

February 27, 28, 01 UT (Fri., Sat., Sun.)

	Aries			Venus			Mars			Jupiter			Saturn		
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	156°50.7	164°49.4	S04°57.1	187°05.1	S13°28.9	50°10.1	N22°53.9	154°37.9	S01°21.9						
1	171°53.1	179°49.0	55.9	202°05.7	28.2	65°12.7	53.9	160°40.1	21.8						
2	186°55.6	194°48.6	54.6	217°06.3	27.5	80°15.3	53.9	184°42.3	21.7						
3	201°58.1	209°48.2	· · 53.4	232°06.8	· · 26.9	95°17.8	· · 53.9	199°44.5	· · 21.6						
4	217°00.5	224°47.8	52.1	247°07.4	26.2	110°20.4	53.9	214°46.7	21.4						
5	232°03.0	239°47.4	50.9	262°07.9	25.5	125°23.0	53.9	229°48.9	21.3						
6	247°05.5	254°47.0	S04°49.6	277°08.5	S13°24.8	140°25.5	N22°53.9	244°51.1	S01°21.2						
7	262°07.9	269°46.6	48.3	292°09.1	24.2	155°28.1	54.0	259°53.3	21.1						
8	277°10.4	284°46.2	47.1	307°09.6	23.5	170°30.7	54.0	274°55.5	21.0						
9	292°12.9	299°45.8	· · 45.8	322°10.2	· · 22.8	185°33.3	· · 54.0	289°57.7	· · 20.8						
10	307°15.3	314°45.4	44.5	337°10.8	22.1	200°35.8	54.0	304°59.9	20.7						
11	322°17.8	329°45.0	43.3	352°11.3	21.4	215°38.4	54.0	320°02.1	20.6						
12	337°20.2	344°44.6	S04°42.0	7°11.9	S13°20.8	230°41.0	N22°54.0	335°04.3	S01°20.5						
13	352°22.7	359°44.2	40.8	22°12.5	20.1	245°43.5	54.0	350°06.5	20.4						
14	7°25.2	14°43.8	39.5	37°13.0	19.4	260°46.1	54.1	5°08.7	20.2						
15	22°27.6	29°43.4	· · 38.2	52°13.6	· · 18.7	275°48.6	· · 54.1	20°10.9	· · 20.1						
16	37°30.1	44°43.0	37.0	67°14.1	18.1	290°51.2	54.1	35°13.0	20.0						
17	52°32.6	59°42.6	35.7	82°14.7	17.4	305°53.8	54.1	50°15.2	19.9						
18	67°35.0	74°42.2	S04°34.5	97°15.3	S13°16.7	320°56.3	N22°54.1	65°17.4	S01°19.8						
19	82°37.5	89°41.8	33.2	112°15.8	16.0	335°58.9	54.1	80°19.6	19.6						
20	97°40.0	104°41.4	31.9	127°16.4	15.3	351°01.5	54.1	95°21.8	19.5						
21	112°42.4	119°41.0	· · 30.7	142°17.0	· · 14.7	6°04.0	· · 54.2	110°24.0	· · 19.4						
22	127°44.9	134°40.6	29.4	157°17.5	14.0	21°06.6	54.2	125°26.2	19.3						
23	142°47.4	149°40.2	28.1	172°18.1	13.3	36°09.2	54.2	140°28.4	19.2						
Mer.pass.	13:30	ν -0.4' d -1.3' m -3.91		ν 0.6' d -0.7' m 1.14		ν 2.6' d 0.0' m -2.46		ν 2.2' d -0.1' m 0.99							

	SHA		Dec
Alpheratz	357°34.1	29°14.1	
Ankaa	353°06.6	-42°10.0	
Schedar	349°30.4	56°41.0	
Diphda	348°46.6	-17°50.7	
Achernar	335°19.8	-57°06.4	
Hamal	327°50.3	23°35.2	
Polaris	313°43.4	89°22.8	
Acamar	315°11.2	-40°12.2	
Menkar	314°05.3	4°11.5	
Mirfak	308°27.0	49°57.4	
Aldebaran	290°38.5	16°33.7	
Rigel	281°02.9	-8°10.4	
Capella	280°20.4	46°01.6	
Bellatrix	278°21.8	6°22.3	
Elnath	278°00.6	28°37.8	
Alnilam	275°36.7	-1°11.2	
Betelgeuse	270°50.9	7°24.6	
Canopus	263°51.7	-52°42.8	
Sirius	258°25.2	-16°45.3	
Adhara	255°04.9	-29°00.7	
Procyon	244°49.6	5°09.4	
Pollux	243°15.9	27°57.7	
Avior	234°13.8	-59°35.8	
Suhail	222°45.2	-43°32.5	
Miaplacidus	221°37.3	-69°49.6	
Alphard	217°46.5	-8°46.5	
Regulus	207°33.1	11°50.2	
Dubhe	193°39.1	61°36.4	
Denebola	182°23.7	14°25.4	
Gienah	175°42.3	-17°41.4	
Acrux	172°58.4	-63°14.6	
Gacrux	171°50.1	-57°15.6	
Alioth	166°11.6	55°48.8	
Spica	158°21.1	-11°18.0	
Alkaid	152°50.9	49°10.6	
Hadar	148°34.3	-60°29.8	
Menkent	147°56.3	-36°29.9	
Arcturus	145°46.8	19°02.5	
Rigel Kent.	139°38.7	-60°56.5	
Kochab	137°19.3	74°02.5	
Zuben'ubi	130°54.8	-16°09.1	
Alphecca	126°02.8	26°37.3	
Antares	112°14.7	-26°29.4	
Atria	107°08.1	-69°04.2	
Sabik	102°01.7	-15°45.5	
Shaula	96°09.2	-37°07.3	
Rasalhague	95°57.7	12°32.2	
Eltanin	90°41.9	51°28.7	
Kaus Aust.	83°31.4	-34°22.3	
Vega	80°32.8	38°48.2	
Nunki	75°46.8	-26°15.8	
Altair	61°59.3	8°56.1	
Peacock	53°04.7	-56°39.0	
Deneb	49°25.6	45°22.2	
Enif	33°38.2	9°59.6	
Al Na'ir	27°32.2	-46°50.1	
Fomalhaut	15°13.8	-29°29.1	
Scheat	13°44.6	28°13.4	
Markab	13°29.3	15°20.7	

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	157°49.8	164°39.8	S04°26.9	187°18.7	S13°12.6	51°11.7	N22°54.2	155°30.6	S01°19.0
1	172°52.3	179°39.5	25.6	202°19.2	11.9	66°14.3	54.2	170°32.8	18.9
2	187°54.7	194°39.1	24.4	217°19.8	11.2	81°16.8	54.2	185°35.0	18.8
3	202°57.2	209°38.7	· · 23.1	232°20.4	· · 10.6	96°19.4	· · 54.2	200°37.2	· · 18.7
4	217°59.7	224°38.3	21.8	247°20.9	09.9	111°22.0	54.2	215°39.4	18.6
5	233°02.1	239°37.9	20.6	262°21.5	09.2	126°24.5	54.3	230°41.6	18.4
6	248°04.6	254°37.5	S04°19.3	277°22.1	S13°08.5	141°27.1	N22°54.3	245°43.7	S01°18.3
7	263°07.1	269°37.1	18.0	292°22.6	07.8	156°29.6	54.3	260°45.9	18.2
8	278°09.5	284°36.7	16.8	307°23.2	07.2	171°32.2	54.3	275°48.1	18.1
9	293°12.0	299°36.3	· · 15.5	322°23.8	· · 06.5	186°34.8	· · 54.3	290°50.3	· · 18.0
10	308°14.5	314°35.9	14.2	337°24.3	05.8	201°37.3	54.3	305°52.5	17.8
11	323°16.9	329°35.5	13.0	352°24.9	05.1	216°39.9	54.3	320°54.7	17.7
12	338°19.4	344°35.1	S04°11.7	7°25.5	S13°04.4	231°42.4	N22°54.3	335°56.9	S01°17.6
13	353°21.8	359°34.7	10.4	22°26.0	03.7	246°45.0	54.4	350°59.1	17.5
14	8°24.3	14°34.4	09.2	37°26.6	03.1	261°47.5	54.4	6°01.3	17.4
15	23°26.8	29°34.0	· · 07.9	52°27.2	· · 02.4	276°50.1	· · 54.4	21°03.5	· · 17.2
16	38°29.2	44°33.6	06.6	67°27.7	01.7	291°52.7	54.4	36°05.7	17.1
17	53°31.7	59°33.2	05.4	82°28.3	01.0	306°55.2	54.4	51°07.9	17.0
18	68°34.2	74°32.8	S04°04.1	97°28.9	S13°00.3	321°57.8	N22°54.4	66°10.1	S01°16.9
19	83°36.6	89°32.4	02.8	112°29.5	12°59.6	337°00.3	54.4	81°12.2	16.8
20	98°39.1	104°32.0	01.6	127°30.0	58.9	352°02.9	54.4	96°14.4	16.6
21	113°41.6	119°31.6	04°00.3	142°30.6	· · 58.3	7°05.4	· · 54.5	111°16.6	· · 16.5
22	128°44.0	134°31.2	03°59.0	157°31.2	57.6	22°08.0	54.5	126°18.8	16.4
23	143°46.5	149°30.9	57.8	172°31.7	56.9	37°10.5	54.5	141°21.0	16.3
Mer.pass.	13:26	ν -0.4' d -1.3' m -3.91		ν 0.6' d -0.7' m 1.14		ν 2.6' d 0.0' m -2.45		ν 2.2' d -0.1' m 0.99	

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	158°49.0	164°30.5	S03°56.5	187°32.3	S12°56.2	52°13.1	N22°54.5	156°23.2	S01°16.2
1	173°51.4	179°30.1	55.2	202°32.9	55.5	67°15.6	54.5	171°25.4	16.0
2	188°53.9	194°29.7	54.0	217°33.4	54.8	82°18.2	54.5	186°27.6	15.9
3	203°56.3	209°29.3	· · 52.7	232°34.0	· · 54.1	97°20.8	· · 54.5	201°29.8	· · 15.8
4	218°58.8	224°28.9	51.4	247°34.6	53.4	112°23.3	54.5	216°32.0	15.7
5	234°01.3	239°28.5	50.1	262°35.2	52.8	127°25.9	54.6	231°34.2	15.6
6	249°03.7	254°28.1	S03°48.9	277°35.7	S12°52.1	142°28.4	N22°54.6	246°36.4	S01°15.4
7	264°06.2	269°27.7	47.6	292°36.3	51.4	157°31.0	54.6	261°38.5	15.3
8	279°08.7	284°27.4	46.3	307°36.9	50.7	172°33.5	54.6	276°40.7	15.2
9	294°11.1	299°27.0	· · 45.1	322°37.4	· · 50.0	187°36.1	· · 54.6	291°42.9	· · 15.1
10	309°13.6	314°26.6	43.8	337°38.0	49.3	202°38.6	54.6	306°45.1	15.0
11	324°16.1	329°26.2	42.5	352°38.6	48.6	217°41.2	54.6	321°47.3	14.8
12	339°18.5	344°25.8	S03°41.3	7°39.2	S12°47.9	232°43.7	N22°54.6	336°49.5	S01°14.7
13	354°21.0	359°25.4	40.0	22°39.7	47.3	247°46.3	54.6	351°51.7	14.6
14	9°23.5	14°25.0	38.7	37°40.3	46.6	262°48.8	54.7	6°53.9	14.5
15	24°25.9	29°24.7	· · 37.4	52°40.9	· · 45.9	277°51.3	· · 54.7	21°56.1	· · 14.4
16	39°28.4	44°24.3	36.2	67°41.4	45.2	292°53.9	54.7	36°58.3	14.2
17	54°30.8	59°23.9	34.9	82°42.0	44.5	307°56.4	54.7	52°00.5	14.1
18	69°33.3	74°23.5	S03°33.6	97°42.6	S12°43.8	322°59.0	N22°54.7	67°02.6	S01°14.0
19	84°35.8	89°23.1	32.4	112°43.2	43.1	338°01.5	54.7	82°04.8	13.9
20	99°38.2	104°22.7	31.1	127°43.7	42.4	353°04.1	54.7	97°07.0	13.8
21	114°40.7	119°22.3	· · 29.8	142°44.3	· · 41.7	8°06.6	· · 54.7	112°09.2	· · 13.6
22	129°43.2	134°22.0	28.5	157°44.9	41.0	23°09.2	54.8	127°11.4	13.5
23	144°45.6	149°21.6	27.3	172°45.5	40.4	38°11.7	54.8	142°13.6	13.4
Mer.pass.	13:23	ν -0.4' d -1.3' m -3.91		ν 0.6' d -0.7' m 1.14		ν 2.6' d 0.0' m -2.44		ν 2.2' d -0.1' m 0.99	

Feb 27 Fri	SHA	Mer.pass
Venus	7°58.7	13:01
Mars	30°14.5	11:31
Jupiter	253°19.5	20:36
Saturn	357°47.3	13:39

Feb 28 Sat

h		Sun			Moon		
Fri	GHA	Dec	GHA	ν	Dec	d	HP
0	176°48.7	S08°25.2	54°21.5	4.1'	N27°26.1	-4.8'	59.0'
1	191°48.8	24.3	68°44.7	4.2'	27°21.3	-5.0'	59.0'
2	206°48.9	23.4	83°07.9	4.3'	27°16.3	-5.2'	59.0'
3	221°49.0	· · 22.4	97°31.1	4.3'	27°11.1	-5.4'	59.0'
4	236°49.1	21.5	111°54.5	4.4'	27°05.7	-5.6'	59.0'
5	251°49.2	20.5	126°17.9	4.5'	27°00.1	-5.7'	59.0'
6	266°49.3	S08°19.6	140°41.4	4.6'	N26°54.3	-5.9'	58.9'
7	281°49.4	18.7	155°05.0	4.6'	26°48.4	-6.1'	58.9'
8	296°49.5	17.7	169°28.6	4.7'	26°42.3	-6.3'	58.9'
9	311°49.6	· · 16.8	183°52.3	4.8'	26°36.0	-6.4'	58.9'
10	326°49.8	15.8	198°16.1	4.9'	26°29.6	-6.6'	58.9'
11	341°49.9	14.9	212°40.0	5.0'	26°23.0	-6.8'	58.9'
12	356°50.0	S08°14.0	227°04.0	5.0'	N26°16.2	-7.0'	58.9'
13	11°50.1	13.0	241°28.0	5.1'	26°09.2	-7.1'	58.9'
14	26°50.2	12.1	255°52.1	5.2'	26°02.1	-7.3'	58.9'
15	41°50.3	· · 11.1	270°16.4	5.3'	25°54.8	-7.5'	58.9'
16	56°50.4	10.2	284°40.7	5.4'	25°47.3	-7.6'	58.9'
17	71°50.5	09.2	299°05.1	5.5'	25°39.7	-7.8'	58.8'
18	86°50.7	S08°08.3	313°29.6	5.6'	N25°31.9	-7.9'	58.8'
19	101°50.8	07.4	327°54.2	5.7'	25°24.0	-8.1'	58.8'
20	116°50.9	06.4	342°18.8	5.8'	25°15.9	-8.3'	58.8'
21	131°51.0	· · 05.5	356°43.6	5.9'	25°07.6	-8.4'	58.8'
22	146°51.1	04.5	11°08.5	6.0'	24°59.2	-8.6'	58.8'
23	161°51.2	03.6	25°33.5	6.1'	24°50.6	-8.7'	58.8'
SD = 16.1'		$d = -0.9'$	SD = 16.1'				

Sat	GHA	Dec	GHA	ν	Dec	d	HP
0	176°51.3	S08°02.6	39°58.5	6.2'	N24°41.9	-8.9'	58.8'
1	191°51.5	01.7	54°23.7	6.3'	24°33.0	-9.0'	58.8'
2	206°51.6	08°00.8	68°49.0	6.4'	24°24.0	-9.2'	58.8'
3	221°51.7	07°59.8	83°14.4	6.5'	24°14.8	-9.3'	58.7'
4	236°51.8	58.9	97°39.8	6.6'	24°05.5	-9.5'	58.7'
5	251°51.9	57.9	112°05.4	6.7'	23°56.1	-9.6'	58.7'
6	266°52.0	S07°57.0	126°31.1	6.8'	N23°46.4	-9.7'	58.7'
7	281°52.2	56.0	140°56.9	6.9'	23°36.7	-9.9'	58.7'
8	296°52.3	55.1	155°22.7	7.0'	23°26.8	-10.0'	58.7'
9	311°52.4	· · 54.1	169°48.7	7.1'	23°16.8	-10.2'	58.7'
10	326°52.5	53.2	184°14.8	7.2'	23°06.6	-10.3'	58.7'
11	341°52.6	52.2	198°41.0	7.3'	22°56.3	-10.4'	58.6'
12	356°52.7	S07°51.3	213°07.3	7.4'	N22°45.9	-10.6'	58.6'
13	11°52.9	50.4	227°33.8	7.5'	22°35.3	-10.7'	58.6'
14	26°53.0	49.4	242°00.3	7.6'	22°24.6	-10.8'	58.6'
15	41°53.1	· · 48.5	256°26.9	7.7'	22°13.8	-10.9'	58.6'
16	56°53.2	47.5	270°53.6	7.8'	22°02.9	-11.1'	58.6'
17	71°53.3	46.6	285°20.5	7.9'	21°51.8	-11.2'	58.6'
18	86°53.4	S07°45.6	299°47.4	8.1'	N21°40.6	-11.3'	58.5'
19	101°53.6	44.7	314°14.5	8.2'	21°29.3	-11.4'	58.5'
20	116°53.7	43.7	328°41.7	8.3'	21°17.8	-11.6'	58.5'
21	131°53.8	· · 42.8	343°08.9	8.4'	21°06.3	-11.7'	58.5'
22	146°53.9	41.8	357°36.3	8.5'	20°54.6	-11.8'	58.5'
23	161°54.0	40.9	12°03.8	8.6'	20°42.9	-11.9'	58.5'
SD = 16.1'		$d = -0.9'$	SD = 16.0'				

Sun	GHA	Dec	GHA	ν	Dec	d	HP
0	176°54.2	S07°39.9	26°31.4	8.7'	N20°31.0	-12.0'	58.5'
1	191°54.3	39.0	40°59.1	8.8'	20°19.0	-12.1'	58.4'
2	206°54.4	38.0	55°26.9	8.9'	20°06.9	-12.2'	58.4'
3	221°54.5	· · 37.1	69°54.8	9.0'	19°54.6	-12.3'	58.4'
4	236°54.6	36.1	84°22.8	9.1'	19°42.3	-12.4'	58.4'
5	251°54.8	35.2	98°51.0	9.2'	19°29.9	-12.5'	58.4'
6	266°54.9	S07°34.2	113°19.2	9.3'	N19°17.4	-12.6'	58.4'
7	281°55.0	33.3	127°47.5	9.4'	19°04.7	-12.7'	58.3'
8	296°55.1	32.3	142°16.0	9.5'	18°52.0	-12.8'	58.3'
9	311°55.3	· · 31.4	156°44.5	9.6'	18°39.2	-12.9'	58.3'
10	326°55.4	30.4	171°13.1	9.7'	18°26.3	-13.0'	58.3'
11	341°55.5	29.5	185°41.9	9.9'	18°13.3	-13.1'	58.3'
12	356°55.6	S07°28.5	200°10.7	10.0'	N18°00.2	-13.2'	58.3'
13	11°55.7	27.6	214°39.7	10.1'	17°47.0	-13.3'	58.2'
14	26°55.9	26.6	229°08.8	10.2'	17°33.7	-13.4'	58.2'
15	41°56.0	· · 25.7	243°37.9	10.3'	17°20.4	-13.4'	58.2'
16	56°56.1	24.7	258°07.2	10.4'	17°06.9	-13.5'	58.2'
17	71°56.2	23.8	272°36.5	10.5'	16°53.4	-13.6'	58.2'
18	86°56.4	S07°22.8	287°06.0	10.6'	N16°39.8	-13.7'	58.1'
19	101°56.5	21.9	301°35.5	10.6'	16°26.1	-13.8'	58.1'
20	116°56.6	20.9	316°05.2	10.7'	16°12.3	-13.8'	58.1'
21	131°56.7	· · 20.0	330°34.9	10.8'	15°58.5	-13.9'	58.1'
22	146°56.9	19.0	345°04.7	10.9'	15°44.6	-14.0'	58.1'
23	161°57.0	18.1	359°34.7	11.0'	15°30.6	-14.1'	58.0'
SD = 16.1'		$d = -0.9'$	SD = 15.9'				

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

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

Day	Sun		Mer. Pass	Moon		Age 10-12 77-93%
	Eqn. of Time 00 ^h mm:ss	12 ^h mm:ss		Mer. Pass. Upper hh:mm	Lower hh:mm	
27	12:45	12:40	12:13	21:14	08:44	
28	12:35	12:29	12:12	22:10	09:42	
01	12:23	12:18	12:12	23:02	10:36	

March 02, 03, 04 UT (Mon., Tue., Wed.)

