

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	249°27.6'	180°33.1' N 22°01.3'	217°03.0' N 10°57.5'	245°33.9' N 0°24.9'	281°33.6' S 14°09.4'	243°58.1' N 0°28.0'						
1	264°30.0'	195°33.0' N 22°01.7'	232°02.6' N 10°58.5'	260°36.0' N 0°25.0'	296°36.0' S 14°09.4'	258°58.8' N 0°28.7'						
2	279°32.5'	210°32.9' N 22°02.0'	247°02.3' N 10°59.5'	275°38.1' N 0°25.2'	311°38.4' S 14°09.4'	273°59.6' N 0°29.4'						
3	294°34.9'	225°32.8' N 22°02.4'	262°01.9' N 11°00.5'	290°40.2' N 0°25.3'	326°40.9' S 14°09.4'	289°00.4' N 0°30.1'						
4	309°37.4'	240°32.7' N 22°02.7'	277°01.6' N 11°01.4'	305°42.3' N 0°25.5'	341°43.3' S 14°09.4'	304°01.1' N 0°30.9'						
5	324°39.9'	255°32.6' N 22°03.0'	292°01.2' N 11°02.4'	320°44.4' N 0°25.6'	356°45.8' S 14°09.4'	319°01.9' N 0°31.6'						
6	339°42.3'	270°32.5' N 22°03.4'	307°00.9' N 11°03.4'	335°46.5' N 0°25.8'	11°48.2' S 14°09.4'	334°02.6' N 0°32.3'						
7	354°44.8'	285°32.5' N 22°03.7'	322°00.5' N 11°04.4'	350°48.6' N 0°25.9'	26°50.7' S 14°09.4'	349°03.4' N 0°33.0'						
8	9°47.3'	300°32.4' N 22°04.1'	337°00.2' N 11°05.4'	5°50.7' N 0°26.1'	41°53.1' S 14°09.4'	4°04.2' N 0°33.7'						
9	24°49.7'	315°32.3' N 22°04.4'	351°59.8' N 11°06.4'	20°52.8' N 0°26.2'	56°55.6' S 14°09.4'	19°04.9' N 0°34.5'						
10	39°52.2'	330°32.2' N 22°04.7'	6°59.5' N 11°07.4'	35°54.9' N 0°26.4'	71°58.0' S 14°09.4'	34°05.7' N 0°35.2'						
11	54°54.7'	345°32.1' N 22°05.1'	21°59.1' N 11°08.4'	50°57.0' N 0°26.5'	87°00.5' S 14°09.4'	49°06.4' N 0°35.9'						
12	69°57.1'	0°32.0' N 22°05.4'	36°58.8' N 11°09.3'	65°59.1' N 0°26.7'	102°02.9' S 14°09.4'	64°07.2' N 0°36.6'						
13	84°59.6'	15°31.9' N 22°05.7'	51°58.4' N 11°10.3'	81°01.2' N 0°26.8'	117°05.4' S 14°09.4'	79°08.0' N 0°37.4'						
14	100°02.1'	30°31.8' N 22°06.1'	66°58.1' N 11°11.3'	96°03.3' N 0°27.0'	132°07.8' S 14°09.4'	94°08.7' N 0°38.1'						
15	115°04.5'	45°31.7' N 22°06.4'	81°57.7' N 11°12.3'	111°05.4' N 0°27.1'	147°10.3' S 14°09.4'	109°09.5' N 0°38.8'						
16	130°07.0'	60°31.6' N 22°06.7'	96°57.4' N 11°13.3'	126°07.5' N 0°27.3'	162°12.7' S 14°09.4'	124°10.2' N 0°39.5'						
17	145°09.4'	75°31.5' N 22°07.1'	111°57.0' N 11°14.3'	141°09.6' N 0°27.4'	177°15.2' S 14°09.4'	139°11.0' N 0°40.2'						
18	160°11.9'	90°31.4' N 22°07.4'	126°56.7' N 11°15.3'	156°11.7' N 0°27.6'	192°17.6' S 14°09.4'	154°11.8' N 0°41.0'						
19	175°14.4'	105°31.3' N 22°07.7'	141°56.3' N 11°16.2'	171°13.8' N 0°27.7'	207°20.1' S 14°09.4'	169°12.5' N 0°41.7'						
20	190°16.8'	120°31.2' N 22°08.1'	156°55.9' N 11°17.2'	186°15.9' N 0°27.8'	222°22.5' S 14°09.4'	184°13.3' N 0°42.4'						
21	205°19.3'	135°31.1' N 22°08.4'	171°55.6' N 11°18.2'	201°18.0' N 0°28.0'	237°25.0' S 14°09.4'	199°14.0' N 0°43.1'						
22	220°21.8'	150°31.0' N 22°08.7'	186°55.2' N 11°19.2'	216°20.1' N 0°28.1'	252°27.4' S 14°09.4'	214°14.8' N 0°43.8'						
23	235°24.2'	165°30.9' N 22°09.1'	201°54.9' N 11°20.2'	231°22.2' N 0°28.3'	267°29.9' S 14°09.4'	229°15.6' N 0°44.6'						
		SD 15.8' d 0.3'	v -0.4' d 1.0'	v 2.1' d 0.1'	v 2.4' d -0.0'	v 0.8' d 0.7'						
Mer. pass.		11 h 57 m 53 s	9 h 32 m	7 h 37 m	5 h 13 m	7 h 44 m						

h	Moon				Lunar distance							
	GHA	dec	v	d	HP	-Spica	-Arcturus	-Regulus	-Procyon	-Pollux	+Capella	+Rigel
0	162°39.5'	N 26°23.8'	10.5'	2.8'	54.0'	117°05.1'	111°37.9'	63°01.1'	34°22.0'	26°32.6'		
1	177°09.0'	N 26°26.7'	10.5'	2.7'	54.0'	116°35.6'	111°12.3'	62°31.6'	33°59.0'	26°03.1'		
2	191°38.5'	N 26°29.4'	10.5'	2.6'	54.0'	116°06.0'	110°46.7'	62°02.1'	33°36.1'	25°33.6'		
3	206°07.9'	N 26°31.9'	10.4'	2.4'	54.0'	115°36.5'	110°21.1'	61°32.6'	33°13.4'	25°04.0'		
4	220°37.4'	N 26°34.4'	10.4'	2.3'	54.0'	115°07.0'	109°55.5'	61°03.1'	32°50.8'	24°34.5'		
5	235°06.8'	N 26°36.7'	10.4'	2.2'	54.0'	114°37.5'	109°29.9'	60°33.6'	32°28.5'	24°05.0'		
6	249°36.2'	N 26°38.9'	10.4'	2.1'	54.0'	114°08.0'	109°04.2'	60°04.1'	32°06.3'	23°35.5'		
7	264°05.7'	N 26°40.9'	10.4'	1.9'	53.9'	113°38.5'	108°38.5'	59°34.6'	31°44.2'	23°06.0'		
8	278°35.0'	N 26°42.9'	10.4'	1.8'	53.9'	113°09.0'	108°12.8'	59°05.1'	31°22.4'	22°36.5'		
9	293°04.4'	N 26°44.7'	10.4'	1.7'	53.9'	112°39.5'	107°47.1'	58°35.6'	31°00.8'	22°07.0'		
10	307°33.8'	N 26°46.4'	10.4'	1.5'	53.9'	112°10.0'	107°21.4'	58°06.2'	30°39.4'	21°37.6'		
11	322°03.1'	N 26°47.9'	10.3'	1.4'	53.9'	111°40.5'	106°55.7'	57°36.7'	30°18.2'	21°08.1'		
12	336°32.5'	N 26°49.3'	10.3'	1.3'	53.9'	111°11.0'	106°29.9'	57°07.3'	29°57.2'	20°38.7'		
13	351°01.8'	N 26°50.6'	10.3'	1.2'	53.9'	110°41.5'	106°04.2'	56°37.8'	29°36.4'	20°09.3'		
14	5°31.2'	N 26°51.8'	10.3'	1.0'	53.9'	110°12.0'	105°38.4'	56°08.4'	29°15.9'	19°39.9'		
15	20°00.5'	N 26°52.8'	10.3'	0.9'	53.9'	109°42.6'	105°12.6'	55°39.0'	28°55.6'	19°10.5'		
16	34°29.8'	N 26°53.7'	10.3'	0.8'	53.9'	109°13.1'	104°46.8'	55°09.5'	28°35.5'	18°41.1'		
17	48°59.1'	N 26°54.5'	10.3'	0.6'	53.9'	108°43.6'	104°21.0'	54°40.1'	28°15.7'	18°11.7'		
18	63°28.4'	N 26°55.2'	10.3'	0.5'	53.9'	108°14.2'	103°55.1'	54°10.7'	27°56.2'	17°42.3'		
19	77°57.7'	N 26°55.7'	10.3'	0.4'	53.9'	107°44.7'	103°29.3'	53°41.3'	27°36.9'	17°13.0'	23°41.9'	39°22.2'
20	92°27.0'	N 26°56.1'	10.3'	0.3'	53.9'	107°15.2'	103°03.4'	53°11.9'	27°18.0'	16°43.7'	23°57.2'	39°37.2'
21	106°56.4'	N 26°56.3'	10.3'	0.1'	53.9'	106°45.8'	102°37.6'	52°42.5'	26°59.3'	16°14.3'	24°13.0'	39°52.5'
22	121°25.7'	N 26°56.4'	10.3'	0.0'	53.9'	106°16.3'	102°11.7'	52°13.1'	26°40.9'	15°45.1'	24°29.2'	40°08.0'
23	135°55.0'	N 26°56.4'	10.3'	-0.1'	53.9'	105°46.9'	101°45.8'	51°43.7'	26°22.9'	15°15.8'	24°45.7'	40°23.7'
Mer. pass.												

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.9'	S 29°30.2'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.8'	N 7°24.6'
Deneb	+1.2	49°27.0'	N 45°21.3'	Acrux	+0.8	173°02.2'	S 63°13.6'	Capella	+0.1	280°25.6'	N 46°01.2'
Altair	+0.8	62°01.8'	N 8°55.5'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.3'	S 8°10.6'
Vega	+0.0	80°34.3'	N 38°48.1'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.5'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.0'	Polaris	+2.0	315°29.2'	N 89°21.3'
Rigil Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.3'	Achernar	+0.5	335°22.3'	S 57°07.3'
Arcturus	-0.1	145°49.6'	N 19°04.0'	Sirius	-1.4	258°28.5'	S 16°44.9'				
Hadar	+0.6	148°38.5'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.6'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	250°26.7'	180°30.8'	N 22°09.4'	216°54.5'	N 11°21.2'	246°24.3'	N 0°28.4'	282°32.3'	S 14°09.4'	244°16.3'	N 0°45.3'	
1	265°29.2'	195°30.7'	N 22°09.7'	231°54.2'	N 11°22.1'	261°26.4'	N 0°28.6'	297°34.8'	S 14°09.5'	259°17.1'	N 0°46.0'	
2	280°31.6'	210°30.6'	N 22°10.0'	246°53.8'	N 11°23.1'	276°28.5'	N 0°28.7'	312°37.2'	S 14°09.5'	274°17.9'	N 0°46.7'	
3	295°34.1'	225°30.5'	N 22°10.4'	261°53.4'	N 11°24.1'	291°30.6'	N 0°28.9'	327°39.7'	S 14°09.5'	289°18.6'	N 0°47.4'	
4	310°36.6'	240°30.4'	N 22°10.7'	276°53.1'	N 11°25.1'	306°32.7'	N 0°29.0'	342°42.1'	S 14°09.5'	304°19.4'	N 0°48.2'	
5	325°39.0'	255°30.3'	N 22°11.0'	291°52.7'	N 11°26.1'	321°34.8'	N 0°29.2'	357°44.6'	S 14°09.5'	319°20.1'	N 0°48.9'	
6	340°41.5'	270°30.2'	N 22°11.3'	306°52.4'	N 11°27.1'	336°36.9'	N 0°29.3'	12°47.0'	S 14°09.5'	334°20.9'	N 0°49.6'	
7	355°43.9'	285°30.1'	N 22°11.7'	321°52.0'	N 11°28.0'	351°39.0'	N 0°29.5'	27°49.5'	S 14°09.5'	349°21.7'	N 0°50.3'	
8	10°46.4'	300°30.0'	N 22°12.0'	336°51.7'	N 11°29.0'	6°41.1'	N 0°29.6'	42°51.9'	S 14°09.5'	4°22.4'	N 0°51.1'	
9	25°48.9'	315°29.9'	N 22°12.3'	351°51.3'	N 11°30.0'	21°43.2'	N 0°29.8'	57°54.4'	S 14°09.5'	19°23.2'	N 0°51.8'	
10	40°51.3'	330°29.8'	N 22°12.6'	6°50.9'	N 11°31.0'	36°45.3'	N 0°29.9'	72°56.8'	S 14°09.5'	34°23.9'	N 0°52.5'	
11	55°53.8'	345°29.7'	N 22°12.9'	21°50.6'	N 11°31.9'	51°47.4'	N 0°30.0'	87°59.3'	S 14°09.5'	49°24.7'	N 0°53.2'	
12	70°56.3'	0°29.6'	N 22°13.3'	36°50.2'	N 11°32.9'	66°49.5'	N 0°30.2'	103°01.7'	S 14°09.5'	64°25.5'	N 0°53.9'	
13	85°58.7'	15°29.5'	N 22°13.6'	51°49.9'	N 11°33.9'	81°51.6'	N 0°30.3'	118°04.2'	S 14°09.5'	79°26.2'	N 0°54.7'	
14	101°01.2'	30°29.4'	N 22°13.9'	66°49.5'	N 11°34.9'	96°53.7'	N 0°30.5'	133°06.6'	S 14°09.5'	94°27.0'	N 0°55.4'	
15	116°03.7'	45°29.3'	N 22°14.2'	81°49.1'	N 11°35.9'	111°55.8'	N 0°30.6'	148°09.1'	S 14°09.5'	109°27.8'	N 0°56.1'	
16	131°06.1'	60°29.2'	N 22°14.5'	96°48.8'	N 11°36.8'	126°57.9'	N 0°30.8'	163°11.5'	S 14°09.5'	124°28.5'	N 0°56.8'	
17	146°08.6'	75°29.1'	N 22°14.8'	111°48.4'	N 11°37.8'	142°00.0'	N 0°30.9'	178°14.0'	S 14°09.5'	139°29.3'	N 0°57.5'	
18	161°11.0'	90°29.0'	N 22°15.2'	126°48.0'	N 11°38.8'	157°02.1'	N 0°31.1'	193°16.4'	S 14°09.5'	154°30.0'	N 0°58.3'	
19	176°13.5'	105°28.9'	N 22°15.5'	141°47.7'	N 11°39.8'	172°04.2'	N 0°31.2'	208°18.9'	S 14°09.5'	169°30.8'	N 0°59.0'	
20	191°16.0'	120°28.8'	N 22°15.8'	156°47.3'	N 11°40.7'	187°06.3'	N 0°31.4'	223°21.3'	S 14°09.5'	184°31.6'	N 0°59.7'	
21	206°18.4'	135°28.7'	N 22°16.1'	171°47.0'	N 11°41.7'	202°08.4'	N 0°31.5'	238°23.8'	S 14°09.5'	199°32.3'	N 1°00.4'	
22	221°20.9'	150°28.6'	N 22°16.4'	186°46.6'	N 11°42.7'	217°10.5'	N 0°31.6'	253°26.2'	S 14°09.5'	214°33.1'	N 1°01.1'	
23	236°23.4'	165°28.5'	N 22°16.7'	201°46.2'	N 11°43.7'	232°12.6'	N 0°31.8'	268°28.7'	S 14°09.5'	229°33.9'	N 1°01.8'	
		SD 15.8' d 0.3'		v -0.4' d 1.0'		v 2.1' d 0.1'		v 2.5' d -0.0'		v 0.8' d 0.7'		
Mer. pass.		11 h 58 m 2 s		9 h 33 m		7 h 33 m		5 h 9 m		7 h 43 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Hadar	-Arcturus	-Regulus	-Procyon	-Pollux	+Betelgeuse	+Capella	+Rigel
0	150°24.3'	N 26°56.3'	10.3'	-0.3'	53.9'		101°19.9'	51°14.3'	26°05.2'	14°46.5'		25°02.6'	40°39.6'
1	164°53.6'	N 26°56.1'	10.3'	-0.4'	53.9'		100°54.0'	50°44.9'	25°47.8'	14°17.3'	22°22.3'	25°19.9'	40°55.8'
2	179°22.9'	N 26°55.7'	10.3'	-0.5'	53.9'		100°28.1'	50°15.6'	25°30.7'	13°48.1'	22°37.6'	25°37.6'	41°12.1'
3	193°52.3'	N 26°55.2'	10.3'	-0.6'	53.9'		100°02.2'	49°46.2'	25°14.1'	13°18.9'	22°53.3'	25°55.5'	41°28.7'
4	208°21.6'	N 26°54.5'	10.4'	-0.8'	53.9'		99°36.2'	49°16.8'	24°57.7'	12°49.7'	23°09.5'	26°13.8'	41°45.4'
5	222°51.0'	N 26°53.7'	10.4'	-0.9'	53.9'		99°10.3'	48°47.5'	24°41.8'	12°20.6'	23°26.1'	26°32.4'	42°02.3'
6	237°20.3'	N 26°52.8'	10.4'	-1.0'	53.9'		98°44.4'	48°18.1'	24°26.3'	11°51.5'	23°43.0'	26°51.3'	42°19.4'
7	251°49.7'	N 26°51.8'	10.4'	-1.2'	53.9'		98°18.4'	47°48.7'		11°22.5'	24°00.4'	27°10.5'	42°36.7'
8	266°19.1'	N 26°50.6'	10.4'	-1.3'	53.9'		97°52.4'	47°19.4'		10°53.5'	24°18.1'	27°30.0'	42°54.2'
9	280°48.5'	N 26°49.4'	10.4'	-1.4'	53.9'		97°26.5'	46°50.0'		10°24.5'	24°36.2'	27°49.8'	43°11.8'
10	295°17.9'	N 26°47.9'	10.4'	-1.5'	53.9'		97°00.5'	46°20.7'		9°55.6'	24°54.6'	28°09.8'	43°29.6'
11	309°47.3'	N 26°46.4'	10.4'	-1.7'	53.9'		96°34.5'	45°51.4'		9°26.8'	25°13.4'	28°30.1'	43°47.6'
12	324°16.8'	N 26°44.7'	10.5'	-1.8'	53.9'		96°08.5'	45°22.0'		8°58.0'	25°32.4'	28°50.6'	44°05.8'
13	338°46.2'	N 26°42.9'	10.5'	-1.9'	53.9'	119°55.2'	95°42.5'	44°52.7'		8°29.3'	25°51.8'	29°11.3'	44°24.1'
14	353°15.7'	N 26°41.0'	10.5'	-2.1'	53.9'	119°37.3'	95°16.5'	44°23.4'		8°00.8'	26°11.5'	29°32.3'	44°42.6'
15	7°45.2'	N 26°38.9'	10.5'	-2.2'	53.9'	119°19.4'	94°50.5'	43°54.0'		7°32.3'	26°31.4'	29°53.5'	45°01.2'
16	22°14.7'	N 26°36.8'	10.5'	-2.3'	53.9'	119°01.4'	94°24.5'	43°24.7'		7°04.0'	26°51.6'	30°14.9'	45°20.0'
17	36°44.2'	N 26°34.4'	10.6'	-2.4'	53.9'	118°43.3'	93°58.5'	42°55.4'		6°35.9'	27°12.1'	30°36.5'	45°38.9'
18	51°13.8'	N 26°32.0'	10.6'	-2.6'	53.9'	118°25.0'	93°32.4'	42°26.1'		6°08.0'	27°32.9'	30°58.3'	45°58.0'
19	65°43.4'	N 26°29.5'	10.6'	-2.7'	53.9'	118°06.8'	93°06.4'	41°56.8'		5°40.4'	27°53.9'	31°20.4'	46°17.2'
20	80°13.0'	N 26°26.8'	10.6'	-2.8'	54.0'	117°48.4'	92°40.4'	41°27.4'		5°13.2'	28°15.1'	31°42.5'	46°36.6'
21	94°42.6'	N 26°24.0'	10.7'	-2.9'	54.0'	117°29.9'	92°14.3'	40°58.1'		4°46.3'	28°36.5'	32°04.9'	46°56.1'
22	109°12.2'	N 26°21.0'	10.7'	-3.1'	54.0'	117°11.4'	91°48.3'	40°28.8'		4°20.1'	28°58.2'	32°27.5'	47°15.7'
23	123°41.9'	N 26°18.0'	10.7'	-3.2'	54.0'	116°52.8'	91°22.3'	39°59.5'			29°20.1'	32°50.2'	47°35.5'
Mer. pass.		14 h 28 m SD 14.7'		phase 6%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.9'	S 29°30.2'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.8'	N 7°24.6'
Deneb	+1.2	49°27.0'	N 45°21.3'	Acrux	+0.8	173°02.2'	S 63°13.6'	Capella	+0.1	280°25.6'	N 46°01.2'
Altair	+0.8	62°01.8'	N 8°55.5'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.3'	S 8°10.6'
Vega	+0.0	80°34.3'	N 38°48.1'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.5'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.0'	Polaris	+2.0	315°28.9'	N 89°21.3'
Rigel Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.3'	Achernar	+0.5	335°22.3'	S 57°07.3'
Arcturus	-0.1	145°49.6'	N 19°04.0'	Sirius	-1.4	258°28.5'	S 16°44.9'				
Hadar	+0.6	148°38.5'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.6'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	251°25.8'	180°28.4'	N 22°17.0'	216°45.9'	N 11°44.6'	247°14.7'	N 0°31.9'	283°31.1'	S 14°09.5'	244°34.6'	N 1°02.6'	
1	266°28.3'	195°28.3'	N 22°17.3'	231°45.5'	N 11°45.6'	262°16.8'	N 0°32.1'	298°33.6'	S 14°09.5'	259°35.4'	N 1°03.3'	
2	281°30.8'	210°28.2'	N 22°17.7'	246°45.1'	N 11°46.6'	277°19.0'	N 0°32.2'	313°36.1'	S 14°09.6'	274°36.1'	N 1°04.0'	
3	296°33.2'	225°28.0'	N 22°18.0'	261°44.8'	N 11°47.6'	292°21.1'	N 0°32.4'	328°38.5'	S 14°09.6'	289°36.9'	N 1°04.7'	
4	311°35.7'	240°27.9'	N 22°18.3'	276°44.4'	N 11°48.5'	307°23.2'	N 0°32.5'	343°41.0'	S 14°09.6'	304°37.7'	N 1°05.4'	
5	326°38.2'	255°27.8'	N 22°18.6'	291°44.0'	N 11°49.5'	322°25.3'	N 0°32.7'	358°43.4'	S 14°09.6'	319°38.4'	N 1°06.2'	
6	341°40.6'	270°27.7'	N 22°18.9'	306°43.7'	N 11°50.5'	337°27.4'	N 0°32.8'	13°45.9'	S 14°09.6'	334°39.2'	N 1°06.9'	
7	356°43.1'	285°27.6'	N 22°19.2'	321°43.3'	N 11°51.4'	352°29.5'	N 0°33.0'	28°48.3'	S 14°09.6'	349°40.0'	N 1°07.6'	
8	11°45.5'	300°27.5'	N 22°19.5'	336°42.9'	N 11°52.4'	7°31.6'	N 0°33.1'	43°50.8'	S 14°09.6'	4°40.7'	N 1°08.3'	
9	26°48.0'	315°27.4'	N 22°19.8'	351°42.5'	N 11°53.4'	22°33.7'	N 0°33.2'	58°53.2'	S 14°09.6'	19°41.5'	N 1°09.0'	
10	41°50.5'	330°27.3'	N 22°20.1'	6°42.2'	N 11°54.4'	37°35.8'	N 0°33.4'	73°55.7'	S 14°09.6'	34°42.3'	N 1°09.8'	
11	56°52.9'	345°27.2'	N 22°20.4'	21°41.8'	N 11°55.3'	52°37.9'	N 0°33.5'	88°58.1'	S 14°09.6'	49°43.0'	N 1°10.5'	
12	71°55.4'	0°27.1'	N 22°20.7'	36°41.4'	N 11°56.3'	67°40.0'	N 0°33.7'	104°00.6'	S 14°09.6'	64°43.8'	N 1°11.2'	
13	86°57.9'	15°27.0'	N 22°21.0'	51°41.1'	N 11°57.3'	82°42.1'	N 0°33.8'	119°03.1'	S 14°09.6'	79°44.5'	N 1°11.9'	
14	102°00.3'	30°26.9'	N 22°21.3'	66°40.7'	N 11°58.2'	97°44.2'	N 0°34.0'	134°05.5'	S 14°09.6'	94°45.3'	N 1°12.6'	
15	117°02.8'	45°26.8'	N 22°21.6'	81°40.3'	N 11°59.2'	112°46.3'	N 0°34.1'	149°08.0'	S 14°09.6'	109°46.1'	N 1°13.4'	
16	132°05.3'	60°26.7'	N 22°21.9'	96°40.0'	N 12°00.2'	127°48.5'	N 0°34.2'	164°10.4'	S 14°09.6'	124°46.8'	N 1°14.1'	
