·2	7·4	0·8	13·4	1·5
15	1 33·8	1 34·0	1 29·5	1·5	0·2	7·5	0·8	13·5	1·5
16	1 34·0	1 34·3	1 29·7	1·6	0·2	7·6	0·8	13·6	1·5
17	1 34·3	1 34·5	1 30·0	1·7	0·2	7·7	0·8	13·7	1·5
18	1 34·5	1 34·8	1 30·2	1·8	0·2	7·8	0·8	13·8	1·5
19	1 34·8	1 35·0	1 30·4	1·9	0·2	7·9	0·9	13·9	1·5
20	1 35·0	1 35·3	1 30·7	2·0	0·2	8·0	0·9	14·0	1·5
21	1 35·3	1 35·5	1 30·9	2·1	0·2	8·1	0·9	14·1	1·5
22	1 35·5	1 35·8	1 31·1	2·2	0·2	8·2	0·9	14·2	1·5
23	1 35·8	1 36·0	1 31·4	2·3	0·2	8·3	0·9	14·3	1·5
24	1 36·0	1 36·3	1 31·6	2·4	0·3	8·4	0·9	14·4	1·6
25	1 36·3	1 36·5	1 31·9	2·5	0·3	8·5	0·9	14·5	1·6
26	1 36·5	1 36·8	1 32·1	2·6	0·3	8·6	0·9	14·6	1·6
27	1 36·8	1 37·0	1 32·3	2·7	0·3	8·7	0·9	14·7	1·6
28	1 37·0	1 37·3	1 32·6	2·8	0·3	8·8	1·0	14·8	1·6
29	1 37·3	1 37·5	1 32·8	2·9	0·3	8·9	1·0	14·9	1·6
30	1 37·5	1 37·8	1 33·1	3·0	0·3	9·0	1·0	15·0	1·6
31	1 37·8	1 38·0	1 33·3	3·1	0·3	9·1	1·0	15·1	1·6
32	1 38·0	1 38·3	1 33·5	3·2	0·3	9·2	1·0	15·2	1·6
33	1 38·3	1 38·5	1 33·8	3·3	0·4	9·3	1·0	15·3	1·7
34	1 38·5	1 38·8	1 34·0	3·4	0·4	9·4	1·0	15·4	1·7
35	1 38·8	1 39·0	1 34·3	3·5	0·4	9·5	1·0	15·5	1·7
36	1 39·0	1 39·3	1 34·5	3·6	0·4	9·6	1·0	15·6	1·7
37	1 39·3	1 39·5	1 34·7	3·7	0·4	9·7	1·1	15·7	1·7
38	1 39·5	1 39·8	1 35·0	3·8	0·4	9·8	1·1	15·8	1·7
39	1 39·8	1 40·0	1 35·2	3·9	0·4	9·9	1·1	15·9	1·7
40	1 40·0	1 40·3	1 35·4	4·0	0·4	10·0	1·1	16·0	1·7
41	1 40·3	1 40·5	1 35·7	4·1	0·4	10·1	1·1	16·1	1·7
42	1 40·5	1 40·8	1 35·9	4·2	0·5	10·2	1·1	16·2	1·8
43	1 40·8	1 41·0	1 36·2	4·3	0·5	10·3	1·1	16·3	1·8
44	1 41·0	1 41·3	1 36·4	4·4	0·5	10·4	1·1	16·4	1·8
45	1 41·3	1 41·5	1 36·6	4·5	0·5	10·5	1·1	16·5	1·8
46	1 41·5	1 41·8	1 36·9	4·6	0·5	10·6	1·1	16·6	1·8
47	1 41·8	1 42·0	1 37·1	4·7	0·5	10·7	1·2	16·7	1·8
48	1 42·0	1 42·3	1 37·4	4·8	0·5	10·8	1·2	16·8	1·8
49	1 42·3	1 42·5	1 37·6	4·9	0·5	10·9	1·2	16·9	1·8
50	1 42·5	1 42·8	1 37·8	5·0	0·5	11·0	1·2	17·0	1·8
51	1 42·8	1 43·0	1 38·1	5·1	0·6	11·1	1·2	17·1	1·9
52	1 43·0	1 43·3	1 38·3	5·2	0·6	11·2	1·2	17·2	1·9
53	1 43·3	1 43·5	1 38·5	5·3	0·6	11·3	1·2	17·3	1·9
54	1 43·5	1 43·8	1 38·8	5·4	0·6	11·4	1·2	17·4	1·9
55	1 43·8	1 44·0	1 39·0	5·5	0·6	11·5	1·2	17·5	1·9
56	1 44·0	1 44·3	1 39·3	5·6	0·6	11·6	1·3	17·6	1·9
57	1 44·3	1 44·5	1 39·5	5·7	0·6	11·7	1·3	17·7	1·9
58	1 44·5	1 44·8	1 39·7	5·8	0·6	11·8	1·3	17·8	1·9
59	1 44·8	1 45·0	1 40·0	5·9	0·6	11·9	1·3	17·9	1·9
60	1 45·0	1 45·3	1 40·2	6·0	0·7	12·0	1·3	18·0	2·0

7m

m 7	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	1 45·0	1 45·3	1 40·2	0·0	0·0	6·0	0·8	12·0	1·5
01	1 45·3	1 45·5	1 40·5	0·1	0·0	6·1	0·8	12·1	1·5
02	1 45·5	1 45·8	1 40·7	0·2	0·0	6·2	0·8	12·2	1·5
03	1 45·8	1 46·0	1 40·9	0·3	0·0	6·3	0·8	12·3	1·5
04	1 46·0	1 46·3	1 41·2	0·4	0·1	6·4	0·8	12·4	1·6
05	1 46·3	1 46·5	1 41·4	0·5	0·1	6·5	0·8	12·5	1·6
06	1 46·5	1 46·8	1 41·6	0·6	0·1	6·6	0·8	12·6	1·6
07	1 46·8	1 47·0	1 41·9	0·7	0·1	6·7	0·8	12·7	1·6
08	1 47·0	1 47·3	1 42·1	0·8	0·1	6·8	0·9	12·8	1·6
09	1 47·3	1 47·5	1 42·4	0·9	0·1	6·9	0·9	12·9	1·6
10	1 47·5	1 47·8	1 42·6	1·0	0·1	7·0	0·9	13·0	1·6
11	1 47·8	1 48·0	1 42·8	1·1	0·1	7·1	0·9	13·1	1·6
12	1 48·0	1 48·3	1 43·1	1·2	0·2	7·2	0·9	13·2	1·7
13	1 48·3	1 48·5	1 43·3	1·3	0·2	7·3	0·9	13·3	1·7
14	1 48·5	1 48·8	1 43·6	1·4	0·2	7·4	0·9	13·4	1·7
15	1 48·8	1 49·0	1 43·8	1·5	0·2	7·5	0·9	13·5	1·7
16	1 49·0	1 49·3	1 44·0	1·6	0·2	7·6	1·0	13·6	1·7
17	1 49·3	1 49·5	1 44·3	1·7	0·2	7·7	1·0	13·7	1·7
18	1 49·5	1 49·8	1 44·5	1·8	0·2	7·8	1·0	13·8	1·7
19	1 49·8	1 50·1	1 44·8	1·9	0·2	7·9	1·0	13·9	1·7
20	1 50·0	1 50·3	1 45·0	2·0	0·3	8·0	1·0	14·0	1·8
21	1 50·3	1 50·6	1 45·2	2·1	0·3	8·1	1·0	14·1	1·8
22	1 50·5	1 50·8	1 45·5	2·2	0·3	8·2	1·0	14·2	1·8
23	1 50·8	1 51·1	1 45·7	2·3	0·3	8·3	1·0	14·3	1·8
24	1 51·0	1 51·3	1 45·9	2·4	0·3	8·4	1·1	14·4	1·8
25	1 51·3	1 51·6	1 46·2	2·5	0·3	8·5	1·1	14·5	1·8
26	1 51·5	1 51·8	1 46·4	2·6	0·3	8·6	1·1	14·6	1·8
27	1 51·8	1 52·1	1 46·7	2·7	0·3	8·7	1·1	14·7	1·8
28	1 52·0	1 52·3	1 46·9	2·8	0·4	8·8	1·1	14·8	1·9
29	1 52·3	1 52·6	1 47·1	2·9	0·4	8·9	1·1	14·9	1·9
30	1 52·5	1 52·8	1 47·4	3·0	0·4	9·0	1·1	15·0	1·9
31	1 52·8	1 53·1	1 47·6	3·1	0·4	9·1	1·1	15·1	1·9
32	1 53·0	1 53·3	1 47·9	3·2	0·4	9·2	1·2	15·2	1·9
33	1 53·3	1 53·6	1 48·1	3·3	0·4	9·3	1·2	15·3	1·9
34	1 53·5	1 53·8	1 48·3	3·4	0·4	9·4	1·2	15·4	1·9
35	1 53·8	1 54·1	1 48·6	3·5	0·4	9·5	1·2	15·5	1·9
36	1 54·0	1 54·3	1 48·8	3·6	0·5	9·6	1·2	15·6	2·0
37	1 54·3	1 54·6	1 49·0	3·7	0·5	9·7	1·2	15·7	2·0
38	1 54·5	1 54·8	1 49·3	3·8	0·5	9·8	1·2	15·8	2·0
39	1 54·8	1 55·1	1 49·5	3·9	0·5	9·9	1·2	15·9	2·0
40	1 55·0	1 55·3	1 49·8	4·0	0·5	10·0	1·3	16·0	2·0
41	1 55·3	1 55·6	1 50·0	4·1	0·5	10·1	1·3	16·1	2·0
42	1 55·5	1 55·8	1 50·2	4·2	0·5	10·2	1·3	16·2	2·0
43	1 55·8	1 56·1	1 50·5	4·3	0·5	10·3	1·3	16·3	2·0
44	1 56·0	1 56·3	1 50·7	4·4	0·6	10·4	1·3	16·4	2·1
45	1 56·3	1 56·6	1 51·0	4·5	0·6	10·5	1·3	16·5	2·1
46	1 56·5	1 56·8	1 51·2	4·6	0·6	10·6	1·3	16·6	2·1
47	1 56·8	1 57·1	1 51·4	4·7	0·6	10·7	1·3	16·7	2·1
48	1 57·0	1 57·3	1 51·7	4·8	0·6	10·8	1·4	16·8	2·1
49	1 57·3	1 57·6	1 51·9	4·9	0·6	10·9	1·4	16·9	2·1
50	1 57·5	1 57·8	1 52·1	5·0	0·6	11·0	1·4	17·0	2·1
51	1 57·8	1 58·1	1 52·4	5·1	0·6	11·1	1·4	17·1	2·1
52	1 58·0	1 58·3	1 52·6	5·2	0·7	11·2	1·4	17·2	2·2
53	1 58·3	1 58·6	1 52·9	5·3	0·7	11·3	1·4	17·3	2·2
54	1 58·5	1 58·8	1 53·1	5·4	0·7	11·4	1·4	17·4	2·2
55	1 58·8	1 59·1	1 53·3	5·5	0·7	11·5	1·4	17·5	2·2
56	1 59·0	1 59·3	1 53·6	5·6	0·7	11·6	1·5	17·6	2·2
57	1 59·3	1 59·6	1 53·8	5·7	0·7	11·7	1·5	17·7	2·2
58	1 59·5	1 59·8	1 54·1	5·8	0·7	11·8	1·5	17·8	2·2
59	1 59·8	2 00·1	1 54·3	5·9	0·7	11·9	1·5	17·9	2·2
60	2 00·0	2 00·3	1 54·5	6·0	0·8	12·0	1·5	18·0	2·3

8m

m 8	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	2 00·0	2 00·3	1 54·5	0·0	0·0	6·0	0·9	12·0	1·7
01	2 00·3	2 00·6	1 54·8	0·1	0·0	6·1	0·9	12·1	1·7
02	2 00·5	2 00·8	1 55·0	0·2	0·0	6·2	0·9	12·2	1·7
03	2 00·8	2 01·1	1 55·2	0·3	0·0	6·3	0·9	12·3	1·7
04	2 01·0	2 01·3	1 55·5	0·4	0·1	6·4	0·9	12·4	1·8
05	2 01·3	2 01·6	1 55·7	0·5	0·1	6·5	0·9	12·5	1·8
06	2 01·5	2 01·8	1 56·0	0·6	0·1	6·6	0·9	12·6	1·8
07	2 01·8	2 02·1	1 56·2	0·7	0·1	6·7	0·9	12·7	1·8
08	2 02·0	2 02·3	1 56·4	0·8	0·1	6·8	1·0	12·8	1·8
09	2 02·3	2 02·6	1 56·7	0·9	0·1	6·9	1·0	12·9	1·8
10	2 02·5	2 02·8	1 56·9	1·0	0·1	7·0	1·0	13·0	1·8
11	2 02·8	2 03·1	1 57·2	1·1	0·2	7·1	1·0	13·1	1·9
12	2 03·0	2 03·3	1 57·4	1·2	0·2	7·2	1·0	13·2	1·9
13	2 03·3	2 03·6	1 57·6	1·3	0·2	7·3	1·0	13·3	1·9
14	2 03·5	2 03·8	1 57·9	1·4	0·2	7·4	1·0	13·4	1·9
15	2 03·8	2 04·1	1 58·1	1·5	0·2	7·5	1·1	13·5	1·9
16	2 04·0	2 04·3	1 58·4	1·6	0·2	7·6	1·1	13·6	1·9
17	2 04·3	2 04·6	1 58·6	1·7	0·2	7·7	1·1	13·7	1·9
18	2 04·5	2 04·8	1 58·8	1·8	0·3	7·8	1·1	13·8	2·0
19	2 04·8	2 05·1	1 59·1	1·9	0·3	7·9	1·1	13·9	2·0
20	2 05·0	2 05·3	1 59·3	2·0	0·3	8·0	1·1	14·0	2·0
21	2 05·3	2 05·6	1 59·5	2·1	0·3	8·1	1·1	14·1	2·0
22	2 05·5	2 05·8	1 59·8	2·2	0·3	8·2	1·2	14·2	2·0
23	2 05·8	2 06·1	2 00·0	2·3	0·3	8·3	1·2	14·3	2·0
24	2 06·0	2 06·3	2 00·3	2·4	0·3	8·4	1·2	14·4	2·0
25	2 06·3	2 06·6	2 00·5	2·5	0·4	8·5	1·2	14·5	2·1
26	2 06·5	2 06·8	2 00·7	2·6	0·4	8·6	1·2	14·6	2·1
27	2 06·8	2 07·1	2 01·0	2·7	0·4	8·7	1·2	14·7	2·1
28	2 07·0	2 07·3	2 01·2	2·8	0·4	8·8	1·2	14·8	2·1
29	2 07·3	2 07·6	2 01·5	2·9	0·4	8·9	1·3	14·9	2·1
30	2 07·5	2 07·8	2 01·7	3·0	0·4	9·0	1·3	15·0	2·1
31	2 07·8	2 08·1	2 01·9	3·1	0·4	9·1	1·3	15·1	2·1
32	2 08·0	2 08·4	2 02·2	3·2	0·5	9·2	1·3	15·2	2·2
33	2 08·3	2 08·6	2 02·4	3·3	0·5	9·3	1·3	15·3	2·2
34	2 08·5	2 08·9	2 02·6	3·4	0·5	9·4	1·3	15·4	2·2
35	2 08·8	2 09·1	2 02·9	3·5	0·5	9·5	1·3	15·5	2·2
36	2 09·0	2 09·4	2 03·1	3·6	0·5	9·6	1·4	15·6	2·2
37	2 09·3	2 09·6	2 03·4	3·7	0·5	9·7	1·4	15·7	2·2
38	2 09·5	2 09·9	2 03·6	3·8	0·5	9·8	1·4	15·8	2·2
39	2 09·8	2 10·1	2 03·8	3·9	0·6	9·9	1·4	15·9	2·3
40	2 10·0	2 10·4	2 04·1	4·0	0·6	10·0	1·4	16·0	2·3
41	2 10·3	2 10·6	2 04·3	4·1	0·6	10·1	1·4	16·1	2·3
42	2 10·5	2 10·9	2 04·6	4·2	0·6	10·2	1·4	16·2	2·3
43	2 10·8	2 11·1	2 04·8	4·3	0·6	10·3	1·5	16·3	2·3
44	2 11·0	2 11·4	2 05·0	4·4	0·6	10·4	1·5	16·4	2·3
45	2 11·3	2 11·6	2 05·3	4·5	0·6	10·5	1·5	16·5	2·3
46	2 11·5	2 11·9	2 05·5	4·6	0·7	10·6	1·5	16·6	2·4
47	2 11·8	2 12·1	2 05·7	4·7	0·7	10·7	1·5	16·7	2·4
48	2 12·0	2 12·4	2 06·0	4·8	0·7	10·8	1·5	16·8	2·4
49	2 12·3	2 12·6	2 06·2	4·9	0·7	10·9	1·5	16·9	2·4
50	2 12·5	2 12·9	2 06·5	5·0	0·7	11·0	1·6	17·0	2·4
51	2 12·8	2 13·1	2 06·7	5·1	0·7	11·1	1·6	17·1	2·4
52	2 13·0	2 13·4	2 06·9	5·2	0·7	11·2	1·6	17·2	2·4
53	2 13·3	2 13·6	2 07·2	5·3	0·8	11·3	1·6	17·3	2·5
54	2 13·5	2 13·9	2 07·4	5·4	0·8	11·4	1·6	17·4	2·5
55	2 13·8	2 14·1	2 07·7	5·5	0·8	11·5	1·6	17·5	2·5
56	2 14·0	2 14·4	2 07·9	5·6	0·8	11·6	1·6	17·6	2·5
57	2 14·3	2 14·6	2 08·1	5·7	0·8	11·7	1·7	17·7	2·5
58	2 14·5	2 14·9	2 08·4	5·8	0·8	11·8	1·7	17·8	2·5
59	2 14·8	2 15·1	2 08·6	5·9	0·8	11·9	1·7	17·9	2·5
60	2 15·0	2 15·4	2 08·9	6·0	0·9	12·0	1·7	18·0	2·6

9m

m 9	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	2 15·0	2 15·4	2 08·9	0·0	0·0	6·0	1·0	12·0	1·9
01	2 15·3	2 15·6	2 09·1	0·1	0·0	6·1	1·0	12·1	1·9
02	2 15·5	2 15·9	2 09·3	0·2	0·0	6·2	1·0	12·2	1·9
03	2 15·8	2 16·1	2 09·6	0·3	0·0	6·3	1·0	12·3	1·9
04	2 16·0	2 16·4	2 09·8	0·4	0·1	6·4	1·0	12·4	2·0
05	2 16·3	2 16·6	2 10·0	0·5	0·1	6·5	1·0	12·5	2·0
06	2 16·5	2 16·9	2 10·3	0·6	0·1	6·6	1·0	12·6	2·0
07	2 16·8	2 17·1	2 10·5	0·7	0·1	6·7	1·1	12·7	2·0
08	2 17·0	2 17·4	2 10·8	0·8	0·1	6·8	1·1	12·8	2·0
09	2 17·3	2 17·6	2 11·0	0·9	0·1	6·9	1·1	12·9	2·0
10	2 17·5	2 17·9	2 11·2	1·0	0·2	7·0	1·1	13·0	2·1
11	2 17·8	2 18·1	2 11·5	1·1	0·2	7·1	1·1	13·1	2·1
12	2 18·0	2 18·4	2 11·7	1·2	0·2	7·2	1·1	13·2	2·1
13	2 18·3	2 18·6	2 12·0	1·3	0·2	7·3	1·2	13·3	2·1
14	2 18·5	2 18·9	2 12·2	1·4	0·2	7·4	1·2	13·4	2·1
15	2 18·8	2 19·1	2 12·4	1·5	0·2	7·5	1·2	13·5	2·1
16	2 19·0	2 19·4	2 12·7	1·6	0·3	7·6	1·2	13·6	2·2
17	2 19·3	2 19·6	2 12·9	1·7	0·3	7·7	1·2	13·7	2·2
18	2 19·5	2 19·9	2 13·1	1·8	0·3	7·8	1·2	13·8	2·2
19	2 19·8	2 20·1	2 13·4	1·9	0·3	7·9	1·3	13·9	2·2
20	2 20·0	2 20·4	2 13·6	2·0	0·3	8·0	1·3	14·0	2·2
21	2 20·3	2 20·6	2 13·9	2·1	0·3	8·1	1·3	14·1	2·2
22	2 20·5	2 20·9	2 14·1	2·2	0·3	8·2	1·3	14·2	2·2
23	2 20·8	2 21·1	2 14·3	2·3	0·4	8·3	1·3	14·3	2·3
24	2 21·0	2 21·4	2 14·6	2·4	0·4	8·4	1·3	14·4	2·3
25	2 21·3	2 21·6	2 14·8	2·5	0·4	8·5	1·3	14·5	2·3
26	2 21·5	2 21·9	2 15·1	2·6	0·4	8·6	1·4	14·6	2·3
27	2 21·8	2 22·1	2 15·3	2·7	0·4	8·7	1·4	14·7	2·3
28	2 22·0	2 22·4	2 15·5	2·8	0·4	8·8	1·4	14·8	2·3
29	2 22·3	2 22·6	2 15·8	2·9	0·5	8·9	1·4	14·9	2·4
30	2 22·5	2 22·9	2 16·0	3·0	0·5	9·0	1·4	15·0	2·4
31	2 22·8	2 23·1	2 16·2	3·1	0·5	9·1	1·4	15·1	2·4
32	2 23·0	2 23·4	2 16·5	3·2	0·5	9·2	1·5	15·2	2·4
33	2 23·3	2 23·6	2 16·7	3·3	0·5	9·3	1·5	15·3	2·4
34	2 23·5	2 23·9	2 17·0	3·4	0·5	9·4	1·5	15·4	2·4
35	2 23·8	2 24·1	2 17·2	3·5	0·6	9·5	1·5	15·5	2·5
36	2 24·0	2 24·4	2 17·4	3·6	0·6	9·6	1·5	15·6	2·5
37	2 24·3	2 24·6	2 17·7	3·7	0·6	9·7	1·5	15·7	2·5
38	2 24·5	2 24·9	2 17·9	3·8	0·6	9·8	1·6	15·8	2·5
39	2 24·8	2 25·1	2 18·2	3·9	0·6	9·9	1·6	15·9	2·5
40	2 25·0	2 25·4	2 18·4	4·0	0·6	10·0	1·6	16·0	2·5
41	2 25·3	2 25·6	2 18·6	4·1	0·6	10·1	1·6	16·1	2·5
42	2 25·5	2 25·9	2 18·9	4·2	0·7	10·2	1·6	16·2	2·6
43	2 25·8	2 26·1	2 19·1	4·3	0·7	10·3	1·6	16·3	2·6
44	2 26·0	2 26·4	2 19·3	4·4	0·7	10·4	1·6	16·4	2·6
45	2 26·3	2 26·7	2 19·6	4·5	0·7	10·5	1·7	16·5	2·6
46	2 26·5	2 26·9	2 19·8	4·6	0·7	10·6	1·7	16·6	2·6
47	2 26·8	2 27·2	2 20·1	4·7	0·7	10·7	1·7	16·7	2·6
48	2 27·0	2 27·4	2 20·3	4·8	0·8	10·8	1·7	16·8	2·7
49	2 27·3	2 27·7	2 20·5	4·9	0·8	10·9	1·7	16·9	2·7
50	2 27·5	2 27·9	2 20·8	5·0	0·8	11·0	1·7	17·0	2·7
51	2 27·8	2 28·2	2 21·0	5·1	0·8	11·1	1·8	17·1	2·7
52	2 28·0	2 28·4	2 21·3	5·2	0·8	11·2	1·8	17·2	2·7
53	2 28·3	2 28·7	2 21·5	5·3	0·8	11·3	1·8	17·3	2·7
54	2 28·5	2 28·9	2 21·7	5·4	0·9	11·4	1·8	17·4	2·8
55	2 28·8	2 29·2	2 22·0	5·5	0·9	11·5	1·8	17·5	2·8
56	2 29·0	2 29·4	2 22·2	5·6	0·9	11·6	1·8	17·6	2·8
57	2 29·3	2 29·7	2 22·5	5·7	0·9	11·7	1·9	17·7	2·8
58	2 29·5	2 29·9	2 22·7	5·8	0·9	11·8	1·9	17·8	2·8
59	2 29·8	2 30·2	2 22·9	5·9	0·9	11·9	1·9	17·9	2·8
60	2 30·0	2 30·4	2 23·2	6·0	1·0	12·0	1·9	18·0	2·9

10m

m 10	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	2 30·0	2 30·4	2 23·2	0·0	0·0	6·0	1·1	12·0	2·1
01	2 30·3	2 30·7	2 23·4	0·1	0·0	6·1	1·1	12·1	2·1
02	2 30·5	2 30·9	2 23·6	0·2	0·0	6·2	1·1	12·2	2·1
03	2 30·8	2 31·2	2 23·9	0·3	0·1	6·3	1·1	12·3	2·2
04	2 31·0	2 31·4	2 24·1	0·4	0·1	6·4	1·1	12·4	2·2
05	2 31·3	2 31·7	2 24·4	0·5	0·1	6·5	1·1	12·5	2·2
06	2 31·5	2 31·9	2 24·6	0·6	0·1	6·6	1·2	12·6	2·2
07	2 31·8	2 32·2	2 24·8	0·7	0·1	6·7	1·2	12·7	2·2
08	2 32·0	2 32·4	2 25·1	0·8	0·1	6·8	1·2	12·8	2·2
09	2 32·3	2 32·7	2 25·3	0·9	0·2	6·9	1·2	12·9	2·3
10	2 32·5	2 32·9	2 25·6	1·0	0·2	7·0	1·2	13·0	2·3
11	2 32·8	2 33·2	2 25·8	1·1	0·2	7·1	1·2	13·1	2·3
12	2 33·0	2 33·4	2 26·0	1·2	0·2	7·2	1·3	13·2	2·3
13	2 33·3	2 33·7	2 26·3	1·3	0·2	7·3	1·3	13·3	2·3
14	2 33·5	2 33·9	2 26·5	1·4	0·2	7·4	1·3	13·4	2·3
15	2 33·8	2 34·2	2 26·7	1·5	0·3	7·5	1·3	13·5	2·4
16	2 34·0	2 34·4	2 27·0	1·6	0·3	7·6	1·3	13·6	2·4
17	2 34·3	2 34·7	2 27·2	1·7	0·3	7·7	1·3	13·7	2·4
18	2 34·5	2 34·9	2 27·5	1·8	0·3	7·8	1·4	13·8	2·4
19	2 34·8	2 35·2	2 27·7	1·9	0·3	7·9	1·4	13·9	2·4
20	2 35·0	2 35·4	2 27·9	2·0	0·4	8·0	1·4	14·0	2·5
21	2 35·3	2 35·7	2 28·2	2·1	0·4	8·1	1·4	14·1	2·5
22	2 35·5	2 35·9	2 28·4	2·2	0·4	8·2	1·4	14·2	2·5
23	2 35·8	2 36·2	2 28·7	2·3	0·4	8·3	1·5	14·3	2·5
24	2 36·0	2 36·4	2 28·9	2·4	0·4	8·4	1·5	14·4	2·5
25	2 36·3	2 36·7	2 29·1	2·5	0·4	8·5	1·5	14·5	2·5
26	2 36·5	2 36·9	2 29·4	2·6	0·5	8·6	1·5	14·6	2·6
27	2 36·8	2 37·2	2 29·6	2·7	0·5	8·7	1·5	14·7	2·6
28	2 37·0	2 37·4	2 29·8	2·8	0·5	8·8	1·5	14·8	2·6
29	2 37·3	2 37·7	2 30·1	2·9	0·5	8·9	1·6	14·9	2·6
30	2 37·5	2 37·9	2 30·3	3·0	0·5	9·0	1·6	15·0	2·6
31	2 37·8	2 38·2	2 30·6	3·1	0·5	9·1	1·6	15·1	2·6
32	2 38·0	2 38·4	2 30·8	3·2	0·6	9·2	1·6	15·2	2·7
33	2 38·3	2 38·7	2 31·0	3·3	0·6	9·3	1·6	15·3	2·7
34	2 38·5	2 38·9	2 31·3	3·4	0·6	9·4	1·6	15·4	2·7
35	2 38·8	2 39·2	2 31·5	3·5	0·6	9·5	1·7	15·5	2·7
36	2 39·0	2 39·4	2 31·8	3·6	0·6	9·6	1·7	15·6	2·7
37	2 39·3	2 39·7	2 32·0	3·7	0·6	9·7	1·7	15·7	2·7
38	2 39·5	2 39·9	2 32·2	3·8	0·7	9·8	1·7	15·8	2·8
39	2 39·8	2 40·2	2 32·5	3·9	0·7	9·9	1·7	15·9	2·8
40	2 40·0	2 40·4	2 32·7	4·0	0·7	10·0	1·8	16·0	2·8
41	2 40·3	2 40·7	2 32·9	4·1	0·7	10·1	1·8	16·1	2·8
42	2 40·5	2 40·9	2 33·2	4·2	0·7	10·2	1·8	16·2	2·8
43	2 40·8	2 41·2	2 33·4	4·3	0·8	10·3	1·8	16·3	2·9
44	2 41·0	2 41·4	2 33·7	4·4	0·8	10·4	1·8	16·4	2·9
45	2 41·3	2 41·7	2 33·9	4·5	0·8	10·5	1·8	16·5	2·9
46	2 41·5	2 41·9	2 34·1	4·6	0·8	10·6	1·9	16·6	2·9
47	2 41·8	2 42·2	2 34·4	4·7	0·8	10·7	1·9	16·7	2·9
48	2 42·0	2 42·4	2 34·6	4·8	0·8	10·8	1·9	16·8	2·9
49	2 42·3	2 42·7	2 34·9	4·9	0·9	10·9	1·9	16·9	3·0
50	2 42·5	2 42·9	2 35·1	5·0	0·9	11·0	1·9	17·0	3·0
51	2 42·8	2 43·2	2 35·3	5·1	0·9	11·1	1·9	17·1	3·0
52	2 43·0	2 43·4	2 35·6	5·2	0·9	11·2	2·0	17·2	3·0
53	2 43·3	2 43·7	2 35·8	5·3	0·9	11·3	2·0	17·3	3·0
54	2 43·5	2 43·9	2 36·1	5·4	0·9	11·4	2·0	17·4	3·0
55	2 43·8	2 44·2	2 36·3	5·5	1·0	11·5	2·0	17·5	3·1
56	2 44·0	2 44·4	2 36·5	5·6	1·0	11·6	2·0	17·6	3·1
57	2 44·3	2 44·7	2 36·8	5·7	1·0	11·7	2·0	17·7	3·1
58	2 44·5	2 45·0	2 37·0	5·8	1·0	11·8	2·1	17·8	3·1
59	2 44·8	2 45·2	2 37·2	5·9	1·0	11·9	2·1	17·9	3·1
60	2 45·0	2 45·5	2 37·5	6·0	1·1	12·0	2·1	18·0	3·2

11m

m 11	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	2 45·0	2 45·5	2 37·5	0·0	0·0	6·0	1·2	12·0	2·3
01	2 45·3	2 45·7	2 37·7	0·1	0·0	6·1	1·2	12·1	2·3
02	2 45·5	2 46·0	2 38·0	0·2	0·0	6·2	1·2	12·2	2·3
03	2 45·8	2 46·2	2 38·2	0·3	0·1	6·3	1·2	12·3	2·4
04	2 46·0	2 46·5	2 38·4	0·4	0·1	6·4	1·2	12·4	2·4
05	2 46·3	2 46·7	2 38·7	0·5	0·1	6·5	1·2	12·5	2·4
06	2 46·5	2 47·0	2 38·9	0·6	0·1	6·6	1·3	12·6	2·4
07	2 46·8	2 47·2	2 39·2	0·7	0·1	6·7	1·3	12·7	2·4
08	2 47·0	2 47·5	2 39·4	0·8	0·2	6·8	1·3	12·8	2·5
09	2 47·3	2 47·7	2 39·6	0·9	0·2	6·9	1·3	12·9	2·5
10	2 47·5	2 48·0	2 39·9	1·0	0·2	7·0	1·3	13·0	2·5
11	2 47·8	2 48·2	2 40·1	1·1	0·2	7·1	1·4	13·1	2·5
12	2 48·0	2 48·5	2 40·3	1·2	0·2	7·2	1·4	13·2	2·5
13	2 48·3	2 48·7	2 40·6	1·3	0·2	7·3	1·4	13·3	2·5
14	2 48·5	2 49·0	2 40·8	1·4	0·3	7·4	1·4	13·4	2·6
15	2 48·8	2 49·2	2 41·1	1·5	0·3	7·5	1·4	13·5	2·6
16	2 49·0	2 49·5	2 41·3	1·6	0·3	7·6	1·5	13·6	2·6
17	2 49·3	2 49·7	2 41·5	1·7	0·3	7·7	1·5	13·7	2·6
18	2 49·5	2 50·0	2 41·8	1·8	0·3	7·8	1·5	13·8	2·6
19	2 49·8	2 50·2	2 42·0	1·9	0·4	7·9	1·5	13·9	2·7
20	2 50·0	2 50·5	2 42·3	2·0	0·4	8·0	1·5	14·0	2·7
21	2 50·3	2 50·7	2 42·5	2·1	0·4	8·1	1·6	14·1	2·7
22	2 50·5	2 51·0	2 42·7	2·2	0·4	8·2	1·6	14·2	2·7
23	2 50·8	2 51·2	2 43·0	2·3	0·4	8·3	1·6	14·3	2·7
24	2 51·0	2 51·5	2 43·2	2·4	0·5	8·4	1·6	14·4	2·8
25	2 51·3	2 51·7	2 43·4	2·5	0·5	8·5	1·6	14·5	2·8
26	2 51·5	2 52·0	2 43·7	2·6	0·5	8·6	1·6	14·6	2·8
27	2 51·8	2 52·2	2 43·9	2·7	0·5	8·7	1·7	14·7	2·8
28	2 52·0	2 52·5	2 44·2	2·8	0·5	8·8	1·7	14·8	2·8
29	2 52·3	2 52·7	2 44·4	2·9	0·6	8·9	1·7	14·9	2·9
30	2 52·5	2 53·0	2 44·6	3·0	0·6	9·0	1·7	15·0	2·9
31	2 52·8	2 53·2	2 44·9	3·1	0·6	9·1	1·7	15·1	2·9
32	2 53·0	2 53·5	2 45·1	3·2	0·6	9·2	1·8	15·2	2·9
33	2 53·3	2 53·7	2 45·4	3·3	0·6	9·3	1·8	15·3	2·9
34	2 53·5	2 54·0	2 45·6	3·4	0·7	9·4	1·8	15·4	3·0
35	2 53·8	2 54·2	2 45·8	3·5	0·7	9·5	1·8	15·5	3·0
36	2 54·0	2 54·5	2 46·1	3·6	0·7	9·6	1·8	15·6	3·0
37	2 54·3	2 54·7	2 46·3	3·7	0·7	9·7	1·9	15·7	3·0
38	2 54·5	2 55·0	2 46·6	3·8	0·7	9·8	1·9	15·8	3·0
39	2 54·8	2 55·2	2 46·8	3·9	0·7	9·9	1·9	15·9	3·0
40	2 55·0	2 55·5	2 47·0	4·0	0·8	10·0	1·9	16·0	3·1
41	2 55·3	2 55·7	2 47·3	4·1	0·8	10·1	1·9	16·1	3·1
42	2 55·5	2 56·0	2 47·5	4·2	0·8	10·2	2·0	16·2	3·1
43	2 55·8	2 56·2	2 47·7	4·3	0·8	10·3	2·0	16·3	3·1
44	2 56·0	2 56·5	2 48·0	4·4	0·8	10·4	2·0	16·4	3·1
45	2 56·3	2 56·7	2 48·2	4·5	0·9	10·5	2·0	16·5	3·2
46	2 56·5	2 57·0	2 48·5	4·6	0·9	10·6	2·0	16·6	3·2
47	2 56·8	2 57·2	2 48·7	4·7	0·9	10·7	2·1	16·7	3·2
48	2 57·0	2 57·5	2 48·9	4·8	0·9	10·8	2·1	16·8	3·2
49	2 57·3	2 57·7	2 49·2	4·9	0·9	10·9	2·1	16·9	3·2
50	2 57·5	2 58·0	2 49·4	5·0	1·0	11·0	2·1	17·0	3·3
51	2 57·8	2 58·2	2 49·7	5·1	1·0	11·1	2·1	17·1	3·3
52	2 58·0	2 58·5	2 49·9	5·2	1·0	11·2	2·1	17·2	3·3
53	2 58·3	2 58·7	2 50·1	5·3	1·0	11·3	2·2	17·3	3·3
54	2 58·5	2 59·0	2 50·4	5·4	1·0	11·4	2·2	17·4	3·3
55	2 58·8	2 59·2	2 50·6	5·5	1·1	11·5	2·2	17·5	3·4
56	2 59·0	2 59·5	2 50·8	5·6	1·1	11·6	2·2	17·6	3·4
57	2 59·3	2 59·7	2 51·1	5·7	1·1	11·7	2·2	17·7	3·4
58	2 59·5	3 00·0	2 51·3	5·8	1·1	11·8	2·3	17·8	3·4
59	2 59·8	3 00·2	2 51·6	5·9	1·1	11·9	2·3	17·9	3·4
60	3 00·0	3 00·5	2 51·8	6·0	1·2	12·0	2·3	18·0	3·5

12m

m 12	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	3 00·0	3 00·5	2 51·8	0·0	0·0	6·0	1·3	12·0	2·5
01	3 00·3	3 00·7	2 52·0	0·1	0·0	6·1	1·3	12·1	2·5
02	3 00·5	3 01·0	2 52·3	0·2	0·0	6·2	1·3	12·2	2·5
03	3 00·8	3 01·2	2 52·5	0·3	0·1	6·3	1·3	12·3	2·6
04	3 01·0	3 01·5	2 52·8	0·4	0·1	6·4	1·3	12·4	2·6
05	3 01·3	3 01·7	2 53·0	0·5	0·1	6·5	1·4	12·5	2·6
06	3 01·5	3 02·0	2 53·2	0·6	0·1	6·6	1·4	12·6	2·6
07	3 01·8	3 02·2	2 53·5	0·7	0·1	6·7	1·4	12·7	2·6
08	3 02·0	3 02·5	2 53·7	0·8	0·2	6·8	1·4	12·8	2·7
09	3 02·3	3 02·7	2 53·9	0·9	0·2	6·9	1·4	12·9	2·7
10	3 02·5	3 03·0	2 54·2	1·0	0·2	7·0	1·5	13·0	2·7
11	3 02·8	3 03·3	2 54·4	1·1	0·2	7·1	1·5	13·1	2·7
12	3 03·0	3 03·5	2 54·7	1·2	0·3	7·2	1·5	13·2	2·8
13	3 03·3	3 03·8	2 54·9	1·3	0·3	7·3	1·5	13·3	2·8
14	3 03·5	3 04·0	2 55·1	1·4	0·3	7·4	1·5	13·4	2·8
15	3 03·8	3 04·3	2 55·4	1·5	0·3	7·5	1·6	13·5	2·8
16	3 04·0	3 04·5	2 55·6	1·6	0·3	7·6	1·6	13·6	2·8
17	3 04·3	3 04·8	2 55·9	1·7	0·4	7·7	1·6	13·7	2·9
18	3 04·5	3 05·0	2 56·1	1·8	0·4	7·8	1·6	13·8	2·9
19	3 04·8	3 05·3	2 56·3	1·9	0·4	7·9	1·6	13·9	2·9
20	3 05·0	3 05·5	2 56·6	2·0	0·4	8·0	1·7	14·0	2·9
21	3 05·3	3 05·8	2 56·8	2·1	0·4	8·1	1·7	14·1	2·9
22	3 05·5	3 06·0	2 57·0	2·2	0·5	8·2	1·7	14·2	3·0
23	3 05·8	3 06·3	2 57·3	2·3	0·5	8·3	1·7	14·3	3·0
24	3 06·0	3 06·5	2 57·5	2·4	0·5	8·4	1·8	14·4	3·0
25	3 06·3	3 06·8	2 57·8	2·5	0·5	8·5	1·8	14·5	3·0
26	3 06·5	3 07·0	2 58·0	2·6	0·5	8·6	1·8	14·6	3·0
27	3 06·8	3 07·3	2 58·2	2·7	0·6	8·7	1·8	14·7	3·1
28	3 07·0	3 07·5	2 58·5	2·8	0·6	8·8	1·8	14·8	3·1
29	3 07·3	3 07·8	2 58·7	2·9	0·6	8·9	1·9	14·9	3·1
30	3 07·5	3 08·0	2 59·0	3·0	0·6	9·0	1·9	15·0	3·1
31	3 07·8	3 08·3	2 59·2	3·1	0·6	9·1	1·9	15·1	3·1
32	3 08·0	3 08·5	2 59·4	3·2	0·7	9·2	1·9	15·2	3·2
33	3 08·3	3 08·8	2 59·7	3·3	0·7	9·3	1·9	15·3	3·2
34	3 08·5	3 09·0	2 59·9	3·4	0·7	9·4	2·0	15·4	3·2
35	3 08·8	3 09·3	3 00·2	3·5	0·7	9·5	2·0	15·5	3·2
36	3 09·0	3 09·5	3 00·4	3·6	0·8	9·6	2·0	15·6	3·3
37	3 09·3	3 09·8	3 00·6	3·7	0·8	9·7	2·0	15·7	3·3
38	3 09·5	3 10·0	3 00·9	3·8	0·8	9·8	2·0	15·8	3·3
39	3 09·8	3 10·3	3 01·1	3·9	0·8	9·9	2·1	15·9	3·3
40	3 10·0	3 10·5	3 01·3	4·0	0·8	10·0	2·1	16·0	3·3
41	3 10·3	3 10·8	3 01·6	4·1	0·9	10·1	2·1	16·1	3·4
42	3 10·5	3 11·0	3 01·8	4·2	0·9	10·2	2·1	16·2	3·4
43	3 10·8	3 11·3	3 02·1	4·3	0·9	10·3	2·1	16·3	3·4
44	3 11·0	3 11·5	3 02·3	4·4	0·9	10·4	2·2	16·4	3·4
45	3 11·3	3 11·8	3 02·5	4·5	0·9	10·5	2·2	16·5	3·4
46	3 11·5	3 12·0	3 02·8	4·6	1·0	10·6	2·2	16·6	3·5
47	3 11·8	3 12·3	3 03·0	4·7	1·0	10·7	2·2	16·7	3·5
48	3 12·0	3 12·5	3 03·3	4·8	1·0	10·8	2·3	16·8	3·5
49	3 12·3	3 12·8	3 03·5	4·9	1·0	10·9	2·3	16·9	3·5
50	3 12·5	3 13·0	3 03·7	5·0	1·0	11·0	2·3	17·0	3·5
51	3 12·8	3 13·3	3 04·0	5·1	1·1	11·1	2·3	17·1	3·6
52	3 13·0	3 13·5	3 04·2	5·2	1·1	11·2	2·3	17·2	3·6
53	3 13·3	3 13·8	3 04·4	5·3	1·1	11·3	2·4	17·3	3·6
54	3 13·5	3 14·0	3 04·7	5·4	1·1	11·4	2·4	17·4	3·6
55	3 13·8	3 14·3	3 04·9	5·5	1·1	11·5	2·4	17·5	3·6
56	3 14·0	3 14·5	3 05·2	5·6	1·2	11·6	2·4	17·6	3·7
57	3 14·3	3 14·8	3 05·4	5·7	1·2	11·7	2·4	17·7	3·7
58	3 14·5	3 15·0	3 05·6	5·8	1·2	11·8	2·5	17·8	3·7
59	3 14·8	3 15·3	3 05·9	5·9	1·2	11·9	2·5	17·9	3·7
60	3 15·0	3 15·5	3 06·1	6·0	1·3	12·0	2·5	18·0	3·8

13m

m 13	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	3 15·0	3 15·5	3 06·1	0·0	0·0	6·0	1·4	12·0	2·7
01	3 15·3	3 15·8	3 06·4	0·1	0·0	6·1	1·4	12·1	2·7
02	3 15·5	3 16·0	3 06·6	0·2	0·0	6·2	1·4	12·2	2·7
03	3 15·8	3 16·3	3 06·8	0·3	0·1	6·3	1·4	12·3	2·8
04	3 16·0	3 16·5	3 07·1	0·4	0·1	6·4	1·4	12·4	2·8
05	3 16·3	3 16·8	3 07·3	0·5	0·1	6·5	1·5	12·5	2·8
06	3 16·5	3 17·0	3 07·5	0·6	0·1	6·6	1·5	12·6	2·8
07	3 16·8	3 17·3	3 07·8	0·7	0·2	6·7	1·5	12·7	2·9
08	3 17·0	3 17·5	3 08·0	0·8	0·2	6·8	1·5	12·8	2·9
09	3 17·3	3 17·8	3 08·3	0·9	0·2	6·9	1·6	12·9	2·9
10	3 17·5	3 18·0	3 08·5	1·0	0·2	7·0	1·6	13·0	2·9
11	3 17·8	3 18·3	3 08·7	1·1	0·2	7·1	1·6	13·1	2·9
12	3 18·0	3 18·5	3 09·0	1·2	0·3	7·2	1·6	13·2	3·0
13	3 18·3	3 18·8	3 09·2	1·3	0·3	7·3	1·6	13·3	3·0
14	3 18·5	3 19·0	3 09·5	1·4	0·3	7·4	1·7	13·4	3·0
15	3 18·8	3 19·3	3 09·7	1·5	0·3	7·5	1·7	13·5	3·0
16	3 19·0	3 19·5	3 09·9	1·6	0·4	7·6	1·7	13·6	3·1
17	3 19·3	3 19·8	3 10·2	1·7	0·4	7·7	1·7	13·7	3·1
18	3 19·5	3 20·0	3 10·4	1·8	0·4	7·8	1·8	13·8	3·1
19	3 19·8	3 20·3	3 10·7	1·9	0·4	7·9	1·8	13·9	3·1
20	3 20·0	3 20·5	3 10·9	2·0	0·5	8·0	1·8	14·0	3·2
21	3 20·3	3 20·8	3 11·1	2·1	0·5	8·1	1·8	14·1	3·2
22	3 20·5	3 21·0	3 11·4	2·2	0·5	8·2	1·8	14·2	3·2
23	3 20·8	3 21·3	3 11·6	2·3	0·5	8·3	1·9	14·3	3·2
24	3 21·0	3 21·6	3 11·8	2·4	0·5	8·4	1·9	14·4	3·2
25	3 21·3	3 21·8	3 12·1	2·5	0·6	8·5	1·9	14·5	3·3
26	3 21·5	3 22·1	3 12·3	2·6	0·6	8·6	1·9	14·6	3·3
27	3 21·8	3 22·3	3 12·6	2·7	0·6	8·7	2·0	14·7	3·3
28	3 22·0	3 22·6	3 12·8	2·8	0·6	8·8	2·0	14·8	3·3
29	3 22·3	3 22·8	3 13·0	2·9	0·7	8·9	2·0	14·9	3·4
30	3 22·5	3 23·1	3 13·3	3·0	0·7	9·0	2·0	15·0	3·4
31	3 22·8	3 23·3	3 13·5	3·1	0·7	9·1	2·0	15·1	3·4
32	3 23·0	3 23·6	3 13·8	3·2	0·7	9·2	2·1	15·2	3·4
33	3 23·3	3 23·8	3 14·0	3·3	0·7	9·3	2·1	15·3	3·4
34	3 23·5	3 24·1	3 14·2	3·4	0·8	9·4	2·1	15·4	3·5
35	3 23·8	3 24·3	3 14·5	3·5	0·8	9·5	2·1	15·5	3·5
36	3 24·0	3 24·6	3 14·7	3·6	0·8	9·6	2·2	15·6	3·5
37	3 24·3	3 24·8	3 14·9	3·7	0·8	9·7	2·2	15·7	3·5
38	3 24·5	3 25·1	3 15·2	3·8	0·9	9·8	2·2	15·8	3·6
39	3 24·8	3 25·3	3 15·4	3·9	0·9	9·9	2·2	15·9	3·6
40	3 25·0	3 25·6	3 15·7	4·0	0·9	10·0	2·3	16·0	3·6
41	3 25·3	3 25·8	3 15·9	4·1	0·9	10·1	2·3	16·1	3·6
42	3 25·5	3 26·1	3 16·1	4·2	0·9	10·2	2·3	16·2	3·6
43	3 25·8	3 26·3	3 16·4	4·3	1·0	10·3	2·3	16·3	3·7
44	3 26·0	3 26·6	3 16·6	4·4	1·0	10·4	2·3	16·4	3·7
45	3 26·3	3 26·8	3 16·9	4·5	1·0	10·5	2·4	16·5	3·7
46	3 26·5	3 27·1	3 17·1	4·6	1·0	10·6	2·4	16·6	3·7
47	3 26·8	3 27·3	3 17·3	4·7	1·1	10·7	2·4	16·7	3·8
48	3 27·0	3 27·6	3 17·6	4·8	1·1	10·8	2·4	16·8	3·8
49	3 27·3	3 27·8	3 17·8	4·9	1·1	10·9	2·5	16·9	3·8
50	3 27·5	3 28·1	3 18·0	5·0	1·1	11·0	2·5	17·0	3·8
51	3 27·8	3 28·3	3 18·3	5·1	1·1	11·1	2·5	17·1	3·8
52	3 28·0	3 28·6	3 18·5	5·2	1·2	11·2	2·5	17·2	3·9
53	3 28·3	3 28·8	3 18·8	5·3	1·2	11·3	2·5	17·3	3·9
54	3 28·5	3 29·1	3 19·0	5·4	1·2	11·4	2·6	17·4	3·9
55	3 28·8	3 29·3	3 19·2	5·5	1·2	11·5	2·6	17·5	3·9
56	3 29·0	3 29·6	3 19·5	5·6	1·3	11·6	2·6	17·6	4·0
57	3 29·3	3 29·8	3 19·7	5·7	1·3	11·7	2·6	17·7	4·0
58	3 29·5	3 30·1	3 20·0	5·8	1·3	11·8	2·7	17·8	4·0
59	3 29·8	3 30·3	3 20·2	5·9	1·3	11·9	2·7	17·9	4·0
60	3 30·0	3 30·6	3 20·4	6·0	1·4	12·0	2·7	18·0	4·1