	Aries		Venus		Mars		Jupiter		Saturn	
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	159°48.1	164°21.2	S03°26.0	187°46.0	S12°39.7	53°14.3	N22°54.8	157°15.8	S01°13.3	
1	174°50.6	179°20.8	24.7	202°46.6	39.0	68°16.8	54.8	172°18.0	13.2	
2	189°53.0	194°20.4	23.5	217°47.2	38.3	83°19.3	54.8	187°20.2	13.0	
3	204°55.5	209°20.0	· · 22.2	232°47.8	· · 37.6	98°21.9	· · 54.8	202°22.4	· · 12.9	
4	219°57.9	224°19.7	20.9	247°48.3	36.9	113°24.4	54.8	217°24.6	12.8	
5	235°00.4	239°19.3	19.6	262°48.9	36.2	128°27.0	54.8	232°26.7	12.7	
6	250°02.9	254°18.9	S03°18.4	277°49.5	S12°35.5	143°29.5	N22°54.8	247°28.9	S01°12.5	
7	265°05.3	269°18.5	17.1	292°50.1	34.8	158°32.1	54.8	262°31.1	12.4	
8	280°07.8	284°18.1	15.8	307°50.6	34.1	173°34.6	54.9	277°33.3	12.3	
9	295°10.3	299°17.7	· · 14.5	322°51.2	· · 33.4	188°37.1	· · 54.9	292°35.5	· · 12.2	
10	310°12.7	314°17.4	13.3	337°51.8	32.7	203°39.7	54.9	307°37.7	12.1	
11	325°15.2	329°17.0	12.0	352°52.4	32.0	218°42.2	54.9	322°39.9	11.9	
12	340°17.7	344°16.6	S03°10.7	7°52.9	S12°31.3	233°44.8	N22°54.9	337°42.1	S01°11.8	
13	355°20.1	359°16.2	09.4	22°53.5	30.6	248°47.3	54.9	352°44.3	11.7	
14	10°22.6	14°15.8	08.2	37°54.1	30.0	37°54.1	54.9	7°46.5	11.6	
15	25°25.1	29°15.5	· · 06.9	52°54.7	· · 29.3	278°52.4	· · 54.9	22°48.6	· · 11.5	
16	40°27.5	44°15.1	05.6	67°55.2	28.6	293°54.9	54.9	37°50.8	11.3	
17	55°30.0	59°14.7	04.3	82°55.8	27.9	308°57.5	55.0	52°53.0	11.2	
18	70°32.4	74°14.3	S03°03.1	97°56.4	S12°27.2	324°00.0	N22°55.0	67°55.2	S01°11.1	
19	85°34.9	89°13.9	01.8	112°57.0	26.5	339°02.5	55.0	82°57.4	11.0	
20	100°37.4	104°13.5	03°00.5	127°57.5	25.8	354°05.1	55.0	97°59.6	10.9	
21	115°39.8	119°13.2	02°59.2	142°58.1	· · 25.1	9°07.6	· · 55.0	113°01.8	· · 10.7	
22	130°42.3	134°12.8	58.0	157°58.7	24.4	24°10.1	55.0	128°04.0	10.6	
23	145°44.8	149°12.4	56.7	172°59.3	23.7	39°12.7	55.0	143°06.2	10.5	
Mer.pass.	13:19	ν -0.4' d -1.3' m -3.92		ν 0.6' d -0.7' m 1.14		ν 2.5' d 0.0' m -2.43		ν 2.2' d -0.1' m 0.99		

	SHA		Dec
Alpheratz	357°34.1	29°14.1	
Ankaa	353°06.6	-42°10.0	
Schedar	349°30.5	56°41.0	
Diphda	348°46.6	-17°50.7	
Achernar	335°19.9	-57°06.4	
Hamal	327°50.3	23°35.2	
Polaris	313°44.9	89°22.8	
Acamar	315°11.2	-40°12.2	
Menkar	314°05.3	4°11.5	
Mirfak	308°27.0	49°57.4	
Aldebaran	290°38.5	16°33.7	
Rigel	281°02.9	-8°10.4	
Capella	280°20.4	46°01.6	
Bellatrix	278°21.8	6°22.3	
Elnath	278°00.6	28°37.8	
Alnilam	275°36.7	-1°11.2	
Betelgeuse	270°50.9	7°24.6	
Canopus	263°51.7	-52°42.8	
Sirius	258°25.2	-16°45.3	
Adhara	255°04.9	-29°00.7	
Procyon	244°49.6	5°09.4	
Pollux	243°15.9	27°57.8	
Avior	234°13.9	-59°35.8	
Suhail	222°45.2	-43°32.5	
Miaplacidus	221°37.3	-69°49.6	
Alphard	217°46.5	-8°46.5	
Regulus	207°33.1	11°50.2	
Dubhe	193°39.1	61°36.5	
Denebola	182°23.6	14°25.4	
Gienah	175°42.3	-17°41.4	
Acrux	172°58.4	-63°14.6	
Gacrux	171°50.1	-57°15.6	
Alioth	166°11.6	55°48.8	
Spica	158°21.0	-11°18.0	
Alkaid	152°50.9	49°10.6	
Hadar	148°34.3	-60°29.8	
Menkent	147°56.2	-36°29.9	
Arcturus	145°46.8	19°02.5	
Rigil Kent.	139°38.6	-60°56.5	
Kochab	137°19.2	74°02.5	
Zuben'ubi	136°54.8	-16°09.1	
Alphecca	126°02.8	26°37.3	
Antares	112°14.6	-26°29.4	
Atria	107°08.0	-69°04.2	
Sabik	102°01.7	-15°45.5	
Shaula	96°09.1	-37°07.3	
Rasalhague	95°57.7	12°32.2	
Eltanin	90°41.9	51°28.7	
Kaus Aust.	83°31.4	-34°22.3	
Vega	80°32.8	38°48.1	
Nunki	75°46.8	-26°15.8	
Altair	61°59.3	8°56.1	
Peacock	53°04.7	-56°38.9	
Deneb	49°25.6	45°22.2	
Enif	33°38.2	9°59.6	
Al Na'ir	27°32.1	-46°50.1	
Fomalhaut	15°13.8	-29°29.1	
Scheat	13°44.6	28°13.4	
Markab	13°29.3	15°20.7	

Mar 02 Mon	SHA	Mer.pass
Venus	4°33.1	13:03
Mars	27°57.9	11:28
Jupiter	253°26.2	20:24
Saturn	357°27.7	13:29

Mar 03 Tue	SHA	Mer.pass
Venus	3°24.8	13:04
Mars	27°12.6	11:28
Jupiter	253°28.0	20:20
Saturn	357°21.1	13:25

Mar 04 Wed	SHA	Mer.pass
Venus	2°16.6	13:04
Mars	26°27.4	11:27
Jupiter	253°29.6	20:16
Saturn	357°14.5	13:22

Horizontal parallax	
Venus:	0.1
Mars:	0.1

	Aries		Venus		Mars		Jupiter		Saturn	
Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	160°47.2	164°12.0	S02°55.4	187°59.9	S12°23.0	54°15.2	N22°55.0	158°08.4	S01°10.4	
1	175°49.7	179°11.6	54.1	203°00.4	22.3	69°17.8	55.0	173°10.5	10.3	
2	190°52.2	194°11.3	52.9	218°01.0	21.6	84°20.3	55.0	188°12.7	10.1	
3	205°54.6	209°10.9	· · 51.6	233°01.6	· · 20.9	99°22.8	· · 55.1	203°14.9	· · 10.0	
4	220°57.1	224°10.5	50.3	248°02.2	20.2	114°25.4	55.1	218°17.1	09.9	
5	235°59.6	239°10.1	49.0	263°02.7	19.5	129°27.9	55.1	233°19.3	09.8	
6	251°02.0	254°09.7	S02°47.8	278°03.3	S12°18.8	144°30.4	N22°55.1	248°21.5	S01°09.6	
7	266°04.5	269°09.4	46.5	293°03.9	18.1	159°33.0	55.1	263°23.7	09.5	
8	281°06.9	284°09.0	45.2	308°04.5	17.4	174°35.5	55.1	278°25.9	09.4	
9	296°09.4	299°08.6	· · 43.9	323°05.1	· · 16.7	189°38.0	· · 55.1	293°28.1	· · 09.3	
10	311°11.9	314°08.2	42.6	338°05.6	16.0	204°40.6	55.1	308°30.2	09.2	
11	326°14.3	329°07.9	41.4	353°06.2	15.3	219°43.1	55.1	323°32.4	09.0	
12	341°16.8	344°07.5	S02°40.1	8°06.8	S12°14.6	234°45.6	N22°55.1	338°34.6	S01°08.9	
13	356°19.3	359°07.1	38.8	23°07.4	13.9	249°48.1	55.2	353°36.8	08.8	
14	11°21.7	14°06.7	37.5	38°08.0	13.2	264°50.7	55.2	8°39.0	08.7	
15	26°24.2	29°06.3	· · 36.3	53°08.5	· · 12.5	279°53.2	· · 55.2	23°41.2	· · 08.6	
16	41°26.7	44°06.0	35.0	68°09.1	11.8	294°55.7	55.2	38°43.4	08.4	
17	56°29.1	59°05.6	33.7	83°09.7	11.1	309°58.3	55.2	53°45.6	08.3	
18	71°31.6	74°05.2	S02°32.4	98°10.3	S12°10.4	325°00.8	N22°55.2	68°47.8	S01°08.2	
19	86°34.0	89°04.8	31.1	113°10.9	09.7	340°03.3	55.2	83°49.9	08.1	
20	101°36.5	104°04.5	29.9	128°11.5	09.0	355°05.9	55.2	98°52.1	08.0	
21	116°39.0	119°04.1	· · 28.6	143°12.0	· · 08.3	10°08.4	· · 55.2	113°54.3	· · 07.8	
22	131°41.4	134°03.7	27.3	158°12.6	07.6	25°10.9	55.2	128°56.5	07.7	
23	146°43.9	149°03.3	26.0	173°13.2	06.9	40°13.4	55.3	143°58.7	07.6	
Mer.pass.	13:15	ν -0.4' d -1.3' m -3.92		ν 0.6' d -0.7' m 1.14		ν 2.5' d 0.0' m -2.43		ν 2.2' d -0.1' m 0.99		

	Aries		Venus		Mars		Jupiter		Saturn	
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	161°46.4	164°03.0	S02°24.7	188°13.8	S12°06.2	55°16.0	N22°55.3	159°00.9	S01°07.5	
1	176°48.8	179°02.6	23.5	203°14.4	05.5	70°18.5	55.3	174°03.1	07.3	
2	191°51.3	194°02.2	22.2	218°14.9	04.8	85°21.0	55.3	189°05.3	07.2	
3	206°53.8	209°01.8	· · 20.9	233°15.5	· · 04.1	100°23.5	· · 55.3	204°07.5	· · 07.1	
4	221°56.2	224°01.5	19.6	248°16.1	03.4	115°26.1	55.3	219°09.6	07.0	
5	236°58.7	239°01.1	18.3	263°16.7	02.7	130°28.6	55.3	234°11.8	06.9	
6	252°01.2	254°00.7	S02°17.1	278°17.3	S12°02.0	145°31.1	N22°55.3	249°14.0	S01°06.7	
7	267°03.6	269°00.3	15.8	293°17.9	01.3	160°33.6	55.3	264°16.2	06.6	
8	282°06.1	283°59.9	14.5	308°18.4	12°00.6	175°36.2	55.3	279°18.4	06.5	
9	297°08.5	298°59.6	· · 13.2	323°19.0	11°59.9	190°38.7	· · 55.3	294°20.6	· · 06.4	
10	312°11.0	313°59.2	11.9	338°19.6	59.2	205°41.2	55.3	309°22.8	06.3	
11	327°13.5	328°58.8	10.7	353°20.2	58.5	220°43.7	55.4	324°25.0	06.1	
12	342°15.9	343°58.5	S02°09.4	8°20.8	S11°57.8	235°46.3	N22°55.4	339°27.2	S01°06.0	
13	357°18.4	358°58.1	08.1	23°21.4	57.1	250°48.8	55.4	354°29.3	05.9	
14	12°20.9	13°57.7	06.8	38°21.9	56.4	265°51.3	55.4	9°31.5	05.8	
15	27°23.3	28°57.3	· · 05.5	53°22.5	· · 55.7	280°53.8	· · 55.4	24°33.7	· · 05.6	
16	42°25.8	43°57.0	04.3	68°23.1	55.0	295°56.3	55.4	39°35.9	05.5	
17	57°28.3	58°56.6	03.0	83°23.7	54.3	310°58.9	55.4	54°38.1	05.4	
18	72°30.7	73°56.2	S02°01.7	98°24.3	S11°53.6	326°01.4	N22°55.4	69°40.3	S01°05.3	
19	87°33.2	88°55.8	02°00.4	113°24.9	52.8	341°03.9	55.4	84°42.5	05.2	
20	102°35.6	103°55.5	01°59.1	128°25.5	52.1	356°06.4	55.4	99°44.7	05.0	
21	117°38.1	118°55.1	· · 57.9	143°26.0	· · 51.4	11°08.9	· · 55.4	114°46.8	· · 04.9	
22	132°40.6	133°54.7	56.6	158°26.6	50.7	26°11.5	55.5	129°49.0	04.8	
23	147°43.0									

h	Sun			Moon			
	Mon	GHA	Dec	GHA	ν	Dec	d
0	176°57.1	S07°17.1	14°04.7	11.1'	N15°16.6	-14.1'	58.0'
1	191°57.2	16.2	28°34.8	11.2'	15°02.4	-14.2'	58.0'
2	206°57.4	15.2	43°05.0	11.3'	14°48.2	-14.3'	58.0'
3	221°57.5	· · 14.2	57°35.4	11.4'	14°34.0	-14.3'	58.0'
4	236°57.6	13.3	72°05.7	11.5'	14°19.7	-14.4'	57.9'
5	251°57.7	12.3	86°36.2	11.6'	14°05.3	-14.4'	57.9'
6	266°57.9	S07°11.4	101°06.8	11.7'	N13°50.9	-14.5'	57.9'
7	281°58.0	10.4	115°37.5	11.7'	13°36.4	-14.6'	57.9'
8	296°58.1	09.5	130°08.2	11.8'	13°21.8	-14.6'	57.9'
9	311°58.2	· · 08.5	144°39.0	11.9'	13°07.2	-14.7'	57.8'
10	326°58.4	07.6	159°10.0	12.0'	12°52.5	-14.7'	57.8'
11	341°58.5	06.6	173°41.0	12.1'	12°37.8	-14.8'	57.8'
12	356°58.6	S07°05.7	188°12.0	12.2'	N12°23.0	-14.8'	57.8'
13	11°58.8	04.7	202°43.2	12.2'	12°08.2	-14.9'	57.8'
14	26°58.9	03.7	217°14.5	12.3'	11°53.4	-14.9'	57.7'
15	41°59.0	· · 02.8	231°45.8	12.4'	11°38.5	-15.0'	57.7'
16	56°59.1	01.8	246°17.2	12.5'	11°23.5	-15.0'	57.7'
17	71°59.3	07°00.9	260°48.7	12.6'	11°08.5	-15.0'	57.7'
18	86°59.4	S06°59.9	275°20.2	12.6'	N10°53.5	-15.1'	57.6'
19	101°59.5	59.0	289°51.8	12.7'	10°38.4	-15.1'	57.6'
20	116°59.7	58.0	304°23.6	12.8'	10°23.3	-15.2'	57.6'
21	131°59.8	· · 57.1	318°55.3	12.9'	10°08.1	-15.2'	57.6'
22	146°59.9	56.1	333°27.2	12.9'	09°52.9	-15.2'	57.6'
23	162°00.1	55.1	347°59.1	13.0'	09°37.7	-15.3'	57.5'
SD = 16.1'		d = -1.0'	SD = 15.8'				

Tue	GHA	Dec	GHA	ν	Dec	d	HP
0	177°00.2	S06°54.2	2°31.1	13.1'	N09°22.4	-15.3'	57.5'
1	192°00.3	53.2	17°03.2	13.1'	09°07.1	-15.3'	57.5'
2	207°00.4	52.3	31°35.3	13.2'	08°51.8	-15.3'	57.5'
3	222°00.6	· · 51.3	46°07.5	13.3'	08°36.5	-15.4'	57.4'
4	237°00.7	50.4	60°39.7	13.3'	08°21.1	-15.4'	57.4'
5	252°00.8	49.4	75°12.1	13.4'	08°05.7	-15.4'	57.4'
6	267°01.0	S06°48.4	89°44.5	13.4'	N07°50.3	-15.4'	57.4'
7	282°01.1	47.5	104°16.9	13.5'	07°34.8	-15.5'	57.3'
8	297°01.2	46.5	118°49.4	13.6'	07°19.3	-15.5'	57.3'
9	312°01.4	· · 45.6	133°22.0	13.6'	07°03.9	-15.5'	57.3'
10	327°01.5	44.6	147°54.6	13.7'	06°48.3	-15.5'	57.3'
11	342°01.6	43.6	162°27.3	13.7'	06°32.8	-15.5'	57.3'
12	357°01.8	S06°42.7	177°00.0	13.8'	N06°17.3	-15.6'	57.2'
13	12°01.9	41.7	191°32.8	13.8'	06°01.7	-15.6'	57.2'
14	27°02.0	40.8	206°05.7	13.9'	05°46.2	-15.6'	57.2'
15	42°02.2	· · 39.8	220°38.6	14.0'	05°30.6	-15.6'	57.2'
16	57°02.3	38.8	235°11.5	14.0'	05°15.0	-15.6'	57.1'
17	72°02.4	37.9	249°44.5	14.1'	04°59.4	-15.6'	57.1'
18	87°02.6	S06°36.9	264°17.6	14.1'	N04°43.8	-15.6'	57.1'
19	102°02.7	36.0	278°50.7	14.1'	04°28.2	-15.6'	57.1'
20	117°02.8	35.0	293°23.8	14.2'	04°12.5	-15.6'	57.0'
21	132°03.0	· · 34.0	307°57.0	14.2'	03°56.9	-15.6'	57.0'
22	147°03.1	33.1	322°30.3	14.3'	03°41.3	-15.6'	57.0'
23	162°03.2	32.1	337°03.5	14.3'	03°25.6	-15.6'	57.0'
SD = 16.1'		d = -1.0'	SD = 15.7'				

Wed	GHA	Dec	GHA	ν	Dec	d	HP
0	177°03.4	S06°31.2	351°36.9	14.4'	N03°10.0	-15.6'	56.9'
1	192°03.5	30.2	6°10.2	14.4'	02°54.4	-15.6'	56.9'
2	207°03.6	29.2	20°43.6	14.4'	02°38.8	-15.6'	56.9'
3	222°03.8	· · 28.3	35°17.1	14.5'	02°23.1	-15.6'	56.9'
4	237°03.9	27.3	49°50.6	14.5'	02°07.5	-15.6'	56.8'
5	252°04.1	26.4	64°24.1	14.6'	01°51.9	-15.6'	56.8'
6	267°04.2	S06°25.4	78°57.6	14.6'	N01°36.3	-15.6'	56.8'
7	282°04.3	24.4	93°31.2	14.6'	01°20.7	-15.6'	56.8'
8	297°04.5	23.5	108°04.8	14.7'	01°05.1	-15.6'	56.7'
9	312°04.6	· · 22.5	122°38.5	14.7'	00°49.5	-15.6'	56.7'
10	327°04.7	21.5	137°12.2	14.7'	00°33.9	-15.6'	56.7'
11	342°04.9	20.6	151°45.9	14.7'	00°18.4	-15.5'	56.7'
12	357°05.0	S06°19.6	166°19.6	14.8'	N00°02.8	-15.5'	56.6'
13	12°05.2	18.7	180°53.4	14.8'	S00°12.7	15.5'	56.6'
14	27°05.3	17.7	195°27.2	14.8'	00°28.2	15.5'	56.6'
15	42°05.4	· · 16.7	210°01.0	14.8'	00°43.7	15.5'	56.5'
16	57°05.6	15.8	224°34.8	14.9'	00°59.2	15.5'	56.5'
17	72°05.7	14.8	239°08.7	14.9'	01°14.7	15.4'	56.5'
18	87°05.8	S06°13.8	253°42.6	14.9'	S01°30.1	15.4'	56.5'
19	102°06.0	12.9	268°16.5	14.9'	01°45.5	15.4'	56.4'
20	117°06.1	11.9	282°50.4	14.9'	02°00.9	15.4'	56.4'
21	132°06.3	· · 10.9	297°24.4	15.0'	02°16.3	15.4'	56.4'
22	147°06.4	10.0	311°58.3	15.0'	02°31.7	15.3'	56.4'
23	162°06.5	09.0	326°32.3	15.0'	02°47.0	15.3'	56.3'
SD = 16.1'		d = -1.0'	SD = 15.5'				

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

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

Day	Sun		Mer. Pass	Moon		Age 13-15 97-100%
	Eqn. of Time 00 ^h mm:ss	Time 12 ^h mm:ss		Mer. Pass Upper hh:mm	Mer. Pass Lower hh:mm	
02	12:12	12:05	12:12	23:50	11:26	
03	11:59	11:53	12:12	--	12:12	
04	11:46	11:40	12:12	00:35	12:56	

March 05, 06, 07 UT (Thu., Fri., Sat.)