17	147°07.7'	75°26.6'	N 22°22.2'	111°39.6'	N 12°01.1'	142°50.6'	N 0°34.4'	179°12.9'	S 14°09.6'	139°47.6'	N 1°14.8'	
18	162°10.2'	90°26.5'	N 22°22.5'	126°39.2'	N 12°02.1'	157°52.7'	N 0°34.5'	194°15.3'	S 14°09.6'	154°48.4'	N 1°15.5'	
19	177°12.7'	105°26.4'	N 22°22.8'	141°38.8'	N 12°03.1'	172°54.8'	N 0°34.7'	209°17.8'	S 14°09.6'	169°49.1'	N 1°16.2'	
20	192°15.1'	120°26.3'	N 22°23.1'	156°38.5'	N 12°04.0'	187°56.9'	N 0°34.8'	224°20.3'	S 14°09.6'	184°49.9'	N 1°16.9'	
21	207°17.6'	135°26.2'	N 22°23.4'	171°38.1'	N 12°05.0'	202°59.0'	N 0°35.0'	239°22.7'	S 14°09.7'	199°50.7'	N 1°17.7'	
22	222°20.0'	150°26.1'	N 22°23.7'	186°37.7'	N 12°06.0'	218°01.1'	N 0°35.1'	254°25.2'	S 14°09.7'	214°51.4'	N 1°18.4'	
23	237°22.5'	165°25.9'	N 22°24.0'	201°37.3'	N 12°06.9'	233°03.2'	N 0°35.2'	269°27.6'	S 14°09.7'	229°52.2'	N 1°19.1'	
		SD 15.8' d 0.3'		v -0.4' d 1.0'		v 2.1' d 0.1'		v 2.5' d -0.0'		v 0.8' d 0.7'		
Mer. pass.		11 h 58 m 12 s		9 h 33 m		7 h 30 m		5 h 5 m		7 h 41 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Spica	-Arcturus	-Regulus	-Pollux	+Betelgeuse	+Capella	+Sun	+Rigel
0	138°11.6'	N 26°14.8'	10.7'	-3.3'	54.0'	93°30.8'	90°56.2'	39°30.2'		29°42.2'	33°13.0'		47°55.4'
1	152°41.4'	N 26°11.5'	10.8'	-3.4'	54.0'	93°01.3'	90°30.2'	39°00.9'		30°04.4'	33°36.1'		48°15.4'
2	167°11.1'	N 26°08.0'	10.8'	-3.6'	54.0'	92°31.8'	90°04.1'	38°31.6'		30°26.9'	33°59.2'		48°35.5'
3	181°40.9'	N 26°04.5'	10.8'	-3.7'	54.0'	92°02.4'	89°38.1'	38°02.3'		30°49.6'	34°22.6'		48°55.8'
4	196°10.7'	N 26°00.8'	10.9'	-3.8'	54.0'	91°32.9'	89°12.0'	37°33.0'		31°12.4'	34°46.0'	40°23.4'	49°16.2'
5	210°40.6'	N 25°57.0'	10.9'	-3.9'	54.0'	91°03.4'	88°45.9'	37°03.8'		31°35.4'	35°09.6'	40°50.6'	49°36.7'
6	225°10.5'	N 25°53.1'	10.9'	-4.0'	54.0'	90°34.0'	88°19.9'	36°34.5'		31°58.6'	35°33.3'	41°17.7'	49°57.3'
7	239°40.4'	N 25°49.0'	10.9'	-4.2'	54.0'	90°04.5'	87°53.8'	36°05.2'		32°21.9'	35°57.2'	41°44.9'	50°18.0'
8	254°10.3'	N 25°44.8'	11.0'	-4.3'	54.0'	89°35.0'	87°27.7'	35°35.9'		32°45.3'	36°21.2'	42°12.0'	50°38.8'
9	268°40.3'	N 25°40.6'	11.0'	-4.4'	54.0'	89°05.5'	87°01.7'	35°06.6'		33°09.0'	36°45.3'	42°39.2'	50°59.8'
10	283°10.3'	N 25°36.2'	11.1'	-4.5'	54.0'	88°36.0'	86°35.6'	34°37.4'		33°32.7'	37°09.5'	43°06.4'	51°20.8'
11	297°40.4'	N 25°31.6'	11.1'	-4.6'	54.0'	88°06.5'	86°09.5'	34°08.1'		33°56.6'	37°33.9'	43°33.6'	51°42.0'
12	312°10.5'	N 25°27.0'	11.1'	-4.8'	54.0'	87°37.0'	85°43.5'	33°38.8'		34°20.7'	37°58.3'	44°00.7'	52°03.2'
13	326°40.6'	N 25°22.2'	11.2'	-4.9'	54.0'	87°07.5'	85°17.4'	33°09.5'		34°44.8'	38°22.9'	44°27.9'	52°24.6'
14	341°10.7'	N 25°17.3'	11.2'	-5.0'	54.1'	86°38.0'	84°51.3'	32°40.3'	4°35.3'	35°09.1'	38°47.5'	44°55.1'	52°46.0'
15	355°40.9'	N 25°12.3'	11.2'	-5.1'	54.1'	86°08.5'	84°25.3'	32°11.0'	5°02.0'	35°33.6'	39°12.3'	45°22.3'	53°07.6'
16	10°11.2'	N 25°07.2'	11.3'	-5.2'	54.1'	85°39.0'	83°59.2'	31°41.8'	5°29.2'	35°58.1'	39°37.2'	45°49.5'	53°29.2'
17	24°41.4'	N 25°01.9'	11.3'	-5.4'	54.1'	85°09.4'	83°33.1'	31°12.5'	5°56.7'	36°22.7'	40°02.1'	46°16.7'	53°50.9'
18	39°11.8'	N 24°56.6'	11.4'	-5.5'	54.1'	84°39.9'	83°07.0'	30°43.3'	6°24.6'	36°47.5'	40°27.2'	46°44.0'	54°12.8'
19	53°42.1'	N 24°51.1'	11.4'	-5.6'	54.1'	84°10.4'	82°41.0'	30°14.0'	6°52.7'	37°12.4'	40°52.3'	47°11.2'	54°34.7'
20	68°12.5'	N 24°45.5'	11.4'	-5.7'	54.1'	83°40.8'	82°14.9'	29°44.8'	7°21.1'	37°37.3'	41°17.5'	47°38.4'	54°56.7'
21	82°42.9'	N 24°39.8'	11.5'	-5.8'	54.1'	83°11.2'	81°48.8'	29°15.6'	7°49.6'	38°02.4'	41°42.8'	48°05.7'	55°18.8'
22	97°13.4'	N 24°34.0'	11.5'	-5.9'	54.1'	82°41.7'	81°22.8'	28°46.3'	8°18.2'	38°27.6'	42°08.2'	48°32.9'	55°40.9'
23	111°43.9'	N 24°28.1'	11.6'	-6.0'	54.1'	82°12.1'	80°56.7'	28°17.1'	8°47.0'	38°52.9'	42°33.7'	49°00.2'	56°03.2'
Mer. pass.		15 h 18 m SD 14.7'		phase 11%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.9'	S 29°30.2'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.8'	N 7°24.6'
Deneb	+1.2	49°27.0'	N 45°21.3'	Acrux	+0.8	173°02.2'	S 63°13.6'	Capella	+0.1	280°25.6'	N 46°01.2'
Altair	+0.8	62°01.8'	N 8°55.5'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.3'	S 8°10.6'
Vega	+0.0	80°34.3'	N 38°48.1'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.0'	Polaris	+2.0	315°28.5'	N 89°21.3'
Rigil Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.3'	S 57°07.3'
Arcturus	-0.1	145°49.6'	N 19°04.1'	Sirius	-1.4	258°28.5'	S 16°44.9'				
Hadar	+0.6	148°38.5'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.6'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	252°25.0'		180°25.8'	N 22°24.3'	216°37.0'	N 12°07.9'	248°05.3'	N 0°35.4'	284°30.1'	S 14°09.7'	244°52.9'	N 1°19.8'
1	267°27.4'		195°25.7'	N 22°24.6'	231°36.6'	N 12°08.9'	263°07.4'	N 0°35.5'	299°32.5'	S 14°09.7'	259°53.7'	N 1°20.5'
2	282°29.9'		210°25.6'	N 22°24.9'	246°36.2'	N 12°09.8'	278°09.5'	N 0°35.7'	314°35.0'	S 14°09.7'	274°54.5'	N 1°21.2'
3	297°32.4'		225°25.5'	N 22°25.2'	261°35.8'	N 12°10.8'	293°11.7'	N 0°35.8'	329°37.5'	S 14°09.7'	289°55.2'	N 1°22.0'
4	312°34.8'		240°25.4'	N 22°25.5'	276°35.5'	N 12°11.7'	308°13.8'	N 0°36.0'	344°39.9'	S 14°09.7'	304°56.0'	N 1°22.7'
5	327°37.3'		255°25.3'	N 22°25.8'	291°35.1'	N 12°12.7'	323°15.9'	N 0°36.1'	359°42.4'	S 14°09.7'	319°56.8'	N 1°23.4'
6	342°39.8'		270°25.2'	N 22°26.1'	306°34.7'	N 12°13.7'	338°18.0'	N 0°36.2'	14°44.8'	S 14°09.7'	334°57.5'	N 1°24.1'
7	357°42.2'		285°25.1'	N 22°26.4'	321°34.3'	N 12°14.6'	353°20.1'	N 0°36.4'	29°47.3'	S 14°09.7'	349°58.3'	N 1°24.8'
8	12°44.7'		300°25.0'	N 22°26.6'	336°34.0'	N 12°15.6'	8°22.2'	N 0°36.5'	44°49.8'	S 14°09.7'	4°59.1'	N 1°25.6'
9	27°47.2'		315°24.9'	N 22°26.9'	351°33.6'	N 12°16.6'	23°24.3'	N 0°36.7'	59°52.2'	S 14°09.7'	19°59.8'	N 1°26.3'
10	42°49.6'		330°24.8'	N 22°27.2'	6°33.2'	N 12°17.5'	38°26.4'	N 0°36.8'	74°54.7'	S 14°09.7'	35°00.6'	N 1°27.0'
11	57°52.1'		345°24.7'	N 22°27.5'	21°32.8'	N 12°18.5'	53°28.6'	N 0°37.0'	89°57.1'	S 14°09.7'	50°01.4'	N 1°27.7'
12	72°54.5'		0°24.5'	N 22°27.8'	36°32.4'	N 12°19.4'	68°30.7'	N 0°37.1'	104°59.6'	S 14°09.8'	65°02.1'	N 1°28.4'
13	87°57.0'		15°24.4'	N 22°28.1'	51°32.1'	N 12°20.4'	83°32.8'	N 0°37.2'	120°02.1'	S 14°09.8'	80°02.9'	N 1°29.1'
14	102°59.5'		30°24.3'	N 22°28.4'	66°31.7'	N 12°21.3'	98°34.9'	N 0°37.4'	135°04.5'	S 14°09.8'	95°03.7'	N 1°29.9'
15	118°01.9'		45°24.2'	N 22°28.6'	81°31.3'	N 12°22.3'	113°37.0'	N 0°37.5'	150°07.0'	S 14°09.8'	110°04.4'	N 1°30.6'
16	133°04.4'		60°24.1'	N 22°28.9'	96°30.9'	N 12°23.3'	128°39.1'	N 0°37.7'	165°09.4'	S 14°09.8'	125°05.2'	N 1°31.3'
17	148°06.9'		75°24.0'	N 22°29.2'	111°30.5'	N 12°24.2'	143°41.2'	N 0°37.8'	180°11.9'	S 14°09.8'	140°06.0'	N 1°32.0'
18	163°09.3'		90°23.9'	N 22°29.5'	126°30.2'	N 12°25.2'	158°43.3'	N 0°37.9'	195°14.4'	S 14°09.8'	155°06.7'	N 1°32.7'
19	178°11.8'		105°23.8'	N 22°29.8'	141°29.8'	N 12°26.1'	173°45.5'	N 0°38.1'	210°16.8'	S 14°09.8'	170°07.5'	N 1°33.4'
20	193°14.3'		120°23.7'	N 22°30.1'	156°29.4'	N 12°27.1'	188°47.6'	N 0°38.2'	225°19.3'	S 14°09.8'	185°08.2'	N 1°34.2'
21	208°16.7'		135°23.6'	N 22°30.3'	171°29.0'	N 12°28.0'	203°49.7'	N 0°38.4'	240°21.7'	S 14°09.8'	200°09.0'	N 1°34.9'
22	223°19.2'		150°23.5'	N 22°30.6'	186°28.6'	N 12°29.0'	218°51.8'	N 0°38.5'	255°24.2'	S 14°09.8'	215°09.8'	N 1°35.6'
23	238°21.6'		165°23.3'	N 22°30.9'	201°28.2'	N 12°30.0'	233°53.9'	N 0°38.6'	270°26.7'	S 14°09.8'	230°10.5'	N 1°36.3'
			SD 15.8'	d 0.3'	v -0.4'	d 1.0'	v 2.1'	d 0.1'	v 2.5'	d -0.0'	v 0.8'	d 0.7'
Mer. pass.			11 h 58 m 22 s		9 h 34 m		7 h 27 m		5 h 1 m		7 h 40 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Acrux	-Spica	-Arcturus	-Regulus	+Pollux	+Procyon	+Betelgeuse	+Sun
0	126°14.5'	N 24°22.0'	11.6'	-6.2'	54.1'	99°40.6'	81°42.5'	80°30.7'	27°47.9'	9°15.8'		39°18.2'	49°27.5'
1	140°45.1'	N 24°15.9'	11.6'	-6.3'	54.2'	99°23.4'	81°12.9'	80°04.6'	27°18.7'	9°44.8'		39°43.7'	49°54.7'
2	155°15.7'	N 24°09.6'	11.7'	-6.4'	54.2'	99°06.2'	80°43.3'	79°38.5'	26°49.5'	10°13.8'		40°09.2'	50°22.0'
3	169°46.4'	N 24°03.2'	11.7'	-6.5'	54.2'	98°48.9'	80°13.7'	79°12.5'	26°20.3'	10°42.9'		40°34.8'	50°49.3'
4	184°17.1'	N 23°56.7'	11.8'	-6.6'	54.2'	98°31.6'	79°44.1'	78°46.4'	25°51.1'	11°12.1'		41°00.6'	51°16.6'
5	198°47.9'	N 23°50.1'	11.8'	-6.7'	54.2'	98°14.3'	79°14.5'	78°20.4'	25°21.9'	11°41.3'		41°26.3'	51°43.9'
6	213°18.7'	N 23°43.4'	11.9'	-6.8'	54.2'	97°56.9'	78°44.9'	77°54.4'	24°52.8'	12°10.5'		41°52.2'	52°11.3'
7	227°49.6'	N 23°36.6'	11.9'	-6.9'	54.2'	97°39.6'	78°15.2'	77°28.3'	24°23.6'	12°39.8'		42°18.2'	52°38.6'
8	242°20.5'	N 23°29.6'	11.9'	-7.0'	54.2'	97°22.1'	77°45.6'	77°02.3'	23°54.5'	13°09.2'		42°44.2'	53°05.9'
9	256°51.4'	N 23°22.6'	12.0'	-7.2'	54.2'	97°04.7'	77°15.9'	76°36.3'	23°25.3'	13°38.6'		43°10.3'	53°33.3'
10	271°22.4'	N 23°15.4'	12.0'	-7.3'	54.3'	96°47.2'	76°46.2'	76°10.2'	22°56.2'	14°08.0'		43°36.5'	54°00.7'
11	285°53.5'	N 23°08.2'	12.1'	-7.4'	54.3'	96°29.7'	76°16.5'	75°44.2'	22°27.1'	14°37.5'	24°14.4'	44°02.7'	54°28.0'
12	300°24.5'	N 23°00.8'	12.1'	-7.5'	54.3'	96°12.2'	75°46.8'	75°18.2'	21°58.0'	15°07.0'	24°29.8'	44°29.0'	54°55.4'
13	314°55.7'	N 22°53.3'	12.2'	-7.6'	54.3'	95°54.7'	75°17.1'	74°52.2'	21°29.0'	15°36.5'	24°45.5'	44°55.4'	55°22.8'
14	329°26.8'	N 22°45.8'	12.2'	-7.7'	54.3'	95°37.1'	74°47.4'	74°26.2'	20°59.9'	16°06.1'	25°01.7'	45°21.9'	55°50.3'
15	343°58.1'	N 22°38.1'	12.3'	-7.8'	54.3'	95°19.5'	74°17.7'	74°00.2'	20°30.9'	16°35.6'	25°18.3'	45°48.4'	56°17.7'
16	358°29.3'	N 22°30.3'	12.3'	-7.9'	54.3'	95°01.9'	73°47.9'	73°34.2'	20°01.9'	17°05.2'	25°35.2'	46°15.0'	56°45.1'
17	13°00.6'	N 22°22.4'	12.4'	-8.0'	54.3'	94°44.2'	73°18.2'	73°08.2'	19°33.0'	17°34.9'	25°52.5'	46°41.6'	57°12.6'
18	27°32.0'	N 22°14.4'	12.4'	-8.1'	54.4'	94°26.5'	72°48.4'	72°42.3'	19°04.1'	18°04.5'	26°10.2'	47°08.3'	57°40.0'
19	42°03.4'	N 22°06.3'	12.4'	-8.2'	54.4'	94°08.9'	72°18.6'	72°16.3'	18°35.2'	18°34.2'	26°28.2'	47°35.1'	58°07.5'
20	56°34.8'	N 21°58.1'	12.5'	-8.3'	54.4'	93°51.1'	71°48.8'	71°50.3'	18°06.3'	19°03.9'	26°46.6'	48°01.9'	58°35.0'
21	71°06.3'	N 21°49.8'	12.5'	-8.4'	54.4'	93°33.4'	71°19.0'	71°24.4'	17°37.5'	19°33.7'	27°05.3'	48°28.8'	59°02.5'
22	85°37.8'	N 21°41.4'	12.6'	-8.5'	54.4'	93°15.7'	70°49.2'	70°58.4'	17°08.7'	20°03.4'	27°24.3'	48°55.7'	59°30.0'
23	100°09.4'	N 21°32.9'	12.6'	-8.6'	54.4'	92°57.9'	70°19.3'	70°32.5'	16°40.0'	20°33.2'	27°43.6'	49°22.7'	59°57.6'
Mer. pass.			16 h 6 m SD 14.8'	phase 17%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.9'	S 29°30.2'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.8'	N 7°24.6'
Deneb	+1.2	49°27.0'	N 45°21.3'	Acrux	+0.8	173°02.2'	S 63°13.6'	Capella	+0.1	280°25.6'	N 46°01.2'
Altair	+0.8	62°01.8'	N 8°55.5'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.3'	S 8°10.6'
Vega	+0.0	80°34.3'	N 38°48.1'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°28.3'	N 89°21.3'
Rigil Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.2'	S 57°07.3'
Arcturus	-0.1	145°49.6'	N 19°04.1'	Sirius	-1.4	258°28.5'	S 16°44.9'				
Hadar	+0.6	148°38.5'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.5'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	253°24.1'	180°23.2'	N 22°31.2'	216°27.8'	N 12°30.9'		248°56.0'	N 0°38.8'		285°29.1'	S 14°09.8'		245°11.3'	N 1°37.0'				
1	268°26.6'	195°23.1'	N 22°31.5'	231°27.5'	N 12°31.9'		263°58.1'	N 0°38.9'		300°31.6'	S 14°09.8'		260°12.1'	N 1°37.7'				
2	283°29.0'	210°23.0'	N 22°31.7'	246°27.1'	N 12°32.8'		279°00.3'	N 0°39.1'		315°34.0'	S 14°09.9'		275°12.8'	N 1°38.5'				
3	298°31.5'	225°22.9'	N 22°32.0'	261°26.7'	N 12°33.8'		294°02.4'	N 0°39.2'		330°36.5'	S 14°09.9'		290°13.6'	N 1°39.2'				
4	313°34.0'	240°22.8'	N 22°32.3'	276°26.3'	N 12°34.7'		309°04.5'	N 0°39.3'		345°39.0'	S 14°09.9'		305°14.4'	N 1°39.9'				
5	328°36.4'	255°22.7'	N 22°32.6'	291°25.9'	N 12°35.7'		324°06.6'	N 0°39.5'		0°41.4'	S 14°09.9'		320°15.1'	N 1°40.6'				
6	343°38.9'	270°22.6'	N 22°32.8'	306°25.5'	N 12°36.6'		339°08.7'	N 0°39.6'		15°43.9'	S 14°09.9'		335°15.9'	N 1°41.3'				
7	358°41.4'	285°22.5'	N 22°33.1'	321°25.1'	N 12°37.6'		354°10.8'	N 0°39.8'		30°46.4'	S 14°09.9'		350°16.7'	N 1°42.0'				
8	13°43.8'	300°22.4'	N 22°33.4'	336°24.8'	N 12°38.5'		9°13.0'	N 0°39.9'		45°48.8'	S 14°09.9'		5°17.4'	N 1°42.7'				
9	28°46.3'	315°22.2'	N 22°33.7'	351°24.4'	N 12°39.5'		24°15.1'	N 0°40.0'		60°51.3'	S 14°09.9'		20°18.2'	N 1°43.5'				
10	43°48.8'	330°22.1'	N 22°33.9'	6°24.0'	N 12°40.4'		39°17.2'	N 0°40.2'		75°53.7'	S 14°09.9'		35°19.0'	N 1°44.2'				
11	58°51.2'	345°22.0'	N 22°34.2'	21°23.6'	N 12°41.4'		54°19.3'	N 0°40.3'		90°56.2'	S 14°09.9'		50°19.7'	N 1°44.9'				
12	73°53.7'	0°21.9'	N 22°34.5'	36°23.2'	N 12°42.3'		69°21.4'	N 0°40.5'		105°58.7'	S 14°09.9'		65°20.5'	N 1°45.6'				
13	88°56.1'	15°21.8'	N 22°34.7'	51°22.8'	N 12°43.3'		84°23.5'	N 0°40.6'		121°01.1'	S 14°09.9'		80°21.3'	N 1°46.3'				
14	103°58.6'	30°21.7'	N 22°35.0'	66°22.4'	N 12°44.2'		99°25.7'	N 0°40.7'		136°03.6'	S 14°09.9'		95°22.0'	N 1°47.0'				
15	119°01.1'	45°21.6'	N 22°35.3'	81°22.0'	N 12°45.2'		114°27.8'	N 0°40.9'		151°06.1'	S 14°10.0'		110°22.8'	N 1°47.8'				
16	134°03.5'	60°21.5'	N 22°35.5'	96°21.6'	N 12°46.1'		129°29.9'	N 0°41.0'		166°08.5'	S 14°10.0'		125°23.6'	N 1°48.5'				
17	149°06.0'	75°21.3'	N 22°35.8'	111°21.2'	N 12°47.1'		144°32.0'	N 0°41.2'		181°11.0'	S 14°10.0'		140°24.3'	N 1°49.2'				
18	164°08.5'	90°21.2'	N 22°36.1'	126°20.9'	N 12°48.0'		159°34.1'	N 0°41.3'		196°13.5'	S 14°10.0'		155°25.1'	N 1°49.9'				
19	179°10.9'	105°21.1'	N 22°36.3'	141°20.5'	N 12°49.0'		174°36.2'	N 0°41.4'		211°15.9'	S 14°10.0'		170°25.9'	N 1°50.6'				
20	194°13.4'	120°21.0'	N 22°36.6'	156°20.1'	N 12°49.9'		189°38.4'	N 0°41.6'		226°18.4'	S 14°10.0'		185°26.6'	N 1°51.3'				
21	209°15.9'	135°20.9'	N 22°36.9'	171°19.7'	N 12°50.9'		204°40.5'	N 0°41.7'		241°20.9'	S 14°10.0'		200°27.4'	N 1°52.0'				
22	224°18.3'	150°20.8'	N 22°37.1'	186°19.3'	N 12°51.8'		219°42.6'	N 0°41.9'		256°23.3'	S 14°10.0'		215°28.2'	N 1°52.8'				
23	239°20.8'	165°20.7'	N 22°37.4'	201°18.9'	N 12°52.7'		234°44.7'	N 0°42.0'		271°25.8'	S 14°10.0'		230°28.9'	N 1°53.5'				
		SD 15.8'	d 0.3'		v -0.4' d 0.9'			v 2.1' d 0.1'			v 2.5' d -0.0'			v 0.8' d 0.7'				
Mer. pass.		11 h 58 m 33 s		9 h 34 m			7 h 23 m			4 h 57 m			7 h 39 m					

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Acrux	-Arcturus	-Spica	-Regulus	+Pollux	+Procyon	+Betelgeuse	+Sun
0	114°41.0'	N 21°24.4'	12.7'	-8.7'	54.5'	92°40.1'	70°06.6'	69°49.5'	16°11.3'	21°03.0'	28°03.2'	49°49.7'	60°25.1'
1	129°12.7'	N 21°15.7'	12.7'	-8.8'	54.5'	92°22.3'	69°40.7'	69°19.6'	15°42.8'	21°32.8'	28°23.1'	50°16.8'	60°52.7'
2	143°44.4'	N 21°06.9'	12.8'	-8.9'	54.5'	92°04.5'	69°14.8'	68°49.7'	15°14.2'	22°02.7'	28°43.3'	50°44.0'	61°20.3'
3	158°16.2'	N 20°58.0'	12.8'	-9.0'	54.5'	91°46.7'	68°48.9'	68°19.8'	14°45.8'	22°32.5'	29°03.7'	51°11.2'	61°47.9'
4	172°48.0'	N 20°49.0'	12.8'	-9.1'	54.5'	91°28.8'	68°23.0'	67°49.9'	14°17.4'	23°02.4'	29°24.4'	51°38.5'	62°15.5'