14m

m 14	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	3 30·0	3 30·6	3 20·4	0·0	0·0	6·0	1·5	12·0	2·9
01	3 30·3	3 30·8	3 20·7	0·1	0·0	6·1	1·5	12·1	2·9
02	3 30·5	3 31·1	3 20·9	0·2	0·0	6·2	1·5	12·2	2·9
03	3 30·8	3 31·3	3 21·1	0·3	0·1	6·3	1·5	12·3	3·0
04	3 31·0	3 31·6	3 21·4	0·4	0·1	6·4	1·5	12·4	3·0
05	3 31·3	3 31·8	3 21·6	0·5	0·1	6·5	1·6	12·5	3·0
06	3 31·5	3 32·1	3 21·9	0·6	0·1	6·6	1·6	12·6	3·0
07	3 31·8	3 32·3	3 22·1	0·7	0·2	6·7	1·6	12·7	3·1
08	3 32·0	3 32·6	3 22·3	0·8	0·2	6·8	1·6	12·8	3·1
09	3 32·3	3 32·8	3 22·6	0·9	0·2	6·9	1·7	12·9	3·1
10	3 32·5	3 33·1	3 22·8	1·0	0·2	7·0	1·7	13·0	3·1
11	3 32·8	3 33·3	3 23·1	1·1	0·3	7·1	1·7	13·1	3·2
12	3 33·0	3 33·6	3 23·3	1·2	0·3	7·2	1·7	13·2	3·2
13	3 33·3	3 33·8	3 23·5	1·3	0·3	7·3	1·8	13·3	3·2
14	3 33·5	3 34·1	3 23·8	1·4	0·3	7·4	1·8	13·4	3·2
15	3 33·8	3 34·3	3 24·0	1·5	0·4	7·5	1·8	13·5	3·3
16	3 34·0	3 34·6	3 24·3	1·6	0·4	7·6	1·8	13·6	3·3
17	3 34·3	3 34·8	3 24·5	1·7	0·4	7·7	1·9	13·7	3·3
18	3 34·5	3 35·1	3 24·7	1·8	0·4	7·8	1·9	13·8	3·3
19	3 34·8	3 35·3	3 25·0	1·9	0·5	7·9	1·9	13·9	3·4
20	3 35·0	3 35·6	3 25·2	2·0	0·5	8·0	1·9	14·0	3·4
21	3 35·3	3 35·8	3 25·4	2·1	0·5	8·1	2·0	14·1	3·4
22	3 35·5	3 36·1	3 25·7	2·2	0·5	8·2	2·0	14·2	3·4
23	3 35·8	3 36·3	3 25·9	2·3	0·6	8·3	2·0	14·3	3·5
24	3 36·0	3 36·6	3 26·2	2·4	0·6	8·4	2·0	14·4	3·5
25	3 36·3	3 36·8	3 26·4	2·5	0·6	8·5	2·1	14·5	3·5
26	3 36·5	3 37·1	3 26·6	2·6	0·6	8·6	2·1	14·6	3·5
27	3 36·8	3 37·3	3 26·9	2·7	0·7	8·7	2·1	14·7	3·6
28	3 37·0	3 37·6	3 27·1	2·8	0·7	8·8	2·1	14·8	3·6
29	3 37·3	3 37·8	3 27·4	2·9	0·7	8·9	2·2	14·9	3·6
30	3 37·5	3 38·1	3 27·6	3·0	0·7	9·0	2·2	15·0	3·6
31	3 37·8	3 38·3	3 27·8	3·1	0·7	9·1	2·2	15·1	3·6
32	3 38·0	3 38·6	3 28·1	3·2	0·8	9·2	2·2	15·2	3·7
33	3 38·3	3 38·8	3 28·3	3·3	0·8	9·3	2·2	15·3	3·7
34	3 38·5	3 39·1	3 28·5	3·4	0·8	9·4	2·3	15·4	3·7
35	3 38·8	3 39·3	3 28·8	3·5	0·8	9·5	2·3	15·5	3·7
36	3 39·0	3 39·6	3 29·0	3·6	0·9	9·6	2·3	15·6	3·8
37	3 39·3	3 39·9	3 29·3	3·7	0·9	9·7	2·3	15·7	3·8
38	3 39·5	3 40·1	3 29·5	3·8	0·9	9·8	2·4	15·8	3·8
39	3 39·8	3 40·4	3 29·7	3·9	0·9	9·9	2·4	15·9	3·8
40	3 40·0	3 40·6	3 30·0	4·0	1·0	10·0	2·4	16·0	3·9
41	3 40·3	3 40·9	3 30·2	4·1	1·0	10·1	2·4	16·1	3·9
42	3 40·5	3 41·1	3 30·5	4·2	1·0	10·2	2·5	16·2	3·9
43	3 40·8	3 41·4	3 30·7	4·3	1·0	10·3	2·5	16·3	3·9
44	3 41·0	3 41·6	3 30·9	4·4	1·1	10·4	2·5	16·4	4·0
45	3 41·3	3 41·9	3 31·2	4·5	1·1	10·5	2·5	16·5	4·0
46	3 41·5	3 42·1	3 31·4	4·6	1·1	10·6	2·6	16·6	4·0
47	3 41·8	3 42·4	3 31·6	4·7	1·1	10·7	2·6	16·7	4·0
48	3 42·0	3 42·6	3 31·9	4·8	1·2	10·8	2·6	16·8	4·1
49	3 42·3	3 42·9	3 32·1	4·9	1·2	10·9	2·6	16·9	4·1
50	3 42·5	3 43·1	3 32·4	5·0	1·2	11·0	2·7	17·0	4·1
51	3 42·8	3 43·4	3 32·6	5·1	1·2	11·1	2·7	17·1	4·1
52	3 43·0	3 43·6	3 32·8	5·2	1·3	11·2	2·7	17·2	4·2
53	3 43·3	3 43·9	3 33·1	5·3	1·3	11·3	2·7	17·3	4·2
54	3 43·5	3 44·1	3 33·3	5·4	1·3	11·4	2·8	17·4	4·2
55	3 43·8	3 44·4	3 33·6	5·5	1·3	11·5	2·8	17·5	4·2
56	3 44·0	3 44·6	3 33·8	5·6	1·4	11·6	2·8	17·6	4·3
57	3 44·3	3 44·9	3 34·0	5·7	1·4	11·7	2·8	17·7	4·3
58	3 44·5	3 45·1	3 34·3	5·8	1·4	11·8	2·9	17·8	4·3
59	3 44·8	3 45·4	3 34·5	5·9	1·4	11·9	2·9	17·9	4·3
60	3 45·0	3 45·6	3 34·8	6·0	1·5	12·0	2·9	18·0	4·4

15m

m 15	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	3 45·0	3 45·6	3 34·8	0·0	0·0	6·0	1·6	12·0	3·1
01	3 45·3	3 45·9	3 35·0	0·1	0·0	6·1	1·6	12·1	3·1
02	3 45·5	3 46·1	3 35·2	0·2	0·1	6·2	1·6	12·2	3·2
03	3 45·8	3 46·4	3 35·5	0·3	0·1	6·3	1·6	12·3	3·2
04	3 46·0	3 46·6	3 35·7	0·4	0·1	6·4	1·7	12·4	3·2
05	3 46·3	3 46·9	3 35·9	0·5	0·1	6·5	1·7	12·5	3·2
06	3 46·5	3 47·1	3 36·2	0·6	0·2	6·6	1·7	12·6	3·3
07	3 46·8	3 47·4	3 36·4	0·7	0·2	6·7	1·7	12·7	3·3
08	3 47·0	3 47·6	3 36·7	0·8	0·2	6·8	1·8	12·8	3·3
09	3 47·3	3 47·9	3 36·9	0·9	0·2	6·9	1·8	12·9	3·3
10	3 47·5	3 48·1	3 37·1	1·0	0·3	7·0	1·8	13·0	3·4
11	3 47·8	3 48·4	3 37·4	1·1	0·3	7·1	1·8	13·1	3·4
12	3 48·0	3 48·6	3 37·6	1·2	0·3	7·2	1·9	13·2	3·4
13	3 48·3	3 48·9	3 37·9	1·3	0·3	7·3	1·9	13·3	3·4
14	3 48·5	3 49·1	3 38·1	1·4	0·4	7·4	1·9	13·4	3·5
15	3 48·8	3 49·4	3 38·3	1·5	0·4	7·5	1·9	13·5	3·5
16	3 49·0	3 49·6	3 38·6	1·6	0·4	7·6	2·0	13·6	3·5
17	3 49·3	3 49·9	3 38·8	1·7	0·4	7·7	2·0	13·7	3·5
18	3 49·5	3 50·1	3 39·0	1·8	0·5	7·8	2·0	13·8	3·6
19	3 49·8	3 50·4	3 39·3	1·9	0·5	7·9	2·0	13·9	3·6
20	3 50·0	3 50·6	3 39·5	2·0	0·5	8·0	2·1	14·0	3·6
21	3 50·3	3 50·9	3 39·8	2·1	0·5	8·1	2·1	14·1	3·6
22	3 50·5	3 51·1	3 40·0	2·2	0·6	8·2	2·1	14·2	3·7
23	3 50·8	3 51·4	3 40·2	2·3	0·6	8·3	2·1	14·3	3·7
24	3 51·0	3 51·6	3 40·5	2·4	0·6	8·4	2·2	14·4	3·7
25	3 51·3	3 51·9	3 40·7	2·5	0·6	8·5	2·2	14·5	3·7
26	3 51·5	3 52·1	3 41·0	2·6	0·7	8·6	2·2	14·6	3·8
27	3 51·8	3 52·4	3 41·2	2·7	0·7	8·7	2·2	14·7	3·8
28	3 52·0	3 52·6	3 41·4	2·8	0·7	8·8	2·3	14·8	3·8
29	3 52·3	3 52·9	3 41·7	2·9	0·7	8·9	2·3	14·9	3·8
30	3 52·5	3 53·1	3 41·9	3·0	0·8	9·0	2·3	15·0	3·9
31	3 52·8	3 53·4	3 42·1	3·1	0·8	9·1	2·4	15·1	3·9
32	3 53·0	3 53·6	3 42·4	3·2	0·8	9·2	2·4	15·2	3·9
33	3 53·3	3 53·9	3 42·6	3·3	0·9	9·3	2·4	15·3	4·0
34	3 53·5	3 54·1	3 42·9	3·4	0·9	9·4	2·4	15·4	4·0
35	3 53·8	3 54·4	3 43·1	3·5	0·9	9·5	2·5	15·5	4·0
36	3 54·0	3 54·6	3 43·3	3·6	0·9	9·6	2·5	15·6	4·0
37	3 54·3	3 54·9	3 43·6	3·7	1·0	9·7	2·5	15·7	4·1
38	3 54·5	3 55·1	3 43·8	3·8	1·0	9·8	2·5	15·8	4·1
39	3 54·8	3 55·4	3 44·1	3·9	1·0	9·9	2·6	15·9	4·1
40	3 55·0	3 55·6	3 44·3	4·0	1·0	10·0	2·6	16·0	4·1
41	3 55·3	3 55·9	3 44·5	4·1	1·1	10·1	2·6	16·1	4·2
42	3 55·5	3 56·1	3 44·8	4·2	1·1	10·2	2·6	16·2	4·2
43	3 55·8	3 56·4	3 45·0	4·3	1·1	10·3	2·7	16·3	4·2
44	3 56·0	3 56·6	3 45·2	4·4	1·1	10·4	2·7	16·4	4·2
45	3 56·3	3 56·9	3 45·5	4·5	1·2	10·5	2·7	16·5	4·3
46	3 56·5	3 57·1	3 45·7	4·6	1·2	10·6	2·7	16·6	4·3
47	3 56·8	3 57·4	3 46·0	4·7	1·2	10·7	2·8	16·7	4·3
48	3 57·0	3 57·6	3 46·2	4·8	1·2	10·8	2·8	16·8	4·3
49	3 57·3	3 57·9	3 46·4	4·9	1·3	10·9	2·8	16·9	4·4
50	3 57·5	3 58·2	3 46·7	5·0	1·3	11·0	2·8	17·0	4·4
51	3 57·8	3 58·4	3 46·9	5·1	1·3	11·1	2·9	17·1	4·4
52	3 58·0	3 58·7	3 47·2	5·2	1·3	11·2	2·9	17·2	4·4
53	3 58·3	3 58·9	3 47·4	5·3	1·4	11·3	2·9	17·3	4·5
54	3 58·5	3 59·2	3 47·6	5·4	1·4	11·4	2·9	17·4	4·5
55	3 58·8	3 59·4	3 47·9	5·5	1·4	11·5	3·0	17·5	4·5
56	3 59·0	3 59·7	3 48·1	5·6	1·4	11·6	3·0	17·6	4·5
57	3 59·3	3 59·9	3 48·4	5·7	1·5	11·7	3·0	17·7	4·6
58	3 59·5	4 00·2	3 48·6	5·8	1·5	11·8	3·0	17·8	4·6
59	3 59·8	4 00·4	3 48·8	5·9	1·5	11·9	3·1	17·9	4·6
60	4 00·0	4 00·7	3 49·1	6·0	1·6	12·0	3·1	18·0	4·7

16m

m 16	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	4 00·0	4 00·7	3 49·1	0·0	0·0	6·0	1·7	12·0	3·3
01	4 00·3	4 00·9	3 49·3	0·1	0·0	6·1	1·7	12·1	3·3
02	4 00·5	4 01·2	3 49·5	0·2	0·1	6·2	1·7	12·2	3·4
03	4 00·8	4 01·4	3 49·8	0·3	0·1	6·3	1·7	12·3	3·4
04	4 01·0	4 01·7	3 50·0	0·4	0·1	6·4	1·8	12·4	3·4
05	4 01·3	4 01·9	3 50·3	0·5	0·1	6·5	1·8	12·5	3·4
06	4 01·5	4 02·2	3 50·5	0·6	0·2	6·6	1·8	12·6	3·5
07	4 01·8	4 02·4	3 50·7	0·7	0·2	6·7	1·8	12·7	3·5
08	4 02·0	4 02·7	3 51·0	0·8	0·2	6·8	1·9	12·8	3·5
09	4 02·3	4 02·9	3 51·2	0·9	0·2	6·9	1·9	12·9	3·5
10	4 02·5	4 03·2	3 51·5	1·0	0·3	7·0	1·9	13·0	3·6
11	4 02·8	4 03·4	3 51·7	1·1	0·3	7·1	2·0	13·1	3·6
12	4 03·0	4 03·7	3 51·9	1·2	0·3	7·2	2·0	13·2	3·6
13	4 03·3	4 03·9	3 52·2	1·3	0·4	7·3	2·0	13·3	3·7
14	4 03·5	4 04·2	3 52·4	1·4	0·4	7·4	2·0	13·4	3·7
15	4 03·8	4 04·4	3 52·6	1·5	0·4	7·5	2·1	13·5	3·7
16	4 04·0	4 04·7	3 52·9	1·6	0·4	7·6	2·1	13·6	3·7
17	4 04·3	4 04·9	3 53·1	1·7	0·5	7·7	2·1	13·7	3·8
18	4 04·5	4 05·2	3 53·4	1·8	0·5	7·8	2·1	13·8	3·8
19	4 04·8	4 05·4	3 53·6	1·9	0·5	7·9	2·2	13·9	3·8
20	4 05·0	4 05·7	3 53·8	2·0	0·6	8·0	2·2	14·0	3·9
21	4 05·3	4 05·9	3 54·1	2·1	0·6	8·1	2·2	14·1	3·9
22	4 05·5	4 06·2	3 54·3	2·2	0·6	8·2	2·3	14·2	3·9
23	4 05·8	4 06·4	3 54·6	2·3	0·6	8·3	2·3	14·3	3·9
24	4 06·0	4 06·7	3 54·8	2·4	0·7	8·4	2·3	14·4	4·0
25	4 06·3	4 06·9	3 55·0	2·5	0·7	8·5	2·3	14·5	4·0
26	4 06·5	4 07·2	3 55·3	2·6	0·7	8·6	2·4	14·6	4·0
27	4 06·8	4 07·4	3 55·5	2·7	0·7	8·7	2·4	14·7	4·0
28	4 07·0	4 07·7	3 55·7	2·8	0·8	8·8	2·4	14·8	4·1
29	4 07·3	4 07·9	3 56·0	2·9	0·8	8·9	2·4	14·9	4·1
30	4 07·5	4 08·2	3 56·2	3·0	0·8	9·0	2·5	15·0	4·1
31	4 07·8	4 08·4	3 56·5	3·1	0·9	9·1	2·5	15·1	4·2
32	4 08·0	4 08·7	3 56·7	3·2	0·9	9·2	2·5	15·2	4·2
33	4 08·3	4 08·9	3 56·9	3·3	0·9	9·3	2·6	15·3	4·2
34	4 08·5	4 09·2	3 57·2	3·4	0·9	9·4	2·6	15·4	4·2
35	4 08·8	4 09·4	3 57·4	3·5	1·0	9·5	2·6	15·5	4·3
36	4 09·0	4 09·7	3 57·7	3·6	1·0	9·6	2·6	15·6	4·3
37	4 09·3	4 09·9	3 57·9	3·7	1·0	9·7	2·7	15·7	4·3
38	4 09·5	4 10·2	3 58·1	3·8	1·0	9·8	2·7	15·8	4·3
39	4 09·8	4 10·4	3 58·4	3·9	1·1	9·9	2·7	15·9	4·4
40	4 10·0	4 10·7	3 58·6	4·0	1·1	10·0	2·8	16·0	4·4
41	4 10·3	4 10·9	3 58·8	4·1	1·1	10·1	2·8	16·1	4·4
42	4 10·5	4 11·2	3 59·1	4·2	1·2	10·2	2·8	16·2	4·5
43	4 10·8	4 11·4	3 59·3	4·3	1·2	10·3	2·8	16·3	4·5
44	4 11·0	4 11·7	3 59·6	4·4	1·2	10·4	2·9	16·4	4·5
45	4 11·3	4 11·9	3 59·8	4·5	1·2	10·5	2·9	16·5	4·5
46	4 11·5	4 12·2	4 00·0	4·6	1·3	10·6	2·9	16·6	4·6
47	4 11·8	4 12·4	4 00·3	4·7	1·3	10·7	2·9	16·7	4·6
48	4 12·0	4 12·7	4 00·5	4·8	1·3	10·8	3·0	16·8	4·6
49	4 12·3	4 12·9	4 00·8	4·9	1·3	10·9	3·0	16·9	4·6
50	4 12·5	4 13·2	4 01·0	5·0	1·4	11·0	3·0	17·0	4·7
51	4 12·8	4 13·4	4 01·2	5·1	1·4	11·1	3·1	17·1	4·7
52	4 13·0	4 13·7	4 01·5	5·2	1·4	11·2	3·1	17·2	4·7
53	4 13·3	4 13·9	4 01·7	5·3	1·5	11·3	3·1	17·3	4·8
54	4 13·5	4 14·2	4 02·0	5·4	1·5	11·4	3·1	17·4	4·8
55	4 13·8	4 14·4	4 02·2	5·5	1·5	11·5	3·2	17·5	4·8
56	4 14·0	4 14·7	4 02·4	5·6	1·5	11·6	3·2	17·6	4·8
57	4 14·3	4 14·9	4 02·7	5·7	1·6	11·7	3·2	17·7	4·9
58	4 14·5	4 15·2	4 02·9	5·8	1·6	11·8	3·2	17·8	4·9
59	4 14·8	4 15·4	4 03·1	5·9	1·6	11·9	3·3	17·9	4·9
60	4 15·0	4 15·7	4 03·4	6·0	1·7	12·0	3·3	18·0	5·0

17m

m 17	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	4 15·0	4 15·7	4 03·4	0·0	0·0	6·0	1·8	12·0	3·5
01	4 15·3	4 15·9	4 03·6	0·1	0·0	6·1	1·8	12·1	3·5
02	4 15·5	4 16·2	4 03·9	0·2	0·1	6·2	1·8	12·2	3·6
03	4 15·8	4 16·5	4 04·1	0·3	0·1	6·3	1·8	12·3	3·6
04	4 16·0	4 16·7	4 04·3	0·4	0·1	6·4	1·9	12·4	3·6
05	4 16·3	4 17·0	4 04·6	0·5	0·1	6·5	1·9	12·5	3·6
06	4 16·5	4 17·2	4 04·8	0·6	0·2	6·6	1·9	12·6	3·7
07	4 16·8	4 17·5	4 05·1	0·7	0·2	6·7	2·0	12·7	3·7
08	4 17·0	4 17·7	4 05·3	0·8	0·2	6·8	2·0	12·8	3·7
09	4 17·3	4 18·0	4 05·5	0·9	0·3	6·9	2·0	12·9	3·8
10	4 17·5	4 18·2	4 05·8	1·0	0·3	7·0	2·0	13·0	3·8
11	4 17·8	4 18·5	4 06·0	1·1	0·3	7·1	2·1	13·1	3·8
12	4 18·0	4 18·7	4 06·2	1·2	0·4	7·2	2·1	13·2	3·9
13	4 18·3	4 19·0	4 06·5	1·3	0·4	7·3	2·1	13·3	3·9
14	4 18·5	4 19·2	4 06·7	1·4	0·4	7·4	2·2	13·4	3·9
15	4 18·8	4 19·5	4 07·0	1·5	0·4	7·5	2·2	13·5	3·9
16	4 19·0	4 19·7	4 07·2	1·6	0·5	7·6	2·2	13·6	4·0
17	4 19·3	4 20·0	4 07·4	1·7	0·5	7·7	2·2	13·7	4·0
18	4 19·5	4 20·2	4 07·7	1·8	0·5	7·8	2·3	13·8	4·0
19	4 19·8	4 20·5	4 07·9	1·9	0·6	7·9	2·3	13·9	4·1
20	4 20·0	4 20·7	4 08·2	2·0	0·6	8·0	2·3	14·0	4·1
21	4 20·3	4 21·0	4 08·4	2·1	0·6	8·1	2·4	14·1	4·1
22	4 20·5	4 21·2	4 08·6	2·2	0·6	8·2	2·4	14·2	4·1
23	4 20·8	4 21·5	4 08·9	2·3	0·7	8·3	2·4	14·3	4·2
24	4 21·0	4 21·7	4 09·1	2·4	0·7	8·4	2·5	14·4	4·2
25	4 21·3	4 22·0	4 09·3	2·5	0·7	8·5	2·5	14·5	4·2
26	4 21·5	4 22·2	4 09·6	2·6	0·8	8·6	2·5	14·6	4·3
27	4 21·8	4 22·5	4 09·8	2·7	0·8	8·7	2·5	14·7	4·3
28	4 22·0	4 22·7	4 10·1	2·8	0·8	8·8	2·6	14·8	4·3
29	4 22·3	4 23·0	4 10·3	2·9	0·8	8·9	2·6	14·9	4·3
30	4 22·5	4 23·2	4 10·5	3·0	0·9	9·0	2·6	15·0	4·4
31	4 22·8	4 23·5	4 10·8	3·1	0·9	9·1	2·7	15·1	4·4
32	4 23·0	4 23·7	4 11·0	3·2	0·9	9·2	2·7	15·2	4·4
33	4 23·3	4 24·0	4 11·3	3·3	1·0	9·3	2·7	15·3	4·5
34	4 23·5	4 24·2	4 11·5	3·4	1·0	9·4	2·7	15·4	4·5
35	4 23·8	4 24·5	4 11·7	3·5	1·0	9·5	2·8	15·5	4·5
36	4 24·0	4 24·7	4 12·0	3·6	1·1	9·6	2·8	15·6	4·6
37	4 24·3	4 25·0	4 12·2	3·7	1·1	9·7	2·8	15·7	4·6
38	4 24·5	4 25·2	4 12·5	3·8	1·1	9·8	2·9	15·8	4·6
39	4 24·8	4 25·5	4 12·7	3·9	1·1	9·9	2·9	15·9	4·6
40	4 25·0	4 25·7	4 12·9	4·0	1·2	10·0	2·9	16·0	4·7
41	4 25·3	4 26·0	4 13·2	4·1	1·2	10·1	2·9	16·1	4·7
42	4 25·5	4 26·2	4 13·4	4·2	1·2	10·2	3·0	16·2	4·7
43	4 25·8	4 26·5	4 13·6	4·3	1·3	10·3	3·0	16·3	4·8
44	4 26·0	4 26·7	4 13·9	4·4	1·3	10·4	3·0	16·4	4·8
45	4 26·3	4 27·0	4 14·1	4·5	1·3	10·5	3·1	16·5	4·8
46	4 26·5	4 27·2	4 14·4	4·6	1·3	10·6	3·1	16·6	4·8
47	4 26·8	4 27·5	4 14·6	4·7	1·4	10·7	3·1	16·7	4·9
48	4 27·0	4 27·7	4 14·8	4·8	1·4	10·8	3·2	16·8	4·9
49	4 27·3	4 28·0	4 15·1	4·9	1·4	10·9	3·2	16·9	4·9
50	4 27·5	4 28·2	4 15·3	5·0	1·5	11·0	3·2	17·0	5·0
51	4 27·8	4 28·5	4 15·6	5·1	1·5	11·1	3·2	17·1	5·0
52	4 28·0	4 28·7	4 15·8	5·2	1·5	11·2	3·3	17·2	5·0
53	4 28·3	4 29·0	4 16·0	5·3	1·5	11·3	3·3	17·3	5·0
54	4 28·5	4 29·2	4 16·3	5·4	1·6	11·4	3·3	17·4	5·1
55	4 28·8	4 29·5	4 16·5	5·5	1·6	11·5	3·4	17·5	5·1
56	4 29·0	4 29·7	4 16·7	5·6	1·6	11·6	3·4	17·6	5·1
57	4 29·3	4 30·0	4 17·0	5·7	1·7	11·7	3·4	17·7	5·2
58	4 29·5	4 30·2	4 17·2	5·8	1·7	11·8	3·4	17·8	5·2
59	4 29·8	4 30·5	4 17·5	5·9	1·7	11·9	3·5	17·9	5·2
60	4 30·0	4 30·7	4 17·7	6·0	1·8	12·0	3·5	18·0	5·3

18m

m 18	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	4 30·0	4 30·7	4 17·7	0·0	0·0	6·0	1·9	12·0	3·7
01	4 30·3	4 31·0	4 17·9	0·1	0·0	6·1	1·9	12·1	3·7
02	4 30·5	4 31·2	4 18·2	0·2	0·1	6·2	1·9	12·2	3·8
03	4 30·8	4 31·5	4 18·4	0·3	0·1	6·3	1·9	12·3	3·8
04	4 31·0	4 31·7	4 18·7	0·4	0·1	6·4	2·0	12·4	3·8
05	4 31·3	4 32·0	4 18·9	0·5	0·2	6·5	2·0	12·5	3·9
06	4 31·5	4 32·2	4 19·1	0·6	0·2	6·6	2·0	12·6	3·9
07	4 31·8	4 32·5	4 19·4	0·7	0·2	6·7	2·1	12·7	3·9
08	4 32·0	4 32·7	4 19·6	0·8	0·2	6·8	2·1	12·8	3·9
09	4 32·3	4 33·0	4 19·8	0·9	0·3	6·9	2·1	12·9	4·0
10	4 32·5	4 33·2	4 20·1	1·0	0·3	7·0	2·2	13·0	4·0
11	4 32·8	4 33·5	4 20·3	1·1	0·3	7·1	2·2	13·1	4·0
12	4 33·0	4 33·7	4 20·6	1·2	0·4	7·2	2·2	13·2	4·1
13	4 33·3	4 34·0	4 20·8	1·3	0·4	7·3	2·3	13·3	4·1
14	4 33·5	4 34·2	4 21·0	1·4	0·4	7·4	2·3	13·4	4·1
15	4 33·8	4 34·5	4 21·3	1·5	0·5	7·5	2·3	13·5	4·2
16	4 34·0	4 34·8	4 21·5	1·6	0·5	7·6	2·3	13·6	4·2
17	4 34·3	4 35·0	4 21·8	1·7	0·5	7·7	2·4	13·7	4·2
18	4 34·5	4 35·3	4 22·0	1·8	0·6	7·8	2·4	13·8	4·3
19	4 34·8	4 35·5	4 22·2	1·9	0·6	7·9	2·4	13·9	4·3
20	4 35·0	4 35·8	4 22·5	2·0	0·6	8·0	2·5	14·0	4·3
21	4 35·3	4 36·0	4 22·7	2·1	0·6	8·1	2·5	14·1	4·3
22	4 35·5	4 36·3	4 22·9	2·2	0·7	8·2	2·5	14·2	4·4
23	4 35·8	4 36·5	4 23·2	2·3	0·7	8·3	2·6	14·3	4·4
24	4 36·0	4 36·8	4 23·4	2·4	0·7	8·4	2·6	14·4	4·4
25	4 36·3	4 37·0	4 23·7	2·5	0·8	8·5	2·6	14·5	4·5
26	4 36·5	4 37·3	4 23·9	2·6	0·8	8·6	2·7	14·6	4·5
27	4 36·8	4 37·5	4 24·1	2·7	0·8	8·7	2·7	14·7	4·5
28	4 37·0	4 37·8	4 24·4	2·8	0·9	8·8	2·7	14·8	4·6
29	4 37·3	4 38·0	4 24·6	2·9	0·9	8·9	2·7	14·9	4·6
30	4 37·5	4 38·3	4 24·9	3·0	0·9	9·0	2·8	15·0	4·6
31	4 37·8	4 38·5	4 25·1	3·1	1·0	9·1	2·8	15·1	4·7
32	4 38·0	4 38·8	4 25·3	3·2	1·0	9·2	2·8	15·2	4·7
33	4 38·3	4 39·0	4 25·6	3·3	1·0	9·3	2·9	15·3	4·7
34	4 38·5	4 39·3	4 25·8	3·4	1·0	9·4	2·9	15·4	4·7
35	4 38·8	4 39·5	4 26·1	3·5	1·1	9·5	2·9	15·5	4·8
36	4 39·0	4 39·8	4 26·3	3·6	1·1	9·6	3·0	15·6	4·8
37	4 39·3	4 40·0	4 26·5	3·7	1·1	9·7	3·0	15·7	4·8
38	4 39·5	4 40·3	4 26·8	3·8	1·2	9·8	3·0	15·8	4·9
39	4 39·8	4 40·5	4 27·0	3·9	1·2	9·9	3·1	15·9	4·9
40	4 40·0	4 40·8	4 27·2	4·0	1·2	10·0	3·1	16·0	4·9
41	4 40·3	4 41·0	4 27·5	4·1	1·3	10·1	3·1	16·1	5·0
42	4 40·5	4 41·3	4 27·7	4·2	1·3	10·2	3·1	16·2	5·0
43	4 40·8	4 41·5	4 28·0	4·3	1·3	10·3	3·2	16·3	5·0
44	4 41·0	4 41·8	4 28·2	4·4	1·4	10·4	3·2	16·4	5·1
45	4 41·3	4 42·0	4 28·4	4·5	1·4	10·5	3·2	16·5	5·1
46	4 41·5	4 42·3	4 28·7	4·6	1·4	10·6	3·3	16·6	5·1
47	4 41·8	4 42·5	4 28·9	4·7	1·4	10·7	3·3	16·7	5·1
48	4 42·0	4 42·8	4 29·2	4·8	1·5	10·8	3·3	16·8	5·2
49	4 42·3	4 43·0	4 29·4	4·9	1·5	10·9	3·4	16·9	5·2
50	4 42·5	4 43·3	4 29·6	5·0	1·5	11·0	3·4	17·0	5·2
51	4 42·8	4 43·5	4 29·9	5·1	1·6	11·1	3·4	17·1	5·3
52	4 43·0	4 43·8	4 30·1	5·2	1·6	11·2	3·5	17·2	5·3
53	4 43·3	4 44·0	4 30·3	5·3	1·6	11·3	3·5	17·3	5·3
54	4 43·5	4 44·3	4 30·6	5·4	1·7	11·4	3·5	17·4	5·4
55	4 43·8	4 44·5	4 30·8	5·5	1·7	11·5	3·5	17·5	5·4
56	4 44·0	4 44·8	4 31·1	5·6	1·7	11·6	3·6	17·6	5·4
57	4 44·3	4 45·0	4 31·3	5·7	1·8	11·7	3·6	17·7	5·5
58	4 44·5	4 45·3	4 31·5	5·8	1·8	11·8	3·6	17·8	5·5
59	4 44·8	4 45·5	4 31·8	5·9	1·8	11·9	3·7	17·9	5·5
60	4 45·0	4 45·8	4 32·0	6·0	1·9	12·0	3·7	18·0	5·6

19m

m 19	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	4 45·0	4 45·8	4 32·0	0·0	0·0	6·0	2·0	12·0	3·9
01	4 45·3	4 46·0	4 32·3	0·1	0·0	6·1	2·0	12·1	3·9
02	4 45·5	4 46·3	4 32·5	0·2	0·1	6·2	2·0	12·2	4·0
03	4 45·8	4 46·5	4 32·7	0·3	0·1	6·3	2·0	12·3	4·0
04	4 46·0	4 46·8	4 33·0	0·4	0·1	6·4	2·1	12·4	4·0
05	4 46·3	4 47·0	4 33·2	0·5	0·2	6·5	2·1	12·5	4·1
06	4 46·5	4 47·3	4 33·4	0·6	0·2	6·6	2·1	12·6	4·1
07	4 46·8	4 47·5	4 33·7	0·7	0·2	6·7	2·2	12·7	4·1
08	4 47·0	4 47·8	4 33·9	0·8	0·3	6·8	2·2	12·8	4·2
09	4 47·3	4 48·0	4 34·2	0·9	0·3	6·9	2·2	12·9	4·2
10	4 47·5	4 48·3	4 34·4	1·0	0·3	7·0	2·3	13·0	4·2
11	4 47·8	4 48·5	4 34·6	1·1	0·4	7·1	2·3	13·1	4·3
12	4 48·0	4 48·8	4 34·9	1·2	0·4	7·2	2·3	13·2	4·3
13	4 48·3	4 49·0	4 35·1	1·3	0·4	7·3	2·4	13·3	4·3
14	4 48·5	4 49·3	4 35·4	1·4	0·5	7·4	2·4	13·4	4·4
15	4 48·8	4 49·5	4 35·6	1·5	0·5	7·5	2·4	13·5	4·4
16	4 49·0	4 49·8	4 35·8	1·6	0·5	7·6	2·5	13·6	4·4
17	4 49·3	4 50·0	4 36·1	1·7	0·6	7·7	2·5	13·7	4·5
18	4 49·5	4 50·3	4 36·3	1·8	0·6	7·8	2·5	13·8	4·5
19	4 49·8	4 50·5	4 36·6	1·9	0·6	7·9	2·6	13·9	4·5
20	4 50·0	4 50·8	4 36·8	2·0	0·7	8·0	2·6	14·0	4·6
21	4 50·3	4 51·0	4 37·0	2·1	0·7	8·1	2·6	14·1	4·6
22	4 50·5	4 51·3	4 37·3	2·2	0·7	8·2	2·7	14·2	4·6
23	4 50·8	4 51·5	4 37·5	2·3	0·7	8·3	2·7	14·3	4·6
24	4 51·0	4 51·8	4 37·7	2·4	0·8	8·4	2·7	14·4	4·7
25	4 51·3	4 52·0	4 38·0	2·5	0·8	8·5	2·8	14·5	4·7
26	4 51·5	4 52·3	4 38·2	2·6	0·8	8·6	2·8	14·6	4·7
27	4 51·8	4 52·5	4 38·5	2·7	0·9	8·7	2·8	14·7	4·8
28	4 52·0	4 52·8	4 38·7	2·8	0·9	8·8	2·9	14·8	4·8
29	4 52·3	4 53·1	4 38·9	2·9	0·9	8·9	2·9	14·9	4·8
30	4 52·5	4 53·3	4 39·2	3·0	1·0	9·0	2·9	15·0	4·9
31	4 52·8	4 53·6	4 39·4	3·1	1·0	9·1	3·0	15·1	4·9
32	4 53·0	4 53·8	4 39·7	3·2	1·0	9·2	3·0	15·2	4·9
33	4 53·3	4 54·1	4 39·9	3·3	1·1	9·3	3·0	15·3	5·0
34	4 53·5	4 54·3	4 40·1	3·4	1·1	9·4	3·1	15·4	5·0
35	4 53·8	4 54·6	4 40·4	3·5	1·1	9·5	3·1	15·5	5·0
36	4 54·0	4 54·8	4 40·6	3·6	1·2	9·6	3·1	15·6	5·1
37	4 54·3	4 55·1	4 40·8	3·7	1·2	9·7	3·2	15·7	5·1
38	4 54·5	4 55·3	4 41·1	3·8	1·2	9·8	3·2	15·8	5·1
39	4 54·8	4 55·6	4 41·3	3·9	1·3	9·9	3·2	15·9	5·2
40	4 55·0	4 55·8	4 41·6	4·0	1·3	10·0	3·3	16·0	5·2
41	4 55·3	4 56·1	4 41·8	4·1	1·3	10·1	3·3	16·1	5·2
42	4 55·5	4 56·3	4 42·0	4·2	1·4	10·2	3·3	16·2	5·3
43	4 55·8	4 56·6	4 42·3	4·3	1·4	10·3	3·3	16·3	5·3
44	4 56·0	4 56·8	4 42·5	4·4	1·4	10·4	3·4	16·4	5·3
45	4 56·3	4 57·1	4 42·8	4·5	1·5	10·5	3·4	16·5	5·4
46	4 56·5	4 57·3	4 43·0	4·6	1·5	10·6	3·4	16·6	5·4
47	4 56·8	4 57·6	4 43·2	4·7	1·5	10·7	3·5	16·7	5·4
48	4 57·0	4 57·8	4 43·5	4·8	1·6	10·8	3·5	16·8	5·5
49	4 57·3	4 58·1	4 43·7	4·9	1·6	10·9	3·5	16·9	5·5
50	4 57·5	4 58·3	4 43·9	5·0	1·6	11·0	3·6	17·0	5·5
51	4 57·8	4 58·6	4 44·2	5·1	1·7	11·1	3·6	17·1	5·6
52	4 58·0	4 58·8	4 44·4	5·2	1·7	11·2	3·6	17·2	5·6
53	4 58·3	4 59·1	4 44·7	5·3	1·7	11·3	3·7	17·3	5·6
54	4 58·5	4 59·3	4 44·9	5·4	1·8	11·4	3·7	17·4	5·7
55	4 58·8	4 59·6	4 45·1	5·5	1·8	11·5	3·7	17·5	5·7
56	4 59·0	4 59·8	4 45·4	5·6	1·8	11·6	3·8	17·6	5·7
57	4 59·3	5 00·1	4 45·6	5·7	1·9	11·7	3·8	17·7	5·8
58	4 59·5	5 00·3	4 45·9	5·8	1·9	11·8	3·8	17·8	5·8
59	4 59·8	5 00·6	4 46·1	5·9	1·9	11·9	3·9	17·9	5·8
60	5 00·0	5 00·8	4 46·3	6·0	2·0	12·0	3·9	18·0	5·9

20m

m 20	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	5 00·0	5 00·8	4 46·3	0·0	0·0	6·0	2·1	12·0	4·1
01	5 00·3	5 01·1	4 46·6	0·1	0·0	6·1	2·1	12·1	4·1
02	5 00·5	5 01·3	4 46·8	0·2	0·1	6·2	2·1	12·2	4·2
03	5 00·8	5 01·6	4 47·0	0·3	0·1	6·3	2·2	12·3	4·2
04	5 01·0	5 01·8	4 47·3	0·4	0·1	6·4	2·2	12·4	4·2
05	5 01·3	5 02·1	4 47·5	0·5	0·2	6·5	2·2	12·5	4·3
06	5 01·5	5 02·3	4 47·8	0·6	0·2	6·6	2·3	12·6	4·3
07	5 01·8	5 02·6	4 48·0	0·7	0·2	6·7	2·3	12·7	4·3
08	5 02·0	5 02·8	4 48·2	0·8	0·3	6·8	2·3	12·8	4·4
09	5 02·3	5 03·1	4 48·5	0·9	0·3	6·9	2·4	12·9	4·4
10	5 02·5	5 03·3	4 48·7	1·0	0·3	7·0	2·4	13·0	4·4
11	5 02·8	5 03·6	4 49·0	1·1	0·4	7·1	2·4	13·1	4·5
12	5 03·0	5 03·8	4 49·2	1·2	0·4	7·2	2·5	13·2	4·5
13	5 03·3	5 04·1	4 49·4	1·3	0·4	7·3	2·5	13·3	4·5
14	5 03·5	5 04·3	4 49·7	1·4	0·5	7·4	2·5	13·4	4·6
15	5 03·8	5 04·6	4 49·9	1·5	0·5	7·5	2·6	13·5	4·6
16	5 04·0	5 04·8	4 50·2	1·6	0·5	7·6	2·6	13·6	4·6
17	5 04·3	5 05·1	4 50·4	1·7	0·6	7·7	2·6	13·7	4·7
18	5 04·5	5 05·3	4 50·6	1·8	0·6	7·8	2·7	13·8	4·7
19	5 04·8	5 05·6	4 50·9	1·9	0·6	7·9	2·7	13·9	4·7
20	5 05·0	5 05·8	4 51·1	2·0	0·7	8·0	2·7	14·0	4·8
21	5 05·3	5 06·1	4 51·3	2·1	0·7	8·1	2·8	14·1	4·8
22	5 05·5	5 06·3	4 51·6	2·2	0·8	8·2	2·8	14·2	4·9
23	5 05·8	5 06·6	4 51·8	2·3	0·8	8·3	2·8	14·3	4·9
24	5 06·0	5 06·8	4 52·1	2·4	0·8	8·4	2·9	14·4	4·9
25	5 06·3	5 07·1	4 52·3	2·5	0·9	8·5	2·9	14·5	5·0
26	5 06·5	5 07·3	4 52·5	2·6	0·9	8·6	2·9	14·6	5·0
27	5 06·8	5 07·6	4 52·8	2·7	0·9	8·7	3·0	14·7	5·0
28	5 07·0	5 07·8	4 53·0	2·8	1·0	8·8	3·0	14·8	5·1
29	5 07·3	5 08·1	4 53·3	2·9	1·0	8·9	3·0	14·9	5·1
30	5 07·5	5 08·3	4 53·5	3·0	1·0	9·0	3·1	15·0	5·1
31	5 07·8	5 08·6	4 53·7	3·1	1·1	9·1	3·1	15·1	5·2
32	5 08·0	5 08·8	4 54·0	3·2	1·1	9·2	3·1	15·2	5·2
33	5 08·3	5 09·1	4 54·2	3·3	1·1	9·3	3·2	15·3	5·2
34	5 08·5	5 09·3	4 54·4	3·4	1·2	9·4	3·2	15·4	5·3
35	5 08·8	5 09·6	4 54·7	3·5	1·2	9·5	3·2	15·5	5·3
36	5 09·0	5 09·8	4 54·9	3·6	1·2	9·6	3·3	15·6	5·3
37	5 09·3	5 10·1	4 55·2	3·7	1·3	9·7	3·3	15·7	5·4
38	5 09·5	5 10·3	4 55·4	3·8	1·3	9·8	3·3	15·8	5·4
39	5 09·8	5 10·6	4 55·6	3·9	1·3	9·9	3·4	15·9	5·4
40	5 10·0	5 10·8	4 55·9	4·0	1·4	10·0	3·4	16·0	5·5
41	5 10·3	5 11·1	4 56·1	4·1	1·4	10·1	3·5	16·1	5·5
42	5 10·5	5 11·4	4 56·4	4·2	1·4	10·2	3·5	16·2	5·5
43	5 10·8	5 11·6	4 56·6	4·3	1·5	10·3	3·5	16·3	5·6
44	5 11·0	5 11·9	4 56·8	4·4	1·5	10·4	3·6	16·4	5·6
45	5 11·3	5 12·1	4 57·1	4·5	1·5	10·5	3·6	16·5	5·6
46	5 11·5	5 12·4	4 57·3	4·6	1·6	10·6	3·6	16·6	5·7
47	5 11·8	5 12·6	4 57·5	4·7	1·6	10·7	3·7	16·7	5·7
48	5 12·0	5 12·9	4 57·8	4·8	1·6	10·8	3·7	16·8	5·7
49	5 12·3	5 13·1	4 58·0	4·9	1·7	10·9	3·7	16·9	5·8
50	5 12·5	5 13·4	4 58·3	5·0	1·7	11·0	3·8	17·0	5·8
51	5 12·8	5 13·6	4 58·5	5·1	1·7	11·1	3·8	17·1	5·8
52	5 13·0	5 13·9	4 58·7	5·2	1·8	11·2	3·8	17·2	5·9
53	5 13·3	5 14·1	4 59·0	5·3	1·8	11·3	3·9	17·3	5·9
54	5 13·5	5 14·4	4 59·2	5·4	1·8	11·4	3·9	17·4	5·9
55	5 13·8	5 14·6	4 59·5	5·5	1·9	11·5	3·9	17·5	6·0
56	5 14·0	5 14·9	4 59·7	5·6	1·9	11·6	4·0	17·6	6·0
57	5 14·3	5 15·1	4 59·9	5·7	1·9	11·7	4·0	17·7	6·0
58	5 14·5	5 15·4	5 00·2	5·8	2·0	11·8	4·0	17·8	6·1
59	5 14·8	5 15·6	5 00·4	5·9	2·0	11·9	4·1	17·9	6·1
60	5 15·0	5 15·9	5 00·7	6·0	2·1	12·0	4·1	18·0	6·2