	Aries			Venus			Mars			Jupiter			Saturn		
Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	162°45.5	163°54.0	S01°54.0	188°27.8	S11°49.3	56°16.5	N22°55.5	159°53.4	S01°04.6						
1	177°48.0	178°53.6	52.7	203°28.4	48.6	71°19.0	55.5	174°55.6	04.4						
2	192°50.4	193°53.2	51.4	218°29.0	47.9	86°21.5	55.5	189°57.8	04.3						
3	207°52.9	208°52.8	· · 50.2	233°29.6	· · 47.2	101°24.1	· · 55.5	205°00.0	· · 04.2						
4	222°55.4	223°52.5	48.9	248°30.1	46.5	116°26.6	55.5	220°02.2	04.1						
5	237°57.8	238°52.1	47.6	263°30.7	45.8	131°29.1	55.5	235°04.3	03.9						
6	253°00.3	253°51.7	S01°46.3	278°31.3	S11°45.1	146°31.6	N22°55.5	250°06.5	S01°03.8						
7	268°02.8	268°51.4	45.0	293°31.9	44.4	161°34.1	55.5	265°08.7	03.7						
8	283°05.2	283°51.0	43.8	308°32.5	43.7	176°36.6	55.5	280°10.9	03.6						
9	298°07.7	298°50.6	· · 42.5	323°33.1	· · 43.0	191°39.1	· · 55.5	295°13.1	· · 03.5						
10	313°10.1	313°50.2	41.2	338°33.7	42.2	206°41.7	55.5	310°15.3	03.3						
11	328°12.6	328°49.9	39.9	353°34.2	41.5	221°44.2	55.6	325°17.5	03.2						
12	343°15.1	343°49.5	S01°38.6	8°34.8	S11°40.8	236°46.7	N22°55.6	340°19.7	S01°03.1						
13	358°17.5	358°49.1	37.3	23°35.4	40.1	251°49.2	55.6	355°21.8	03.0						
14	13°20.0	13°48.8	36.1	38°36.0	39.4	266°51.7	55.6	10°24.0	02.9						
15	28°22.5	28°48.4	· · 34.8	53°36.6	· · 38.7	281°54.2	· · 55.6	25°26.2	· · 02.7						
16	43°24.9	43°48.0	33.5	68°37.2	38.0	296°56.7	55.6	40°28.4	02.6						
17	58°27.4	58°47.6	32.2	83°37.8	37.3	311°59.3	55.6	55°30.6	02.5						
18	73°29.9	73°47.3	S01°30.9	98°38.4	S11°36.6	327°01.8	N22°55.6	70°32.8	S01°02.4						
19	88°32.3	88°46.9	29.6	113°39.0	35.9	342°04.3	55.6	85°35.0	02.2						
20	103°34.8	103°46.5	28.4	128°39.5	35.1	357°06.8	55.6	100°37.1	02.1						
21	118°37.2	118°46.2	· · 27.1	143°40.1	· · 34.4	12°09.3	· · 55.6	115°39.3	· · 02.0						
22	133°39.7	133°45.8	25.8	158°40.7	33.7	27°11.8	55.6	130°41.5	01.9						
23	148°42.2	148°45.4	24.5	173°41.3	33.0	42°14.3	55.6	145°43.7	01.8						
Mer.pass. 13:07 ν -0.4' d -1.3' m -3.92 ν 0.6' d -0.7' m 1.15 ν 2.5' d 0.0' m -2.41 ν 2.2' d -0.1' m 0.98															

	SHA		Dec
Alpheratz	357°34.1	29°14.1	
Ankaa	353°06.6	-42°10.0	
Schedar	349°30.5	56°40.9	
Diphda	348°46.6	-17°50.7	
Achernar	335°19.9	-57°06.4	
Hamal	327°50.3	23°35.2	
Polaris	313°46.3	89°22.8	
Acamar	315°11.2	-40°12.2	
Menkar	314°05.3	4°11.5	
Mirfak	308°27.1	49°57.4	
Aldebaran	290°38.5	16°33.7	
Rigel	281°02.9	-8°10.4	
Capella	280°20.4	46°01.6	
Bellatrix	278°21.8	6°22.3	
Elnath	278°00.6	28°37.8	
Alnilam	275°36.7	-1°11.2	
Betelgeuse	270°51.0	7°24.6	
Canopus	263°51.8	-52°42.8	
Sirius	258°25.2	-16°45.3	
Adhara	255°04.9	-29°00.7	
Procyon	244°49.6	5°09.4	
Pollux	243°15.9	27°57.8	
Avior	234°13.9	-59°35.8	
Suhail	222°45.2	-43°32.5	
Miaplacidus	221°37.3	-69°49.6	
Alphard	217°46.5	-8°46.5	
Regulus	207°33.1	11°50.2	
Dubhe	193°39.1	61°36.5	
Denebola	182°23.6	14°25.4	
Gienah	175°42.3	-17°41.4	
Acrux	172°58.4	-63°14.6	
Gacrux	171°50.1	-57°15.6	
Alioth	166°11.6	55°48.8	
Spica	158°21.0	-11°18.0	
Alkaid	152°50.9	49°10.6	
Hadar	148°34.2	-60°29.8	
Menkent	147°56.2	-36°29.9	
Arcturus	145°46.8	19°02.4	
Rigel Kent.	139°38.6	-60°56.5	
Kochab	137°19.2	74°02.5	
Zuben'ubi	136°54.8	-16°09.1	
Alphecca	126°02.8	26°37.3	
Antares	112°14.6	-26°29.4	
Atria	107°08.0	-69°04.2	
Sabik	102°01.7	-15°45.5	
Shaula	96°09.1	-37°07.3	
Rasalhague	95°57.7	12°32.2	
Eltanin	90°41.9	51°28.7	
Kaus Aust.	83°31.4	-34°22.3	
Vega	80°32.7	38°48.1	
Nunki	75°46.7	-26°15.8	
Altair	61°59.2	8°56.1	
Peacock	53°04.7	-56°38.9	
Deneb	49°25.5	45°22.2	
Enif	33°38.2	9°59.6	
Al Na'ir	27°32.1	-46°50.1	
Fomalhaut	15°13.8	-29°29.1	
Scheat	13°44.6	28°13.4	
Markab	13°29.3	15°20.7	

	Aries			Venus			Mars			Jupiter			Saturn		
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	163°44.6	163°45.1	S01°23.2	188°41.9	S11°32.3	57°16.8	N22°55.7	160°45.9	S01°01.6						
1	178°47.1	178°44.7	21.9	203°42.5	31.6	72°19.3	55.7	175°48.1	01.5						
2	193°49.6	193°44.3	20.6	218°43.1	30.9	87°21.8	55.7	190°50.3	01.4						
3	208°52.0	208°43.9	· · 19.4	233°43.7	· · 30.2	102°24.4	· · 55.7	205°52.5	· · 01.3						
4	223°54.5	223°43.6	18.1	248°44.3	29.5	117°26.9	55.7	220°54.6	01.1						
5	238°57.0	238°43.2	16.8	263°44.9	28.7	132°29.4	55.7	235°56.8	01.0						
6	253°59.4	253°42.8	S01°15.5	278°45.4	S11°28.0	147°31.9	N22°55.7	250°59.0	S01°00.9						
7	269°01.9	268°42.5	14.2	293°46.0	27.3	162°34.4	55.7	266°01.2	00.8						
8	284°04.4	283°42.1	12.9	308°46.6	26.6	177°36.9	55.7	281°03.4	00.7						
9	299°06.8	298°41.7	· · 11.7	323°47.2	· · 25.9	192°39.4	· · 55.7	296°05.6	· · 00.5						
10	314°09.3	313°41.4	10.4	338°47.8	25.2	207°41.9	55.7	311°07.8	00.4						
11	329°11.7	328°41.0	09.1	353°48.4	24.5	222°44.4	55.7	326°09.9	00.3						
12	344°14.2	343°40.6	S01°07.8	8°49.0	S11°23.8	237°46.9	N22°55.7	341°12.1	S01°00.2						
13	359°16.7	358°40.2	06.5	23°49.6	23.0	252°49.4	55.7	356°14.3	01°00.1						
14	14°19.1	13°39.9	05.2	38°50.2	22.3	267°51.9	55.7	11°16.5	00°59.9						
15	29°21.6	28°39.5	· · 03.9	53°50.8	· · 21.6	282°54.4	· · 55.8	26°18.7	· · 59.8						
16	44°24.1	43°39.1	02.7	68°51.4	20.9	297°56.9	55.8	41°20.9	59.7						
17	59°26.5	58°38.8	01.4	83°52.0	20.2	312°59.4	55.8	56°23.1	59.6						
18	74°29.0	73°38.4	S01°00.1	98°52.5	S11°19.5	328°01.9	N22°55.8	71°25.3	S00°59.4						
19	89°31.5	88°38.0	00°58.8	113°53.1	18.8	343°04.4	55.8	86°27.4	59.3						
20	104°33.9	103°37.7	57.5	128°53.7	18.0	358°06.9	55.8	101°29.6	59.2						
21	119°36.4	118°37.3	· · 56.2	143°54.3	· · 17.3	13°09.4	· · 55.8	116°31.8	· · 59.1						
22	134°38.8	133°36.9	54.9	158°54.9	16.6	28°11.9	55.8	131°34.0	59.0						
23	149°41.3	148°36.6	53.7	173°55.5	15.9	43°14.4	55.8	146°36.2	58.8						
Mer.pass. 13:03 ν -0.4' d -1.3' m -3.92 ν 0.6' d -0.7' m 1.15 ν 2.5' d 0.0' m -2.40 ν 2.2' d -0.1' m 0.98															

	Aries			Venus			Mars			Jupiter			Saturn		
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	164°43.8	163°36.2	S00°52.4	188°56.1	S11°15.2	58°16.9	N22°55.8	161°38.4	S00°58.7						
1	179°46.2	178°35.8	51.1	203°56.7	14.5	73°19.4	55.8	176°40.6	58.6						
2	194°48.7	193°35.5	49.8	218°57.3	13.8	88°21.9	55.8	191°42.7	58.5						
3	209°51.2	208°35.1	· · 48.5	233°57.9	· · 13.0	103°24.4	· · 55.8	206°44.9	· · 58.3						
4	224°53.6	223°34.7	47.2	248°58.5	12.3	118°26.9	55.8	221°47.1	58.2						
5	239°56.1	238°34.4	45.9	263°59.1	11.6	133°29.4	55.8	236°49.3	58.1						
6	254°58.6	253°34.0	S00°44.7	278°59.7	S11°10.9	148°31.9	N22°55.9	251°51.5	S00°58.0						
7	270°01.0	268°33.6	43.4	294°00.3	10.2	163°34.4	55.9	266°53.7	57.9						
8	285°03.5	283°33.3	42.1	309°00.9	09.5	178°36.9	55.9	281°55.9	57.7						
9	300°06.0	298°32.9	· · 40.8	324°01.5	· · 08.7	193°39.4	· · 55.9	296°58.0	· · 57.6						
10	315°08.4	313°32.5	39.5	339°02.0	08.0	208°41.9	55.9	312°00.2	57.5						
11	330°10.9	328°32.2	38.2	354°02.6	07.3	223°44.4	55.9	327°02.4	57.4						
12	345°13.3	343°31.8	S00°36.9	9°03.2	S11°06.6	238°46.9	N22°55.9	342°04.6	S00°57.2						
13	0°15.8	358°31.4	35.7	24°03.8	05.9	253°49.4	55.9	357°06.8	57.1						
14	15°18.3	13°31.1	34.4	39°04.4	05.1	268°51.9	55.9	12°09.0	57.0						
15	30°20.7	28°30.7	· · 33.1	54°05.0	· · 04.4	283°54.4	· · 55.9	27°11.1	· · 56.9						
16	45°23.2	43°30.3	31.8	69°05.6	03.7	298°56.9	55.9	42°13.3	56.8						
17	60°25.7	58°30.0	30.5	84°06.2	03.0	313°59.4	55.9	57°15.5	56.6						
18	75°28.1	73°29.6	S00°29.2	99°06.8	S11°02.3	329°01.9	N22°55.9	72°17.7	S00°56.5						
19	90°30.6	88°29.2	27.9	114°07.4	01.6	344°04.4	55.9	87°19.9	56.4						

h	Sun			Moon			
Thu	GHA	Dec	GHA	ν	Dec	d	HP
0	177°06.7	S06°08.1	341°06.3	15.0'	S03°02.3	15.3'	56.3'
1	192°06.8	07.1	355°40.3	15.0'	03°17.6	15.2'	56.3'
2	207°07.0	06.1	10°14.3	15.0'	03°32.8	15.2'	56.3'
3	222°07.1	· · 05.2	24°48.3	15.0'	03°48.1	15.2'	56.2'
4	237°07.2	04.2	39°22.4	15.1'	04°03.2	15.2'	56.2'
5	252°07.4	03.2	53°56.4	15.1'	04°18.4	15.1'	56.2'
6	267°07.5	S06°02.3	68°30.5	15.1'	S04°33.5	15.1'	56.2'
7	282°07.7	01.3	83°04.6	15.1'	04°48.6	15.1'	56.1'
8	297°07.8	06°00.3	97°38.6	15.1'	05°03.7	15.0'	56.1'
9	312°08.0	05°59.4	112°12.7	15.1'	05°18.7	15.0'	56.1'
10	327°08.1	58.4	126°46.8	15.1'	05°33.7	14.9'	56.1'
11	342°08.2	57.4	141°20.9	15.1'	05°48.6	14.9'	56.0'
12	357°08.4	S05°56.5	155°55.0	15.1'	S06°03.5	14.9'	56.0'
13	12°08.5	55.5	170°29.1	15.1'	06°18.4	14.8'	56.0'
14	27°08.7	54.5	185°03.2	15.1'	06°33.2	14.8'	56.0'
15	42°08.8	· · 53.6	199°37.2	15.1'	06°48.0	14.7'	55.9'
16	57°08.9	52.6	214°11.3	15.1'	07°02.8	14.7'	55.9'
17	72°09.1	51.6	228°45.4	15.1'	07°17.5	14.7'	55.9'
18	87°09.2	S05°50.7	243°19.5	15.1'	S07°32.1	14.6'	55.9'
19	102°09.4	49.7	257°53.6	15.1'	07°46.7	14.6'	55.8'
20	117°09.5	48.7	272°27.7	15.1'	08°01.3	14.5'	55.8'
21	132°09.7	· · 47.8	287°01.7	15.1'	08°15.8	14.5'	55.8'
22	147°09.8	46.8	301°35.8	15.0'	08°30.3	14.4'	55.8'
23	162°10.0	45.8	316°09.8	15.0'	08°44.7	14.4'	55.7'
SD = 16.1'			$d = -1.0'$		SD = 15.4'		

Fri	GHA	Dec	GHA	ν	Dec	d	HP
0	177°10.1	S05°44.9	330°43.9	15.0'	S08°59.1	14.3'	55.7'
1	192°10.2	43.9	345°17.9	15.0'	09°13.5	14.3'	55.7'
2	207°10.4	42.9	359°51.9	15.0'	09°27.7	14.2'	55.7'
3	222°10.5	· · 41.9	14°25.9	15.0'	09°42.0	14.2'	55.6'
4	237°10.7	41.0	28°59.9	15.0'	09°56.1	14.1'	55.6'
5	252°10.8	40.0	43°33.9	15.0'	10°10.3	14.1'	55.6'
6	267°11.0	S05°39.0	58°07.8	14.9'	S10°24.3	14.0'	55.6'
7	282°11.1	38.1	72°41.8	14.9'	10°38.3	14.0'	55.5'
8	297°11.3	37.1	87°15.7	14.9'	10°52.3	13.9'	55.5'
9	312°11.4	· · 36.1	101°49.6	14.9'	11°06.2	13.8'	55.5'
10	327°11.5	35.2	116°23.5	14.9'	11°20.0	13.8'	55.5'
11	342°11.7	34.2	130°57.4	14.9'	11°33.8	13.7'	55.5'
12	357°11.8	S05°33.2	145°31.3	14.8'	S11°47.5	13.7'	55.4'
13	12°12.0	32.3	160°05.1	14.8'	12°01.2	13.6'	55.4'
14	27°12.1	31.3	174°38.9	14.8'	12°14.8	13.5'	55.4'
15	42°12.3	· · 30.3	189°12.7	14.8'	12°28.4	13.5'	55.4'
16	57°12.4	29.3	203°46.4	14.7'	12°41.8	13.4'	55.3'
17	72°12.6	28.4	218°20.2	14.7'	12°55.2	13.3'	55.3'
18	87°12.7	S05°27.4	232°53.9	14.7'	S13°08.6	13.3'	55.3'
19	102°12.9	26.4	247°27.6	14.7'	13°21.9	13.2'	55.3'
20	117°13.0	25.5	262°01.2	14.6'	13°35.1	13.2'	55.2'
21	132°13.2	· · 24.5	276°34.9	14.6'	13°48.2	13.1'	55.2'
22	147°13.3	23.5	291°08.5	14.6'	14°01.3	13.0'	55.2'
23	162°13.5	22.5	305°42.0	14.5'	14°14.3	12.9'	55.2'
SD = 16.1'			$d = -1.0'$		SD = 15.2'		

Sat	GHA	Dec	GHA	ν	Dec	d	HP
0	177°13.6	S05°21.6	320°15.6	14.5'	S14°27.3	12.9'	55.2'
1	192°13.8	20.6	334°49.1	14.5'	14°40.2	12.8'	55.1'
2	207°13.9	19.6	349°22.6	14.4'	14°53.0	12.7'	55.1'
3	222°14.1	· · 18.7	3°56.0	14.4'	15°05.7	12.7'	55.1'
4	237°14.2	17.7	18°29.4	14.4'	15°18.4	12.6'	55.1'
5	252°14.4	16.7	33°02.8	14.3'	15°31.0	12.5'	55.1'
6	267°14.5	S05°15.7	47°36.1	14.3'	S15°43.5	12.4'	55.0'
7	282°14.7	14.8	62°09.4	14.3'	15°55.9	12.4'	55.0'
8	297°14.8	13.8	76°42.7	14.2'	16°08.3	12.3'	55.0'
9	312°15.0	· · 12.8	91°15.9	14.2'	16°20.6	12.2'	55.0'
10	327°15.1	11.9	105°49.1	14.2'	16°32.8	12.1'	55.0'
11	342°15.3	10.9	120°22.3	14.1'	16°44.9	12.1'	54.9'
12	357°15.4	S05°09.9	134°55.4	14.1'	S16°57.0	12.0'	54.9'
13	12°15.6	08.9	149°28.5	14.0'	17°08.9	11.9'	54.9'
14	27°15.7	08.0	164°01.5	14.0'	17°20.8	11.8'	54.9'
15	42°15.9	· · 07.0	178°34.5	14.0'	17°32.6	11.7'	54.9'
16	57°16.0	06.0	193°07.5	13.9'	17°44.4	11.6'	54.8'
17	72°16.2	05.0	207°40.4	13.9'	17°56.0	11.6'	54.8'
18	87°16.3	S05°04.1	222°13.3	13.8'	S18°07.6	11.5'	54.8'
19	102°16.5	03.1	236°46.1	13.8'	18°19.1	11.4'	54.8'
20	117°16.6	02.1	251°18.9	13.7'	18°30.5	11.3'	54.8'
21	132°16.8	· · 01.1	265°51.6	13.7'	18°41.8	11.2'	54.8'
22	147°16.9	05°00.2	280°24.3	13.7'	18°53.0	11.1'	54.7'
23	162°17.1	04°59.2	294°57.0	13.6'	19°04.1	11.0'	54.7'
SD = 16.1'			$d = -1.0'$		SD = 15.0'		

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

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

Day	Sun		Mer. Pass	Moon		Age 16-18 97-87%
	Eqn. of Time 00 ^h mm:ss	12 ^h mm:ss		Upper	Lower	
05	11:33	11:26	12:11	01:18	13:39	
06	11:20	11:13	12:11	02:01	14:22	
07	11:06	10:58	12:11	02:44	15:06	

March 08, 09, 10 UT (Sun., Mon., Tue.)