5	187°19.8'	N 20°39.9'	12.9'	-9.2'	54.5'	91°11.0'	67°57.2'	67°20.0'	13°49.2'	23°32.3'	29°45.4'	52°05.8'	62°43.1'
6	201°51.7'	N 20°30.7'	12.9'	-9.3'	54.6'	90°53.1'	67°31.3'	66°50.1'	13°21.0'	24°02.3'	30°06.6'	52°33.1'	63°10.8'
7	216°23.7'	N 20°21.5'	13.0'	-9.4'	54.6'	90°35.2'	67°05.5'	66°20.1'	12°53.0'	24°32.2'	30°28.0'	53°00.5'	63°38.5'
8	230°55.6'	N 20°12.1'	13.0'	-9.5'	54.6'	90°17.3'	66°39.7'	65°50.1'	12°25.1'	25°02.2'	30°49.7'	53°28.0'	64°06.1'
9	245°27.7'	N 20°02.6'	13.1'	-9.5'	54.6'	89°59.4'	66°13.9'	65°20.1'	11°57.4'	25°32.2'	31°11.6'	53°55.5'	64°33.9'
10	259°59.7'	N 19°53.1'	13.1'	-9.6'	54.6'	89°41.4'	65°48.1'	64°50.1'	11°29.9'	26°02.2'	31°33.7'	54°23.1'	65°01.6'
11	274°31.8'	N 19°43.5'	13.1'	-9.7'	54.6'	89°23.5'	65°22.3'	64°20.1'	11°02.5'	26°32.2'	31°56.0'	54°50.7'	65°29.3'
12	289°04.0'	N 19°33.7'	13.2'	-9.8'	54.7'	89°05.6'	64°56.5'	63°50.0'	10°35.4'	27°02.3'	32°18.5'	55°18.3'	65°57.1'
13	303°36.2'	N 19°23.9'	13.2'	-9.9'	54.7'	88°47.6'	64°30.8'	63°20.0'	10°08.6'	27°32.4'	32°41.2'	55°46.0'	66°24.9'
14	318°08.4'	N 19°14.0'	13.3'	-10.0'	54.7'	88°29.7'	64°05.1'	62°49.9'	9°42.1'	28°02.5'	33°04.1'	56°13.8'	66°52.7'
15	332°40.7'	N 19°04.0'	13.3'	-10.1'	54.7'	88°11.7'	63°39.4'	62°19.8'	9°15.9'	28°32.6'	33°27.2'	56°41.6'	67°20.5'
16	347°13.0'	N 18°53.9'	13.4'	-10.2'	54.7'	87°53.7'	63°13.7'	61°49.7'	8°50.2'	29°02.8'	33°50.5'	57°09.4'	67°48.3'
17	1°45.4'	N 18°43.7'	13.4'	-10.3'	54.8'	87°35.7'	62°48.0'	61°19.5'	8°24.9'	29°33.0'	34°14.0'	57°37.3'	68°16.2'
18	16°17.8'	N 18°33.4'	13.4'	-10.4'	54.8'	87°17.7'	62°22.4'	60°49.4'	8°00.1'	30°03.2'	34°37.6'	58°05.2'	68°44.0'
19	30°50.2'	N 18°23.1'	13.5'	-10.4'	54.8'	86°59.8'	61°56.8'	60°19.2'	7°36.1'	30°33.4'	35°01.4'	58°33.2'	69°11.9'
20	45°22.7'	N 18°12.7'	13.5'	-10.5'	54.8'	86°41.8'	61°31.2'	59°49.0'		31°03.7'	35°25.3'	59°01.2'	69°39.9'
21	59°55.2'	N 18°02.1'	13.6'	-10.6'	54.8'	86°23.8'	61°05.6'	59°18.8'		31°33.9'	35°49.5'	59°29.3'	70°07.8'
22	74°27.7'	N 17°51.5'	13.6'	-10.7'	54.9'	86°05.8'	60°40.0'	58°48.5'		32°04.2'	36°13.7'	59°57.4'	70°35.8'
23	89°00.3'	N 17°40.8'	13.6'	-10.8'	54.9'	85°47.8'	60°14.5'	58°18.2'		32°34.5'	36°38.1'	60°25.5'	71°03.8'
Mer. pass.		16 h 53 m SD 14.8'		phase 25%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.9'	S 29°30.2'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.6'
Deneb	+1.2	49°27.0'	N 45°21.3'	Acrux	+0.8	173°02.2'	S 63°13.6'	Capella	+0.1	280°25.6'	N 46°01.2'
Altair	+0.8	62°01.8'	N 8°55.6'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.3'	S 8°10.6'
Vega	+0.0	80°34.3'	N 38°48.1'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°28.0'	N 89°21.3'
Rigil Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.2'	S 57°07.3'
Arcturus	-0.1	145°49.6'	N 19°04.1'	Sirius	-1.4	258°28.5'	S 16°44.9'				
Hadar	+0.6	148°38.5'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.5'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	254°23.3'	180°20.6'	N 22°37.7'	216°18.5'	N 12°53.7'		249°46.8'	N 0°42.1'		286°28.3'	S 14°10.0'		245°29.7'	N 1°54.2'				
1	269°25.7'	195°20.4'	N 22°37.9'	231°18.1'	N 12°54.6'		264°49.0'	N 0°42.3'		301°30.7'	S 14°10.0'		260°30.5'	N 1°54.9'				
2	284°28.2'	210°20.3'	N 22°38.2'	246°17.7'	N 12°55.6'		279°51.1'	N 0°42.4'		316°33.2'	S 14°10.0'		275°31.2'	N 1°55.6'				
3	299°30.6'	225°20.2'	N 22°38.4'	261°17.3'	N 12°56.5'		294°53.2'	N 0°42.5'		331°35.7'	S 14°10.1'		290°32.0'	N 1°56.3'				
4	314°33.1'	240°20.1'	N 22°38.7'	276°16.9'	N 12°57.5'		309°55.3'	N 0°42.7'		346°38.1'	S 14°10.1'		305°32.8'	N 1°57.0'				
5	329°35.6'	255°20.0'	N 22°39.0'	291°16.5'	N 12°58.4'		324°57.4'	N 0°42.8'		1°40.6'	S 14°10.1'		320°33.5'	N 1°57.8'				
6	344°38.0'	270°19.9'	N 22°39.2'	306°16.1'	N 12°59.3'		339°59.6'	N 0°43.0'		16°43.1'	S 14°10.1'		335°34.3'	N 1°58.5'				
7	359°40.5'	285°19.8'	N 22°39.5'	321°15.7'	N 13°00.3'		355°01.7'	N 0°43.1'		31°45.5'	S 14°10.1'		350°35.1'	N 1°59.2'				
8	14°43.0'	300°19.6'	N 22°39.7'	336°15.3'	N 13°01.2'		10°03.8'	N 0°43.2'		46°48.0'	S 14°10.1'		5°35.8'	N 1°59.9'				
9	29°45.4'	315°19.5'	N 22°40.0'	351°14.9'	N 13°02.2'		25°05.9'	N 0°43.4'		61°50.5'	S 14°10.1'		20°36.6'	N 2°00.6'				
10	44°47.9'	330°19.4'	N 22°40.2'	6°14.5'	N 13°03.1'		40°08.1'	N 0°43.5'		76°52.9'	S 14°10.1'		35°37.4'	N 2°01.3'				
11	59°50.4'	345°19.3'	N 22°40.5'	21°14.1'	N 13°04.0'		55°10.2'	N 0°43.6'		91°55.4'	S 14°10.1'		50°38.1'	N 2°02.0'				
12	74°52.8'	0°19.2'	N 22°40.8'	36°13.7'	N 13°05.0'		70°12.3'	N 0°43.8'		106°57.9'	S 14°10.1'		65°38.9'	N 2°02.8'				
13	89°55.3'	15°19.1'	N 22°41.0'	51°13.3'	N 13°05.9'		85°14.4'	N 0°43.9'		122°00.3'	S 14°10.2'		80°39.7'	N 2°03.5'				
14	104°57.8'	30°19.0'	N 22°41.3'	66°12.9'	N 13°06.9'		100°16.5'	N 0°44.1'		137°02.8'	S 14°10.2'		95°40.5'	N 2°04.2'				
15	120°00.2'	45°18.8'	N 22°41.5'	81°12.5'	N 13°07.8'		115°18.7'	N 0°44.2'		152°05.3'	S 14°10.2'		110°41.2'	N 2°04.9'				
16	135°02.7'	60°18.7'	N 22°41.8'	96°12.1'	N 13°08.7'		130°20.8'	N 0°44.3'		167°07.7'	S 14°10.2'		125°42.0'	N 2°05.6'				
17	150°05.1'	75°18.6'	N 22°42.0'	111°11.7'	N 13°09.7'		145°22.9'	N 0°44.5'		182°10.2'	S 14°10.2'		140°42.8'	N 2°06.3'				
18	165°07.6'	90°18.5'	N 22°42.3'	126°11.3'	N 13°10.6'		160°25.0'	N 0°44.6'		197°12.7'	S 14°10.2'		155°43.5'	N 2°07.0'				
19	180°10.1'	105°18.4'	N 22°42.5'	141°10.9'	N 13°11.5'		175°27.2'	N 0°44.7'		212°15.1'	S 14°10.2'		170°44.3'	N 2°07.7'				
20	195°12.5'	120°18.3'	N 22°42.8'	156°10.5'	N 13°12.5'		190°29.3'	N 0°44.9'		227°17.6'	S 14°10.2'		185°45.1'	N 2°08.5'				
21	210°15.0'	135°18.2'	N 22°43.0'	171°10.1'	N 13°13.4'		205°31.4'	N 0°45.0'		242°20.1'	S 14°10.2'		200°45.8'	N 2°09.2'				
22	225°17.5'	150°18.0'	N 22°43.3'	186°09.7'	N 13°14.4'		220°33.5'	N 0°45.1'		257°22.5'	S 14°10.2'		215°46.6'	N 2°09.9'				
23	240°19.9'	165°17.9'	N 22°43.5'	201°09.3'	N 13°15.3'		235°35.7'	N 0°45.3'		272°25.0'	S 14°10.3'		230°47.4'	N 2°10.6'				
		SD 15.8'	d 0.3'		v -0.4' d 0.9'		v 2.1' d 0.1'			v 2.5' d -0.0'			v 0.8' d 0.7'					
Mer. pass.		11 h 58 m 44 s		9 h 35 m			7 h 20 m			4 h 53 m			7 h 38 m					

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Acrux	-Arcturus	-Spica	-Regulus	+Pollux	+Procyon	+Sirius	+Sun
0	103°32.9'	N 17°30.1'	13.7'	-10.9'	54.9'	85°29.8'	59°49.0'	57°48.0'		33°04.9'	37°02.7'	59°25.3'	71°31.8'
1	118°05.6'	N 17°19.2'	13.7'	-10.9'	54.9'	85°11.8'	59°23.5'	57°17.7'		33°35.3'	37°27.4'	59°43.5'	71°59.8'
2	132°38.3'	N 17°08.3'	13.7'	-11.0'	55.0'	84°53.8'	58°58.1'	56°47.3'		34°05.7'	37°52.2'	60°01.9'	72°27.9'
3	147°11.0'	N 16°57.2'	13.8'	-11.1'	55.0'	84°35.8'	58°32.7'	56°17.0'		34°36.1'	38°17.2'	60°20.3'	72°56.0'
4	161°43.8'	N 16°46.1'	13.8'	-11.2'	55.0'	84°17.8'	58°07.3'	55°46.6'		35°06.5'	38°42.3'	60°38.9'	73°24.1'
5	176°16.6'	N 16°35.0'	13.8'	-11.3'	55.0'	83°59.8'	57°41.9'	55°16.2'		35°37.0'	39°07.6'	60°57.6'	73°52.2'
6	190°49.4'	N 16°23.7'	13.9'	-11.3'	55.1'	83°41.8'	57°16.6'	54°45.8'		36°07.5'	39°32.9'	61°16.4'	74°20.4'
7	205°22.3'	N 16°12.4'	13.9'	-11.4'	55.1'	83°23.8'	56°51.3'	54°15.3'		36°38.0'	39°58.4'	61°35.3'	74°48.5'
8	219°55.2'	N 16°00.9'	13.9'	-11.5'	55.1'	83°05.8'	56°26.1'	53°44.9'		37°08.6'	40°24.0'	61°54.3'	75°16.7'
9	234°28.1'	N 15°49.4'	14.0'	-11.6'	55.1'	82°47.8'	56°00.9'	53°14.4'		37°39.2'	40°49.7'	62°13.4'	75°45.0'
10	249°01.1'	N 15°37.9'	14.0'	-11.6'	55.1'	82°29.9'	55°35.7'	52°43.9'		38°09.8'	41°15.6'	62°32.6'	76°13.2'
11	263°34.1'	N 15°26.2'	14.0'	-11.7'	55.2'	82°11.9'	55°10.6'	52°13.3'		38°40.4'	41°41.5'	62°51.9'	76°41.5'
12	278°07.1'	N 15°14.5'	14.1'	-11.8'	55.2'	81°54.0'	54°45.5'	51°42.8'		39°11.1'	42°07.6'	63°11.3'	77°09.8'
13	292°40.2'	N 15°02.7'	14.1'	-11.9'	55.2'	81°36.0'	54°20.4'	51°12.2'		39°41.8'	42°33.7'	63°30.9'	77°38.2'
14	307°13.3'	N 14°50.9'	14.1'	-11.9'	55.2'	81°18.1'	53°55.4'	50°41.6'		40°12.5'	42°60.0'	63°50.5'	78°06.5'
15	321°46.4'	N 14°38.9'	14.1'	-12.0'	55.3'	81°00.2'	53°30.5'	50°10.9'		40°43.3'	43°26.4'	64°10.2'	78°34.9'
16	336°19.5'	N 14°26.9'	14.2'	-12.1'	55.3'	80°42.3'	53°05.5'	49°40.3'		41°14.0'	43°52.8'	64°30.0'	79°03.4'
17	350°52.7'	N 14°14.8'	14.2'	-12.2'	55.3'	80°24.4'	52°40.7'	49°09.6'		41°44.8'	44°19.4'	64°49.9'	79°31.8'
18	5°25.8'	N 14°02.7'	14.2'	-12.2'	55.4'	80°06.5'	52°15.9'	48°38.9'		42°15.7'	44°46.1'	65°09.9'	80°00.3'
19	19°59.0'	N 13°50.4'	14.2'	-12.3'	55.4'	79°48.7'	51°51.1'	48°08.1'	7°51.3'	42°46.5'	45°12.8'	65°30.0'	80°28.8'
20	34°32.3'	N 13°38.1'	14.3'	-12.4'	55.4'	79°30.8'	51°26.4'	47°37.4'	8°16.4'	43°17.4'	45°39.7'	65°50.2'	80°57.3'
21	49°05.5'	N 13°25.8'	14.3'	-12.4'	55.4'	79°13.0'	51°01.8'	47°06.6'	8°42.1'	43°48.4'	46°06.7'	66°10.5'	81°25.9'
22	63°38.8'	N 13°13.3'	14.3'	-12.5'	55.5'	78°55.2'	50°37.2'	46°35.7'	9°08.3'	44°19.3'	46°33.7'	66°30.9'	81°54.5'
23	78°12.1'	N 13°00.8'	14.3'	-12.6'	55.5'	78°37.4'	50°12.7'	46°04.9'	9°35.1'	44°50.3'	47°00.8'	66°51.3'	82°23.1'
Mer. pass.		17 h 38 m SD 15.0'		phase 34%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.9'	S 29°30.2'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.6'
Deneb	+1.2	49°27.0'	N 45°21.3'	Acrux	+0.8	173°02.2'	S 63°13.6'	Capella	+0.1	280°25.6'	N 46°01.2'
Altair	+0.8	62°01.8'	N 8°55.6'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.3'	S 8°10.6'
Vega	+0.0	80°34.3'	N 38°48.1'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°27.7'	N 89°21.3'
Rigil Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.2'	S 57°07.3'
Arcturus	-0.1	145°49.6'	N 19°04.1'	Sirius	-1.4	258°28.5'	S 16°44.9'				
Hadar	+0.6	148°38.5'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.5'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	255°22.4'	180°17.8' N	22°43.7'	216°08.9' N	13°16.2'	250°37.8' N	0°45.4'	287°27.5' S	14°10.3'	245°48.1' N	2°11.3'	
1	270°24.9'	195°17.7' N	22°44.0'	231°08.5' N	13°17.2'	265°39.9' N	0°45.6'	302°29.9' S	14°10.3'	260°48.9' N	2°12.0'	
2	285°27.3'	210°17.6' N	22°44.2'	246°08.1' N	13°18.1'	280°42.0' N	0°45.7'	317°32.4' S	14°10.3'	275°49.7' N	2°12.7'	
3	300°29.8'	225°17.5' N	22°44.5'	261°07.7' N	13°19.0'	295°44.2' N	0°45.8'	332°34.9' S	14°10.3'	290°50.4' N	2°13.4'	
4	315°32.2'	240°17.3' N	22°44.7'	276°07.3' N	13°19.9'	310°46.3' N	0°46.0'	347°37.4' S	14°10.3'	305°51.2' N	2°14.2'	
5	330°34.7'	255°17.2' N	22°45.0'	291°06.9' N	13°20.9'	325°48.4' N	0°46.1'	2°39.8' S	14°10.3'	320°52.0' N	2°14.9'	
6	345°37.2'	270°17.1' N	22°45.2'	306°06.5' N	13°21.8'	340°50.5' N	0°46.2'	17°42.3' S	14°10.3'	335°52.7' N	2°15.6'	
7	0°39.6'	285°17.0' N	22°45.4'	321°06.1' N	13°22.7'	355°52.7' N	0°46.4'	32°44.8' S	14°10.3'	350°53.5' N	2°16.3'	
8	15°42.1'	300°16.9' N	22°45.7'	336°05.6' N	13°23.7'	10°54.8' N	0°46.5'	47°47.2' S	14°10.3'	5°54.3' N	2°17.0'	
9	30°44.6'	315°16.8' N	22°45.9'	351°05.2' N	13°24.6'	25°56.9' N	0°46.6'	62°49.7' S	14°10.4'	20°55.1' N	2°17.7'	
10	45°47.0'	330°16.6' N	22°46.2'	6°04.8' N	13°25.5'	40°59.0' N	0°46.8'	77°52.2' S	14°10.4'	35°55.8' N	2°18.4'	
11	60°49.5'	345°16.5' N	22°46.4'	21°04.4' N	13°26.5'	56°01.2' N	0°46.9'	92°54.7' S	14°10.4'	50°56.6' N	2°19.1'	
12	75°52.0'	0°16.4' N	22°46.6'	36°04.0' N	13°27.4'	71°03.3' N	0°47.0'	107°57.1' S	14°10.4'	65°57.4' N	2°19.9'	
13	90°54.4'	15°16.3' N	22°46.9'	51°03.6' N	13°28.3'	86°05.4' N	0°47.2'	122°59.6' S	14°10.4'	80°58.1' N	2°20.6'	
14	105°56.9'	30°16.2' N	22°47.1'	66°03.2' N	13°29.2'	101°07.5' N	0°47.3'	138°02.1' S	14°10.4'	95°58.9' N	2°21.3'	
15	120°59.4'	45°16.0' N	22°47.3'	81°02.8' N	13°30.2'	116°09.7' N	0°47.4'	153°04.5' S	14°10.4'	110°59.7' N	2°22.0'	
16	136°01.8'	60°15.9' N	22°47.6'	96°02.4' N	13°31.1'	131°11.8' N	0°47.6'	168°07.0' S	14°10.4'	126°00.4' N	2°22.7'	
17	151°04.3'	75°15.8' N	22°47.8'	111°02.0' N	13°32.0'	146°13.9' N	0°47.7'	183°09.5' S	14°10.4'	141°01.2' N	2°23.4'	
18	166°06.7'	90°15.7' N	22°48.0'	126°01.5' N	13°32.9'	161°16.1' N	0°47.8'	198°12.0' S	14°10.5'	156°02.0' N	2°24.1'	
19	181°09.2'	105°15.6' N	22°48.3'	141°01.1' N	13°33.9'	176°18.2' N	0°48.0'	213°14.4' S	14°10.5'	171°02.8' N	2°24.8'	
20	196°11.7'	120°15.5' N	22°48.5'	156°00.7' N	13°34.8'	191°20.3' N	0°48.1'	228°16.9' S	14°10.5'	186°03.5' N	2°25.5'	
21	211°14.1'	135°15.3' N	22°48.7'	171°00.3' N	13°35.7'	206°22.4' N	0°48.3'	243°19.4' S	14°10.5'	201°04.3' N	2°26.3'	
22	226°16.6'	150°15.2' N	22°49.0'	185°59.9' N	13°36.6'	221°24.6' N	0°48.4'	258°21.9' S	14°10.5'	216°05.1' N	2°27.0'	
23	241°19.1'	165°15.1' N	22°49.2'	200°59.5' N	13°37.6'	236°26.7' N	0°48.5'	273°24.3' S	14°10.5'	231°05.8' N	2°27.7'	
		SD 15.8' d 0.2'		v -0.4' d 0.9'		v 2.1' d 0.1'		v 2.5' d -0.0'		v 0.8' d 0.7'		
Mer. pass.		11 h 58 m 55 s		9 h 36 m		7 h 16 m		4 h 49 m		7 h 36 m		

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Hadar	-Acrux	-Arcturus	-Spica	+Regulus	+Pollux	+Procyon	+Sun
0	92°45.4' N	12°48.3'	14.3'	-12.6'	55.5'	82°52.8'	78°19.6'	49°48.2'	45°34.0'	10°02.3'	45°21.4'	47°28.1'	82°51.8'
1	107°18.8' N	12°35.6'	14.4'	-12.7'	55.5'	82°30.5'	78°01.9'	49°23.8'	45°03.1'	10°29.8'	45°52.4'	47°55.4'	83°20.5'
2	121°52.1' N	12°22.9'	14.4'	-12.8'	55.6'	82°08.2'	77°44.1'	48°59.5'	44°32.2'	10°57.7'	46°23.5'	48°22.8'	83°49.2'
3	136°25.5' N	12°10.2'	14.4'	-12.8'	55.6'	81°45.9'	77°26.4'	48°35.2'	44°01.2'	11°26.0'	46°54.6'	48°50.2'	84°17.9'
4	150°58.9' N	11°57.4'	14.4'	-12.9'	55.6'	81°23.6'	77°08.8'	48°11.0'	43°30.2'	11°54.4'	47°25.8'	49°17.8'	84°46.7'
5	165°32.3' N	11°44.5'	14.4'	-13.0'	55.7'	81°01.2'	76°51.1'	47°46.9'	42°59.2'	12°23.2'	47°57.0'	49°45.4'	85°15.6'
6	180°05.7' N	11°31.5'	14.4'	-13.0'	55.7'	80°38.9'	76°33.5'	47°22.9'	42°28.2'	12°52.1'	48°28.2'	50°13.2'	85°44.4'
7	194°39.2' N	11°18.5'	14.4'	-13.1'	55.7'	80°16.6'	76°15.9'	46°59.0'	41°57.1'	13°21.3'	48°59.4'	50°41.0'	86°13.3'
8	209°12.6' N	11°05.4'	14.5'	-13.1'	55.8'	79°54.3'	75°58.3'	46°35.1'	41°26.0'	13°50.6'	49°30.7'	51°08.8'	86°42.2'
9	223°46.1' N	10°52.3'	14.5'	-13.2'	55.8'	79°32.0'	75°40.8'	46°11.3'	40°54.9'	14°20.1'	50°02.0'	51°36.8'	87°11.2'
10	238°19.5' N	10°39.1'	14.5'	-13.3'	55.8'	79°09.7'	75°23.3'	45°47.7'	40°23.7'	14°49.8'	50°33.4'	52°04.8'	87°40.1'
11	252°53.0' N	10°25.8'	14.5'	-13.3'	55.8'	78°47.4'	75°05.8'	45°24.1'	39°52.5'	15°19.6'	51°04.8'	52°33.0'	88°09.2'
12	267°26.5' N	10°12.5'	14.5'	-13.4'	55.9'	78°25.1'	74°48.4'	45°00.6'	39°21.3'	15°49.5'	51°36.2'	53°01.1'	88°38.2'
13	281°60.0' N	9°59.2'	14.5'	-13.4'	55.9'	78°02.8'	74°30.9'	44°37.2'	38°50.0'	16°19.6'	52°07.7'	53°29.4'	89°07.3'
14	296°33.5' N	9°45.7'	14.5'	-13.5'	55.9'	77°40.5'	74°13.6'	44°14.0'	38°18.8'	16°49.8'	52°39.2'	53°57.7'	89°36.4'
15	311°07.0' N	9°32.2'	14.5'	-13.5'	56.0'	77°18.2'	73°56.2'	43°50.8'	37°47.5'	17°20.1'	53°10.7'	54°26.1'	90°05.6'
16	325°40.5' N	9°18.7'	14.5'	-13.6'	56.0'	76°55.9'	73°38.9'	43°27.7'	37°16.1'	17°50.5'	53°42.3'	54°54.6'	90°34.8'
17	340°14.0' N	9°05.1'	14.5'	-13.6'	56.0'	76°33.6'	73°21.7'	43°04.8'	36°44.7'	18°21.0'	54°13.9'	55°23.2'	91°04.0'
18	354°47.6' N	8°51.5'	14.5'	-13.7'	56.1'	76°11.4'	73°04.5'	42°42.0'	36°13.3'	18°51.6'	54°45.5'	55°51.8'	91°33.3'