21m

m 21	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	5 15·0	5 15·9	5 00·7	0·0	0·0	6·0	2·2	12·0	4·3
01	5 15·3	5 16·1	5 00·9	0·1	0·0	6·1	2·2	12·1	4·3
02	5 15·5	5 16·4	5 01·1	0·2	0·1	6·2	2·2	12·2	4·4
03	5 15·8	5 16·6	5 01·4	0·3	0·1	6·3	2·3	12·3	4·4
04	5 16·0	5 16·9	5 01·6	0·4	0·1	6·4	2·3	12·4	4·4
05	5 16·3	5 17·1	5 01·8	0·5	0·2	6·5	2·3	12·5	4·5
06	5 16·5	5 17·4	5 02·1	0·6	0·2	6·6	2·4	12·6	4·5
07	5 16·8	5 17·6	5 02·3	0·7	0·3	6·7	2·4	12·7	4·6
08	5 17·0	5 17·9	5 02·6	0·8	0·3	6·8	2·4	12·8	4·6
09	5 17·3	5 18·1	5 02·8	0·9	0·3	6·9	2·5	12·9	4·6
10	5 17·5	5 18·4	5 03·0	1·0	0·4	7·0	2·5	13·0	4·7
11	5 17·8	5 18·6	5 03·3	1·1	0·4	7·1	2·5	13·1	4·7
12	5 18·0	5 18·9	5 03·5	1·2	0·4	7·2	2·6	13·2	4·7
13	5 18·3	5 19·1	5 03·8	1·3	0·5	7·3	2·6	13·3	4·8
14	5 18·5	5 19·4	5 04·0	1·4	0·5	7·4	2·7	13·4	4·8
15	5 18·8	5 19·6	5 04·2	1·5	0·5	7·5	2·7	13·5	4·8
16	5 19·0	5 19·9	5 04·5	1·6	0·6	7·6	2·7	13·6	4·9
17	5 19·3	5 20·1	5 04·7	1·7	0·6	7·7	2·8	13·7	4·9
18	5 19·5	5 20·4	5 04·9	1·8	0·6	7·8	2·8	13·8	4·9
19	5 19·8	5 20·6	5 05·2	1·9	0·7	7·9	2·8	13·9	5·0
20	5 20·0	5 20·9	5 05·4	2·0	0·7	8·0	2·9	14·0	5·0
21	5 20·3	5 21·1	5 05·7	2·1	0·8	8·1	2·9	14·1	5·1
22	5 20·5	5 21·4	5 05·9	2·2	0·8	8·2	2·9	14·2	5·1
23	5 20·8	5 21·6	5 06·1	2·3	0·8	8·3	3·0	14·3	5·1
24	5 21·0	5 21·9	5 06·4	2·4	0·9	8·4	3·0	14·4	5·2
25	5 21·3	5 22·1	5 06·6	2·5	0·9	8·5	3·0	14·5	5·2
26	5 21·5	5 22·4	5 06·9	2·6	0·9	8·6	3·1	14·6	5·2
27	5 21·8	5 22·6	5 07·1	2·7	1·0	8·7	3·1	14·7	5·3
28	5 22·0	5 22·9	5 07·3	2·8	1·0	8·8	3·2	14·8	5·3
29	5 22·3	5 23·1	5 07·6	2·9	1·0	8·9	3·2	14·9	5·3
30	5 22·5	5 23·4	5 07·8	3·0	1·1	9·0	3·2	15·0	5·4
31	5 22·8	5 23·6	5 08·0	3·1	1·1	9·1	3·3	15·1	5·4
32	5 23·0	5 23·9	5 08·3	3·2	1·1	9·2	3·3	15·2	5·4
33	5 23·3	5 24·1	5 08·5	3·3	1·2	9·3	3·3	15·3	5·5
34	5 23·5	5 24·4	5 08·8	3·4	1·2	9·4	3·4	15·4	5·5
35	5 23·8	5 24·6	5 09·0	3·5	1·3	9·5	3·4	15·5	5·6
36	5 24·0	5 24·9	5 09·2	3·6	1·3	9·6	3·4	15·6	5·6
37	5 24·3	5 25·1	5 09·5	3·7	1·3	9·7	3·5	15·7	5·6
38	5 24·5	5 25·4	5 09·7	3·8	1·4	9·8	3·5	15·8	5·7
39	5 24·8	5 25·6	5 10·0	3·9	1·4	9·9	3·5	15·9	5·7
40	5 25·0	5 25·9	5 10·2	4·0	1·4	10·0	3·6	16·0	5·7
41	5 25·3	5 26·1	5 10·4	4·1	1·5	10·1	3·6	16·1	5·8
42	5 25·5	5 26·4	5 10·7	4·2	1·5	10·2	3·7	16·2	5·8
43	5 25·8	5 26·6	5 10·9	4·3	1·5	10·3	3·7	16·3	5·8
44	5 26·0	5 26·9	5 11·1	4·4	1·6	10·4	3·7	16·4	5·9
45	5 26·3	5 27·1	5 11·4	4·5	1·6	10·5	3·8	16·5	5·9
46	5 26·5	5 27·4	5 11·6	4·6	1·6	10·6	3·8	16·6	5·9
47	5 26·8	5 27·6	5 11·9	4·7	1·7	10·7	3·8	16·7	6·0
48	5 27·0	5 27·9	5 12·1	4·8	1·7	10·8	3·9	16·8	6·0
49	5 27·3	5 28·1	5 12·3	4·9	1·8	10·9	3·9	16·9	6·1
50	5 27·5	5 28·4	5 12·6	5·0	1·8	11·0	3·9	17·0	6·1
51	5 27·8	5 28·6	5 12·8	5·1	1·8	11·1	4·0	17·1	6·1
52	5 28·0	5 28·9	5 13·1	5·2	1·9	11·2	4·0	17·2	6·2
53	5 28·3	5 29·1	5 13·3	5·3	1·9	11·3	4·0	17·3	6·2
54	5 28·5	5 29·4	5 13·5	5·4	1·9	11·4	4·1	17·4	6·2
55	5 28·8	5 29·7	5 13·8	5·5	2·0	11·5	4·1	17·5	6·3
56	5 29·0	5 29·9	5 14·0	5·6	2·0	11·6	4·2	17·6	6·3
57	5 29·3	5 30·2	5 14·3	5·7	2·0	11·7	4·2	17·7	6·3
58	5 29·5	5 30·4	5 14·5	5·8	2·1	11·8	4·2	17·8	6·4
59	5 29·8	5 30·7	5 14·7	5·9	2·1	11·9	4·3	17·9	6·4
60	5 30·0	5 30·9	5 15·0	6·0	2·2	12·0	4·3	18·0	6·5

22m

m 22	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	5 30·0	5 30·9	5 15·0	0·0	0·0	6·0	2·3	12·0	4·5
01	5 30·3	5 31·2	5 15·2	0·1	0·0	6·1	2·3	12·1	4·5
02	5 30·5	5 31·4	5 15·4	0·2	0·1	6·2	2·3	12·2	4·6
03	5 30·8	5 31·7	5 15·7	0·3	0·1	6·3	2·4	12·3	4·6
04	5 31·0	5 31·9	5 15·9	0·4	0·2	6·4	2·4	12·4	4·7
05	5 31·3	5 32·2	5 16·2	0·5	0·2	6·5	2·4	12·5	4·7
06	5 31·5	5 32·4	5 16·4	0·6	0·2	6·6	2·5	12·6	4·7
07	5 31·8	5 32·7	5 16·6	0·7	0·3	6·7	2·5	12·7	4·8
08	5 32·0	5 32·9	5 16·9	0·8	0·3	6·8	2·6	12·8	4·8
09	5 32·3	5 33·2	5 17·1	0·9	0·3	6·9	2·6	12·9	4·8
10	5 32·5	5 33·4	5 17·4	1·0	0·4	7·0	2·6	13·0	4·9
11	5 32·8	5 33·7	5 17·6	1·1	0·4	7·1	2·7	13·1	4·9
12	5 33·0	5 33·9	5 17·8	1·2	0·5	7·2	2·7	13·2	5·0
13	5 33·3	5 34·2	5 18·1	1·3	0·5	7·3	2·7	13·3	5·0
14	5 33·5	5 34·4	5 18·3	1·4	0·5	7·4	2·8	13·4	5·0
15	5 33·8	5 34·7	5 18·5	1·5	0·6	7·5	2·8	13·5	5·1
16	5 34·0	5 34·9	5 18·8	1·6	0·6	7·6	2·9	13·6	5·1
17	5 34·3	5 35·2	5 19·0	1·7	0·6	7·7	2·9	13·7	5·1
18	5 34·5	5 35·4	5 19·3	1·8	0·7	7·8	2·9	13·8	5·2
19	5 34·8	5 35·7	5 19·5	1·9	0·7	7·9	3·0	13·9	5·2
20	5 35·0	5 35·9	5 19·7	2·0	0·8	8·0	3·0	14·0	5·3
21	5 35·3	5 36·2	5 20·0	2·1	0·8	8·1	3·0	14·1	5·3
22	5 35·5	5 36·4	5 20·2	2·2	0·8	8·2	3·1	14·2	5·3
23	5 35·8	5 36·7	5 20·5	2·3	0·9	8·3	3·1	14·3	5·4
24	5 36·0	5 36·9	5 20·7	2·4	0·9	8·4	3·2	14·4	5·4
25	5 36·3	5 37·2	5 20·9	2·5	0·9	8·5	3·2	14·5	5·4
26	5 36·5	5 37·4	5 21·2	2·6	1·0	8·6	3·2	14·6	5·5
27	5 36·8	5 37·7	5 21·4	2·7	1·0	8·7	3·3	14·7	5·5
28	5 37·0	5 37·9	5 21·6	2·8	1·0	8·8	3·3	14·8	5·6
29	5 37·3	5 38·2	5 21·9	2·9	1·1	8·9	3·3	14·9	5·6
30	5 37·5	5 38·4	5 22·1	3·0	1·1	9·0	3·4	15·0	5·6
31	5 37·8	5 38·7	5 22·4	3·1	1·2	9·1	3·4	15·1	5·7
32	5 38·0	5 38·9	5 22·6	3·2	1·2	9·2	3·5	15·2	5·7
33	5 38·3	5 39·2	5 22·8	3·3	1·2	9·3	3·5	15·3	5·7
34	5 38·5	5 39·4	5 23·1	3·4	1·3	9·4	3·5	15·4	5·8
35	5 38·8	5 39·7	5 23·3	3·5	1·3	9·5	3·6	15·5	5·8
36	5 39·0	5 39·9	5 23·6	3·6	1·4	9·6	3·6	15·6	5·9
37	5 39·3	5 40·2	5 23·8	3·7	1·4	9·7	3·6	15·7	5·9
38	5 39·5	5 40·4	5 24·0	3·8	1·4	9·8	3·7	15·8	5·9
39	5 39·8	5 40·7	5 24·3	3·9	1·5	9·9	3·7	15·9	6·0
40	5 40·0	5 40·9	5 24·5	4·0	1·5	10·0	3·8	16·0	6·0
41	5 40·3	5 41·2	5 24·7	4·1	1·5	10·1	3·8	16·1	6·0
42	5 40·5	5 41·4	5 25·0	4·2	1·6	10·2	3·8	16·2	6·1
43	5 40·8	5 41·7	5 25·2	4·3	1·6	10·3	3·9	16·3	6·1
44	5 41·0	5 41·9	5 25·5	4·4	1·7	10·4	3·9	16·4	6·1
45	5 41·3	5 42·2	5 25·7	4·5	1·7	10·5	3·9	16·5	6·2
46	5 41·5	5 42·4	5 25·9	4·6	1·7	10·6	4·0	16·6	6·2
47	5 41·8	5 42·7	5 26·2	4·7	1·8	10·7	4·0	16·7	6·3
48	5 42·0	5 42·9	5 26·4	4·8	1·8	10·8	4·1	16·8	6·3
49	5 42·3	5 43·2	5 26·7	4·9	1·8	10·9	4·1	16·9	6·3
50	5 42·5	5 43·4	5 26·9	5·0	1·9	11·0	4·1	17·0	6·4
51	5 42·8	5 43·7	5 27·1	5·1	1·9	11·1	4·2	17·1	6·4
52	5 43·0	5 43·9	5 27·4	5·2	2·0	11·2	4·2	17·2	6·5
53	5 43·3	5 44·2	5 27·6	5·3	2·0	11·3	4·2	17·3	6·5
54	5 43·5	5 44·4	5 27·9	5·4	2·0	11·4	4·3	17·4	6·5
55	5 43·8	5 44·7	5 28·1	5·5	2·1	11·5	4·3	17·5	6·6
56	5 44·0	5 44·9	5 28·3	5·6	2·1	11·6	4·4	17·6	6·6
57	5 44·3	5 45·2	5 28·6	5·7	2·1	11·7	4·4	17·7	6·6
58	5 44·5	5 45·4	5 28·8	5·8	2·2	11·8	4·4	17·8	6·7
59	5 44·8	5 45·7	5 29·0	5·9	2·2	11·9	4·5	17·9	6·7
60	5 45·0	5 45·9	5 29·3	6·0	2·3	12·0	4·5	18·0	6·8

23m

m 23	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	5 45·0	5 45·9	5 29·3	0·0	0·0	6·0	2·4	12·0	4·7
01	5 45·3	5 46·2	5 29·5	0·1	0·0	6·1	2·4	12·1	4·7
02	5 45·5	5 46·4	5 29·8	0·2	0·1	6·2	2·4	12·2	4·8
03	5 45·8	5 46·7	5 30·0	0·3	0·1	6·3	2·5	12·3	4·8
04	5 46·0	5 46·9	5 30·2	0·4	0·2	6·4	2·5	12·4	4·9
05	5 46·3	5 47·2	5 30·5	0·5	0·2	6·5	2·5	12·5	4·9
06	5 46·5	5 47·4	5 30·7	0·6	0·2	6·6	2·6	12·6	4·9
07	5 46·8	5 47·7	5 31·0	0·7	0·3	6·7	2·6	12·7	5·0
08	5 47·0	5 48·0	5 31·2	0·8	0·3	6·8	2·7	12·8	5·0
09	5 47·3	5 48·2	5 31·4	0·9	0·4	6·9	2·7	12·9	5·1
10	5 47·5	5 48·5	5 31·7	1·0	0·4	7·0	2·7	13·0	5·1
11	5 47·8	5 48·7	5 31·9	1·1	0·4	7·1	2·8	13·1	5·1
12	5 48·0	5 49·0	5 32·1	1·2	0·5	7·2	2·8	13·2	5·2
13	5 48·3	5 49·2	5 32·4	1·3	0·5	7·3	2·9	13·3	5·2
14	5 48·5	5 49·5	5 32·6	1·4	0·5	7·4	2·9	13·4	5·2
15	5 48·8	5 49·7	5 32·9	1·5	0·6	7·5	2·9	13·5	5·3
16	5 49·0	5 50·0	5 33·1	1·6	0·6	7·6	3·0	13·6	5·3
17	5 49·3	5 50·2	5 33·3	1·7	0·7	7·7	3·0	13·7	5·4
18	5 49·5	5 50·5	5 33·6	1·8	0·7	7·8	3·1	13·8	5·4
19	5 49·8	5 50·7	5 33·8	1·9	0·7	7·9	3·1	13·9	5·4
20	5 50·0	5 51·0	5 34·1	2·0	0·8	8·0	3·1	14·0	5·5
21	5 50·3	5 51·2	5 34·3	2·1	0·8	8·1	3·2	14·1	5·5
22	5 50·5	5 51·5	5 34·5	2·2	0·9	8·2	3·2	14·2	5·6
23	5 50·8	5 51·7	5 34·8	2·3	0·9	8·3	3·3	14·3	5·6
24	5 51·0	5 52·0	5 35·0	2·4	0·9	8·4	3·3	14·4	5·6
25	5 51·3	5 52·2	5 35·2	2·5	1·0	8·5	3·3	14·5	5·7
26	5 51·5	5 52·5	5 35·5	2·6	1·0	8·6	3·4	14·6	5·7
27	5 51·8	5 52·7	5 35·7	2·7	1·1	8·7	3·4	14·7	5·8
28	5 52·0	5 53·0	5 36·0	2·8	1·1	8·8	3·4	14·8	5·8
29	5 52·3	5 53·2	5 36·2	2·9	1·1	8·9	3·5	14·9	5·8
30	5 52·5	5 53·5	5 36·4	3·0	1·2	9·0	3·5	15·0	5·9
31	5 52·8	5 53·7	5 36·7	3·1	1·2	9·1	3·6	15·1	5·9
32	5 53·0	5 54·0	5 36·9	3·2	1·3	9·2	3·6	15·2	6·0
33	5 53·3	5 54·2	5 37·2	3·3	1·3	9·3	3·6	15·3	6·0
34	5 53·5	5 54·5	5 37·4	3·4	1·3	9·4	3·7	15·4	6·0
35	5 53·8	5 54·7	5 37·6	3·5	1·4	9·5	3·7	15·5	6·1
36	5 54·0	5 55·0	5 37·9	3·6	1·4	9·6	3·8	15·6	6·1
37	5 54·3	5 55·2	5 38·1	3·7	1·4	9·7	3·8	15·7	6·1
38	5 54·5	5 55·5	5 38·4	3·8	1·5	9·8	3·8	15·8	6·2
39	5 54·8	5 55·7	5 38·6	3·9	1·5	9·9	3·9	15·9	6·2
40	5 55·0	5 56·0	5 38·8	4·0	1·6	10·0	3·9	16·0	6·3
41	5 55·3	5 56·2	5 39·1	4·1	1·6	10·1	4·0	16·1	6·3
42	5 55·5	5 56·5	5 39·3	4·2	1·6	10·2	4·0	16·2	6·3
43	5 55·8	5 56·7	5 39·5	4·3	1·7	10·3	4·0	16·3	6·4
44	5 56·0	5 57·0	5 39·8	4·4	1·7	10·4	4·1	16·4	6·4
45	5 56·3	5 57·2	5 40·0	4·5	1·8	10·5	4·1	16·5	6·5
46	5 56·5	5 57·5	5 40·3	4·6	1·8	10·6	4·2	16·6	6·5
47	5 56·8	5 57·7	5 40·5	4·7	1·8	10·7	4·2	16·7	6·5
48	5 57·0	5 58·0	5 40·7	4·8	1·9	10·8	4·2	16·8	6·6
49	5 57·3	5 58·2	5 41·0	4·9	1·9	10·9	4·3	16·9	6·6
50	5 57·5	5 58·5	5 41·2	5·0	2·0	11·0	4·3	17·0	6·7
51	5 57·8	5 58·7	5 41·5	5·1	2·0	11·1	4·3	17·1	6·7
52	5 58·0	5 59·0	5 41·7	5·2	2·0	11·2	4·4	17·2	6·7
53	5 58·3	5 59·2	5 41·9	5·3	2·1	11·3	4·4	17·3	6·8
54	5 58·5	5 59·5	5 42·2	5·4	2·1	11·4	4·5	17·4	6·8
55	5 58·8	5 59·7	5 42·4	5·5	2·2	11·5	4·5	17·5	6·9
56	5 59·0	6 00·0	5 42·6	5·6	2·2	11·6	4·5	17·6	6·9
57	5 59·3	6 00·2	5 42·9	5·7	2·2	11·7	4·6	17·7	6·9
58	5 59·5	6 00·5	5 43·1	5·8	2·3	11·8	4·6	17·8	7·0
59	5 59·8	6 00·7	5 43·4	5·9	2·3	11·9	4·7	17·9	7·0
60	6 00·0	6 01·0	5 43·6	6·0	2·4	12·0	4·7	18·0	7·1

24m

m 24	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	6 00·0	6 01·0	5 43·6	0·0	0·0	6·0	2·5	12·0	4·9
01	6 00·3	6 01·2	5 43·8	0·1	0·0	6·1	2·5	12·1	4·9
02	6 00·5	6 01·5	5 44·1	0·2	0·1	6·2	2·5	12·2	5·0
03	6 00·8	6 01·7	5 44·3	0·3	0·1	6·3	2·6	12·3	5·0
04	6 01·0	6 02·0	5 44·6	0·4	0·2	6·4	2·6	12·4	5·1
05	6 01·3	6 02·2	5 44·8	0·5	0·2	6·5	2·7	12·5	5·1
06	6 01·5	6 02·5	5 45·0	0·6	0·2	6·6	2·7	12·6	5·1
07	6 01·8	6 02·7	5 45·3	0·7	0·3	6·7	2·7	12·7	5·2
08	6 02·0	6 03·0	5 45·5	0·8	0·3	6·8	2·8	12·8	5·2
09	6 02·3	6 03·2	5 45·7	0·9	0·4	6·9	2·8	12·9	5·3
10	6 02·5	6 03·5	5 46·0	1·0	0·4	7·0	2·9	13·0	5·3
11	6 02·8	6 03·7	5 46·2	1·1	0·4	7·1	2·9	13·1	5·3
12	6 03·0	6 04·0	5 46·5	1·2	0·5	7·2	2·9	13·2	5·4
13	6 03·3	6 04·2	5 46·7	1·3	0·5	7·3	3·0	13·3	5·4
14	6 03·5	6 04·5	5 46·9	1·4	0·6	7·4	3·0	13·4	5·5
15	6 03·8	6 04·7	5 47·2	1·5	0·6	7·5	3·1	13·5	5·5
16	6 04·0	6 05·0	5 47·4	1·6	0·7	7·6	3·1	13·6	5·6
17	6 04·3	6 05·2	5 47·7	1·7	0·7	7·7	3·1	13·7	5·6
18	6 04·5	6 05·5	5 47·9	1·8	0·7	7·8	3·2	13·8	5·6
19	6 04·8	6 05·7	5 48·1	1·9	0·8	7·9	3·2	13·9	5·7
20	6 05·0	6 06·0	5 48·4	2·0	0·8	8·0	3·3	14·0	5·7
21	6 05·3	6 06·3	5 48·6	2·1	0·9	8·1	3·3	14·1	5·8
22	6 05·5	6 06·5	5 48·8	2·2	0·9	8·2	3·3	14·2	5·8
23	6 05·8	6 06·8	5 49·1	2·3	0·9	8·3	3·4	14·3	5·8
24	6 06·0	6 07·0	5 49·3	2·4	1·0	8·4	3·4	14·4	5·9
25	6 06·3	6 07·3	5 49·6	2·5	1·0	8·5	3·5	14·5	5·9
26	6 06·5	6 07·5	5 49·8	2·6	1·1	8·6	3·5	14·6	6·0
27	6 06·8	6 07·8	5 50·0	2·7	1·1	8·7	3·6	14·7	6·0
28	6 07·0	6 08·0	5 50·3	2·8	1·1	8·8	3·6	14·8	6·0
29	6 07·3	6 08·3	5 50·5	2·9	1·2	8·9	3·6	14·9	6·1
30	6 07·5	6 08·5	5 50·8	3·0	1·2	9·0	3·7	15·0	6·1
31	6 07·8	6 08·8	5 51·0	3·1	1·3	9·1	3·7	15·1	6·2
32	6 08·0	6 09·0	5 51·2	3·2	1·3	9·2	3·8	15·2	6·2
33	6 08·3	6 09·3	5 51·5	3·3	1·3	9·3	3·8	15·3	6·2
34	6 08·5	6 09·5	5 51·7	3·4	1·4	9·4	3·8	15·4	6·3
35	6 08·8	6 09·8	5 52·0	3·5	1·4	9·5	3·9	15·5	6·3
36	6 09·0	6 10·0	5 52·2	3·6	1·5	9·6	3·9	15·6	6·4
37	6 09·3	6 10·3	5 52·4	3·7	1·5	9·7	4·0	15·7	6·4
38	6 09·5	6 10·5	5 52·7	3·8	1·6	9·8	4·0	15·8	6·5
39	6 09·8	6 10·8	5 52·9	3·9	1·6	9·9	4·0	15·9	6·5
40	6 10·0	6 11·0	5 53·1	4·0	1·6	10·0	4·1	16·0	6·5
41	6 10·3	6 11·3	5 53·4	4·1	1·7	10·1	4·1	16·1	6·6
42	6 10·5	6 11·5	5 53·6	4·2	1·7	10·2	4·2	16·2	6·6
43	6 10·8	6 11·8	5 53·9	4·3	1·8	10·3	4·2	16·3	6·7
44	6 11·0	6 12·0	5 54·1	4·4	1·8	10·4	4·2	16·4	6·7
45	6 11·3	6 12·3	5 54·3	4·5	1·8	10·5	4·3	16·5	6·7
46	6 11·5	6 12·5	5 54·6	4·6	1·9	10·6	4·3	16·6	6·8
47	6 11·8	6 12·8	5 54·8	4·7	1·9	10·7	4·4	16·7	6·8
48	6 12·0	6 13·0	5 55·1	4·8	2·0	10·8	4·4	16·8	6·9
49	6 12·3	6 13·3	5 55·3	4·9	2·0	10·9	4·5	16·9	6·9
50	6 12·5	6 13·5	5 55·5	5·0	2·0	11·0	4·5	17·0	6·9
51	6 12·8	6 13·8	5 55·8	5·1	2·1	11·1	4·5	17·1	7·0
52	6 13·0	6 14·0	5 56·0	5·2	2·1	11·2	4·6	17·2	7·0
53	6 13·3	6 14·3	5 56·2	5·3	2·2	11·3	4·6	17·3	7·1
54	6 13·5	6 14·5	5 56·5	5·4	2·2	11·4	4·7	17·4	7·1
55	6 13·8	6 14·8	5 56·7	5·5	2·2	11·5	4·7	17·5	7·1
56	6 14·0	6 15·0	5 57·0	5·6	2·3	11·6	4·7	17·6	7·2
57	6 14·3	6 15·3	5 57·2	5·7	2·3	11·7	4·8	17·7	7·2
58	6 14·5	6 15·5	5 57·4	5·8	2·4	11·8	4·8	17·8	7·3
59	6 14·8	6 15·8	5 57·7	5·9	2·4	11·9	4·9	17·9	7·3
60	6 15·0	6 16·0	5 57·9	6·0	2·5	12·0	4·9	18·0	7·4

25m

m 25	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	6 15·0	6 16·0	5 57·9	0·0	0·0	6·0	2·6	12·0	5·1
01	6 15·3	6 16·3	5 58·2	0·1	0·0	6·1	2·6	12·1	5·1
02	6 15·5	6 16·5	5 58·4	0·2	0·1	6·2	2·6	12·2	5·2
03	6 15·8	6 16·8	5 58·6	0·3	0·1	6·3	2·7	12·3	5·2
04	6 16·0	6 17·0	5 58·9	0·4	0·2	6·4	2·7	12·4	5·3
05	6 16·3	6 17·3	5 59·1	0·5	0·2	6·5	2·8	12·5	5·3
06	6 16·5	6 17·5	5 59·3	0·6	0·3	6·6	2·8	12·6	5·4
07	6 16·8	6 17·8	5 59·6	0·7	0·3	6·7	2·8	12·7	5·4
08	6 17·0	6 18·0	5 59·8	0·8	0·3	6·8	2·9	12·8	5·4
09	6 17·3	6 18·3	6 00·1	0·9	0·4	6·9	2·9	12·9	5·5
10	6 17·5	6 18·5	6 00·3	1·0	0·4	7·0	3·0	13·0	5·5
11	6 17·8	6 18·8	6 00·5	1·1	0·5	7·1	3·0	13·1	5·6
12	6 18·0	6 19·0	6 00·8	1·2	0·5	7·2	3·1	13·2	5·6
13	6 18·3	6 19·3	6 01·0	1·3	0·6	7·3	3·1	13·3	5·7
14	6 18·5	6 19·5	6 01·3	1·4	0·6	7·4	3·1	13·4	5·7
15	6 18·8	6 19·8	6 01·5	1·5	0·6	7·5	3·2	13·5	5·7
16	6 19·0	6 20·0	6 01·7	1·6	0·7	7·6	3·2	13·6	5·8
17	6 19·3	6 20·3	6 02·0	1·7	0·7	7·7	3·3	13·7	5·8
18	6 19·5	6 20·5	6 02·2	1·8	0·8	7·8	3·3	13·8	5·9
19	6 19·8	6 20·8	6 02·5	1·9	0·8	7·9	3·4	13·9	5·9
20	6 20·0	6 21·0	6 02·7	2·0	0·9	8·0	3·4	14·0	6·0
21	6 20·3	6 21·3	6 02·9	2·1	0·9	8·1	3·4	14·1	6·0
22	6 20·5	6 21·5	6 03·2	2·2	0·9	8·2	3·5	14·2	6·0
23	6 20·8	6 21·8	6 03·4	2·3	1·0	8·3	3·5	14·3	6·1
24	6 21·0	6 22·0	6 03·6	2·4	1·0	8·4	3·6	14·4	6·1
25	6 21·3	6 22·3	6 03·9	2·5	1·1	8·5	3·6	14·5	6·2
26	6 21·5	6 22·5	6 04·1	2·6	1·1	8·6	3·7	14·6	6·2
27	6 21·8	6 22·8	6 04·4	2·7	1·1	8·7	3·7	14·7	6·2
28	6 22·0	6 23·0	6 04·6	2·8	1·2	8·8	3·7	14·8	6·3
29	6 22·3	6 23·3	6 04·8	2·9	1·2	8·9	3·8	14·9	6·3
30	6 22·5	6 23·5	6 05·1	3·0	1·3	9·0	3·8	15·0	6·4
31	6 22·8	6 23·8	6 05·3	3·1	1·3	9·1	3·9	15·1	6·4
32	6 23·0	6 24·0	6 05·6	3·2	1·4	9·2	3·9	15·2	6·5
33	6 23·3	6 24·3	6 05·8	3·3	1·4	9·3	4·0	15·3	6·5
34	6 23·5	6 24·5	6 06·0	3·4	1·4	9·4	4·0	15·4	6·5
35	6 23·8	6 24·8	6 06·3	3·5	1·5	9·5	4·0	15·5	6·6
36	6 24·0	6 25·1	6 06·5	3·6	1·5	9·6	4·1	15·6	6·6
37	6 24·3	6 25·3	6 06·7	3·7	1·6	9·7	4·1	15·7	6·7
38	6 24·5	6 25·6	6 07·0	3·8	1·6	9·8	4·2	15·8	6·7
39	6 24·8	6 25·8	6 07·2	3·9	1·7	9·9	4·2	15·9	6·8
40	6 25·0	6 26·1	6 07·5	4·0	1·7	10·0	4·3	16·0	6·8
41	6 25·3	6 26·3	6 07·7	4·1	1·7	10·1	4·3	16·1	6·8
42	6 25·5	6 26·6	6 07·9	4·2	1·8	10·2	4·3	16·2	6·9
43	6 25·8	6 26·8	6 08·2	4·3	1·8	10·3	4·4	16·3	6·9
44	6 26·0	6 27·1	6 08·4	4·4	1·9	10·4	4·4	16·4	7·0
45	6 26·3	6 27·3	6 08·7	4·5	1·9	10·5	4·5	16·5	7·0
46	6 26·5	6 27·6	6 08·9	4·6	2·0	10·6	4·5	16·6	7·1
47	6 26·8	6 27·8	6 09·1	4·7	2·0	10·7	4·5	16·7	7·1
48	6 27·0	6 28·1	6 09·4	4·8	2·0	10·8	4·6	16·8	7·1
49	6 27·3	6 28·3	6 09·6	4·9	2·1	10·9	4·6	16·9	7·2
50	6 27·5	6 28·6	6 09·8	5·0	2·1	11·0	4·7	17·0	7·2
51	6 27·8	6 28·8	6 10·1	5·1	2·2	11·1	4·7	17·1	7·3
52	6 28·0	6 29·1	6 10·3	5·2	2·2	11·2	4·8	17·2	7·3
53	6 28·3	6 29·3	6 10·6	5·3	2·3	11·3	4·8	17·3	7·4
54	6 28·5	6 29·6	6 10·8	5·4	2·3	11·4	4·8	17·4	7·4
55	6 28·8	6 29·8	6 11·0	5·5	2·3	11·5	4·9	17·5	7·4
56	6 29·0	6 30·1	6 11·3	5·6	2·4	11·6	4·9	17·6	7·5
57	6 29·3	6 30·3	6 11·5	5·7	2·4	11·7	5·0	17·7	7·5
58	6 29·5	6 30·6	6 11·8	5·8	2·5	11·8	5·0	17·8	7·6
59	6 29·8	6 30·8	6 12·0	5·9	2·5	11·9	5·1	17·9	7·6
60	6 30·0	6 31·1	6 12·2	6·0	2·6	12·0	5·1	18·0	7·7

26m

m 26	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	6 30·0	6 31·1	6 12·2	0·0	0·0	6·0	2·7	12·0	5·3
01	6 30·3	6 31·3	6 12·5	0·1	0·0	6·1	2·7	12·1	5·3
02	6 30·5	6 31·6	6 12·7	0·2	0·1	6·2	2·7	12·2	5·4
03	6 30·8	6 31·8	6 12·9	0·3	0·1	6·3	2·8	12·3	5·4
04	6 31·0	6 32·1	6 13·2	0·4	0·2	6·4	2·8	12·4	5·5
05	6 31·3	6 32·3	6 13·4	0·5	0·2	6·5	2·9	12·5	5·5
06	6 31·5	6 32·6	6 13·7	0·6	0·3	6·6	2·9	12·6	5·6
07	6 31·8	6 32·8	6 13·9	0·7	0·3	6·7	3·0	12·7	5·6
08	6 32·0	6 33·1	6 14·1	0·8	0·4	6·8	3·0	12·8	5·7
09	6 32·3	6 33·3	6 14·4	0·9	0·4	6·9	3·0	12·9	5·7
10	6 32·5	6 33·6	6 14·6	1·0	0·4	7·0	3·1	13·0	5·7
11	6 32·8	6 33·8	6 14·9	1·1	0·5	7·1	3·1	13·1	5·8
12	6 33·0	6 34·1	6 15·1	1·2	0·5	7·2	3·2	13·2	5·8
13	6 33·3	6 34·3	6 15·3	1·3	0·6	7·3	3·2	13·3	5·9
14	6 33·5	6 34·6	6 15·6	1·4	0·6	7·4	3·3	13·4	5·9
15	6 33·8	6 34·8	6 15·8	1·5	0·7	7·5	3·3	13·5	6·0
16	6 34·0	6 35·1	6 16·1	1·6	0·7	7·6	3·4	13·6	6·0
17	6 34·3	6 35·3	6 16·3	1·7	0·8	7·7	3·4	13·7	6·1
18	6 34·5	6 35·6	6 16·5	1·8	0·8	7·8	3·4	13·8	6·1
19	6 34·8	6 35·8	6 16·8	1·9	0·8	7·9	3·5	13·9	6·1
20	6 35·0	6 36·1	6 17·0	2·0	0·9	8·0	3·5	14·0	6·2
21	6 35·3	6 36·3	6 17·2	2·1	0·9	8·1	3·6	14·1	6·2
22	6 35·5	6 36·6	6 17·5	2·2	1·0	8·2	3·6	14·2	6·3
23	6 35·8	6 36·8	6 17·7	2·3	1·0	8·3	3·7	14·3	6·3
24	6 36·0	6 37·1	6 18·0	2·4	1·1	8·4	3·7	14·4	6·4
25	6 36·3	6 37·3	6 18·2	2·5	1·1	8·5	3·8	14·5	6·4
26	6 36·5	6 37·6	6 18·4	2·6	1·1	8·6	3·8	14·6	6·4
27	6 36·8	6 37·8	6 18·7	2·7	1·2	8·7	3·8	14·7	6·5
28	6 37·0	6 38·1	6 18·9	2·8	1·2	8·8	3·9	14·8	6·5
29	6 37·3	6 38·3	6 19·2	2·9	1·3	8·9	3·9	14·9	6·6
30	6 37·5	6 38·6	6 19·4	3·0	1·3	9·0	4·0	15·0	6·6
31	6 37·8	6 38·8	6 19·6	3·1	1·4	9·1	4·0	15·1	6·7
32	6 38·0	6 39·1	6 19·9	3·2	1·4	9·2	4·1	15·2	6·7
33	6 38·3	6 39·3	6 20·1	3·3	1·5	9·3	4·1	15·3	6·8
34	6 38·5	6 39·6	6 20·3	3·4	1·5	9·4	4·2	15·4	6·8
35	6 38·8	6 39·8	6 20·6	3·5	1·5	9·5	4·2	15·5	6·8
36	6 39·0	6 40·1	6 20·8	3·6	1·6	9·6	4·2	15·6	6·9
37	6 39·3	6 40·3	6 21·1	3·7	1·6	9·7	4·3	15·7	6·9
38	6 39·5	6 40·6	6 21·3	3·8	1·7	9·8	4·3	15·8	7·0
39	6 39·8	6 40·8	6 21·5	3·9	1·7	9·9	4·4	15·9	7·0
40	6 40·0	6 41·1	6 21·8	4·0	1·8	10·0	4·4	16·0	7·1
41	6 40·3	6 41·3	6 22·0	4·1	1·8	10·1	4·5	16·1	7·1
42	6 40·5	6 41·6	6 22·3	4·2	1·9	10·2	4·5	16·2	7·2
43	6 40·8	6 41·8	6 22·5	4·3	1·9	10·3	4·5	16·3	7·2
44	6 41·0	6 42·1	6 22·7	4·4	1·9	10·4	4·6	16·4	7·2
45	6 41·3	6 42·3	6 23·0	4·5	2·0	10·5	4·6	16·5	7·3
46	6 41·5	6 42·6	6 23·2	4·6	2·0	10·6	4·7	16·6	7·3
47	6 41·8	6 42·8	6 23·4	4·7	2·1	10·7	4·7	16·7	7·4
48	6 42·0	6 43·1	6 23·7	4·8	2·1	10·8	4·8	16·8	7·4
49	6 42·3	6 43·4	6 23·9	4·9	2·2	10·9	4·8	16·9	7·5
50	6 42·5	6 43·6	6 24·2	5·0	2·2	11·0	4·9	17·0	7·5
51	6 42·8	6 43·9	6 24·4	5·1	2·3	11·1	4·9	17·1	7·6
52	6 43·0	6 44·1	6 24·6	5·2	2·3	11·2	4·9	17·2	7·6
53	6 43·3	6 44·4	6 24·9	5·3	2·3	11·3	5·0	17·3	7·6
54	6 43·5	6 44·6	6 25·1	5·4	2·4	11·4	5·0	17·4	7·7
55	6 43·8	6 44·9	6 25·4	5·5	2·4	11·5	5·1	17·5	7·7
56	6 44·0	6 45·1	6 25·6	5·6	2·5	11·6	5·1	17·6	7·8
57	6 44·3	6 45·4	6 25·8	5·7	2·5	11·7	5·2	17·7	7·8
58	6 44·5	6 45·6	6 26·1	5·8	2·6	11·8	5·2	17·8	7·9
59	6 44·8	6 45·9	6 26·3	5·9	2·6	11·9	5·3	17·9	7·9
60	6 45·0	6 46·1	6 26·6	6·0	2·7	12·0	5·3	18·0	8·0

27m

m 27	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	6 45·0	6 46·1	6 26·6	0·0	0·0	6·0	2·8	12·0	5·5
01	6 45·3	6 46·4	6 26·8	0·1	0·0	6·1	2·8	12·1	5·5
02	6 45·5	6 46·6	6 27·0	0·2	0·1	6·2	2·8	12·2	5·6
03	6 45·8	6 46·9	6 27·3	0·3	0·1	6·3	2·9	12·3	5·6
04	6 46·0	6 47·1	6 27·5	0·4	0·2	6·4	2·9	12·4	5·7
05	6 46·3	6 47·4	6 27·7	0·5	0·2	6·5	3·0	12·5	5·7
06	6 46·5	6 47·6	6 28·0	0·6	0·3	6·6	3·0	12·6	5·8
07	6 46·8	6 47·9	6 28·2	0·7	0·3	6·7	3·1	12·7	5·8
08	6 47·0	6 48·1	6 28·5	0·8	0·4	6·8	3·1	12·8	5·9
09	6 47·3	6 48·4	6 28·7	0·9	0·4	6·9	3·2	12·9	5·9
10	6 47·5	6 48·6	6 28·9	1·0	0·5	7·0	3·2	13·0	6·0
11	6 47·8	6 48·9	6 29·2	1·1	0·5	7·1	3·3	13·1	6·0
12	6 48·0	6 49·1	6 29·4	1·2	0·6	7·2	3·3	13·2	6·1
13	6 48·3	6 49·4	6 29·7	1·3	0·6	7·3	3·3	13·3	6·1
14	6 48·5	6 49·6	6 29·9	1·4	0·6	7·4	3·4	13·4	6·1
15	6 48·8	6 49·9	6 30·1	1·5	0·7	7·5	3·4	13·5	6·2
16	6 49·0	6 50·1	6 30·4	1·6	0·7	7·6	3·5	13·6	6·2
17	6 49·3	6 50·4	6 30·6	1·7	0·8	7·7	3·5	13·7	6·3
18	6 49·5	6 50·6	6 30·8	1·8	0·8	7·8	3·6	13·8	6·3
19	6 49·8	6 50·9	6 31·1	1·9	0·9	7·9	3·6	13·9	6·4
20	6 50·0	6 51·1	6 31·3	2·0	0·9	8·0	3·7	14·0	6·4
21	6 50·3	6 51·4	6 31·6	2·1	1·0	8·1	3·7	14·1	6·5
22	6 50·5	6 51·6	6 31·8	2·2	1·0	8·2	3·8	14·2	6·5
23	6 50·8	6 51·9	6 32·0	2·3	1·1	8·3	3·8	14·3	6·6
24	6 51·0	6 52·1	6 32·3	2·4	1·1	8·4	3·9	14·4	6·6
25	6 51·3	6 52·4	6 32·5	2·5	1·1	8·5	3·9	14·5	6·6
26	6 51·5	6 52·6	6 32·8	2·6	1·2	8·6	3·9	14·6	6·7
27	6 51·8	6 52·9	6 33·0	2·7	1·2	8·7	4·0	14·7	6·7
28	6 52·0	6 53·1	6 33·2	2·8	1·3	8·8	4·0	14·8	6·8
29	6 52·3	6 53·4	6 33·5	2·9	1·3	8·9	4·1	14·9	6·8
30	6 52·5	6 53·6	6 33·7	3·0	1·4	9·0	4·1	15·0	6·9
31	6 52·8	6 53·9	6 33·9	3·1	1·4	9·1	4·2	15·1	6·9
32	6 53·0	6 54·1	6 34·2	3·2	1·5	9·2	4·2	15·2	7·0
33	6 53·3	6 54·4	6 34·4	3·3	1·5	9·3	4·3	15·3	7·0
34	6 53·5	6 54·6	6 34·7	3·4	1·6	9·4	4·3	15·4	7·1
35	6 53·8	6 54·9	6 34·9	3·5	1·6	9·5	4·4	15·5	7·1
36	6 54·0	6 55·1	6 35·1	3·6	1·7	9·6	4·4	15·6	7·2
37	6 54·3	6 55·4	6 35·4	3·7	1·7	9·7	4·4	15·7	7·2
38	6 54·5	6 55·6	6 35·6	3·8	1·7	9·8	4·5	15·8	7·2
39	6 54·8	6 55·9	6 35·9	3·9	1·8	9·9	4·5	15·9	7·3
40	6 55·0	6 56·1	6 36·1	4·0	1·8	10·0	4·6	16·0	7·3
41	6 55·3	6 56·4	6 36·3	4·1	1·9	10·1	4·6	16·1	7·4
42	6 55·5	6 56·6	6 36·6	4·2	1·9	10·2	4·7	16·2	7·4
43	6 55·8	6 56·9	6 36·8	4·3	2·0	10·3	4·7	16·3	7·5
44	6 56·0	6 57·1	6 37·0	4·4	2·0	10·4	4·8	16·4	7·5
45	6 56·3	6 57·4	6 37·3	4·5	2·1	10·5	4·8	16·5	7·6
46	6 56·5	6 57·6	6 37·5	4·6	2·1	10·6	4·9	16·6	7·6
47	6 56·8	6 57·9	6 37·8	4·7	2·2	10·7	4·9	16·7	7·7
48	6 57·0	6 58·1	6 38·0	4·8	2·2	10·8	5·0	16·8	7·7
49	6 57·3	6 58·4	6 38·2	4·9	2·2	10·9	5·0	16·9	7·7
50	6 57·5	6 58·6	6 38·5	5·0	2·3	11·0	5·0	17·0	7·8
51	6 57·8	6 58·9	6 38·7	5·1	2·3	11·1	5·1	17·1	7·8
52	6 58·0	6 59·1	6 39·0	5·2	2·4	11·2	5·1	17·2	7·9
53	6 58·3	6 59·4	6 39·2	5·3	2·4	11·3	5·2	17·3	7·9
54	6 58·5	6 59·6	6 39·4	5·4	2·5	11·4	5·2	17·4	8·0
55	6 58·8	6 59·9	6 39·7	5·5	2·5	11·5	5·3	17·5	8·0
56	6 59·0	7 00·1	6 39·9	5·6	2·6	11·6	5·3	17·6	8·1
57	6 59·3	7 00·4	6 40·2	5·7	2·6	11·7	5·4	17·7	8·1
58	6 59·5	7 00·6	6 40·4	5·8	2·7	11·8	5·4	17·8	8·2
59	6 59·8	7 00·9	6 40·6	5·9	2·7	11·9	5·5	17·9	8·2
60	7 00·0	7 01·1	6 40·9	6·0	2·8	12·0	5·5	18·0	8·3