	Aries		Venus		Mars		Jupiter		Saturn	
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	165°42.9	163°27.4	S00°21.5	189°10.4	S10°58.0	59°16.8	N22°56.0	162°30.8	S00°55.8	
1	180°45.4	178°27.0	20.2	204°11.0	57.2	74°19.3	56.0	177°33.0	55.7	
2	195°47.8	193°26.7	18.9	219°11.6	56.5	89°21.8	56.0	192°35.2	55.5	
3	210°50.3	208°26.3	· · 17.6	234°12.2	· · 55.8	104°24.3	· · 56.0	207°37.4	· · 55.4	
4	225°52.8	223°25.9	16.4	249°12.8	55.1	119°26.8	56.0	222°39.6	55.3	
5	240°55.2	238°25.6	15.1	264°13.4	54.4	134°29.3	56.0	237°41.7	55.2	
6	255°57.7	253°25.2	S00°13.8	279°14.0	S10°53.6	149°31.8	N22°56.0	252°43.9	S00°55.0	
7	271°00.2	268°24.8	12.5	294°14.6	52.9	164°34.3	56.0	267°46.1	54.9	
8	286°02.6	283°24.5	11.2	309°15.2	52.2	179°36.8	56.0	282°48.3	54.8	
9	301°05.1	298°24.1	· · 09.9	324°15.8	· · 51.5	194°39.3	· · 56.0	297°50.5	· · 54.7	
10	316°07.6	313°23.7	08.6	339°16.4	50.7	209°41.7	56.0	312°52.7	54.6	
11	331°10.0	328°23.4	07.3	354°17.0	50.0	224°44.2	56.0	327°54.8	54.4	
12	346°12.5	343°23.0	S00°06.1	9°17.6	S10°49.3	239°46.7	N22°56.0	342°57.0	S00°54.3	
13	1°14.9	358°22.6	04.8	24°18.2	48.6	254°49.2	56.0	357°59.2	54.2	
14	16°17.4	13°22.3	03.5	39°18.8	47.9	269°51.7	56.0	13°01.4	54.1	
15	31°19.9	28°21.9	· · 02.2	54°19.4	· · 47.1	284°54.2	· · 56.0	28°03.6	· · 53.9	
16	46°22.3	43°21.5	S00°00.9	69°20.0	46.4	299°56.7	56.0	43°05.8	53.8	
17	61°24.8	58°21.2	N00°00.4	84°20.6	45.7	314°59.1	56.0	58°08.0	53.7	
18	76°27.3	73°20.8	N00°01.7	99°21.2	S10°45.0	330°01.6	N22°56.0	73°10.1	S00°53.6	
19	91°29.7	88°20.4	03.0	114°21.8	44.2	345°04.1	56.0	88°12.3	53.5	
20	106°32.2	103°20.1	04.2	129°22.4	43.5	0°06.6	56.0	103°14.5	53.3	
21	121°34.7	118°19.7	· · 05.5	144°23.0	· · 42.8	15°09.1	· · 56.1	118°16.7	· · 53.2	
22	136°37.1	133°19.4	06.8	159°23.6	42.1	30°11.6	56.1	133°18.9	53.1	
23	151°39.6	148°19.0	08.1	174°24.2	41.3	45°14.1	56.1	148°21.1	53.0	
Mer.pass.	12:55	ν -0.4' d -1.3' m -3.92		ν 0.6' d -0.7' m 1.15		ν 2.5' d 0.0' m -2.39		ν 2.2' d -0.1' m 0.97		

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	166°42.1	163°18.6	N00°09.4	189°24.8	S10°40.6	60°16.5	N22°56.1	163°23.2	S00°52.8
1	181°44.5	178°18.3	10.7	204°25.4	39.9	75°19.0	56.1	178°25.4	52.7
2	196°47.0	193°17.9	12.0	219°26.0	39.2	90°21.5	56.1	193°27.6	52.6
3	211°49.4	208°17.5	· · 13.3	234°26.6	· · 38.4	105°24.0	· · 56.1	208°29.8	· · 52.5
4	226°51.9	223°17.2	14.5	249°27.2	37.7	120°26.5	56.1	223°32.0	52.4
5	241°54.4	238°16.8	15.8	264°27.8	37.0	135°28.9	56.1	238°34.2	52.2
6	256°56.8	253°16.4	N00°17.1	279°28.4	S10°36.3	150°31.4	N22°56.1	253°36.3	S00°52.1
7	271°59.3	268°16.1	18.4	294°29.0	35.5	165°33.9	56.1	268°38.5	52.0
8	287°01.8	283°15.7	19.7	309°29.6	34.8	180°36.4	56.1	283°40.7	51.9
9	302°04.2	298°15.3	· · 21.0	324°30.2	· · 34.1	195°38.9	· · 56.1	298°42.9	· · 51.7
10	317°06.7	313°15.0	22.3	339°30.8	33.4	210°41.3	56.1	313°45.1	51.6
11	332°09.2	328°14.6	23.6	354°31.4	32.6	225°43.8	56.1	328°47.3	51.5
12	347°11.6	343°14.3	N00°24.9	9°32.0	S10°31.9	240°46.3	N22°56.1	343°49.5	S00°51.4
13	2°14.1	358°13.9	26.1	24°32.6	31.2	255°48.8	56.1	358°51.6	51.3
14	17°16.6	13°13.5	27.4	39°33.2	30.5	270°51.3	56.1	13°53.8	51.1
15	32°19.0	28°13.2	· · 28.7	54°33.8	· · 29.7	285°53.7	· · 56.1	28°56.0	· · 51.0
16	47°21.5	43°12.8	30.0	69°34.4	29.0	300°56.2	56.1	43°58.2	50.9
17	62°23.9	58°12.4	31.3	84°35.0	28.3	315°58.7	56.1	59°00.4	50.8
18	77°26.4	73°12.1	N00°32.6	99°35.6	S10°27.6	331°01.2	N22°56.1	74°02.6	S00°50.6
19	92°28.9	88°11.7	33.9	114°36.2	26.8	346°03.6	56.1	89°04.7	50.5
20	107°31.3	103°11.3	35.2	129°36.8	26.1	1°06.1	56.1	104°06.9	50.4
21	122°33.8	118°11.0	· · 36.4	144°37.4	· · 25.4	16°08.6	· · 56.1	119°09.1	· · 50.3
22	137°36.3	133°10.6	37.7	159°38.0	24.6	31°11.1	56.2	134°11.3	50.1
23	152°38.7	148°10.3	39.0	174°38.6	23.9	46°13.5	56.2	149°13.5	50.0
Mer.pass.	12:51	ν -0.4' d 1.3' m -3.92		ν 0.6' d -0.7' m 1.15		ν 2.5' d 0.0' m -2.38		ν 2.2' d -0.1' m 0.97	

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	167°41.2	163°09.9	N00°40.3	189°39.2	S10°23.2	61°16.0	N22°56.2	164°15.7	S00°49.9
1	182°43.7	178°09.5	41.6	204°39.8	22.5	76°18.5	56.2	179°17.8	49.8
2	197°46.1	193°09.2	42.9	219°40.4	21.7	91°21.0	56.2	194°20.0	49.7
3	212°48.6	208°08.8	· · 44.2	234°41.0	· · 21.0	106°23.4	· · 56.2	209°22.2	· · 49.5
4	227°51.0	223°08.4	45.5	249°41.7	20.3	121°25.9	56.2	224°24.4	49.4
5	242°53.5	238°08.1	46.7	264°42.3	19.5	136°28.4	56.2	239°26.6	49.3
6	257°56.0	253°07.7	N00°48.0	279°42.9	S10°18.8	151°30.9	N22°56.2	254°28.8	S00°49.2
7	272°58.4	268°07.3	49.3	294°43.5	18.1	166°33.3	56.2	269°30.9	49.0
8	288°00.9	283°07.0	50.6	309°44.1	17.4	181°35.8	56.2	284°33.1	48.9
9	303°03.4	298°06.6	· · 51.9	324°44.7	· · 16.6	196°38.3	· · 56.2	299°35.3	· · 48.8
10	318°05.8	313°06.3	53.2	339°45.3	15.9	211°40.7	56.2	314°37.5	48.7
11	333°08.3	328°05.9	54.5	354°45.9	15.2	226°43.2	56.2	329°39.7	48.6
12	348°10.8	343°05.5	N00°55.8	9°46.5	S10°14.4	241°45.7	N22°56.2	344°41.9	S00°48.4
13	3°13.2	358°05.2	57.0	24°47.1	13.7	256°48.1	56.2	359°44.0	48.3
14	18°15.7	13°04.8	58.3	39°47.7	13.0	271°50.6	56.2	14°46.2	48.2
15	33°18.2	28°04.4	00°59.6	54°48.3	· · 12.2	286°53.1	· · 56.2	29°48.4	· · 48.1
16	48°20.6	43°04.1	01°00.9	69°48.9	11.5	301°55.6	56.2	44°50.6	47.9
17	63°23.1	58°03.7	02.2	84°49.5	10.8	316°58.0	56.2	59°52.8	47.8
18	78°25.5	73°03.3	N01°03.5	99°50.1	S10°10.1	332°00.5	N22°56.2	74°55.0	S00°47.7
19	93°28.0	88°03.0	04.8	114°50.7	09.3	347°03.0	56.2	89°57.1	47.6
20	108°30.5	103°02.6	06.1	129°51.3	08.6	2°05.4	56.2	104°59.3	47.4
21	123°32.9	118°02.3	· · 07.3	144°52.0	· · 07.9	17°07.9	· · 56.2	120°01.5	· · 47.3
22	138°35.4	133°01.9	08.6	159°52.6	07.1	32°10.4	56.2	135°03.7	47.2
23	153°37.9	148°01.5	09.9	174°53.2	06.4	47°12.8	56.2	150°05.9	47.1
Mer.pass.	12:47	ν -0.4' d 1.3' m -3.92		ν 0.6' d -0.7' m 1.15		ν 2.5' d 0.0' m -2.37		ν 2.2' d -0.1' m 0.97	

	SHA	Dec
Alpheratz	357°34.1	29°14.1
Ankaa	353°06.6	-42°09.9
Schedar	349°30.5	56°40.9
Diphda	348°46.6	-17°50.7
Achernar	335°19.9	-57°06.4
Hamal	327°50.3	23°35.2
Polaris	313°47.5	89°22.7
Acamar	315°11.2	-40°12.2
Menkar	314°05.3	4°11.5
Mirfak	308°27.1	49°57.4
Aldebaran	290°38.6	16°33.7
Rigel	281°02.9	-8°10.4
Capella	280°20.4	46°01.6
Bellatrix	278°21.8	6°22.3
Elnath	278°00.6	28°37.8
Alnilam	275°36.7	-1°11.2
Betelgeuse	270°51.0	7°24.6
Canopus	263°51.8	-52°42.8
Sirius	258°25.3	-16°45.3
Adhara	255°04.9	-29°00.7
Procyon	244°49.6	5°09.4
Pollux	243°15.9	27°57.8
Avior	234°13.9	-59°35.8
Suhail	222°45.2	-43°32.5
Miaplacidus	221°37.3	-69°49.6
Alphard	217°46.5	-8°46.5
Regulus	207°33.1	11°50.2
Dubhe	193°39.1	61°36.5
Denebola	182°23.6	14°25.4
Gienah	175°42.3	-17°41.4
Acrux	172°58.4	-63°14.7
Gacrux	171°50.1	-57°15.6
Alioth	166°11.6	55°48.8
Spica	158°21.0	-11°18.0
Alkaid	152°50.9	49°10.6
Hadar	148°34.2	-60°29.9
Menkent	147°56.2	-36°29.9
Arcturus	145°46.8	19°02.5
Rigil Kent.	139°38.6	-60°56.5
Kochab	137°19.1	74°02.5
Zuben'ubi	136°54.8	-18°09.1
Alphecca	126°02.8	26°37.3
Antares	112°14.6	-26°29.4
Atria	107°07.9	-69°04.2
Sabik	102°01.7	-15°45.5
Shaula	96°09.1	-37°07.3
Rasalhague	95°57.7	12°32.2
Eltanin	90°41.8	51°28.7
Kaus Aust.	83°31.4	-34°22.3
Vega	80°32.7	38°48.1
Nunki	75°46.7	-26°15.8
Altair	61°59.2	-8°56.1
Peacock	53°04.6	-56°38.9
Deneb	49°25.5	45°22.2
Enif	33°38.1	9°59.6
Al Na'ir	27°32.1	-46°50.0
Fomalhaut	15°13.8	-29°29.1
Scheat	13°44.6	28°13.4
Markab	13°29.3	15°20.7

Mar 08 Sun	SHA	Mer.pass
Venus	357°44.5	13:06
Mars	23°27.5	11:23
Jupiter	253°33.9	20:00
Saturn	356°47.9	13:08

Mar 09 Mon	SHA	Mer.pass
Venus	356°36.6	13:07
Mars	22°42.7	11:22
Jupiter	253°34.5	19:56
Saturn	356°41.2	13:05

Mar 10 Tue	SHA	Mer.pass
Venus	355°28.7	13:08
Mars	21°58.0	11:21
Jupiter	253°34.8	19:52
Saturn	356°34.5	13:01

Horizontal parallax	
Venus:	0.1
Mars:	0.1

h	Sun			Moon			
Sun	GHA	Dec	GHA	ν	Dec	d	HP
0	177°17.2	S04°58.2	309°29.6	13.6'	S16°15.2	11.0'	54.7'
1	192°17.4	57.3	324°02.2	13.5'	19°26.1	10.9'	54.7'
2	207°17.5	56.3	338°34.7	13.5'	19°37.0	10.8'	54.7'
3	222°17.7	.. 55.3	353°07.2	13.4'	19°47.8	10.7'	54.7'
4	237°17.8	54.3	7°39.6	13.4'	19°58.5	10.6'	54.6'
5	252°18.0	53.4	22°12.0	13.3'	20°09.1	10.5'	54.6'
6	267°18.1	S04°52.4	36°44.3	13.3'	S20°19.6	10.4'	54.6'
7	282°18.3	51.4	51°16.6	13.2'	20°30.0	10.3'	54.6'
8	297°18.4	50.4	65°48.8	13.2'	20°40.3	10.2'	54.6'
9	312°18.6	.. 49.5	80°21.0	13.1'	20°50.6	10.1'	54.6'
10	327°18.8	48.5	94°53.1	13.1'	21°00.7	10.0'	54.5'
11	342°18.9	47.5	109°25.2	13.0'	21°10.7	9.9'	54.5'
12	357°19.1	S04°46.5	123°57.2	13.0'	S21°20.7	9.8'	54.5'
13	12°19.2	45.5	138°29.2	12.9'	21°30.5	9.7'	54.5'
14	27°19.4	44.6	153°01.1	12.9'	21°40.3	9.6'	54.5'
15	42°19.5	.. 43.6	167°33.0	12.8'	21°49.9	9.5'	54.5'
16	57°19.7	42.6	182°04.8	12.8'	21°59.4	9.4'	54.5'
17	72°19.8	41.6	196°36.6	12.7'	22°08.9	9.3'	54.5'
18	87°20.0	S04°40.7	211°08.3	12.7'	S22°18.2	9.2'	54.4'
19	102°20.1	39.7	225°40.0	12.6'	22°27.5	9.1'	54.4'
20	117°20.3	38.7	240°11.6	12.6'	22°36.6	9.0'	54.4'
21	132°20.5	.. 37.7	254°43.2	12.5'	22°45.6	8.9'	54.4'
22	147°20.6	36.8	269°14.7	12.5'	22°54.6	8.8'	54.4'
23	162°20.8	35.8	283°46.1	12.4'	23°03.4	8.7'	54.4'
SD = 16.1'			d = -1.0'		SD = 14.9'		

Mon	GHA	Dec	GHA	ν	Dec	d	HP
0	177°20.9	S04°34.8	298°17.5	12.4'	S23°12.1	8.6'	54.4'
1	192°21.1	33.8	312°48.9	12.3'	23°20.7	8.5'	54.4'
2	207°21.2	32.9	327°20.2	12.3'	23°29.3	8.4'	54.3'
3	222°21.4	.. 31.9	341°51.5	12.2'	23°37.7	8.3'	54.3'
4	237°21.6	30.9	356°22.7	12.1'	23°46.0	8.2'	54.3'
5	252°21.7	29.9	10°53.8	12.1'	23°54.1	8.1'	54.3'
6	267°21.9	S04°28.9	25°24.9	12.0'	S24°02.2	8.0'	54.3'
7	282°22.0	28.0	39°55.9	12.0'	24°10.2	7.9'	54.3'
8	297°22.2	27.0	54°26.9	11.9'	24°18.0	7.7'	54.3'
9	312°22.3	.. 26.0	68°57.9	11.9'	24°25.8	7.6'	54.3'
10	327°22.5	25.0	83°28.7	11.8'	24°33.4	7.5'	54.3'
11	342°22.7	24.1	97°59.6	11.8'	24°40.9	7.4'	54.3'
12	357°22.8	S04°23.1	112°30.4	11.7'	S24°48.3	7.3'	54.3'
13	12°23.0	22.1	127°01.1	11.7'	24°55.6	7.2'	54.3'
14	27°23.1	21.1	141°31.8	11.6'	25°02.8	7.1'	54.2'
15	42°23.3	.. 20.1	156°02.4	11.6'	25°09.9	6.9'	54.2'
16	57°23.4	19.2	170°33.0	11.5'	25°16.8	6.8'	54.2'
17	72°23.6	18.2	185°03.5	11.5'	25°23.7	6.7'	54.2'
18	87°23.8	S04°17.2	199°33.9	11.4'	S25°30.4	6.6'	54.2'
19	102°23.9	16.2	214°04.4	11.4'	25°37.0	6.5'	54.2'
20	117°24.1	15.2	228°34.7	11.3'	25°43.5	6.4'	54.2'
21	132°24.2	.. 14.3	243°05.1	11.3'	25°49.8	6.2'	54.2'
22	147°24.4	13.3	257°35.3	11.2'	25°56.1	6.1'	54.2'
23	162°24.6	12.3	272°05.5	11.2'	26°02.2	6.0'	54.2'
SD = 16.1'			d = -1.0'		SD = 14.8'		

Tue	GHA	Dec	GHA	ν	Dec	d	HP
0	177°24.7	S04°11.3	286°35.7	11.1'	S26°08.2	5.9'	54.2'
1	192°24.9	10.3	301°05.8	11.1'	26°14.0	5.8'	54.2'
2	207°25.0	09.4	315°35.9	11.0'	26°19.8	5.6'	54.2'
3	222°25.2	.. 08.4	330°05.9	11.0'	26°25.4	5.5'	54.2'
4	237°25.4	07.4	344°35.9	10.9'	26°30.9	5.4'	54.2'
5	252°25.5	06.4	359°05.9	10.9'	26°36.3	5.3'	54.2'
6	267°25.7	S04°05.4	13°35.8	10.8'	S26°41.6	5.1'	54.2'
7	282°25.8	04.5	28°05.6	10.8'	26°46.7	5.0'	54.2'
8	297°26.0	03.5	42°35.4	10.8'	26°51.7	4.9'	54.2'
9	312°26.2	.. 02.5	57°05.1	10.7'	26°56.6	4.8'	54.2'
10	327°26.3	01.5	71°34.9	10.7'	27°01.4	4.6'	54.2'
11	342°26.5	04°00.5	86°04.5	10.6'	27°06.0	4.5'	54.2'
12	357°26.6	S03°59.6	100°34.1	10.6'	S27°10.5	4.4'	54.2'
13	12°26.8	58.6	115°03.7	10.5'	27°14.9	4.2'	54.2'
14	27°27.0	57.6	129°33.3	10.5'	27°19.2	4.1'	54.2'
15	42°27.1	.. 56.6	144°02.8	10.5'	27°23.3	4.0'	54.2'
16	57°27.3	55.6	158°32.2	10.4'	27°27.3	3.9'	54.2'
17	72°27.5	54.7	173°01.7	10.4'	27°31.1	3.7'	54.2'
18	87°27.6	S03°53.7	187°31.0	10.3'	S27°34.9	3.6'	54.2'
19	102°27.8	52.7	202°00.4	10.3'	27°38.5	3.5'	54.2'
20	117°27.9	51.7	216°29.7	10.3'	27°41.9	3.3'	54.2'
21	132°28.1	.. 50.7	230°59.0	10.2'	27°45.3	3.2'	54.2'
22	147°28.3	49.8	245°28.2	10.2'	27°48.5	3.1'	54.2'
23	162°28.4	48.8	259°57.4	10.2'	27°51.6	2.9'	54.2'
SD = 16.1'			d = -1.0'		SD = 14.8'		

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

Lat.	Moonrise			Moonset		
	Sun	Mon	Tue	Sun	Mon	Tue
N 72°	██	██	██	██	██	██
N 70°	03:04	██	██	03:34	██	██
68°	01:33	██	██	05:07	██	██
66°	00:55	03:44	██	05:46	04:34	██
64°	00:28	02:27	██	06:14	05:52	██
62°	00:08	01:51	03:42	06:35	06:29	06:19
60°	01:25	02:59	06:52	06:55	07:02
N 58°	01:05	02:30	07:07	07:16	07:31
56°	00:48	02:08	07:20	07:33	07:54
54°	00:34	01:50	07:31	07:47	08:12
52°	00:22	01:34	07:40	08:00	08:28
50°	00:11	01:21	07:49	08:11	08:41
45°	23:48	00:54	08:08	08:35	09:09
N 40°	23:30	00:33	08:23	08:54	09:31
35°	23:15	00:15	08:36	09:10	09:49
30°	23:02	00:00	08:47	09:23	10:05
20°	22:40	23:34	09:06	09:47	10:31
N 10°	22:21	23:12	09:23	10:07	10:54
0°	22:04	22:52	23:42	09:39	10:27	11:16
S 10°	21:46	22:31	23:20	09:55	10:46	11:37
20°	21:27	22:10	22:56	10:13	11:06	12:00
30°	21:06	21:44	22:29	10:32	11:30	12:27
35°	20:53	21:30	22:12	10:44	11:44	12:43
40°	20:39	21:13	21:53	10:58	12:01	13:02
45°	20:22	20:52	21:31	11:13	12:20	13:24
S 50°	20:01	20:27	21:02	11:33	12:45	13:53
52°	19:51	20:14	20:47	11:43	12:57	14:07
54°	19:40	20:00	20:31	11:53	13:11	14:23
56°	19:27	19:44	20:11	12:05	13:27	14:43
58°	19:13	19:25	19:47	12:19	13:46	15:07
S 60°	18:56	19:01	19:14	12:36	14:09	15:39

Day	Sun		Mer. Pass	Moon		Age 19-21 80-63%
	Eqn. of Time 00 ^h	Time 12 ^h		Mer. Pass. Upper	Lower	
08	10:51	10:44	12:11	03:28	15:51	
09	10:36	10:29	12:10	04:15	16:39	
10	10:21	10:13	12:10	05:04	17:29	

March 11, 12, 13 UT (Wed., Thu., Fri.)