19	9°21.1' N	8°37.8'	14.5'	-13.8'	56.1'	75°49.1'	72°47.3'	42°19.3'	35°41.9'	19°22.3'	55°17.2'	56°20.5'	92°02.6'
20	23°54.6' N	8°24.0'	14.5'	-13.8'	56.1'	75°26.9'	72°30.2'	41°56.8'	35°10.5'	19°53.1'	55°48.9'	56°49.2'	92°31.9'
21	38°28.2' N	8°10.2'	14.5'	-13.9'	56.2'	75°04.7'	72°13.1'	41°34.3'	34°39.0'	20°23.9'	56°20.7'	57°18.1'	93°01.3'
22	53°01.7' N	7°56.4'	14.5'	-13.9'	56.2'	74°42.5'	71°56.1'	41°12.1'	34°07.5'	20°54.9'	56°52.5'	57°47.0'	93°30.7'
23	67°35.2' N	7°42.5'	14.5'	-14.0'	56.2'	74°20.3'	71°39.1'	40°49.9'	33°35.9'	21°25.9'	57°24.3'	58°15.9'	94°00.2'
Mer. pass.		18 h 21 m SD 15.1'		phase 44%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.9'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.6'
Deneb	+1.2	49°27.0'	N 45°21.3'	Acrux	+0.8	173°02.2'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.2'
Altair	+0.8	62°01.8'	N 8°55.6'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.3'	S 8°10.6'
Vega	+0.0	80°34.3'	N 38°48.1'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°27.5'	N 89°21.3'
Rigil Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.2'	S 57°07.2'
Arcturus	-0.1	145°49.6'	N 19°04.1'	Sirius	-1.4	258°28.5'	S 16°44.9'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.5'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	256°21.5'	180°15.0'	N 22°49.4'	215°59.1'	N 13°38.5'		251°28.8'	N 0°48.7'		288°26.8'	S 14°10.5'		246°06.6'	N 2°28.4'				
1	271°24.0'	195°14.9'	N 22°49.7'	230°58.6'	N 13°39.4'		266°31.0'	N 0°48.8'		303°29.3'	S 14°10.5'		261°07.4'	N 2°29.1'				
2	286°26.5'	210°14.7'	N 22°49.9'	245°58.2'	N 13°40.3'		281°33.1'	N 0°48.9'		318°31.7'	S 14°10.5'		276°08.1'	N 2°29.8'				
3	301°28.9'	225°14.6'	N 22°50.1'	260°57.8'	N 13°41.2'		296°35.2'	N 0°49.1'		333°34.2'	S 14°10.6'		291°08.9'	N 2°30.5'				
4	316°31.4'	240°14.5'	N 22°50.3'	275°57.4'	N 13°42.2'		311°37.3'	N 0°49.2'		348°36.7'	S 14°10.6'		306°09.7'	N 2°31.2'				
5	331°33.9'	255°14.4'	N 22°50.6'	290°57.0'	N 13°43.1'		326°39.5'	N 0°49.3'		3°39.2'	S 14°10.6'		321°10.5'	N 2°31.9'				
6	346°36.3'	270°14.3'	N 22°50.8'	305°56.6'	N 13°44.0'		341°41.6'	N 0°49.5'		18°41.6'	S 14°10.6'		336°11.2'	N 2°32.6'				
7	1°38.8'	285°14.1'	N 22°51.0'	320°56.1'	N 13°44.9'		356°43.7'	N 0°49.6'		33°44.1'	S 14°10.6'		351°12.0'	N 2°33.4'				
8	16°41.2'	300°14.0'	N 22°51.2'	335°55.7'	N 13°45.8'		11°45.9'	N 0°49.7'		48°46.6'	S 14°10.6'		6°12.8'	N 2°34.1'				
9	31°43.7'	315°13.9'	N 22°51.4'	350°55.3'	N 13°46.8'		26°48.0'	N 0°49.9'		63°49.1'	S 14°10.6'		21°13.5'	N 2°34.8'				
10	46°46.2'	330°13.8'	N 22°51.7'	5°54.9'	N 13°47.7'		41°50.1'	N 0°50.0'		78°51.5'	S 14°10.6'		36°14.3'	N 2°35.5'				
11	61°48.6'	345°13.7'	N 22°51.9'	20°54.5'	N 13°48.6'		56°52.3'	N 0°50.1'		93°54.0'	S 14°10.7'		51°15.1'	N 2°36.2'				
12	76°51.1'	0°13.5'	N 22°52.1'	35°54.0'	N 13°49.5'		71°54.4'	N 0°50.2'		108°56.5'	S 14°10.7'		66°15.8'	N 2°36.9'				
13	91°53.6'	15°13.4'	N 22°52.3'	50°53.6'	N 13°50.4'		86°56.5'	N 0°50.4'		123°59.0'	S 14°10.7'		81°16.6'	N 2°37.6'				
14	106°56.0'	30°13.3'	N 22°52.6'	65°53.2'	N 13°51.3'		101°58.7'	N 0°50.5'		139°01.4'	S 14°10.7'		96°17.4'	N 2°38.3'				
15	121°58.5'	45°13.2'	N 22°52.8'	80°52.8'	N 13°52.3'		117°00.8'	N 0°50.6'		154°03.9'	S 14°10.7'		111°18.2'	N 2°39.0'				
16	137°01.0'	60°13.1'	N 22°53.0'	95°52.4'	N 13°53.2'		132°02.9'	N 0°50.8'		169°06.4'	S 14°10.7'		126°18.9'	N 2°39.7'				
17	152°03.4'	75°12.9'	N 22°53.2'	110°51.9'	N 13°54.1'		147°05.1'	N 0°50.9'		184°08.9'	S 14°10.7'		141°19.7'	N 2°40.4'				
18	167°05.9'	90°12.8'	N 22°53.4'	125°51.5'	N 13°55.0'		162°07.2'	N 0°51.0'		199°11.4'	S 14°10.7'		156°20.5'	N 2°41.2'				
19	182°08.3'	105°12.7'	N 22°53.6'	140°51.1'	N 13°55.9'		177°09.3'	N 0°51.2'		214°13.8'	S 14°10.8'		171°21.2'	N 2°41.9'				
20	197°10.8'	120°12.6'	N 22°53.9'	155°50.7'	N 13°56.8'		192°11.5'	N 0°51.3'		229°16.3'	S 14°10.8'		186°22.0'	N 2°42.6'				
21	212°13.3'	135°12.5'	N 22°54.1'	170°50.2'	N 13°57.7'		207°13.6'	N 0°51.4'		244°18.8'	S 14°10.8'		201°22.8'	N 2°43.3'				
22	227°15.7'	150°12.3'	N 22°54.3'	185°49.8'	N 13°58.6'		222°15.7'	N 0°51.6'		259°21.3'	S 14°10.8'		216°23.6'	N 2°44.0'				
23	242°18.2'	165°12.2'	N 22°54.5'	200°49.4'	N 13°59.6'		237°17.9'	N 0°51.7'		274°23.7'	S 14°10.8'		231°24.3'	N 2°44.7'				
		SD 15.8'	d 0.2'		v -0.4' d 0.9'			v 2.1' d 0.1'			v 2.5' d -0.0'			v 0.8' d 0.7'				
Mer. pass.		11 h 59 m 6 s			9 h 36 m			7 h 13 m			4 h 45 m			7 h 35 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Hadar	-Acrux	-Arcturus	-Spica	+Regulus	+Pollux	+Procyon	+Sun
0	82°08.7'	N 7°28.5'	14.5'	-14.0'	56.3'	73°58.1'	71°22.1'	40°28.0'	33°04.3'	21°57.0'	57°56.2'	58°45.0'	94°29.7'
1	96°42.2'	N 7°14.5'	14.5'	-14.0'	56.3'	73°35.9'	71°05.3'	40°06.2'	32°32.7'	22°28.2'	58°28.1'	59°14.1'	94°59.2'
2	111°15.7'	N 7°00.4'	14.5'	-14.1'	56.3'	73°13.8'	70°48.4'	39°44.5'	32°01.1'	22°59.4'	59°00.1'	59°43.2'	95°28.8'
3	125°49.2'	N 6°46.4'	14.5'	-14.1'	56.4'	72°51.6'	70°31.6'	39°23.0'	31°29.4'	23°30.8'	59°32.1'	60°12.4'	95°58.4'
4	140°22.7'	N 6°32.2'	14.5'	-14.2'	56.4'	72°29.5'	70°14.9'	39°01.7'	30°57.7'	24°02.1'	60°04.1'	60°41.7'	96°28.1'
5	154°56.2'	N 6°18.0'	14.5'	-14.2'	56.4'	72°07.4'	69°58.3'	38°40.6'	30°26.0'	24°33.6'	60°36.2'	61°11.1'	96°57.8'
6	169°29.7'	N 6°03.8'	14.5'	-14.3'	56.5'	71°45.4'	69°41.6'	38°19.6'	29°54.3'	25°05.1'	61°08.3'	61°40.5'	97°27.5'
7	184°03.2'	N 5°49.5'	14.5'	-14.3'	56.5'	71°23.3'	69°25.1'	37°58.9'	29°22.5'	25°36.7'	61°40.4'	62°10.0'	97°57.3'
8	198°36.6'	N 5°35.2'	14.4'	-14.4'	56.5'	71°01.3'	69°08.6'	37°38.3'	28°50.7'	26°08.3'	62°12.6'	62°39.5'	98°27.1'
9	213°10.1'	N 5°20.8'	14.4'	-14.4'	56.6'	70°39.3'	68°52.2'	37°18.0'	28°18.9'	26°40.0'	62°44.9'	63°09.2'	98°56.9'
10	227°43.5'	N 5°06.4'	14.4'	-14.4'	56.6'	70°17.4'	68°35.8'	36°57.9'	27°47.0'	27°11.8'	63°17.1'	63°38.8'	99°26.8'
11	242°16.9'	N 4°52.0'	14.4'	-14.5'	56.7'	69°55.5'	68°19.6'	36°38.0'	27°15.2'	27°43.6'	63°49.5'	64°08.6'	99°56.8'
12	256°50.3'	N 4°37.5'	14.4'	-14.5'	56.7'	69°33.6'	68°03.3'	36°18.3'	26°43.3'	28°15.5'	64°21.8'	64°38.4'	100°26.8'
13	271°23.7'	N 4°23.0'	14.4'	-14.6'	56.7'	69°11.7'	67°47.2'	35°58.9'	26°11.3'	28°47.5'	64°54.2'	65°08.2'	100°56.8'
14	285°57.0'	N 4°08.4'	14.3'	-14.6'	56.8'	68°49.9'	67°31.1'	35°39.7'	25°39.4'	29°19.5'	65°26.7'	65°38.1'	101°26.9'
15	300°30.3'	N 3°53.8'	14.3'	-14.6'	56.8'	68°28.1'	67°15.1'	35°20.8'	25°07.4'	29°51.5'	65°59.2'	66°08.1'	101°57.0'
16	315°03.7'	N 3°39.2'	14.3'	-14.7'	56.8'	68°06.3'	66°59.2'	35°02.1'	24°35.4'	30°23.7'	66°31.7'	66°38.1'	102°27.1'
17	329°36.9'	N 3°24.5'	14.3'	-14.7'	56.9'	67°44.6'	66°43.4'	34°43.7'	24°03.4'	30°55.8'	67°04.3'	67°08.2'	102°57.3'
18	344°10.2'	N 3°09.8'	14.2'	-14.7'	56.9'	67°23.0'	66°27.6'	34°25.6'	23°31.4'	31°28.1'	67°36.9'	67°38.4'	103°27.5'
19	358°43.4'	N 2°55.1'	14.2'	-14.8'	57.0'	67°01.3'	66°11.9'	34°07.8'	22°59.4'	32°00.4'	68°09.6'	68°08.6'	103°57.8'
20	13°16.7'	N 2°40.3'	14.2'	-14.8'	57.0'	66°39.8'	65°56.4'	33°50.3'	22°27.3'	32°32.7'	68°42.3'	68°38.9'	104°28.1'
21	27°49.8'	N 2°25.5'	14.2'	-14.8'	57.0'	66°18.2'	65°40.8'	33°33.1'	21°55.3'	33°05.1'	69°15.1'	69°09.2'	104°58.5'
22	42°23.0'	N 2°10.7'	14.1'	-14.9'	57.1'	65°56.7'	65°25.4'	33°16.2'	21°23.2'	33°37.6'	69°47.9'	69°39.6'	105°28.9'
23	56°56.1'	N 1°55.8'	14.1'	-14.9'	57.1'	65°35.3'	65°10.1'	32°59.7'	20°51.1'	34°10.1'	70°20.7'	70°10.1'	105°59.4'
Mer. pass.		19 h 5 m SD 15.3'	phase 54%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.9'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.6'
Deneb	+1.2	49°27.0'	N 45°21.3'	Acrux	+0.8	173°02.2'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.2'
Altair	+0.8	62°01.8'	N 8°55.6'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.3'	S 8°10.6'
Vega	+0.0	80°34.3'	N 38°48.1'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°27.2'	N 89°21.3'
Rigil Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.2'	S 57°07.2'
Arcturus	-0.1	145°49.6'	N 19°04.1'	Sirius	-1.4	258°28.5'	S 16°44.9'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.5'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	257°20.7'	180°12.1' N	22°54.7'	215°49.0' N	14°00.5'	252°20.0' N	0°51.8'	289°26.2' S	14°10.8'	246°25.1' N	2°45.4'	
1	272°23.1'	195°12.0' N	22°54.9'	230°48.5' N	14°01.4'	267°22.1' N	0°52.0'	304°28.7' S	14°10.8'	261°25.9' N	2°46.1'	
2	287°25.6'	210°11.9' N	22°55.1'	245°48.1' N	14°02.3'	282°24.3' N	0°52.1'	319°31.2' S	14°10.8'	276°26.6' N	2°46.8'	
3	302°28.1'	225°11.7' N	22°55.3'	260°47.7' N	14°03.2'	297°26.4' N	0°52.2'	334°33.7' S	14°10.9'	291°27.4' N	2°47.5'	
4	317°30.5'	240°11.6' N	22°55.5'	275°47.3' N	14°04.1'	312°28.5' N	0°52.4'	349°36.1' S	14°10.9'	306°28.2' N	2°48.2'	
5	332°33.0'	255°11.5' N	22°55.8'	290°46.8' N	14°05.0'	327°30.7' N	0°52.5'	4°38.6' S	14°10.9'	321°29.0' N	2°48.9'	
6	347°35.5'	270°11.4' N	22°56.0'	305°46.4' N	14°05.9'	342°32.8' N	0°52.6'	19°41.1' S	14°10.9'	336°29.7' N	2°49.7'	
7	2°37.9'	285°11.2' N	22°56.2'	320°46.0' N	14°06.8'	357°34.9' N	0°52.7'	34°43.6' S	14°10.9'	351°30.5' N	2°50.4'	
8	17°40.4'	300°11.1' N	22°56.4'	335°45.6' N	14°07.7'	12°37.1' N	0°52.9'	49°46.0' S	14°10.9'	6°31.3' N	2°51.1'	
9	32°42.8'	315°11.0' N	22°56.6'	350°45.1' N	14°08.6'	27°39.2' N	0°53.0'	64°48.5' S	14°10.9'	21°32.0' N	2°51.8'	
10	47°45.3'	330°10.9' N	22°56.8'	5°44.7' N	14°09.5'	42°41.4' N	0°53.1'	79°51.0' S	14°10.9'	36°32.8' N	2°52.5'	
11	62°47.8'	345°10.8' N	22°57.0'	20°44.3' N	14°10.4'	57°43.5' N	0°53.3'	94°53.5' S	14°11.0'	51°33.6' N	2°53.2'	
12	77°50.2'	0°10.6' N	22°57.2'	35°43.8' N	14°11.3'	72°45.6' N	0°53.4'	109°56.0' S	14°11.0'	66°34.4' N	2°53.9'	
13	92°52.7'	15°10.5' N	22°57.4'	50°43.4' N	14°12.2'	87°47.8' N	0°53.5'	124°58.4' S	14°11.0'	81°35.1' N	2°54.6'	
14	107°55.2'	30°10.4' N	22°57.6'	65°43.0' N	14°13.2'	102°49.9' N	0°53.7'	140°00.9' S	14°11.0'	96°35.9' N	2°55.3'	
15	122°57.6'	45°10.3' N	22°57.8'	80°42.5' N	14°14.1'	117°52.0' N	0°53.8'	155°03.4' S	14°11.0'	111°36.7' N	2°56.0'	
16	138°00.1'	60°10.1' N	22°58.0'	95°42.1' N	14°15.0'	132°54.2' N	0°53.9'	170°05.9' S	14°11.0'	126°37.4' N	2°56.7'	
17	153°02.6'	75°10.0' N	22°58.2'	110°41.7' N	14°15.9'	147°56.3' N	0°54.1'	185°08.4' S	14°11.0'	141°38.2' N	2°57.4'	
18	168°05.0'	90°09.9' N	22°58.4'	125°41.2' N	14°16.8'	162°58.5' N	0°54.2'	200°10.8' S	14°11.1'	156°39.0' N	2°58.1'	
19	183°07.5'	105°09.8' N	22°58.6'	140°40.8' N	14°17.7'	178°00.6' N	0°54.3'	215°13.3' S	14°11.1'	171°39.8' N	2°58.9'	
20	198°09.9'	120°09.7' N	22°58.8'	155°40.4' N	14°18.6'	193°02.7' N	0°54.4'	230°15.8' S	14°11.1'	186°40.5' N	2°59.6'	
21	213°12.4'	135°09.5' N	22°59.0'	170°39.9' N	14°19.5'	208°04.9' N	0°54.6'	245°18.3' S	14°11.1'	201°41.3' N	3°00.3'	
22	228°14.9'	150°09.4' N	22°59.2'	185°39.5' N	14°20.4'	223°07.0' N	0°54.7'	260°20.8' S	14°11.1'	216°42.1' N	3°01.0'	
23	243°17.3'	165°09.3' N	22°59.4'	200°39.1' N	14°21.3'	238°09.2' N	0°54.8'	275°23.2' S	14°11.1'	231°42.8' N	3°01.7'	
		SD 15.8' d 0.2'		v -0.4' d 0.9'		v 2.1' d 0.1'		v 2.5' d -0.0'		v 0.8' d 0.7'		
Mer. pass.		11 h 59 m 18 s		9 h 37 m		7 h 10 m		4 h 41 m		7 h 34 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Hadar	-Acrux	-Arcturus	-Spica	+Regulus	+Procyon	+Pollux	+Sun
0	71°29.2' N	1°41.0'	14.1'	-14.9'	57.1'	65°13.9'	64°54.9'	32°43.5'	20°19.0'	34°42.6'	70°40.6'	70°53.6'	106°29.9'
1	86°02.3' N	1°26.0'	14.0'	-14.9'	57.2'	64°52.6'	64°39.7'	32°27.6'	19°47.0'	35°15.3'	71°11.1'	71°26.5'	107°00.4'
2	100°35.3' N	1°11.1'	14.0'	-15.0'	57.2'	64°31.3'		32°12.1'	19°14.9'	35°47.9'	71°41.8'	71°59.5'	107°31.0'
3	115°08.3' N	0°56.1'	14.0'	-15.0'	57.3'	64°10.1'			18°42.8'	36°20.7'	72°12.4'	72°32.5'	108°01.7'
4	129°41.2' N	0°41.1'	13.9'	-15.0'	57.3'	63°49.0'			18°10.8'	36°53.4'	72°43.2'	73°05.6'	108°32.4'
5	144°14.2' N	0°26.1'	13.9'	-15.0'	57.3'	63°27.9'			17°38.7'	37°26.3'	73°14.0'	73°38.7'	109°03.1'
6	158°47.0' N	0°11.1'	13.8'	-15.1'	57.4'	63°06.9'			17°06.7'	37°59.2'	73°44.8'	74°11.9'	109°33.9'
7	173°19.9' S	0°04.0'	13.8'	-15.1'	57.4'	62°45.9'			16°34.7'	38°32.1'	74°15.7'	74°45.1'	110°04.7'
8	187°52.7' S	0°19.1'	13.7'	-15.1'	57.4'	62°25.1'			16°02.8'	39°05.1'	74°46.7'	75°18.4'	110°35.6'
9	202°25.4' S	0°34.2'	13.7'	-15.1'	57.5'	62°04.3'			15°30.9'	39°38.2'	75°17.7'	75°51.7'	111°06.5'
10	216°58.1' S	0°49.3'	13.7'	-15.1'	57.5'	61°43.5'			14°59.0'	40°11.3'	75°48.8'	76°25.1'	111°37.4'
11	231°30.8' S	1°04.4'	13.6'	-15.2'	57.6'	61°22.9'			14°27.2'	40°44.4'	76°19.9'	76°58.5'	112°08.4'
12	246°03.4' S	1°19.6'	13.6'	-15.2'	57.6'	61°02.3'			13°55.5'	41°17.6'	76°51.1'	77°31.9'	112°39.5'
13	260°35.9' S	1°34.8'	13.5'	-15.2'	57.6'	60°41.8'			13°23.9'	41°50.9'	77°22.3'	78°05.4'	113°10.6'
14	275°08.5' S	1°50.0'	13.5'	-15.2'	57.7'	60°21.4'			12°52.4'	42°24.2'	77°53.6'	78°39.0'	113°41.8'
15	289°40.9' S	2°05.2'	13.4'	-15.2'	57.7'	60°01.1'			12°21.1'	42°57.6'	78°25.0'	79°12.5'	114°12.9'
16	304°13.3' S	2°20.4'	13.4'	-15.2'	57.8'	59°40.9'			11°49.9'	43°31.0'	78°56.4'	79°46.2'	114°44.2'
17	318°45.7' S	2°35.6'	13.3'	-15.2'	57.8'	59°20.8'			11°18.9'	44°04.5'	79°27.8'	80°19.9'	115°15.5'
18	333°18.0' S	2°50.8'	13.2'	-15.2'	57.8'	59°00.8'			10°48.1'	44°38.0'	79°59.3'	80°53.6'	115°46.8'
19	347°50.2' S	3°06.1'	13.2'	-15.2'	57.9'	58°40.8'			10°17.6'	45°11.6'	80°30.9'	81°27.4'	116°18.2'
20	2°22.4' S	3°21.3'	13.1'	-15.3'	57.9'	58°21.0'			9°47.4'	45°45.2'	81°02.5'	82°01.2'	116°49.7'
21	16°54.5' S	3°36.6'	13.1'	-15.3'	58.0'	58°01.3'			9°17.5'	46°18.9'	81°34.2'	82°35.1'	117°21.1'
22	31°26.6' S	3°51.8'	13.0'	-15.3'	58.0'	57°41.7'			8°48.1'	46°52.6'	82°05.9'	83°09.1'	117°52.7'
23	45°58.6' S	4°07.1'	12.9'	-15.3'	58.0'	57°22.2'			8°19.3'	47°26.4'	82°37.7'	83°43.1'	118°24.3'
Mer. pass.		19 h 50 m SD 15.6'		phase 64%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.9'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.6'
Deneb	+1.2	49°26.9'	N 45°21.3'	Acrux	+0.8	173°02.2'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.2'
Altair	+0.8	62°01.8'	N 8°55.6'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.3'	S 8°10.6'
Vega	+0.0	80°34.3'	N 38°48.1'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°27.0'	N 89°21.3'
Rigil Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.2'	S 57°07.2'
Arcturus	-0.1	145°49.6'	N 19°04.1'	Sirius	-1.4	258°28.5'	S 16°44.9'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.5'				

Friday 10 June 2022 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	258°19.8'	180°09.0'	N 22°59.6'	215°38.6'	N 14°22.2'	253°11.3'	N 0°55.0'	290°25.7'	S 14°11.1'	246°43.6'	N 3°02.4'			
1	273°22.3'	195°09.0'	N 22°59.8'	230°38.2'	N 14°23.1'	268°13.4'	N 0°55.1'	305°28.2'	S 14°11.2'	261°44.4'	N 3°03.1'			
2	288°24.7'	210°08.9'	N 22°60.0'	245°37.8'	N 14°24.0'	283°15.6'	N 0°55.2'	320°30.7'	S 14°11.2'	276°45.2'	N 3°03.8'			
3	303°27.2'	225°08.8'	N 23°00.2'	260°37.3'	N 14°24.8'	298°17.7'	N 0°55.3'	335°33.2'	S 14°11.2'	291°45.9'	N 3°04.5'			
4	318°29.7'	240°08.7'	N 23°00.3'	275°36.9'	N 14°25.7'	313°19.9'	N 0°55.5'	350°35.7'	S 14°11.2'	306°46.7'	N 3°05.2'			