28m

m 28	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	7 00·0	7 01·1	6 40·9	0·0	0·0	6·0	2·9	12·0	5·7
01	7 00·3	7 01·4	6 41·1	0·1	0·0	6·1	2·9	12·1	5·7
02	7 00·5	7 01·7	6 41·3	0·2	0·1	6·2	2·9	12·2	5·8
03	7 00·8	7 01·9	6 41·6	0·3	0·1	6·3	3·0	12·3	5·8
04	7 01·0	7 02·2	6 41·8	0·4	0·2	6·4	3·0	12·4	5·9
05	7 01·3	7 02·4	6 42·1	0·5	0·2	6·5	3·1	12·5	5·9
06	7 01·5	7 02·7	6 42·3	0·6	0·3	6·6	3·1	12·6	6·0
07	7 01·8	7 02·9	6 42·5	0·7	0·3	6·7	3·2	12·7	6·0
08	7 02·0	7 03·2	6 42·8	0·8	0·4	6·8	3·2	12·8	6·1
09	7 02·3	7 03·4	6 43·0	0·9	0·4	6·9	3·3	12·9	6·1
10	7 02·5	7 03·7	6 43·3	1·0	0·5	7·0	3·3	13·0	6·2
11	7 02·8	7 03·9	6 43·5	1·1	0·5	7·1	3·4	13·1	6·2
12	7 03·0	7 04·2	6 43·7	1·2	0·6	7·2	3·4	13·2	6·3
13	7 03·3	7 04·4	6 44·0	1·3	0·6	7·3	3·5	13·3	6·3
14	7 03·5	7 04·7	6 44·2	1·4	0·7	7·4	3·5	13·4	6·4
15	7 03·8	7 04·9	6 44·4	1·5	0·7	7·5	3·6	13·5	6·4
16	7 04·0	7 05·2	6 44·7	1·6	0·8	7·6	3·6	13·6	6·5
17	7 04·3	7 05·4	6 44·9	1·7	0·8	7·7	3·7	13·7	6·5
18	7 04·5	7 05·7	6 45·2	1·8	0·9	7·8	3·7	13·8	6·6
19	7 04·8	7 05·9	6 45·4	1·9	0·9	7·9	3·8	13·9	6·6
20	7 05·0	7 06·2	6 45·6	2·0	1·0	8·0	3·8	14·0	6·7
21	7 05·3	7 06·4	6 45·9	2·1	1·0	8·1	3·8	14·1	6·7
22	7 05·5	7 06·7	6 46·1	2·2	1·0	8·2	3·9	14·2	6·7
23	7 05·8	7 06·9	6 46·4	2·3	1·1	8·3	3·9	14·3	6·8
24	7 06·0	7 07·2	6 46·6	2·4	1·1	8·4	4·0	14·4	6·8
25	7 06·3	7 07·4	6 46·8	2·5	1·2	8·5	4·0	14·5	6·9
26	7 06·5	7 07·7	6 47·1	2·6	1·2	8·6	4·1	14·6	6·9
27	7 06·8	7 07·9	6 47·3	2·7	1·3	8·7	4·1	14·7	7·0
28	7 07·0	7 08·2	6 47·5	2·8	1·3	8·8	4·2	14·8	7·0
29	7 07·3	7 08·4	6 47·8	2·9	1·4	8·9	4·2	14·9	7·1
30	7 07·5	7 08·7	6 48·0	3·0	1·4	9·0	4·3	15·0	7·1
31	7 07·8	7 08·9	6 48·3	3·1	1·5	9·1	4·3	15·1	7·2
32	7 08·0	7 09·2	6 48·5	3·2	1·5	9·2	4·4	15·2	7·2
33	7 08·3	7 09·4	6 48·7	3·3	1·6	9·3	4·4	15·3	7·3
34	7 08·5	7 09·7	6 49·0	3·4	1·6	9·4	4·5	15·4	7·3
35	7 08·8	7 09·9	6 49·2	3·5	1·7	9·5	4·5	15·5	7·4
36	7 09·0	7 10·2	6 49·5	3·6	1·7	9·6	4·6	15·6	7·4
37	7 09·3	7 10·4	6 49·7	3·7	1·8	9·7	4·6	15·7	7·5
38	7 09·5	7 10·7	6 49·9	3·8	1·8	9·8	4·7	15·8	7·5
39	7 09·8	7 10·9	6 50·2	3·9	1·9	9·9	4·7	15·9	7·6
40	7 10·0	7 11·2	6 50·4	4·0	1·9	10·0	4·8	16·0	7·6
41	7 10·3	7 11·4	6 50·6	4·1	1·9	10·1	4·8	16·1	7·6
42	7 10·5	7 11·7	6 50·9	4·2	2·0	10·2	4·8	16·2	7·7
43	7 10·8	7 11·9	6 51·1	4·3	2·0	10·3	4·9	16·3	7·7
44	7 11·0	7 12·2	6 51·4	4·4	2·1	10·4	4·9	16·4	7·8
45	7 11·3	7 12·4	6 51·6	4·5	2·1	10·5	5·0	16·5	7·8
46	7 11·5	7 12·7	6 51·8	4·6	2·2	10·6	5·0	16·6	7·9
47	7 11·8	7 12·9	6 52·1	4·7	2·2	10·7	5·1	16·7	7·9
48	7 12·0	7 13·2	6 52·3	4·8	2·3	10·8	5·1	16·8	8·0
49	7 12·3	7 13·4	6 52·6	4·9	2·3	10·9	5·2	16·9	8·0
50	7 12·5	7 13·7	6 52·8	5·0	2·4	11·0	5·2	17·0	8·1
51	7 12·8	7 13·9	6 53·0	5·1	2·4	11·1	5·3	17·1	8·1
52	7 13·0	7 14·2	6 53·3	5·2	2·5	11·2	5·3	17·2	8·2
53	7 13·3	7 14·4	6 53·5	5·3	2·5	11·3	5·4	17·3	8·2
54	7 13·5	7 14·7	6 53·8	5·4	2·6	11·4	5·4	17·4	8·3
55	7 13·8	7 14·9	6 54·0	5·5	2·6	11·5	5·5	17·5	8·3
56	7 14·0	7 15·2	6 54·2	5·6	2·7	11·6	5·5	17·6	8·4
57	7 14·3	7 15·4	6 54·5	5·7	2·7	11·7	5·6	17·7	8·4
58	7 14·5	7 15·7	6 54·7	5·8	2·8	11·8	5·6	17·8	8·5
59	7 14·8	7 15·9	6 54·9	5·9	2·8	11·9	5·7	17·9	8·5
60	7 15·0	7 16·2	6 55·2	6·0	2·9	12·0	5·7	18·0	8·6

29m

m 29	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	7 15·0	7 16·2	6 55·2	0·0	0·0	6·0	3·0	12·0	5·9
01	7 15·3	7 16·4	6 55·4	0·1	0·0	6·1	3·0	12·1	5·9
02	7 15·5	7 16·7	6 55·7	0·2	0·1	6·2	3·0	12·2	6·0
03	7 15·8	7 16·9	6 55·9	0·3	0·1	6·3	3·1	12·3	6·0
04	7 16·0	7 17·2	6 56·1	0·4	0·2	6·4	3·1	12·4	6·1
05	7 16·3	7 17·4	6 56·4	0·5	0·2	6·5	3·2	12·5	6·1
06	7 16·5	7 17·7	6 56·6	0·6	0·3	6·6	3·2	12·6	6·2
07	7 16·8	7 17·9	6 56·9	0·7	0·3	6·7	3·3	12·7	6·2
08	7 17·0	7 18·2	6 57·1	0·8	0·4	6·8	3·3	12·8	6·3
09	7 17·3	7 18·4	6 57·3	0·9	0·4	6·9	3·4	12·9	6·3
10	7 17·5	7 18·7	6 57·6	1·0	0·5	7·0	3·4	13·0	6·4
11	7 17·8	7 18·9	6 57·8	1·1	0·5	7·1	3·5	13·1	6·4
12	7 18·0	7 19·2	6 58·0	1·2	0·6	7·2	3·5	13·2	6·5
13	7 18·3	7 19·4	6 58·3	1·3	0·6	7·3	3·6	13·3	6·5
14	7 18·5	7 19·7	6 58·5	1·4	0·7	7·4	3·6	13·4	6·6
15	7 18·8	7 20·0	6 58·8	1·5	0·7	7·5	3·7	13·5	6·6
16	7 19·0	7 20·2	6 59·0	1·6	0·8	7·6	3·7	13·6	6·7
17	7 19·3	7 20·5	6 59·2	1·7	0·8	7·7	3·8	13·7	6·7
18	7 19·5	7 20·7	6 59·5	1·8	0·9	7·8	3·8	13·8	6·8
19	7 19·8	7 21·0	6 59·7	1·9	0·9	7·9	3·9	13·9	6·8
20	7 20·0	7 21·2	7 00·0	2·0	1·0	8·0	3·9	14·0	6·9
21	7 20·3	7 21·5	7 00·2	2·1	1·0	8·1	4·0	14·1	6·9
22	7 20·5	7 21·7	7 00·4	2·2	1·1	8·2	4·0	14·2	7·0
23	7 20·8	7 22·0	7 00·7	2·3	1·1	8·3	4·1	14·3	7·0
24	7 21·0	7 22·2	7 00·9	2·4	1·2	8·4	4·1	14·4	7·1
25	7 21·3	7 22·5	7 01·1	2·5	1·2	8·5	4·2	14·5	7·1
26	7 21·5	7 22·7	7 01·4	2·6	1·3	8·6	4·2	14·6	7·2
27	7 21·8	7 23·0	7 01·6	2·7	1·3	8·7	4·3	14·7	7·2
28	7 22·0	7 23·2	7 01·9	2·8	1·4	8·8	4·3	14·8	7·3
29	7 22·3	7 23·5	7 02·1	2·9	1·4	8·9	4·4	14·9	7·3
30	7 22·5	7 23·7	7 02·3	3·0	1·5	9·0	4·4	15·0	7·4
31	7 22·8	7 24·0	7 02·6	3·1	1·5	9·1	4·5	15·1	7·4
32	7 23·0	7 24·2	7 02·8	3·2	1·6	9·2	4·5	15·2	7·5
33	7 23·3	7 24·5	7 03·1	3·3	1·6	9·3	4·6	15·3	7·5
34	7 23·5	7 24·7	7 03·3	3·4	1·7	9·4	4·6	15·4	7·6
35	7 23·8	7 25·0	7 03·5	3·5	1·7	9·5	4·7	15·5	7·6
36	7 24·0	7 25·2	7 03·8	3·6	1·8	9·6	4·7	15·6	7·7
37	7 24·3	7 25·5	7 04·0	3·7	1·8	9·7	4·8	15·7	7·7
38	7 24·5	7 25·7	7 04·3	3·8	1·9	9·8	4·8	15·8	7·8
39	7 24·8	7 26·0	7 04·5	3·9	1·9	9·9	4·9	15·9	7·8
40	7 25·0	7 26·2	7 04·7	4·0	2·0	10·0	4·9	16·0	7·9
41	7 25·3	7 26·5	7 05·0	4·1	2·0	10·1	5·0	16·1	7·9
42	7 25·5	7 26·7	7 05·2	4·2	2·1	10·2	5·0	16·2	8·0
43	7 25·8	7 27·0	7 05·4	4·3	2·1	10·3	5·1	16·3	8·0
44	7 26·0	7 27·2	7 05·7	4·4	2·2	10·4	5·1	16·4	8·1
45	7 26·3	7 27·5	7 05·9	4·5	2·2	10·5	5·2	16·5	8·1
46	7 26·5	7 27·7	7 06·2	4·6	2·3	10·6	5·2	16·6	8·2
47	7 26·8	7 28·0	7 06·4	4·7	2·3	10·7	5·3	16·7	8·2
48	7 27·0	7 28·2	7 06·6	4·8	2·4	10·8	5·3	16·8	8·3
49	7 27·3	7 28·5	7 06·9	4·9	2·4	10·9	5·4	16·9	8·3
50	7 27·5	7 28·7	7 07·1	5·0	2·5	11·0	5·4	17·0	8·4
51	7 27·8	7 29·0	7 07·4	5·1	2·5	11·1	5·5	17·1	8·4
52	7 28·0	7 29·2	7 07·6	5·2	2·6	11·2	5·5	17·2	8·5
53	7 28·3	7 29·5	7 07·8	5·3	2·6	11·3	5·6	17·3	8·5
54	7 28·5	7 29·7	7 08·1	5·4	2·7	11·4	5·6	17·4	8·6
55	7 28·8	7 30·0	7 08·3	5·5	2·7	11·5	5·7	17·5	8·6
56	7 29·0	7 30·2	7 08·5	5·6	2·8	11·6	5·7	17·6	8·7
57	7 29·3	7 30·5	7 08·8	5·7	2·8	11·7	5·8	17·7	8·7
58	7 29·5	7 30·7	7 09·0	5·8	2·9	11·8	5·8	17·8	8·8
59	7 29·8	7 31·0	7 09·3	5·9	2·9	11·9	5·9	17·9	8·8
60	7 30·0	7 31·2	7 09·5	6·0	3·0	12·0	5·9	18·0	8·9

30m

m 30	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	7 30·0	7 31·2	7 09·5	0·0	0·0	6·0	3·1	12·0	6·1
01	7 30·3	7 31·5	7 09·7	0·1	0·1	6·1	3·1	12·1	6·2
02	7 30·5	7 31·7	7 10·0	0·2	0·1	6·2	3·2	12·2	6·2
03	7 30·8	7 32·0	7 10·2	0·3	0·2	6·3	3·2	12·3	6·3
04	7 31·0	7 32·2	7 10·5	0·4	0·2	6·4	3·3	12·4	6·3
05	7 31·3	7 32·5	7 10·7	0·5	0·3	6·5	3·3	12·5	6·4
06	7 31·5	7 32·7	7 10·9	0·6	0·3	6·6	3·4	12·6	6·4
07	7 31·8	7 33·0	7 11·2	0·7	0·4	6·7	3·4	12·7	6·5
08	7 32·0	7 33·2	7 11·4	0·8	0·4	6·8	3·5	12·8	6·5
09	7 32·3	7 33·5	7 11·6	0·9	0·5	6·9	3·5	12·9	6·6
10	7 32·5	7 33·7	7 11·9	1·0	0·5	7·0	3·6	13·0	6·6
11	7 32·8	7 34·0	7 12·1	1·1	0·6	7·1	3·6	13·1	6·7
12	7 33·0	7 34·2	7 12·4	1·2	0·6	7·2	3·7	13·2	6·7
13	7 33·3	7 34·5	7 12·6	1·3	0·7	7·3	3·7	13·3	6·8
14	7 33·5	7 34·7	7 12·8	1·4	0·7	7·4	3·8	13·4	6·8
15	7 33·8	7 35·0	7 13·1	1·5	0·8	7·5	3·8	13·5	6·9
16	7 34·0	7 35·2	7 13·3	1·6	0·8	7·6	3·9	13·6	6·9
17	7 34·3	7 35·5	7 13·6	1·7	0·9	7·7	3·9	13·7	7·0
18	7 34·5	7 35·7	7 13·8	1·8	0·9	7·8	4·0	13·8	7·0
19	7 34·8	7 36·0	7 14·0	1·9	1·0	7·9	4·0	13·9	7·1
20	7 35·0	7 36·2	7 14·3	2·0	1·0	8·0	4·1	14·0	7·1
21	7 35·3	7 36·5	7 14·5	2·1	1·1	8·1	4·1	14·1	7·2
22	7 35·5	7 36·7	7 14·7	2·2	1·1	8·2	4·2	14·2	7·2
23	7 35·8	7 37·0	7 15·0	2·3	1·2	8·3	4·2	14·3	7·3
24	7 36·0	7 37·2	7 15·2	2·4	1·2	8·4	4·3	14·4	7·3
25	7 36·3	7 37·5	7 15·5	2·5	1·3	8·5	4·3	14·5	7·4
26	7 36·5	7 37·7	7 15·7	2·6	1·3	8·6	4·4	14·6	7·4
27	7 36·8	7 38·0	7 15·9	2·7	1·4	8·7	4·4	14·7	7·5
28	7 37·0	7 38·3	7 16·2	2·8	1·4	8·8	4·5	14·8	7·5
29	7 37·3	7 38·5	7 16·4	2·9	1·5	8·9	4·5	14·9	7·6
30	7 37·5	7 38·8	7 16·7	3·0	1·5	9·0	4·6	15·0	7·6
31	7 37·8	7 39·0	7 16·9	3·1	1·6	9·1	4·6	15·1	7·7
32	7 38·0	7 39·3	7 17·1	3·2	1·6	9·2	4·7	15·2	7·7
33	7 38·3	7 39·5	7 17·4	3·3	1·7	9·3	4·7	15·3	7·8
34	7 38·5	7 39·8	7 17·6	3·4	1·7	9·4	4·8	15·4	7·8
35	7 38·8	7 40·0	7 17·9	3·5	1·8	9·5	4·8	15·5	7·9
36	7 39·0	7 40·3	7 18·1	3·6	1·8	9·6	4·9	15·6	7·9
37	7 39·3	7 40·5	7 18·3	3·7	1·9	9·7	4·9	15·7	8·0
38	7 39·5	7 40·8	7 18·6	3·8	1·9	9·8	5·0	15·8	8·0
39	7 39·8	7 41·0	7 18·8	3·9	2·0	9·9	5·0	15·9	8·1
40	7 40·0	7 41·3	7 19·0	4·0	2·0	10·0	5·1	16·0	8·1
41	7 40·3	7 41·5	7 19·3	4·1	2·1	10·1	5·1	16·1	8·2
42	7 40·5	7 41·8	7 19·5	4·2	2·1	10·2	5·2	16·2	8·2
43	7 40·8	7 42·0	7 19·8	4·3	2·2	10·3	5·2	16·3	8·3
44	7 41·0	7 42·3	7 20·0	4·4	2·2	10·4	5·3	16·4	8·3
45	7 41·3	7 42·5	7 20·2	4·5	2·3	10·5	5·3	16·5	8·4
46	7 41·5	7 42·8	7 20·5	4·6	2·3	10·6	5·4	16·6	8·4
47	7 41·8	7 43·0	7 20·7	4·7	2·4	10·7	5·4	16·7	8·5
48	7 42·0	7 43·3	7 21·0	4·8	2·4	10·8	5·5	16·8	8·5
49	7 42·3	7 43·5	7 21·2	4·9	2·5	10·9	5·5	16·9	8·6
50	7 42·5	7 43·8	7 21·4	5·0	2·5	11·0	5·6	17·0	8·6
51	7 42·8	7 44·0	7 21·7	5·1	2·6	11·1	5·6	17·1	8·7
52	7 43·0	7 44·3	7 21·9	5·2	2·6	11·2	5·7	17·2	8·7
53	7 43·3	7 44·5	7 22·1	5·3	2·7	11·3	5·7	17·3	8·8
54	7 43·5	7 44·8	7 22·4	5·4	2·7	11·4	5·8	17·4	8·8
55	7 43·8	7 45·0	7 22·6	5·5	2·8	11·5	5·8	17·5	8·9
56	7 44·0	7 45·3	7 22·9	5·6	2·8	11·6	5·9	17·6	8·9
57	7 44·3	7 45·5	7 23·1	5·7	2·9	11·7	5·9	17·7	9·0
58	7 44·5	7 45·8	7 23·3	5·8	2·9	11·8	6·0	17·8	9·0
59	7 44·8	7 46·0	7 23·6	5·9	3·0	11·9	6·0	17·9	9·1
60	7 45·0	7 46·3	7 23·8	6·0	3·1	12·0	6·1	18·0	9·2

31m

m 31	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	7 45·0	7 46·3	7 23·8	0·0	0·0	6·0	3·2	12·0	6·3
01	7 45·3	7 46·5	7 24·1	0·1	0·1	6·1	3·2	12·1	6·4
02	7 45·5	7 46·8	7 24·3	0·2	0·1	6·2	3·3	12·2	6·4
03	7 45·8	7 47·0	7 24·5	0·3	0·2	6·3	3·3	12·3	6·5
04	7 46·0	7 47·3	7 24·8	0·4	0·2	6·4	3·4	12·4	6·5
05	7 46·3	7 47·5	7 25·0	0·5	0·3	6·5	3·4	12·5	6·6
06	7 46·5	7 47·8	7 25·2	0·6	0·3	6·6	3·5	12·6	6·6
07	7 46·8	7 48·0	7 25·5	0·7	0·4	6·7	3·5	12·7	6·7
08	7 47·0	7 48·3	7 25·7	0·8	0·4	6·8	3·6	12·8	6·7
09	7 47·3	7 48·5	7 26·0	0·9	0·5	6·9	3·6	12·9	6·8
10	7 47·5	7 48·8	7 26·2	1·0	0·5	7·0	3·7	13·0	6·8
11	7 47·8	7 49·0	7 26·4	1·1	0·6	7·1	3·7	13·1	6·9
12	7 48·0	7 49·3	7 26·7	1·2	0·6	7·2	3·8	13·2	6·9
13	7 48·3	7 49·5	7 26·9	1·3	0·7	7·3	3·8	13·3	7·0
14	7 48·5	7 49·8	7 27·2	1·4	0·7	7·4	3·9	13·4	7·0
15	7 48·8	7 50·0	7 27·4	1·5	0·8	7·5	3·9	13·5	7·1
16	7 49·0	7 50·3	7 27·6	1·6	0·8	7·6	4·0	13·6	7·1
17	7 49·3	7 50·5	7 27·9	1·7	0·9	7·7	4·0	13·7	7·2
18	7 49·5	7 50·8	7 28·1	1·8	0·9	7·8	4·1	13·8	7·2
19	7 49·8	7 51·0	7 28·4	1·9	1·0	7·9	4·1	13·9	7·3
20	7 50·0	7 51·3	7 28·6	2·0	1·1	8·0	4·2	14·0	7·4
21	7 50·3	7 51·5	7 28·8	2·1	1·1	8·1	4·3	14·1	7·4
22	7 50·5	7 51·8	7 29·1	2·2	1·2	8·2	4·3	14·2	7·5
23	7 50·8	7 52·0	7 29·3	2·3	1·2	8·3	4·4	14·3	7·5
24	7 51·0	7 52·3	7 29·5	2·4	1·3	8·4	4·4	14·4	7·6
25	7 51·3	7 52·5	7 29·8	2·5	1·3	8·5	4·5	14·5	7·6
26	7 51·5	7 52·8	7 30·0	2·6	1·4	8·6	4·5	14·6	7·7
27	7 51·8	7 53·0	7 30·3	2·7	1·4	8·7	4·6	14·7	7·7
28	7 52·0	7 53·3	7 30·5	2·8	1·5	8·8	4·6	14·8	7·8
29	7 52·3	7 53·5	7 30·7	2·9	1·5	8·9	4·7	14·9	7·8
30	7 52·5	7 53·8	7 31·0	3·0	1·6	9·0	4·7	15·0	7·9
31	7 52·8	7 54·0	7 31·2	3·1	1·6	9·1	4·8	15·1	7·9
32	7 53·0	7 54·3	7 31·5	3·2	1·7	9·2	4·8	15·2	8·0
33	7 53·3	7 54·5	7 31·7	3·3	1·7	9·3	4·9	15·3	8·0
34	7 53·5	7 54·8	7 31·9	3·4	1·8	9·4	4·9	15·4	8·1
35	7 53·8	7 55·0	7 32·2	3·5	1·8	9·5	5·0	15·5	8·1
36	7 54·0	7 55·3	7 32·4	3·6	1·9	9·6	5·0	15·6	8·2
37	7 54·3	7 55·5	7 32·6	3·7	1·9	9·7	5·1	15·7	8·2
38	7 54·5	7 55·8	7 32·9	3·8	2·0	9·8	5·1	15·8	8·3
39	7 54·8	7 56·0	7 33·1	3·9	2·0	9·9	5·2	15·9	8·3
40	7 55·0	7 56·3	7 33·4	4·0	2·1	10·0	5·3	16·0	8·4
41	7 55·3	7 56·6	7 33·6	4·1	2·2	10·1	5·3	16·1	8·5
42	7 55·5	7 56·8	7 33·8	4·2	2·2	10·2	5·4	16·2	8·5
43	7 55·8	7 57·1	7 34·1	4·3	2·3	10·3	5·4	16·3	8·6
44	7 56·0	7 57·3	7 34·3	4·4	2·3	10·4	5·5	16·4	8·6
45	7 56·3	7 57·6	7 34·6	4·5	2·4	10·5	5·5	16·5	8·7
46	7 56·5	7 57·8	7 34·8	4·6	2·4	10·6	5·6	16·6	8·7
47	7 56·8	7 58·1	7 35·0	4·7	2·5	10·7	5·6	16·7	8·8
48	7 57·0	7 58·3	7 35·3	4·8	2·5	10·8	5·7	16·8	8·8
49	7 57·3	7 58·6	7 35·5	4·9	2·6	10·9	5·7	16·9	8·9
50	7 57·5	7 58·8	7 35·7	5·0	2·6	11·0	5·8	17·0	8·9
51	7 57·8	7 59·1	7 36·0	5·1	2·7	11·1	5·8	17·1	9·0
52	7 58·0	7 59·3	7 36·2	5·2	2·7	11·2	5·9	17·2	9·0
53	7 58·3	7 59·6	7 36·5	5·3	2·8	11·3	5·9	17·3	9·1
54	7 58·5	7 59·8	7 36·7	5·4	2·8	11·4	6·0	17·4	9·1
55	7 58·8	8 00·1	7 36·9	5·5	2·9	11·5	6·0	17·5	9·2
56	7 59·0	8 00·3	7 37·2	5·6	2·9	11·6	6·1	17·6	9·2
57	7 59·3	8 00·6	7 37·4	5·7	3·0	11·7	6·1	17·7	9·3
58	7 59·5	8 00·8	7 37·7	5·8	3·0	11·8	6·2	17·8	9·3
59	7 59·8	8 01·1	7 37·9	5·9	3·1	11·9	6·2	17·9	9·4
60	8 00·0	8 01·3	7 38·1	6·0	3·2	12·0	6·3	18·0	9·5

32m

m 32	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	8 00·0	8 01·3	7 38·1	0·0	0·0	6·0	3·3	12·0	6·5
01	8 00·3	8 01·6	7 38·4	0·1	0·1	6·1	3·3	12·1	6·6
02	8 00·5	8 01·8	7 38·6	0·2	0·1	6·2	3·4	12·2	6·6
03	8 00·8	8 02·1	7 38·8	0·3	0·2	6·3	3·4	12·3	6·7
04	8 01·0	8 02·3	7 39·1	0·4	0·2	6·4	3·5	12·4	6·7
05	8 01·3	8 02·6	7 39·3	0·5	0·3	6·5	3·5	12·5	6·8
06	8 01·5	8 02·8	7 39·6	0·6	0·3	6·6	3·6	12·6	6·8
07	8 01·8	8 03·1	7 39·8	0·7	0·4	6·7	3·6	12·7	6·9
08	8 02·0	8 03·3	7 40·0	0·8	0·4	6·8	3·7	12·8	6·9
09	8 02·3	8 03·6	7 40·3	0·9	0·5	6·9	3·7	12·9	7·0
10	8 02·5	8 03·8	7 40·5	1·0	0·5	7·0	3·8	13·0	7·0
11	8 02·8	8 04·1	7 40·8	1·1	0·6	7·1	3·8	13·1	7·1
12	8 03·0	8 04·3	7 41·0	1·2	0·7	7·2	3·9	13·2	7·2
13	8 03·3	8 04·6	7 41·2	1·3	0·7	7·3	4·0	13·3	7·2
14	8 03·5	8 04·8	7 41·5	1·4	0·8	7·4	4·0	13·4	7·3
15	8 03·8	8 05·1	7 41·7	1·5	0·8	7·5	4·1	13·5	7·3
16	8 04·0	8 05·3	7 42·0	1·6	0·9	7·6	4·1	13·6	7·4
17	8 04·3	8 05·6	7 42·2	1·7	0·9	7·7	4·2	13·7	7·4
18	8 04·5	8 05·8	7 42·4	1·8	1·0	7·8	4·2	13·8	7·5
19	8 04·8	8 06·1	7 42·7	1·9	1·0	7·9	4·3	13·9	7·5
20	8 05·0	8 06·3	7 42·9	2·0	1·1	8·0	4·3	14·0	7·6
21	8 05·3	8 06·6	7 43·1	2·1	1·1	8·1	4·4	14·1	7·6
22	8 05·5	8 06·8	7 43·4	2·2	1·2	8·2	4·4	14·2	7·7
23	8 05·8	8 07·1	7 43·6	2·3	1·2	8·3	4·5	14·3	7·7
24	8 06·0	8 07·3	7 43·9	2·4	1·3	8·4	4·6	14·4	7·8
25	8 06·3	8 07·6	7 44·1	2·5	1·4	8·5	4·6	14·5	7·9
26	8 06·5	8 07·8	7 44·3	2·6	1·4	8·6	4·7	14·6	7·9
27	8 06·8	8 08·1	7 44·6	2·7	1·5	8·7	4·7	14·7	8·0
28	8 07·0	8 08·3	7 44·8	2·8	1·5	8·8	4·8	14·8	8·0
29	8 07·3	8 08·6	7 45·1	2·9	1·6	8·9	4·8	14·9	8·1
30	8 07·5	8 08·8	7 45·3	3·0	1·6	9·0	4·9	15·0	8·1
31	8 07·8	8 09·1	7 45·5	3·1	1·7	9·1	4·9	15·1	8·2
32	8 08·0	8 09·3	7 45·8	3·2	1·7	9·2	5·0	15·2	8·2
33	8 08·3	8 09·6	7 46·0	3·3	1·8	9·3	5·0	15·3	8·3
34	8 08·5	8 09·8	7 46·2	3·4	1·8	9·4	5·1	15·4	8·3
35	8 08·8	8 10·1	7 46·5	3·5	1·9	9·5	5·1	15·5	8·4
36	8 09·0	8 10·3	7 46·7	3·6	2·0	9·6	5·2	15·6	8·5
37	8 09·3	8 10·6	7 47·0	3·7	2·0	9·7	5·3	15·7	8·5
38	8 09·5	8 10·8	7 47·2	3·8	2·1	9·8	5·3	15·8	8·6
39	8 09·8	8 11·1	7 47·4	3·9	2·1	9·9	5·4	15·9	8·6
40	8 10·0	8 11·3	7 47·7	4·0	2·2	10·0	5·4	16·0	8·7
41	8 10·3	8 11·6	7 47·9	4·1	2·2	10·1	5·5	16·1	8·7
42	8 10·5	8 11·8	7 48·2	4·2	2·3	10·2	5·5	16·2	8·8
43	8 10·8	8 12·1	7 48·4	4·3	2·3	10·3	5·6	16·3	8·8
44	8 11·0	8 12·3	7 48·6	4·4	2·4	10·4	5·6	16·4	8·9
45	8 11·3	8 12·6	7 48·9	4·5	2·4	10·5	5·7	16·5	8·9
46	8 11·5	8 12·8	7 49·1	4·6	2·5	10·6	5·7	16·6	9·0
47	8 11·8	8 13·1	7 49·3	4·7	2·5	10·7	5·8	16·7	9·0
48	8 12·0	8 13·3	7 49·6	4·8	2·6	10·8	5·9	16·8	9·1
49	8 12·3	8 13·6	7 49·8	4·9	2·7	10·9	5·9	16·9	9·2
50	8 12·5	8 13·8	7 50·1	5·0	2·7	11·0	6·0	17·0	9·2
51	8 12·8	8 14·1	7 50·3	5·1	2·8	11·1	6·0	17·1	9·3
52	8 13·0	8 14·3	7 50·5	5·2	2·8	11·2	6·1	17·2	9·3
53	8 13·3	8 14·6	7 50·8	5·3	2·9	11·3	6·1	17·3	9·4
54	8 13·5	8 14·9	7 51·0	5·4	2·9	11·4	6·2	17·4	9·4
55	8 13·8	8 15·1	7 51·3	5·5	3·0	11·5	6·2	17·5	9·5
56	8 14·0	8 15·4	7 51·5	5·6	3·0	11·6	6·3	17·6	9·5
57	8 14·3	8 15·6	7 51·7	5·7	3·1	11·7	6·3	17·7	9·6
58	8 14·5	8 15·9	7 52·0	5·8	3·1	11·8	6·4	17·8	9·6
59	8 14·8	8 16·1	7 52·2	5·9	3·2	11·9	6·4	17·9	9·7
60	8 15·0	8 16·4	7 52·5	6·0	3·3	12·0	6·5	18·0	9·8

33m

m 33	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	8 15·0	8 16·4	7 52·5	0·0	0·0	6·0	3·4	12·0	6·7
01	8 15·3	8 16·6	7 52·7	0·1	0·1	6·1	3·4	12·1	6·8
02	8 15·5	8 16·9	7 52·9	0·2	0·1	6·2	3·5	12·2	6·8
03	8 15·8	8 17·1	7 53·2	0·3	0·2	6·3	3·5	12·3	6·9
04	8 16·0	8 17·4	7 53·4	0·4	0·2	6·4	3·6	12·4	6·9
05	8 16·3	8 17·6	7 53·6	0·5	0·3	6·5	3·6	12·5	7·0
06	8 16·5	8 17·9	7 53·9	0·6	0·3	6·6	3·7	12·6	7·0
07	8 16·8	8 18·1	7 54·1	0·7	0·4	6·7	3·7	12·7	7·1
08	8 17·0	8 18·4	7 54·4	0·8	0·4	6·8	3·8	12·8	7·1
09	8 17·3	8 18·6	7 54·6	0·9	0·5	6·9	3·9	12·9	7·2
10	8 17·5	8 18·9	7 54·8	1·0	0·6	7·0	3·9	13·0	7·3
11	8 17·8	8 19·1	7 55·1	1·1	0·6	7·1	4·0	13·1	7·3
12	8 18·0	8 19·4	7 55·3	1·2	0·7	7·2	4·0	13·2	7·4
13	8 18·3	8 19·6	7 55·6	1·3	0·7	7·3	4·1	13·3	7·4
14	8 18·5	8 19·9	7 55·8	1·4	0·8	7·4	4·1	13·4	7·5
15	8 18·8	8 20·1	7 56·0	1·5	0·8	7·5	4·2	13·5	7·5
16	8 19·0	8 20·4	7 56·3	1·6	0·9	7·6	4·2	13·6	7·6
17	8 19·3	8 20·6	7 56·5	1·7	0·9	7·7	4·3	13·7	7·6
18	8 19·5	8 20·9	7 56·7	1·8	1·0	7·8	4·4	13·8	7·7
19	8 19·8	8 21·1	7 57·0	1·9	1·1	7·9	4·4	13·9	7·8
20	8 20·0	8 21·4	7 57·2	2·0	1·1	8·0	4·5	14·0	7·8
21	8 20·3	8 21·6	7 57·5	2·1	1·2	8·1	4·5	14·1	7·9
22	8 20·5	8 21·9	7 57·7	2·2	1·2	8·2	4·6	14·2	7·9
23	8 20·8	8 22·1	7 57·9	2·3	1·3	8·3	4·6	14·3	8·0
24	8 21·0	8 22·4	7 58·2	2·4	1·3	8·4	4·7	14·4	8·0
25	8 21·3	8 22·6	7 58·4	2·5	1·4	8·5	4·7	14·5	8·1
26	8 21·5	8 22·9	7 58·7	2·6	1·5	8·6	4·8	14·6	8·2
27	8 21·8	8 23·1	7 58·9	2·7	1·5	8·7	4·9	14·7	8·2
28	8 22·0	8 23·4	7 59·1	2·8	1·6	8·8	4·9	14·8	8·3
29	8 22·3	8 23·6	7 59·4	2·9	1·6	8·9	5·0	14·9	8·3
30	8 22·5	8 23·9	7 59·6	3·0	1·7	9·0	5·0	15·0	8·4
31	8 22·8	8 24·1	7 59·8	3·1	1·7	9·1	5·1	15·1	8·4
32	8 23·0	8 24·4	8 00·1	3·2	1·8	9·2	5·1	15·2	8·5
33	8 23·3	8 24·6	8 00·3	3·3	1·8	9·3	5·2	15·3	8·5
34	8 23·5	8 24·9	8 00·6	3·4	1·9	9·4	5·2	15·4	8·6
35	8 23·8	8 25·1	8 00·8	3·5	2·0	9·5	5·3	15·5	8·7
36	8 24·0	8 25·4	8 01·0	3·6	2·0	9·6	5·4	15·6	8·7
37	8 24·3	8 25·6	8 01·3	3·7	2·1	9·7	5·4	15·7	8·8
38	8 24·5	8 25·9	8 01·5	3·8	2·1	9·8	5·5	15·8	8·8
39	8 24·8	8 26·1	8 01·8	3·9	2·2	9·9	5·5	15·9	8·9
40	8 25·0	8 26·4	8 02·0	4·0	2·2	10·0	5·6	16·0	8·9
41	8 25·3	8 26·6	8 02·2	4·1	2·3	10·1	5·6	16·1	9·0
42	8 25·5	8 26·9	8 02·5	4·2	2·3	10·2	5·7	16·2	9·0
43	8 25·8	8 27·1	8 02·7	4·3	2·4	10·3	5·8	16·3	9·1
44	8 26·0	8 27·4	8 02·9	4·4	2·5	10·4	5·8	16·4	9·2
45	8 26·3	8 27·6	8 03·2	4·5	2·5	10·5	5·9	16·5	9·2
46	8 26·5	8 27·9	8 03·4	4·6	2·6	10·6	5·9	16·6	9·3
47	8 26·8	8 28·1	8 03·7	4·7	2·6	10·7	6·0	16·7	9·3
48	8 27·0	8 28·4	8 03·9	4·8	2·7	10·8	6·0	16·8	9·4
49	8 27·3	8 28·6	8 04·1	4·9	2·7	10·9	6·1	16·9	9·4
50	8 27·5	8 28·9	8 04·4	5·0	2·8	11·0	6·1	17·0	9·5
51	8 27·8	8 29·1	8 04·6	5·1	2·8	11·1	6·2	17·1	9·5
52	8 28·0	8 29·4	8 04·9	5·2	2·9	11·2	6·3	17·2	9·6
53	8 28·3	8 29·6	8 05·1	5·3	3·0	11·3	6·3	17·3	9·7
54	8 28·5	8 29·9	8 05·3	5·4	3·0	11·4	6·4	17·4	9·7
55	8 28·8	8 30·1	8 05·6	5·5	3·1	11·5	6·4	17·5	9·8
56	8 29·0	8 30·4	8 05·8	5·6	3·1	11·6	6·5	17·6	9·8
57	8 29·3	8 30·6	8 06·1	5·7	3·2	11·7	6·5	17·7	9·9
58	8 29·5	8 30·9	8 06·3	5·8	3·2	11·8	6·6	17·8	9·9
59	8 29·8	8 31·1	8 06·5	5·9	3·3	11·9	6·6	17·9	10·0
60	8 30·0	8 31·4	8 06·8	6·0	3·4	12·0	6·7	18·0	10·1

34m

m 34	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	8 30·0	8 31·4	8 06·8	0·0	0·0	6·0	3·5	12·0	6·9
01	8 30·3	8 31·6	8 07·0	0·1	0·1	6·1	3·5	12·1	7·0
02	8 30·5	8 31·9	8 07·2	0·2	0·1	6·2	3·6	12·2	7·0
03	8 30·8	8 32·1	8 07·5	0·3	0·2	6·3	3·6	12·3	7·1
04	8 31·0	8 32·4	8 07·7	0·4	0·2	6·4	3·7	12·4	7·1
05	8 31·3	8 32·6	8 08·0	0·5	0·3	6·5	3·7	12·5	7·2
06	8 31·5	8 32·9	8 08·2	0·6	0·3	6·6	3·8	12·6	7·2
07	8 31·8	8 33·2	8 08·4	0·7	0·4	6·7	3·9	12·7	7·3
08	8 32·0	8 33·4	8 08·7	0·8	0·5	6·8	3·9	12·8	7·4
09	8 32·3	8 33·7	8 08·9	0·9	0·5	6·9	4·0	12·9	7·4
10	8 32·5	8 33·9	8 09·2	1·0	0·6	7·0	4·0	13·0	7·5
11	8 32·8	8 34·2	8 09·4	1·1	0·6	7·1	4·1	13·1	7·5
12	8 33·0	8 34·4	8 09·6	1·2	0·7	7·2	4·1	13·2	7·6
13	8 33·3	8 34·7	8 09·9	1·3	0·7	7·3	4·2	13·3	7·6
14	8 33·5	8 34·9	8 10·1	1·4	0·8	7·4	4·3	13·4	7·7
15	8 33·8	8 35·2	8 10·3	1·5	0·9	7·5	4·3	13·5	7·8
16	8 34·0	8 35·4	8 10·6	1·6	0·9	7·6	4·4	13·6	7·8
17	8 34·3	8 35·7	8 10·8	1·7	1·0	7·7	4·4	13·7	7·9
18	8 34·5	8 35·9	8 11·1	1·8	1·0	7·8	4·5	13·8	7·9
19	8 34·8	8 36·2	8 11·3	1·9	1·1	7·9	4·5	13·9	8·0
20	8 35·0	8 36·4	8 11·5	2·0	1·2	8·0	4·6	14·0	8·1
21	8 35·3	8 36·7	8 11·8	2·1	1·2	8·1	4·7	14·1	8·1
22	8 35·5	8 36·9	8 12·0	2·2	1·3	8·2	4·7	14·2	8·2
23	8 35·8	8 37·2	8 12·3	2·3	1·3	8·3	4·8	14·3	8·2
24	8 36·0	8 37·4	8 12·5	2·4	1·4	8·4	4·8	14·4	8·3
25	8 36·3	8 37·7	8 12·7	2·5	1·4	8·5	4·9	14·5	8·3
26	8 36·5	8 37·9	8 13·0	2·6	1·5	8·6	4·9	14·6	8·4
27	8 36·8	8 38·2	8 13·2	2·7	1·6	8·7	5·0	14·7	8·5
28	8 37·0	8 38·4	8 13·4	2·8	1·6	8·8	5·1	14·8	8·5
29	8 37·3	8 38·7	8 13·7	2·9	1·7	8·9	5·1	14·9	8·6
30	8 37·5	8 38·9	8 13·9	3·0	1·7	9·0	5·2	15·0	8·6
31	8 37·8	8 39·2	8 14·2	3·1	1·8	9·1	5·2	15·1	8·7
32	8 38·0	8 39·4	8 14·4	3·2	1·8	9·2	5·3	15·2	8·7
33	8 38·3	8 39·7	8 14·6	3·3	1·9	9·3	5·3	15·3	8·8
34	8 38·5	8 39·9	8 14·9	3·4	2·0	9·4	5·4	15·4	8·9
35	8 38·8	8 40·2	8 15·1	3·5	2·0	9·5	5·5	15·5	8·9
36	8 39·0	8 40·4	8 15·4	3·6	2·1	9·6	5·5	15·6	9·0
37	8 39·3	8 40·7	8 15·6	3·7	2·1	9·7	5·6	15·7	9·0
38	8 39·5	8 40·9	8 15·8	3·8	2·2	9·8	5·6	15·8	9·1
39	8 39·8	8 41·2	8 16·1	3·9	2·2	9·9	5·7	15·9	9·1
40	8 40·0	8 41·4	8 16·3	4·0	2·3	10·0	5·8	16·0	9·2
41	8 40·3	8 41·7	8 16·5	4·1	2·4	10·1	5·8	16·1	9·3
42	8 40·5	8 41·9	8 16·8	4·2	2·4	10·2	5·9	16·2	9·3
43	8 40·8	8 42·2	8 17·0	4·3	2·5	10·3	5·9	16·3	9·4
44	8 41·0	8 42·4	8 17·3	4·4	2·5	10·4	6·0	16·4	9·4
45	8 41·3	8 42·7	8 17·5	4·5	2·6	10·5	6·0	16·5	9·5
46	8 41·5	8 42·9	8 17·7	4·6	2·6	10·6	6·1	16·6	9·5
47	8 41·8	8 43·2	8 18·0	4·7	2·7	10·7	6·2	16·7	9·6
48	8 42·0	8 43·4	8 18·2	4·8	2·8	10·8	6·2	16·8	9·7
49	8 42·3	8 43·7	8 18·5	4·9	2·8	10·9	6·3	16·9	9·7
50	8 42·5	8 43·9	8 18·7	5·0	2·9	11·0	6·3	17·0	9·8
51	8 42·8	8 44·2	8 18·9	5·1	2·9	11·1	6·4	17·1	9·8
52	8 43·0	8 44·4	8 19·2	5·2	3·0	11·2	6·4	17·2	9·9
53	8 43·3	8 44·7	8 19·4	5·3	3·0	11·3	6·5	17·3	9·9
54	8 43·5	8 44·9	8 19·7	5·4	3·1	11·4	6·6	17·4	10·0
55	8 43·8	8 45·2	8 19·9	5·5	3·2	11·5	6·6	17·5	10·1
56	8 44·0	8 45·4	8 20·1	5·6	3·2	11·6	6·7	17·6	10·1
57	8 44·3	8 45·7	8 20·4	5·7	3·3	11·7	6·7	17·7	10·2
58	8 44·5	8 45·9	8 20·6	5·8	3·3	11·8	6·8	17·8	10·2
59	8 44·8	8 46·2	8 20·8	5·9	3·4	11·9	6·8	17·9	10·3
60	8 45·0	8 46·4	8 21·1	6·0	3·5	12·0	6·9	18·0	10·4

35m

m 35	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	8 45·0	8 46·4	8 21·1	0·0	0·0	6·0	3·6	12·0	7·1
01	8 45·3	8 46·7	8 21·3	0·1	0·1	6·1	3·6	12·1	7·2
02	8 45·5	8 46·9	8 21·6	0·2	0·1	6·2	3·7	12·2	7·2
03	8 45·8	8 47·2	8 21·8	0·3	0·2	6·3	3·7	12·3	7·3
04	8 46·0	8 47·4	8 22·0	0·4	0·2	6·4	3·8	12·4	7·3
05	8 46·3	8 47·7	8 22·3	0·5	0·3	6·5	3·8	12·5	7·4
06	8 46·5	8 47·9	8 22·5	0·6	0·4	6·6	3·9	12·6	7·5
07	8 46·8	8 48·2	8 22·8	0·7	0·4	6·7	4·0	12·7	7·5
08	8 47·0	8 48·4	8 23·0	0·8	0·5	6·8	4·0	12·8	7·6
09	8 47·3	8 48·7	8 23·2	0·9	0·5	6·9	4·1	12·9	7·6
10	8 47·5	8 48·9	8 23·5	1·0	0·6	7·0	4·1	13·0	7·7
11	8 47·8	8 49·2	8 23·7	1·1	0·7	7·1	4·2	13·1	7·8
12	8 48·0	8 49·4	8 23·9	1·2	0·7	7·2	4·3	13·2	7·8
13	8 48·3	8 49·7	8 24·2	1·3	0·8	7·3	4·3	13·3	7·9
14	8 48·5	8 49·9	8 24·4	1·4	0·8	7·4	4·4	13·4	7·9
15	8 48·8	8 50·2	8 24·7	1·5	0·9	7·5	4·4	13·5	8·0
16	8 49·0	8 50·4	8 24·9	1·6	0·9	7·6	4·5	13·6	8·0
17	8 49·3	8 50·7	8 25·1	1·7	1·0	7·7	4·6	13·7	8·1
18	8 49·5	8 50·9	8 25·4	1·8	1·1	7·8	4·6	13·8	8·2
19	8 49·8	8 51·2	8 25·6	1·9	1·1	7·9	4·7	13·9	8·2
20	8 50·0	8 51·5	8 25·9	2·0	1·2	8·0	4·7	14·0	8·3
21	8 50·3	8 51·7	8 26·1	2·1	1·2	8·1	4·8	14·1	8·3
22	8 50·5	8 52·0	8 26·3	2·2	1·3	8·2	4·9	14·2	8·4
23	8 50·8	8 52·2	8 26·6	2·3	1·4	8·3	4·9	14·3	8·5
24	8 51·0	8 52·5	8 26·8	2·4	1·4	8·4	5·0	14·4	8·5
25	8 51·3	8 52·7	8 27·0	2·5	1·5	8·5	5·0	14·5	8·6
26	8 51·5	8 53·0	8 27·3	2·6	1·5	8·6	5·1	14·6	8·6
27	8 51·8	8 53·2	8 27·5	2·7	1·6	8·7	5·1	14·7	8·7
28	8 52·0	8 53·5	8 27·8	2·8	1·7	8·8	5·2	14·8	8·8
29	8 52·3	8 53·7	8 28·0	2·9	1·7	8·9	5·3	14·9	8·8
30	8 52·5	8 54·0	8 28·2	3·0	1·8	9·0	5·3	15·0	8·9
31	8 52·8	8 54·2	8 28·5	3·1	1·8	9·1	5·4	15·1	8·9
32	8 53·0	8 54·5	8 28·7	3·2	1·9	9·2	5·4	15·2	9·0
33	8 53·3	8 54·7	8 29·0	3·3	2·0	9·3	5·5	15·3	9·1
34	8 53·5	8 55·0	8 29·2	3·4	2·0	9·4	5·6	15·4	9·1
35	8 53·8	8 55·2	8 29·4	3·5	2·1	9·5	5·6	15·5	9·2
36	8 54·0	8 55·5	8 29·7	3·6	2·1	9·6	5·7	15·6	9·2
37	8 54·3	8 55·7	8 29·9	3·7	2·2	9·7	5·7	15·7	9·3
38	8 54·5	8 56·0	8 30·2	3·8	2·2	9·8	5·8	15·8	9·3
39	8 54·8	8 56·2	8 30·4	3·9	2·3	9·9	5·9	15·9	9·4
40	8 55·0	8 56·5	8 30·6	4·0	2·4	10·0	5·9	16·0	9·5
41	8 55·3	8 56·7	8 30·9	4·1	2·4	10·1	6·0	16·1	9·5
42	8 55·5	8 57·0	8 31·1	4·2	2·5	10·2	6·0	16·2	9·6
43	8 55·8	8 57·2	8 31·3	4·3	2·5	10·3	6·1	16·3	9·6
44	8 56·0	8 57·5	8 31·6	4·4	2·6	10·4	6·2	16·4	9·7
45	8 56·3	8 57·7	8 31·8	4·5	2·7	10·5	6·2	16·5	9·8
46	8 56·5	8 58·0	8 32·1	4·6	2·7	10·6	6·3	16·6	9·8
47	8 56·8	8 58·2	8 32·3	4·7	2·8	10·7	6·3	16·7	9·9
48	8 57·0	8 58·5	8 32·5	4·8	2·8	10·8	6·4	16·8	9·9
49	8 57·3	8 58·7	8 32·8	4·9	2·9	10·9	6·4	16·9	10·0
50	8 57·5	8 59·0	8 33·0	5·0	3·0	11·0	6·5	17·0	10·1
51	8 57·8	8 59·2	8 33·3	5·1	3·0	11·1	6·6	17·1	10·1
52	8 58·0	8 59·5	8 33·5	5·2	3·1	11·2	6·6	17·2	10·2
53	8 58·3	8 59·7	8 33·7	5·3	3·1	11·3	6·7	17·3	10·2
54	8 58·5	9 00·0	8 34·0	5·4	3·2	11·4	6·7	17·4	10·3
55	8 58·8	9 00·2	8 34·2	5·5	3·3	11·5	6·8	17·5	10·4
56	8 59·0	9 00·5	8 34·4	5·6	3·3	11·6	6·9	17·6	10·4
57	8 59·3	9 00·7	8 34·7	5·7	3·4	11·7	6·9	17·7	10·5
58	8 59·5	9 01·0	8 34·9	5·8	3·4	11·8	7·0	17·8	10·5
59	8 59·8	9 01·2	8 35·2	5·9	3·5	11·9	7·0	17·9	10·6
60	9 00·0	9 01·5	8 35·4	6·0	3·6	12·0	7·1	18·0	10·7