Wed	Aries			Venus			Mars			Jupiter			Saturn		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	168° 40.3	163° 01.2	N01° 11.2	189° 53.8	S10° 05.7	62° 15.3	N22° 56.2	165° 08.0	S00° 47.0						
1	183° 42.8	178° 00.8	12.5	204° 54.4	04.9	77° 17.8	56.2	180° 10.2	46.8						
2	198° 45.3	193° 00.4	13.8	219° 55.0	04.2	92° 20.2	56.2	195° 12.4	46.7						
3	213° 47.7	208° 00.1	· · 15.1	234° 55.6	· · 03.5	107° 22.7	· · 56.2	210° 14.6	· · 46.6						
4	228° 50.2	222° 59.7	16.4	249° 56.2	02.7	122° 25.1	56.2	225° 16.8	46.5						
5	243° 52.7	237° 59.4	17.6	264° 56.8	02.0	137° 27.6	56.2	240° 19.0	46.3						
6	258° 55.1	252° 59.0	N01° 18.9	279° 57.4	S10° 01.3	152° 30.1	N22° 56.2	255° 21.1	S00° 46.2						
7	273° 57.6	267° 58.6	20.2	294° 58.0	10° 00.5	167° 32.5	56.2	270° 23.3	46.1						
8	289° 00.0	282° 58.3	21.5	309° 58.6	09° 59.8	182° 35.0	56.2	285° 25.5	46.0						
9	304° 02.5	297° 57.9	· · 22.8	324° 59.3	· · 59.1	197° 37.5	· · 56.2	300° 27.7	· · 45.9						
10	319° 05.0	312° 57.5	24.1	339° 59.9	58.3	212° 39.9	56.2	315° 29.9	45.7						
11	334° 07.4	327° 57.2	25.4	355° 00.5	57.6	227° 42.4	56.3	330° 32.1	45.6						
12	349° 09.9	342° 56.8	N01° 26.7	10° 01.1	S09° 56.9	242° 44.8	N22° 56.3	345° 34.2	S00° 45.5						
13	4° 12.4	357° 56.4	27.9	25° 01.7	56.1	257° 47.3	56.3	0° 36.4	45.4						
14	19° 14.8	12° 56.1	29.2	40° 02.3	55.4	272° 49.8	56.3	15° 38.6	45.2						
15	34° 17.3	27° 55.7	· · 30.5	55° 02.9	· · 54.7	287° 52.2	· · 56.3	30° 40.8	· · 45.1						
16	49° 19.8	42° 55.4	31.8	70° 03.5	53.9	302° 54.7	56.3	45° 43.0	45.0						
17	64° 22.2	57° 55.0	33.1	85° 04.1	53.2	317° 57.1	56.3	60° 45.2	44.9						
18	79° 24.7	72° 54.6	N01° 34.4	100° 04.7	S09° 52.5	332° 59.6	N22° 56.3	75° 47.3	S00° 44.7						
19	94° 27.2	87° 54.3	35.7	115° 05.4	51.7	348° 02.1	56.3	90° 49.5	44.6						
20	109° 29.6	102° 53.9	37.0	130° 06.0	51.0	3° 04.5	56.3	105° 51.7	44.5						
21	124° 32.1	117° 53.5	· · 38.2	145° 06.6	· · 50.2	18° 07.0	· · 56.3	120° 53.9	· · 44.4						
22	139° 34.5	132° 53.2	39.5	160° 07.2	49.5	33° 09.4	56.3	135° 56.1	44.3						
23	154° 37.0	147° 52.8	40.8	175° 07.8	48.8	48° 11.9	56.3	150° 58.2	44.1						
Mer.pass. 12:43 ν -0.4' d 1.3' m -3.92 ν 0.6' d -0.7' m 1.15 ν 2.5' d 0.0' m -2.36 ν 2.2' d -0.1' m 0.96															

Stars	SHA		Dec
	SHA	Dec	
Alpheratz	357° 34.1	29° 14.1	
Ankaa	353° 06.6	-42° 09.9	
Schedar	349° 30.5	56° 40.9	
Diphda	348° 46.6	-17° 50.7	
Achernar	335° 19.9	-57° 06.4	
Hamal	327° 50.4	23° 35.2	
Polaris	313° 48.6	89° 22.7	
Acamar	315° 11.3	-40° 12.2	
Menkar	314° 05.3	4° 11.5	
Mirfak	308° 27.1	49° 57.4	
Aldebaran	290° 38.6	16° 33.7	
Rigel	281° 02.9	-8° 10.4	
Capella	280° 20.5	46° 01.6	
Bellatrix	278° 21.8	6° 22.3	
Elnath	278° 00.6	28° 37.8	
Alnilam	275° 36.7	-1° 11.2	
Betelgeuse	270° 51.0	7° 24.6	
Canopus	263° 51.8	-52° 42.8	
Sirius	258° 25.3	-16° 45.3	
Adhara	255° 05.0	-29° 00.7	
Procyon	244° 49.6	5° 09.4	
Pollux	243° 15.9	27° 57.8	
Avior	234° 13.9	-59° 35.8	
Suhail	222° 45.2	-43° 32.5	
Miaplacidus	221° 37.3	-69° 49.7	
Alphard	217° 46.5	-8° 46.5	
Regulus	207° 33.1	11° 50.2	
Dubhe	193° 39.1	61° 36.5	
Denebola	182° 23.6	14° 25.4	
Gienah	175° 42.3	-17° 41.4	
Acrux	172° 58.4	-63° 14.7	
Gacrux	171° 50.0	-57° 15.6	
Alioth	166° 11.6	55° 48.8	
Spica	158° 21.0	-11° 18.0	
Alkaid	152° 50.8	49° 10.7	
Hadar	148° 34.2	-60° 29.9	
Menkent	147° 56.2	-36° 30.0	
Arcturus	145° 46.8	19° 02.5	
Rigel Kent.	139° 38.5	-60° 56.5	
Kochab	137° 19.1	74° 02.5	
Zuben'ubi	136° 54.7	-16° 09.1	
Alphecca	126° 02.8	26° 37.3	
Antares	112° 14.6	-26° 29.4	
Atria	107° 07.9	-69° 04.2	
Sabik	102° 01.6	-15° 45.5	
Shaula	96° 09.1	-37° 07.3	
Rasalhague	95° 57.7	12° 32.2	
Eltanin	90° 41.8	51° 28.7	
Kaus Aust.	83° 31.3	-34° 22.3	
Vega	80° 32.7	38° 48.1	
Nunki	75° 46.7	-26° 15.8	
Altair	61° 59.2	8° 56.1	
Peacock	53° 04.6	-56° 38.9	
Deneb	49° 25.5	45° 22.2	
Enif	33° 38.1	9° 59.6	
Al Na'ir	27° 32.1	-46° 50.0	
Fomalhaut	15° 13.8	-29° 29.1	
Scheat	13° 44.6	28° 13.4	
Markab	13° 29.3	25° 20.7	

Mar 11 Wed	SHA	Mer.pass
Venus	354° 20.8	13:08
Mars	21° 13.4	11:20
Jupiter	253° 35.0	19:48
Saturn	356° 27.7	12:58

Mar 12 Thu	SHA	Mer.pass
Venus	353° 13.0	13:09
Mars	20° 28.9	11:19
Jupiter	253° 34.9	19:44
Saturn	356° 21.0	12:54

Mar 13 Fri	SHA	Mer.pass
Venus	352° 05.1	13:09
Mars	19° 44.5	11:18
Jupiter	253° 34.6	19:40
Saturn	356° 14.2	12:51

Horizontal parallax		
Venus:	0.1	
Mars:	0.1	

Thu	Aries			Venus			Mars			Jupiter			Saturn		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	169° 39.5	162° 52.5	N01° 42.1	190° 08.4	S09° 48.0	63° 14.3	N22° 56.3	166° 00.4	S00° 44.0						
1	184° 41.9	177° 52.1	43.4	205° 09.0	47.3	78° 16.8	56.3	181° 02.6	43.9						
2	199° 44.4	192° 51.7	44.7	220° 09.6	46.6	93° 19.3	56.3	196° 04.8	43.8						
3	214° 46.9	207° 51.4	· · 46.0	235° 10.2	· · 45.8	108° 21.7	· · 56.3	211° 07.0	· · 43.6						
4	229° 49.3	222° 51.0	47.2	250° 10.9	45.1	123° 24.2	56.3	226° 09.2	43.5						
5	244° 51.8	237° 50.6	48.5	265° 11.5	44.4	138° 26.6	56.3	241° 11.3	43.4						
6	259° 54.3	252° 50.3	N01° 49.8	280° 12.1	S09° 43.6	153° 29.1	N22° 56.3	256° 13.5	S00° 43.3						
7	274° 56.7	267° 49.9	51.1	295° 12.7	42.9	168° 31.5	56.3	271° 15.7	43.1						
8	289° 59.2	282° 49.5	52.4	310° 13.3	42.1	183° 34.0	56.3	286° 17.9	43.0						
9	305° 01.6	297° 49.2	· · 53.7	325° 13.9	· · 41.4	198° 36.4	· · 56.3	301° 20.1	· · 42.9						
10	320° 04.1	312° 48.8	55.0	340° 14.5	40.7	213° 38.9	56.3	316° 22.2	42.8						
11	335° 06.6	327° 48.5	56.2	355° 15.1	39.9	228° 41.3	56.3	331° 24.4	42.7						
12	350° 09.0	342° 48.1	N01° 57.5	10° 15.8	S09° 39.2	243° 43.8	N22° 56.3	346° 26.6	S00° 42.5						
13	5° 11.5	357° 47.7	01° 58.8	25° 16.4	38.5	258° 46.2	56.3	1° 28.8	42.4						
14	20° 14.0	12° 47.4	02° 00.1	40° 17.0	37.7	273° 48.7	56.3	16° 31.0	42.3						
15	35° 16.4	27° 47.0	· · 01.4	55° 17.6	· · 37.0	288° 51.2	· · 56.3	31° 33.2	· · 42.2						
16	50° 18.9	42° 46.6	02.7	70° 18.2	36.2	303° 53.6	56.3	46° 35.3	42.0						
17	65° 21.4	57° 46.3	04.0	85° 18.8	35.5	318° 56.1	56.3	61° 37.5	41.9						
18	80° 23.8	72° 45.9	N02° 05.2	100° 19.4	S09° 34.8	333° 58.5	N22° 56.3	76° 39.7	S00° 41.8						
19	95° 26.3	87° 45.6	06.5	115° 20.1	34.0	349° 01.0	56.3	91° 41.9	41.7						
20	110° 28.8	102° 45.2	07.8	130° 20.7	33.3	4° 03.4	56.3	106° 44.1	41.5						
21	125° 31.2	117° 44.8	· · 09.1	145° 21.3	· · 32.5	19° 05.8	· · 56.3	121° 46.2	· · 41.4						
22	140° 33.7	132° 44.5	10.4	160° 21.9	31.8	34° 08.3	56.3	136° 48.4	41.3						
23	155° 36.1	147° 44.1	11.7	175° 22.5	31.1	49° 10.7	56.3	151° 50.6	41.2						
Mer.pass. 12:39 ν -0.4' d 1.3' m -3.92 ν 0.6' d -0.7' m 1.16 ν 2.5' d 0.0' m -2.36 ν 2.2' d -0.1' m 0.96															

Fri	Aries			Venus			Mars			Jupiter			Saturn		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	170° 38.6	162° 43.7	N02° 13.0	190° 23.1	S09° 30.3	64° 13.2	N22° 56.3	166° 52.8	S00° 41.1						
1	185° 41.1	177° 43.4	14.2	205° 23.7	29.6	79° 15.6	56.3	181° 55.0	40.9						
2	200° 43.5	192° 43.0	15.5	220° 24.4	28.8	94° 18.1	56.3	196° 57.1	40.8						
3	215° 46.0	207° 42.6	· · 16.8	235° 25.0	· · 28.1	109° 20.5	· · 56.3	211° 59.3	· · 40.7						
4	230° 48.5	222° 42.3	18.1	250° 25.6	27.4	124° 23.0	56.3	227° 01.5	40.6						
5	245° 50.9	237° 41.9	19.4	265° 26.2	26.6	139° 25.4	56.3	242° 03.7	40.4						
6	260° 53.4	252° 41.6	N02° 20.7	280° 26.8	S09° 25.9	154° 27.9	N22° 56.3	257° 05.9	S00° 40.3						
7	275° 55.9	267° 41.2	22.0	295° 27.4	25.1	169° 30.3	56.3	272° 08.1	40.2						
8	290° 58.3	282° 40.8	23.2	310° 28.1	24.4	184° 32.8	56.3	287° 10.2	40.1						
9	306° 00.8	297° 40.5	· · 24.5	325° 28.7	· · 23.7	199° 35.2	· · 56.3	302° 12.4	· · 39.9						
10	321° 03.3	312° 40.1	25.8	340° 29.3	22.9	214° 37.7	56.3	317° 14.6	39.8						
11	336° 05.7	327° 39.7	27.1	355° 29.9	22.2	229° 40.1	56.3	332° 16.8							

h	Sun			Moon			
Wed	GHA	Dec	GHA	ν	Dec	d	HP
0	177°28.6	S03°47.8	274°26.6	10.1'	S27°54.5	2.8'	54.2'
1	192°28.8	46.8	288°55.7	10.1'	27°57.3	2.7'	54.2'
2	207°28.9	45.8	303°24.8	10.1'	28°00.0	2.5'	54.2'
3	222°29.1	· · 44.8	317°53.9	10.0'	28°02.5	2.4'	54.2'
4	237°29.2	43.9	332°22.9	10.0'	28°04.9	2.3'	54.2'
5	252°29.4	42.9	346°51.9	10.0'	28°07.2	2.1'	54.2'
6	267°29.6	S03°41.9	1°20.9	10.0'	S28°09.3	2.0'	54.2'
7	282°29.7	40.9	15°49.9	9.9'	28°11.3	1.9'	54.2'
8	297°29.9	39.9	30°18.8	9.9'	28°13.2	1.7'	54.2'
9	312°30.1	· · 39.0	44°47.7	9.9'	28°14.9	1.6'	54.2'
10	327°30.2	38.0	59°16.6	9.9'	28°16.5	1.5'	54.2'
11	342°30.4	37.0	73°45.4	9.8'	28°18.0	1.3'	54.2'
12	357°30.6	S03°36.0	88°14.3	9.8'	S28°19.3	1.2'	54.2'
13	12°30.7	35.0	102°43.1	9.8'	28°20.5	1.0'	54.2'
14	27°30.9	34.0	117°11.9	9.8'	28°21.5	0.9'	54.3'
15	42°31.0	· · 33.1	131°40.6	9.8'	28°22.4	0.8'	54.3'
16	57°31.2	32.1	146°09.4	9.7'	28°23.2	0.6'	54.3'
17	72°31.4	31.1	160°38.1	9.7'	28°23.8	0.5'	54.3'
18	87°31.5	S03°30.1	175°06.9	9.7'	S28°24.3	0.4'	54.3'
19	102°31.7	29.1	189°35.6	9.7'	28°24.7	0.2'	54.3'
20	117°31.9	28.1	204°04.2	9.7'	28°24.9	0.1'	54.3'
21	132°32.0	· · 27.2	218°32.9	9.7'	28°25.0	-0.1'	54.3'
22	147°32.2	26.2	233°01.6	9.7'	28°24.9	-0.2'	54.3'
23	162°32.4	25.2	247°30.2	9.6'	28°24.7	-0.3'	54.3'
SD = 16.1'			d = -1.0'		SD = 14.8'		

Thu	GHA	Dec	GHA	ν	Dec	d	HP
0	177°32.5	S03°24.2	261°58.9	9.6'	S28°24.4	-0.5'	54.3'
1	192°32.7	23.2	276°27.5	9.6'	28°23.9	-0.6'	54.4'
2	207°32.9	22.2	290°56.1	9.6'	28°23.3	-0.8'	54.4'
3	222°33.0	· · 21.3	305°24.7	9.6'	28°22.5	-0.9'	54.4'
4	237°33.2	20.3	319°53.3	9.6'	28°21.6	-1.0'	54.4'
5	252°33.4	19.3	334°22.0	9.6'	28°20.6	-1.2'	54.4'
6	267°33.5	S03°18.3	348°50.6	9.6'	S28°19.4	-1.3'	54.4'
7	282°33.7	17.3	3°19.1	9.6'	28°18.1	-1.5'	54.4'
8	297°33.9	16.3	17°47.7	9.6'	28°16.6	-1.6'	54.4'
9	312°34.0	· · 15.4	32°16.3	9.6'	28°15.0	-1.7'	54.4'
10	327°34.2	14.4	46°44.9	9.6'	28°13.3	-1.9'	54.5'
11	342°34.4	13.4	61°13.5	9.6'	28°11.4	-2.0'	54.5'
12	357°34.5	S03°12.4	75°42.1	9.6'	S28°09.4	-2.2'	54.5'
13	12°34.7	11.4	90°10.7	9.6'	28°07.2	-2.3'	54.5'
14	27°34.9	10.4	104°39.3	9.6'	28°04.9	-2.4'	54.5'
15	42°35.0	· · 09.5	119°08.0	9.6'	28°02.5	-2.6'	54.5'
16	57°35.2	08.5	133°36.6	9.6'	27°59.9	-2.7'	54.5'
17	72°35.4	07.5	148°05.2	9.6'	27°57.2	-2.9'	54.6'
18	87°35.5	S03°06.5	162°33.8	9.6'	S27°54.3	-3.0'	54.6'
19	102°35.7	05.5	177°02.5	9.7'	27°51.3	-3.1'	54.6'
20	117°35.9	04.5	191°31.1	9.7'	27°48.2	-3.3'	54.6'
21	132°36.0	· · 03.5	205°59.8	9.7'	27°44.9	-3.4'	54.6'
22	147°36.2	02.6	220°28.5	9.7'	27°41.5	-3.6'	54.6'
23	162°36.4	01.6	234°57.2	9.7'	27°37.9	-3.7'	54.7'
SD = 16.1'			d = -1.0'		SD = 14.8'		

Fri	GHA	Dec	GHA	ν	Dec	d	HP
0	177°36.6	S03°00.6	249°25.9	9.7'	S27°34.2	-3.8'	54.7'
1	192°36.7	02°59.6	263°54.6	9.7'	27°30.4	-4.0'	54.7'
2	207°36.9	58.6	278°23.3	9.8'	27°26.4	-4.1'	54.7'
3	222°37.1	· · 57.6	292°52.1	9.8'	27°22.3	-4.2'	54.7'
4	237°37.2	56.6	307°20.9	9.8'	27°18.1	-4.4'	54.7'
5	252°37.4	55.7	321°49.7	9.8'	27°13.7	-4.5'	54.8'
6	267°37.6	S02°54.7	336°18.5	9.8'	S27°09.2	-4.7'	54.8'
7	282°37.7	53.7	350°47.3	9.9'	27°04.5	-4.8'	54.8'
8	297°37.9	52.7	5°16.2	9.9'	26°59.7	-4.9'	54.8'
9	312°38.1	· · 51.7	19°45.0	9.9'	26°54.8	-5.1'	54.8'
10	327°38.2	50.7	34°13.9	9.9'	26°49.7	-5.2'	54.9'
11	342°38.4	49.7	48°42.9	10.0'	26°44.5	-5.3'	54.9'
12	357°38.6	S02°48.8	63°11.8	10.0'	S26°39.2	-5.5'	54.9'
13	12°38.8	47.8	77°40.8	10.0'	26°33.7	-5.6'	54.9'
14	27°38.9	46.8	92°09.8	10.0'	26°28.1	-5.7'	54.9'
15	42°39.1	· · 45.8	106°38.8	10.1'	26°22.4	-5.9'	55.0'
16	57°39.3	44.8	121°07.9	10.1'	26°16.5	-6.0'	55.0'
17	72°39.4	43.8	135°37.0	10.1'	26°10.5	-6.1'	55.0'
18	87°39.6	S02°42.8	150°06.1	10.1'	S26°04.3	-6.3'	55.0'
19	102°39.8	41.9	164°35.2	10.2'	25°58.1	-6.4'	55.1'
20	117°39.9	40.9	179°04.4	10.2'	25°51.7	-6.5'	55.1'
21	132°40.1	· · 39.9	193°33.6	10.2'	25°45.1	-6.7'	55.1'
22	147°40.3	38.9	208°02.9	10.3'	25°38.4	-6.8'	55.1'
23	162°40.5	37.9	222°32.1	10.3'	25°31.6	-6.9'	55.1'
SD = 16.1'			d = -1.0'		SD = 14.9'		

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

Lat.	Moonrise			Moonset		
	Wed	Thu	Fri	Wed	Thu	Fri
N 72°	██	██	██	██	██	██
N 70°	██	██	██	██	██	██
68°	██	██	██	██	██	██
66°	██	██	██	██	██	██
64°	██	██	██	██	██	██
62°	██	██	06:37	██	██	08:46
60°	04:24	05:22	05:47	07:22	08:12	09:35
N 58°	03:46	04:42	05:16	08:01	08:52	10:06
56°	03:19	04:15	04:53	08:27	09:19	10:29
54°	02:58	03:53	04:33	08:49	09:41	10:48
52°	02:40	03:35	04:17	09:06	09:58	11:04
50°	02:25	03:20	04:03	09:21	10:14	11:17
45°	01:55	02:49	03:35	09:52	10:44	11:45
N 40°	01:32	02:26	03:13	10:15	11:08	12:07
35°	01:13	02:06	02:54	10:35	11:27	12:25
30°	00:56	01:49	02:38	10:52	11:44	12:41
20°	00:28	01:21	02:11	11:20	12:12	13:07
N 10°	00:04	00:56	01:47	11:44	12:36	13:30
0°	· · ·	00:34	01:26	12:07	12:59	13:51
S 10°	· · ·	00:11	01:04	12:29	13:21	14:11
20°	23:47	· · ·	00:40	12:54	13:45	14:34
30°	23:18	· · ·	00:13	13:22	14:13	14:59
35°	23:02	23:57	· · ·	13:39	14:30	15:15
40°	22:42	23:38	· · ·	13:58	14:49	15:32
45°	22:18	23:15	· · ·	14:22	15:12	15:53
S 50°	21:48	22:46	23:55	14:52	15:41	16:19
52°	21:33	22:32	23:42	15:08	15:56	16:32
54°	21:15	22:15	23:28	15:25	16:13	16:47
56°	20:53	21:55	23:11	15:47	16:33	17:04
58°	20:26	21:30	22:51	16:14	16:59	17:24
S 60°	19:47	20:55	22:26	16:53	17:33	17:50

Day	Sun		Mer. Pass	Moon		Age 22-24 54-35%
	Eqn. of Time 00 ^h mm:ss	12 ^h mm:ss		Upper Mer. Pass. hh:mm	Lower Mer. Pass. hh:mm	
11	10:06	09:58	12:10	05:54	18:20	
12	09:50	09:42	12:10	06:46	19:12	
13	09:34	09:26	12:09	07:38	20:04	

March 14, 15, 16 UT (Sat., Sun., Mon.)