5	333°32.1'	255°08.5'	N 23°00.5'	290°36.4'	N 14°26.6'	328°22.0'	N 0°55.6'	5°38.1'	S 14°11.2'	321°47.5'	N 3°05.9'			
6	348°34.6'	270°08.4'	N 23°00.7'	305°36.0'	N 14°27.5'	343°24.1'	N 0°55.7'	20°40.6'	S 14°11.2'	336°48.3'	N 3°06.6'			
7	3°37.1'	285°08.3'	N 23°00.9'	320°35.6'	N 14°28.4'	358°26.3'	N 0°55.9'	35°43.1'	S 14°11.2'	351°49.0'	N 3°07.3'			
8	18°39.5'	300°08.2'	N 23°01.1'	335°35.1'	N 14°29.3'	13°28.4'	N 0°56.0'	50°45.6'	S 14°11.3'	6°49.8'	N 3°08.0'			
9	33°42.0'	315°08.0'	N 23°01.3'	350°34.7'	N 14°30.2'	28°30.6'	N 0°56.1'	65°48.1'	S 14°11.3'	21°50.6'	N 3°08.7'			
10	48°44.4'	330°07.9'	N 23°01.5'	5°34.2'	N 14°31.1'	43°32.7'	N 0°56.2'	80°50.6'	S 14°11.3'	36°51.3'	N 3°09.4'			
11	63°46.9'	345°07.8'	N 23°01.7'	20°33.8'	N 14°32.0'	58°34.8'	N 0°56.4'	95°53.0'	S 14°11.3'	51°52.1'	N 3°10.1'			
12	78°49.4'	0°07.7'	N 23°01.9'	35°33.4'	N 14°32.9'	73°37.0'	N 0°56.5'	110°55.5'	S 14°11.3'	66°52.9'	N 3°10.8'			
13	93°51.8'	15°07.5'	N 23°02.0'	50°32.9'	N 14°33.8'	88°39.1'	N 0°56.6'	125°58.0'	S 14°11.3'	81°53.7'	N 3°11.6'			
14	108°54.3'	30°07.4'	N 23°02.2'	65°32.5'	N 14°34.7'	103°41.3'	N 0°56.8'	141°00.5'	S 14°11.3'	96°54.4'	N 3°12.3'			
15	123°56.8'	45°07.3'	N 23°02.4'	80°32.0'	N 14°35.6'	118°43.4'	N 0°56.9'	156°03.0'	S 14°11.4'	111°55.2'	N 3°13.0'			
16	138°59.2'	60°07.2'	N 23°02.6'	95°31.6'	N 14°36.5'	133°45.6'	N 0°57.0'	171°05.5'	S 14°11.4'	126°56.0'	N 3°13.7'			
17	154°01.7'	75°07.0'	N 23°02.8'	110°31.1'	N 14°37.3'	148°47.7'	N 0°57.1'	186°07.9'	S 14°11.4'	141°56.8'	N 3°14.4'			
18	169°04.2'	90°06.9'	N 23°03.0'	125°30.7'	N 14°38.2'	163°49.8'	N 0°57.3'	201°10.4'	S 14°11.4'	156°57.5'	N 3°15.1'			
19	184°06.6'	105°06.8'	N 23°03.1'	140°30.3'	N 14°39.1'	178°52.0'	N 0°57.4'	216°12.9'	S 14°11.4'	171°58.3'	N 3°15.8'			
20	199°09.1'	120°06.7'	N 23°03.3'	155°29.8'	N 14°40.0'	193°54.1'	N 0°57.5'	231°15.4'	S 14°11.4'	186°59.1'	N 3°16.5'			
21	214°11.6'	135°06.5'	N 23°03.5'	170°29.4'	N 14°40.9'	208°56.3'	N 0°57.6'	246°17.9'	S 14°11.5'	201°59.9'	N 3°17.2'			
22	229°14.0'	150°06.4'	N 23°03.7'	185°28.9'	N 14°41.8'	223°58.4'	N 0°57.8'	261°20.4'	S 14°11.5'	217°00.6'	N 3°17.9'			
23	244°16.5'	165°06.3'	N 23°03.9'	200°28.5'	N 14°42.7'	239°00.6'	N 0°57.9'	276°22.8'	S 14°11.5'	232°01.4'	N 3°18.6'			
		SD 15.7'	d 0.2'	v -0.4'	d 0.9'	v 2.1'	d 0.1'	v 2.5'	d -0.0'	v 0.8'	d 0.7'			
Mer. pass.		11 h 59 m 30 s		9 h 38 m		7 h 6 m		4 h 38 m		7 h 33 m				

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Rigil Kent	-Hadar	-Antares	-Spica	+Regulus	+Procyon	+Pollux	+Sun
0	60°30.5'	S 4°22.4'	12.9'	-15.3'	58.1'	59°02.8'	57°02.9'	52°28.4'	7°51.1'	48°00.3'	83°09.5'	84°17.1'	118°55.9'
1	75°02.4'	S 4°37.6'	12.8'	-15.3'	58.1'	58°41.4'	56°43.6'	51°54.4'		48°34.2'	83°41.4'	84°51.2'	119°27.6'
2	89°34.2'	S 4°52.9'	12.7'	-15.3'	58.2'	58°20.0'	56°24.5'	51°20.3'		49°08.1'	84°13.3'	85°25.3'	119°59.3'
3	104°06.0'	S 5°08.2'	12.7'	-15.3'	58.2'	57°58.7'	56°05.5'	50°46.2'		49°42.1'	84°45.2'	85°59.5'	
4	118°37.6'	S 5°23.4'	12.6'	-15.3'	58.2'	57°37.6'	55°46.6'	50°12.0'		50°16.2'	85°17.3'	86°33.7'	
5	133°09.2'	S 5°38.7'	12.5'	-15.3'	58.3'	57°16.5'	55°27.9'	49°37.8'		50°50.3'	85°49.3'	87°08.0'	
6	147°40.8'	S 5°53.9'	12.5'	-15.2'	58.3'	56°55.6'	55°09.3'	49°03.5'		51°24.4'	86°21.5'	87°42.3'	
7	162°12.2'	S 6°09.2'	12.4'	-15.2'	58.4'	56°34.7'	54°50.9'	48°29.2'		51°58.7'	86°53.6'	88°16.7'	
8	176°43.6'	S 6°24.4'	12.3'	-15.2'	58.4'	56°14.0'	54°32.6'	47°54.8'		52°32.9'	87°25.9'	88°51.1'	
9	191°14.9'	S 6°39.7'	12.2'	-15.2'	58.4'	55°53.4'	54°14.4'	47°20.4'		53°07.2'	87°58.1'	89°25.6'	
10	205°46.1'	S 6°54.9'	12.1'	-15.2'	58.5'	55°32.9'	53°56.4'	46°45.9'		53°41.6'	88°30.4'	90°00.1'	
11	220°17.3'	S 7°10.1'	12.1'	-15.2'	58.5'	55°12.5'	53°38.6'	46°11.4'		54°16.0'	89°02.8'	90°34.7'	
12	234°48.3'	S 7°25.3'	12.0'	-15.2'	58.6'	54°52.3'	53°20.9'	45°36.8'		54°50.5'	89°35.2'	91°09.3'	
13	249°19.3'	S 7°40.5'	11.9'	-15.2'	58.6'	54°32.2'	53°03.4'	45°02.2'		55°25.0'	90°07.7'	91°44.0'	
14	263°50.2'	S 7°55.6'	11.8'	-15.1'	58.6'	54°12.3'	52°46.1'	44°27.6'		55°59.6'	90°40.2'	92°18.7'	
15	278°21.1'	S 8°10.8'	11.7'	-15.1'	58.7'	53°52.5'	52°28.9'	43°52.9'		56°34.2'	91°12.7'	92°53.5'	
16	292°51.8'	S 8°25.9'	11.6'	-15.1'	58.7'	53°32.8'	52°12.0'	43°18.1'		57°08.9'	91°45.3'	93°28.3'	
17	307°22.4'	S 8°41.0'	11.6'	-15.1'	58.8'	53°13.3'	51°55.2'	42°43.3'		57°43.6'	92°18.0'	94°03.2'	
18	321°53.0'	S 8°56.1'	11.5'	-15.1'	58.8'	52°53.9'	51°38.6'	42°08.5'		58°18.4'	92°50.6'	94°38.1'	
19	336°23.5'	S 9°11.1'	11.4'	-15.0'	58.8'	52°34.7'	51°22.2'	41°33.6'		58°53.3'	93°23.4'	95°13.1'	
20	350°53.9'	S 9°26.2'	11.3'	-15.0'	58.9'	52°15.7'	51°06.0'	40°58.6'		59°28.1'	93°56.2'	95°48.1'	
21	5°24.1'	S 9°41.2'	11.2'	-15.0'	58.9'	51°56.8'	50°50.0'	40°23.7'		60°03.1'	94°29.0'	96°23.2'	
22	19°54.3'	S 9°56.1'	11.1'	-14.9'	59.0'	51°38.1'	50°34.2'	39°48.6'		60°38.1'	95°01.8'	96°58.3'	
23	34°24.4'	S 10°11.1'	11.0'	-14.9'	59.0'	51°19.6'	50°18.7'	39°13.6'		61°13.1'	95°34.7'	97°33.5'	
Mer. pass.		20 h 38 m SD 15.8'		phase 74%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.9'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.6'
Deneb	+1.2	49°26.9'	N 45°21.4'	Acrux	+0.8	173°02.2'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.2'
Altair	+0.8	62°01.8'	N 8°55.6'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.3'	S 8°10.6'
Vega	+0.0	80°34.3'	N 38°48.2'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°26.7'	N 89°21.3'
Rigil Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.2'	S 57°07.2'
Arcturus	-0.1	145°49.6'	N 19°04.1'	Sirius	-1.4	258°28.5'	S 16°44.9'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.5'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	259°18.9'	180°06.2'	N 23°04.0'	215°28.0'	N 14°43.6'	254°02.7'	N 0°58.0'	291°25.3'	S 14°11.5'	247°02.2'	N 3°19.3'	
1	274°21.4'	195°06.0'	N 23°04.2'	230°27.6'	N 14°44.4'	269°04.8'	N 0°58.2'	306°27.8'	S 14°11.5'	262°02.9'	N 3°20.0'	
2	289°23.9'	210°05.9'	N 23°04.4'	245°27.1'	N 14°45.3'	284°07.0'	N 0°58.3'	321°30.3'	S 14°11.5'	277°03.7'	N 3°20.7'	
3	304°26.3'	225°05.8'	N 23°04.6'	260°26.7'	N 14°46.2'	299°09.1'	N 0°58.4'	336°32.8'	S 14°11.5'	292°04.5'	N 3°21.4'	
4	319°28.8'	240°05.7'	N 23°04.8'	275°26.2'	N 14°47.1'	314°11.3'	N 0°58.5'	351°35.3'	S 14°11.6'	307°05.3'	N 3°22.1'	
5	334°31.3'	255°05.5'	N 23°04.9'	290°25.8'	N 14°48.0'	329°13.4'	N 0°58.7'	6°37.8'	S 14°11.6'	322°06.0'	N 3°22.8'	
6	349°33.7'	270°05.4'	N 23°05.1'	305°25.3'	N 14°48.9'	344°15.6'	N 0°58.8'	21°40.2'	S 14°11.6'	337°06.8'	N 3°23.5'	
7	4°36.2'	285°05.3'	N 23°05.3'	320°24.9'	N 14°49.7'	359°17.7'	N 0°58.9'	36°42.7'	S 14°11.6'	352°07.6'	N 3°24.2'	
8	19°38.7'	300°05.2'	N 23°05.4'	335°24.4'	N 14°50.6'	14°19.9'	N 0°59.0'	51°45.2'	S 14°11.6'	7°08.4'	N 3°24.9'	
9	34°41.1'	315°05.0'	N 23°05.6'	350°24.0'	N 14°51.5'	29°22.0'	N 0°59.2'	66°47.7'	S 14°11.6'	22°09.1'	N 3°25.6'	
10	49°43.6'	330°04.9'	N 23°05.8'	5°23.5'	N 14°52.4'	44°24.2'	N 0°59.3'	81°50.2'	S 14°11.7'	37°09.9'	N 3°26.3'	
11	64°46.0'	345°04.8'	N 23°06.0'	20°23.1'	N 14°53.3'	59°26.3'	N 0°59.4'	96°52.7'	S 14°11.7'	52°10.7'	N 3°27.0'	
12	79°48.5'	0°04.7'	N 23°06.1'	35°22.6'	N 14°54.1'	74°28.5'	N 0°59.5'	111°55.2'	S 14°11.7'	67°11.5'	N 3°27.7'	
13	94°51.0'	15°04.5'	N 23°06.3'	50°22.2'	N 14°55.0'	89°30.6'	N 0°59.7'	126°57.7'	S 14°11.7'	82°12.2'	N 3°28.4'	
14	109°53.4'	30°04.4'	N 23°06.5'	65°21.7'	N 14°55.9'	104°32.8'	N 0°59.8'	142°00.1'	S 14°11.7'	97°13.0'	N 3°29.1'	
15	124°55.9'	45°04.3'	N 23°06.6'	80°21.3'	N 14°56.8'	119°34.9'	N 0°59.9'	157°02.6'	S 14°11.7'	112°13.8'	N 3°29.8'	
16	139°58.4'	60°04.1'	N 23°06.8'	95°20.8'	N 14°57.6'	134°37.0'	N 1°00.0'	172°05.1'	S 14°11.8'	127°14.6'	N 3°30.6'	
17	155°00.8'	75°04.0'	N 23°07.0'	110°20.4'	N 14°58.5'	149°39.2'	N 1°00.2'	187°07.6'	S 14°11.8'	142°15.3'	N 3°31.3'	
18	170°03.3'	90°03.9'	N 23°07.1'	125°19.9'	N 14°59.4'	164°41.3'	N 1°00.3'	202°10.1'	S 14°11.8'	157°16.1'	N 3°32.0'	
19	185°05.8'	105°03.8'	N 23°07.3'	140°19.4'	N 15°00.3'	179°43.5'	N 1°00.4'	217°12.6'	S 14°11.8'	172°16.9'	N 3°32.7'	
20	200°08.2'	120°03.6'	N 23°07.5'	155°19.0'	N 15°01.1'	194°45.6'	N 1°00.5'	232°15.1'	S 14°11.8'	187°17.7'	N 3°33.4'	
21	215°10.7'	135°03.5'	N 23°07.6'	170°18.5'	N 15°02.0'	209°47.8'	N 1°00.7'	247°17.6'	S 14°11.8'	202°18.4'	N 3°34.1'	
22	230°13.2'	150°03.4'	N 23°07.8'	185°18.1'	N 15°02.9'	224°49.9'	N 1°00.8'	262°20.1'	S 14°11.9'	217°19.2'	N 3°34.8'	
23	245°15.6'	165°03.3'	N 23°07.9'	200°17.6'	N 15°03.8'	239°52.1'	N 1°00.9'	277°22.5'	S 14°11.9'	232°20.0'	N 3°35.5'	
		SD 15.7'	d 0.2'	v -0.5'	d 0.9'	v 2.1'	d 0.1'	v 2.5'	d -0.0'	v 0.8'	d 0.7'	
Mer. pass.		11 h 59 m 42 s		9 h 38 m		7 h 3 m		4 h 34 m		7 h 31 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Altair	-Rigil Kent	-Hadar	-Antares	+Spica	+Arcturus	+Regulus	+Procyon
0	48°54.4'	S 10°26.0'	10.9'	-14.9'	59.0'	89°14.5'	51°01.3'	50°03.3'	38°38.4'	8°41.9'		61°48.2'	96°07.7'
1	63°24.4'	S 10°40.9'	10.8'	-14.8'	59.1'	88°45.3'	50°43.1'		38°03.3'	9°12.3'		62°23.3'	96°40.7'
2	77°54.2'	S 10°55.7'	10.7'	-14.8'	59.1'	88°16.1'	50°25.2'		37°28.0'	9°43.3'		62°58.5'	97°13.7'
3	92°23.9'	S 11°10.5'	10.6'	-14.8'	59.2'	87°46.8'	50°07.4'		36°52.8'	10°14.9'		63°33.8'	97°46.7'
4	106°53.5'	S 11°25.3'	10.5'	-14.7'	59.2'	87°17.5'	49°49.9'		36°17.5'	10°46.8'		64°09.1'	98°19.8'
5	121°23.0'	S 11°40.0'	10.4'	-14.7'	59.2'	86°48.2'	49°32.6'		35°42.1'	11°19.2'		64°44.4'	98°53.0'
6	135°52.4'	S 11°54.7'	10.3'	-14.6'	59.3'	86°18.8'	49°15.4'		35°06.7'	11°51.9'		65°19.8'	99°26.2'
7	150°21.7'	S 12°09.3'	10.2'	-14.6'	59.3'	85°49.4'	48°58.6'		34°31.3'	12°24.9'		65°55.2'	99°59.4'
8	164°50.9'	S 12°23.9'	10.1'	-14.5'	59.3'	85°20.0'	48°41.9'		33°55.8'	12°58.1'	31°28.3'	66°30.7'	100°32.6'
9	179°20.0'	S 12°38.4'	10.0'	-14.5'	59.4'	84°50.5'	48°25.5'		33°20.3'	13°31.6'	31°43.8'	67°06.3'	101°05.9'
10	193°48.9'	S 12°52.9'	9.9'	-14.4'	59.4'	84°21.0'	48°09.3'		32°44.7'	14°05.4'	31°59.7'	67°41.8'	101°39.3'
11	208°17.8'	S 13°07.4'	9.8'	-14.4'	59.5'	83°51.5'	47°53.3'		32°09.1'	14°39.3'	32°16.2'	68°17.5'	102°12.6'
12	222°46.6'	S 13°21.7'	9.6'	-14.3'	59.5'	83°22.0'	47°37.6'		31°33.5'	15°13.4'	32°33.1'	68°53.2'	102°46.0'
13	237°15.2'	S 13°36.1'	9.5'	-14.3'	59.5'	82°52.4'	47°22.2'		30°57.8'	15°47.7'	32°50.5'	69°28.9'	103°19.4'
14	251°43.8'	S 13°50.3'	9.4'	-14.2'	59.6'	82°22.8'			30°22.0'	16°22.1'	33°08.4'	70°04.7'	103°52.9'
15	266°12.2'	S 14°04.5'	9.3'	-14.1'	59.6'	81°53.2'			29°46.3'	16°56.7'	33°26.8'	70°40.5'	104°26.4'
16	280°40.5'	S 14°18.7'	9.2'	-14.1'	59.6'	81°23.6'			29°10.4'	17°31.4'	33°45.5'	71°16.4'	104°59.9'
17	295°08.7'	S 14°32.8'	9.1'	-14.0'	59.7'	80°53.9'			28°34.6'	18°06.3'	34°04.7'	71°52.3'	105°33.4'
18	309°36.8'	S 14°46.8'	9.0'	-14.0'	59.7'	80°24.2'			27°58.7'	18°41.2'	34°24.4'	72°28.3'	106°07.0'
19	324°04.7'	S 15°00.7'	8.8'	-13.9'	59.8'	79°54.5'			27°22.8'	19°16.3'	34°44.4'	73°04.3'	106°40.6'
20	338°32.5'	S 15°14.6'	8.7'	-13.8'	59.8'	79°24.8'			26°46.8'	19°51.5'	35°04.8'	73°40.3'	107°14.3'
21	353°00.3'	S 15°28.4'	8.6'	-13.7'	59.8'	78°55.1'			26°10.8'	20°26.8'	35°25.7'	74°16.4'	107°47.9'
22	7°27.9'	S 15°42.2'	8.5'	-13.7'	59.9'	78°25.4'			25°34.8'	21°02.1'	35°46.9'	74°52.6'	108°21.6'
23	21°55.3'	S 15°55.8'	8.4'	-13.6'	59.9'	77°55.6'			24°58.7'	21°37.6'	36°08.5'	75°28.8'	108°55.3'
Mer. pass.		21 h 29 m SD 16.1'		phase 83%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.8'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.6'
Deneb	+1.2	49°26.9'	N 45°21.4'	Acrux	+0.8	173°02.2'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.2'
Altair	+0.8	62°01.8'	N 8°55.6'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.3'	S 8°10.6'
Vega	+0.0	80°34.3'	N 38°48.2'	Pollux	+1.2	243°20.3'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°26.3'	N 89°21.3'
Rigil Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.2'	S 57°07.2'
Arcturus	-0.1	145°49.6'	N 19°04.1'	Sirius	-1.4	258°28.5'	S 16°44.9'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.5'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	260°18.1'	180°03.1'	N 23°08.1'	215°17.2'	N 15°04.6'	254°54.2'	N 1°01.0'	292°25.0'	S 14°11.9'	247°20.8'	N 3°36.2'	
1	275°20.5'	195°03.0'	N 23°08.3'	230°16.7'	N 15°05.5'	269°56.4'	N 1°01.2'	307°27.5'	S 14°11.9'	262°21.5'	N 3°36.9'	
2	290°23.0'	210°02.9'	N 23°08.4'	245°16.2'	N 15°06.4'	284°58.5'	N 1°01.3'	322°30.0'	S 14°11.9'	277°22.3'	N 3°37.6'	
3	305°25.5'	225°02.7'	N 23°08.6'	260°15.8'	N 15°07.3'	300°00.7'	N 1°01.4'	337°32.5'	S 14°11.9'	292°23.1'	N 3°38.3'	
4	320°27.9'	240°02.6'	N 23°08.7'	275°15.3'	N 15°08.1'	315°02.8'	N 1°01.5'	352°35.0'	S 14°12.0'	307°23.9'	N 3°39.0'	
5	335°30.4'	255°02.5'	N 23°08.9'	290°14.9'	N 15°09.0'	330°05.0'	N 1°01.7'	7°37.5'	S 14°12.0'	322°24.6'	N 3°39.7'	
6	350°32.9'	270°02.4'	N 23°09.1'	305°14.4'	N 15°09.9'	345°07.1'	N 1°01.8'	22°40.0'	S 14°12.0'	337°25.4'	N 3°40.4'	
7	5°35.3'	285°02.2'	N 23°09.2'	320°13.9'	N 15°10.7'	0°09.3'	N 1°01.9'	37°42.5'	S 14°12.0'	352°26.2'	N 3°41.1'	
8	20°37.8'	300°02.1'	N 23°09.4'	335°13.5'	N 15°11.6'	15°11.4'	N 1°02.0'	52°45.0'	S 14°12.0'	7°27.0'	N 3°41.8'	
9	35°40.3'	315°02.0'	N 23°09.5'	350°13.0'	N 15°12.5'	30°13.6'	N 1°02.2'	67°47.4'	S 14°12.0'	22°27.7'	N 3°42.5'	
10	50°42.7'	330°01.8'	N 23°09.7'	5°12.6'	N 15°13.3'	45°15.8'	N 1°02.3'	82°49.9'	S 14°12.1'	37°28.5'	N 3°43.2'	
11	65°45.2'	345°01.7'	N 23°09.8'	20°12.1'	N 15°14.2'	60°17.9'	N 1°02.4'	97°52.4'	S 14°12.1'	52°29.3'	N 3°43.9'	
12	80°47.7'	0°01.6'	N 23°10.0'	35°11.6'	N 15°15.1'	75°20.1'	N 1°02.5'	112°54.9'	S 14°12.1'	67°30.1'	N 3°44.6'	
13	95°50.1'	15°01.5'	N 23°10.1'	50°11.2'	N 15°15.9'	90°22.2'	N 1°02.6'	127°57.4'	S 14°12.1'	82°30.8'	N 3°45.3'	
14	110°52.6'	30°01.3'	N 23°10.3'	65°10.7'	N 15°16.8'	105°24.4'	N 1°02.8'	142°59.9'	S 14°12.1'	97°31.6'	N 3°46.0'	
15	125°55.0'	45°01.2'	N 23°10.4'	80°10.2'	N 15°17.7'	120°26.5'	N 1°02.9'	158°02.4'	S 14°12.2'	112°32.4'	N 3°46.7'	
16	140°57.5'	60°01.1'	N 23°10.6'	95°09.8'	N 15°18.5'	135°28.7'	N 1°03.0'	173°04.9'	S 14°12.2'	127°33.2'	N 3°47.4'	
17	155°60.0'	75°00.9'	N 23°10.7'	110°09.3'	N 15°19.4'	150°30.8'	N 1°03.1'	188°07.4'	S 14°12.2'	142°33.9'	N 3°48.1'	
18	171°02.4'	90°00.8'	N 23°10.9'	125°08.8'	N 15°20.2'	165°33.0'	N 1°03.3'	203°09.9'	S 14°12.2'	157°34.7'	N 3°48.8'	
19	186°04.9'	105°00.7'	N 23°11.0'	140°08.4'	N 15°21.1'	180°35.1'	N 1°03.4'	218°12.4'	S 14°12.2'	172°35.5'	N 3°49.5'	
20	201°07.4'	120°00.6'	N 23°11.2'	155°07.9'	N 15°22.0'	195°37.3'	N 1°03.5'	233°14.9'	S 14°12.2'	187°36.3'	N 3°50.2'	
21	216°09.8'	135°00.4'	N 23°11.3'	170°07.4'	N 15°22.8'	210°39.4'	N 1°03.6'	248°17.3'	S 14°12.3'	202°37.0'	N 3°50.9'	
22	231°12.3'	150°00.3'	N 23°11.5'	185°07.0'	N 15°23.7'	225°41.6'	N 1°03.8'	263°19.8'	S 14°12.3'	217°37.8'	N 3°51.6'	
23	246°14.8'	165°00.2'	N 23°11.6'	200°06.5'	N 15°24.5'	240°43.7'	N 1°03.9'	278°22.3'	S 14°12.3'	232°38.6'	N 3°52.3'	
		SD 15.7'	d 0.2'		v -0.5' d 0.9'		v 2.2' d 0.1'		v 2.5' d -0.0'		v 0.8' d 0.7'	