36m

m 36	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	9 00·0	9 01·5	8 35·4	0·0	0·0	6·0	3·7	12·0	7·3
01	9 00·3	9 01·7	8 35·6	0·1	0·1	6·1	3·7	12·1	7·4
02	9 00·5	9 02·0	8 35·9	0·2	0·1	6·2	3·8	12·2	7·4
03	9 00·8	9 02·2	8 36·1	0·3	0·2	6·3	3·8	12·3	7·5
04	9 01·0	9 02·5	8 36·4	0·4	0·2	6·4	3·9	12·4	7·5
05	9 01·3	9 02·7	8 36·6	0·5	0·3	6·5	4·0	12·5	7·6
06	9 01·5	9 03·0	8 36·8	0·6	0·4	6·6	4·0	12·6	7·7
07	9 01·8	9 03·2	8 37·1	0·7	0·4	6·7	4·1	12·7	7·7
08	9 02·0	9 03·5	8 37·3	0·8	0·5	6·8	4·1	12·8	7·8
09	9 02·3	9 03·7	8 37·5	0·9	0·5	6·9	4·2	12·9	7·8
10	9 02·5	9 04·0	8 37·8	1·0	0·6	7·0	4·3	13·0	7·9
11	9 02·8	9 04·2	8 38·0	1·1	0·7	7·1	4·3	13·1	8·0
12	9 03·0	9 04·5	8 38·3	1·2	0·7	7·2	4·4	13·2	8·0
13	9 03·3	9 04·7	8 38·5	1·3	0·8	7·3	4·4	13·3	8·1
14	9 03·5	9 05·0	8 38·7	1·4	0·9	7·4	4·5	13·4	8·2
15	9 03·8	9 05·2	8 39·0	1·5	0·9	7·5	4·6	13·5	8·2
16	9 04·0	9 05·5	8 39·2	1·6	1·0	7·6	4·6	13·6	8·3
17	9 04·3	9 05·7	8 39·5	1·7	1·0	7·7	4·7	13·7	8·3
18	9 04·5	9 06·0	8 39·7	1·8	1·1	7·8	4·7	13·8	8·4
19	9 04·8	9 06·2	8 39·9	1·9	1·2	7·9	4·8	13·9	8·5
20	9 05·0	9 06·5	8 40·2	2·0	1·2	8·0	4·9	14·0	8·5
21	9 05·3	9 06·7	8 40·4	2·1	1·3	8·1	4·9	14·1	8·6
22	9 05·5	9 07·0	8 40·6	2·2	1·3	8·2	5·0	14·2	8·6
23	9 05·8	9 07·2	8 40·9	2·3	1·4	8·3	5·0	14·3	8·7
24	9 06·0	9 07·5	8 41·1	2·4	1·5	8·4	5·1	14·4	8·8
25	9 06·3	9 07·7	8 41·4	2·5	1·5	8·5	5·2	14·5	8·8
26	9 06·5	9 08·0	8 41·6	2·6	1·6	8·6	5·2	14·6	8·9
27	9 06·8	9 08·2	8 41·8	2·7	1·6	8·7	5·3	14·7	8·9
28	9 07·0	9 08·5	8 42·1	2·8	1·7	8·8	5·4	14·8	9·0
29	9 07·3	9 08·7	8 42·3	2·9	1·8	8·9	5·4	14·9	9·1
30	9 07·5	9 09·0	8 42·6	3·0	1·8	9·0	5·5	15·0	9·1
31	9 07·8	9 09·2	8 42·8	3·1	1·9	9·1	5·5	15·1	9·2
32	9 08·0	9 09·5	8 43·0	3·2	1·9	9·2	5·6	15·2	9·2
33	9 08·3	9 09·8	8 43·3	3·3	2·0	9·3	5·7	15·3	9·3
34	9 08·5	9 10·0	8 43·5	3·4	2·1	9·4	5·7	15·4	9·4
35	9 08·8	9 10·3	8 43·8	3·5	2·1	9·5	5·8	15·5	9·4
36	9 09·0	9 10·5	8 44·0	3·6	2·2	9·6	5·8	15·6	9·5
37	9 09·3	9 10·8	8 44·2	3·7	2·3	9·7	5·9	15·7	9·6
38	9 09·5	9 11·0	8 44·5	3·8	2·3	9·8	6·0	15·8	9·6
39	9 09·8	9 11·3	8 44·7	3·9	2·4	9·9	6·0	15·9	9·7
40	9 10·0	9 11·5	8 44·9	4·0	2·4	10·0	6·1	16·0	9·7
41	9 10·3	9 11·8	8 45·2	4·1	2·5	10·1	6·1	16·1	9·8
42	9 10·5	9 12·0	8 45·4	4·2	2·6	10·2	6·2	16·2	9·9
43	9 10·8	9 12·3	8 45·7	4·3	2·6	10·3	6·3	16·3	9·9
44	9 11·0	9 12·5	8 45·9	4·4	2·7	10·4	6·3	16·4	10·0
45	9 11·3	9 12·8	8 46·1	4·5	2·7	10·5	6·4	16·5	10·0
46	9 11·5	9 13·0	8 46·4	4·6	2·8	10·6	6·4	16·6	10·1
47	9 11·8	9 13·3	8 46·6	4·7	2·9	10·7	6·5	16·7	10·2
48	9 12·0	9 13·5	8 46·9	4·8	2·9	10·8	6·6	16·8	10·2
49	9 12·3	9 13·8	8 47·1	4·9	3·0	10·9	6·6	16·9	10·3
50	9 12·5	9 14·0	8 47·3	5·0	3·0	11·0	6·7	17·0	10·3
51	9 12·8	9 14·3	8 47·6	5·1	3·1	11·1	6·8	17·1	10·4
52	9 13·0	9 14·5	8 47·8	5·2	3·2	11·2	6·8	17·2	10·5
53	9 13·3	9 14·8	8 48·0	5·3	3·2	11·3	6·9	17·3	10·5
54	9 13·5	9 15·0	8 48·3	5·4	3·3	11·4	6·9	17·4	10·6
55	9 13·8	9 15·3	8 48·5	5·5	3·3	11·5	7·0	17·5	10·6
56	9 14·0	9 15·5	8 48·8	5·6	3·4	11·6	7·1	17·6	10·7
57	9 14·3	9 15·8	8 49·0	5·7	3·5	11·7	7·1	17·7	10·8
58	9 14·5	9 16·0	8 49·2	5·8	3·5	11·8	7·2	17·8	10·8
59	9 14·8	9 16·3	8 49·5	5·9	3·6	11·9	7·2	17·9	10·9
60	9 15·0	9 16·5	8 49·7	6·0	3·7	12·0	7·3	18·0	11·0

37m

m 37	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	9 15·0	9 16·5	8 49·7	0·0	0·0	6·0	3·8	12·0	7·5
01	9 15·3	9 16·8	8 50·0	0·1	0·1	6·1	3·8	12·1	7·6
02	9 15·5	9 17·0	8 50·2	0·2	0·1	6·2	3·9	12·2	7·6
03	9 15·8	9 17·3	8 50·4	0·3	0·2	6·3	3·9	12·3	7·7
04	9 16·0	9 17·5	8 50·7	0·4	0·3	6·4	4·0	12·4	7·8
05	9 16·3	9 17·8	8 50·9	0·5	0·3	6·5	4·1	12·5	7·8
06	9 16·5	9 18·0	8 51·1	0·6	0·4	6·6	4·1	12·6	7·9
07	9 16·8	9 18·3	8 51·4	0·7	0·4	6·7	4·2	12·7	7·9
08	9 17·0	9 18·5	8 51·6	0·8	0·5	6·8	4·3	12·8	8·0
09	9 17·3	9 18·8	8 51·9	0·9	0·6	6·9	4·3	12·9	8·1
10	9 17·5	9 19·0	8 52·1	1·0	0·6	7·0	4·4	13·0	8·1
11	9 17·8	9 19·3	8 52·3	1·1	0·7	7·1	4·4	13·1	8·2
12	9 18·0	9 19·5	8 52·6	1·2	0·8	7·2	4·5	13·2	8·3
13	9 18·3	9 19·8	8 52·8	1·3	0·8	7·3	4·6	13·3	8·3
14	9 18·5	9 20·0	8 53·1	1·4	0·9	7·4	4·6	13·4	8·4
15	9 18·8	9 20·3	8 53·3	1·5	0·9	7·5	4·7	13·5	8·4
16	9 19·0	9 20·5	8 53·5	1·6	1·0	7·6	4·8	13·6	8·5
17	9 19·3	9 20·8	8 53·8	1·7	1·1	7·7	4·8	13·7	8·6
18	9 19·5	9 21·0	8 54·0	1·8	1·1	7·8	4·9	13·8	8·6
19	9 19·8	9 21·3	8 54·3	1·9	1·2	7·9	4·9	13·9	8·7
20	9 20·0	9 21·5	8 54·5	2·0	1·3	8·0	5·0	14·0	8·8
21	9 20·3	9 21·8	8 54·7	2·1	1·3	8·1	5·1	14·1	8·8
22	9 20·5	9 22·0	8 55·0	2·2	1·4	8·2	5·1	14·2	8·9
23	9 20·8	9 22·3	8 55·2	2·3	1·4	8·3	5·2	14·3	8·9
24	9 21·0	9 22·5	8 55·4	2·4	1·5	8·4	5·3	14·4	9·0
25	9 21·3	9 22·8	8 55·7	2·5	1·6	8·5	5·3	14·5	9·1
26	9 21·5	9 23·0	8 55·9	2·6	1·6	8·6	5·4	14·6	9·1
27	9 21·8	9 23·3	8 56·2	2·7	1·7	8·7	5·4	14·7	9·2
28	9 22·0	9 23·5	8 56·4	2·8	1·8	8·8	5·5	14·8	9·3
29	9 22·3	9 23·8	8 56·6	2·9	1·8	8·9	5·6	14·9	9·3
30	9 22·5	9 24·0	8 56·9	3·0	1·9	9·0	5·6	15·0	9·4
31	9 22·8	9 24·3	8 57·1	3·1	1·9	9·1	5·7	15·1	9·4
32	9 23·0	9 24·5	8 57·4	3·2	2·0	9·2	5·8	15·2	9·5
33	9 23·3	9 24·8	8 57·6	3·3	2·1	9·3	5·8	15·3	9·6
34	9 23·5	9 25·0	8 57·8	3·4	2·1	9·4	5·9	15·4	9·6
35	9 23·8	9 25·3	8 58·1	3·5	2·2	9·5	5·9	15·5	9·7
36	9 24·0	9 25·5	8 58·3	3·6	2·3	9·6	6·0	15·6	9·8
37	9 24·3	9 25·8	8 58·5	3·7	2·3	9·7	6·1	15·7	9·8
38	9 24·5	9 26·0	8 58·8	3·8	2·4	9·8	6·1	15·8	9·9
39	9 24·8	9 26·3	8 59·0	3·9	2·4	9·9	6·2	15·9	9·9
40	9 25·0	9 26·5	8 59·3	4·0	2·5	10·0	6·3	16·0	10·0
41	9 25·3	9 26·8	8 59·5	4·1	2·6	10·1	6·3	16·1	10·1
42	9 25·5	9 27·0	8 59·7	4·2	2·6	10·2	6·4	16·2	10·1
43	9 25·8	9 27·3	9 00·0	4·3	2·7	10·3	6·4	16·3	10·2
44	9 26·0	9 27·5	9 00·2	4·4	2·8	10·4	6·5	16·4	10·3
45	9 26·3	9 27·8	9 00·5	4·5	2·8	10·5	6·6	16·5	10·3
46	9 26·5	9 28·1	9 00·7	4·6	2·9	10·6	6·6	16·6	10·4
47	9 26·8	9 28·3	9 00·9	4·7	2·9	10·7	6·7	16·7	10·4
48	9 27·0	9 28·6	9 01·2	4·8	3·0	10·8	6·8	16·8	10·5
49	9 27·3	9 28·8	9 01·4	4·9	3·1	10·9	6·8	16·9	10·6
50	9 27·5	9 29·1	9 01·6	5·0	3·1	11·0	6·9	17·0	10·6
51	9 27·8	9 29·3	9 01·9	5·1	3·2	11·1	6·9	17·1	10·7
52	9 28·0	9 29·6	9 02·1	5·2	3·3	11·2	7·0	17·2	10·8
53	9 28·3	9 29·8	9 02·4	5·3	3·3	11·3	7·1	17·3	10·8
54	9 28·5	9 30·1	9 02·6	5·4	3·4	11·4	7·1	17·4	10·9
55	9 28·8	9 30·3	9 02·8	5·5	3·4	11·5	7·2	17·5	10·9
56	9 29·0	9 30·6	9 03·1	5·6	3·5	11·6	7·3	17·6	11·0
57	9 29·3	9 30·8	9 03·3	5·7	3·6	11·7	7·3	17·7	11·1
58	9 29·5	9 31·1	9 03·6	5·8	3·6	11·8	7·4	17·8	11·1
59	9 29·8	9 31·3	9 03·8	5·9	3·7	11·9	7·4	17·9	11·2
60	9 30·0	9 31·6	9 04·0	6·0	3·8	12·0	7·5	18·0	11·3

38m

m 38	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	9 30·0	9 31·6	9 04·0	0·0	0·0	6·0	3·9	12·0	7·7
01	9 30·3	9 31·8	9 04·3	0·1	0·1	6·1	3·9	12·1	7·8
02	9 30·5	9 32·1	9 04·5	0·2	0·1	6·2	4·0	12·2	7·8
03	9 30·8	9 32·3	9 04·7	0·3	0·2	6·3	4·0	12·3	7·9
04	9 31·0	9 32·6	9 05·0	0·4	0·3	6·4	4·1	12·4	8·0
05	9 31·3	9 32·8	9 05·2	0·5	0·3	6·5	4·2	12·5	8·0
06	9 31·5	9 33·1	9 05·5	0·6	0·4	6·6	4·2	12·6	8·1
07	9 31·8	9 33·3	9 05·7	0·7	0·4	6·7	4·3	12·7	8·1
08	9 32·0	9 33·6	9 05·9	0·8	0·5	6·8	4·4	12·8	8·2
09	9 32·3	9 33·8	9 06·2	0·9	0·6	6·9	4·4	12·9	8·3
10	9 32·5	9 34·1	9 06·4	1·0	0·6	7·0	4·5	13·0	8·3
11	9 32·8	9 34·3	9 06·7	1·1	0·7	7·1	4·6	13·1	8·4
12	9 33·0	9 34·6	9 06·9	1·2	0·8	7·2	4·6	13·2	8·5
13	9 33·3	9 34·8	9 07·1	1·3	0·8	7·3	4·7	13·3	8·5
14	9 33·5	9 35·1	9 07·4	1·4	0·9	7·4	4·7	13·4	8·6
15	9 33·8	9 35·3	9 07·6	1·5	1·0	7·5	4·8	13·5	8·7
16	9 34·0	9 35·6	9 07·9	1·6	1·0	7·6	4·9	13·6	8·7
17	9 34·3	9 35·8	9 08·1	1·7	1·1	7·7	4·9	13·7	8·8
18	9 34·5	9 36·1	9 08·3	1·8	1·2	7·8	5·0	13·8	8·9
19	9 34·8	9 36·3	9 08·6	1·9	1·2	7·9	5·1	13·9	8·9
20	9 35·0	9 36·6	9 08·8	2·0	1·3	8·0	5·1	14·0	9·0
21	9 35·3	9 36·8	9 09·0	2·1	1·3	8·1	5·2	14·1	9·0
22	9 35·5	9 37·1	9 09·3	2·2	1·4	8·2	5·3	14·2	9·1
23	9 35·8	9 37·3	9 09·5	2·3	1·5	8·3	5·3	14·3	9·2
24	9 36·0	9 37·6	9 09·8	2·4	1·5	8·4	5·4	14·4	9·2
25	9 36·3	9 37·8	9 10·0	2·5	1·6	8·5	5·5	14·5	9·3
26	9 36·5	9 38·1	9 10·2	2·6	1·7	8·6	5·5	14·6	9·4
27	9 36·8	9 38·3	9 10·5	2·7	1·7	8·7	5·6	14·7	9·4
28	9 37·0	9 38·6	9 10·7	2·8	1·8	8·8	5·6	14·8	9·5
29	9 37·3	9 38·8	9 11·0	2·9	1·9	8·9	5·7	14·9	9·6
30	9 37·5	9 39·1	9 11·2	3·0	1·9	9·0	5·8	15·0	9·6
31	9 37·8	9 39·3	9 11·4	3·1	2·0	9·1	5·8	15·1	9·7
32	9 38·0	9 39·6	9 11·7	3·2	2·1	9·2	5·9	15·2	9·8
33	9 38·3	9 39·8	9 11·9	3·3	2·1	9·3	6·0	15·3	9·8
34	9 38·5	9 40·1	9 12·1	3·4	2·2	9·4	6·0	15·4	9·9
35	9 38·8	9 40·3	9 12·4	3·5	2·2	9·5	6·1	15·5	9·9
36	9 39·0	9 40·6	9 12·6	3·6	2·3	9·6	6·2	15·6	10·0
37	9 39·3	9 40·8	9 12·9	3·7	2·4	9·7	6·2	15·7	10·1
38	9 39·5	9 41·1	9 13·1	3·8	2·4	9·8	6·3	15·8	10·1
39	9 39·8	9 41·3	9 13·3	3·9	2·5	9·9	6·4	15·9	10·2
40	9 40·0	9 41·6	9 13·6	4·0	2·6	10·0	6·4	16·0	10·3
41	9 40·3	9 41·8	9 13·8	4·1	2·6	10·1	6·5	16·1	10·3
42	9 40·5	9 42·1	9 14·1	4·2	2·7	10·2	6·5	16·2	10·4
43	9 40·8	9 42·3	9 14·3	4·3	2·8	10·3	6·6	16·3	10·5
44	9 41·0	9 42·6	9 14·5	4·4	2·8	10·4	6·7	16·4	10·5
45	9 41·3	9 42·8	9 14·8	4·5	2·9	10·5	6·7	16·5	10·6
46	9 41·5	9 43·1	9 15·0	4·6	3·0	10·6	6·8	16·6	10·7
47	9 41·8	9 43·3	9 15·2	4·7	3·0	10·7	6·9	16·7	10·7
48	9 42·0	9 43·6	9 15·5	4·8	3·1	10·8	6·9	16·8	10·8
49	9 42·3	9 43·8	9 15·7	4·9	3·1	10·9	7·0	16·9	10·8
50	9 42·5	9 44·1	9 16·0	5·0	3·2	11·0	7·1	17·0	10·9
51	9 42·8	9 44·3	9 16·2	5·1	3·3	11·1	7·1	17·1	11·0
52	9 43·0	9 44·6	9 16·4	5·2	3·3	11·2	7·2	17·2	11·0
53	9 43·3	9 44·8	9 16·7	5·3	3·4	11·3	7·3	17·3	11·1
54	9 43·5	9 45·1	9 16·9	5·4	3·5	11·4	7·3	17·4	11·2
55	9 43·8	9 45·3	9 17·2	5·5	3·5	11·5	7·4	17·5	11·2
56	9 44·0	9 45·6	9 17·4	5·6	3·6	11·6	7·4	17·6	11·3
57	9 44·3	9 45·8	9 17·6	5·7	3·7	11·7	7·5	17·7	11·4
58	9 44·5	9 46·1	9 17·9	5·8	3·7	11·8	7·6	17·8	11·4
59	9 44·8	9 46·4	9 18·1	5·9	3·8	11·9	7·6	17·9	11·5
60	9 45·0	9 46·6	9 18·4	6·0	3·9	12·0	7·7	18·0	11·6

39m

m 39	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	9 45·0	9 46·6	9 18·4	0·0	0·0	6·0	4·0	12·0	7·9
01	9 45·3	9 46·9	9 18·6	0·1	0·1	6·1	4·0	12·1	8·0
02	9 45·5	9 47·1	9 18·8	0·2	0·1	6·2	4·1	12·2	8·0
03	9 45·8	9 47·4	9 19·1	0·3	0·2	6·3	4·1	12·3	8·1
04	9 46·0	9 47·6	9 19·3	0·4	0·3	6·4	4·2	12·4	8·2
05	9 46·3	9 47·9	9 19·5	0·5	0·3	6·5	4·3	12·5	8·2
06	9 46·5	9 48·1	9 19·8	0·6	0·4	6·6	4·3	12·6	8·3
07	9 46·8	9 48·4	9 20·0	0·7	0·5	6·7	4·4	12·7	8·4
08	9 47·0	9 48·6	9 20·3	0·8	0·5	6·8	4·5	12·8	8·4
09	9 47·3	9 48·9	9 20·5	0·9	0·6	6·9	4·5	12·9	8·5
10	9 47·5	9 49·1	9 20·7	1·0	0·7	7·0	4·6	13·0	8·6
11	9 47·8	9 49·4	9 21·0	1·1	0·7	7·1	4·7	13·1	8·6
12	9 48·0	9 49·6	9 21·2	1·2	0·8	7·2	4·7	13·2	8·7
13	9 48·3	9 49·9	9 21·5	1·3	0·9	7·3	4·8	13·3	8·8
14	9 48·5	9 50·1	9 21·7	1·4	0·9	7·4	4·9	13·4	8·8
15	9 48·8	9 50·4	9 21·9	1·5	1·0	7·5	4·9	13·5	8·9
16	9 49·0	9 50·6	9 22·2	1·6	1·1	7·6	5·0	13·6	9·0
17	9 49·3	9 50·9	9 22·4	1·7	1·1	7·7	5·1	13·7	9·0
18	9 49·5	9 51·1	9 22·6	1·8	1·2	7·8	5·1	13·8	9·1
19	9 49·8	9 51·4	9 22·9	1·9	1·3	7·9	5·2	13·9	9·2
20	9 50·0	9 51·6	9 23·1	2·0	1·3	8·0	5·3	14·0	9·2
21	9 50·3	9 51·9	9 23·4	2·1	1·4	8·1	5·3	14·1	9·3
22	9 50·5	9 52·1	9 23·6	2·2	1·4	8·2	5·4	14·2	9·3
23	9 50·8	9 52·4	9 23·8	2·3	1·5	8·3	5·5	14·3	9·4
24	9 51·0	9 52·6	9 24·1	2·4	1·6	8·4	5·5	14·4	9·5
25	9 51·3	9 52·9	9 24·3	2·5	1·6	8·5	5·6	14·5	9·5
26	9 51·5	9 53·1	9 24·6	2·6	1·7	8·6	5·7	14·6	9·6
27	9 51·8	9 53·4	9 24·8	2·7	1·8	8·7	5·7	14·7	9·7
28	9 52·0	9 53·6	9 25·0	2·8	1·8	8·8	5·8	14·8	9·7
29	9 52·3	9 53·9	9 25·3	2·9	1·9	8·9	5·9	14·9	9·8
30	9 52·5	9 54·1	9 25·5	3·0	2·0	9·0	5·9	15·0	9·9
31	9 52·8	9 54·4	9 25·7	3·1	2·0	9·1	6·0	15·1	9·9
32	9 53·0	9 54·6	9 26·0	3·2	2·1	9·2	6·1	15·2	10·0
33	9 53·3	9 54·9	9 26·2	3·3	2·2	9·3	6·1	15·3	10·1
34	9 53·5	9 55·1	9 26·5	3·4	2·2	9·4	6·2	15·4	10·1
35	9 53·8	9 55·4	9 26·7	3·5	2·3	9·5	6·3	15·5	10·2
36	9 54·0	9 55·6	9 26·9	3·6	2·4	9·6	6·3	15·6	10·3
37	9 54·3	9 55·9	9 27·2	3·7	2·4	9·7	6·4	15·7	10·3
38	9 54·5	9 56·1	9 27·4	3·8	2·5	9·8	6·5	15·8	10·4
39	9 54·8	9 56·4	9 27·7	3·9	2·6	9·9	6·5	15·9	10·5
40	9 55·0	9 56·6	9 27·9	4·0	2·6	10·0	6·6	16·0	10·5
41	9 55·3	9 56·9	9 28·1	4·1	2·7	10·1	6·6	16·1	10·6
42	9 55·5	9 57·1	9 28·4	4·2	2·8	10·2	6·7	16·2	10·7
43	9 55·8	9 57·4	9 28·6	4·3	2·8	10·3	6·8	16·3	10·7
44	9 56·0	9 57·6	9 28·8	4·4	2·9	10·4	6·8	16·4	10·8
45	9 56·3	9 57·9	9 29·1	4·5	3·0	10·5	6·9	16·5	10·9
46	9 56·5	9 58·1	9 29·3	4·6	3·0	10·6	7·0	16·6	10·9
47	9 56·8	9 58·4	9 29·6	4·7	3·1	10·7	7·0	16·7	11·0
48	9 57·0	9 58·6	9 29·8	4·8	3·2	10·8	7·1	16·8	11·1
49	9 57·3	9 58·9	9 30·0	4·9	3·2	10·9	7·2	16·9	11·1
50	9 57·5	9 59·1	9 30·3	5·0	3·3	11·0	7·2	17·0	11·2
51	9 57·8	9 59·4	9 30·5	5·1	3·4	11·1	7·3	17·1	11·3
52	9 58·0	9 59·6	9 30·8	5·2	3·4	11·2	7·4	17·2	11·3
53	9 58·3	9 59·9	9 31·0	5·3	3·5	11·3	7·4	17·3	11·4
54	9 58·5	10 00·1	9 31·2	5·4	3·6	11·4	7·5	17·4	11·5
55	9 58·8	10 00·4	9 31·5	5·5	3·6	11·5	7·6	17·5	11·5
56	9 59·0	10 00·6	9 31·7	5·6	3·7	11·6	7·6	17·6	11·6
57	9 59·3	10 00·9	9 32·0	5·7	3·8	11·7	7·7	17·7	11·7
58	9 59·5	10 01·1	9 32·2	5·8	3·8	11·8	7·8	17·8	11·7
59	9 59·8	10 01·4	9 32·4	5·9	3·9	11·9	7·8	17·9	11·8
60	10 00·0	10 01·6	9 32·7	6·0	4·0	12·0	7·9	18·0	11·9

40m

m 40	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	10 00·0	10 01·6	9 32·7	0·0	0·0	6·0	4·1	12·0	8·1
01	10 00·3	10 01·9	9 32·9	0·1	0·1	6·1	4·1	12·1	8·2
02	10 00·5	10 02·1	9 33·1	0·2	0·1	6·2	4·2	12·2	8·2
03	10 00·8	10 02·4	9 33·4	0·3	0·2	6·3	4·3	12·3	8·3
04	10 01·0	10 02·6	9 33·6	0·4	0·3	6·4	4·3	12·4	8·4
05	10 01·3	10 02·9	9 33·9	0·5	0·3	6·5	4·4	12·5	8·4
06	10 01·5	10 03·1	9 34·1	0·6	0·4	6·6	4·5	12·6	8·5
07	10 01·8	10 03·4	9 34·3	0·7	0·5	6·7	4·5	12·7	8·6
08	10 02·0	10 03·6	9 34·6	0·8	0·5	6·8	4·6	12·8	8·6
09	10 02·3	10 03·9	9 34·8	0·9	0·6	6·9	4·7	12·9	8·7
10	10 02·5	10 04·1	9 35·1	1·0	0·7	7·0	4·7	13·0	8·8
11	10 02·8	10 04·4	9 35·3	1·1	0·7	7·1	4·8	13·1	8·8
12	10 03·0	10 04·7	9 35·5	1·2	0·8	7·2	4·9	13·2	8·9
13	10 03·3	10 04·9	9 35·8	1·3	0·9	7·3	4·9	13·3	9·0
14	10 03·5	10 05·2	9 36·0	1·4	0·9	7·4	5·0	13·4	9·0
15	10 03·8	10 05·4	9 36·2	1·5	1·0	7·5	5·1	13·5	9·1
16	10 04·0	10 05·7	9 36·5	1·6	1·1	7·6	5·1	13·6	9·2
17	10 04·3	10 05·9	9 36·7	1·7	1·1	7·7	5·2	13·7	9·2
18	10 04·5	10 06·2	9 37·0	1·8	1·2	7·8	5·3	13·8	9·3
19	10 04·8	10 06·4	9 37·2	1·9	1·3	7·9	5·3	13·9	9·4
20	10 05·0	10 06·7	9 37·4	2·0	1·4	8·0	5·4	14·0	9·5
21	10 05·3	10 06·9	9 37·7	2·1	1·4	8·1	5·5	14·1	9·5
22	10 05·5	10 07·2	9 37·9	2·2	1·5	8·2	5·5	14·2	9·6
23	10 05·8	10 07·4	9 38·2	2·3	1·6	8·3	5·6	14·3	9·7
24	10 06·0	10 07·7	9 38·4	2·4	1·6	8·4	5·7	14·4	9·7
25	10 06·3	10 07·9	9 38·6	2·5	1·7	8·5	5·7	14·5	9·8
26	10 06·5	10 08·2	9 38·9	2·6	1·8	8·6	5·8	14·6	9·9
27	10 06·8	10 08·4	9 39·1	2·7	1·8	8·7	5·9	14·7	9·9
28	10 07·0	10 08·7	9 39·3	2·8	1·9	8·8	5·9	14·8	10·0
29	10 07·3	10 08·9	9 39·6	2·9	2·0	8·9	6·0	14·9	10·1
30	10 07·5	10 09·2	9 39·8	3·0	2·0	9·0	6·1	15·0	10·1
31	10 07·8	10 09·4	9 40·1	3·1	2·1	9·1	6·1	15·1	10·2
32	10 08·0	10 09·7	9 40·3	3·2	2·2	9·2	6·2	15·2	10·3
33	10 08·3	10 09·9	9 40·5	3·3	2·2	9·3	6·3	15·3	10·3
34	10 08·5	10 10·2	9 40·8	3·4	2·3	9·4	6·3	15·4	10·4
35	10 08·8	10 10·4	9 41·0	3·5	2·4	9·5	6·4	15·5	10·5
36	10 09·0	10 10·7	9 41·3	3·6	2·4	9·6	6·5	15·6	10·5
37	10 09·3	10 10·9	9 41·5	3·7	2·5	9·7	6·5	15·7	10·6
38	10 09·5	10 11·2	9 41·7	3·8	2·6	9·8	6·6	15·8	10·7
39	10 09·8	10 11·4	9 42·0	3·9	2·6	9·9	6·7	15·9	10·7
40	10 10·0	10 11·7	9 42·2	4·0	2·7	10·0	6·8	16·0	10·8
41	10 10·3	10 11·9	9 42·4	4·1	2·8	10·1	6·8	16·1	10·9
42	10 10·5	10 12·2	9 42·7	4·2	2·8	10·2	6·9	16·2	10·9
43	10 10·8	10 12·4	9 42·9	4·3	2·9	10·3	7·0	16·3	11·0
44	10 11·0	10 12·7	9 43·2	4·4	3·0	10·4	7·0	16·4	11·1
45	10 11·3	10 12·9	9 43·4	4·5	3·0	10·5	7·1	16·5	11·1
46	10 11·5	10 13·2	9 43·6	4·6	3·1	10·6	7·2	16·6	11·2
47	10 11·8	10 13·4	9 43·9	4·7	3·2	10·7	7·2	16·7	11·3
48	10 12·0	10 13·7	9 44·1	4·8	3·2	10·8	7·3	16·8	11·3
49	10 12·3	10 13·9	9 44·4	4·9	3·3	10·9	7·4	16·9	11·4
50	10 12·5	10 14·2	9 44·6	5·0	3·4	11·0	7·4	17·0	11·5
51	10 12·8	10 14·4	9 44·8	5·1	3·4	11·1	7·5	17·1	11·5
52	10 13·0	10 14·7	9 45·1	5·2	3·5	11·2	7·6	17·2	11·6
53	10 13·3	10 14·9	9 45·3	5·3	3·6	11·3	7·6	17·3	11·7
54	10 13·5	10 15·2	9 45·6	5·4	3·6	11·4	7·7	17·4	11·7
55	10 13·8	10 15·4	9 45·8	5·5	3·7	11·5	7·8	17·5	11·8
56	10 14·0	10 15·7	9 46·0	5·6	3·8	11·6	7·8	17·6	11·9
57	10 14·3	10 15·9	9 46·3	5·7	3·8	11·7	7·9	17·7	11·9
58	10 14·5	10 16·2	9 46·5	5·8	3·9	11·8	8·0	17·8	12·0
59	10 14·8	10 16·4	9 46·7	5·9	4·0	11·9	8·0	17·9	12·1
60	10 15·0	10 16·7	9 47·0	6·0	4·1	12·0	8·1	18·0	12·2

41m

m 41	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	10 15·0	10 16·7	9 47·0	0·0	0·0	6·0	4·2	12·0	8·3
01	10 15·3	10 16·9	9 47·2	0·1	0·1	6·1	4·2	12·1	8·4
02	10 15·5	10 17·2	9 47·5	0·2	0·1	6·2	4·3	12·2	8·4
03	10 15·8	10 17·4	9 47·7	0·3	0·2	6·3	4·4	12·3	8·5
04	10 16·0	10 17·7	9 47·9	0·4	0·3	6·4	4·4	12·4	8·6
05	10 16·3	10 17·9	9 48·2	0·5	0·3	6·5	4·5	12·5	8·6
06	10 16·5	10 18·2	9 48·4	0·6	0·4	6·6	4·6	12·6	8·7
07	10 16·8	10 18·4	9 48·7	0·7	0·5	6·7	4·6	12·7	8·8
08	10 17·0	10 18·7	9 48·9	0·8	0·6	6·8	4·7	12·8	8·9
09	10 17·3	10 18·9	9 49·1	0·9	0·6	6·9	4·8	12·9	8·9
10	10 17·5	10 19·2	9 49·4	1·0	0·7	7·0	4·8	13·0	9·0
11	10 17·8	10 19·4	9 49·6	1·1	0·8	7·1	4·9	13·1	9·1
12	10 18·0	10 19·7	9 49·8	1·2	0·8	7·2	5·0	13·2	9·1
13	10 18·3	10 19·9	9 50·1	1·3	0·9	7·3	5·0	13·3	9·2
14	10 18·5	10 20·2	9 50·3	1·4	1·0	7·4	5·1	13·4	9·3
15	10 18·8	10 20·4	9 50·6	1·5	1·0	7·5	5·2	13·5	9·3
16	10 19·0	10 20·7	9 50·8	1·6	1·1	7·6	5·3	13·6	9·4
17	10 19·3	10 20·9	9 51·0	1·7	1·2	7·7	5·3	13·7	9·5
18	10 19·5	10 21·2	9 51·3	1·8	1·2	7·8	5·4	13·8	9·5
19	10 19·8	10 21·4	9 51·5	1·9	1·3	7·9	5·5	13·9	9·6
20	10 20·0	10 21·7	9 51·8	2·0	1·4	8·0	5·5	14·0	9·7
21	10 20·3	10 21·9	9 52·0	2·1	1·5	8·1	5·6	14·1	9·8
22	10 20·5	10 22·2	9 52·2	2·2	1·5	8·2	5·7	14·2	9·8
23	10 20·8	10 22·4	9 52·5	2·3	1·6	8·3	5·7	14·3	9·9
24	10 21·0	10 22·7	9 52·7	2·4	1·7	8·4	5·8	14·4	10·0
25	10 21·3	10 23·0	9 52·9	2·5	1·7	8·5	5·9	14·5	10·0
26	10 21·5	10 23·2	9 53·2	2·6	1·8	8·6	5·9	14·6	10·1
27	10 21·8	10 23·5	9 53·4	2·7	1·9	8·7	6·0	14·7	10·2
28	10 22·0	10 23·7	9 53·7	2·8	1·9	8·8	6·1	14·8	10·2
29	10 22·3	10 24·0	9 53·9	2·9	2·0	8·9	6·2	14·9	10·3
30	10 22·5	10 24·2	9 54·1	3·0	2·1	9·0	6·2	15·0	10·4
31	10 22·8	10 24·5	9 54·4	3·1	2·1	9·1	6·3	15·1	10·4
32	10 23·0	10 24·7	9 54·6	3·2	2·2	9·2	6·4	15·2	10·5
33	10 23·3	10 25·0	9 54·9	3·3	2·3	9·3	6·4	15·3	10·6
34	10 23·5	10 25·2	9 55·1	3·4	2·4	9·4	6·5	15·4	10·7
35	10 23·8	10 25·5	9 55·3	3·5	2·4	9·5	6·6	15·5	10·7
36	10 24·0	10 25·7	9 55·6	3·6	2·5	9·6	6·6	15·6	10·8
37	10 24·3	10 26·0	9 55·8	3·7	2·6	9·7	6·7	15·7	10·9
38	10 24·5	10 26·2	9 56·1	3·8	2·6	9·8	6·8	15·8	10·9
39	10 24·8	10 26·5	9 56·3	3·9	2·7	9·9	6·8	15·9	11·0
40	10 25·0	10 26·7	9 56·5	4·0	2·8	10·0	6·9	16·0	11·1
41	10 25·3	10 27·0	9 56·8	4·1	2·8	10·1	7·0	16·1	11·1
42	10 25·5	10 27·2	9 57·0	4·2	2·9	10·2	7·1	16·2	11·2
43	10 25·8	10 27·5	9 57·2	4·3	3·0	10·3	7·1	16·3	11·3
44	10 26·0	10 27·7	9 57·5	4·4	3·0	10·4	7·2	16·4	11·3
45	10 26·3	10 28·0	9 57·7	4·5	3·1	10·5	7·3	16·5	11·4
46	10 26·5	10 28·2	9 58·0	4·6	3·2	10·6	7·3	16·6	11·5
47	10 26·8	10 28·5	9 58·2	4·7	3·3	10·7	7·4	16·7	11·6
48	10 27·0	10 28·7	9 58·4	4·8	3·3	10·8	7·5	16·8	11·6
49	10 27·3	10 29·0	9 58·7	4·9	3·4	10·9	7·5	16·9	11·7
50	10 27·5	10 29·2	9 58·9	5·0	3·5	11·0	7·6	17·0	11·8
51	10 27·8	10 29·5	9 59·2	5·1	3·5	11·1	7·7	17·1	11·8
52	10 28·0	10 29·7	9 59·4	5·2	3·6	11·2	7·7	17·2	11·9
53	10 28·3	10 30·0	9 59·6	5·3	3·7	11·3	7·8	17·3	12·0
54	10 28·5	10 30·2	9 59·9	5·4	3·7	11·4	7·9	17·4	12·0
55	10 28·8	10 30·5	10 00·1	5·5	3·8	11·5	8·0	17·5	12·1
56	10 29·0	10 30·7	10 00·3	5·6	3·9	11·6	8·0	17·6	12·2
57	10 29·3	10 31·0	10 00·6	5·7	3·9	11·7	8·1	17·7	12·2
58	10 29·5	10 31·2	10 00·8	5·8	4·0	11·8	8·2	17·8	12·3
59	10 29·8	10 31·5	10 01·1	5·9	4·1	11·9	8·2	17·9	12·4
60	10 30·0	10 31·7	10 01·3	6·0	4·2	12·0	8·3	18·0	12·5

42m

m 42	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	10 30·0	10 31·7	10 01·3	0·0	0·0	6·0	4·3	12·0	8·5
01	10 30·3	10 32·0	10 01·5	0·1	0·1	6·1	4·3	12·1	8·6
02	10 30·5	10 32·2	10 01·8	0·2	0·1	6·2	4·4	12·2	8·6
03	10 30·8	10 32·5	10 02·0	0·3	0·2	6·3	4·5	12·3	8·7
04	10 31·0	10 32·7	10 02·3	0·4	0·3	6·4	4·5	12·4	8·8
05	10 31·3	10 33·0	10 02·5	0·5	0·4	6·5	4·6	12·5	8·9
06	10 31·5	10 33·2	10 02·7	0·6	0·4	6·6	4·7	12·6	8·9
07	10 31·8	10 33·5	10 03·0	0·7	0·5	6·7	4·7	12·7	9·0
08	10 32·0	10 33·7	10 03·2	0·8	0·6	6·8	4·8	12·8	9·1
09	10 32·3	10 34·0	10 03·4	0·9	0·6	6·9	4·9	12·9	9·1
10	10 32·5	10 34·2	10 03·7	1·0	0·7	7·0	5·0	13·0	9·2
11	10 32·8	10 34·5	10 03·9	1·1	0·8	7·1	5·0	13·1	9·3
12	10 33·0	10 34·7	10 04·2	1·2	0·9	7·2	5·1	13·2	9·4
13	10 33·3	10 35·0	10 04·4	1·3	0·9	7·3	5·2	13·3	9·4
14	10 33·5	10 35·2	10 04·6	1·4	1·0	7·4	5·2	13·4	9·5
15	10 33·8	10 35·5	10 04·9	1·5	1·1	7·5	5·3	13·5	9·6
16	10 34·0	10 35·7	10 05·1	1·6	1·1	7·6	5·4	13·6	9·6
17	10 34·3	10 36·0	10 05·4	1·7	1·2	7·7	5·5	13·7	9·7
18	10 34·5	10 36·2	10 05·6	1·8	1·3	7·8	5·5	13·8	9·8
19	10 34·8	10 36·5	10 05·8	1·9	1·3	7·9	5·6	13·9	9·8
20	10 35·0	10 36·7	10 06·1	2·0	1·4	8·0	5·7	14·0	9·9
21	10 35·3	10 37·0	10 06·3	2·1	1·5	8·1	5·7	14·1	10·0
22	10 35·5	10 37·2	10 06·5	2·2	1·6	8·2	5·8	14·2	10·1
23	10 35·8	10 37·5	10 06·8	2·3	1·6	8·3	5·9	14·3	10·1
24	10 36·0	10 37·7	10 07·0	2·4	1·7	8·4	6·0	14·4	10·2
25	10 36·3	10 38·0	10 07·3	2·5	1·8	8·5	6·0	14·5	10·3
26	10 36·5	10 38·2	10 07·5	2·6	1·8	8·6	6·1	14·6	10·3
27	10 36·8	10 38·5	10 07·7	2·7	1·9	8·7	6·2	14·7	10·4
28	10 37·0	10 38·7	10 08·0	2·8	2·0	8·8	6·2	14·8	10·5
29	10 37·3	10 39·0	10 08·2	2·9	2·1	8·9	6·3	14·9	10·6
30	10 37·5	10 39·2	10 08·5	3·0	2·1	9·0	6·4	15·0	10·6
31	10 37·8	10 39·5	10 08·7	3·1	2·2	9·1	6·4	15·1	10·7
32	10 38·0	10 39·7	10 08·9	3·2	2·3	9·2	6·5	15·2	10·8
33	10 38·3	10 40·0	10 09·2	3·3	2·3	9·3	6·6	15·3	10·8
34	10 38·5	10 40·2	10 09·4	3·4	2·4	9·4	6·7	15·4	10·9
35	10 38·8	10 40·5	10 09·7	3·5	2·5	9·5	6·7	15·5	11·0
36	10 39·0	10 40·7	10 09·9	3·6	2·6	9·6	6·8	15·6	11·1
37	10 39·3	10 41·0	10 10·1	3·7	2·6	9·7	6·9	15·7	11·1
38	10 39·5	10 41·3	10 10·4	3·8	2·7	9·8	6·9	15·8	11·2
39	10 39·8	10 41·5	10 10·6	3·9	2·8	9·9	7·0	15·9	11·3
40	10 40·0	10 41·8	10 10·8	4·0	2·8	10·0	7·1	16·0	11·3
41	10 40·3	10 42·0	10 11·1	4·1	2·9	10·1	7·2	16·1	11·4
42	10 40·5	10 42·3	10 11·3	4·2	3·0	10·2	7·2	16·2	11·5
43	10 40·8	10 42·5	10 11·6	4·3	3·0	10·3	7·3	16·3	11·5
44	10 41·0	10 42·8	10 11·8	4·4	3·1	10·4	7·4	16·4	11·6
45	10 41·3	10 43·0	10 12·0	4·5	3·2	10·5	7·4	16·5	11·7
46	10 41·5	10 43·3	10 12·3	4·6	3·3	10·6	7·5	16·6	11·8
47	10 41·8	10 43·5	10 12·5	4·7	3·3	10·7	7·6	16·7	11·8
48	10 42·0	10 43·8	10 12·8	4·8	3·4	10·8	7·7	16·8	11·9
49	10 42·3	10 44·0	10 13·0	4·9	3·5	10·9	7·7	16·9	12·0
50	10 42·5	10 44·3	10 13·2	5·0	3·5	11·0	7·8	17·0	12·0
51	10 42·8	10 44·5	10 13·5	5·1	3·6	11·1	7·9	17·1	12·1
52	10 43·0	10 44·8	10 13·7	5·2	3·7	11·2	7·9	17·2	12·2
53	10 43·3	10 45·0	10 13·9	5·3	3·8	11·3	8·0	17·3	12·3
54	10 43·5	10 45·3	10 14·2	5·4	3·8	11·4	8·1	17·4	12·3
55	10 43·8	10 45·5	10 14·4	5·5	3·9	11·5	8·1	17·5	12·4
56	10 44·0	10 45·8	10 14·7	5·6	4·0	11·6	8·2	17·6	12·5
57	10 44·3	10 46·0	10 14·9	5·7	4·0	11·7	8·3	17·7	12·5
58	10 44·5	10 46·3	10 15·1	5·8	4·1	11·8	8·4	17·8	12·6
59	10 44·8	10 46·5	10 15·4	5·9	4·2	11·9	8·4	17·9	12·7
60	10 45·0	10 46·8	10 15·6	6·0	4·3	12·0	8·5	18·0	12·8