Aries		Venus		Mars		Jupiter		Saturn	
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	171°37.8	162°35.0	N02°43.8	190°37.9	S09°12.5	65°11.8	N22°56.3	167°45.1	S00°38.1
1	186°40.2	177°34.6	45.1	205°38.5	11.8	80°14.3	56.3	182°47.3	38.0
2	201°42.7	192°34.3	46.4	220°39.2	11.0	95°16.7	56.3	197°49.5	37.9
3	216°45.1	207°33.9	· · 47.6	235°39.8	· · 10.3	110°19.1	· · 56.3	212°51.7	· · 37.7
4	231°47.6	222°33.5	48.9	250°40.4	09.6	125°21.6	56.3	227°53.9	37.6
5	246°50.1	237°33.2	50.2	265°41.0	08.8	140°24.0	56.3	242°56.0	37.5
6	261°52.5	252°32.8	N02°51.5	280°41.6	S09°08.1	155°26.5	N22°56.3	257°58.2	S00°37.4
7	276°55.0	267°32.4	52.8	295°42.3	07.3	170°28.9	56.3	273°00.4	37.2
8	291°57.5	282°32.1	54.1	310°42.9	06.6	185°31.3	56.3	288°02.6	37.1
9	306°59.9	297°31.7	· · 55.3	325°43.5	· · 05.8	200°33.8	· · 56.3	303°04.8	· · 37.0
10	322°02.4	312°31.4	56.6	340°44.1	05.1	215°36.2	56.3	318°06.9	36.9
11	337°04.9	327°31.0	57.9	355°44.7	04.3	230°38.6	56.3	333°09.1	36.7
12	352°07.3	342°30.6	N02°59.2	10°45.4	S09°03.6	245°41.1	N22°56.3	348°11.3	S00°36.6
13	7°09.8	357°30.3	03°00.5	25°46.0	02.9	260°43.5	56.3	3°13.5	36.5
14	22°12.2	12°29.9	01.7	40°46.6	02.1	275°45.9	56.3	18°15.7	36.4
15	37°14.7	27°29.5	· · 03.0	55°47.2	· · 01.4	290°48.4	· · 56.3	33°17.8	· · 36.3
16	52°17.2	42°29.2	04.3	70°47.8	09°00.6	305°50.8	56.3	48°20.0	36.1
17	67°19.6	57°28.8	05.6	85°48.5	08°59.9	320°53.2	56.3	63°22.2	36.0
18	82°22.1	72°28.4	N03°06.9	100°49.1	S08°59.1	335°55.7	N22°56.3	78°24.4	S00°35.9
19	97°24.6	87°28.1	08.2	115°49.7	58.4	350°58.1	56.3	93°26.6	35.8
20	112°27.0	102°27.7	09.4	130°50.3	57.6	6°00.5	56.3	108°28.7	35.6
21	127°29.5	117°27.3	· · 10.7	145°50.9	· · 56.9	21°03.0	· · 56.3	123°30.9	· · 35.5
22	142°32.0	132°27.0	12.0	160°51.6	56.1	36°05.4	56.3	138°33.1	35.4
23	157°34.4	147°26.6	13.3	175°52.2	55.4	51°07.8	56.3	153°35.3	35.3
Mer.pass. 12:31		ν -0.4' d 1.3' m -3.92		ν 0.6' d -0.7' m 1.16		ν 2.4' d -0.0' m -2.34		ν 2.2' d -0.1' m 0.95	

Stars	
SHA	Dec
Alpheratz	357°34.1 29°14.1
Ankaa	353°06.6 -42°09.9
Schedar	349°30.5 56°40.9
Diphda	348°46.6 -17°50.7
Achernar	335°19.9 -57°06.4
Hamal	327°50.4 23°35.2
Polaris	313°49.7 89°22.7
Acamar	315°11.3 -40°12.2
Menkar	314°05.3 4°11.5
Mirfak	308°27.1 49°57.4
Aldebaran	290°38.6 16°33.7
Rigel	281°02.9 -8°10.4
Capella	280°20.5 46°01.6
Bellatrix	278°21.8 6°22.3
Elnath	278°00.6 28°37.8
Anilam	275°36.7 -1°11.2
Betelgeuse	270°51.0 7°24.6
Canopus	263°51.8 -52°42.8
Sirius	258°25.3 -16°45.3
Adhara	255°05.0 -29°00.7
Procyon	244°49.6 5°09.4
Pollux	243°15.9 27°57.8
Avior	234°13.9 -59°35.8
Suhail	222°45.3 -43°32.5
Miaplacidus	221°37.4 -69°49.7
Alphard	217°46.5 -8°46.5
Regulus	207°33.1 11°50.2
Dubhe	193°39.1 61°36.5
Denebola	182°23.6 14°25.4
Gienah	175°42.3 -17°41.4
Acrux	172°58.4 -63°14.7
Gacrux	171°50.0 -57°15.6
Alioth	166°11.6 55°48.8
Spica	158°21.0 -11°18.0
Alkaid	152°50.8 49°10.7
Hadar	148°34.1 -60°29.9
Menkent	147°56.2 -36°30.0
Arcturus	145°46.8 19°02.5
Rigel Kent.	139°38.5 -60°56.5
Kochab	137°19.0 74°02.5
Zuben'ubi	136°54.7 -16°09.1
Alphecca	126°02.7 26°37.3
Antares	112°14.5 -26°29.4
Atria	107°07.8 -69°04.2
Sabik	102°01.6 -15°45.5
Shaula	96°09.0 -37°07.3
Rasalhague	95°57.6 12°32.2
Eltanin	90°41.8 51°28.7
Kaus Aust.	83°31.3 -34°22.3
Vega	80°32.7 38°48.1
Nunki	75°46.7 -26°15.8
Altair	61°59.2 8°56.1
Peacock	53°04.6 -56°38.9
Deneb	49°25.5 45°22.2
Enif	33°38.1 9°59.6
Al Na'ir	27°32.1 -46°50.0
Fomalhaut	15°13.8 -29°29.1
Scheat	13°44.6 28°13.4
Markab	13°29.2 15°20.7

Sun		Venus		Mars		Jupiter		Saturn	
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	172°36.9	162°26.2	N03°14.6	190°52.8	S08°54.6	66°10.3	N22°56.3	168°37.5	S00°35.1
1	187°39.4	177°25.9	15.8	205°53.4	53.9	81°12.7	56.3	183°39.6	35.0
2	202°41.8	192°25.5	17.1	220°54.0	53.2	96°15.1	56.3	198°41.8	34.9
3	217°44.3	207°25.1	· · 18.4	235°54.7	· · 52.4	111°17.5	· · 56.3	213°44.0	· · 34.8
4	232°46.7	222°24.8	19.7	250°55.3	51.7	126°20.0	56.3	228°46.2	34.7
5	247°49.2	237°24.4	21.0	265°55.9	50.9	141°22.4	56.3	243°48.4	34.5
6	262°51.7	252°24.0	N03°22.2	280°56.5	S08°50.2	156°24.8	N22°56.3	258°50.5	S00°34.4
7	277°54.1	267°23.7	23.5	295°57.2	49.4	171°27.3	56.3	273°52.7	34.3
8	292°56.6	282°23.3	24.8	310°57.8	48.7	186°29.7	56.3	288°54.9	34.2
9	307°59.1	297°22.9	· · 26.1	325°58.4	· · 47.9	201°32.1	· · 56.3	303°57.1	· · 34.0
10	323°01.5	312°22.6	27.4	340°59.0	47.2	216°34.5	56.3	318°59.3	33.9
11	338°04.0	327°22.2	28.6	355°59.6	46.4	231°37.0	56.3	334°01.4	33.8
12	353°06.5	342°21.8	N03°29.9	11°00.3	S08°45.7	246°39.4	N22°56.3	349°03.6	S00°33.7
13	8°08.9	357°21.5	31.2	26°00.9	44.9	261°41.8	56.3	4°05.8	33.5
14	23°11.4	12°21.1	32.5	41°01.5	44.2	276°44.2	56.3	19°08.0	33.4
15	38°13.9	27°20.7	· · 33.8	56°02.1	· · 43.4	291°46.7	· · 56.3	34°10.2	· · 33.3
16	53°16.3	42°20.4	35.0	71°02.8	42.7	306°49.1	56.3	49°12.3	33.2
17	68°18.8	57°20.0	36.3	86°03.4	41.9	321°51.5	56.3	64°14.5	33.1
18	83°21.2	72°19.6	N03°37.6	101°04.0	S08°41.2	336°53.9	N22°56.2	79°16.7	S00°32.9
19	98°23.7	87°19.3	38.9	116°04.6	40.4	351°56.4	56.2	94°18.9	32.8
20	113°26.2	102°18.9	40.2	131°05.3	39.7	6°58.8	56.2	109°21.1	32.7
21	128°28.6	117°18.5	· · 41.4	146°05.9	· · 38.9	22°01.2	· · 56.2	124°23.2	· · 32.6
22	143°31.1	132°18.2	42.7	161°06.5	38.2	37°03.6	56.2	139°25.4	32.4
23	158°33.6	147°17.8	44.0	176°07.1	37.4	52°06.1	56.2	154°27.6	32.3
Mer.pass. 12:27		ν -0.4' d 1.3' m -3.92		ν 0.6' d -0.7' m 1.16		ν 2.4' d -0.0' m -2.33		ν 2.2' d -0.1' m 0.95	

Mon		Venus		Mars		Jupiter		Saturn	
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	173°36.0	162°17.4	N03°45.3	191°07.8	S08°36.7	67°08.5	N22°56.2	169°29.8	S00°32.2
1	188°38.5	177°17.1	46.5	206°08.4	35.9	82°10.9	56.2	184°32.0	32.1
2	203°41.0	192°16.7	47.8	221°09.0	35.2	97°13.3	56.2	199°34.1	31.9
3	218°43.4	207°16.3	· · 49.1	236°09.6	· · 34.4	112°15.7	· · 56.2	214°36.3	· · 31.8
4	233°45.9	222°16.0	50.4	251°10.3	33.7	127°18.2	56.2	229°38.5	31.7
5	248°48.3	237°15.6	51.7	266°10.9	32.9	142°20.6	56.2	244°40.7	31.6
6	263°50.8	252°15.2	N03°52.9	281°11.5	S08°32.2	157°23.0	N22°56.2	259°42.9	S00°31.4
7	278°53.3	267°14.9	54.2	296°12.1	31.4	172°25.4	56.2	274°45.0	31.3
8	293°55.7	282°14.5	55.5	311°12.8	30.7	187°27.8	56.2	289°47.2	31.2
9	308°58.2	297°14.1	· · 56.8	326°13.4	· · 29.9	202°30.3	· · 56.2	304°49.4	· · 31.1
10	324°00.7	312°13.8	58.0	341°14.0	29.2	217°32.7	56.2	319°51.6	31.0
11	339°03.1	327°13.4	03°59.3	356°14.6	28.4	232°35.1	56.2	334°53.8	30.8
12	354°05.6	342°13.0	N04°00.6	11°15.3	S08°27.7	247°37.5	N22°56.2	349°55.9	S00°30.7
13	9°08.1	357°12.7	01.9	26°15.9	26.9	262°39.9	56.2	4°58.1	30.6
14	24°10.5	12°12.3	03.1	41°16.5	26.2	277°42.3	56.2	20°00.3	30.5
15	39°13.0	27°11.9	· · 04.4	56°17.1	· · 25.4	292°44.8	· · 56.2	35°02.5	· · 30.3
16	54°15.5	42°11.6	05.7	71°17.8	24.7	307°47.2	56.2	50°04.7	30.2
17	69°17.9	57°11.2	07.0	86°18.4	23.9	322°49.6	56.2	65°06.8	30.1
18	84°20.4	72°10.8	N04°08.2	101°19.0	S08°23.2	337°52.0	N22°56.2	80°09.0	S00°30.0
19	99°22.8	87°10.5	09.5	116°19.6	22.4	352°54.4	56.2	95°11.2	29.8
20	114°25.3	102°10.1	10.8	131°20.3	21.7	7°56.8	56.2	110°13.4	29.7
21	129°27.8	117°09.7	· · 12.1	146°20.9	· · 20.9	22°59.2	· · 56.2	125°15.6	· · 29.6
22	144°30.2	132°09.3	13.3	161°21.5	20.2	38°01.7	56.2	140°17.7	29.5
23	159°32.7	147°09.0	14.6	176°22.2	19.4	53°04.1	56.2	155°19.9	29.4
Mer.pass. 12:24		ν -0.4' d 1.3' m -3.92		ν 0.6' d -0.8' m 1.16		ν 2.4' d -0.0' m -2.32		ν 2.2' d -0.1' m 0.95	

Mar 14 Sat	SHA	Mer.pass
Venus	350°57.2	13:10
Mars	19°00.2	11:17
Jupiter	253°34.1	19:36
Saturn	356°07.4	12:47

Mar 15 Sun	SHA	Mer.pass
Venus	349°49.4	13:11
Mars	18°15.9	11:16
Jupiter	253°33.4	19:32
Saturn	356°00.6	12:44

Mar 16 Mon	SHA	Mer.pass
Venus	348°41.4	13:11
Mars	17°31.7	11:15
Jupiter	253°32.4	19:28
Saturn	355°53.8	12:40

Horizontal parallax	
Venus:	0.1
Mars:	0.1

h	Sun			Moon			
	Sat	GHA	Dec	GHA	ν	Dec	d
0	177°40.6	S02°36.9	237°01.4	10.3'	S25°24.7	-7.1'	55.2'
1	192°40.8	35.9	251°30.8	10.4'	S25°17.6	-7.2'	55.2'
2	207°41.0	35.0	266°00.1	10.4'	S25°10.4	-7.3'	55.2'
3	222°41.1	· · 34.0	280°29.5	10.4'	S25°03.1	-7.5'	55.2'
4	237°41.3	33.0	294°59.0	10.5'	S24°55.7	-7.6'	55.3'
5	252°41.5	32.0	309°28.5	10.5'	S24°48.1	-7.7'	55.3'
6	267°41.7	S02°31.0	323°58.0	10.5'	S24°40.4	-7.8'	55.3'
7	282°41.8	30.0	338°27.5	10.6'	S24°32.5	-8.0'	55.3'
8	297°42.0	29.0	352°57.1	10.6'	S24°24.6	-8.1'	55.4'
9	312°42.2	· · 28.1	7°26.7	10.7'	S24°16.5	-8.2'	55.4'
10	327°42.4	27.1	21°56.4	10.7'	S24°08.3	-8.3'	55.4'
11	342°42.5	26.1	36°26.1	10.7'	S23°59.9	-8.5'	55.4'
12	357°42.7	S02°25.1	50°55.8	10.8'	S23°51.5	-8.6'	55.5'
13	12°42.9	24.1	65°25.6	10.8'	S23°42.9	-8.7'	55.5'
14	27°43.0	23.1	79°55.4	10.9'	S23°34.2	-8.8'	55.5'
15	42°43.2	· · 22.1	94°25.3	10.9'	S23°25.3	-9.0'	55.5'
16	57°43.4	21.1	108°55.2	10.9'	S23°16.4	-9.1'	55.6'
17	72°43.6	20.2	123°25.1	11.0'	S23°07.3	-9.2'	55.6'
18	87°43.7	S02°19.2	137°55.1	11.0'	S22°58.1	-9.3'	55.6'
19	102°43.9	18.2	152°25.1	11.1'	S22°48.8	-9.4'	55.6'
20	117°44.1	17.2	166°55.1	11.1'	S22°39.4	-9.6'	55.7'
21	132°44.3	· · 16.2	181°25.2	11.1'	S22°29.8	-9.7'	55.7'
22	147°44.4	15.2	195°55.4	11.2'	S22°20.1	-9.8'	55.7'
23	162°44.6	14.2	210°25.5	11.2'	S22°10.4	-9.9'	55.8'
SD = 16.1'		d = -1.0'	SD = 15.0'				

Sun	GHA	Dec	GHA	ν	Dec	d	HP
0	177°44.8	S02°13.2	224°55.7	11.3'	S22°00.5	-10.0'	55.8'
1	192°45.0	12.3	239°26.0	11.3'	S21°50.4	-10.1'	55.8'
2	207°45.1	11.3	253°56.3	11.3'	S21°40.3	-10.3'	55.8'
3	222°45.3	· · 10.3	268°26.6	11.4'	S21°30.0	-10.4'	55.9'
4	237°45.5	09.3	282°57.0	11.4'	S21°19.7	-10.5'	55.9'
5	252°45.6	08.3	297°27.4	11.5'	S21°09.2	-10.6'	55.9'
6	267°45.8	S02°07.3	311°57.9	11.5'	S20°58.6	-10.7'	56.0'
7	282°46.0	06.3	326°28.4	11.5'	S20°47.9	-10.8'	56.0'
8	297°46.2	05.3	340°58.9	11.6'	S20°37.1	-10.9'	56.0'
9	312°46.3	· · 04.4	355°29.5	11.6'	S20°26.2	-11.0'	56.0'
10	327°46.5	03.4	10°00.1	11.7'	S20°15.2	-11.1'	56.1'
11	342°46.7	02.4	24°30.7	11.7'	S20°04.0	-11.2'	56.1'
12	357°46.9	S02°01.4	39°01.4	11.7'	S19°52.8	-11.4'	56.1'
13	12°47.0	02°00.4	53°32.2	11.8'	S19°41.4	-11.5'	56.2'
14	27°47.2	01°59.4	68°02.9	11.8'	S19°30.0	-11.6'	56.2'
15	42°47.4	· · 58.4	82°33.7	11.8'	S19°18.4	-11.7'	56.2'
16	57°47.6	57.4	97°04.6	11.9'	S19°06.7	-11.8'	56.3'
17	72°47.7	56.4	111°35.5	11.9'	S18°55.0	-11.9'	56.3'
18	87°47.9	S01°55.5	126°06.4	12.0'	S18°43.1	-12.0'	56.3'
19	102°48.1	54.5	140°37.4	12.0'	S18°31.1	-12.1'	56.3'
20	117°48.3	53.5	155°08.4	12.0'	S18°19.0	-12.2'	56.4'
21	132°48.5	· · 52.5	169°39.4	12.1'	S18°06.9	-12.3'	56.4'
22	147°48.6	51.5	184°10.5	12.1'	S17°54.6	-12.4'	56.4'
23	162°48.8	50.5	198°41.6	12.1'	S17°42.2	-12.5'	56.5'
SD = 16.1'		d = -1.0'	SD = 15.2'				

Mon	GHA	Dec	GHA	ν	Dec	d	HP
0	177°49.0	S01°49.5	213°12.7	12.2'	S17°29.7	-12.6'	56.5'
1	192°49.2	48.5	227°43.9	12.2'	S17°17.2	-12.7'	56.5'
2	207°49.3	47.6	242°15.1	12.2'	S17°04.5	-12.8'	56.6'
3	222°49.5	· · 46.6	256°46.3	12.3'	S16°51.8	-12.8'	56.6'
4	237°49.7	45.6	271°17.6	12.3'	S16°38.9	-12.9'	56.6'
5	252°49.9	44.6	285°48.9	12.3'	S16°26.0	-13.0'	56.7'
6	267°50.0	S01°43.6	300°20.3	12.4'	S16°12.9	-13.1'	56.7'
7	282°50.2	42.6	314°51.7	12.4'	S15°59.8	-13.2'	56.7'
8	297°50.4	41.6	329°23.1	12.4'	S15°46.6	-13.3'	56.7'
9	312°50.6	· · 40.6	343°54.5	12.5'	S15°33.3	-13.4'	56.8'
10	327°50.7	39.6	358°26.0	12.5'	S15°19.9	-13.5'	56.8'
11	342°50.9	38.7	12°57.5	12.5'	S15°06.4	-13.6'	56.8'
12	357°51.1	S01°37.7	27°29.0	12.6'	S14°52.9	-13.6'	56.9'
13	12°51.3	36.7	42°00.6	12.6'	S14°39.2	-13.7'	56.9'
14	27°51.5	35.7	56°32.2	12.6'	S14°25.5	-13.8'	56.9'
15	42°51.6	· · 34.7	71°03.8	12.6'	S14°11.7	-13.9'	57.0'
16	57°51.8	33.7	85°35.4	12.7'	S13°57.8	-14.0'	57.0'
17	72°52.0	32.7	100°07.1	12.7'	S13°43.8	-14.1'	57.0'
18	87°52.2	S01°31.7	114°38.8	12.7'	S13°29.7	-14.1'	57.1'
19	102°52.3	30.7	129°10.5	12.7'	S13°15.6	-14.2'	57.1'
20	117°52.5	29.8	143°42.2	12.8'	S13°01.4	-14.3'	57.1'
21	132°52.7	· · 28.8	158°14.0	12.8'	S12°47.1	-14.4'	57.2'
22	147°52.9	27.8	172°45.8	12.8'	S12°32.7	-14.4'	57.2'
23	162°53.1	26.8	187°17.6	12.8'	S12°18.3	-14.5'	57.2'
SD = 16.1'		d = -1.0'	SD = 15.4'				

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

Lat.	Moonrise			Moonset		
	Sat	Sun	Mon	Sat	Sun	Mon
N 72°	■	■	08:07	■	■	12:32
N 70°	■	■	07:30	■	■	13:07
68°	■	07:54	07:03	■	11:00	13:32
66°	■	07:10	06:43	■	11:43	13:50
64°	07:07	06:41	06:26	10:03	12:12	14:06
62°	06:25	06:18	06:12	10:44	12:33	14:18
60°	05:56	06:00	06:01	11:12	12:51	14:29
N 58°	05:34	05:45	05:51	11:33	13:05	14:38
56°	05:16	05:31	05:42	11:51	13:18	14:46
54°	05:01	05:20	05:34	12:06	13:28	14:53
52°	04:48	05:10	05:27	12:18	13:38	14:59
50°	04:36	05:01	05:20	12:30	13:46	15:05
45°	04:12	04:42	05:06	12:53	14:04	15:17
N 40°	03:52	04:26	04:55	13:12	14:19	15:27
35°	03:36	04:13	04:45	13:27	14:31	15:36
30°	03:22	04:01	04:36	13:41	14:42	15:43
20°	02:58	03:41	04:21	14:03	15:00	15:56
N 10°	02:37	03:23	04:08	14:23	15:16	16:07
0°	02:17	03:07	03:55	14:41	15:30	16:18
S 10°	01:57	02:50	03:43	14:59	15:45	16:28
20°	01:36	02:33	03:29	15:19	16:00	16:39
30°	01:12	02:12	03:14	15:41	16:18	16:51
35°	00:57	02:00	03:05	15:54	16:28	16:58
40°	00:40	01:46	02:54	16:08	16:39	17:06
45°	00:20	01:30	02:42	16:26	16:53	17:16
S 50°	· · ·	01:09	02:27	16:48	17:09	17:27
52°	· · ·	01:00	02:20	16:58	17:17	17:32
54°	· · ·	00:49	02:13	17:09	17:26	17:37
56°	· · ·	00:36	02:04	17:23	17:35	17:44
58°	· · ·	00:22	01:54	17:38	17:46	17:51
S 60°	· · ·	00:04	01:42	17:56	17:58	17:59

Day	Sun		Mer. Pass	Moon		Age 25-27 26-11%
	Eqn. of Time 00 ^h mm:ss	12 ^h mm:ss		Mer. Pass. Upper hh:mm	Lower hh:mm	
14	09:17	09:09	12:09	08:29	20:54	
15	09:01	08:53	12:09	09:19	21:43	
16	08:44	08:36	12:09	10:06	22:30	

March 17, 18, 19 UT (Tue., Wed., Thu.)