Mer. pass.		11 h 59 m 54 s		9 h 39 m		6 h 59 m		4 h 30 m		7 h 30 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Deneb	-Saturn	-Altair	-Antares	+Spica	+Arcturus	+Regulus	+Adhara
0	36°22.7'	S 16°09.4'	8.2'	-13.5'	59.9'		98°59.9'	77°25.9'	24°22.7'	22°13.2'	36°30.4'	76°05.0'	105°50.7'
1	50°49.9'	S 16°22.9'	8.1'	-13.4'	60.0'		98°23.5'	76°56.1'	23°46.5'	22°48.8'	36°52.7'	76°41.3'	106°09.3'
2	65°17.0'	S 16°36.3'	8.0'	-13.3'	60.0'		97°47.1'	76°26.4'	23°10.4'	23°24.5'	37°15.4'	77°17.6'	106°27.9'
3	79°44.0'	S 16°49.7'	7.9'	-13.2'	60.0'		97°10.7'	75°56.6'	22°34.2'	24°00.3'	37°38.4'	77°54.0'	106°46.3'
4	94°10.9'	S 17°02.9'	7.7'	-13.2'	60.1'		96°34.2'	75°26.8'	21°58.0'	24°36.2'	38°01.7'	78°30.4'	107°04.7'
5	108°37.6'	S 17°16.1'	7.6'	-13.1'	60.1'		95°57.7'	74°57.0'	21°21.8'	25°12.1'	38°25.3'	79°06.9'	107°23.1'
6	123°04.2'	S 17°29.2'	7.5'	-13.0'	60.1'		95°21.1'	74°27.3'	20°45.5'	25°48.1'	38°49.3'	79°43.4'	107°41.3'
7	137°30.7'	S 17°42.1'	7.4'	-12.9'	60.2'		94°44.5'	73°57.5'	20°09.3'	26°24.2'	39°13.5'	80°19.9'	107°59.5'
8	151°57.1'	S 17°55.0'	7.2'	-12.8'	60.2'	97°08.6'	94°07.9'	73°27.7'	19°33.0'	27°00.3'	39°38.1'	80°56.5'	108°17.7'
9	166°23.3'	S 18°07.8'	7.1'	-12.7'	60.2'	96°53.6'	93°31.2'	72°58.0'	18°56.7'	27°36.6'	40°02.9'	81°33.1'	108°35.7'
10	180°49.4'	S 18°20.5'	7.0'	-12.6'	60.3'	96°38.5'	92°54.5'	72°28.2'	18°20.4'	28°12.8'	40°28.0'	82°09.8'	108°53.7'
11	195°15.4'	S 18°33.1'	6.8'	-12.5'	60.3'	96°23.4'	92°17.7'	71°58.5'	17°44.1'	28°49.2'	40°53.4'	82°46.5'	109°11.5'
12	209°41.2'	S 18°45.5'	6.7'	-12.4'	60.3'	96°08.3'	91°40.9'	71°28.8'	17°07.7'	29°25.5'	41°19.1'	83°23.3'	109°29.3'
13	224°06.9'	S 18°57.9'	6.6'	-12.3'	60.3'	95°53.0'	91°04.0'	70°59.1'	16°31.4'	30°02.0'	41°45.0'	84°00.0'	109°47.0'
14	238°32.5'	S 19°10.2'	6.5'	-12.2'	60.4'	95°37.8'	90°27.2'	70°29.4'	15°55.1'	30°38.5'	42°11.1'	84°36.9'	110°04.6'
15	252°58.0'	S 19°22.3'	6.3'	-12.0'	60.4'	95°22.4'	89°50.2'	69°59.7'	15°18.8'	31°15.0'	42°37.5'	85°13.7'	110°22.2'
16	267°23.3'	S 19°34.4'	6.2'	-11.9'	60.4'	95°07.1'	89°13.3'	69°30.1'	14°42.5'	31°51.6'	43°04.2'	85°50.6'	110°39.6'
17	281°48.5'	S 19°46.3'	6.1'	-11.8'	60.5'	94°51.7'	88°36.3'	69°00.4'	14°06.3'	32°28.3'	43°31.0'	86°27.6'	110°56.9'
18	296°13.6'	S 19°58.1'	5.9'	-11.7'	60.5'	94°36.2'	87°59.2'	68°30.8'	13°30.1'	33°05.0'	43°58.1'	87°04.5'	111°14.1'
19	310°38.5'	S 20°09.8'	5.8'	-11.6'	60.5'	94°20.7'	87°22.2'	68°01.3'	12°53.9'	33°41.7'	44°25.4'	87°41.5'	111°31.2'
20	325°03.3'	S 20°21.4'	5.7'	-11.4'	60.5'	94°05.2'	86°45.1'	67°31.7'	12°17.8'	34°18.5'	44°53.0'	88°18.6'	111°48.2'
21	339°28.0'	S 20°32.8'	5.6'	-11.3'	60.6'	93°49.6'	86°07.9'	67°02.2'	11°41.8'	34°55.4'	45°20.7'	88°55.7'	112°05.1'
22	353°52.6'	S 20°44.1'	5.4'	-11.2'	60.6'	93°34.0'	85°30.7'	66°32.7'	11°05.8'	35°32.3'	45°48.6'	89°32.8'	112°21.9'
23	8°17.0'	S 20°55.3'	5.3'	-11.1'	60.6'	93°18.3'	84°53.5'	66°03.3'	10°30.0'	36°09.2'	46°16.7'	90°09.9'	112°38.6'
Mer. pass.		22 h 26 m SD 16.3'		phase 91%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.8'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.6'
Deneb	+1.2	49°26.9'	N 45°21.4'	Acrux	+0.8	173°02.3'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.1'
Altair	+0.8	62°01.8'	N 8°55.6'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.3'	S 8°10.6'
Vega	+0.0	80°34.3'	N 38°48.2'	Pollux	+1.2	243°20.3'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°25.9'	N 89°21.3'
Rigil Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.2'	S 57°07.2'
Arcturus	-0.1	145°49.6'	N 19°04.1'	Sirius	-1.4	258°28.5'	S 16°44.9'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.5'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	261°17.2'	180°00.0'	N 23°11.8'	215°06.0'	N 15°25.4'	255°45.9'	N 1°04.0'	293°24.8'	S 14°12.3'	247°39.4'	N 3°53.0'			
1	276°19.7'	194°59.9'	N 23°11.9'	230°05.6'	N 15°26.3'	270°48.1'	N 1°04.1'	308°27.3'	S 14°12.3'	262°40.1'	N 3°53.7'			
2	291°22.2'	209°59.8'	N 23°12.0'	245°05.1'	N 15°27.1'	285°50.2'	N 1°04.2'	323°29.8'	S 14°12.4'	277°40.9'	N 3°54.4'			
3	306°24.6'	224°59.7'	N 23°12.2'	260°04.6'	N 15°28.0'	300°52.4'	N 1°04.4'	338°32.3'	S 14°12.4'	292°41.7'	N 3°55.1'			
4	321°27.1'	239°59.5'	N 23°12.3'	275°04.1'	N 15°28.8'	315°54.5'	N 1°04.5'	353°34.8'	S 14°12.4'	307°42.5'	N 3°55.8'			
5	336°29.5'	254°59.4'	N 23°12.5'	290°03.7'	N 15°29.7'	330°56.7'	N 1°04.6'	8°37.3'	S 14°12.4'	322°43.2'	N 3°56.5'			
6	351°32.0'	269°59.3'	N 23°12.6'	305°03.2'	N 15°30.5'	345°58.8'	N 1°04.7'	23°39.8'	S 14°12.4'	337°44.0'	N 3°57.2'			
7	6°34.5'	284°59.1'	N 23°12.8'	320°02.7'	N 15°31.4'	1°01.0'	N 1°04.8'	38°42.3'	S 14°12.4'	352°44.8'	N 3°57.9'			
8	21°36.9'	299°59.0'	N 23°12.9'	335°02.3'	N 15°32.2'	16°03.1'	N 1°05.0'	53°44.8'	S 14°12.5'	7°45.6'	N 3°58.6'			
9	36°39.4'	314°58.9'	N 23°13.0'	350°01.8'	N 15°33.1'	31°05.3'	N 1°05.1'	68°47.3'	S 14°12.5'	22°46.3'	N 3°59.3'			
10	51°41.9'	329°58.7'	N 23°13.2'	5°01.3'	N 15°34.0'	46°07.5'	N 1°05.2'	83°49.8'	S 14°12.5'	37°47.1'	N 3°60.0'			
11	66°44.3'	344°58.6'	N 23°13.3'	20°00.8'	N 15°34.8'	61°09.6'	N 1°05.3'	98°52.3'	S 14°12.5'	52°47.9'	N 4°00.7'			
12	81°46.8'	359°58.5'	N 23°13.4'	35°00.4'	N 15°35.7'	76°11.8'	N 1°05.5'	113°54.8'	S 14°12.5'	67°48.7'	N 4°01.4'			
13	96°49.3'	14°58.4'	N 23°13.6'	49°59.9'	N 15°36.5'	91°13.9'	N 1°05.6'	128°57.2'	S 14°12.6'	82°49.4'	N 4°02.1'			
14	111°51.7'	29°58.2'	N 23°13.7'	64°59.4'	N 15°37.4'	106°16.1'	N 1°05.7'	143°59.7'	S 14°12.6'	97°50.2'	N 4°02.8'			
15	126°54.2'	44°58.1'	N 23°13.8'	79°58.9'	N 15°38.2'	121°18.3'	N 1°05.8'	159°02.2'	S 14°12.6'	112°51.0'	N 4°03.4'			
16	141°56.7'	59°58.0'	N 23°14.0'	94°58.5'	N 15°39.1'	136°20.4'	N 1°05.9'	174°04.7'	S 14°12.6'	127°51.8'	N 4°04.1'			
17	156°59.1'	74°57.8'	N 23°14.1'	109°58.0'	N 15°39.9'	151°22.6'	N 1°06.1'	189°07.2'	S 14°12.6'	142°52.6'	N 4°04.8'			
18	172°01.6'	89°57.7'	N 23°14.2'	124°57.5'	N 15°40.8'	166°24.7'	N 1°06.2'	204°09.7'	S 14°12.7'	157°53.3'	N 4°05.5'			
19	187°04.0'	104°57.6'	N 23°14.4'	139°57.0'	N 15°41.6'	181°26.9'	N 1°06.3'	219°12.2'	S 14°12.7'	172°54.1'	N 4°06.2'			
20	202°06.5'	119°57.4'	N 23°14.5'	154°56.5'	N 15°42.5'	196°29.0'	N 1°06.4'	234°14.7'	S 14°12.7'	187°54.9'	N 4°06.9'			
21	217°09.0'	134°57.3'	N 23°14.6'	169°56.1'	N 15°43.3'	211°31.2'	N 1°06.5'	249°17.2'	S 14°12.7'	202°55.7'	N 4°07.6'			
22	232°11.4'	149°57.2'	N 23°14.8'	184°55.6'	N 15°44.1'	226°33.4'	N 1°06.7'	264°19.7'	S 14°12.7'	217°56.4'	N 4°08.3'			
23	247°13.9'	164°57.0'	N 23°14.9'	199°55.1'	N 15°45.0'	241°35.5'	N 1°06.8'	279°22.2'	S 14°12.7'	232°57.2'	N 4°09.0'			
		SD 15.7' d 0.1'		v -0.5' d 0.9'		v 2.2' d 0.1'		v 2.5' d -0.0'		v 0.8' d 0.7'				
Mer. pass.		12 h 0 m 7 s		9 h 40 m		6 h 56 m		4 h 26 m		7 h 29 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Fomalhaut	-Saturn	-Altair	-Antares	+Spica	+Arcturus	+Regulus	+Adhara
0	22°41.3'	S 21°06.4'	5.2'	-10.9'	60.6'	92°45.5'	84°16.3'	65°33.9'	9°54.3'	36°46.2'	46°45.1'	90°47.1'	112°55.1'
1	37°05.5'	S 21°17.3'	5.0'	-10.8'	60.7'	92°09.6'	83°39.0'	65°04.6'	9°18.8'	37°23.2'	47°13.6'	91°24.3'	113°11.5'
2	51°29.5'	S 21°28.1'	4.9'	-10.6'	60.7'	91°33.7'	83°01.7'	64°35.3'	8°43.5'	38°00.3'	47°42.3'	92°01.6'	113°27.8'
3	65°53.4'	S 21°38.7'	4.8'	-10.5'	60.7'	90°57.7'	82°24.4'	64°06.0'	8°08.6'	38°37.4'	48°11.1'	92°38.8'	113°44.0'
4	80°17.2'	S 21°49.2'	4.7'	-10.4'	60.7'	90°21.7'	81°47.0'	63°36.8'	7°33.9'	39°14.5'	48°40.1'	93°16.1'	114°00.0'
5	94°40.9'	S 21°59.6'	4.5'	-10.2'	60.8'	89°45.7'	81°09.6'	63°07.7'	6°59.7'	39°51.7'	49°09.3'	93°53.5'	114°15.9'
6	109°04.4'	S 22°09.8'	4.4'	-10.1'	60.8'	89°09.7'	80°32.1'	62°38.6'	6°26.1'	40°28.9'	49°38.7'	94°30.9'	114°31.7'
7	123°27.8'	S 22°19.9'	4.3'	-9.9'	60.8'	88°33.6'	79°54.7'	62°09.6'		41°06.2'	50°08.2'	95°08.2'	114°47.3'
8	137°51.1'	S 22°29.8'	4.2'	-9.8'	60.8'	87°57.5'	79°17.2'	61°40.6'		41°43.4'	50°37.9'	95°45.7'	115°02.7'
9	152°14.3'	S 22°39.6'	4.0'	-9.6'	60.9'	87°21.4'	78°39.7'	61°11.7'		42°20.8'	51°07.7'	96°23.1'	115°18.1'
10	166°37.3'	S 22°49.2'	3.9'	-9.5'	60.9'	86°45.3'	78°02.1'	60°42.9'		42°58.1'	51°37.6'	97°00.6'	115°33.2'
11	181°00.2'	S 22°58.7'	3.8'	-9.3'	60.9'	86°09.1'	77°24.6'	60°14.2'		43°35.5'	52°07.7'	97°38.1'	
12	195°23.0'	S 23°08.0'	3.7'	-9.1'	60.9'	85°32.9'	76°47.0'	59°45.5'		44°12.9'	52°38.0'	98°15.6'	
13	209°45.7'	S 23°17.1'	3.6'	-9.0'	60.9'	84°56.7'	76°09.3'	59°16.9'		44°50.4'	53°08.3'	98°53.2'	
14	224°08.3'	S 23°26.1'	3.5'	-8.8'	61.0'	84°20.5'	75°31.7'	58°48.5'		45°27.9'	53°38.8'	99°30.8'	
15	238°30.7'	S 23°34.9'	3.3'	-8.7'	61.0'	83°44.2'	74°54.0'	58°20.0'		46°05.4'	54°09.4'	100°08.4'	
16	252°53.1'	S 23°43.6'	3.2'	-8.5'	61.0'	83°08.0'	74°16.3'	57°51.7'		46°42.9'	54°40.2'	100°46.0'	
17	267°15.3'	S 23°52.1'	3.1'	-8.3'	61.0'	82°31.7'	73°38.6'	57°23.5'		47°20.5'	55°11.0'	101°23.7'	
18	281°37.4'	S 24°00.4'	3.0'	-8.1'	61.0'	81°55.4'	73°00.9'	56°55.4'		47°58.0'	55°42.0'	102°01.3'	
19	295°59.4'	S 24°08.5'	2.9'	-8.0'	61.0'	81°19.1'	72°23.1'	56°27.4'		48°35.7'	56°13.1'	102°39.0'	
20	310°21.3'	S 24°16.5'	2.8'	-7.8'	61.1'	80°42.7'	71°45.4'	55°59.5'		49°13.3'	56°44.2'	103°16.7'	
21	324°43.1'	S 24°24.3'	2.7'	-7.6'	61.1'	80°06.4'	71°07.6'	55°31.7'		49°51.0'	57°15.5'	103°54.5'	
22	339°04.8'	S 24°31.9'	2.6'	-7.4'	61.1'	79°30.0'	70°29.8'	55°04.1'		50°28.6'	57°46.9'	104°32.2'	
23	353°26.4'	S 24°39.4'	2.5'	-7.3'	61.1'	78°53.6'	69°51.9'	54°36.5'		51°06.4'	58°18.4'	105°10.0'	
Mer. pass.		23 h 27 m SD 16.5'		phase 97%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.8'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.6'
Deneb	+1.2	49°26.9'	N 45°21.4'	Acrux	+0.8	173°02.3'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.1'
Altair	+0.8	62°01.8'	N 8°55.6'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.3'	S 8°10.6'
Vega	+0.0	80°34.2'	N 38°48.2'	Pollux	+1.2	243°20.3'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°25.5'	N 89°21.3'
Rigil Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.2'	S 57°07.2'
Arcturus	-0.1	145°49.6'	N 19°04.1'	Sirius	-1.4	258°28.5'	S 16°44.9'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.5'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	262°16.4'	179°56.9'	N 23°15.0'	214°54.6'	N 15°45.8'	256°37.7'	N 1°06.9'	294°24.7'	S 14°12.8'	247°58.0'	N 4°09.7'			
1	277°18.8'	194°56.8'	N 23°15.1'	229°54.1'	N 15°46.7'	271°39.8'	N 1°07.0'	309°27.2'	S 14°12.8'	262°58.8'	N 4°10.4'			
2	292°21.3'	209°56.7'	N 23°15.3'	244°53.7'	N 15°47.5'	286°42.0'	N 1°07.1'	324°29.7'	S 14°12.8'	277°59.5'	N 4°11.1'			
3	307°23.8'	224°56.5'	N 23°15.4'	259°53.2'	N 15°48.4'	301°44.2'	N 1°07.3'	339°32.2'	S 14°12.8'	293°00.3'	N 4°11.8'			
4	322°26.2'	239°56.4'	N 23°15.5'	274°52.7'	N 15°49.2'	316°46.3'	N 1°07.4'	354°34.7'	S 14°12.8'	308°01.1'	N 4°12.5'			
5	337°28.7'	254°56.3'	N 23°15.6'	289°52.2'	N 15°50.0'	331°48.5'	N 1°07.5'	9°37.2'	S 14°12.9'	323°01.9'	N 4°13.2'			
6	352°31.2'	269°56.1'	N 23°15.8'	304°51.7'	N 15°50.9'	346°50.7'	N 1°07.6'	24°39.7'	S 14°12.9'	338°02.7'	N 4°13.9'			
7	7°33.6'	284°56.0'	N 23°15.9'	319°51.2'	N 15°51.7'	1°52.8'	N 1°07.7'	39°42.2'	S 14°12.9'	353°03.4'	N 4°14.6'			
8	22°36.1'	299°55.9'	N 23°16.0'	334°50.8'	N 15°52.6'	16°55.0'	N 1°07.9'	54°44.7'	S 14°12.9'	8°04.2'	N 4°15.3'			
9	37°38.5'	314°55.7'	N 23°16.1'	349°50.3'	N 15°53.4'	31°57.1'	N 1°08.0'	69°47.2'	S 14°12.9'	23°05.0'	N 4°16.0'			
10	52°41.0'	329°55.6'	N 23°16.2'	4°49.8'	N 15°54.2'	46°59.3'	N 1°08.1'	84°49.7'	S 14°13.0'	38°05.8'	N 4°16.7'			
11	67°43.5'	344°55.5'	N 23°16.4'	19°49.3'	N 15°55.1'	62°01.5'	N 1°08.2'	99°52.2'	S 14°13.0'	53°06.5'	N 4°17.4'			
12	82°45.9'	359°55.3'	N 23°16.5'	34°48.8'	N 15°55.9'	77°03.6'	N 1°08.3'	114°54.7'	S 14°13.0'	68°07.3'	N 4°18.1'			
13	97°48.4'	14°55.2'	N 23°16.6'	49°48.3'	N 15°56.8'	92°05.8'	N 1°08.4'	129°57.2'	S 14°13.0'	83°08.1'	N 4°18.8'			
14	112°50.9'	29°55.1'	N 23°16.7'	64°47.8'	N 15°57.6'	107°08.0'	N 1°08.6'	144°59.7'	S 14°13.0'	98°08.9'	N 4°19.5'			
15	127°53.3'	44°54.9'	N 23°16.8'	79°47.4'	N 15°58.4'	122°10.1'	N 1°08.7'	160°02.2'	S 14°13.1'	113°09.6'	N 4°20.2'			
16	142°55.8'	59°54.8'	N 23°16.9'	94°46.9'	N 15°59.3'	137°12.3'	N 1°08.8'	175°04.7'	S 14°13.1'	128°10.4'	N 4°20.9'			
17	157°58.3'	74°54.7'	N 23°17.1'	109°46.4'	N 16°00.1'	152°14.4'	N 1°08.9'	190°07.2'	S 14°13.1'	143°11.2'	N 4°21.5'			
18	173°00.7'	89°54.6'	N 23°17.2'	124°45.9'	N 16°00.9'	167°16.6'	N 1°09.0'	205°09.7'	S 14°13.1'	158°12.0'	N 4°22.2'			
19	188°03.2'	104°54.4'	N 23°17.3'	139°45.4'	N 16°01.8'	182°18.8'	N 1°09.2'	220°12.2'	S 14°13.2'	173°12.8'	N 4°22.9'			
20	203°05.6'	119°54.3'	N 23°17.4'	154°44.9'	N 16°02.6'	197°20.9'	N 1°09.3'	235°14.7'	S 14°13.2'	188°13.5'	N 4°23.6'			
21	218°08.1'	134°54.2'	N 23°17.5'	169°44.4'	N 16°03.4'	212°23.1'	N 1°09.4'	250°17.2'	S 14°13.2'	203°14.3'	N 4°24.3'			
22	233°10.6'	149°54.0'	N 23°17.6'	184°43.9'	N 16°04.3'	227°25.3'	N 1°09.5'	265°19.7'	S 14°13.2'	218°15.1'	N 4°25.0'			
23	248°13.0'	164°53.9'	N 23°17.7'	199°43.4'	N 16°05.1'	242°27.4'	N 1°09.6'	280°22.2'	S 14°13.2'	233°15.9'	N 4°25.7'			
		SD 15.7' d 0.1'		v -0.5' d 0.8'		v 2.2' d 0.1'		v 2.5' d -0.0'		v 0.8' d 0.7'				
Mer. pass.		12 h 0 m 19 s		9 h 41 m		6 h 53 m		4 h 22 m		7 h 28 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Deneb	-Fomalhaut	-Saturn	-Altair	+Antares	+Rigil Kent	+Hadar	+Spica
0	7°47.9'	S 24°46.6'	2.4'	-7.1'	61.1'	86°40.9'	78°17.2'	69°14.1'	54°09.1'				51°44.1'
1	22°09.3'	S 24°53.7'	2.3'	-6.9'	61.1'	86°25.0'	77°40.9'	68°36.2'	53°41.9'	6°54.4'			52°21.8'
2	36°30.6'	S 25°00.6'	2.2'	-6.7'	61.1'	86°09.1'	77°04.5'	67°58.3'	53°14.7'	7°28.9'			52°59.6'
3	50°51.8'	S 25°07.3'	2.1'	-6.5'	61.2'	85°53.2'	76°28.0'	67°20.4'	52°47.7'	8°04.0'			53°37.4'
4	65°12.9'	S 25°13.8'	2.0'	-6.3'	61.2'	85°37.3'	75°51.6'	66°42.5'	52°20.9'	8°39.5'			54°15.2'
5	79°33.9'	S 25°20.1'	1.9'	-6.1'	61.2'	85°21.4'	75°15.2'	66°04.6'	51°54.2'	9°15.4'			54°53.0'
6	93°54.9'	S 25°26.3'	1.9'	-5.9'	61.2'	85°05.6'	74°38.8'	65°26.7'	51°27.6'	9°51.5'			55°30.9'
7	108°15.7'	S 25°32.2'	1.8'	-5.7'	61.2'	84°49.8'	74°02.4'	64°48.7'	51°01.3'	10°27.8'			56°08.7'
8	122°36.5'	S 25°37.9'	1.7'	-5.5'	61.2'	84°34.0'	73°25.9'	64°10.7'	50°35.1'	11°04.4'			56°46.6'
9	136°57.2'	S 25°43.5'	1.6'	-5.4'	61.2'	84°18.2'	72°49.5'	63°32.8'	50°09.0'	11°41.1'			57°24.5'
10	151°17.8'	S 25°48.8'	1.5'	-5.2'	61.2'	84°02.5'	72°13.1'	62°54.8'	49°43.2'	12°18.0'			58°02.4'
11	165°38.4'	S 25°54.0'	1.5'	-5.0'	61.2'	83°46.8'	71°36.7'	62°16.8'	49°17.5'	12°54.9'			58°40.3'
12	179°58.9'	S 25°58.9'	1.4'	-4.7'	61.2'	83°31.1'	71°00.2'	61°38.8'	48°52.0'	13°32.0'		48°54.0'	59°18.2'
13	194°19.3'	S 26°03.7'	1.3'	-4.5'	61.2'	83°15.5'	70°23.8'	61°00.8'	48°26.8'	14°09.2'		49°09.3'	59°56.1'
14	208°39.6'	S 26°08.2'	1.3'	-4.3'	61.3'	82°59.9'	69°47.4'	60°22.8'	48°01.7'	14°46.5'		49°24.9'	60°34.0'
15	222°59.9'	S 26°12.6'	1.2'	-4.1'	61.3'	82°44.4'	69°11.0'	59°44.8'	47°36.9'	15°23.8'		49°40.8'	61°12.0'