43m

m 43	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	10 45·0	10 46·8	10 15·6	0·0	0·0	6·0	4·4	12·0	8·7
01	10 45·3	10 47·0	10 15·9	0·1	0·1	6·1	4·4	12·1	8·8
02	10 45·5	10 47·3	10 16·1	0·2	0·1	6·2	4·5	12·2	8·8
03	10 45·8	10 47·5	10 16·3	0·3	0·2	6·3	4·6	12·3	8·9
04	10 46·0	10 47·8	10 16·6	0·4	0·3	6·4	4·6	12·4	9·0
05	10 46·3	10 48·0	10 16·8	0·5	0·4	6·5	4·7	12·5	9·1
06	10 46·5	10 48·3	10 17·0	0·6	0·4	6·6	4·8	12·6	9·1
07	10 46·8	10 48·5	10 17·3	0·7	0·5	6·7	4·9	12·7	9·2
08	10 47·0	10 48·8	10 17·5	0·8	0·6	6·8	4·9	12·8	9·3
09	10 47·3	10 49·0	10 17·8	0·9	0·7	6·9	5·0	12·9	9·4
10	10 47·5	10 49·3	10 18·0	1·0	0·7	7·0	5·1	13·0	9·4
11	10 47·8	10 49·5	10 18·2	1·1	0·8	7·1	5·1	13·1	9·5
12	10 48·0	10 49·8	10 18·5	1·2	0·9	7·2	5·2	13·2	9·6
13	10 48·3	10 50·0	10 18·7	1·3	0·9	7·3	5·3	13·3	9·6
14	10 48·5	10 50·3	10 19·0	1·4	1·0	7·4	5·4	13·4	9·7
15	10 48·8	10 50·5	10 19·2	1·5	1·1	7·5	5·4	13·5	9·8
16	10 49·0	10 50·8	10 19·4	1·6	1·2	7·6	5·5	13·6	9·9
17	10 49·3	10 51·0	10 19·7	1·7	1·2	7·7	5·6	13·7	9·9
18	10 49·5	10 51·3	10 19·9	1·8	1·3	7·8	5·7	13·8	10·0
19	10 49·8	10 51·5	10 20·2	1·9	1·4	7·9	5·7	13·9	10·1
20	10 50·0	10 51·8	10 20·4	2·0	1·5	8·0	5·8	14·0	10·2
21	10 50·3	10 52·0	10 20·6	2·1	1·5	8·1	5·9	14·1	10·2
22	10 50·5	10 52·3	10 20·9	2·2	1·6	8·2	5·9	14·2	10·3
23	10 50·8	10 52·5	10 21·1	2·3	1·7	8·3	6·0	14·3	10·4
24	10 51·0	10 52·8	10 21·3	2·4	1·7	8·4	6·1	14·4	10·4
25	10 51·3	10 53·0	10 21·6	2·5	1·8	8·5	6·2	14·5	10·5
26	10 51·5	10 53·3	10 21·8	2·6	1·9	8·6	6·2	14·6	10·6
27	10 51·8	10 53·5	10 22·1	2·7	2·0	8·7	6·3	14·7	10·7
28	10 52·0	10 53·8	10 22·3	2·8	2·0	8·8	6·4	14·8	10·7
29	10 52·3	10 54·0	10 22·5	2·9	2·1	8·9	6·5	14·9	10·8
30	10 52·5	10 54·3	10 22·8	3·0	2·2	9·0	6·5	15·0	10·9
31	10 52·8	10 54·5	10 23·0	3·1	2·2	9·1	6·6	15·1	10·9
32	10 53·0	10 54·8	10 23·3	3·2	2·3	9·2	6·7	15·2	11·0
33	10 53·3	10 55·0	10 23·5	3·3	2·4	9·3	6·7	15·3	11·1
34	10 53·5	10 55·3	10 23·7	3·4	2·5	9·4	6·8	15·4	11·2
35	10 53·8	10 55·5	10 24·0	3·5	2·5	9·5	6·9	15·5	11·2
36	10 54·0	10 55·8	10 24·2	3·6	2·6	9·6	7·0	15·6	11·3
37	10 54·3	10 56·0	10 24·4	3·7	2·7	9·7	7·0	15·7	11·4
38	10 54·5	10 56·3	10 24·7	3·8	2·8	9·8	7·1	15·8	11·5
39	10 54·8	10 56·5	10 24·9	3·9	2·8	9·9	7·2	15·9	11·5
40	10 55·0	10 56·8	10 25·2	4·0	2·9	10·0	7·3	16·0	11·6
41	10 55·3	10 57·0	10 25·4	4·1	3·0	10·1	7·3	16·1	11·7
42	10 55·5	10 57·3	10 25·6	4·2	3·0	10·2	7·4	16·2	11·7
43	10 55·8	10 57·5	10 25·9	4·3	3·1	10·3	7·5	16·3	11·8
44	10 56·0	10 57·8	10 26·1	4·4	3·2	10·4	7·5	16·4	11·9
45	10 56·3	10 58·0	10 26·4	4·5	3·3	10·5	7·6	16·5	12·0
46	10 56·5	10 58·3	10 26·6	4·6	3·3	10·6	7·7	16·6	12·0
47	10 56·8	10 58·5	10 26·8	4·7	3·4	10·7	7·8	16·7	12·1
48	10 57·0	10 58·8	10 27·1	4·8	3·5	10·8	7·8	16·8	12·2
49	10 57·3	10 59·0	10 27·3	4·9	3·6	10·9	7·9	16·9	12·3
50	10 57·5	10 59·3	10 27·5	5·0	3·6	11·0	8·0	17·0	12·3
51	10 57·8	10 59·6	10 27·8	5·1	3·7	11·1	8·0	17·1	12·4
52	10 58·0	10 59·8	10 28·0	5·2	3·8	11·2	8·1	17·2	12·5
53	10 58·3	11 00·1	10 28·3	5·3	3·8	11·3	8·2	17·3	12·5
54	10 58·5	11 00·3	10 28·5	5·4	3·9	11·4	8·3	17·4	12·6
55	10 58·8	11 00·6	10 28·7	5·5	4·0	11·5	8·3	17·5	12·7
56	10 59·0	11 00·8	10 29·0	5·6	4·1	11·6	8·4	17·6	12·8
57	10 59·3	11 01·1	10 29·2	5·7	4·1	11·7	8·5	17·7	12·8
58	10 59·5	11 01·3	10 29·5	5·8	4·2	11·8	8·6	17·8	12·9
59	10 59·8	11 01·6	10 29·7	5·9	4·3	11·9	8·6	17·9	13·0
60	11 00·0	11 01·8	10 29·9	6·0	4·4	12·0	8·7	18·0	13·1

44m

m 44	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	11 00·0	11 01·8	10 29·9	0·0	0·0	6·0	4·5	12·0	8·9
01	11 00·3	11 02·1	10 30·2	0·1	0·1	6·1	4·5	12·1	9·0
02	11 00·5	11 02·3	10 30·4	0·2	0·1	6·2	4·6	12·2	9·0
03	11 00·8	11 02·6	10 30·6	0·3	0·2	6·3	4·7	12·3	9·1
04	11 01·0	11 02·8	10 30·9	0·4	0·3	6·4	4·7	12·4	9·2
05	11 01·3	11 03·1	10 31·1	0·5	0·4	6·5	4·8	12·5	9·3
06	11 01·5	11 03·3	10 31·4	0·6	0·4	6·6	4·9	12·6	9·3
07	11 01·8	11 03·6	10 31·6	0·7	0·5	6·7	5·0	12·7	9·4
08	11 02·0	11 03·8	10 31·8	0·8	0·6	6·8	5·0	12·8	9·5
09	11 02·3	11 04·1	10 32·1	0·9	0·7	6·9	5·1	12·9	9·6
10	11 02·5	11 04·3	10 32·3	1·0	0·7	7·0	5·2	13·0	9·6
11	11 02·8	11 04·6	10 32·6	1·1	0·8	7·1	5·3	13·1	9·7
12	11 03·0	11 04·8	10 32·8	1·2	0·9	7·2	5·3	13·2	9·8
13	11 03·3	11 05·1	10 33·0	1·3	1·0	7·3	5·4	13·3	9·9
14	11 03·5	11 05·3	10 33·3	1·4	1·0	7·4	5·5	13·4	9·9
15	11 03·8	11 05·6	10 33·5	1·5	1·1	7·5	5·6	13·5	10·0
16	11 04·0	11 05·8	10 33·8	1·6	1·2	7·6	5·6	13·6	10·1
17	11 04·3	11 06·1	10 34·0	1·7	1·3	7·7	5·7	13·7	10·2
18	11 04·5	11 06·3	10 34·2	1·8	1·3	7·8	5·8	13·8	10·2
19	11 04·8	11 06·6	10 34·5	1·9	1·4	7·9	5·9	13·9	10·3
20	11 05·0	11 06·8	10 34·7	2·0	1·5	8·0	5·9	14·0	10·4
21	11 05·3	11 07·1	10 34·9	2·1	1·6	8·1	6·0	14·1	10·5
22	11 05·5	11 07·3	10 35·2	2·2	1·6	8·2	6·1	14·2	10·5
23	11 05·8	11 07·6	10 35·4	2·3	1·7	8·3	6·2	14·3	10·6
24	11 06·0	11 07·8	10 35·7	2·4	1·8	8·4	6·2	14·4	10·7
25	11 06·3	11 08·1	10 35·9	2·5	1·9	8·5	6·3	14·5	10·8
26	11 06·5	11 08·3	10 36·1	2·6	1·9	8·6	6·4	14·6	10·8
27	11 06·8	11 08·6	10 36·4	2·7	2·0	8·7	6·5	14·7	10·9
28	11 07·0	11 08·8	10 36·6	2·8	2·1	8·8	6·5	14·8	11·0
29	11 07·3	11 09·1	10 36·9	2·9	2·2	8·9	6·6	14·9	11·1
30	11 07·5	11 09·3	10 37·1	3·0	2·2	9·0	6·7	15·0	11·1
31	11 07·8	11 09·6	10 37·3	3·1	2·3	9·1	6·7	15·1	11·2
32	11 08·0	11 09·8	10 37·6	3·2	2·4	9·2	6·8	15·2	11·3
33	11 08·3	11 10·1	10 37·8	3·3	2·4	9·3	6·9	15·3	11·3
34	11 08·5	11 10·3	10 38·0	3·4	2·5	9·4	7·0	15·4	11·4
35	11 08·8	11 10·6	10 38·3	3·5	2·6	9·5	7·0	15·5	11·5
36	11 09·0	11 10·8	10 38·5	3·6	2·7	9·6	7·1	15·6	11·6
37	11 09·3	11 11·1	10 38·8	3·7	2·7	9·7	7·2	15·7	11·6
38	11 09·5	11 11·3	10 39·0	3·8	2·8	9·8	7·3	15·8	11·7
39	11 09·8	11 11·6	10 39·2	3·9	2·9	9·9	7·3	15·9	11·8
40	11 10·0	11 11·8	10 39·5	4·0	3·0	10·0	7·4	16·0	11·9
41	11 10·3	11 12·1	10 39·7	4·1	3·0	10·1	7·5	16·1	11·9
42	11 10·5	11 12·3	10 40·0	4·2	3·1	10·2	7·6	16·2	12·0
43	11 10·8	11 12·6	10 40·2	4·3	3·2	10·3	7·6	16·3	12·1
44	11 11·0	11 12·8	10 40·4	4·4	3·3	10·4	7·7	16·4	12·2
45	11 11·3	11 13·1	10 40·7	4·5	3·3	10·5	7·8	16·5	12·2
46	11 11·5	11 13·3	10 40·9	4·6	3·4	10·6	7·9	16·6	12·3
47	11 11·8	11 13·6	10 41·1	4·7	3·5	10·7	7·9	16·7	12·4
48	11 12·0	11 13·8	10 41·4	4·8	3·6	10·8	8·0	16·8	12·5
49	11 12·3	11 14·1	10 41·6	4·9	3·6	10·9	8·1	16·9	12·5
50	11 12·5	11 14·3	10 41·9	5·0	3·7	11·0	8·2	17·0	12·6
51	11 12·8	11 14·6	10 42·1	5·1	3·8	11·1	8·2	17·1	12·7
52	11 13·0	11 14·8	10 42·3	5·2	3·9	11·2	8·3	17·2	12·8
53	11 13·3	11 15·1	10 42·6	5·3	3·9	11·3	8·4	17·3	12·8
54	11 13·5	11 15·3	10 42·8	5·4	4·0	11·4	8·5	17·4	12·9
55	11 13·8	11 15·6	10 43·1	5·5	4·1	11·5	8·5	17·5	13·0
56	11 14·0	11 15·8	10 43·3	5·6	4·2	11·6	8·6	17·6	13·1
57	11 14·3	11 16·1	10 43·5	5·7	4·2	11·7	8·7	17·7	13·1
58	11 14·5	11 16·3	10 43·8	5·8	4·3	11·8	8·8	17·8	13·2
59	11 14·8	11 16·6	10 44·0	5·9	4·4	11·9	8·8	17·9	13·3
60	11 15·0	11 16·8	10 44·3	6·0	4·5	12·0	8·9	18·0	13·4

45m

m 45	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	11 15·0	11 16·8	10 44·3	0·0	0·0	6·0	4·6	12·0	9·1
01	11 15·3	11 17·1	10 44·5	0·1	0·1	6·1	4·6	12·1	9·2
02	11 15·5	11 17·3	10 44·7	0·2	0·2	6·2	4·7	12·2	9·3
03	11 15·8	11 17·6	10 45·0	0·3	0·2	6·3	4·8	12·3	9·3
04	11 16·0	11 17·9	10 45·2	0·4	0·3	6·4	4·9	12·4	9·4
05	11 16·3	11 18·1	10 45·4	0·5	0·4	6·5	4·9	12·5	9·5
06	11 16·5	11 18·4	10 45·7	0·6	0·5	6·6	5·0	12·6	9·6
07	11 16·8	11 18·6	10 45·9	0·7	0·5	6·7	5·1	12·7	9·6
08	11 17·0	11 18·9	10 46·2	0·8	0·6	6·8	5·2	12·8	9·7
09	11 17·3	11 19·1	10 46·4	0·9	0·7	6·9	5·2	12·9	9·8
10	11 17·5	11 19·4	10 46·6	1·0	0·8	7·0	5·3	13·0	9·9
11	11 17·8	11 19·6	10 46·9	1·1	0·8	7·1	5·4	13·1	9·9
12	11 18·0	11 19·9	10 47·1	1·2	0·9	7·2	5·5	13·2	10·0
13	11 18·3	11 20·1	10 47·4	1·3	1·0	7·3	5·5	13·3	10·1
14	11 18·5	11 20·4	10 47·6	1·4	1·1	7·4	5·6	13·4	10·2
15	11 18·8	11 20·6	10 47·8	1·5	1·1	7·5	5·7	13·5	10·2
16	11 19·0	11 20·9	10 48·1	1·6	1·2	7·6	5·8	13·6	10·3
17	11 19·3	11 21·1	10 48·3	1·7	1·3	7·7	5·8	13·7	10·4
18	11 19·5	11 21·4	10 48·5	1·8	1·4	7·8	5·9	13·8	10·5
19	11 19·8	11 21·6	10 48·8	1·9	1·4	7·9	6·0	13·9	10·5
20	11 20·0	11 21·9	10 49·0	2·0	1·5	8·0	6·1	14·0	10·6
21	11 20·3	11 22·1	10 49·3	2·1	1·6	8·1	6·1	14·1	10·7
22	11 20·5	11 22·4	10 49·5	2·2	1·7	8·2	6·2	14·2	10·8
23	11 20·8	11 22·6	10 49·7	2·3	1·7	8·3	6·3	14·3	10·8
24	11 21·0	11 22·9	10 50·0	2·4	1·8	8·4	6·4	14·4	10·9
25	11 21·3	11 23·1	10 50·2	2·5	1·9	8·5	6·4	14·5	11·0
26	11 21·5	11 23·4	10 50·5	2·6	2·0	8·6	6·5	14·6	11·1
27	11 21·8	11 23·6	10 50·7	2·7	2·0	8·7	6·6	14·7	11·1
28	11 22·0	11 23·9	10 50·9	2·8	2·1	8·8	6·7	14·8	11·2
29	11 22·3	11 24·1	10 51·2	2·9	2·2	8·9	6·7	14·9	11·3
30	11 22·5	11 24·4	10 51·4	3·0	2·3	9·0	6·8	15·0	11·4
31	11 22·8	11 24·6	10 51·6	3·1	2·4	9·1	6·9	15·1	11·5
32	11 23·0	11 24·9	10 51·9	3·2	2·4	9·2	7·0	15·2	11·5
33	11 23·3	11 25·1	10 52·1	3·3	2·5	9·3	7·1	15·3	11·6
34	11 23·5	11 25·4	10 52·4	3·4	2·6	9·4	7·1	15·4	11·7
35	11 23·8	11 25·6	10 52·6	3·5	2·7	9·5	7·2	15·5	11·8
36	11 24·0	11 25·9	10 52·8	3·6	2·7	9·6	7·3	15·6	11·8
37	11 24·3	11 26·1	10 53·1	3·7	2·8	9·7	7·4	15·7	11·9
38	11 24·5	11 26·4	10 53·3	3·8	2·9	9·8	7·4	15·8	12·0
39	11 24·8	11 26·6	10 53·6	3·9	3·0	9·9	7·5	15·9	12·1
40	11 25·0	11 26·9	10 53·8	4·0	3·0	10·0	7·6	16·0	12·1
41	11 25·3	11 27·1	10 54·0	4·1	3·1	10·1	7·7	16·1	12·2
42	11 25·5	11 27·4	10 54·3	4·2	3·2	10·2	7·7	16·2	12·3
43	11 25·8	11 27·6	10 54·5	4·3	3·3	10·3	7·8	16·3	12·4
44	11 26·0	11 27·9	10 54·7	4·4	3·3	10·4	7·9	16·4	12·4
45	11 26·3	11 28·1	10 55·0	4·5	3·4	10·5	8·0	16·5	12·5
46	11 26·5	11 28·4	10 55·2	4·6	3·5	10·6	8·0	16·6	12·6
47	11 26·8	11 28·6	10 55·5	4·7	3·6	10·7	8·1	16·7	12·7
48	11 27·0	11 28·9	10 55·7	4·8	3·6	10·8	8·2	16·8	12·7
49	11 27·3	11 29·1	10 55·9	4·9	3·7	10·9	8·3	16·9	12·8
50	11 27·5	11 29·4	10 56·2	5·0	3·8	11·0	8·3	17·0	12·9
51	11 27·8	11 29·6	10 56·4	5·1	3·9	11·1	8·4	17·1	13·0
52	11 28·0	11 29·9	10 56·7	5·2	3·9	11·2	8·5	17·2	13·0
53	11 28·3	11 30·1	10 56·9	5·3	4·0	11·3	8·6	17·3	13·1
54	11 28·5	11 30·4	10 57·1	5·4	4·1	11·4	8·6	17·4	13·2
55	11 28·8	11 30·6	10 57·4	5·5	4·2	11·5	8·7	17·5	13·3
56	11 29·0	11 30·9	10 57·6	5·6	4·2	11·6	8·8	17·6	13·3
57	11 29·3	11 31·1	10 57·9	5·7	4·3	11·7	8·9	17·7	13·4
58	11 29·5	11 31·4	10 58·1	5·8	4·4	11·8	8·9	17·8	13·5
59	11 29·8	11 31·6	10 58·3	5·9	4·5	11·9	9·0	17·9	13·6
60	11 30·0	11 31·9	10 58·6	6·0	4·6	12·0	9·1	18·0	13·7

46m

m 46	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	11 30·0	11 31·9	10 58·6	0·0	0·0	6·0	4·7	12·0	9·3
01	11 30·3	11 32·1	10 58·8	0·1	0·1	6·1	4·7	12·1	9·4
02	11 30·5	11 32·4	10 59·0	0·2	0·2	6·2	4·8	12·2	9·5
03	11 30·8	11 32·6	10 59·3	0·3	0·2	6·3	4·9	12·3	9·5
04	11 31·0	11 32·9	10 59·5	0·4	0·3	6·4	5·0	12·4	9·6
05	11 31·3	11 33·1	10 59·8	0·5	0·4	6·5	5·0	12·5	9·7
06	11 31·5	11 33·4	11 00·0	0·6	0·5	6·6	5·1	12·6	9·8
07	11 31·8	11 33·6	11 00·2	0·7	0·5	6·7	5·2	12·7	9·8
08	11 32·0	11 33·9	11 00·5	0·8	0·6	6·8	5·3	12·8	9·9
09	11 32·3	11 34·1	11 00·7	0·9	0·7	6·9	5·3	12·9	10·0
10	11 32·5	11 34·4	11 01·0	1·0	0·8	7·0	5·4	13·0	10·1
11	11 32·8	11 34·6	11 01·2	1·1	0·9	7·1	5·5	13·1	10·2
12	11 33·0	11 34·9	11 01·4	1·2	0·9	7·2	5·6	13·2	10·2
13	11 33·3	11 35·1	11 01·7	1·3	1·0	7·3	5·7	13·3	10·3
14	11 33·5	11 35·4	11 01·9	1·4	1·1	7·4	5·7	13·4	10·4
15	11 33·8	11 35·6	11 02·1	1·5	1·2	7·5	5·8	13·5	10·5
16	11 34·0	11 35·9	11 02·4	1·6	1·2	7·6	5·9	13·6	10·5
17	11 34·3	11 36·2	11 02·6	1·7	1·3	7·7	6·0	13·7	10·6
18	11 34·5	11 36·4	11 02·9	1·8	1·4	7·8	6·0	13·8	10·7
19	11 34·8	11 36·7	11 03·1	1·9	1·5	7·9	6·1	13·9	10·8
20	11 35·0	11 36·9	11 03·3	2·0	1·6	8·0	6·2	14·0	10·9
21	11 35·3	11 37·2	11 03·6	2·1	1·6	8·1	6·3	14·1	10·9
22	11 35·5	11 37·4	11 03·8	2·2	1·7	8·2	6·4	14·2	11·0
23	11 35·8	11 37·7	11 04·1	2·3	1·8	8·3	6·4	14·3	11·1
24	11 36·0	11 37·9	11 04·3	2·4	1·9	8·4	6·5	14·4	11·2
25	11 36·3	11 38·2	11 04·5	2·5	1·9	8·5	6·6	14·5	11·2
26	11 36·5	11 38·4	11 04·8	2·6	2·0	8·6	6·7	14·6	11·3
27	11 36·8	11 38·7	11 05·0	2·7	2·1	8·7	6·7	14·7	11·4
28	11 37·0	11 38·9	11 05·2	2·8	2·2	8·8	6·8	14·8	11·5
29	11 37·3	11 39·2	11 05·5	2·9	2·2	8·9	6·9	14·9	11·5
30	11 37·5	11 39·4	11 05·7	3·0	2·3	9·0	7·0	15·0	11·6
31	11 37·8	11 39·7	11 06·0	3·1	2·4	9·1	7·1	15·1	11·7
32	11 38·0	11 39·9	11 06·2	3·2	2·5	9·2	7·1	15·2	11·8
33	11 38·3	11 40·2	11 06·4	3·3	2·6	9·3	7·2	15·3	11·9
34	11 38·5	11 40·4	11 06·7	3·4	2·6	9·4	7·3	15·4	11·9
35	11 38·8	11 40·7	11 06·9	3·5	2·7	9·5	7·4	15·5	12·0
36	11 39·0	11 40·9	11 07·2	3·6	2·8	9·6	7·4	15·6	12·1
37	11 39·3	11 41·2	11 07·4	3·7	2·9	9·7	7·5	15·7	12·2
38	11 39·5	11 41·4	11 07·6	3·8	2·9	9·8	7·6	15·8	12·2
39	11 39·8	11 41·7	11 07·9	3·9	3·0	9·9	7·7	15·9	12·3
40	11 40·0	11 41·9	11 08·1	4·0	3·1	10·0	7·8	16·0	12·4
41	11 40·3	11 42·2	11 08·3	4·1	3·2	10·1	7·8	16·1	12·5
42	11 40·5	11 42·4	11 08·6	4·2	3·3	10·2	7·9	16·2	12·6
43	11 40·8	11 42·7	11 08·8	4·3	3·3	10·3	8·0	16·3	12·6
44	11 41·0	11 42·9	11 09·1	4·4	3·4	10·4	8·1	16·4	12·7
45	11 41·3	11 43·2	11 09·3	4·5	3·5	10·5	8·1	16·5	12·8
46	11 41·5	11 43·4	11 09·5	4·6	3·6	10·6	8·2	16·6	12·9
47	11 41·8	11 43·7	11 09·8	4·7	3·6	10·7	8·3	16·7	12·9
48	11 42·0	11 43·9	11 10·0	4·8	3·7	10·8	8·4	16·8	13·0
49	11 42·3	11 44·2	11 10·3	4·9	3·8	10·9	8·4	16·9	13·1
50	11 42·5	11 44·4	11 10·5	5·0	3·9	11·0	8·5	17·0	13·2
51	11 42·8	11 44·7	11 10·7	5·1	4·0	11·1	8·6	17·1	13·3
52	11 43·0	11 44·9	11 11·0	5·2	4·0	11·2	8·7	17·2	13·3
53	11 43·3	11 45·2	11 11·2	5·3	4·1	11·3	8·8	17·3	13·4
54	11 43·5	11 45·4	11 11·5	5·4	4·2	11·4	8·8	17·4	13·5
55	11 43·8	11 45·7	11 11·7	5·5	4·3	11·5	8·9	17·5	13·6
56	11 44·0	11 45·9	11 11·9	5·6	4·3	11·6	9·0	17·6	13·6
57	11 44·3	11 46·2	11 12·2	5·7	4·4	11·7	9·1	17·7	13·7
58	11 44·5	11 46·4	11 12·4	5·8	4·5	11·8	9·1	17·8	13·8
59	11 44·8	11 46·7	11 12·6	5·9	4·6	11·9	9·2	17·9	13·9
60	11 45·0	11 46·9	11 12·9	6·0	4·7	12·0	9·3	18·0	14·0

47m

m 47	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	11 45·0	11 46·9	11 12·9	0·0	0·0	6·0	4·8	12·0	9·5
01	11 45·3	11 47·2	11 13·1	0·1	0·1	6·1	4·8	12·1	9·6
02	11 45·5	11 47·4	11 13·4	0·2	0·2	6·2	4·9	12·2	9·7
03	11 45·8	11 47·7	11 13·6	0·3	0·2	6·3	5·0	12·3	9·7
04	11 46·0	11 47·9	11 13·8	0·4	0·3	6·4	5·1	12·4	9·8
05	11 46·3	11 48·2	11 14·1	0·5	0·4	6·5	5·1	12·5	9·9
06	11 46·5	11 48·4	11 14·3	0·6	0·5	6·6	5·2	12·6	10·0
07	11 46·8	11 48·7	11 14·6	0·7	0·6	6·7	5·3	12·7	10·1
08	11 47·0	11 48·9	11 14·8	0·8	0·6	6·8	5·4	12·8	10·1
09	11 47·3	11 49·2	11 15·0	0·9	0·7	6·9	5·5	12·9	10·2
10	11 47·5	11 49·4	11 15·3	1·0	0·8	7·0	5·5	13·0	10·3
11	11 47·8	11 49·7	11 15·5	1·1	0·9	7·1	5·6	13·1	10·4
12	11 48·0	11 49·9	11 15·7	1·2	1·0	7·2	5·7	13·2	10·5
13	11 48·3	11 50·2	11 16·0	1·3	1·0	7·3	5·8	13·3	10·5
14	11 48·5	11 50·4	11 16·2	1·4	1·1	7·4	5·9	13·4	10·6
15	11 48·8	11 50·7	11 16·5	1·5	1·2	7·5	5·9	13·5	10·7
16	11 49·0	11 50·9	11 16·7	1·6	1·3	7·6	6·0	13·6	10·8
17	11 49·3	11 51·2	11 16·9	1·7	1·3	7·7	6·1	13·7	10·8
18	11 49·5	11 51·4	11 17·2	1·8	1·4	7·8	6·2	13·8	10·9
19	11 49·8	11 51·7	11 17·4	1·9	1·5	7·9	6·3	13·9	11·0
20	11 50·0	11 51·9	11 17·7	2·0	1·6	8·0	6·3	14·0	11·1
21	11 50·3	11 52·2	11 17·9	2·1	1·7	8·1	6·4	14·1	11·2
22	11 50·5	11 52·4	11 18·1	2·2	1·7	8·2	6·5	14·2	11·2
23	11 50·8	11 52·7	11 18·4	2·3	1·8	8·3	6·6	14·3	11·3
24	11 51·0	11 52·9	11 18·6	2·4	1·9	8·4	6·7	14·4	11·4
25	11 51·3	11 53·2	11 18·8	2·5	2·0	8·5	6·7	14·5	11·5
26	11 51·5	11 53·4	11 19·1	2·6	2·1	8·6	6·8	14·6	11·6
27	11 51·8	11 53·7	11 19·3	2·7	2·1	8·7	6·9	14·7	11·6
28	11 52·0	11 53·9	11 19·6	2·8	2·2	8·8	7·0	14·8	11·7
29	11 52·3	11 54·2	11 19·8	2·9	2·3	8·9	7·0	14·9	11·8
30	11 52·5	11 54·5	11 20·0	3·0	2·4	9·0	7·1	15·0	11·9
31	11 52·8	11 54·7	11 20·3	3·1	2·5	9·1	7·2	15·1	12·0
32	11 53·0	11 55·0	11 20·5	3·2	2·5	9·2	7·3	15·2	12·0
33	11 53·3	11 55·2	11 20·8	3·3	2·6	9·3	7·4	15·3	12·1
34	11 53·5	11 55·5	11 21·0	3·4	2·7	9·4	7·4	15·4	12·2
35	11 53·8	11 55·7	11 21·2	3·5	2·8	9·5	7·5	15·5	12·3
36	11 54·0	11 56·0	11 21·5	3·6	2·9	9·6	7·6	15·6	12·4
37	11 54·3	11 56·2	11 21·7	3·7	2·9	9·7	7·7	15·7	12·4
38	11 54·5	11 56·5	11 22·0	3·8	3·0	9·8	7·8	15·8	12·5
39	11 54·8	11 56·7	11 22·2	3·9	3·1	9·9	7·8	15·9	12·6
40	11 55·0	11 57·0	11 22·4	4·0	3·2	10·0	7·9	16·0	12·7
41	11 55·3	11 57·2	11 22·7	4·1	3·2	10·1	8·0	16·1	12·7
42	11 55·5	11 57·5	11 22·9	4·2	3·3	10·2	8·1	16·2	12·8
43	11 55·8	11 57·7	11 23·1	4·3	3·4	10·3	8·2	16·3	12·9
44	11 56·0	11 58·0	11 23·4	4·4	3·5	10·4	8·2	16·4	13·0
45	11 56·3	11 58·2	11 23·6	4·5	3·6	10·5	8·3	16·5	13·1
46	11 56·5	11 58·5	11 23·9	4·6	3·6	10·6	8·4	16·6	13·1
47	11 56·8	11 58·7	11 24·1	4·7	3·7	10·7	8·5	16·7	13·2
48	11 57·0	11 59·0	11 24·3	4·8	3·8	10·8	8·6	16·8	13·3
49	11 57·3	11 59·2	11 24·6	4·9	3·9	10·9	8·6	16·9	13·4
50	11 57·5	11 59·5	11 24·8	5·0	4·0	11·0	8·7	17·0	13·5
51	11 57·8	11 59·7	11 25·1	5·1	4·0	11·1	8·8	17·1	13·5
52	11 58·0	12 00·0	11 25·3	5·2	4·1	11·2	8·9	17·2	13·6
53	11 58·3	12 00·2	11 25·5	5·3	4·2	11·3	8·9	17·3	13·7
54	11 58·5	12 00·5	11 25·8	5·4	4·3	11·4	9·0	17·4	13·8
55	11 58·8	12 00·7	11 26·0	5·5	4·4	11·5	9·1	17·5	13·9
56	11 59·0	12 01·0	11 26·2	5·6	4·4	11·6	9·2	17·6	13·9
57	11 59·3	12 01·2	11 26·5	5·7	4·5	11·7	9·3	17·7	14·0
58	11 59·5	12 01·5	11 26·7	5·8	4·6	11·8	9·3	17·8	14·1
59	11 59·8	12 01·7	11 27·0	5·9	4·7	11·9	9·4	17·9	14·2
60	12 00·0	12 02·0	11 27·2	6·0	4·8	12·0	9·5	18·0	14·3

48m

m 48	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	12 00·0	12 02·0	11 27·2	0·0	0·0	6·0	4·9	12·0	9·7
01	12 00·3	12 02·2	11 27·4	0·1	0·1	6·1	4·9	12·1	9·8
02	12 00·5	12 02·5	11 27·7	0·2	0·2	6·2	5·0	12·2	9·9
03	12 00·8	12 02·7	11 27·9	0·3	0·2	6·3	5·1	12·3	9·9
04	12 01·0	12 03·0	11 28·2	0·4	0·3	6·4	5·2	12·4	10·0
05	12 01·3	12 03·2	11 28·4	0·5	0·4	6·5	5·3	12·5	10·1
06	12 01·5	12 03·5	11 28·6	0·6	0·5	6·6	5·3	12·6	10·2
07	12 01·8	12 03·7	11 28·9	0·7	0·6	6·7	5·4	12·7	10·3
08	12 02·0	12 04·0	11 29·1	0·8	0·6	6·8	5·5	12·8	10·3
09	12 02·3	12 04·2	11 29·3	0·9	0·7	6·9	5·6	12·9	10·4
10	12 02·5	12 04·5	11 29·6	1·0	0·8	7·0	5·7	13·0	10·5
11	12 02·8	12 04·7	11 29·8	1·1	0·9	7·1	5·7	13·1	10·6
12	12 03·0	12 05·0	11 30·1	1·2	1·0	7·2	5·8	13·2	10·7
13	12 03·3	12 05·2	11 30·3	1·3	1·1	7·3	5·9	13·3	10·8
14	12 03·5	12 05·5	11 30·5	1·4	1·1	7·4	6·0	13·4	10·8
15	12 03·8	12 05·7	11 30·8	1·5	1·2	7·5	6·1	13·5	10·9
16	12 04·0	12 06·0	11 31·0	1·6	1·3	7·6	6·1	13·6	11·0
17	12 04·3	12 06·2	11 31·3	1·7	1·4	7·7	6·2	13·7	11·1
18	12 04·5	12 06·5	11 31·5	1·8	1·5	7·8	6·3	13·8	11·2
19	12 04·8	12 06·7	11 31·7	1·9	1·5	7·9	6·4	13·9	11·2
20	12 05·0	12 07·0	11 32·0	2·0	1·6	8·0	6·5	14·0	11·3
21	12 05·3	12 07·2	11 32·2	2·1	1·7	8·1	6·5	14·1	11·4
22	12 05·5	12 07·5	11 32·4	2·2	1·8	8·2	6·6	14·2	11·5
23	12 05·8	12 07·7	11 32·7	2·3	1·9	8·3	6·7	14·3	11·6
24	12 06·0	12 08·0	11 32·9	2·4	1·9	8·4	6·8	14·4	11·6
25	12 06·3	12 08·2	11 33·2	2·5	2·0	8·5	6·9	14·5	11·7
26	12 06·5	12 08·5	11 33·4	2·6	2·1	8·6	7·0	14·6	11·8
27	12 06·8	12 08·7	11 33·6	2·7	2·2	8·7	7·0	14·7	11·9
28	12 07·0	12 09·0	11 33·9	2·8	2·3	8·8	7·1	14·8	12·0
29	12 07·3	12 09·2	11 34·1	2·9	2·3	8·9	7·2	14·9	12·0
30	12 07·5	12 09·5	11 34·4	3·0	2·4	9·0	7·3	15·0	12·1
31	12 07·8	12 09·7	11 34·6	3·1	2·5	9·1	7·4	15·1	12·2
32	12 08·0	12 10·0	11 34·8	3·2	2·6	9·2	7·4	15·2	12·3
33	12 08·3	12 10·2	11 35·1	3·3	2·7	9·3	7·5	15·3	12·4
34	12 08·5	12 10·5	11 35·3	3·4	2·7	9·4	7·6	15·4	12·4
35	12 08·8	12 10·7	11 35·6	3·5	2·8	9·5	7·7	15·5	12·5
36	12 09·0	12 11·0	11 35·8	3·6	2·9	9·6	7·8	15·6	12·6
37	12 09·3	12 11·2	11 36·0	3·7	3·0	9·7	7·8	15·7	12·7
38	12 09·5	12 11·5	11 36·3	3·8	3·1	9·8	7·9	15·8	12·8
39	12 09·8	12 11·7	11 36·5	3·9	3·2	9·9	8·0	15·9	12·9
40	12 10·0	12 12·0	11 36·7	4·0	3·2	10·0	8·1	16·0	12·9
41	12 10·3	12 12·2	11 37·0	4·1	3·3	10·1	8·2	16·1	13·0
42	12 10·5	12 12·5	11 37·2	4·2	3·4	10·2	8·2	16·2	13·1
43	12 10·8	12 12·8	11 37·5	4·3	3·5	10·3	8·3	16·3	13·2
44	12 11·0	12 13·0	11 37·7	4·4	3·6	10·4	8·4	16·4	13·3
45	12 11·3	12 13·3	11 37·9	4·5	3·6	10·5	8·5	16·5	13·3
46	12 11·5	12 13·5	11 38·2	4·6	3·7	10·6	8·6	16·6	13·4
47	12 11·8	12 13·8	11 38·4	4·7	3·8	10·7	8·6	16·7	13·5
48	12 12·0	12 14·0	11 38·7	4·8	3·9	10·8	8·7	16·8	13·6
49	12 12·3	12 14·3	11 38·9	4·9	4·0	10·9	8·8	16·9	13·7
50	12 12·5	12 14·5	11 39·1	5·0	4·0	11·0	8·9	17·0	13·7
51	12 12·8	12 14·8	11 39·4	5·1	4·1	11·1	9·0	17·1	13·8
52	12 13·0	12 15·0	11 39·6	5·2	4·2	11·2	9·1	17·2	13·9
53	12 13·3	12 15·3	11 39·8	5·3	4·3	11·3	9·1	17·3	14·0
54	12 13·5	12 15·5	11 40·1	5·4	4·4	11·4	9·2	17·4	14·1
55	12 13·8	12 15·8	11 40·3	5·5	4·4	11·5	9·3	17·5	14·1
56	12 14·0	12 16·0	11 40·6	5·6	4·5	11·6	9·4	17·6	14·2
57	12 14·3	12 16·3	11 40·8	5·7	4·6	11·7	9·5	17·7	14·3
58	12 14·5	12 16·5	11 41·0	5·8	4·7	11·8	9·5	17·8	14·4
59	12 14·8	12 16·8	11 41·3	5·9	4·8	11·9	9·6	17·9	14·5
60	12 15·0	12 17·0	11 41·5	6·0	4·9	12·0	9·7	18·0	14·6

49m

m 49	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	12 15·0	12 17·0	11 41·5	0·0	0·0	6·0	5·0	12·0	9·9
01	12 15·3	12 17·3	11 41·8	0·1	0·1	6·1	5·0	12·1	10·0
02	12 15·5	12 17·5	11 42·0	0·2	0·2	6·2	5·1	12·2	10·1
03	12 15·8	12 17·8	11 42·2	0·3	0·2	6·3	5·2	12·3	10·1
04	12 16·0	12 18·0	11 42·5	0·4	0·3	6·4	5·3	12·4	10·2
05	12 16·3	12 18·3	11 42·7	0·5	0·4	6·5	5·4	12·5	10·3
06	12 16·5	12 18·5	11 42·9	0·6	0·5	6·6	5·4	12·6	10·4
07	12 16·8	12 18·8	11 43·2	0·7	0·6	6·7	5·5	12·7	10·5
08	12 17·0	12 19·0	11 43·4	0·8	0·7	6·8	5·6	12·8	10·6
09	12 17·3	12 19·3	11 43·7	0·9	0·7	6·9	5·7	12·9	10·6
10	12 17·5	12 19·5	11 43·9	1·0	0·8	7·0	5·8	13·0	10·7
11	12 17·8	12 19·8	11 44·1	1·1	0·9	7·1	5·9	13·1	10·8
12	12 18·0	12 20·0	11 44·4	1·2	1·0	7·2	5·9	13·2	10·9
13	12 18·3	12 20·3	11 44·6	1·3	1·1	7·3	6·0	13·3	11·0
14	12 18·5	12 20·5	11 44·9	1·4	1·2	7·4	6·1	13·4	11·1
15	12 18·8	12 20·8	11 45·1	1·5	1·2	7·5	6·2	13·5	11·1
16	12 19·0	12 21·0	11 45·3	1·6	1·3	7·6	6·3	13·6	11·2
17	12 19·3	12 21·3	11 45·6	1·7	1·4	7·7	6·4	13·7	11·3
18	12 19·5	12 21·5	11 45·8	1·8	1·5	7·8	6·4	13·8	11·4
19	12 19·8	12 21·8	11 46·1	1·9	1·6	7·9	6·5	13·9	11·5
20	12 20·0	12 22·0	11 46·3	2·0	1·7	8·0	6·6	14·0	11·6
21	12 20·3	12 22·3	11 46·5	2·1	1·7	8·1	6·7	14·1	11·6
22	12 20·5	12 22·5	11 46·8	2·2	1·8	8·2	6·8	14·2	11·7
23	12 20·8	12 22·8	11 47·0	2·3	1·9	8·3	6·8	14·3	11·8
24	12 21·0	12 23·0	11 47·2	2·4	2·0	8·4	6·9	14·4	11·9
25	12 21·3	12 23·3	11 47·5	2·5	2·1	8·5	7·0	14·5	12·0
26	12 21·5	12 23·5	11 47·7	2·6	2·1	8·6	7·1	14·6	12·0
27	12 21·8	12 23·8	11 48·0	2·7	2·2	8·7	7·2	14·7	12·1
28	12 22·0	12 24·0	11 48·2	2·8	2·3	8·8	7·3	14·8	12·2
29	12 22·3	12 24·3	11 48·4	2·9	2·4	8·9	7·3	14·9	12·3
30	12 22·5	12 24·5	11 48·7	3·0	2·5	9·0	7·4	15·0	12·4
31	12 22·8	12 24·8	11 48·9	3·1	2·6	9·1	7·5	15·1	12·5
32	12 23·0	12 25·0	11 49·2	3·2	2·6	9·2	7·6	15·2	12·5
33	12 23·3	12 25·3	11 49·4	3·3	2·7	9·3	7·7	15·3	12·6
34	12 23·5	12 25·5	11 49·6	3·4	2·8	9·4	7·8	15·4	12·7
35	12 23·8	12 25·8	11 49·9	3·5	2·9	9·5	7·8	15·5	12·8
36	12 24·0	12 26·0	11 50·1	3·6	3·0	9·6	7·9	15·6	12·9
37	12 24·3	12 26·3	11 50·3	3·7	3·1	9·7	8·0	15·7	13·0
38	12 24·5	12 26·5	11 50·6	3·8	3·1	9·8	8·1	15·8	13·0
39	12 24·8	12 26·8	11 50·8	3·9	3·2	9·9	8·2	15·9	13·1
40	12 25·0	12 27·0	11 51·1	4·0	3·3	10·0	8·3	16·0	13·2
41	12 25·3	12 27·3	11 51·3	4·1	3·4	10·1	8·3	16·1	13·3
42	12 25·5	12 27·5	11 51·5	4·2	3·5	10·2	8·4	16·2	13·4
43	12 25·8	12 27·8	11 51·8	4·3	3·5	10·3	8·5	16·3	13·4
44	12 26·0	12 28·0	11 52·0	4·4	3·6	10·4	8·6	16·4	13·5
45	12 26·3	12 28·3	11 52·3	4·5	3·7	10·5	8·7	16·5	13·6
46	12 26·5	12 28·5	11 52·5	4·6	3·8	10·6	8·7	16·6	13·7
47	12 26·8	12 28·8	11 52·7	4·7	3·9	10·7	8·8	16·7	13·8
48	12 27·0	12 29·0	11 53·0	4·8	4·0	10·8	8·9	16·8	13·9
49	12 27·3	12 29·3	11 53·2	4·9	4·0	10·9	9·0	16·9	13·9
50	12 27·5	12 29·5	11 53·4	5·0	4·1	11·0	9·1	17·0	14·0
51	12 27·8	12 29·8	11 53·7	5·1	4·2	11·1	9·2	17·1	14·1
52	12 28·0	12 30·0	11 53·9	5·2	4·3	11·2	9·2	17·2	14·2
53	12 28·3	12 30·3	11 54·2	5·3	4·4	11·3	9·3	17·3	14·3
54	12 28·5	12 30·5	11 54·4	5·4	4·5	11·4	9·4	17·4	14·4
55	12 28·8	12 30·8	11 54·6	5·5	4·5	11·5	9·5	17·5	14·4
56	12 29·0	12 31·1	11 54·9	5·6	4·6	11·6	9·6	17·6	14·5
57	12 29·3	12 31·3	11 55·1	5·7	4·7	11·7	9·7	17·7	14·6
58	12 29·5	12 31·6	11 55·4	5·8	4·8	11·8	9·7	17·8	14·7
59	12 29·8	12 31·8	11 55·6	5·9	4·9	11·9	9·8	17·9	14·8
60	12 30·0	12 32·1	11 55·8	6·0	5·0	12·0	9·9	18·0	14·9

50m

m 50	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	12 30·0	12 32·1	11 55·8	0·0	0·0	6·0	5·1	12·0	10·1
01	12 30·3	12 32·3	11 56·1	0·1	0·1	6·1	5·1	12·1	10·2
02	12 30·5	12 32·6	11 56·3	0·2	0·2	6·2	5·2	12·2	10·3
03	12 30·8	12 32·8	11 56·5	0·3	0·3	6·3	5·3	12·3	10·4
04	12 31·0	12 33·1	11 56·8	0·4	0·3	6·4	5·4	12·4	10·4
05	12 31·3	12 33·3	11 57·0	0·5	0·4	6·5	5·5	12·5	10·5
06	12 31·5	12 33·6	11 57·3	0·6	0·5	6·6	5·6	12·6	10·6
07	12 31·8	12 33·8	11 57·5	0·7	0·6	6·7	5·6	12·7	10·7
08	12 32·0	12 34·1	11 57·7	0·8	0·7	6·8	5·7	12·8	10·8
09	12 32·3	12 34·3	11 58·0	0·9	0·8	6·9	5·8	12·9	10·9
10	12 32·5	12 34·6	11 58·2	1·0	0·8	7·0	5·9	13·0	10·9
11	12 32·8	12 34·8	11 58·5	1·1	0·9	7·1	6·0	13·1	11·0
12	12 33·0	12 35·1	11 58·7	1·2	1·0	7·2	6·1	13·2	11·1
13	12 33·3	12 35·3	11 58·9	1·3	1·1	7·3	6·1	13·3	11·2
14	12 33·5	12 35·6	11 59·2	1·4	1·2	7·4	6·2	13·4	11·3
15	12 33·8	12 35·8	11 59·4	1·5	1·3	7·5	6·3	13·5	11·4
16	12 34·0	12 36·1	11 59·7	1·6	1·3	7·6	6·4	13·6	11·4
17	12 34·3	12 36·3	11 59·9	1·7	1·4	7·7	6·5	13·7	11·5
18	12 34·5	12 36·6	12 00·1	1·8	1·5	7·8	6·6	13·8	11·6
19	12 34·8	12 36·8	12 00·4	1·9	1·6	7·9	6·6	13·9	11·7
20	12 35·0	12 37·1	12 00·6	2·0	1·7	8·0	6·7	14·0	11·8
21	12 35·3	12 37·3	12 00·8	2·1	1·8	8·1	6·8	14·1	11·9
22	12 35·5	12 37·6	12 01·1	2·2	1·9	8·2	6·9	14·2	12·0
23	12 35·8	12 37·8	12 01·3	2·3	1·9	8·3	7·0	14·3	12·0
24	12 36·0	12 38·1	12 01·6	2·4	2·0	8·4	7·1	14·4	12·1
25	12 36·3	12 38·3	12 01·8	2·5	2·1	8·5	7·2	14·5	12·2
26	12 36·5	12 38·6	12 02·0	2·6	2·2	8·6	7·2	14·6	12·3
27	12 36·8	12 38·8	12 02·3	2·7	2·3	8·7	7·3	14·7	12·4
28	12 37·0	12 39·1	12 02·5	2·8	2·4	8·8	7·4	14·8	12·5
29	12 37·3	12 39·3	12 02·8	2·9	2·4	8·9	7·5	14·9	12·5
30	12 37·5	12 39·6	12 03·0	3·0	2·5	9·0	7·6	15·0	12·6
31	12 37·8	12 39·8	12 03·2	3·1	2·6	9·1	7·7	15·1	12·7
32	12 38·0	12 40·1	12 03·5	3·2	2·7	9·2	7·7	15·2	12·8
33	12 38·3	12 40·3	12 03·7	3·3	2·8	9·3	7·8	15·3	12·9
34	12 38·5	12 40·6	12 03·9	3·4	2·9	9·4	7·9	15·4	13·0
35	12 38·8	12 40·8	12 04·2	3·5	2·9	9·5	8·0	15·5	13·0
36	12 39·0	12 41·1	12 04·4	3·6	3·0	9·6	8·1	15·6	13·1
37	12 39·3	12 41·3	12 04·7	3·7	3·1	9·7	8·2	15·7	13·2
38	12 39·5	12 41·6	12 04·9	3·8	3·2	9·8	8·2	15·8	13·3
39	12 39·8	12 41·8	12 05·1	3·9	3·3	9·9	8·3	15·9	13·4
40	12 40·0	12 42·1	12 05·4	4·0	3·4	10·0	8·4	16·0	13·5
41	12 40·3	12 42·3	12 05·6	4·1	3·5	10·1	8·5	16·1	13·6
42	12 40·5	12 42·6	12 05·9	4·2	3·5	10·2	8·6	16·2	13·6
43	12 40·8	12 42·8	12 06·1	4·3	3·6	10·3	8·7	16·3	13·7
44	12 41·0	12 43·1	12 06·3	4·4	3·7	10·4	8·8	16·4	13·8
45	12 41·3	12 43·3	12 06·6	4·5	3·8	10·5	8·8	16·5	13·9
46	12 41·5	12 43·6	12 06·8	4·6	3·9	10·6	8·9	16·6	14·0
47	12 41·8	12 43·8	12 07·0	4·7	4·0	10·7	9·0	16·7	14·1
48	12 42·0	12 44·1	12 07·3	4·8	4·0	10·8	9·1	16·8	14·1
49	12 42·3	12 44·3	12 07·5	4·9	4·1	10·9	9·2	16·9	14·2
50	12 42·5	12 44·6	12 07·8	5·0	4·2	11·0	9·3	17·0	14·3
51	12 42·8	12 44·8	12 08·0	5·1	4·3	11·1	9·3	17·1	14·4
52	12 43·0	12 45·1	12 08·2	5·2	4·4	11·2	9·4	17·2	14·5
53	12 43·3	12 45·3	12 08·5	5·3	4·5	11·3	9·5	17·3	14·6
54	12 43·5	12 45·6	12 08·7	5·4	4·5	11·4	9·6	17·4	14·6
55	12 43·8	12 45·8	12 09·0	5·5	4·6	11·5	9·7	17·5	14·7
56	12 44·0	12 46·1	12 09·2	5·6	4·7	11·6	9·8	17·6	14·8
57	12 44·3	12 46·3	12 09·4	5·7	4·8	11·7	9·8	17·7	14·9
58	12 44·5	12 46·6	12 09·7	5·8	4·9	11·8	9·9	17·8	15·0
59	12 44·8	12 46·8	12 09·9	5·9	5·0	11·9	10·0	17·9	15·1
60	12 45·0	12 47·1	12 10·2	6·0	5·1	12·0	10·1	18·0	15·2