	Aries		Venus		Mars		Jupiter		Saturn	
Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	174° 35.2	162° 08.6	N04° 15.9	191° 22.8	S08° 18.7	68° 06.5	N22° 56.2	170° 22.1	S00° 29.2	
1	189° 37.6	177° 08.2	17.2	206° 23.4	17.9	83° 08.9	56.2	185° 24.3	29.1	
2	204° 40.1	192° 07.9	18.4	221° 24.0	17.1	98° 11.3	56.2	200° 26.5	29.0	
3	219° 42.6	207° 07.5	· · 19.7	236° 24.7	· · 16.4	113° 13.7	· · 56.2	215° 28.6	· · 28.9	
4	234° 45.0	222° 07.1	21.0	251° 25.3	15.6	128° 16.1	56.2	230° 30.8	28.7	
5	249° 47.5	237° 06.8	22.3	266° 25.9	14.9	143° 18.5	56.2	245° 33.0	28.6	
6	264° 50.0	252° 06.4	N04° 23.5	281° 26.6	S08° 14.1	158° 20.9	N22° 56.1	260° 35.2	S00° 28.5	
7	279° 52.4	267° 06.0	24.8	296° 27.2	13.4	173° 23.4	56.1	275° 37.3	28.4	
8	294° 54.9	282° 05.6	26.1	311° 27.8	12.6	188° 25.8	56.1	290° 39.5	28.2	
9	309° 57.3	297° 05.3	· · 27.4	326° 28.4	· · 11.9	203° 28.2	· · 56.1	305° 41.7	· · 28.1	
10	324° 59.8	312° 04.9	28.6	341° 29.1	11.1	218° 30.6	56.1	320° 43.9	28.0	
11	340° 02.3	327° 04.5	29.9	356° 29.7	10.4	233° 33.0	56.1	335° 46.1	27.9	
12	355° 04.7	342° 04.2	N04° 31.2	11° 30.3	S08° 09.6	248° 35.4	N22° 56.1	350° 48.2	S00° 27.7	
13	10° 07.2	357° 03.8	32.5	26° 31.0	08.9	263° 37.8	56.1	5° 50.4	27.6	
14	25° 09.7	12° 03.4	33.7	41° 31.6	08.1	278° 40.2	56.1	20° 52.6	27.5	
15	40° 12.1	27° 03.0	· · 35.0	56° 32.2	· · 07.3	293° 42.6	· · 56.1	35° 54.8	· · 27.4	
16	55° 14.6	42° 02.7	36.3	71° 32.9	06.6	308° 45.0	56.1	50° 57.0	27.3	
17	70° 17.1	57° 02.3	37.5	86° 33.5	05.8	323° 47.4	56.1	65° 59.1	27.1	
18	85° 19.5	72° 01.9	N04° 38.8	101° 34.1	S08° 05.1	338° 49.8	N22° 56.1	81° 01.3	S00° 27.0	
19	100° 22.0	87° 01.6	40.1	116° 34.7	04.3	353° 52.3	56.1	96° 03.5	26.9	
20	115° 24.4	102° 01.2	41.4	131° 35.4	03.6	8° 54.7	56.1	111° 05.7	26.8	
21	130° 26.9	117° 00.8	· · 42.6	146° 36.0	· · 02.8	23° 57.1	· · 56.1	126° 07.9	· · 26.6	
22	145° 29.4	132° 00.4	43.9	161° 36.6	02.1	38° 59.5	56.1	141° 10.0	26.5	
23	160° 31.8	147° 00.1	45.2	176° 37.3	01.3	54° 01.9	56.1	156° 12.2	26.4	
Mer.pass.	12:20	ν -0.4' d 1.3' m -3.92		ν 0.6' d -0.8' m 1.16		ν 2.4' d -0.0' m -2.32		ν 2.2' d -0.1' m 0.94		

	SHA		Dec
Alpheratz	357° 34.1	29° 14.0	
Ankaa	353° 06.6	-42° 09.9	
Schedar	349° 30.5	56° 40.9	
Diphda	348° 46.6	-17° 50.7	
Achernar	335° 19.9	-57° 06.4	
Hamal	327° 50.4	23° 35.2	
Polaris	313° 51.1	89° 22.7	
Acamar	315° 11.3	-40° 12.2	
Menkar	314° 05.3	4° 11.5	
Mirfak	308° 27.1	49° 57.4	
Aldebaran	290° 38.6	16° 33.7	
Rigel	281° 03.0	-8° 10.4	
Capella	280° 20.5	46° 01.6	
Bellatrix	278° 21.8	6° 22.3	
Elnath	278° 00.6	28° 37.8	
Anilam	275° 36.7	-1° 11.2	
Betelgeuse	270° 51.0	7° 24.6	
Canopus	263° 51.9	-52° 42.8	
Sirius	258° 25.3	-16° 45.3	
Adhara	255° 05.0	-29° 00.7	
Procyon	244° 49.7	5° 09.4	
Pollux	243° 15.9	27° 57.8	
Avior	234° 14.0	-59° 35.8	
Suhail	222° 45.3	-43° 32.5	
Miaplacidus	221° 37.4	-69° 49.7	
Alphard	217° 46.5	-8° 46.5	
Regulus	207° 33.1	11° 50.2	
Dubhe	193° 39.1	61° 36.5	
Denebola	182° 23.6	14° 25.4	
Gienah	175° 42.3	-17° 41.4	
Acrux	172° 58.4	-63° 14.7	
Gacrux	171° 50.0	-57° 15.7	
Alioth	166° 11.5	55° 48.8	
Spica	158° 21.0	-11° 18.0	
Alkaid	152° 50.8	49° 10.7	
Hadar	148° 34.1	-60° 29.9	
Menkent	147° 56.1	-36° 30.0	
Arcturus	145° 46.7	19° 02.5	
Rigel Kent.	139° 38.5	-60° 56.5	
Kochab	137° 19.0	74° 02.5	
Zuben'ubi	136° 54.7	-16° 09.2	
Alphecca	126° 02.7	26° 37.3	
Antares	112° 14.5	-26° 29.4	
Atria	107° 07.8	-69° 04.2	
Sabik	102° 01.6	-15° 45.5	
Shaula	96° 09.0	-37° 07.3	
Rasalhague	95° 57.6	12° 32.2	
Eltanin	90° 41.7	51° 28.7	
Kaus Aust.	83° 31.3	-34° 22.3	
Vega	80° 32.6	38° 48.1	
Nunki	75° 46.6	-26° 15.8	
Altair	61° 59.2	8° 56.1	
Peacock	53° 04.5	-56° 38.9	
Deneb	49° 25.5	45° 22.2	
Enif	33° 38.1	9° 59.6	
Al Na'ir	27° 32.1	-46° 50.0	
Fomalhaut	15° 13.8	-29° 29.1	
Scheat	13° 44.6	28° 13.4	
Markab	13° 29.2	15° 20.7	

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	175° 34.3	161° 59.7	N04° 46.4	191° 37.9	S08° 00.5	69° 04.3	N22° 56.1	171° 14.4	S00° 26.3
1	190° 36.8	176° 59.3	47.7	206° 38.5	07° 59.8	84° 06.7	56.1	186° 16.6	26.1
2	205° 39.2	191° 59.0	49.0	221° 39.2	59.0	99° 09.1	56.1	201° 18.8	26.0
3	220° 41.7	206° 58.6	· · 50.3	236° 39.8	· · 58.3	114° 11.5	· · 56.1	216° 20.9	· · 25.9
4	235° 44.2	221° 58.2	51.5	251° 40.4	57.5	129° 13.9	56.1	231° 23.1	25.8
5	250° 46.6	236° 57.8	52.8	266° 41.1	56.8	144° 16.3	56.1	246° 25.3	25.7
6	265° 49.1	251° 57.5	N04° 54.1	281° 41.7	S07° 56.0	159° 18.7	N22° 56.1	261° 27.5	S00° 25.5
7	280° 51.6	266° 57.1	55.3	296° 42.3	55.2	174° 21.1	56.1	276° 29.6	25.4
8	295° 54.0	281° 56.7	56.6	311° 42.9	54.5	189° 23.5	56.0	291° 31.8	25.3
9	310° 56.5	296° 56.4	· · 57.9	326° 43.6	· · 53.7	204° 25.9	· · 56.0	306° 34.0	· · 25.2
10	325° 58.9	311° 56.0	04° 59.1	341° 44.2	53.0	219° 28.3	56.0	321° 36.2	25.0
11	341° 01.4	326° 55.6	05° 00.4	356° 44.8	52.2	234° 30.7	56.0	336° 38.4	24.9
12	356° 03.9	341° 55.2	N05° 01.7	11° 45.5	S07° 51.5	249° 33.1	N22° 56.0	351° 40.5	S00° 24.8
13	11° 06.3	356° 54.9	02.9	26° 46.1	50.7	264° 35.5	56.0	6° 42.7	24.7
14	26° 08.8	11° 54.5	04.2	41° 46.7	49.9	279° 37.9	56.0	21° 44.9	24.5
15	41° 11.3	26° 54.1	· · 05.5	56° 47.4	· · 49.2	294° 40.3	· · 56.0	36° 47.1	· · 24.4
16	56° 13.7	41° 53.7	06.7	71° 48.0	48.4	309° 42.7	56.0	51° 49.3	24.3
17	71° 16.2	56° 53.4	08.0	86° 48.6	47.7	324° 45.1	56.0	66° 51.4	24.2
18	86° 18.7	71° 53.0	N05° 09.3	101° 49.3	S07° 46.9	339° 47.5	N22° 56.0	81° 53.6	S00° 24.1
19	101° 21.1	86° 52.6	10.5	116° 49.9	46.2	354° 49.9	56.0	96° 55.8	23.9
20	116° 23.6	101° 52.2	11.8	131° 50.5	45.4	9° 52.3	56.0	111° 58.0	23.8
21	131° 26.0	116° 51.9	· · 13.1	146° 51.2	· · 44.6	24° 54.7	· · 56.0	127° 00.1	· · 23.7
22	146° 28.5	131° 51.5	14.3	161° 51.8	43.9	39° 57.1	56.0	142° 02.3	23.6
23	161° 31.0	146° 51.1	15.6	176° 52.4	43.1	54° 59.5	56.0	157° 04.5	23.4
Mer.pass.	12:16	ν -0.4' d 1.3' m -3.92		ν 0.6' d -0.8' m 1.16		ν 2.4' d -0.0' m -2.31		ν 2.2' d -0.1' m 0.94	

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	176° 33.4	161° 50.7	N05° 16.9	191° 53.1	S07° 42.4	70° 01.9	N22° 56.0	172° 06.7	S00° 23.3
1	191° 35.9	176° 50.4	18.1	206° 53.7	41.6	85° 04.3	56.0	187° 08.9	23.2
2	206° 38.4	191° 50.0	19.4	221° 54.3	40.8	100° 06.7	56.0	202° 11.0	23.1
3	221° 40.8	206° 49.6	· · 20.7	236° 55.0	· · 40.1	115° 09.1	· · 56.0	217° 13.2	· · 22.9
4	236° 43.3	221° 49.2	21.9	251° 55.6	39.3	130° 11.4	55.9	232° 15.4	22.8
5	251° 45.8	236° 48.9	23.2	266° 56.2	38.6	145° 13.8	55.9	247° 17.6	22.7
6	266° 48.2	251° 48.5	N05° 24.5	281° 56.9	S07° 37.8	160° 16.2	N22° 55.9	262° 19.8	S00° 22.6
7	281° 50.7	266° 48.1	25.7	296° 57.5	37.1	175° 18.6	55.9	277° 21.9	22.4
8	296° 53.2	281° 47.7	27.0	311° 58.2	36.3	190° 21.0	55.9	292° 24.1	22.3
9	311° 55.6	296° 47.4	· · 28.3	326° 58.8	· · 35.5	205° 23.4	· · 55.9	307° 26.3	· · 22.2
10	326° 58.1	311° 47.0	29.5	341° 59.4	34.8	220° 25.8	55.9	322° 28.5	22.1
11	342° 00.5	326° 46.6	30.8	357° 00.1	34.0	235° 28.2	55.9	337° 30.6	22.0
12	357° 03.0	341° 46.2	N05° 32.1	12° 00.7	S07° 33.3	250° 30.6	N22° 55.9	352° 32.8	S00° 21.8
13	12° 05.5	356° 45.9	33.3	27° 01.3	32.5	265° 33.0	55.9	7° 35.0	21.7
14	27° 07.9	11° 45.5	34.6	42° 02.0	31.7	280° 35.4	55.9	22° 37.2	21.6
15	42° 10.4	26° 45.1	· · 35.9	57° 02.6	· · 31.0	295° 37.8	· · 55.9	37° 39.4	· · 21.5
16	57° 12.9	41° 44.7	37.1	72° 03.2	30.2	310° 40.1	55.9	52° 41.5	21.3
17	72° 15.3	56° 44.3	38.4	87° 03.9	29.5	325° 42.5	55.9	67° 43.7	21.2
18	87° 17.8	71° 44.0	N05° 39.6	102° 04.5	S07° 28.7	340° 44.9	N22° 55.9	82° 45.9	S00° 21.1
19	102° 20.3	86° 43.6	40.9	117° 05.1	27.9	355° 47.3	55.9	97° 48.1	21.0
20	117° 22.7	101° 43.2	42.2	132° 05.8	27.2	10° 49.7	55.9	112° 50.2	20.8
21	132° 25.2	116° 42.8	· · 43.4	147° 06.4	· · 26.4	25° 52.1	· · 55.9	127° 52.4	· · 20.7
22	147° 27.6	131° 42.5	44.7	162° 07.1	25.6	40° 54.5	55.8	142° 54.6	20.6
23	162° 30.1	146° 42.1	45.9	177° 07.7	24.9	55° 56.9	55.8	157° 56.8	20.5
Mer.pass.	12:12	ν -0.4' d 1.3' m -3.92		ν 0.6' d -0.8' m 1.17		ν 2.4' d -0.0' m -2.30		ν 2.2' d -0.1' m 0.93	

Mar 17 Tue	SHA	Mer.pass
Venus	347° 33.4	13:12
Mars	16° 47.6	11:14
Jupiter</		

Sun			Moon				
h	GHA	Dec	GHA	ν	Dec	d	HP
0	177°53.2	S01°25.8	201°49.4	12.8'	S12°03.8	-14.6'	57.2'
1	192°53.4	24.8	216°21.3	12.9'	11°49.2	-14.7'	57.3'
2	207°53.6	23.8	230°53.1	12.9'	11°34.5	-14.7'	57.3'
3	222°53.8	· · 22.8	245°25.0	12.9'	11°19.8	-14.8'	57.3'
4	237°53.9	21.8	259°56.9	12.9'	11°05.0	-14.9'	57.4'
5	252°54.1	20.9	274°28.8	12.9'	10°50.1	-14.9'	57.4'
6	267°54.3	S01°19.9	289°00.8	12.9'	S10°35.2	-15.0'	57.4'
7	282°54.5	18.9	303°32.7	13.0'	08°48.9	-15.1'	57.5'
8	297°54.7	17.9	318°04.7	13.0'	10°05.1	-15.1'	57.5'
9	312°54.8	· · 16.9	332°36.6	13.0'	09°50.0	-15.2'	57.5'
10	327°55.0	15.9	347°08.6	13.0'	09°34.8	-15.3'	57.6'
11	342°55.2	14.9	1°40.6	13.0'	09°19.6	-15.3'	57.6'
12	357°55.4	S01°13.9	16°12.6	13.0'	S09°04.3	-15.4'	57.6'
13	12°55.6	12.9	30°44.7	13.0'	08°48.9	-15.4'	57.6'
14	27°55.7	12.0	45°16.7	13.0'	08°33.5	-15.5'	57.7'
15	42°55.9	· · 11.0	59°48.7	13.0'	08°18.0	-15.5'	57.7'
16	57°56.1	10.0	74°20.8	13.0'	08°02.4	-15.6'	57.7'
17	72°56.3	09.0	88°52.8	13.1'	07°46.8	-15.6'	57.8'
18	87°56.4	S01°08.0	103°24.9	13.1'	S07°31.2	-15.7'	57.8'
19	102°56.6	07.0	117°56.9	13.1'	07°15.5	-15.7'	57.8'
20	117°56.8	06.0	132°29.0	13.1'	06°59.7	-15.8'	57.9'
21	132°57.0	· · 05.0	147°01.0	13.1'	06°43.9	-15.8'	57.9'
22	147°57.2	04.0	161°33.1	13.1'	06°28.1	-15.9'	57.9'
23	162°57.3	03.1	176°05.2	13.1'	06°12.2	-15.9'	57.9'
SD = 16.1' d = -1.0'			SD = 15.6'				

Wed	GHA	Dec	GHA	ν	Dec	d	HP
0	177°57.5	S01°02.1	190°37.2	13.1'	S05°56.3	-16.0'	58.0'
1	192°57.7	01.1	205°09.3	13.1'	05°40.3	-16.0'	58.0'
2	207°57.9	01°00.1	219°41.3	13.0'	05°24.3	-16.1'	58.0'
3	222°58.1	00°59.1	234°13.4	13.0'	05°08.2	-16.1'	58.1'
4	237°58.2	58.1	248°45.4	13.0'	04°52.1	-16.1'	58.1'
5	252°58.4	57.1	263°17.5	13.0'	04°35.9	-16.2'	58.1'
6	267°58.6	S00°56.1	277°49.5	13.0'	S04°19.7	-16.2'	58.1'
7	282°58.8	55.1	292°21.5	13.0'	04°03.5	-16.3'	58.2'
8	297°59.0	54.2	306°53.5	13.0'	03°47.3	-16.3'	58.2'
9	312°59.2	· · 53.2	321°25.5	13.0'	03°31.0	-16.3'	58.2'
10	327°59.3	52.2	335°57.5	13.0'	03°14.7	-16.4'	58.3'
11	342°59.5	51.2	350°29.5	13.0'	02°58.3	-16.4'	58.3'
12	357°59.7	S00°50.2	5°01.4	12.9'	S02°41.9	-16.4'	58.3'
13	12°59.9	49.2	19°33.4	12.9'	02°25.5	-16.4'	58.3'
14	28°00.1	48.2	34°05.3	12.9'	02°09.1	-16.5'	58.4'
15	43°00.2	· · 47.2	48°37.2	12.9'	01°52.6	-16.5'	58.4'
16	58°00.4	46.2	63°09.1	12.9'	01°36.1	-16.5'	58.4'
17	73°00.6	45.3	77°41.0	12.8'	01°19.6	-16.5'	58.4'
18	88°00.8	S00°44.3	92°12.8	12.8'	S01°03.1	-16.6'	58.5'
19	103°01.0	43.3	106°44.7	12.8'	00°46.5	-16.6'	58.5'
20	118°01.1	42.3	121°16.5	12.8'	00°30.0	-16.6'	58.5'
21	133°01.3	· · 41.3	135°48.2	12.8'	S00°13.4	-16.6'	58.6'
22	148°01.5	40.3	150°20.0	12.7'	N00°03.2	16.6'	58.6'
23	163°01.7	39.3	164°51.7	12.7'	00°19.9	16.6'	58.6'
SD = 16.1' d = -1.0'			SD = 15.8'				

Thu	GHA	Dec	GHA	ν	Dec	d	HP
0	178°01.9	S00°38.3	179°23.4	12.7'	N00°36.5	16.6'	58.6'
1	193°02.1	37.3	193°55.1	12.6'	00°53.1	16.6'	58.7'
2	208°02.2	36.4	208°26.7	12.6'	01°09.8	16.7'	58.7'
3	223°02.4	· · 35.4	222°58.3	12.6'	01°26.4	16.7'	58.7'
4	238°02.6	34.4	237°29.9	12.5'	01°43.1	16.7'	58.7'
5	253°02.8	33.4	252°01.4	12.5'	01°59.8	16.7'	58.7'
6	268°03.0	S00°32.4	266°32.9	12.5'	N02°16.4	16.7'	58.8'
7	283°03.1	31.4	281°04.4	12.4'	02°33.1	16.7'	58.8'
8	298°03.3	30.4	295°35.8	12.4'	02°49.8	16.7'	58.8'
9	313°03.5	· · 29.4	310°07.2	12.4'	03°06.5	16.7'	58.8'
10	328°03.7	28.4	324°38.6	12.3'	03°23.1	16.7'	58.9'
11	343°03.9	27.4	339°09.9	12.3'	03°39.8	16.7'	58.9'
12	358°04.1	S00°26.5	353°41.2	12.2'	N03°56.4	16.7'	58.9'
13	13°04.2	25.5	8°12.4	12.2'	04°13.1	16.6'	58.9'
14	28°04.4	24.5	22°43.6	12.1'	04°29.7	16.6'	58.9'
15	43°04.6	· · 23.5	37°14.7	12.1'	04°46.4	16.6'	59.0'
16	58°04.8	22.5	51°45.8	12.0'	05°03.0	16.6'	59.0'
17	73°05.0	21.5	66°16.8	12.0'	05°19.6	16.6'	59.0'
18	88°05.2	S00°20.5	80°47.8	11.9'	N05°36.2	16.6'	59.0'
19	103°05.3	19.5	95°18.7	11.9'	05°52.8	16.6'	59.1'
20	118°05.5	18.5	109°49.6	11.8'	06°09.3	16.5'	59.1'
21	133°05.7	· · 17.6	124°20.5	11.8'	06°25.9	16.5'	59.1'
22	148°05.9	16.6	138°51.2	11.7'	06°42.4	16.5'	59.1'
23	163°06.1	15.6	153°22.0	11.7'	06°58.9	16.5'	59.1'
SD = 16.1' d = -1.0'			SD = 16.0'				

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

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

Day	Sun		Mer. Pass	Moon		Age 28-0 5-0%
	Eqn. of Time 00 ^h mm:ss	12 ^h mm:ss		Mer. Pass hh:mm	Upper Lower hh:mm	
17	08:27	08:19	12:08	10:53	23:16	
18	08:10	08:01	12:08	11:39	--:--	
19	07:53	07:44	12:08	12:26	00:03	

March 20, 21, 22 UT (Fri., Sat., Sun.)