16	237°20.1'	S 26°16.7'	1.2'	-3.9'	61.3'	82°28.9'	68°34.6'	59°06.8'	47°12.2'	16°01.2'		49°57.0'	61°49.9'
17	251°40.3'	S 26°20.7'	1.1'	-3.7'	61.3'	82°13.4'	67°58.2'	58°28.8'	46°47.8'	16°38.7'	46°20.9'	50°13.5'	62°27.9'
18	266°00.4'	S 26°24.4'	1.1'	-3.5'	61.3'	81°58.0'	67°21.8'	57°50.7'	46°23.6'	17°16.2'	46°36.1'	50°30.3'	63°05.9'
19	280°20.5'	S 26°27.9'	1.0'	-3.3'	61.3'	81°42.6'	66°45.5'	57°12.7'	45°59.7'	17°53.7'	46°51.5'	50°47.4'	63°43.8'
20	294°40.5'	S 26°31.2'	1.0'	-3.1'	61.3'	81°27.3'	66°09.1'	56°34.7'	45°36.0'	18°31.3'	47°07.3'	51°04.7'	64°21.8'
21	309°00.5'	S 26°34.3'	1.0'	-2.9'	61.3'	81°12.0'	65°32.8'	55°56.7'	45°12.6'	19°09.0'	47°23.5'	51°22.3'	64°59.8'
22	323°20.5'	S 26°37.2'	0.9'	-2.7'	61.3'	80°56.8'	64°56.5'	55°18.6'	44°49.4'	19°46.6'	47°39.9'	51°40.2'	65°37.8'
23	337°40.4'	S 26°39.9'	0.9'	-2.5'	61.3'	80°41.7'	64°20.2'	54°40.6'	44°26.5'	20°24.3'	47°56.7'	51°58.3'	66°15.8'
Mer. pass.		0 h 33 m SD 16.7' phase 100%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.8'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.6'
Deneb	+1.2	49°26.9'	N 45°21.4'	Acrux	+0.8	173°02.3'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.6'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.3'	S 8°10.6'
Vega	+0.0	80°34.2'	N 38°48.2'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°25.0'	N 89°21.3'
Rigil Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.1'	S 57°07.2'
Arcturus	-0.1	145°49.6'	N 19°04.1'	Sirius	-1.4	258°28.5'	S 16°44.8'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.5'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	263°15.5'		179°53.8'	N 23°17.8'	214°42.9'	N 16°05.9'	257°29.6'	N 1°09.7'	295°24.7'	S 14°13.3'	248°16.6'	N 4°26.4'
1	278°18.0'		194°53.6'	N 23°18.0'	229°42.4'	N 16°06.7'	272°31.8'	N 1°09.9'	310°27.2'	S 14°13.3'	263°17.4'	N 4°27.1'
2	293°20.4'		209°53.5'	N 23°18.1'	244°42.0'	N 16°07.6'	287°33.9'	N 1°10.0'	325°29.7'	S 14°13.3'	278°18.2'	N 4°27.8'
3	308°22.9'		224°53.4'	N 23°18.2'	259°41.5'	N 16°08.4'	302°36.1'	N 1°10.1'	340°32.2'	S 14°13.3'	293°19.0'	N 4°28.5'
4	323°25.4'		239°53.2'	N 23°18.3'	274°41.0'	N 16°09.2'	317°38.3'	N 1°10.2'	355°34.7'	S 14°13.3'	308°19.8'	N 4°29.2'
5	338°27.8'		254°53.1'	N 23°18.4'	289°40.5'	N 16°10.1'	332°40.4'	N 1°10.3'	10°37.2'	S 14°13.4'	323°20.5'	N 4°29.9'
6	353°30.3'		269°53.0'	N 23°18.5'	304°40.0'	N 16°10.9'	347°42.6'	N 1°10.4'	25°39.7'	S 14°13.4'	338°21.3'	N 4°30.6'
7	8°32.8'		284°52.8'	N 23°18.6'	319°39.5'	N 16°11.7'	2°44.8'	N 1°10.6'	40°42.2'	S 14°13.4'	353°22.1'	N 4°31.3'
8	23°35.2'		299°52.7'	N 23°18.7'	334°39.0'	N 16°12.5'	17°46.9'	N 1°10.7'	55°44.7'	S 14°13.4'	8°22.9'	N 4°32.0'
9	38°37.7'		314°52.6'	N 23°18.8'	349°38.5'	N 16°13.4'	32°49.1'	N 1°10.8'	70°47.2'	S 14°13.4'	23°23.6'	N 4°32.6'
10	53°40.1'		329°52.4'	N 23°18.9'	4°38.0'	N 16°14.2'	47°51.3'	N 1°10.9'	85°49.7'	S 14°13.5'	38°24.4'	N 4°33.3'
11	68°42.6'		344°52.3'	N 23°19.0'	19°37.5'	N 16°15.0'	62°53.4'	N 1°11.0'	100°52.2'	S 14°13.5'	53°25.2'	N 4°34.0'
12	83°45.1'		359°52.2'	N 23°19.1'	34°37.0'	N 16°15.8'	77°55.6'	N 1°11.1'	115°54.7'	S 14°13.5'	68°26.0'	N 4°34.7'
13	98°47.5'		14°52.0'	N 23°19.2'	49°36.5'	N 16°16.7'	92°57.8'	N 1°11.3'	130°57.2'	S 14°13.5'	83°26.8'	N 4°35.4'
14	113°50.0'		29°51.9'	N 23°19.3'	64°36.0'	N 16°17.5'	107°59.9'	N 1°11.4'	145°59.7'	S 14°13.6'	98°27.5'	N 4°36.1'
15	128°52.5'		44°51.8'	N 23°19.4'	79°35.5'	N 16°18.3'	123°02.1'	N 1°11.5'	161°02.2'	S 14°13.6'	113°28.3'	N 4°36.8'
16	143°54.9'		59°51.6'	N 23°19.5'	94°35.0'	N 16°19.1'	138°04.3'	N 1°11.6'	176°04.7'	S 14°13.6'	128°29.1'	N 4°37.5'
17	158°57.4'		74°51.5'	N 23°19.6'	109°34.5'	N 16°19.9'	153°06.5'	N 1°11.7'	191°07.2'	S 14°13.6'	143°29.9'	N 4°38.2'
18	173°59.9'		89°51.4'	N 23°19.7'	124°34.0'	N 16°20.8'	168°08.6'	N 1°11.8'	206°09.7'	S 14°13.6'	158°30.6'	N 4°38.9'
19	189°02.3'		104°51.2'	N 23°19.8'	139°33.5'	N 16°21.6'	183°10.8'	N 1°11.9'	221°12.2'	S 14°13.7'	173°31.4'	N 4°39.6'
20	204°04.8'		119°51.1'	N 23°19.9'	154°33.0'	N 16°22.4'	198°13.0'	N 1°12.1'	236°14.7'	S 14°13.7'	188°32.2'	N 4°40.3'
21	219°07.3'		134°51.0'	N 23°20.0'	169°32.5'	N 16°23.2'	213°15.1'	N 1°12.2'	251°17.2'	S 14°13.7'	203°33.0'	N 4°41.0'
22	234°09.7'		149°50.8'	N 23°20.1'	184°32.0'	N 16°24.0'	228°17.3'	N 1°12.3'	266°19.7'	S 14°13.7'	218°33.8'	N 4°41.6'
23	249°12.2'		164°50.7'	N 23°20.2'	199°31.5'	N 16°24.8'	243°19.5'	N 1°12.4'	281°22.2'	S 14°13.7'	233°34.5'	N 4°42.3'
			SD 15.7' d 0.1'		v -0.5' d 0.8'		v 2.2' d 0.1'		v 2.5' d -0.0'		v 0.8' d 0.7'	
Mer. pass.			12 h 0 m 32 s		9 h 41 m		6 h 49 m		4 h 18 m		7 h 27 m	

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Achernar	-Fomalhaut	-Saturn	-Altair	+Antares	+Rigel Kent	+Hadar	+Acrux
0	352°00.3'	S 26°42.3'	0.9'	-2.3'	61.3'	79°20.4'	63°43.9'	54°02.6'	44°03.9'	21°02.0'	48°13.8'	52°16.7'	63°49.0'
1	6°20.1'	S 26°44.6'	0.8'	-2.0'	61.3'	78°59.1'	63°07.7'	53°24.6'	43°41.6'	21°39.8'	48°31.1'	52°35.3'	64°06.0'
2	20°40.0'	S 26°46.6'	0.8'	-1.8'	61.3'	78°37.8'	62°31.4'	52°46.6'	43°19.5'	22°17.5'	48°48.8'	52°54.2'	64°23.2'
3	34°59.8'	S 26°48.5'	0.8'	-1.6'	61.3'	78°16.6'	61°55.2'	52°08.6'	42°57.8'	22°55.3'	49°06.7'	53°13.3'	64°40.6'
4	49°19.6'	S 26°50.1'	0.8'	-1.4'	61.3'	77°55.5'	61°19.0'	51°30.6'	42°36.3'	23°33.1'	49°25.0'	53°32.7'	64°58.1'
5	63°39.4'	S 26°51.5'	0.8'	-1.2'	61.3'	77°34.5'	60°42.9'	50°52.6'	42°15.2'	24°10.9'	49°43.5'	53°52.3'	65°15.8'
6	77°59.1'	S 26°52.7'	0.8'	-1.0'	61.3'	77°13.5'	60°06.7'	50°14.6'	41°54.4'	24°48.7'	50°02.3'	54°12.1'	65°33.6'
7	92°18.9'	S 26°53.6'	0.8'	-0.8'	61.3'	76°52.6'	59°30.6'	49°36.6'	41°34.0'	25°26.5'	50°21.3'	54°32.1'	65°51.6'
8	106°38.6'	S 26°54.4'	0.8'	-0.5'	61.3'	76°31.7'	58°54.6'	48°58.6'	41°13.9'	26°04.3'	50°40.6'	54°52.4'	66°09.7'
9	120°58.4'	S 26°54.9'	0.8'	-0.3'	61.3'	76°11.0'	58°18.5'	48°20.7'	40°54.1'	26°42.2'	51°00.2'	55°12.8'	66°27.9'
10	135°18.2'	S 26°55.3'	0.8'	-0.1'	61.2'	75°50.3'	57°42.5'	47°42.7'	40°34.7'	27°20.0'	51°20.0'	55°33.5'	66°46.3'
11	149°37.9'	S 26°55.4'	0.8'	0.1'	61.2'	75°29.7'	57°06.6'	47°04.8'	40°15.7'	27°57.8'	51°40.0'	55°54.3'	67°04.9'
12	163°57.7'	S 26°55.3'	0.8'	0.3'	61.2'	75°09.1'	56°30.6'	46°26.8'	39°57.0'	28°35.7'	52°00.3'	56°15.4'	67°23.5'
13	178°17.5'	S 26°55.0'	0.8'	0.5'	61.2'	74°48.7'	55°54.8'	45°48.9'	39°38.8'	29°13.5'	52°20.8'	56°36.6'	67°42.3'
14	192°37.3'	S 26°54.5'	0.8'	0.7'	61.2'	74°28.3'	55°18.9'	45°11.0'	39°20.9'	29°51.3'	52°41.5'	56°58.0'	68°01.2'
15	206°57.1'	S 26°53.7'	0.9'	1.0'	61.2'	74°08.1'	54°43.1'	44°33.1'	39°03.5'	30°29.2'	53°02.4'	57°19.6'	68°20.3'
16	221°17.0'	S 26°52.8'	0.9'	1.2'	61.2'	73°47.9'	54°07.4'	43°55.3'	38°46.5'	31°07.0'	53°23.6'	57°41.4'	68°39.4'
17	235°36.9'	S 26°51.6'	0.9'	1.4'	61.2'	73°27.8'	53°31.7'	43°17.4'	38°29.9'	31°44.8'	53°45.0'	58°03.3'	68°58.7'
18	249°56.8'	S 26°50.2'	0.9'	1.6'	61.2'	73°07.8'	52°56.0'	42°39.6'	38°13.7'	32°22.6'	54°06.5'	58°25.4'	69°18.1'
19	264°16.7'	S 26°48.6'	1.0'	1.8'	61.2'	72°47.9'	52°20.4'	42°01.8'	37°58.0'	33°00.4'	54°28.3'	58°47.7'	69°37.6'
20	278°36.7'	S 26°46.8'	1.0'	2.0'	61.2'	72°28.2'	51°44.8'	41°24.0'		33°38.2'	54°50.3'	59°10.1'	69°57.2'
21	292°56.7'	S 26°44.8'	1.1'	2.2'	61.1'	72°08.5'	51°09.4'	40°46.2'		34°16.0'	55°12.4'	59°32.7'	70°16.9'
22	307°16.8'	S 26°42.6'	1.1'	2.4'	61.1'	71°48.9'	50°33.9'	40°08.5'		34°53.7'	55°34.7'	59°55.4'	70°36.7'
23	321°36.9'	S 26°40.2'	1.2'	2.6'	61.1'	71°29.5'	49°58.5'	39°30.8'		35°31.5'	55°57.2'	60°18.3'	70°56.6'
Mer. pass.			0 h 33 m SD 16.7'	phase 100%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.8'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.6'
Deneb	+1.2	49°26.9'	N 45°21.4'	Acrux	+0.8	173°02.3'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.6'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.3'	S 8°10.6'
Vega	+0.0	80°34.2'	N 38°48.2'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°24.6'	N 89°21.2'
Rigel Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.1'	S 57°07.2'
Arcturus	-0.1	145°49.6'	N 19°04.1'	Sirius	-1.4	258°28.5'	S 16°44.8'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.5'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	264°14.6'		179°50.6'	N 23°20.3'	214°31.0'	N 16°25.7'	258°21.6'	N 1°12.5'	296°24.8'	S 14°13.8'	248°35.3'	N 4°43.0'
1	279°17.1'		194°50.4'	N 23°20.4'	229°30.5'	N 16°26.5'	273°23.8'	N 1°12.6'	311°27.3'	S 14°13.8'	263°36.1'	N 4°43.7'
2	294°19.6'		209°50.3'	N 23°20.5'	244°30.0'	N 16°27.3'	288°26.0'	N 1°12.8'	326°29.8'	S 14°13.8'	278°36.9'	N 4°44.4'
3	309°22.0'		224°50.2'	N 23°20.5'	259°29.5'	N 16°28.1'	303°28.2'	N 1°12.9'	341°32.3'	S 14°13.8'	293°37.7'	N 4°45.1'
4	324°24.5'		239°50.0'	N 23°20.6'	274°29.0'	N 16°28.9'	318°30.3'	N 1°13.0'	356°34.8'	S 14°13.9'	308°38.4'	N 4°45.8'
5	339°27.0'		254°49.9'	N 23°20.7'	289°28.5'	N 16°29.7'	333°32.5'	N 1°13.1'	11°37.3'	S 14°13.9'	323°39.2'	N 4°46.5'
6	354°29.4'		269°49.8'	N 23°20.8'	304°27.9'	N 16°30.5'	348°34.7'	N 1°13.2'	26°39.8'	S 14°13.9'	338°40.0'	N 4°47.2'
7	9°31.9'		284°49.6'	N 23°20.9'	319°27.4'	N 16°31.3'	3°36.9'	N 1°13.3'	41°42.3'	S 14°13.9'	353°40.8'	N 4°47.9'
8	24°34.4'		299°49.5'	N 23°21.0'	334°26.9'	N 16°32.2'	18°39.0'	N 1°13.4'	56°44.8'	S 14°14.0'	8°41.6'	N 4°48.5'
9	39°36.8'		314°49.4'	N 23°21.1'	349°26.4'	N 16°33.0'	33°41.2'	N 1°13.6'	71°47.3'	S 14°14.0'	23°42.3'	N 4°49.2'
10	54°39.3'		329°49.2'	N 23°21.2'	4°25.9'	N 16°33.8'	48°43.4'	N 1°13.7'	86°49.8'	S 14°14.0'	38°43.1'	N 4°49.9'
11	69°41.8'		344°49.1'	N 23°21.2'	19°25.4'	N 16°34.6'	63°45.5'	N 1°13.8'	101°52.3'	S 14°14.0'	53°43.9'	N 4°50.6'
12	84°44.2'		359°49.0'	N 23°21.3'	34°24.9'	N 16°35.4'	78°47.7'	N 1°13.9'	116°54.8'	S 14°14.0'	68°44.7'	N 4°51.3'
13	99°46.7'		14°48.8'	N 23°21.4'	49°24.4'	N 16°36.2'	93°49.9'	N 1°14.0'	131°57.3'	S 14°14.1'	83°45.4'	N 4°52.0'
14	114°49.1'		29°48.7'	N 23°21.5'	64°23.9'	N 16°37.0'	108°52.1'	N 1°14.1'	146°59.8'	S 14°14.1'	98°46.2'	N 4°52.7'
15	129°51.6'		44°48.6'	N 23°21.6'	79°23.4'	N 16°37.8'	123°54.2'	N 1°14.2'	162°02.3'	S 14°14.1'	113°47.0'	N 4°53.4'
16	144°54.1'		59°48.4'	N 23°21.7'	94°22.9'	N 16°38.6'	138°56.4'	N 1°14.3'	177°04.9'	S 14°14.1'	128°47.8'	N 4°54.1'
17	159°56.5'		74°48.3'	N 23°21.7'	109°22.3'	N 16°39.4'	153°58.6'	N 1°14.5'	192°07.4'	S 14°14.2'	143°48.6'	N 4°54.8'
18	174°59.0'		89°48.2'	N 23°21.8'	124°21.8'	N 16°40.2'	169°00.8'	N 1°14.6'	207°09.9'	S 14°14.2'	158°49.3'	N 4°55.4'
19	190°01.5'		104°48.0'	N 23°21.9'	139°21.3'	N 16°41.0'	184°02.9'	N 1°14.7'	222°12.4'	S 14°14.2'	173°50.1'	N 4°56.1'
20	205°03.9'		119°47.9'	N 23°22.0'	154°20.8'	N 16°41.8'	199°05.1'	N 1°14.8'	237°14.9'	S 14°14.2'	188°50.9'	N 4°56.8'
21	220°06.4'		134°47.8'	N 23°22.1'	169°20.3'	N 16°42.6'	214°07.3'	N 1°14.9'	252°17.4'	S 14°14.3'	203°51.7'	N 4°57.5'
22	235°08.9'		149°47.6'	N 23°22.1'	184°19.8'	N 16°43.4'	229°09.5'	N 1°15.0'	267°19.9'	S 14°14.3'	218°52.5'	N 4°58.2'
23	250°11.3'		164°47.5'	N 23°22.2'	199°19.3'	N 16°44.2'	244°11.6'	N 1°15.1'	282°22.4'	S 14°14.3'	233°53.2'	N 4°58.9'
			SD 15.7'	d 0.1'	v -0.5'	d 0.8'	v 2.2'	d 0.1'	v 2.5'	d -0.0'	v 0.8'	d 0.7'
Mer. pass.			12 h 0 m 45 s		9 h 42 m		6 h 46 m		4 h 14 m		7 h 25 m	

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Jupiter	-Achernar	-Fomalhaut	-Saturn	+Antares	+Rigel Kent	+Hadar	+Acrux
0	335°57.1'	S 26°37.5'	1.2'	2.8'	61.1'	79°28.7'	71°10.1'	49°23.2'	38°53.1'	36°09.2'	56°19.9'	60°41.3'	71°16.6'
1	350°17.3'	S 26°34.7'	1.3'	3.1'	61.1'	78°51.2'	70°50.9'	48°48.0'	38°15.4'	36°47.0'	56°42.8'	61°04.5'	71°36.7'
2	4°37.6'	S 26°31.6'	1.3'	3.3'	61.1'	78°13.7'	70°31.8'	48°12.8'	37°37.7'	37°24.7'	57°05.8'	61°27.8'	71°56.9'
3	18°58.0'	S 26°28.4'	1.4'	3.5'	61.1'	77°36.2'	70°12.8'	47°37.7'	37°00.1'	38°02.4'	57°28.9'	61°51.2'	72°17.1'
4	33°18.4'	S 26°24.9'	1.5'	3.7'	61.0'	76°58.7'	69°53.9'	47°02.6'	36°22.5'	38°40.1'	57°52.2'	62°14.7'	72°37.5'
5	47°38.9'	S 26°21.2'	1.5'	3.9'	61.0'	76°21.3'	69°35.2'	46°27.7'	35°44.9'	39°17.7'	58°15.7'	62°38.4'	72°57.9'
6	61°59.4'	S 26°17.4'	1.6'	4.1'	61.0'	75°43.9'	69°16.6'	45°52.8'	35°07.4'	39°55.4'	58°39.3'	63°02.1'	73°18.4'
7	76°20.0'	S 26°13.3'	1.7'	4.3'	61.0'	75°06.5'	68°58.1'	45°18.0'	34°29.9'	40°33.0'	59°03.0'	63°26.0'	73°39.0'
8	90°40.7'	S 26°09.1'	1.8'	4.5'	61.0'	74°29.1'	68°39.7'	44°43.3'	33°52.4'	41°10.6'	59°26.9'	63°50.0'	73°59.7'
9	105°01.5'	S 26°04.6'	1.9'	4.7'	61.0'	73°51.8'	68°21.5'	44°08.6'	33°15.0'	41°48.2'	59°50.9'	64°14.1'	74°20.4'
10	119°22.4'	S 25°59.9'	1.9'	4.9'	60.9'	73°14.4'	68°03.4'	43°34.1'	32°37.6'	42°25.8'	60°15.1'	64°38.3'	74°41.2'
11	133°43.3'	S 25°55.1'	2.0'	5.0'	60.9'	72°37.1'	67°45.5'	42°59.6'	32°00.2'	43°03.3'	60°39.3'	65°02.6'	75°02.1'
12	148°04.3'	S 25°50.0'	2.1'	5.2'	60.9'	71°59.9'	67°27.7'	42°25.3'	31°22.9'	43°40.8'	61°03.7'	65°27.0'	75°23.0'
13	162°25.4'	S 25°44.8'	2.2'	5.4'	60.9'	71°22.6'	67°10.1'	41°51.0'	30°45.6'	44°18.3'	61°28.2'	65°51.5'	75°44.0'
14	176°46.6'	S 25°39.4'	2.3'	5.6'	60.9'	70°45.4'	66°52.6'	41°16.9'	30°08.3'	44°55.8'	61°52.8'	66°16.1'	76°05.0'
15	191°07.9'	S 25°33.7'	2.4'	5.8'	60.8'	70°08.2'	66°35.2'	40°42.8'	29°31.1'	45°33.2'	62°17.5'	66°40.7'	76°26.1'
16	205°29.3'	S 25°27.9'	2.5'	6.0'	60.8'	69°31.0'	66°18.0'	40°08.9'	28°53.9'	46°10.6'	62°42.3'	67°05.5'	76°47.2'
17	219°50.8'	S 25°21.9'	2.6'	6.2'	60.8'	68°53.9'	66°01.0'	39°35.1'	28°16.8'	46°48.0'	63°07.2'	67°30.3'	77°08.4'
18	234°12.4'	S 25°15.8'	2.7'	6.4'	60.8'	68°16.8'	65°44.1'	39°01.4'	27°39.7'	47°25.4'	63°32.2'	67°55.2'	77°29.7'
19	248°34.1'	S 25°09.4'	2.8'	6.5'	60.8'	67°39.7'	65°27.4'	38°27.8'	27°02.7'	48°02.7'	63°57.3'	68°20.2'	77°51.0'
20	262°55.9'	S 25°02.9'	2.9'	6.7'	60.7'	67°02.7'	65°10.8'	37°54.4'	26°25.7'	48°40.0'	64°22.5'	68°45.2'	78°12.3'
21	277°17.8'	S 24°56.2'	3.0'	6.9'	60.7'	66°25.7'	64°54.4'	37°21.1'	25°48.8'	49°17.3'	64°47.8'	69°10.3'	78°33.6'
22	291°39.9'	S 24°49.3'	3.1'	7.1'	60.7'	65°48.7'	64°38.2'	36°47.9'	25°11.9'	49°54.6'	65°13.1'	69°35.5'	78°55.0'
23	306°02.0'	S 24°42.2'	3.2'	7.2'	60.7'	65°11.7'	64°22.1'	36°14.8'	24°35.1'	50°31.8'	65°38.6'	70°00.7'	79°16.5'
Mer. pass.			1 h 41 m SD 16.7'	phase 96%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.8'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.6'
Deneb	+1.2	49°26.9'	N 45°21.4'	Acrux	+0.8	173°02.3'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.6'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.3'	S 8°10.6'
Vega	+0.0	80°34.2'	N 38°48.2'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°24.1'	N 89°21.2'
Rigel Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.1'	S 57°07.2'
Arcturus	-0.1	145°49.6'	N 19°04.1'	Sirius	-1.4	258°28.5'	S 16°44.8'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.5'				

Friday 17 June 2022 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	265°13.8'	179°47.4'	N 23°22.3'	214°18.7'	N 16°45.0'	259°13.8'	N 1°15.2'	297°24.9'	S 14°14.3'	248°54.0'	N 4°59.6'			
1	280°16.3'	194°47.2'	N 23°22.4'	229°18.2'	N 16°45.8'	274°16.0'	N 1°15.4'	312°27.4'	S 14°14.3'	263°54.8'	N 5°00.3'			