51m

m 51	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	12 45·0	12 47·1	12 10·2	0·0	0·0	6·0	5·2	12·0	10·3
01	12 45·3	12 47·3	12 10·4	0·1	0·1	6·1	5·2	12·1	10·4
02	12 45·5	12 47·6	12 10·6	0·2	0·2	6·2	5·3	12·2	10·5
03	12 45·8	12 47·8	12 10·9	0·3	0·3	6·3	5·4	12·3	10·6
04	12 46·0	12 48·1	12 11·1	0·4	0·3	6·4	5·5	12·4	10·6
05	12 46·3	12 48·3	12 11·3	0·5	0·4	6·5	5·6	12·5	10·7
06	12 46·5	12 48·6	12 11·6	0·6	0·5	6·6	5·7	12·6	10·8
07	12 46·8	12 48·8	12 11·8	0·7	0·6	6·7	5·8	12·7	10·9
08	12 47·0	12 49·1	12 12·1	0·8	0·7	6·8	5·8	12·8	11·0
09	12 47·3	12 49·4	12 12·3	0·9	0·8	6·9	5·9	12·9	11·1
10	12 47·5	12 49·6	12 12·5	1·0	0·9	7·0	6·0	13·0	11·2
11	12 47·8	12 49·9	12 12·8	1·1	0·9	7·1	6·1	13·1	11·2
12	12 48·0	12 50·1	12 13·0	1·2	1·0	7·2	6·2	13·2	11·3
13	12 48·3	12 50·4	12 13·3	1·3	1·1	7·3	6·3	13·3	11·4
14	12 48·5	12 50·6	12 13·5	1·4	1·2	7·4	6·4	13·4	11·5
15	12 48·8	12 50·9	12 13·7	1·5	1·3	7·5	6·4	13·5	11·6
16	12 49·0	12 51·1	12 14·0	1·6	1·4	7·6	6·5	13·6	11·7
17	12 49·3	12 51·4	12 14·2	1·7	1·5	7·7	6·6	13·7	11·8
18	12 49·5	12 51·6	12 14·4	1·8	1·5	7·8	6·7	13·8	11·8
19	12 49·8	12 51·9	12 14·7	1·9	1·6	7·9	6·8	13·9	11·9
20	12 50·0	12 52·1	12 14·9	2·0	1·7	8·0	6·9	14·0	12·0
21	12 50·3	12 52·4	12 15·2	2·1	1·8	8·1	7·0	14·1	12·1
22	12 50·5	12 52·6	12 15·4	2·2	1·9	8·2	7·0	14·2	12·2
23	12 50·8	12 52·9	12 15·6	2·3	2·0	8·3	7·1	14·3	12·3
24	12 51·0	12 53·1	12 15·9	2·4	2·1	8·4	7·2	14·4	12·4
25	12 51·3	12 53·4	12 16·1	2·5	2·1	8·5	7·3	14·5	12·4
26	12 51·5	12 53·6	12 16·4	2·6	2·2	8·6	7·4	14·6	12·5
27	12 51·8	12 53·9	12 16·6	2·7	2·3	8·7	7·5	14·7	12·6
28	12 52·0	12 54·1	12 16·8	2·8	2·4	8·8	7·6	14·8	12·7
29	12 52·3	12 54·4	12 17·1	2·9	2·5	8·9	7·6	14·9	12·8
30	12 52·5	12 54·6	12 17·3	3·0	2·6	9·0	7·7	15·0	12·9
31	12 52·8	12 54·9	12 17·5	3·1	2·7	9·1	7·8	15·1	13·0
32	12 53·0	12 55·1	12 17·8	3·2	2·7	9·2	7·9	15·2	13·0
33	12 53·3	12 55·4	12 18·0	3·3	2·8	9·3	8·0	15·3	13·1
34	12 53·5	12 55·6	12 18·3	3·4	2·9	9·4	8·1	15·4	13·2
35	12 53·8	12 55·9	12 18·5	3·5	3·0	9·5	8·2	15·5	13·3
36	12 54·0	12 56·1	12 18·7	3·6	3·1	9·6	8·2	15·6	13·4
37	12 54·3	12 56·4	12 19·0	3·7	3·2	9·7	8·3	15·7	13·5
38	12 54·5	12 56·6	12 19·2	3·8	3·3	9·8	8·4	15·8	13·6
39	12 54·8	12 56·9	12 19·5	3·9	3·3	9·9	8·5	15·9	13·6
40	12 55·0	12 57·1	12 19·7	4·0	3·4	10·0	8·6	16·0	13·7
41	12 55·3	12 57·4	12 19·9	4·1	3·5	10·1	8·7	16·1	13·8
42	12 55·5	12 57·6	12 20·2	4·2	3·6	10·2	8·8	16·2	13·9
43	12 55·8	12 57·9	12 20·4	4·3	3·7	10·3	8·8	16·3	14·0
44	12 56·0	12 58·1	12 20·6	4·4	3·8	10·4	8·9	16·4	14·1
45	12 56·3	12 58·4	12 20·9	4·5	3·9	10·5	9·0	16·5	14·2
46	12 56·5	12 58·6	12 21·1	4·6	3·9	10·6	9·1	16·6	14·2
47	12 56·8	12 58·9	12 21·4	4·7	4·0	10·7	9·2	16·7	14·3
48	12 57·0	12 59·1	12 21·6	4·8	4·1	10·8	9·3	16·8	14·4
49	12 57·3	12 59·4	12 21·8	4·9	4·2	10·9	9·4	16·9	14·5
50	12 57·5	12 59·6	12 22·1	5·0	4·3	11·0	9·4	17·0	14·6
51	12 57·8	12 59·9	12 22·3	5·1	4·4	11·1	9·5	17·1	14·7
52	12 58·0	13 00·1	12 22·6	5·2	4·5	11·2	9·6	17·2	14·8
53	12 58·3	13 00·4	12 22·8	5·3	4·5	11·3	9·7	17·3	14·8
54	12 58·5	13 00·6	12 23·0	5·4	4·6	11·4	9·8	17·4	14·9
55	12 58·8	13 00·9	12 23·3	5·5	4·7	11·5	9·9	17·5	15·0
56	12 59·0	13 01·1	12 23·5	5·6	4·8	11·6	10·0	17·6	15·1
57	12 59·3	13 01·4	12 23·8	5·7	4·9	11·7	10·0	17·7	15·2
58	12 59·5	13 01·6	12 24·0	5·8	5·0	11·8	10·1	17·8	15·3
59	12 59·8	13 01·9	12 24·2	5·9	5·1	11·9	10·2	17·9	15·4
60	13 00·0	13 02·1	12 24·5	6·0	5·2	12·0	10·3	18·0	15·5

52m

m 52	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	13 00·0	13 02·1	12 24·5	0·0	0·0	6·0	5·3	12·0	10·5
01	13 00·3	13 02·4	12 24·7	0·1	0·1	6·1	5·3	12·1	10·6
02	13 00·5	13 02·6	12 24·9	0·2	0·2	6·2	5·4	12·2	10·7
03	13 00·8	13 02·9	12 25·2	0·3	0·3	6·3	5·5	12·3	10·8
04	13 01·0	13 03·1	12 25·4	0·4	0·4	6·4	5·6	12·4	10·9
05	13 01·3	13 03·4	12 25·7	0·5	0·4	6·5	5·7	12·5	10·9
06	13 01·5	13 03·6	12 25·9	0·6	0·5	6·6	5·8	12·6	11·0
07	13 01·8	13 03·9	12 26·1	0·7	0·6	6·7	5·9	12·7	11·1
08	13 02·0	13 04·1	12 26·4	0·8	0·7	6·8	6·0	12·8	11·2
09	13 02·3	13 04·4	12 26·6	0·9	0·8	6·9	6·0	12·9	11·3
10	13 02·5	13 04·6	12 26·9	1·0	0·9	7·0	6·1	13·0	11·4
11	13 02·8	13 04·9	12 27·1	1·1	1·0	7·1	6·2	13·1	11·5
12	13 03·0	13 05·1	12 27·3	1·2	1·1	7·2	6·3	13·2	11·6
13	13 03·3	13 05·4	12 27·6	1·3	1·1	7·3	6·4	13·3	11·6
14	13 03·5	13 05·6	12 27·8	1·4	1·2	7·4	6·5	13·4	11·7
15	13 03·8	13 05·9	12 28·0	1·5	1·3	7·5	6·6	13·5	11·8
16	13 04·0	13 06·1	12 28·3	1·6	1·4	7·6	6·7	13·6	11·9
17	13 04·3	13 06·4	12 28·5	1·7	1·5	7·7	6·7	13·7	12·0
18	13 04·5	13 06·6	12 28·8	1·8	1·6	7·8	6·8	13·8	12·1
19	13 04·8	13 06·9	12 29·0	1·9	1·7	7·9	6·9	13·9	12·2
20	13 05·0	13 07·1	12 29·2	2·0	1·8	8·0	7·0	14·0	12·3
21	13 05·3	13 07·4	12 29·5	2·1	1·8	8·1	7·1	14·1	12·3
22	13 05·5	13 07·7	12 29·7	2·2	1·9	8·2	7·2	14·2	12·4
23	13 05·8	13 07·9	12 30·0	2·3	2·0	8·3	7·3	14·3	12·5
24	13 06·0	13 08·2	12 30·2	2·4	2·1	8·4	7·4	14·4	12·6
25	13 06·3	13 08·4	12 30·4	2·5	2·2	8·5	7·4	14·5	12·7
26	13 06·5	13 08·7	12 30·7	2·6	2·3	8·6	7·5	14·6	12·8
27	13 06·8	13 08·9	12 30·9	2·7	2·4	8·7	7·6	14·7	12·9
28	13 07·0	13 09·2	12 31·1	2·8	2·5	8·8	7·7	14·8	13·0
29	13 07·3	13 09·4	12 31·4	2·9	2·5	8·9	7·8	14·9	13·0
30	13 07·5	13 09·7	12 31·6	3·0	2·6	9·0	7·9	15·0	13·1
31	13 07·8	13 09·9	12 31·9	3·1	2·7	9·1	8·0	15·1	13·2
32	13 08·0	13 10·2	12 32·1	3·2	2·8	9·2	8·0	15·2	13·3
33	13 08·3	13 10·4	12 32·3	3·3	2·9	9·3	8·1	15·3	13·4
34	13 08·5	13 10·7	12 32·6	3·4	3·0	9·4	8·2	15·4	13·5
35	13 08·8	13 10·9	12 32·8	3·5	3·1	9·5	8·3	15·5	13·6
36	13 09·0	13 11·2	12 33·1	3·6	3·2	9·6	8·4	15·6	13·7
37	13 09·3	13 11·4	12 33·3	3·7	3·2	9·7	8·5	15·7	13·7
38	13 09·5	13 11·7	12 33·5	3·8	3·3	9·8	8·6	15·8	13·8
39	13 09·8	13 11·9	12 33·8	3·9	3·4	9·9	8·7	15·9	13·9
40	13 10·0	13 12·2	12 34·0	4·0	3·5	10·0	8·8	16·0	14·0
41	13 10·3	13 12·4	12 34·2	4·1	3·6	10·1	8·8	16·1	14·1
42	13 10·5	13 12·7	12 34·5	4·2	3·7	10·2	8·9	16·2	14·2
43	13 10·8	13 12·9	12 34·7	4·3	3·8	10·3	9·0	16·3	14·3
44	13 11·0	13 13·2	12 35·0	4·4	3·9	10·4	9·1	16·4	14·3
45	13 11·3	13 13·4	12 35·2	4·5	3·9	10·5	9·2	16·5	14·4
46	13 11·5	13 13·7	12 35·4	4·6	4·0	10·6	9·3	16·6	14·5
47	13 11·8	13 13·9	12 35·7	4·7	4·1	10·7	9·4	16·7	14·6
48	13 12·0	13 14·2	12 35·9	4·8	4·2	10·8	9·5	16·8	14·7
49	13 12·3	13 14·4	12 36·2	4·9	4·3	10·9	9·5	16·9	14·8
50	13 12·5	13 14·7	12 36·4	5·0	4·4	11·0	9·6	17·0	14·9
51	13 12·8	13 14·9	12 36·6	5·1	4·5	11·1	9·7	17·1	15·0
52	13 13·0	13 15·2	12 36·9	5·2	4·6	11·2	9·8	17·2	15·1
53	13 13·3	13 15·4	12 37·1	5·3	4·6	11·3	9·9	17·3	15·1
54	13 13·5	13 15·7	12 37·4	5·4	4·7	11·4	10·0	17·4	15·2
55	13 13·8	13 15·9	12 37·6	5·5	4·8	11·5	10·1	17·5	15·3
56	13 14·0	13 16·2	12 37·8	5·6	4·9	11·6	10·2	17·6	15·4
57	13 14·3	13 16·4	12 38·1	5·7	5·0	11·7	10·2	17·7	15·5
58	13 14·5	13 16·7	12 38·3	5·8	5·1	11·8	10·3	17·8	15·6
59	13 14·8	13 16·9	12 38·5	5·9	5·2	11·9	10·4	17·9	15·7
60	13 15·0	13 17·2	12 38·8	6·0	5·3	12·0	10·5	18·0	15·8

53m

m 53	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	13 15·0	13 17·2	12 38·8	0·0	0·0	6·0	5·4	12·0	10·7
01	13 15·3	13 17·4	12 39·0	0·1	0·1	6·1	5·4	12·1	10·8
02	13 15·5	13 17·7	12 39·3	0·2	0·2	6·2	5·5	12·2	10·9
03	13 15·8	13 17·9	12 39·5	0·3	0·3	6·3	5·6	12·3	11·0
04	13 16·0	13 18·2	12 39·7	0·4	0·4	6·4	5·7	12·4	11·1
05	13 16·3	13 18·4	12 40·0	0·5	0·4	6·5	5·8	12·5	11·1
06	13 16·5	13 18·7	12 40·2	0·6	0·5	6·6	5·9	12·6	11·2
07	13 16·8	13 18·9	12 40·5	0·7	0·6	6·7	6·0	12·7	11·3
08	13 17·0	13 19·2	12 40·7	0·8	0·7	6·8	6·1	12·8	11·4
09	13 17·3	13 19·4	12 40·9	0·9	0·8	6·9	6·2	12·9	11·5
10	13 17·5	13 19·7	12 41·2	1·0	0·9	7·0	6·2	13·0	11·6
11	13 17·8	13 19·9	12 41·4	1·1	1·0	7·1	6·3	13·1	11·7
12	13 18·0	13 20·2	12 41·6	1·2	1·1	7·2	6·4	13·2	11·8
13	13 18·3	13 20·4	12 41·9	1·3	1·2	7·3	6·5	13·3	11·9
14	13 18·5	13 20·7	12 42·1	1·4	1·2	7·4	6·6	13·4	11·9
15	13 18·8	13 20·9	12 42·4	1·5	1·3	7·5	6·7	13·5	12·0
16	13 19·0	13 21·2	12 42·6	1·6	1·4	7·6	6·8	13·6	12·1
17	13 19·3	13 21·4	12 42·8	1·7	1·5	7·7	6·9	13·7	12·2
18	13 19·5	13 21·7	12 43·1	1·8	1·6	7·8	7·0	13·8	12·3
19	13 19·8	13 21·9	12 43·3	1·9	1·7	7·9	7·0	13·9	12·4
20	13 20·0	13 22·2	12 43·6	2·0	1·8	8·0	7·1	14·0	12·5
21	13 20·3	13 22·4	12 43·8	2·1	1·9	8·1	7·2	14·1	12·6
22	13 20·5	13 22·7	12 44·0	2·2	2·0	8·2	7·3	14·2	12·7
23	13 20·8	13 22·9	12 44·3	2·3	2·1	8·3	7·4	14·3	12·8
24	13 21·0	13 23·2	12 44·5	2·4	2·1	8·4	7·5	14·4	12·8
25	13 21·3	13 23·4	12 44·7	2·5	2·2	8·5	7·6	14·5	12·9
26	13 21·5	13 23·7	12 45·0	2·6	2·3	8·6	7·7	14·6	13·0
27	13 21·8	13 23·9	12 45·2	2·7	2·4	8·7	7·8	14·7	13·1
28	13 22·0	13 24·2	12 45·5	2·8	2·5	8·8	7·8	14·8	13·2
29	13 22·3	13 24·4	12 45·7	2·9	2·6	8·9	7·9	14·9	13·3
30	13 22·5	13 24·7	12 45·9	3·0	2·7	9·0	8·0	15·0	13·4
31	13 22·8	13 24·9	12 46·2	3·1	2·8	9·1	8·1	15·1	13·5
32	13 23·0	13 25·2	12 46·4	3·2	2·9	9·2	8·2	15·2	13·6
33	13 23·3	13 25·4	12 46·7	3·3	2·9	9·3	8·3	15·3	13·6
34	13 23·5	13 25·7	12 46·9	3·4	3·0	9·4	8·4	15·4	13·7
35	13 23·8	13 26·0	12 47·1	3·5	3·1	9·5	8·5	15·5	13·8
36	13 24·0	13 26·2	12 47·4	3·6	3·2	9·6	8·6	15·6	13·9
37	13 24·3	13 26·5	12 47·6	3·7	3·3	9·7	8·6	15·7	14·0
38	13 24·5	13 26·7	12 47·9	3·8	3·4	9·8	8·7	15·8	14·1
39	13 24·8	13 27·0	12 48·1	3·9	3·5	9·9	8·8	15·9	14·2
40	13 25·0	13 27·2	12 48·3	4·0	3·6	10·0	8·9	16·0	14·3
41	13 25·3	13 27·5	12 48·6	4·1	3·7	10·1	9·0	16·1	14·4
42	13 25·5	13 27·7	12 48·8	4·2	3·7	10·2	9·1	16·2	14·4
43	13 25·8	13 28·0	12 49·0	4·3	3·8	10·3	9·2	16·3	14·5
44	13 26·0	13 28·2	12 49·3	4·4	3·9	10·4	9·3	16·4	14·6
45	13 26·3	13 28·5	12 49·5	4·5	4·0	10·5	9·4	16·5	14·7
46	13 26·5	13 28·7	12 49·8	4·6	4·1	10·6	9·5	16·6	14·8
47	13 26·8	13 29·0	12 50·0	4·7	4·2	10·7	9·5	16·7	14·9
48	13 27·0	13 29·2	12 50·2	4·8	4·3	10·8	9·6	16·8	15·0
49	13 27·3	13 29·5	12 50·5	4·9	4·4	10·9	9·7	16·9	15·1
50	13 27·5	13 29·7	12 50·7	5·0	4·5	11·0	9·8	17·0	15·2
51	13 27·8	13 30·0	12 51·0	5·1	4·5	11·1	9·9	17·1	15·2
52	13 28·0	13 30·2	12 51·2	5·2	4·6	11·2	10·0	17·2	15·3
53	13 28·3	13 30·5	12 51·4	5·3	4·7	11·3	10·1	17·3	15·4
54	13 28·5	13 30·7	12 51·7	5·4	4·8	11·4	10·2	17·4	15·5
55	13 28·8	13 31·0	12 51·9	5·5	4·9	11·5	10·3	17·5	15·6
56	13 29·0	13 31·2	12 52·1	5·6	5·0	11·6	10·3	17·6	15·7
57	13 29·3	13 31·5	12 52·4	5·7	5·1	11·7	10·4	17·7	15·8
58	13 29·5	13 31·7	12 52·6	5·8	5·2	11·8	10·5	17·8	15·9
59	13 29·8	13 32·0	12 52·9	5·9	5·3	11·9	10·6	17·9	16·0
60	13 30·0	13 32·2	12 53·1	6·0	5·4	12·0	10·7	18·0	16·1

54m

m 54	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	13 30·0	13 32·2	12 53·1	0·0	0·0	6·0	5·5	12·0	10·9
01	13 30·3	13 32·5	12 53·3	0·1	0·1	6·1	5·5	12·1	11·0
02	13 30·5	13 32·7	12 53·6	0·2	0·2	6·2	5·6	12·2	11·1
03	13 30·8	13 33·0	12 53·8	0·3	0·3	6·3	5·7	12·3	11·2
04	13 31·0	13 33·2	12 54·1	0·4	0·4	6·4	5·8	12·4	11·3
05	13 31·3	13 33·5	12 54·3	0·5	0·5	6·5	5·9	12·5	11·4
06	13 31·5	13 33·7	12 54·5	0·6	0·5	6·6	6·0	12·6	11·4
07	13 31·8	13 34·0	12 54·8	0·7	0·6	6·7	6·1	12·7	11·5
08	13 32·0	13 34·2	12 55·0	0·8	0·7	6·8	6·2	12·8	11·6
09	13 32·3	13 34·5	12 55·2	0·9	0·8	6·9	6·3	12·9	11·7
10	13 32·5	13 34·7	12 55·5	1·0	0·9	7·0	6·4	13·0	11·8
11	13 32·8	13 35·0	12 55·7	1·1	1·0	7·1	6·4	13·1	11·9
12	13 33·0	13 35·2	12 56·0	1·2	1·1	7·2	6·5	13·2	12·0
13	13 33·3	13 35·5	12 56·2	1·3	1·2	7·3	6·6	13·3	12·1
14	13 33·5	13 35·7	12 56·4	1·4	1·3	7·4	6·7	13·4	12·2
15	13 33·8	13 36·0	12 56·7	1·5	1·4	7·5	6·8	13·5	12·3
16	13 34·0	13 36·2	12 56·9	1·6	1·5	7·6	6·9	13·6	12·4
17	13 34·3	13 36·5	12 57·2	1·7	1·5	7·7	7·0	13·7	12·4
18	13 34·5	13 36·7	12 57·4	1·8	1·6	7·8	7·1	13·8	12·5
19	13 34·8	13 37·0	12 57·6	1·9	1·7	7·9	7·2	13·9	12·6
20	13 35·0	13 37·2	12 57·9	2·0	1·8	8·0	7·3	14·0	12·7
21	13 35·3	13 37·5	12 58·1	2·1	1·9	8·1	7·4	14·1	12·8
22	13 35·5	13 37·7	12 58·3	2·2	2·0	8·2	7·4	14·2	12·9
23	13 35·8	13 38·0	12 58·6	2·3	2·1	8·3	7·5	14·3	13·0
24	13 36·0	13 38·2	12 58·8	2·4	2·2	8·4	7·6	14·4	13·1
25	13 36·3	13 38·5	12 59·1	2·5	2·3	8·5	7·7	14·5	13·2
26	13 36·5	13 38·7	12 59·3	2·6	2·4	8·6	7·8	14·6	13·3
27	13 36·8	13 39·0	12 59·5	2·7	2·5	8·7	7·9	14·7	13·4
28	13 37·0	13 39·2	12 59·8	2·8	2·5	8·8	8·0	14·8	13·4
29	13 37·3	13 39·5	13 00·0	2·9	2·6	8·9	8·1	14·9	13·5
30	13 37·5	13 39·7	13 00·3	3·0	2·7	9·0	8·2	15·0	13·6
31	13 37·8	13 40·0	13 00·5	3·1	2·8	9·1	8·3	15·1	13·7
32	13 38·0	13 40·2	13 00·7	3·2	2·9	9·2	8·4	15·2	13·8
33	13 38·3	13 40·5	13 01·0	3·3	3·0	9·3	8·4	15·3	13·9
34	13 38·5	13 40·7	13 01·2	3·4	3·1	9·4	8·5	15·4	14·0
35	13 38·8	13 41·0	13 01·5	3·5	3·2	9·5	8·6	15·5	14·1
36	13 39·0	13 41·2	13 01·7	3·6	3·3	9·6	8·7	15·6	14·2
37	13 39·3	13 41·5	13 01·9	3·7	3·4	9·7	8·8	15·7	14·3
38	13 39·5	13 41·7	13 02·2	3·8	3·5	9·8	8·9	15·8	14·4
39	13 39·8	13 42·0	13 02·4	3·9	3·5	9·9	9·0	15·9	14·4
40	13 40·0	13 42·2	13 02·6	4·0	3·6	10·0	9·1	16·0	14·5
41	13 40·3	13 42·5	13 02·9	4·1	3·7	10·1	9·2	16·1	14·6
42	13 40·5	13 42·7	13 03·1	4·2	3·8	10·2	9·3	16·2	14·7
43	13 40·8	13 43·0	13 03·4	4·3	3·9	10·3	9·4	16·3	14·8
44	13 41·0	13 43·2	13 03·6	4·4	4·0	10·4	9·4	16·4	14·9
45	13 41·3	13 43·5	13 03·8	4·5	4·1	10·5	9·5	16·5	15·0
46	13 41·5	13 43·7	13 04·1	4·6	4·2	10·6	9·6	16·6	15·1
47	13 41·8	13 44·0	13 04·3	4·7	4·3	10·7	9·7	16·7	15·2
48	13 42·0	13 44·3	13 04·6	4·8	4·4	10·8	9·8	16·8	15·3
49	13 42·3	13 44·5	13 04·8	4·9	4·5	10·9	9·9	16·9	15·4
50	13 42·5	13 44·8	13 05·0	5·0	4·5	11·0	10·0	17·0	15·4
51	13 42·8	13 45·0	13 05·3	5·1	4·6	11·1	10·1	17·1	15·5
52	13 43·0	13 45·3	13 05·5	5·2	4·7	11·2	10·2	17·2	15·6
53	13 43·3	13 45·5	13 05·7	5·3	4·8	11·3	10·3	17·3	15·7
54	13 43·5	13 45·8	13 06·0	5·4	4·9	11·4	10·4	17·4	15·8
55	13 43·8	13 46·0	13 06·2	5·5	5·0	11·5	10·4	17·5	15·9
56	13 44·0	13 46·3	13 06·5	5·6	5·1	11·6	10·5	17·6	16·0
57	13 44·3	13 46·5	13 06·7	5·7	5·2	11·7	10·6	17·7	16·1
58	13 44·5	13 46·8	13 06·9	5·8	5·3	11·8	10·7	17·8	16·2
59	13 44·8	13 47·0	13 07·2	5·9	5·4	11·9	10·8	17·9	16·3
60	13 45·0	13 47·3	13 07·4	6·0	5·5	12·0	10·9	18·0	16·4

55m

m 55	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	13 45·0	13 47·3	13 07·4	0·0	0·0	6·0	5·6	12·0	11·1
01	13 45·3	13 47·5	13 07·7	0·1	0·1	6·1	5·6	12·1	11·2
02	13 45·5	13 47·8	13 07·9	0·2	0·2	6·2	5·7	12·2	11·3
03	13 45·8	13 48·0	13 08·1	0·3	0·3	6·3	5·8	12·3	11·4
04	13 46·0	13 48·3	13 08·4	0·4	0·4	6·4	5·9	12·4	11·5
05	13 46·3	13 48·5	13 08·6	0·5	0·5	6·5	6·0	12·5	11·6
06	13 46·5	13 48·8	13 08·8	0·6	0·6	6·6	6·1	12·6	11·7
07	13 46·8	13 49·0	13 09·1	0·7	0·6	6·7	6·2	12·7	11·7
08	13 47·0	13 49·3	13 09·3	0·8	0·7	6·8	6·3	12·8	11·8
09	13 47·3	13 49·5	13 09·6	0·9	0·8	6·9	6·4	12·9	11·9
10	13 47·5	13 49·8	13 09·8	1·0	0·9	7·0	6·5	13·0	12·0
11	13 47·8	13 50·0	13 10·0	1·1	1·0	7·1	6·6	13·1	12·1
12	13 48·0	13 50·3	13 10·3	1·2	1·1	7·2	6·7	13·2	12·2
13	13 48·3	13 50·5	13 10·5	1·3	1·2	7·3	6·8	13·3	12·3
14	13 48·5	13 50·8	13 10·8	1·4	1·3	7·4	6·8	13·4	12·4
15	13 48·8	13 51·0	13 11·0	1·5	1·4	7·5	6·9	13·5	12·5
16	13 49·0	13 51·3	13 11·2	1·6	1·5	7·6	7·0	13·6	12·6
17	13 49·3	13 51·5	13 11·5	1·7	1·6	7·7	7·1	13·7	12·7
18	13 49·5	13 51·8	13 11·7	1·8	1·7	7·8	7·2	13·8	12·8
19	13 49·8	13 52·0	13 12·0	1·9	1·8	7·9	7·3	13·9	12·9
20	13 50·0	13 52·3	13 12·2	2·0	1·9	8·0	7·4	14·0	13·0
21	13 50·3	13 52·5	13 12·4	2·1	1·9	8·1	7·5	14·1	13·0
22	13 50·5	13 52·8	13 12·7	2·2	2·0	8·2	7·6	14·2	13·1
23	13 50·8	13 53·0	13 12·9	2·3	2·1	8·3	7·7	14·3	13·2
24	13 51·0	13 53·3	13 13·1	2·4	2·2	8·4	7·8	14·4	13·3
25	13 51·3	13 53·5	13 13·4	2·5	2·3	8·5	7·9	14·5	13·4
26	13 51·5	13 53·8	13 13·6	2·6	2·4	8·6	8·0	14·6	13·5
27	13 51·8	13 54·0	13 13·9	2·7	2·5	8·7	8·0	14·7	13·6
28	13 52·0	13 54·3	13 14·1	2·8	2·6	8·8	8·1	14·8	13·7
29	13 52·3	13 54·5	13 14·3	2·9	2·7	8·9	8·2	14·9	13·8
30	13 52·5	13 54·8	13 14·6	3·0	2·8	9·0	8·3	15·0	13·9
31	13 52·8	13 55·0	13 14·8	3·1	2·9	9·1	8·4	15·1	14·0
32	13 53·0	13 55·3	13 15·1	3·2	3·0	9·2	8·5	15·2	14·1
33	13 53·3	13 55·5	13 15·3	3·3	3·1	9·3	8·6	15·3	14·2
34	13 53·5	13 55·8	13 15·5	3·4	3·1	9·4	8·7	15·4	14·2
35	13 53·8	13 56·0	13 15·8	3·5	3·2	9·5	8·8	15·5	14·3
36	13 54·0	13 56·3	13 16·0	3·6	3·3	9·6	8·9	15·6	14·4
37	13 54·3	13 56·5	13 16·2	3·7	3·4	9·7	9·0	15·7	14·5
38	13 54·5	13 56·8	13 16·5	3·8	3·5	9·8	9·1	15·8	14·6
39	13 54·8	13 57·0	13 16·7	3·9	3·6	9·9	9·2	15·9	14·7
40	13 55·0	13 57·3	13 17·0	4·0	3·7	10·0	9·3	16·0	14·8
41	13 55·3	13 57·5	13 17·2	4·1	3·8	10·1	9·3	16·1	14·9
42	13 55·5	13 57·8	13 17·4	4·2	3·9	10·2	9·4	16·2	15·0
43	13 55·8	13 58·0	13 17·7	4·3	4·0	10·3	9·5	16·3	15·1
44	13 56·0	13 58·3	13 17·9	4·4	4·1	10·4	9·6	16·4	15·2
45	13 56·3	13 58·5	13 18·2	4·5	4·2	10·5	9·7	16·5	15·3
46	13 56·5	13 58·8	13 18·4	4·6	4·3	10·6	9·8	16·6	15·4
47	13 56·8	13 59·0	13 18·6	4·7	4·3	10·7	9·9	16·7	15·4
48	13 57·0	13 59·3	13 18·9	4·8	4·4	10·8	10·0	16·8	15·5
49	13 57·3	13 59·5	13 19·1	4·9	4·5	10·9	10·1	16·9	15·6
50	13 57·5	13 59·8	13 19·3	5·0	4·6	11·0	10·2	17·0	15·7
51	13 57·8	14 00·0	13 19·6	5·1	4·7	11·1	10·3	17·1	15·8
52	13 58·0	14 00·3	13 19·8	5·2	4·8	11·2	10·4	17·2	15·9
53	13 58·3	14 00·5	13 20·1	5·3	4·9	11·3	10·5	17·3	16·0
54	13 58·5	14 00·8	13 20·3	5·4	5·0	11·4	10·5	17·4	16·1
55	13 58·8	14 01·0	13 20·5	5·5	5·1	11·5	10·6	17·5	16·2
56	13 59·0	14 01·3	13 20·8	5·6	5·2	11·6	10·7	17·6	16·3
57	13 59·3	14 01·5	13 21·0	5·7	5·3	11·7	10·8	17·7	16·4
58	13 59·5	14 01·8	13 21·3	5·8	5·4	11·8	10·9	17·8	16·5
59	13 59·8	14 02·0	13 21·5	5·9	5·5	11·9	11·0	17·9	16·6
60	14 00·0	14 02·3	13 21·7	6·0	5·6	12·0	11·1	18·0	16·7

56m

m 56	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	14 00·0	14 02·3	13 21·7	0·0	0·0	6·0	5·7	12·0	11·3
01	14 00·3	14 02·6	13 22·0	0·1	0·1	6·1	5·7	12·1	11·4
02	14 00·5	14 02·8	13 22·2	0·2	0·2	6·2	5·8	12·2	11·5
03	14 00·8	14 03·1	13 22·4	0·3	0·3	6·3	5·9	12·3	11·6
04	14 01·0	14 03·3	13 22·7	0·4	0·4	6·4	6·0	12·4	11·7
05	14 01·3	14 03·6	13 22·9	0·5	0·5	6·5	6·1	12·5	11·8
06	14 01·5	14 03·8	13 23·2	0·6	0·6	6·6	6·2	12·6	11·9
07	14 01·8	14 04·1	13 23·4	0·7	0·7	6·7	6·3	12·7	12·0
08	14 02·0	14 04·3	13 23·6	0·8	0·8	6·8	6·4	12·8	12·1
09	14 02·3	14 04·6	13 23·9	0·9	0·8	6·9	6·5	12·9	12·1
10	14 02·5	14 04·8	13 24·1	1·0	0·9	7·0	6·6	13·0	12·2
11	14 02·8	14 05·1	13 24·4	1·1	1·0	7·1	6·7	13·1	12·3
12	14 03·0	14 05·3	13 24·6	1·2	1·1	7·2	6·8	13·2	12·4
13	14 03·3	14 05·6	13 24·8	1·3	1·2	7·3	6·9	13·3	12·5
14	14 03·5	14 05·8	13 25·1	1·4	1·3	7·4	7·0	13·4	12·6
15	14 03·8	14 06·1	13 25·3	1·5	1·4	7·5	7·1	13·5	12·7
16	14 04·0	14 06·3	13 25·6	1·6	1·5	7·6	7·2	13·6	12·8
17	14 04·3	14 06·6	13 25·8	1·7	1·6	7·7	7·3	13·7	12·9
18	14 04·5	14 06·8	13 26·0	1·8	1·7	7·8	7·3	13·8	13·0
19	14 04·8	14 07·1	13 26·3	1·9	1·8	7·9	7·4	13·9	13·1
20	14 05·0	14 07·3	13 26·5	2·0	1·9	8·0	7·5	14·0	13·2
21	14 05·3	14 07·6	13 26·7	2·1	2·0	8·1	7·6	14·1	13·3
22	14 05·5	14 07·8	13 27·0	2·2	2·1	8·2	7·7	14·2	13·4
23	14 05·8	14 08·1	13 27·2	2·3	2·2	8·3	7·8	14·3	13·5
24	14 06·0	14 08·3	13 27·5	2·4	2·3	8·4	7·9	14·4	13·6
25	14 06·3	14 08·6	13 27·7	2·5	2·4	8·5	8·0	14·5	13·7
26	14 06·5	14 08·8	13 27·9	2·6	2·4	8·6	8·1	14·6	13·7
27	14 06·8	14 09·1	13 28·2	2·7	2·5	8·7	8·2	14·7	13·8
28	14 07·0	14 09·3	13 28·4	2·8	2·6	8·8	8·3	14·8	13·9
29	14 07·3	14 09·6	13 28·7	2·9	2·7	8·9	8·4	14·9	14·0
30	14 07·5	14 09·8	13 28·9	3·0	2·8	9·0	8·5	15·0	14·1
31	14 07·8	14 10·1	13 29·1	3·1	2·9	9·1	8·6	15·1	14·2
32	14 08·0	14 10·3	13 29·4	3·2	3·0	9·2	8·7	15·2	14·3
33	14 08·3	14 10·6	13 29·6	3·3	3·1	9·3	8·8	15·3	14·4
34	14 08·5	14 10·8	13 29·8	3·4	3·2	9·4	8·9	15·4	14·5
35	14 08·8	14 11·1	13 30·1	3·5	3·3	9·5	8·9	15·5	14·6
36	14 09·0	14 11·3	13 30·3	3·6	3·4	9·6	9·0	15·6	14·7
37	14 09·3	14 11·6	13 30·6	3·7	3·5	9·7	9·1	15·7	14·8
38	14 09·5	14 11·8	13 30·8	3·8	3·6	9·8	9·2	15·8	14·9
39	14 09·8	14 12·1	13 31·0	3·9	3·7	9·9	9·3	15·9	15·0
40	14 10·0	14 12·3	13 31·3	4·0	3·8	10·0	9·4	16·0	15·1
41	14 10·3	14 12·6	13 31·5	4·1	3·9	10·1	9·5	16·1	15·2
42	14 10·5	14 12·8	13 31·8	4·2	4·0	10·2	9·6	16·2	15·3
43	14 10·8	14 13·1	13 32·0	4·3	4·0	10·3	9·7	16·3	15·3
44	14 11·0	14 13·3	13 32·2	4·4	4·1	10·4	9·8	16·4	15·4
45	14 11·3	14 13·6	13 32·5	4·5	4·2	10·5	9·9	16·5	15·5
46	14 11·5	14 13·8	13 32·7	4·6	4·3	10·6	10·0	16·6	15·6
47	14 11·8	14 14·1	13 32·9	4·7	4·4	10·7	10·1	16·7	15·7
48	14 12·0	14 14·3	13 33·2	4·8	4·5	10·8	10·2	16·8	15·8
49	14 12·3	14 14·6	13 33·4	4·9	4·6	10·9	10·3	16·9	15·9
50	14 12·5	14 14·8	13 33·7	5·0	4·7	11·0	10·4	17·0	16·0
51	14 12·8	14 15·1	13 33·9	5·1	4·8	11·1	10·5	17·1	16·1
52	14 13·0	14 15·3	13 34·1	5·2	4·9	11·2	10·5	17·2	16·2
53	14 13·3	14 15·6	13 34·4	5·3	5·0	11·3	10·6	17·3	16·3
54	14 13·5	14 15·8	13 34·6	5·4	5·1	11·4	10·7	17·4	16·4
55	14 13·8	14 16·1	13 34·9	5·5	5·2	11·5	10·8	17·5	16·5
56	14 14·0	14 16·3	13 35·1	5·6	5·3	11·6	10·9	17·6	16·6
57	14 14·3	14 16·6	13 35·3	5·7	5·4	11·7	11·0	17·7	16·7
58	14 14·5	14 16·8	13 35·6	5·8	5·5	11·8	11·1	17·8	16·8
59	14 14·8	14 17·1	13 35·8	5·9	5·6	11·9	11·2	17·9	16·9
60	14 15·0	14 17·3	13 36·1	6·0	5·7	12·0	11·3	18·0	17·0

57m

m 57	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	14 15·0	14 17·3	13 36·1	0·0	0·0	6·0	5·8	12·0	11·5
01	14 15·3	14 17·6	13 36·3	0·1	0·1	6·1	5·8	12·1	11·6
02	14 15·5	14 17·8	13 36·5	0·2	0·2	6·2	5·9	12·2	11·7
03	14 15·8	14 18·1	13 36·8	0·3	0·3	6·3	6·0	12·3	11·8
04	14 16·0	14 18·3	13 37·0	0·4	0·4	6·4	6·1	12·4	11·9
05	14 16·3	14 18·6	13 37·2	0·5	0·5	6·5	6·2	12·5	12·0
06	14 16·5	14 18·8	13 37·5	0·6	0·6	6·6	6·3	12·6	12·1
07	14 16·8	14 19·1	13 37·7	0·7	0·7	6·7	6·4	12·7	12·2
08	14 17·0	14 19·3	13 38·0	0·8	0·8	6·8	6·5	12·8	12·3
09	14 17·3	14 19·6	13 38·2	0·9	0·9	6·9	6·6	12·9	12·4
10	14 17·5	14 19·8	13 38·4	1·0	1·0	7·0	6·7	13·0	12·5
11	14 17·8	14 20·1	13 38·7	1·1	1·1	7·1	6·8	13·1	12·6
12	14 18·0	14 20·3	13 38·9	1·2	1·2	7·2	6·9	13·2	12·7
13	14 18·3	14 20·6	13 39·2	1·3	1·2	7·3	7·0	13·3	12·7
14	14 18·5	14 20·9	13 39·4	1·4	1·3	7·4	7·1	13·4	12·8
15	14 18·8	14 21·1	13 39·6	1·5	1·4	7·5	7·2	13·5	12·9
16	14 19·0	14 21·4	13 39·9	1·6	1·5	7·6	7·3	13·6	13·0
17	14 19·3	14 21·6	13 40·1	1·7	1·6	7·7	7·4	13·7	13·1
18	14 19·5	14 21·9	13 40·3	1·8	1·7	7·8	7·5	13·8	13·2
19	14 19·8	14 22·1	13 40·6	1·9	1·8	7·9	7·6	13·9	13·3
20	14 20·0	14 22·4	13 40·8	2·0	1·9	8·0	7·7	14·0	13·4
21	14 20·3	14 22·6	13 41·1	2·1	2·0	8·1	7·8	14·1	13·5
22	14 20·5	14 22·9	13 41·3	2·2	2·1	8·2	7·9	14·2	13·6
23	14 20·8	14 23·1	13 41·5	2·3	2·2	8·3	8·0	14·3	13·7
24	14 21·0	14 23·4	13 41·8	2·4	2·3	8·4	8·1	14·4	13·8
25	14 21·3	14 23·6	13 42·0	2·5	2·4	8·5	8·1	14·5	13·9
26	14 21·5	14 23·9	13 42·3	2·6	2·5	8·6	8·2	14·6	14·0
27	14 21·8	14 24·1	13 42·5	2·7	2·6	8·7	8·3	14·7	14·1
28	14 22·0	14 24·4	13 42·7	2·8	2·7	8·8	8·4	14·8	14·2
29	14 22·3	14 24·6	13 43·0	2·9	2·8	8·9	8·5	14·9	14·3
30	14 22·5	14 24·9	13 43·2	3·0	2·9	9·0	8·6	15·0	14·4
31	14 22·8	14 25·1	13 43·4	3·1	3·0	9·1	8·7	15·1	14·5
32	14 23·0	14 25·4	13 43·7	3·2	3·1	9·2	8·8	15·2	14·6
33	14 23·3	14 25·6	13 43·9	3·3	3·2	9·3	8·9	15·3	14·7
34	14 23·5	14 25·9	13 44·2	3·4	3·3	9·4	9·0	15·4	14·8
35	14 23·8	14 26·1	13 44·4	3·5	3·4	9·5	9·1	15·5	14·9
36	14 24·0	14 26·4	13 44·6	3·6	3·5	9·6	9·2	15·6	15·0
37	14 24·3	14 26·6	13 44·9	3·7	3·5	9·7	9·3	15·7	15·0
38	14 24·5	14 26·9	13 45·1	3·8	3·6	9·8	9·4	15·8	15·1
39	14 24·8	14 27·1	13 45·4	3·9	3·7	9·9	9·5	15·9	15·2
40	14 25·0	14 27·4	13 45·6	4·0	3·8	10·0	9·6	16·0	15·3
41	14 25·3	14 27·6	13 45·8	4·1	3·9	10·1	9·7	16·1	15·4
42	14 25·5	14 27·9	13 46·1	4·2	4·0	10·2	9·8	16·2	15·5
43	14 25·8	14 28·1	13 46·3	4·3	4·1	10·3	9·9	16·3	15·6
44	14 26·0	14 28·4	13 46·5	4·4	4·2	10·4	10·0	16·4	15·7
45	14 26·3	14 28·6	13 46·8	4·5	4·3	10·5	10·1	16·5	15·8
46	14 26·5	14 28·9	13 47·0	4·6	4·4	10·6	10·2	16·6	15·9
47	14 26·8	14 29·1	13 47·3	4·7	4·5	10·7	10·3	16·7	16·0
48	14 27·0	14 29·4	13 47·5	4·8	4·6	10·8	10·4	16·8	16·1
49	14 27·3	14 29·6	13 47·7	4·9	4·7	10·9	10·4	16·9	16·2
50	14 27·5	14 29·9	13 48·0	5·0	4·8	11·0	10·5	17·0	16·3
51	14 27·8	14 30·1	13 48·2	5·1	4·9	11·1	10·6	17·1	16·4
52	14 28·0	14 30·4	13 48·5	5·2	5·0	11·2	10·7	17·2	16·5
53	14 28·3	14 30·6	13 48·7	5·3	5·1	11·3	10·8	17·3	16·6
54	14 28·5	14 30·9	13 48·9	5·4	5·2	11·4	10·9	17·4	16·7
55	14 28·8	14 31·1	13 49·2	5·5	5·3	11·5	11·0	17·5	16·8
56	14 29·0	14 31·4	13 49·4	5·6	5·4	11·6	11·1	17·6	16·9
57	14 29·3	14 31·6	13 49·7	5·7	5·5	11·7	11·2	17·7	17·0
58	14 29·5	14 31·9	13 49·9	5·8	5·6	11·8	11·3	17·8	17·1
59	14 29·8	14 32·1	13 50·1	5·9	5·7	11·9	11·4	17·9	17·2
60	14 30·0	14 32·4	13 50·4	6·0	5·8	12·0	11·5	18·0	17·3