	Aries			Venus			Mars			Jupiter			Saturn		
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	177°32.6	161°41.7	N05°47.2	192°08.3	S07°24.1	70°59.3	N22°55.8	172°59.0	S00°20.4						
1	192°35.0	176°41.3	48.5	207°09.0	23.4	86°01.6	55.8	188°01.1	20.2						
2	207°37.5	191°40.9	49.7	222°09.6	22.6	101°04.0	55.8	203°03.3	20.1						
3	222°40.0	206°40.6	· · 51.0	237°10.2	· · 21.8	116°06.4	· · 55.8	218°05.5	· · 20.0						
4	237°42.4	221°40.2	52.3	252°10.9	21.1	131°08.8	55.8	233°07.7	19.9						
5	252°44.9	236°39.8	53.5	267°11.5	20.3	146°11.2	55.8	248°09.9	19.7						
6	267°47.4	251°39.4	N05°54.8	282°12.2	S07°19.6	161°13.6	N22°55.8	263°12.0	S00°19.6						
7	282°49.8	266°39.0	56.0	297°12.8	18.8	176°16.0	55.8	278°14.2	19.5						
8	297°52.3	281°38.7	57.3	312°13.4	18.0	191°18.3	55.8	293°16.4	19.4						
9	312°54.8	296°38.3	· · 58.5	327°14.1	· · 17.3	206°20.7	· · 55.8	308°18.6	· · 19.2						
10	327°57.2	311°37.9	05°59.8	342°14.7	16.5	221°23.1	55.8	323°20.7	19.1						
11	342°59.7	326°37.5	06°01.1	357°15.3	15.7	236°25.5	55.8	338°22.9	19.0						
12	358°02.1	341°37.1	N06°02.3	12°16.0	S07°15.0	251°27.9	N22°55.8	353°25.1	S00°18.9						
13	13°04.6	356°36.8	03.6	27°16.6	14.2	266°30.3	55.8	8°27.3	18.7						
14	28°07.1	11°36.4	04.8	42°17.3	13.5	281°32.6	55.7	23°29.5	18.6						
15	43°09.5	26°36.0	· · 06.1	57°17.9	· · 12.7	296°35.0	· · 55.7	38°31.6	· · 18.5						
16	58°12.0	41°35.6	07.4	72°18.5	11.9	311°37.4	55.7	53°33.8	18.4						
17	73°14.5	56°35.2	08.6	87°19.2	11.2	326°39.8	55.7	68°36.0	18.3						
18	88°16.9	71°34.9	N06°09.9	102°19.8	S07°10.4	341°42.2	N22°55.7	83°38.2	S00°18.1						
19	103°19.4	86°34.5	11.1	117°20.5	09.6	356°44.5	55.7	98°40.3	18.0						
20	118°21.9	101°34.1	12.4	132°21.1	08.9	11°46.9	55.7	113°42.5	17.9						
21	133°24.3	116°33.7	· · 13.6	147°21.7	· · 08.1	26°49.3	· · 55.7	128°44.7	· · 17.8						
22	148°26.8	131°33.3	14.9	162°22.4	07.4	41°51.7	55.7	143°46.9	17.6						
23	163°29.2	146°33.0	16.2	177°23.0	06.6	56°54.1	55.7	158°49.1	17.5						
Mer.pass.	12:08	ν -0.4' d 1.3' m -3.92		ν 0.6' d -0.8' m 1.17		ν 2.4' d -0.0' m -2.29		ν 2.2' d -0.1' m 0.93							

	SHA		Dec
Alpheratz	357°34.1	29°14.0	
Ankaa	353°06.6	-42°09.9	
Schedar	349°30.5	56°40.9	
Diphda	348°46.6	-17°50.7	
Achernar	335°19.9	-57°06.3	
Hamal	327°50.4	23°35.2	
Polaris	313°52.2	89°22.7	
Acamar	315°11.3	-40°12.2	
Menkar	314°05.3	4°11.5	
Mirfak	308°27.1	49°57.4	
Aldebaran	290°38.6	16°33.7	
Rigel	281°03.0	-8°10.4	
Capella	280°20.5	46°01.6	
Bellatrix	278°21.9	6°22.3	
Elnath	278°00.7	28°37.8	
Alnilam	275°36.8	-1°11.2	
Betelgeuse	270°51.0	7°24.6	
Canopus	263°51.9	-52°42.8	
Sirius	258°25.3	-16°45.3	
Adhara	255°05.0	-29°00.7	
Procyon	244°49.7	5°09.4	
Pollux	243°15.9	27°57.8	
Avior	234°14.0	-59°35.9	
Suhail	222°45.3	-43°32.5	
Miaplacidus	221°37.4	-69°49.7	
Alphard	217°46.5	-8°46.5	
Regulus	207°33.1	11°50.2	
Dubhe	193°39.1	61°36.5	
Denebola	182°23.6	14°25.4	
Gienah	175°42.3	-17°41.4	
Acrux	172°58.3	-63°14.7	
Gacrux	171°50.0	-57°15.7	
Alioth	166°11.5	55°48.9	
Spica	158°21.0	-11°18.0	
Alkaid	152°50.8	49°10.7	
Hadar	148°34.1	-60°29.9	
Menkent	147°56.1	-36°30.0	
Arcturus	145°46.7	19°02.5	
Rigel Kent.	139°38.5	-60°56.5	
Kochab	137°18.9	74°02.5	
Zuben'ubi	136°54.7	-16°09.2	
Alphecca	126°02.7	26°37.3	
Antares	112°14.5	-26°29.4	
Atria	107°07.7	-69°04.2	
Sabik	102°01.6	-15°45.5	
Shaula	96°09.0	-37°07.3	
Rasalhague	95°57.6	12°32.2	
Eltanin	90°41.7	51°28.7	
Kaus Aust.	83°31.2	-34°22.3	
Vega	80°32.6	38°48.1	
Nunki	75°46.6	-26°15.8	
Altair	61°59.1	8°56.1	
Peacock	53°04.5	-56°38.9	
Deneb	49°25.4	45°22.2	
Enif	33°38.1	9°59.6	
Al Na'ir	27°32.1	-46°50.0	
Fomalhaut	15°13.8	-29°29.0	
Scheat	13°44.6	28°13.4	
Markab	13°29.2	15°20.7	

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	178°31.7	161°32.6	N06°17.4	192°23.7	S07°05.8	71°56.4	N22°55.7	173°51.2	S00°17.4
1	193°34.2	176°32.2	18.7	207°24.3	05.1	86°58.8	55.7	188°53.4	17.3
2	208°36.6	191°31.8	19.9	222°24.9	04.3	102°01.2	55.7	203°55.6	17.1
3	223°39.1	206°31.4	· · 21.2	237°25.6	· · 03.5	117°03.6	· · 55.7	218°57.8	· · 17.0
4	238°41.6	221°31.0	22.4	252°26.2	02.8	132°05.9	55.6	233°59.9	16.9
5	253°44.0	236°30.7	23.7	267°26.9	02.0	147°08.3	55.6	249°02.1	16.8
6	268°46.5	251°30.3	N06°24.9	282°27.5	S07°01.2	162°10.7	N22°55.6	264°04.3	S00°16.7
7	283°49.0	266°29.9	26.2	297°28.1	07°00.5	177°13.1	55.6	279°06.5	16.5
8	298°51.4	281°29.5	27.4	312°28.8	06°59.7	192°15.4	55.6	294°08.7	16.4
9	313°53.9	296°29.1	· · 28.7	327°29.4	· · 58.9	207°17.8	· · 55.6	309°10.8	· · 16.3
10	328°56.4	311°28.7	30.0	342°30.1	58.2	222°20.2	55.6	324°13.0	16.2
11	343°58.8	326°28.4	31.2	357°30.7	57.4	237°22.6	55.6	339°15.2	16.0
12	359°01.3	341°28.0	N06°32.5	12°31.4	S06°56.7	252°24.9	N22°55.6	354°17.4	S00°15.9
13	14°03.7	356°27.6	33.7	27°32.0	55.9	267°27.3	55.6	9°19.5	15.8
14	29°06.2	11°27.2	35.0	42°32.6	55.1	282°29.7	55.6	24°21.7	15.7
15	44°08.7	26°26.8	· · 36.2	57°33.3	· · 54.4	297°32.1	· · 55.6	39°23.9	· · 15.5
16	59°11.1	41°26.4	37.5	72°33.9	53.6	312°34.4	55.6	54°26.1	15.4
17	74°13.6	56°26.1	38.7	87°34.6	52.8	327°36.8	55.5	69°28.3	15.3
18	89°16.1	71°25.7	N06°40.0	102°35.2	S06°52.1	342°39.2	N22°55.5	84°30.4	S00°15.2
19	104°18.5	86°25.3	41.2	117°35.8	51.3	357°41.6	55.5	99°32.6	15.1
20	119°21.0	101°24.9	42.5	132°36.5	50.5	12°43.9	55.5	114°34.8	14.9
21	134°23.5	116°24.5	· · 43.7	147°37.1	· · 49.8	27°46.3	· · 55.5	129°37.0	· · 14.8
22	149°25.9	131°24.1	45.0	162°37.8	49.0	42°48.7	55.5	144°39.1	14.7
23	164°28.4	146°23.7	46.2	177°38.4	48.2	57°51.0	55.5	159°41.3	14.6
Mer.pass.	12:04	ν -0.4' d 1.3' m -3.92		ν 0.6' d -0.8' m 1.17		ν 2.4' d -0.0' m -2.28		ν 2.2' d -0.1' m 0.92	

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	179°30.9	161°23.3	N06°47.5	192°39.1	S06°47.5	72°53.4	N22°55.5	174°43.5	S00°14.4
1	194°33.3	176°23.0	48.7	207°39.7	46.7	87°55.8	55.5	189°45.7	14.3
2	209°35.8	191°22.6	50.0	222°40.3	45.9	102°58.1	55.5	204°47.9	14.2
3	224°38.2	206°22.2	· · 51.2	237°41.0	· · 45.2	118°00.5	· · 55.5	219°50.0	· · 14.1
4	239°40.7	221°21.8	52.5	252°41.6	44.4	133°02.9	55.5	234°52.2	13.9
5	254°43.2	236°21.4	53.7	267°42.3	43.6	148°05.2	55.5	249°54.4	13.8
6	269°45.6	251°21.0	N06°55.0	282°42.9	S06°42.9	163°07.6	N22°55.4	264°56.6	S00°13.7
7	284°48.1	266°20.6	56.2	297°43.6	42.1	178°10.0	55.4	279°58.7	13.6
8	299°50.6	281°20.3	57.5	312°44.2	41.3	193°12.4	55.4	295°00.9	13.5
9	314°53.0	296°19.9	06°58.7	327°44.9	· · 40.6	208°14.7	· · 55.4	310°03.1	· · 13.3
10	329°55.5	311°19.5	07°00.0	342°45.5	39.8	223°17.1	55.4	325°05.3	13.2
11	344°58.0	326°19.1	01.2	357°46.1	39.0	238°19.4	55.4	340°07.5	13.1
12	0°00.4	341°18.7	N07°02.4	12°46.8	S06°38.3	253°21.8	N22°55.4	355°09.6	S00°13.0
13	15°02.9	356°18.3	03.7	27°47.4	37.5	268°24.2	55.4	10°11.8	12.8
14	30°05.3	11°17.9	04.9	42°48.1	36.7	283°26.5	55.4	25°14.0	12.7
15	45°07.8	26°17.5	· · 06.2	57°48.7	· · 36.0	298°28.9	· · 55.4	40°16.2	· · 12.6
16	60°10.3	41°17.1	07.4	72°49.4	35.2	313°31.3	55.4	55°18.3	12.5
17	75°12.7	56°16.8	08.7	87°50.0	34.4	328°33.6	55.4	70°20.5	12.3
18	90°15.2	71°16.4	N07°09.9	102°50.7	S06°33.7	343°36.0	N22°55.3	85°22.7	S00°12.2
19	105°17.7	86°16.0	11.2	117°51.3	32.9	358°38.4	55.3	100°24.9	12.1
20	120°20.1	101°15.6	12.4	132°51.9	32.1	13°40.7	55.3	115°27.1	12.0
21	135°22.6	116°15.2	· · 13.7	147°52.6	· · 31.4	28°43.1	· · 55.3	130°29.2	· · 11.9
22	150°25.1	131°14.8	14.9	162°53.2	30.6	43°45.5	55.3	145°31.4	11.7
23	165°27.5	146°14.4	16.1	177°53.9	29.8	58°47.8	55.3	160°33.6	11.6
Mer.pass.	12:00	ν -0.4' d 1.2' m -3.92		ν 0.6' d -0.8' m 1.17		ν 2.4' d -0.0' m -2.28		ν 2.2' d -0.1' m 0.92	

Mar 20 Fri	SHA	Mer.pass
Venus	344°09.1	13:14
Mars	14°35.8	11:11
Jupiter	253°26.7	19:13
Saturn	355°26.4	12:26

h	Sun			Moon				
	GHA	Dec		GHA	ν	Dec	d	HP
0	178°06.3	S00°14.6		167°52.6	11.6'	N07°15.3	16.4'	59.1'
1	193°06.4	13.6		182°23.2	11.6'	07°31.8	16.4'	59.2'
2	208°06.6	12.6		196°53.8	11.5'	07°48.2	16.4'	59.2'
3	223°06.8	· · 11.6		211°24.3	11.4'	08°04.5	16.3'	59.2'
4	238°07.0	10.6		225°54.7	11.4'	08°20.9	16.3'	59.2'
5	253°07.2	09.6		240°25.1	11.3'	08°37.2	16.3'	59.2'
6	268°07.4	S00°08.7		254°55.4	11.2'	N08°53.5	16.2'	59.3'
7	283°07.5	07.7		269°25.6	11.2'	09°09.7	16.2'	59.3'
8	298°07.7	06.7		283°55.8	11.1'	09°25.9	16.2'	59.3'
9	313°07.9	· · 05.7		298°25.9	11.0'	09°42.0	16.1'	59.3'
10	328°08.1	04.7		312°56.0	11.0'	09°58.2	16.1'	59.3'
11	343°08.3	03.7		327°25.9	10.9'	10°14.2	16.0'	59.3'
12	358°08.5	S00°02.7		341°55.8	10.8'	N10°30.2	16.0'	59.3'
13	13°08.6	01.7		356°25.7	10.8'	10°46.2	15.9'	59.4'
14	28°08.8	S00°00.8		10°55.4	10.7'	11°02.1	15.9'	59.4'
15	43°09.0	N00°00.2		25°25.1	10.6'	11°18.0	15.8'	59.4'
16	58°09.2	01.2		39°54.7	10.5'	11°33.8	15.8'	59.4'
17	73°09.4	02.2		54°24.2	10.5'	11°49.6	15.7'	59.4'
18	88°09.6	N00°03.2		68°53.7	10.4'	N12°05.3	15.6'	59.4'
19	103°09.7	04.2		83°23.1	10.3'	12°20.9	15.6'	59.4'
20	118°09.9	05.2		97°52.4	10.2'	12°36.5	15.5'	59.5'
21	133°10.1	· · 06.2		112°21.6	10.1'	12°52.0	15.5'	59.5'
22	148°10.3	07.2		126°50.8	10.1'	13°07.5	15.4'	59.5'
23	163°10.5	08.1		141°19.8	10.0'	13°22.9	15.3'	59.5'
SD = 16.1'		$d = -1.0'$		SD = 16.1'				

Sat	GHA	Dec	GHA	ν	Dec	d	HP
0	178°10.7	N00°09.1	155°48.8	9.9'	N13°38.2	15.2'	59.5'
1	193°10.8	10.1	170°17.7	9.8'	13°53.4	15.2'	59.5'
2	208°11.0	11.1	184°46.5	9.7'	14°08.6	15.1'	59.5'
3	223°11.2	· · 12.1	199°15.2	9.6'	14°23.7	15.0'	59.5'
4	238°11.4	13.1	213°43.9	9.6'	14°38.7	14.9'	59.5'
5	253°11.6	14.1	228°12.4	9.5'	14°53.7	14.9'	59.6'
6	268°11.8	N00°15.1	242°40.9	9.4'	N15°08.6	14.8'	59.6'
7	283°12.0	16.0	257°09.3	9.3'	15°23.3	14.7'	59.6'
8	298°12.1	17.0	271°37.6	9.2'	15°38.0	14.6'	59.6'
9	313°12.3	· · 18.0	286°05.8	9.1'	15°52.7	14.5'	59.6'
10	328°12.5	19.0	300°33.9	9.0'	16°07.2	14.4'	59.6'
11	343°12.7	20.0	315°02.0	8.9'	16°21.6	14.4'	59.6'
12	358°12.9	N00°21.0	329°29.9	8.8'	N16°36.0	14.3'	59.6'
13	13°13.1	22.0	343°57.7	8.8'	16°50.3	14.2'	59.6'
14	28°13.3	23.0	358°25.5	8.7'	17°04.4	14.1'	59.6'
15	43°13.4	· · 24.0	12°53.1	8.6'	17°18.5	14.0'	59.6'
16	58°13.6	24.9	27°20.7	8.5'	17°32.5	13.9'	59.6'
17	73°13.8	25.9	41°48.2	8.4'	17°46.3	13.8'	59.6'
18	88°14.0	N00°26.9	56°15.5	8.3'	N18°00.1	13.7'	59.6'
19	103°14.2	27.9	70°42.8	8.2'	18°13.8	13.6'	59.7'
20	118°14.4	28.9	85°10.0	8.1'	18°27.3	13.4'	59.7'
21	133°14.6	· · 29.9	99°37.1	8.0'	18°40.8	13.3'	59.7'
22	148°14.7	30.9	114°04.1	7.9'	18°54.1	13.2'	59.7'
23	163°14.9	31.9	128°31.0	7.8'	19°07.3	13.1'	59.7'
SD = 16.1'		$d = 1.0'$	SD = 16.2'				

Sun	GHA	Dec	GHA	ν	Dec	d	HP
0	178°15.1	N00°32.8	142°57.8	7.7'	N19°20.4	13.0'	59.7'
1	193°15.3	33.8	157°24.5	7.6'	19°33.4	12.9'	59.7'
2	208°15.5	34.8	171°51.1	7.5'	19°46.3	12.8'	59.7'
3	223°15.7	· · 35.8	186°17.6	7.4'	19°59.1	12.6'	59.7'
4	238°15.9	36.8	200°44.0	7.3'	20°11.7	12.5'	59.7'
5	253°16.0	37.8	215°10.4	7.2'	20°24.2	12.4'	59.7'
6	268°16.2	N00°38.8	229°36.6	7.1'	N20°36.6	12.3'	59.7'
7	283°16.4	39.8	244°02.7	7.0'	20°48.9	12.1'	59.7'
8	298°16.6	40.7	258°28.7	6.9'	21°01.0	12.0'	59.7'
9	313°16.8	· · 41.7	272°54.6	6.8'	21°13.0	11.9'	59.7'
10	328°17.0	42.7	287°20.5	6.7'	21°24.9	11.7'	59.7'
11	343°17.2	43.7	301°46.2	6.6'	21°36.6	11.6'	59.7'
12	358°17.3	N00°44.7	316°11.8	6.5'	N21°48.3	11.5'	59.7'
13	13°17.5	45.7	330°37.4	6.4'	21°59.7	11.3'	59.7'
14	28°17.7	46.7	345°02.8	6.3'	22°11.0	11.2'	59.7'
15	43°17.9	· · 47.6	359°28.2	6.3'	22°22.2	11.0'	59.7'
16	58°18.1	48.6	13°53.4	6.2'	22°33.3	10.9'	59.7'
17	73°18.3	49.6	28°18.6	6.1'	22°44.2	10.8'	59.7'
18	88°18.5	N00°50.6	42°43.7	6.0'	N22°54.9	10.6'	59.7'
19	103°18.6	51.6	57°08.6	5.9'	23°05.5	10.5'	59.7'
20	118°18.8	52.6	71°33.5	5.8'	23°16.0	10.3'	59.7'
21	133°19.0	· · 53.6	85°58.3	5.7'	23°26.3	10.2'	59.7'
22	148°19.2	54.6	100°23.0	5.6'	23°36.5	10.0'	59.7'
23	163°19.4	55.5	114°47.6	5.5'	23°46.5	9.8'	59.7'
SD = 16.0'		$d = 1.0'$	SD = 16.3'				

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

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

Day	Sun		Mer. Pass	Moon		Age 1-3
	Eqn. of Time	12h		Mer. Pass	Lower	
20	07:35	07:26	12:07	13:15	00:50	
21	07:17	07:08	12:07	14:07	01:40	
22	07:00	06:51	12:07	15:02	02:34	