58m

m 58	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	14 30·0	14 32·4	13 50·4	0·0	0·0	6·0	5·9	12·0	11·7
01	14 30·3	14 32·6	13 50·6	0·1	0·1	6·1	5·9	12·1	11·8
02	14 30·5	14 32·9	13 50·8	0·2	0·2	6·2	6·0	12·2	11·9
03	14 30·8	14 33·1	13 51·1	0·3	0·3	6·3	6·1	12·3	12·0
04	14 31·0	14 33·4	13 51·3	0·4	0·4	6·4	6·2	12·4	12·1
05	14 31·3	14 33·6	13 51·6	0·5	0·5	6·5	6·3	12·5	12·2
06	14 31·5	14 33·9	13 51·8	0·6	0·6	6·6	6·4	12·6	12·3
07	14 31·8	14 34·1	13 52·0	0·7	0·7	6·7	6·5	12·7	12·4
08	14 32·0	14 34·4	13 52·3	0·8	0·8	6·8	6·6	12·8	12·5
09	14 32·3	14 34·6	13 52·5	0·9	0·9	6·9	6·7	12·9	12·6
10	14 32·5	14 34·9	13 52·8	1·0	1·0	7·0	6·8	13·0	12·7
11	14 32·8	14 35·1	13 53·0	1·1	1·1	7·1	6·9	13·1	12·8
12	14 33·0	14 35·4	13 53·2	1·2	1·2	7·2	7·0	13·2	12·9
13	14 33·3	14 35·6	13 53·5	1·3	1·3	7·3	7·1	13·3	13·0
14	14 33·5	14 35·9	13 53·7	1·4	1·4	7·4	7·2	13·4	13·1
15	14 33·8	14 36·1	13 53·9	1·5	1·5	7·5	7·3	13·5	13·2
16	14 34·0	14 36·4	13 54·2	1·6	1·6	7·6	7·4	13·6	13·3
17	14 34·3	14 36·6	13 54·4	1·7	1·7	7·7	7·5	13·7	13·4
18	14 34·5	14 36·9	13 54·7	1·8	1·8	7·8	7·6	13·8	13·5
19	14 34·8	14 37·1	13 54·9	1·9	1·9	7·9	7·7	13·9	13·6
20	14 35·0	14 37·4	13 55·1	2·0	2·0	8·0	7·8	14·0	13·7
21	14 35·3	14 37·6	13 55·4	2·1	2·0	8·1	7·9	14·1	13·7
22	14 35·5	14 37·9	13 55·6	2·2	2·1	8·2	8·0	14·2	13·8
23	14 35·8	14 38·1	13 55·9	2·3	2·2	8·3	8·1	14·3	13·9
24	14 36·0	14 38·4	13 56·1	2·4	2·3	8·4	8·2	14·4	14·0
25	14 36·3	14 38·6	13 56·3	2·5	2·4	8·5	8·3	14·5	14·1
26	14 36·5	14 38·9	13 56·6	2·6	2·5	8·6	8·4	14·6	14·2
27	14 36·8	14 39·2	13 56·8	2·7	2·6	8·7	8·5	14·7	14·3
28	14 37·0	14 39·4	13 57·0	2·8	2·7	8·8	8·6	14·8	14·4
29	14 37·3	14 39·7	13 57·3	2·9	2·8	8·9	8·7	14·9	14·5
30	14 37·5	14 39·9	13 57·5	3·0	2·9	9·0	8·8	15·0	14·6
31	14 37·8	14 40·2	13 57·8	3·1	3·0	9·1	8·9	15·1	14·7
32	14 38·0	14 40·4	13 58·0	3·2	3·1	9·2	9·0	15·2	14·8
33	14 38·3	14 40·7	13 58·2	3·3	3·2	9·3	9·1	15·3	14·9
34	14 38·5	14 40·9	13 58·5	3·4	3·3	9·4	9·2	15·4	15·0
35	14 38·8	14 41·2	13 58·7	3·5	3·4	9·5	9·3	15·5	15·1
36	14 39·0	14 41·4	13 59·0	3·6	3·5	9·6	9·4	15·6	15·2
37	14 39·3	14 41·7	13 59·2	3·7	3·6	9·7	9·5	15·7	15·3
38	14 39·5	14 41·9	13 59·4	3·8	3·7	9·8	9·6	15·8	15·4
39	14 39·8	14 42·2	13 59·7	3·9	3·8	9·9	9·7	15·9	15·5
40	14 40·0	14 42·4	13 59·9	4·0	3·9	10·0	9·8	16·0	15·6
41	14 40·3	14 42·7	14 00·1	4·1	4·0	10·1	9·8	16·1	15·7
42	14 40·5	14 42·9	14 00·4	4·2	4·1	10·2	9·9	16·2	15·8
43	14 40·8	14 43·2	14 00·6	4·3	4·2	10·3	10·0	16·3	15·9
44	14 41·0	14 43·4	14 00·9	4·4	4·3	10·4	10·1	16·4	16·0
45	14 41·3	14 43·7	14 01·1	4·5	4·4	10·5	10·2	16·5	16·1
46	14 41·5	14 43·9	14 01·3	4·6	4·5	10·6	10·3	16·6	16·2
47	14 41·8	14 44·2	14 01·6	4·7	4·6	10·7	10·4	16·7	16·3
48	14 42·0	14 44·4	14 01·8	4·8	4·7	10·8	10·5	16·8	16·4
49	14 42·3	14 44·7	14 02·1	4·9	4·8	10·9	10·6	16·9	16·5
50	14 42·5	14 44·9	14 02·3	5·0	4·9	11·0	10·7	17·0	16·6
51	14 42·8	14 45·2	14 02·5	5·1	5·0	11·1	10·8	17·1	16·7
52	14 43·0	14 45·4	14 02·8	5·2	5·1	11·2	10·9	17·2	16·8
53	14 43·3	14 45·7	14 03·0	5·3	5·2	11·3	11·0	17·3	16·9
54	14 43·5	14 45·9	14 03·3	5·4	5·3	11·4	11·1	17·4	17·0
55	14 43·8	14 46·2	14 03·5	5·5	5·4	11·5	11·2	17·5	17·1
56	14 44·0	14 46·4	14 03·7	5·6	5·5	11·6	11·3	17·6	17·2
57	14 44·3	14 46·7	14 04·0	5·7	5·6	11·7	11·4	17·7	17·3
58	14 44·5	14 46·9	14 04·2	5·8	5·7	11·8	11·5	17·8	17·4
59	14 44·8	14 47·2	14 04·4	5·9	5·8	11·9	11·6	17·9	17·5
60	14 45·0	14 47·4	14 04·7	6·0	5·9	12·0	11·7	18·0	17·6

59m

m 59	SOL PLANETAS	ARIES	LUNA	v o d	Corr	v o d	Corr	v o d	Corr
s	° ′	° ′	° ′	′	′	′	′	′	′
00	14 45·0	14 47·4	14 04·7	0·0	0·0	6·0	6·0	12·0	11·9
01	14 45·3	14 47·7	14 04·9	0·1	0·1	6·1	6·0	12·1	12·0
02	14 45·5	14 47·9	14 05·2	0·2	0·2	6·2	6·1	12·2	12·1
03	14 45·8	14 48·2	14 05·4	0·3	0·3	6·3	6·2	12·3	12·2
04	14 46·0	14 48·4	14 05·6	0·4	0·4	6·4	6·3	12·4	12·3
05	14 46·3	14 48·7	14 05·9	0·5	0·5	6·5	6·4	12·5	12·4
06	14 46·5	14 48·9	14 06·1	0·6	0·6	6·6	6·5	12·6	12·5
07	14 46·8	14 49·2	14 06·4	0·7	0·7	6·7	6·6	12·7	12·6
08	14 47·0	14 49·4	14 06·6	0·8	0·8	6·8	6·7	12·8	12·7
09	14 47·3	14 49·7	14 06·8	0·9	0·9	6·9	6·8	12·9	12·8
10	14 47·5	14 49·9	14 07·1	1·0	1·0	7·0	6·9	13·0	12·9
11	14 47·8	14 50·2	14 07·3	1·1	1·1	7·1	7·0	13·1	13·0
12	14 48·0	14 50·4	14 07·5	1·2	1·2	7·2	7·1	13·2	13·1
13	14 48·3	14 50·7	14 07·8	1·3	1·3	7·3	7·2	13·3	13·2
14	14 48·5	14 50·9	14 08·0	1·4	1·4	7·4	7·3	13·4	13·3
15	14 48·8	14 51·2	14 08·3	1·5	1·5	7·5	7·4	13·5	13·4
16	14 49·0	14 51·4	14 08·5	1·6	1·6	7·6	7·5	13·6	13·5
17	14 49·3	14 51·7	14 08·7	1·7	1·7	7·7	7·6	13·7	13·6
18	14 49·5	14 51·9	14 09·0	1·8	1·8	7·8	7·7	13·8	13·7
19	14 49·8	14 52·2	14 09·2	1·9	1·9	7·9	7·8	13·9	13·8
20	14 50·0	14 52·4	14 09·5	2·0	2·0	8·0	7·9	14·0	13·9
21	14 50·3	14 52·7	14 09·7	2·1	2·1	8·1	8·0	14·1	14·0
22	14 50·5	14 52·9	14 09·9	2·2	2·2	8·2	8·1	14·2	14·1
23	14 50·8	14 53·2	14 10·2	2·3	2·3	8·3	8·2	14·3	14·2
24	14 51·0	14 53·4	14 10·4	2·4	2·4	8·4	8·3	14·4	14·3
25	14 51·3	14 53·7	14 10·6	2·5	2·5	8·5	8·4	14·5	14·4
26	14 51·5	14 53·9	14 10·9	2·6	2·6	8·6	8·5	14·6	14·5
27	14 51·8	14 54·2	14 11·1	2·7	2·7	8·7	8·6	14·7	14·6
28	14 52·0	14 54·4	14 11·4	2·8	2·8	8·8	8·7	14·8	14·7
29	14 52·3	14 54·7	14 11·6	2·9	2·9	8·9	8·8	14·9	14·8
30	14 52·5	14 54·9	14 11·8	3·0	3·0	9·0	8·9	15·0	14·9
31	14 52·8	14 55·2	14 12·1	3·1	3·1	9·1	9·0	15·1	15·0
32	14 53·0	14 55·4	14 12·3	3·2	3·2	9·2	9·1	15·2	15·1
33	14 53·3	14 55·7	14 12·6	3·3	3·3	9·3	9·2	15·3	15·2
34	14 53·5	14 55·9	14 12·8	3·4	3·4	9·4	9·3	15·4	15·3
35	14 53·8	14 56·2	14 13·0	3·5	3·5	9·5	9·4	15·5	15·4
36	14 54·0	14 56·4	14 13·3	3·6	3·6	9·6	9·5	15·6	15·5
37	14 54·3	14 56·7	14 13·5	3·7	3·7	9·7	9·6	15·7	15·6
38	14 54·5	14 56·9	14 13·8	3·8	3·8	9·8	9·7	15·8	15·7
39	14 54·8	14 57·2	14 14·0	3·9	3·9	9·9	9·8	15·9	15·8
40	14 55·0	14 57·5	14 14·2	4·0	4·0	10·0	9·9	16·0	15·9
41	14 55·3	14 57·7	14 14·5	4·1	4·1	10·1	10·0	16·1	16·0
42	14 55·5	14 58·0	14 14·7	4·2	4·2	10·2	10·1	16·2	16·1
43	14 55·8	14 58·2	14 14·9	4·3	4·3	10·3	10·2	16·3	16·2
44	14 56·0	14 58·5	14 15·2	4·4	4·4	10·4	10·3	16·4	16·3
45	14 56·3	14 58·7	14 15·4	4·5	4·5	10·5	10·4	16·5	16·4
46	14 56·5	14 59·0	14 15·7	4·6	4·6	10·6	10·5	16·6	16·5
47	14 56·8	14 59·2	14 15·9	4·7	4·7	10·7	10·6	16·7	16·6
48	14 57·0	14 59·5	14 16·1	4·8	4·8	10·8	10·7	16·8	16·7
49	14 57·3	14 59·7	14 16·4	4·9	4·9	10·9	10·8	16·9	16·8
50	14 57·5	15 00·0	14 16·6	5·0	5·0	11·0	10·9	17·0	16·9
51	14 57·8	15 00·2	14 16·9	5·1	5·1	11·1	11·0	17·1	17·0
52	14 58·0	15 00·5	14 17·1	5·2	5·2	11·2	11·1	17·2	17·1
53	14 58·3	15 00·7	14 17·3	5·3	5·3	11·3	11·2	17·3	17·2
54	14 58·5	15 01·0	14 17·6	5·4	5·4	11·4	11·3	17·4	17·3
55	14 58·8	15 01·2	14 17·8	5·5	5·5	11·5	11·4	17·5	17·4
56	14 59·0	15 01·5	14 18·0	5·6	5·6	11·6	11·5	17·6	17·5
57	14 59·3	15 01·7	14 18·3	5·7	5·7	11·7	11·6	17·7	17·6
58	14 59·5	15 02·0	14 18·5	5·8	5·8	11·8	11·7	17·8	17·7
59	14 59·8	15 02·2	14 18·8	5·9	5·9	11·9	11·8	17·9	17·8
60	15 00·0	15 02·5	14 19·0	6·0	6·0	12·0	11·9	18·0	17·9

TABLAS PARA INTERPOLAR ORTOS DE SOL, ORTOS DE LA LUNA, ETC.

TABLA I — POR LATITUD

Intervalo Tabular			Diferencia entre los tiempos para latitudes consecutivas															
10°	5°	2°	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m	60m	1h05m	1h10m	1h15m	1h20m
° ′	° ′	° ′	m	m	m	m	m	m	m	m	m	m	m	m	h m	h m	h m	h m
0 30	0 15	0 06	0	0	1	1	1	1	1	2	2	2	2	2	0 02	0 02	0 02	0 02
1 00	0 30	0 12	0	1	1	2	2	3	3	3	4	4	4	5	05	05	05	05
1 30	0 45	0 18	1	1	2	3	3	4	4	5	5	6	7	7	07	07	07	07
2 00	1 00	0 24	1	2	3	4	5	5	6	7	7	8	9	10	10	10	10	10
2 30	1 15	0 30	1	2	4	5	6	7	8	9	9	10	11	12	12	13	13	13
3 00	1 30	0 36	1	3	4	6	7	8	9	10	11	12	13	14	0 15	0 15	0 16	0 16
3 30	1 45	0 42	2	3	5	7	8	10	11	12	13	14	16	17	18	18	19	19
4 00	2 00	0 48	2	4	6	8	9	11	13	14	15	16	18	19	20	21	22	22
4 30	2 15	0 54	2	4	7	9	11	13	15	16	18	19	21	22	23	24	25	26
5 00	2 30	1 00	2	5	7	10	12	14	16	18	20	22	23	25	26	27	28	29
5 30	2 45	1 06	3	5	8	11	13	16	18	20	22	24	26	28	0 29	0 30	0 31	0 32
6 00	3 00	1 12	3	6	9	12	14	17	20	22	24	26	29	31	32	33	34	36
6 30	3 15	1 18	3	6	10	13	16	19	22	24	26	29	31	34	36	37	38	40
7 00	3 30	1 24	3	7	10	14	17	20	23	26	29	31	34	37	39	41	42	44
7 30	3 45	1 30	4	7	11	15	18	22	25	28	31	34	37	40	43	44	46	48
8 00	4 00	1 36	4	8	12	16	20	23	27	30	34	37	41	44	0 47	0 48	0 51	0 53
8 30	4 15	1 42	4	8	13	17	21	25	29	33	36	40	44	48	0 51	0 53	0 56	0 58
9 00	4 30	1 48	4	9	13	18	22	27	31	35	39	43	47	52	0 55	0 58	1 01	1 04
9 30	4 45	1 54	5	9	14	19	24	28	33	38	42	47	51	56	1 00	1 04	1 08	1 12
10 00	5 00	2 00	5	10	15	20	25	30	35	40	45	50	55	60	1 05	1 10	1 15	1 20

La Tabla I se usa para interpolar por latitud la Hml del orto de Sol, crepúsculo, orto de la Luna, etc. Se debe ingresar en la columna apropiada de la izquierda con la diferencia entre la latitud verdadera y la latitud tabulada más próxima, la cual es *inferior* que la latitud verdadera; el otro argumento de entrada —en la parte superior— es el valor más próximo de la diferencia entre las horas de la latitud tabular y la siguiente superior. La corrección así obtenida se aplica a la hora de la latitud tabular; el signo de la corrección puede determinarse por inspección. Nótese que la interpolación no es lineal, de manera que cuando se usa la tabla, es esencial tomar el dato tabular para la latitud *inferior* al de la latitud verdadera.

TABLA II — POR LONGITUD

Long. Este u Oeste	Diferencia entre las horas para la fecha dada y la fecha inmediatamente anterior (para longitudes este) o para la fecha dada y la inmediata posterior (para longitudes oeste).																	
	10m	20m	30m	40m	50m	60m	1h + 10m	1h + 20m	1h + 30m	1h + 40m	1h + 50m	1h + 60m	2h10m	2h20m	2h30m	2h40m	2h50m	3h00m
°	m	m	m	m	m	m	m	m	m	m	m	m	h m	h m	h m	h m	h m	h m
0	0	0	0	0	0	0	0	0	0	0	0	0	0 00	0 00	0 00	0 00	0 00	0 00
10	0	1	1	1	1	2	2	2	2	3	3	3	04	04	04	04	05	05
20	1	1	2	2	3	3	4	4	5	6	6	7	07	08	08	09	09	10
30	1	2	2	3	4	5	6	7	7	8	9	10	11	12	12	13	14	15
40	1	2	3	4	6	7	8	9	10	11	12	13	14	16	17	18	19	20
50	1	3	4	6	7	8	10	11	12	14	15	17	0 18	0 19	0 21	0 22	0 24	0 25
60	2	3	5	7	8	10	12	13	15	17	18	20	22	23	25	27	28	30
70	2	4	6	8	10	12	14	16	17	19	21	23	25	27	29	31	33	35
80	2	4	7	9	11	13	16	18	20	22	24	27	29	31	33	36	38	40
90	2	5	7	10	12	15	17	20	22	25	27	30	32	35	37	40	42	45
100	3	6	8	11	14	17	19	22	25	28	31	33	0 36	0 39	0 42	0 44	0 47	0 50
110	3	6	9	12	15	18	21	24	27	31	34	37	40	43	46	49	0 52	0 55
120	3	7	10	13	17	20	23	27	30	33	37	40	43	47	50	53	0 57	1 00
130	4	7	11	14	18	22	25	29	32	36	40	43	47	51	54	0 58	1 01	1 05
140	4	8	12	16	19	23	27	31	35	39	43	47	51	54	0 58	1 02	1 06	1 10
150	4	8	13	17	21	25	29	33	38	42	46	50	0 54	0 58	1 03	1 07	1 11	1 15
160	4	9	13	18	22	27	31	36	40	44	49	53	0 58	1 02	1 07	1 11	1 16	1 20
170	5	9	14	19	24	28	33	38	42	47	52	57	1 01	1 06	1 11	1 16	1 20	1 25
180	5	10	15	20	25	30	35	40	45	50	55	60	1 05	1 10	1 15	1 20	1 25	1 30

La Tabla II se usa para interpolar por longitud la Hml del orto y ocaso de la Luna y del paso de la Luna por el meridiano. Se ingresa a la tabla con la longitud y con la diferencia entre las horas para la fecha dada y la fecha inmediatamente anterior (en longitudes E) o la fecha inmediatamente posterior (en longitudes W). Normalmente, la corrección se *suma* en las longitudes W y se *resta* en las longitudes E, pero si, como ocurre ocasionalmente, las horas aparecen más temprano cada día en lugar de más tarde, los signos de la corrección deben invertirse.

ÍNDICE DE ESTRELLAS SELECCIONADAS, 2022

Nombre	N°	Mag	AHS	Dec
			°	°
Acamar	**7**	3·2	315	S 40
Achernar	**5**	0·5	335	S 57
Acrux	**30**	1·3	173	S 63
Adhara	**19**	1·5	255	S 29
Aldebaran	**10**	0·9	291	N 17
Alioth	**32**	1·8	166	N 56
Alkaid	**34**	1·9	153	N 49
Alnair	**55**	1·7	28	S 47
Alnilam	**15**	1·7	276	S 1
Alphard	**25**	2·0	218	S 9
Alphecca	**41**	2·2	126	N 27
Alpheratz	**1**	2·1	358	N 29
Altair	**51**	0·8	62	N 9
Ankaa	**2**	2·4	353	S 42
Antares	**42**	1·0	112	S 26
Arcturus	**37**	0·0	146	N 19
Atria	**43**	1·9	107	S 69
Avior	**22**	1·9	234	S 60
Bellatrix	**13**	1·6	278	N 6
Betelgeuse	**16**	Var.*	271	N 7
Canopus	**17**	−0·7	264	S 53
Capella	**12**	0·1	280	N 46
Deneb	**53**	1·3	49	N 45
Denebola	**28**	2·1	182	N 14
Diphda	**4**	2·0	349	S 18
Dubhe	**27**	1·8	194	N 62
Elnath	**14**	1·7	278	N 29
Eltanin	**47**	2·2	91	N 51
Enif	**54**	2·4	34	N 10
Fomalhaut	**56**	1·2	15	S 30
Gacrux	**31**	1·6	172	S 57
Gienah	**29**	2·6	176	S 18
Hadar	**35**	0·6	149	S 60
Hamal	**6**	2·0	328	N 24
Kaus Australis	**48**	1·9	84	S 34
Kochab	**40**	2·1	137	N 74
Markab	**57**	2·5	14	N 15
Menkar	**8**	2·5	314	N 4
Menkent	**36**	2·1	148	S 36
Miaplacidus	**24**	1·7	222	S 70
Mirfak	**9**	1·8	309	N 50
Nunki	**50**	2·0	76	S 26
Peacock	**52**	1·9	53	S 57
Pollux	**21**	1·1	243	N 28
Procyon	**20**	0·4	245	N 5
Rasalhague	**46**	2·1	96	N 13
Regulus	**26**	1·4	208	N 12
Rigel	**11**	0·1	281	S 8
Rigil Kentaurus	**38**	−0·3	140	S 61
Sabik	**44**	2·4	102	S 16
Schedar	**3**	2·2	350	N 57
Shaula	**45**	1·6	96	S 37
Sirius	**18**	−1·5	258	S 17
Spica	**33**	1·0	158	S 11
Suhail	**23**	2·2	223	S 44
Vega	**49**	0·0	81	N 39
Zubenelgenubi	**39**	2·8	137	S 16

Nº	Nombre	Constelación
1	*Alpheratz*	α *Andromedae*
2	*Ankaa*	α *Phoenicis*
3	*Schedar*	α *Cassiopeiae*
4	*Diphda*	β *Ceti*
5	*Achernar*	α *Eridani*
6	*Hamal*	α *Arietis*
7	*Acamar*	θ *Eridani*
8	*Menkar*	α *Ceti*
9	*Mirfak*	α *Persei*
10	*Aldebaran*	α *Tauri*
11	*Rigel*	β *Orionis*
12	*Capella*	α *Aurigae*
13	*Bellatrix*	γ *Orionis*
14	*Elnath*	β *Tauri*
15	*Alnilam*	ε *Orionis*
16	*Betelgeuse*	α *Orionis*
17	*Canopus*	α *Carinae*
18	*Sirius*	α *Canis Majoris*
19	*Adhara*	ε *Canis Majoris*
20	*Procyon*	α *Canis Minoris*
21	*Pollux*	β *Geminorum*
22	*Avior*	ε *Carinae*
23	*Suhail*	λ *Velorum*
24	*Miaplacidus*	β *Carinae*
25	*Alphard*	α *Hydrae*
26	*Regulus*	α *Leonis*
27	*Dubhe*	α *Ursae Majoris*
28	*Denebola*	β *Leonis*
29	*Gienah*	γ *Corvi*
30	*Acrux*	α *Crucis*
31	*Gacrux*	γ *Crucis*
32	*Alioth*	ε *Ursae Majoris*
33	*Spica*	α *Virginis*
34	*Alkaid*	η *Ursae Majoris*
35	*Hadar*	β *Centauri*
36	*Menkent*	θ *Centauri*
37	*Arcturus*	α *Bootis*
38	*Rigil Kentaurus*	α *Centauri*
39	*Zubenelgenubi*	α *Librae*
40	*Kochab*	β *Ursae Minoris*
41	*Alphecca*	α *Coronae Bor.*
42	*Antares*	α *Scorpii*
43	*Atria*	α *Triang. Aust.*
44	*Sabik*	η *Ophiuchi*
45	*Shaula*	λ *Scorpii*
46	*Rasalhague*	α *Ophiuchi*
47	*Eltanin*	γ *Draconis*
48	*Kaus Australis*	ε *Sagittarii*
49	*Vega*	α *Lyrae*
50	*Nunki*	σ *Sagittarii*
51	*Altair*	α *Aquilae*
52	*Peacock*	α *Pavonis*
53	*Deneb*	α *Cygni*
54	*Enif*	ε *Pegasi*
55	*Alnair*	α *Gruis*
56	*Fomalhaut*	α *Piscis Aust.*
57	*Markab*	α *Pegasi*

*0·1 — 1·2

TABLAS DE CORRECCIÓN DE ALTURAS 0º - 35º PARA LA LUNA

Alt. Ap.	0°–4°	5°–9°	10°–14°	15°–19°	20°–24°	25°–29°	30°–34°	Alt. Ap.
	Corr.	Corr.	Corr.	Corr.	Corr.	Corr.	Corr.	
′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	′
00	0 34.5	5 58.2	10 62.1	15 62.8	20 62.2	25 60.8	30 58.9	00
10	36.5	58.5	62.2	62.8	62.2	60.8	58.8	10
20	38.3	58.7	62.2	62.8	62.1	60.7	58.8	20
30	40.0	58.9	62.3	62.8	62.1	60.7	58.7	30
40	41.5	59.1	62.3	62.8	62.0	60.6	58.6	40
50	42.9	59.3	62.4	62.7	62.0	60.6	58.5	50
00	1 44.2	6 59.5	11 62.4	16 62.7	21 62.0	26 60.5	31 58.5	00
10	45.4	59.7	62.4	62.7	61.9	60.4	58.4	10
20	46.5	59.9	62.5	62.7	61.9	60.4	58.3	20
30	47.5	60.0	62.5	62.7	61.9	60.3	58.2	30
40	48.4	60.2	62.5	62.7	61.8	60.3	58.2	40
50	49.3	60.3	62.6	62.7	61.8	60.2	58.1	50
00	2 50.1	7 60.5	12 62.6	17 62.7	22 61.7	27 60.1	32 58.0	00
10	50.8	60.6	62.6	62.6	61.7	60.1	57.9	10
20	51.5	60.7	62.6	62.6	61.6	60.0	57.8	20
30	52.2	60.9	62.7	62.6	61.6	59.9	57.8	30
40	52.8	61.0	62.7	62.6	61.6	59.9	57.7	40
50	53.4	61.1	62.7	62.6	61.5	59.8	57.6	50
00	3 53.9	8 61.2	13 62.7	18 62.5	23 61.5	28 59.7	33 57.5	00
10	54.4	61.3	62.7	62.5	61.4	59.7	57.4	10
20	54.9	61.4	62.7	62.5	61.4	59.6	57.4	20
30	55.3	61.5	62.8	62.5	61.3	59.5	57.3	30
40	55.7	61.6	62.8	62.4	61.3	59.5	57.2	40
50	56.1	61.6	62.8	62.4	61.2	59.4	57.1	50
00	4 56.4	9 61.7	14 62.8	19 62.4	24 61.2	29 59.3	34 57.0	00
10	56.8	61.8	62.8	62.4	61.1	59.3	56.9	10
20	57.1	61.9	62.8	62.3	61.1	59.2	56.9	20
30	57.4	61.9	62.8	62.3	61.0	59.1	56.8	30
40	57.7	62.0	62.8	62.3	61.0	59.1	56.7	40
50	58.0	62.1	62.8	62.2	60.9	59.0	56.6	50

P.h.	I	S	I	S	I	S	I	S	I	S	I	S	I	S	P.h.
′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
54.0	0.3	0.9	0.3	0.9	0.4	1.0	0.5	1.1	0.6	1.2	0.7	1.3	0.9	1.5	54.0
54.3	0.7	1.1	0.7	1.2	0.8	1.2	0.8	1.3	0.9	1.4	1.1	1.5	1.2	1.7	54.3
54.6	1.1	1.4	1.1	1.4	1.1	1.4	1.2	1.5	1.3	1.6	1.4	1.7	1.5	1.8	54.6
54.9	1.4	1.6	1.5	1.6	1.5	1.6	1.6	1.7	1.6	1.8	1.8	1.9	1.9	2.0	54.9
55.2	1.8	1.8	1.8	1.8	1.9	1.8	1.9	1.9	2.0	2.0	2.1	2.1	2.2	2.2	55.2
55.5	2.2	2.0	2.2	2.0	2.3	2.1	2.3	2.1	2.4	2.2	2.4	2.3	2.5	2.4	55.5
55.8	2.6	2.2	2.6	2.2	2.6	2.3	2.7	2.3	2.7	2.4	2.8	2.4	2.9	2.5	55.8
56.1	3.0	2.4	3.0	2.5	3.0	2.5	3.0	2.5	3.1	2.6	3.1	2.6	3.2	2.7	56.1
56.4	3.3	2.7	3.4	2.7	3.4	2.7	3.4	2.7	3.4	2.8	3.5	2.8	3.5	2.9	56.4
56.7	3.7	2.9	3.7	2.9	3.8	2.9	3.8	2.9	3.8	3.0	3.8	3.0	3.9	3.0	56.7
57.0	4.1	3.1	4.1	3.1	4.1	3.1	4.1	3.1	4.2	3.2	4.2	3.2	4.2	3.2	57.0
57.3	4.5	3.3	4.5	3.3	4.5	3.3	4.5	3.3	4.5	3.3	4.5	3.4	4.6	3.4	57.3
57.6	4.9	3.5	4.9	3.5	4.9	3.5	4.9	3.5	4.9	3.5	4.9	3.5	4.9	3.6	57.6
57.9	5.3	3.8	5.3	3.8	5.2	3.8	5.2	3.7	5.2	3.7	5.2	3.7	5.2	3.7	57.9
58.2	5.6	4.0	5.6	4.0	5.6	4.0	5.6	4.0	5.6	3.9	5.6	3.9	5.6	3.9	58.2
58.5	6.0	4.2	6.0	4.2	6.0	4.2	6.0	4.2	6.0	4.1	5.9	4.1	5.9	4.1	58.5
58.8	6.4	4.4	6.4	4.4	6.4	4.4	6.3	4.4	6.3	4.3	6.3	4.3	6.2	4.2	58.8
59.1	6.8	4.6	6.8	4.6	6.7	4.6	6.7	4.6	6.7	4.5	6.6	4.5	6.6	4.4	59.1
59.4	7.2	4.8	7.1	4.8	7.1	4.8	7.1	4.8	7.0	4.7	7.0	4.7	6.9	4.6	59.4
59.7	7.5	5.1	7.5	5.0	7.5	5.0	7.5	5.0	7.4	4.9	7.3	4.8	7.2	4.8	59.7
60.0	7.9	5.3	7.9	5.3	7.9	5.2	7.8	5.2	7.8	5.1	7.7	5.0	7.6	4.9	60.0
60.3	8.3	5.5	8.3	5.5	8.2	5.4	8.2	5.4	8.1	5.3	8.0	5.2	7.9	5.1	60.3
60.6	8.7	5.7	8.7	5.7	8.6	5.7	8.6	5.6	8.5	5.5	8.4	5.4	8.2	5.3	60.6
60.9	9.1	5.9	9.0	5.9	9.0	5.9	8.9	5.8	8.8	5.7	8.7	5.6	8.6	5.4	60.9
61.2	9.5	6.2	9.4	6.1	9.4	6.1	9.3	6.0	9.2	5.9	9.1	5.8	8.9	5.6	61.2
61.5	9.8	6.4	9.8	6.3	9.7	6.3	9.7	6.2	9.5	6.1	9.4	5.9	9.2	5.8	61.5

DEPRESIÓN					
Elev. del Ojo	Corr.	Elev. del Ojo	Elev. del Ojo	Corr.	Elev. del Ojo
m		pies	m		pies
2.4	−2.8′	8.0	9.5	−5.5′	31.5
2.6	−2.9	8.6	9.9	−5.6	32.7
2.8	−3.0	9.2	10.3	−5.7	33.9
3.0	−3.1	9.8	10.6	−5.8	35.1
3.2	−3.2	10.5	11.0	−5.9	36.3
3.4	−3.3	11.2	11.4	−6.0	37.6
3.6	−3.4	11.9	11.8	−6.1	38.9
3.8	−3.5	12.6	12.2	−6.2	40.1
4.0	−3.6	13.3	12.6	−6.3	41.5
4.3	−3.7	14.1	13.0	−6.4	42.8
4.5	−3.8	14.9	13.4	−6.5	44.2
4.7	−3.9	15.7	13.8	−6.6	45.5
5.0	−4.0	16.5	14.2	−6.7	46.9
5.2	−4.1	17.4	14.7	−6.8	48.4
5.5	−4.2	18.3	15.1	−6.9	49.8
5.8	−4.3	19.1	15.5	−7.0	51.3
6.1	−4.4	20.1	16.0	−7.1	52.8
6.3	−4.5	21.0	16.5	−7.2	54.3
6.6	−4.6	22.0	16.9	−7.3	55.8
6.9	−4.7	22.9	17.4	−7.4	57.4
7.2	−4.8	23.9	17.9	−7.5	58.9
7.5	−4.9	24.9	18.4	−7.6	60.5
7.9	−5.0	26.0	18.8	−7.7	62.1
8.2	−5.1	27.1	19.3	−7.8	63.8
8.5	−5.2	28.1	19.8	−7.9	65.4
8.8	−5.3	29.2	20.4	−8.0	67.1
9.2	−5.4	30.4	20.9	−8.1	68.8
9.5		31.5	21.4		70.5

TABLA DE CORRECCIÓN DE LUNA

La corrección está dividida en dos partes: la primera corrección se toma de la parte superior de la tabla, usando la altura aparente (Alt. Ap.) como argumento, y la segunda de la parte inferior, usando el paralaje horizontal (Ph) como argumento, en la misma columna que se usó para tomar la primera corrección. En la parte inferior se dan correcciones separadas para los limbos inferiores (I) y superiores (S). Todas las correcciones deben **sumarse** a la altura aparente, *pero deben restarse 30' de la altura correspondiente al limbo superior.*

Para correcciones por presión y temperatura ver página A_4.

Para observaciones con sextantes de burbuja, ignorar la depresión, tomar la media de las correcciones para limbo superior y limbo inferior y restar 15` de la altura.

Alt. Ap. = Altura aparente = Altura sextante corregida por error de índice y depresión.

TABLAS DE CORRECCIÓN DE ALTURAS 35º - 90º PARA LA LUNA

Alt. Ap.	35°–39°	40°–44°	45°–49°	50°–54°	55°–59°	60°–64°	65°–69°	70°–74°	75°–79°	80°–84°	85°–89°	Alt. Ap.
	Corr.	Corr.	Corr.	Corr.	Corr.	Corr.	Corr.	Corr.	Corr.	Corr.	Corr.	
′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	′
00	**35** 56·5	**40** 53·7	**45** 50·5	**50** 46·9	**55** 43·1	**60** 38·9	**65** 34·6	**70** 30·0	**75** 25·3	**80** 20·5	**85** 15·6	**00**
10	56·4	53·6	50·4	46·8	42·9	38·8	34·4	29·9	25·2	20·4	15·5	**10**
20	56·3	53·5	50·2	46·7	42·8	38·7	34·3	29·7	25·0	20·2	15·3	**20**
30	56·2	53·4	50·1	46·5	42·7	38·5	34·1	29·6	24·9	20·0	15·1	**30**
40	56·2	53·3	50·0	46·4	42·5	38·4	34·0	29·4	24·7	19·9	15·0	**40**
50	56·1	53·2	49·9	46·3	42·4	38·2	33·8	29·3	24·5	19·7	14·8	**50**
00	**36** 56·0	**41** 53·1	**46** 49·8	**51** 46·2	**56** 42·3	**61** 38·1	**66** 33·7	**71** 29·1	**76** 24·4	**81** 19·6	**86** 14·6	**00**
10	55·9	53·0	49·7	46·0	42·1	37·9	33·5	29·0	24·2	19·4	14·5	**10**
20	55·8	52·9	49·5	45·9	42·0	37·8	33·4	28·8	24·1	19·2	14·3	**20**
30	55·7	52·8	49·4	45·8	41·9	37·7	33·2	28·7	23·9	19·1	14·2	**30**
40	55·6	52·6	49·3	45·7	41·7	37·5	33·1	28·5	23·8	18·9	14·0	**40**
50	55·5	52·5	49·2	45·5	41·6	37·4	32·9	28·3	23·6	18·7	13·8	**50**
00	**37** 55·4	**42** 52·4	**47** 49·1	**52** 45·4	**57** 41·4	**62** 37·2	**67** 32·8	**72** 28·2	**77** 23·4	**82** 18·6	**87** 13·7	**00**
10	55·3	52·3	49·0	45·3	41·3	37·1	32·6	28·0	23·3	18·4	13·5	**10**
20	55·2	52·2	48·8	45·2	41·2	36·9	32·5	27·9	23·1	18·2	13·3	**20**
30	55·1	52·1	48·7	45·0	41·0	36·8	32·3	27·7	22·9	18·1	13·2	**30**
40	55·0	52·0	48·6	44·9	40·9	36·6	32·2	27·6	22·8	17·9	13·0	**40**
50	55·0	51·9	48·5	44·8	40·8	36·5	32·0	27·4	22·6	17·8	12·8	**50**
00	**38** 54·9	**43** 51·8	**48** 48·4	**53** 44·6	**58** 40·6	**63** 36·4	**68** 31·9	**73** 27·2	**78** 22·5	**83** 17·6	**88** 12·7	**00**
10	54·8	51·7	48·3	44·5	40·5	36·2	31·7	27·1	22·3	17·4	12·5	**10**
20	54·7	51·6	48·1	44·4	40·3	36·1	31·6	26·9	22·1	17·3	12·3	**20**
30	54·6	51·5	48·0	44·2	40·2	35·9	31·4	26·8	22·0	17·1	12·2	**30**
40	54·5	51·4	47·9	44·1	40·1	35·8	31·3	26·6	21·8	16·9	12·0	**40**
50	54·4	51·2	47·8	44·0	39·9	35·6	31·1	26·5	21·7	16·8	11·8	**50**
00	**39** 54·3	**44** 51·1	**49** 47·7	**54** 43·9	**59** 39·8	**64** 35·5	**69** 31·0	**74** 26·3	**79** 21·5	**84** 16·6	**89** 11·7	**00**
10	54·2	51·0	47·5	43·7	39·6	35·3	30·8	26·1	21·3	16·4	11·5	**10**
20	54·1	50·9	47·4	43·6	39·5	35·2	30·7	26·0	21·2	16·3	11·4	**20**
30	54·0	50·8	47·3	43·5	39·4	35·0	30·5	25·8	21·0	16·1	11·2	**30**
40	53·9	50·7	47·2	43·3	39·2	34·9	30·4	25·7	20·9	16·0	11·0	**40**
50	53·8	50·6	47·0	43·2	39·1	34·7	30·2	25·5	20·7	15·8	10·9	**50**

P.h.	I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S	**P.h.**
′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
54·0	1·1	1·7	1·3	1·9	1·5	2·1	1·7	2·4	2·0	2·6	2·3	2·9	2·6	3·2	2·9	3·5	3·2	3·8	3·5	4·1	3·8	4·5	**54·0**
54·3	1·4	1·8	1·6	2·0	1·8	2·2	2·0	2·5	2·2	2·7	2·5	3·0	2·8	3·2	3·1	3·5	3·3	3·8	3·6	4·1	3·9	4·4	**54·3**
54·6	1·7	2·0	1·9	2·2	2·1	2·4	2·3	2·6	2·5	2·8	2·7	3·0	3·0	3·3	3·2	3·5	3·5	3·8	3·8	4·0	4·0	4·3	**54·6**
54·9	2·0	2·2	2·2	2·3	2·3	2·5	2·5	2·7	2·7	2·9	2·9	3·1	3·2	3·3	3·4	3·5	3·6	3·8	3·9	4·0	4·1	4·3	**54·9**
55·2	2·3	2·3	2·5	2·4	2·6	2·6	2·8	2·8	3·0	2·9	3·2	3·1	3·4	3·3	3·6	3·5	3·8	3·7	4·0	4·0	4·2	4·2	**55·2**
55·5	2·7	2·5	2·8	2·6	2·9	2·7	3·1	2·9	3·2	3·0	3·4	3·2	3·6	3·4	3·7	3·5	3·9	3·7	4·1	3·9	4·3	4·1	**55·5**
55·8	3·0	2·6	3·1	2·7	3·2	2·8	3·3	3·0	3·5	3·1	3·6	3·3	3·8	3·4	3·9	3·6	4·1	3·7	4·2	3·9	4·4	4·0	**55·8**
56·1	3·3	2·8	3·4	2·9	3·5	3·0	3·6	3·1	3·7	3·2	3·8	3·3	4·0	3·4	4·1	3·6	4·2	3·7	4·4	3·8	4·5	4·0	**56·1**
56·4	3·6	2·9	3·7	3·0	3·8	3·1	3·9	3·2	3·9	3·3	4·0	3·4	4·1	3·5	4·3	3·6	4·4	3·7	4·5	3·8	4·6	3·9	**56·4**
56·7	3·9	3·1	4·0	3·1	4·1	3·2	4·1	3·3	4·2	3·3	4·3	3·4	4·3	3·5	4·4	3·6	4·5	3·7	4·6	3·8	4·7	3·8	**56·7**
57·0	4·3	3·2	4·3	3·3	4·3	3·3	4·4	3·4	4·4	3·4	4·5	3·5	4·5	3·5	4·6	3·6	4·7	3·6	4·7	3·7	4·8	3·8	**57·0**
57·3	4·6	3·4	4·6	3·4	4·6	3·4	4·6	3·5	4·7	3·5	4·7	3·5	4·7	3·6	4·8	3·6	4·8	3·6	4·8	3·7	4·9	3·7	**57·3**
57·6	4·9	3·6	4·9	3·6	4·9	3·6	4·9	3·6	4·9	3·6	4·9	3·6	4·9	3·6	4·9	3·6	5·0	3·6	5·0	3·6	5·0	3·6	**57·6**
57·9	5·2	3·7	5·2	3·7	5·2	3·7	5·2	3·7	5·2	3·7	5·1	3·6	5·1	3·6	5·1	3·6	5·1	3·6	5·1	3·6	5·1	3·6	**57·9**
58·2	5·5	3·9	5·5	3·8	5·5	3·8	5·4	3·8	5·4	3·7	5·4	3·7	5·3	3·7	5·3	3·6	5·2	3·6	5·2	3·5	5·2	3·5	**58·2**
58·5	5·9	4·0	5·8	4·0	5·8	3·9	5·7	3·9	5·6	3·8	5·6	3·8	5·5	3·7	5·5	3·6	5·4	3·6	5·3	3·5	5·3	3·4	**58·5**
58·8	6·2	4·2	6·1	4·1	6·0	4·1	6·0	4·0	5·9	3·9	5·8	3·8	5·7	3·7	5·6	3·6	5·5	3·5	5·4	3·5	5·3	3·4	**58·8**
59·1	6·5	4·3	6·4	4·3	6·3	4·2	6·2	4·1	6·1	4·0	6·0	3·9	5·9	3·8	5·8	3·6	5·7	3·5	5·6	3·4	5·4	3·3	**59·1**
59·4	6·8	4·5	6·7	4·4	6·6	4·3	6·5	4·2	6·4	4·1	6·2	3·9	6·1	3·8	6·0	3·7	5·8	3·5	5·7	3·4	5·5	3·2	**59·4**
59·7	7·1	4·7	7·0	4·5	6·9	4·4	6·8	4·3	6·6	4·1	6·5	4·0	6·3	3·8	6·1	3·7	6·0	3·5	5·8	3·3	5·6	3·2	**59·7**
60·0	7·5	4·8	7·3	4·7	7·2	4·5	7·0	4·4	6·9	4·2	6·7	4·0	6·5	3·9	6·3	3·7	6·1	3·5	5·9	3·3	5·7	3·1	**60·0**
60·3	7·8	5·0	7·6	4·8	7·5	4·7	7·3	4·5	7·1	4·3	6·9	4·1	6·7	3·9	6·5	3·7	6·3	3·5	6·0	3·2	5·8	3·0	**60·3**
60·6	8·1	5·1	7·9	5·0	7·7	4·8	7·6	4·6	7·3	4·4	7·1	4·2	6·9	3·9	6·7	3·7	6·4	3·4	6·2	3·2	5·9	2·9	**60·6**
60·9	8·4	5·3	8·2	5·1	8·0	4·9	7·8	4·7	7·6	4·5	7·3	4·2	7·1	4·0	6·8	3·7	6·6	3·4	6·3	3·2	6·0	2·9	**60·9**
61·2	8·7	5·4	8·5	5·2	8·3	5·0	8·1	4·8	7·8	4·5	7·6	4·3	7·3	4·0	7·0	3·7	6·7	3·4	6·4	3·1	6·1	2·8	**61·2**
61·5	9·1	5·6	8·8	5·4	8·6	5·1	8·3	4·9	8·1	4·6	7·8	4·3	7·5	4·0	7·2	3·7	6·9	3·4	6·5	3·1	6·2	2·7	**61·5**



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LISTA DE CONTENIDOS

Págs.	
1 - 3	Portada, Prefacio.
4	Fases de la Luna.
5	Calendario Juliano. Eclipses.
6 - 7	Diagramas de Eclipses de Sol.
8	Notas respecto de los planetas.
9	Diagrama planetario.
10 - 253	Páginas diarias: Efemérides del Sol, Luna, punto Vernal (Aries) y planetas; ortos, ocasos y crepúsculos del Sol; ortos y ocasos de la Luna, etc.
254 - 261	Explicación. Fundamento y disposición de los datos.
262 - 270	Procedimientos de Reducción de Observaciones.
271 - 274	Horas Oficiales.
275	Nombre de las Constelaciones.
276 - 277	Cartas Estelares.
278 - 283	Lista de Estrellas: AHS y Dec. de 173 estrellas, en orden de su AHS (exactitud de 0',1).
284 - 286	Tablas para la estrella polar ''Polaris''.
287 - 315	Tablas de aurora y crepúsculo civil y náutico, de ortos y ocasos de la Luna y el Sol para latitudes 60° S a 72° S. Se incluyen los Fenómenos Dobles para el año vigente (en página 311).
i	Conversión de Arco a Tiempo.
ii-xxxi	Tablas de incrementos y correcciones para el Sol, planetas, punto Vernal (Aries) y la Luna.
xxxii	Tablas para interpolar: ortos, ocasos y crepúsculos del Sol; ortos, ocasos y paso de la Luna.
xxxiii	Índice de estrellas seleccionadas y nombre de la constelación a la que pertenecen.
xxxiv - xxxv	Tablas de corrección de alturas para la Luna.

Páginas auxiliares	Anteriores a la página 1.
A_2 - A_3	Tablas de corrección de alturas para el Sol, estrellas y planetas.
A_4	Tablas de correcciones adicionales por refracción para condiciones anormales.
Marcador de libro	Tablas de corrección de alturas e Índice de estrellas seleccionadas.

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