2	295°18.7'	209°47.1'	N 23°22.4'	244°17.7'	N 16°46.6'	289°18.2'	N 1°15.5'	327°29.9'	S 14°14.4'	278°55.6'	N 5°01.0'			
3	310°21.2'	224°47.0'	N 23°22.5'	259°17.2'	N 16°47.4'	304°20.4'	N 1°15.6'	342°32.4'	S 14°14.4'	293°56.4'	N 5°01.6'			
4	325°23.6'	239°46.8'	N 23°22.6'	274°16.7'	N 16°48.2'	319°22.5'	N 1°15.7'	357°35.0'	S 14°14.4'	308°57.1'	N 5°02.3'			
5	340°26.1'	254°46.7'	N 23°22.7'	289°16.2'	N 16°49.0'	334°24.7'	N 1°15.8'	12°37.5'	S 14°14.4'	323°57.9'	N 5°03.0'			
6	355°28.6'	269°46.6'	N 23°22.7'	304°15.6'	N 16°49.8'	349°26.9'	N 1°15.9'	27°40.0'	S 14°14.5'	338°58.7'	N 5°03.7'			
7	10°31.0'	284°46.4'	N 23°22.8'	319°15.1'	N 16°50.6'	4°29.1'	N 1°16.0'	42°42.5'	S 14°14.5'	353°59.5'	N 5°04.4'			
8	25°33.5'	299°46.3'	N 23°22.9'	334°14.6'	N 16°51.4'	19°31.2'	N 1°16.1'	57°45.0'	S 14°14.5'	9°00.3'	N 5°05.1'			
9	40°36.0'	314°46.1'	N 23°22.9'	349°14.1'	N 16°52.2'	34°33.4'	N 1°16.3'	72°47.5'	S 14°14.5'	24°01.0'	N 5°05.8'			
10	55°38.4'	329°46.0'	N 23°23.0'	4°13.6'	N 16°53.0'	49°35.6'	N 1°16.4'	87°50.0'	S 14°14.6'	39°01.8'	N 5°06.5'			
11	70°40.9'	344°45.9'	N 23°23.1'	19°13.0'	N 16°53.8'	64°37.8'	N 1°16.5'	102°52.5'	S 14°14.6'	54°02.6'	N 5°07.1'			
12	85°43.4'	359°45.7'	N 23°23.1'	34°12.5'	N 16°54.6'	79°40.0'	N 1°16.6'	117°55.0'	S 14°14.6'	69°03.4'	N 5°07.8'			
13	100°45.8'	14°45.6'	N 23°23.2'	49°12.0'	N 16°55.4'	94°42.1'	N 1°16.7'	132°57.5'	S 14°14.6'	84°04.2'	N 5°08.5'			
14	115°48.3'	29°45.5'	N 23°23.3'	64°11.5'	N 16°56.1'	109°44.3'	N 1°16.8'	148°00.1'	S 14°14.7'	99°04.9'	N 5°09.2'			
15	130°50.8'	44°45.3'	N 23°23.3'	79°10.9'	N 16°56.9'	124°46.5'	N 1°16.9'	163°02.6'	S 14°14.7'	114°05.7'	N 5°09.9'			
16	145°53.2'	59°45.2'	N 23°23.4'	94°10.4'	N 16°57.7'	139°48.7'	N 1°17.0'	178°05.1'	S 14°14.7'	129°06.5'	N 5°10.6'			
17	160°55.7'	74°45.1'	N 23°23.5'	109°09.9'	N 16°58.5'	154°50.9'	N 1°17.1'	193°07.6'	S 14°14.7'	144°07.3'	N 5°11.3'			
18	175°58.1'	89°44.9'	N 23°23.5'	124°09.4'	N 16°59.3'	169°53.0'	N 1°17.3'	208°10.1'	S 14°14.8'	159°08.1'	N 5°11.9'			
19	191°00.6'	104°44.8'	N 23°23.6'	139°08.9'	N 17°00.1'	184°55.2'	N 1°17.4'	223°12.6'	S 14°14.8'	174°08.8'	N 5°12.6'			
20	206°03.1'	119°44.7'	N 23°23.7'	154°08.3'	N 17°00.9'	199°57.4'	N 1°17.5'	238°15.1'	S 14°14.8'	189°09.6'	N 5°13.3'			
21	221°05.5'	134°44.5'	N 23°23.7'	169°07.8'	N 17°01.7'	214°59.6'	N 1°17.6'	253°17.6'	S 14°14.8'	204°10.4'	N 5°14.0'			
22	236°08.0'	149°44.4'	N 23°23.8'	184°07.3'	N 17°02.4'	230°01.8'	N 1°17.7'	268°20.1'	S 14°14.9'	219°11.2'	N 5°14.7'			
23	251°10.5'	164°44.3'	N 23°23.8'	199°06.7'	N 17°03.2'	245°03.9'	N 1°17.8'	283°22.7'	S 14°14.9'	234°12.0'	N 5°15.4'			
		SD 15.7' d 0.1'		v -0.5' d 0.8'		v 2.2' d 0.1'		v 2.5' d -0.0'		v 0.8' d 0.7'				
Mer. pass.		12 h 0 m 58 s		9 h 43 m		6 h 42 m		4 h 10 m		7 h 24 m				

h	Moon				Lunar distance			Lunar distance					
	GHA	dec	v	d	HP	-Jupiter	-Achernar	-Fomalhaut	-Saturn	+Antares	+Rigel Kent	+Hadar	+Acrux
0	320°24.2'	S 24°35.0'	3.4'	7.4'	60.6'	64°34.8'	64°06.2'	35°42.0'	23°58.3'	51°09.0'	66°04.1'	70°26.0'	79°38.0'
1	334°46.6'	S 24°27.5'	3.5'	7.6'	60.6'	63°57.9'	63°50.5'	35°09.2'	23°21.6'	51°46.1'	66°29.6'	70°51.3'	79°59.5'
2	349°09.1'	S 24°20.0'	3.6'	7.8'	60.6'	63°21.1'	63°35.0'	34°36.7'	22°44.9'	52°23.2'	66°55.3'	71°16.7'	80°21.0'
3	3°31.6'	S 24°12.2'	3.7'	7.9'	60.6'	62°44.3'	63°19.6'	34°04.3'	22°08.3'	53°00.3'	67°21.0'	71°42.2'	80°42.6'
4	17°54.4'	S 24°04.3'	3.8'	8.1'	60.5'	62°07.5'		33°32.1'	21°31.8'	53°37.4'	67°46.8'	72°07.7'	81°04.1'
5	32°17.2'	S 23°56.2'	3.9'	8.2'	60.5'	61°30.7'		33°00.0'	20°55.4'	54°14.4'	68°12.6'	72°33.2'	81°25.7'
6	46°40.1'	S 23°48.0'	4.1'	8.4'	60.5'	60°54.0'		32°28.2'	20°19.0'	54°51.4'	68°38.5'	72°58.8'	81°47.4'
7	61°03.2'	S 23°39.6'	4.2'	8.6'	60.5'	60°17.3'		31°56.5'	19°42.7'	55°28.4'	69°04.5'	73°24.4'	82°09.0'
8	75°26.4'	S 23°31.0'	4.3'	8.7'	60.4'	59°40.7'		31°25.1'	19°06.5'	56°05.3'	69°30.5'	73°50.0'	82°30.6'
9	89°49.7'	S 23°22.3'	4.4'	8.9'	60.4'	59°04.1'		30°53.8'	18°30.4'	56°42.2'	69°56.6'	74°15.7'	82°52.3'
10	104°13.1'	S 23°13.4'	4.6'	9.0'	60.4'	58°27.5'		30°22.8'	17°54.4'	57°19.0'	70°22.7'	74°41.4'	83°14.0'
11	118°36.7'	S 23°04.4'	4.7'	9.2'	60.3'	57°51.0'		29°52.0'	17°18.4'	57°55.8'	70°48.8'	75°07.2'	83°35.7'
12	133°00.4'	S 22°55.3'	4.8'	9.3'	60.3'	57°14.5'		29°21.5'	16°42.6'	58°32.6'	71°15.0'	75°33.0'	83°57.4'
13	147°24.2'	S 22°45.9'	5.0'	9.5'	60.3'	56°38.0'		28°51.2'	16°06.9'	59°09.3'	71°41.2'	75°58.8'	84°19.1'
14	161°48.2'	S 22°36.5'	5.1'	9.6'	60.3'	56°01.6'		28°21.2'	15°31.3'	59°46.0'	72°07.5'	76°24.6'	84°40.8'
15	176°12.3'	S 22°26.9'	5.2'	9.7'	60.2'	55°25.3'		27°51.5'	14°55.9'	60°22.7'	72°33.8'	76°50.4'	85°02.5'
16	190°36.5'	S 22°17.1'	5.3'	9.9'	60.2'	54°48.9'		27°22.0'	14°20.6'	60°59.3'	73°00.1'	77°16.3'	85°24.2'
17	205°00.8'	S 22°07.3'	5.5'	10.0'	60.2'	54°12.6'		26°52.9'	13°45.4'	61°35.9'	73°26.5'	77°42.2'	85°45.9'
18	219°25.3'	S 21°57.2'	5.6'	10.1'	60.1'	53°36.4'		26°24.1'	13°10.5'	62°12.5'	73°52.8'	78°08.1'	86°07.6'
19	233°49.9'	S 21°47.1'	5.7'	10.3'	60.1'	53°00.2'		25°55.6'	12°35.7'	62°49.0'	74°19.3'	78°34.0'	86°29.3'
20	248°14.7'	S 21°36.8'	5.9'	10.4'	60.1'	52°24.0'		25°27.5'	12°01.2'	63°25.4'	74°45.7'	78°59.9'	86°50.9'
21	262°39.5'	S 21°26.4'	6.0'	10.5'	60.0'	51°47.8'		24°59.7'	11°26.9'	64°01.9'	75°12.1'	79°25.8'	87°12.6'
22	277°04.5'	S 21°15.9'	6.1'	10.7'	60.0'	51°11.8'		24°32.3'	10°52.8'	64°38.3'	75°38.6'	79°51.8'	87°34.3'
23	291°29.7'	S 21°05.2'	6.3'	10.8'	60.0'	50°35.7'		24°05.4'	10°19.1'	65°14.6'	76°05.1'	80°17.7'	87°55.9'
Mer. pass.		2 h 45 m SD 16.5' phase 91%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.8'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.6'
Deneb	+1.2	49°26.9'	N 45°21.4'	Acrux	+0.8	173°02.3'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.6'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.2'	S 8°10.6'
Vega	+0.0	80°34.2'	N 38°48.2'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°23.8'	N 89°21.2'
Rigel Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.1'	S 57°07.2'
Arcturus	-0.1	145°49.6'	N 19°04.1'	Sirius	-1.4	258°28.4'	S 16°44.8'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.5'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	266°12.9'	179°44.1'	N 23°23.9'	214°06.2'	N 17°04.0'	260°06.1'	N 1°17.9'	298°25.2'	S 14°14.9'	249°12.7'	N 5°16.1'			
1	281°15.4'	194°44.0'	N 23°24.0'	229°05.7'	N 17°04.8'	275°08.3'	N 1°18.0'	313°27.7'	S 14°14.9'	264°13.5'	N 5°16.7'			
2	296°17.9'	209°43.9'	N 23°24.0'	244°05.2'	N 17°05.6'	290°10.5'	N 1°18.1'	328°30.2'	S 14°15.0'	279°14.3'	N 5°17.4'			
3	311°20.3'	224°43.7'	N 23°24.1'	259°04.6'	N 17°06.4'	305°12.7'	N 1°18.2'	343°32.7'	S 14°15.0'	294°15.1'	N 5°18.1'			
4	326°22.8'	239°43.6'	N 23°24.1'	274°04.1'	N 17°07.1'	320°14.9'	N 1°18.4'	358°35.2'	S 14°15.0'	309°15.9'	N 5°18.8'			
5	341°25.3'	254°43.4'	N 23°24.2'	289°03.6'	N 17°07.9'	335°17.0'	N 1°18.5'	13°37.7'	S 14°15.0'	324°16.6'	N 5°19.5'			
6	356°27.7'	269°43.3'	N 23°24.2'	304°03.0'	N 17°08.7'	350°19.2'	N 1°18.6'	28°40.2'	S 14°15.1'	339°17.4'	N 5°20.2'			
7	11°30.2'	284°43.2'	N 23°24.3'	319°02.5'	N 17°09.5'	5°21.4'	N 1°18.7'	43°42.8'	S 14°15.1'	354°18.2'	N 5°20.8'			
8	26°32.6'	299°43.0'	N 23°24.3'	334°02.0'	N 17°10.3'	20°23.6'	N 1°18.8'	58°45.3'	S 14°15.1'	9°19.0'	N 5°21.5'			
9	41°35.1'	314°42.9'	N 23°24.4'	349°01.5'	N 17°11.0'	35°25.8'	N 1°18.9'	73°47.8'	S 14°15.1'	24°19.8'	N 5°22.2'			
10	56°37.6'	329°42.8'	N 23°24.4'	4°00.9'	N 17°11.8'	50°28.0'	N 1°19.0'	88°50.3'	S 14°15.2'	39°20.6'	N 5°22.9'			
11	71°40.0'	344°42.6'	N 23°24.5'	19°00.4'	N 17°12.6'	65°30.1'	N 1°19.1'	103°52.8'	S 14°15.2'	54°21.3'	N 5°23.6'			
12	86°42.5'	359°42.5'	N 23°24.5'	33°59.9'	N 17°13.4'	80°32.3'	N 1°19.2'	118°55.3'	S 14°15.2'	69°22.1'	N 5°24.3'			
13	101°45.0'	14°42.4'	N 23°24.6'	48°59.3'	N 17°14.1'	95°34.5'	N 1°19.3'	133°57.8'	S 14°15.2'	84°22.9'	N 5°25.0'			
14	116°47.4'	29°42.2'	N 23°24.6'	63°58.8'	N 17°14.9'	110°36.7'	N 1°19.4'	149°00.4'	S 14°15.3'	99°23.7'	N 5°25.6'			
15	131°49.9'	44°42.1'	N 23°24.7'	78°58.3'	N 17°15.7'	125°38.9'	N 1°19.5'	164°02.9'	S 14°15.3'	114°24.5'	N 5°26.3'			
16	146°52.4'	59°42.0'	N 23°24.7'	93°57.7'	N 17°16.5'	140°41.1'	N 1°19.7'	179°05.4'	S 14°15.3'	129°25.2'	N 5°27.0'			
17	161°54.8'	74°41.8'	N 23°24.8'	108°57.2'	N 17°17.2'	155°43.3'	N 1°19.8'	194°07.9'	S 14°15.3'	144°26.0'	N 5°27.7'			
18	176°57.3'	89°41.7'	N 23°24.8'	123°56.6'	N 17°18.0'	170°45.4'	N 1°19.9'	209°10.4'	S 14°15.4'	159°26.8'	N 5°28.4'			
19	191°59.7'	104°41.6'	N 23°24.9'	138°56.1'	N 17°18.8'	185°47.6'	N 1°20.0'	224°12.9'	S 14°15.4'	174°27.6'	N 5°29.1'			
20	207°02.2'	119°41.4'	N 23°24.9'	153°55.6'	N 17°19.5'	200°49.8'	N 1°20.1'	239°15.5'	S 14°15.4'	189°28.4'	N 5°29.7'			
21	222°04.7'	134°41.3'	N 23°25.0'	168°55.0'	N 17°20.3'	215°52.0'	N 1°20.2'	254°18.0'	S 14°15.4'	204°29.1'	N 5°30.4'			
22	237°07.1'	149°41.1'	N 23°25.0'	183°54.5'	N 17°21.1'	230°54.2'	N 1°20.3'	269°20.5'	S 14°15.5'	219°29.7'	N 5°31.1'			
23	252°09.6'	164°41.0'	N 23°25.0'	198°54.0'	N 17°21.8'	245°56.4'	N 1°20.4'	284°23.0'	S 14°15.5'	234°30.7'	N 5°31.8'			
		SD 15.7' d 0.0'		v -0.5' d 0.8'		v 2.2' d 0.1'		v 2.5' d -0.0'		v 0.8' d 0.7'				
Mer. pass.		12 h 1 m 11 s		9 h 44 m		6 h 39 m		4 h 6 m		7 h 23 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Jupiter	-Fomalhaut	-Saturn	+Altair	+Antares	+Rigel Kent	+Hadar
0	305°54.9'	S 20°54.4'	6.4'	10.9'	59.9'		49°59.7'	23°38.8'	9°45.8'		65°50.9'	76°31.6'	80°43.6'
1	320°20.3'	S 20°43.5'	6.5'	11.0'	59.9'		49°23.7'	23°12.7'	9°12.9'		66°27.2'	76°58.1'	81°09.6'
2	334°45.9'	S 20°32.5'	6.7'	11.1'	59.9'		48°47.8'	22°47.1'	8°40.4'		67°03.4'	77°24.7'	81°35.5'
3	349°11.5'	S 20°21.3'	6.8'	11.3'	59.8'		48°12.0'	22°22.0'	8°08.6'		67°39.6'	77°51.2'	82°01.5'
4	3°37.3'	S 20°10.1'	6.9'	11.4'	59.8'		47°36.1'	21°57.4'			68°15.7'	78°17.7'	82°27.4'
5	18°03.3'	S 19°58.7'	7.1'	11.5'	59.8'		47°00.3'	21°33.3'		38°12.8'	68°51.8'	78°44.3'	82°53.3'
6	32°29.3'	S 19°47.2'	7.2'	11.6'	59.7'		46°24.6'	21°09.8'		38°28.1'	69°27.9'	79°10.8'	83°19.2'
7	46°55.5'	S 19°35.6'	7.3'	11.7'	59.7'		45°48.9'	20°46.9'		38°43.9'	70°03.9'	79°37.4'	83°45.1'
8	61°21.8'	S 19°23.9'	7.5'	11.8'	59.7'		45°13.2'	20°24.7'		38°59.9'	70°39.8'	80°03.9'	84°11.0'
9	75°48.3'	S 19°12.1'	7.6'	11.9'	59.6'		44°37.6'	20°03.1'		39°16.3'	71°15.8'	80°30.5'	84°36.9'
10	90°14.9'	S 19°00.2'	7.7'	12.0'	59.6'		44°02.1'	19°42.2'		39°33.1'	71°51.6'	80°57.0'	85°02.8'
11	104°41.6'	S 18°48.2'	7.8'	12.1'	59.6'		43°26.5'	19°22.0'		39°50.2'	72°27.5'	81°23.6'	85°28.6'
12	119°08.5'	S 18°36.1'	8.0'	12.2'	59.5'		42°51.1'			40°07.6'	73°03.3'	81°50.1'	85°54.5'
13	133°35.4'	S 18°23.9'	8.1'	12.3'	59.5'		42°15.6'			40°25.3'	73°39.0'	82°16.6'	86°20.3'
14	148°02.5'	S 18°11.6'	8.2'	12.4'	59.5'		41°40.2'			40°43.3'	74°14.7'	82°43.1'	86°46.1'
15	162°29.8'	S 17°59.2'	8.4'	12.5'	59.4'		41°04.9'			41°01.7'	74°50.4'	83°09.6'	87°11.9'
16	176°57.1'	S 17°46.8'	8.5'	12.6'	59.4'		40°29.6'			41°20.3'	75°26.0'	83°36.1'	87°37.6'
17	191°24.6'	S 17°34.2'	8.6'	12.7'	59.4'		39°54.4'			41°39.2'	76°01.5'	84°02.6'	88°03.3'
18	205°52.2'	S 17°21.5'	8.7'	12.7'	59.3'		39°19.2'			41°58.3'	76°37.1'	84°29.1'	88°29.0'
19	220°19.9'	S 17°08.8'	8.9'	12.8'	59.3'	119°46.5'	38°44.0'			42°17.8'	77°12.6'	84°55.5'	88°54.7'
20	234°47.8'	S 16°56.0'	9.0'	12.9'	59.2'	119°13.4'	38°08.9'			42°37.5'	77°48.0'	85°21.9'	89°20.3'
21	249°15.8'	S 16°43.1'	9.1'	13.0'	59.2'	118°40.4'	37°33.9'			42°57.4'	78°23.4'	85°48.3'	89°46.0'
22	263°43.9'	S 16°30.1'	9.2'	13.1'	59.2'	118°07.5'	36°58.9'			43°17.6'	78°58.7'	86°14.7'	90°11.5'
23	278°12.1'	S 16°17.1'	9.3'	13.1'	59.1'	117°34.6'	36°23.9'			43°38.0'	79°34.0'	86°41.0'	90°37.1'
Mer. pass.		3 h 45 m SD 16.3'		phase 82%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.8'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.6'
Deneb	+1.2	49°26.9'	N 45°21.4'	Acrux	+0.8	173°02.3'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.6'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.2'	S 8°10.6'
Vega	+0.0	80°34.2'	N 38°48.2'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°23.4'	N 89°21.2'
Rigel Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.1'	S 57°07.2'
Arcturus	-0.1	145°49.6'	N 19°04.1'	Sirius	-1.4	258°28.4'	S 16°44.8'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.5'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	267°12.1'	179°40.9' N	23°25.1'	213°53.4' N	17°22.6'	260°58.6' N	1°20.5'	299°25.5' S	14°15.5'	249°31.5' N	5°32.5'	
1	282°14.5'	194°40.7' N	23°25.1'	228°52.9' N	17°23.4'	276°00.8' N	1°20.6'	314°28.0' S	14°15.5'	264°32.3' N	5°33.1'	
2	297°17.0'	209°40.6' N	23°25.2'	243°52.3' N	17°24.1'	291°02.9' N	1°20.7'	329°30.5' S	14°15.6'	279°33.1' N	5°33.8'	
3	312°19.5'	224°40.5' N	23°25.2'	258°51.8' N	17°24.9'	306°05.1' N	1°20.8'	344°33.1' S	14°15.6'	294°33.8' N	5°34.5'	
4	327°21.9'	239°40.3' N	23°25.2'	273°51.3' N	17°25.7'	321°07.3' N	1°20.9'	359°35.6' S	14°15.6'	309°34.6' N	5°35.2'	
5	342°24.4'	254°40.2' N	23°25.3'	288°50.7' N	17°26.4'	336°09.5' N	1°21.1'	14°38.1' S	14°15.6'	324°35.4' N	5°35.9'	
6	357°26.9'	269°40.1' N	23°25.3'	303°50.2' N	17°27.2'	351°11.7' N	1°21.2'	29°40.6' S	14°15.7'	339°36.2' N	5°36.6'	
7	12°29.3'	284°39.9' N	23°25.4'	318°49.6' N	17°28.0'	6°13.9' N	1°21.3'	44°43.1' S	14°15.7'	354°37.0' N	5°37.2'	
8	27°31.8'	299°39.8' N	23°25.4'	333°49.1' N	17°28.7'	21°16.1' N	1°21.4'	59°45.7' S	14°15.7'	9°37.7' N	5°37.9'	
9	42°34.2'	314°39.7' N	23°25.4'	348°48.5' N	17°29.5'	36°18.3' N	1°21.5'	74°48.2' S	14°15.8'	24°38.5' N	5°38.6'	
10	57°36.7'	329°39.5' N	23°25.5'	3°48.0' N	17°30.2'	51°20.5' N	1°21.6'	89°50.7' S	14°15.8'	39°39.3' N	5°39.3'	
11	72°39.2'	344°39.4' N	23°25.5'	18°47.5' N	17°31.0'	66°22.6' N	1°21.7'	104°53.2' S	14°15.8'	54°40.1' N	5°40.0'	
12	87°41.6'	359°39.2' N	23°25.5'	33°46.9' N	17°31.8'	81°24.8' N	1°21.8'	119°55.7' S	14°15.8'	69°40.9' N	5°40.6'	
13	102°44.1'	14°39.1' N	23°25.6'	48°46.4' N	17°32.5'	96°27.0' N	1°21.9'	134°58.2' S	14°15.9'	84°41.7' N	5°41.3'	
14	117°46.6'	29°39.0' N	23°25.6'	63°45.8' N	17°33.3'	111°29.2' N	1°22.0'	150°00.8' S	14°15.9'	99°42.4' N	5°42.0'	
15	132°49.0'	44°38.8' N	23°25.6'	78°45.3' N	17°34.0'	126°31.4' N	1°22.1'	165°03.3' S	14°15.9'	114°43.2' N	5°42.7'	
16	147°51.5'	59°38.7' N	23°25.7'	93°44.7' N	17°34.8'	141°33.6' N	1°22.2'	180°05.8' S	14°15.9'	129°44.0' N	5°43.4'	
17	162°54.0'	74°38.6' N	23°25.7'	108°44.2' N	17°35.5'	156°35.8' N	1°22.3'	195°08.3' S	14°16.0'	144°44.8' N	5°44.0'	
18	177°56.4'	89°38.4' N	23°25.7'	123°43.6' N	17°36.3'	171°38.0' N	1°22.4'	210°10.8' S	14°16.0'	159°45.6' N	5°44.7'	
19	192°58.9'	104°38.3' N	23°25.7'	138°43.1' N	17°37.0'	186°40.2' N	1°22.5'	225°13.4' S	14°16.0'	174°46.3' N	5°45.4'	
20	208°01.4'	119°38.2' N	23°25.8'	153°42.5' N	17°37.8'	201°42.4' N	1°22.6'	240°15.9' S	14°16.0'	189°47.1' N	5°46.1'	
21	223°03.8'	134°38.0' N	23°25.8'	168°42.0' N	17°38.6'	216°44.6' N	1°22.7'	255°18.4' S	14°16.1'	204°47.9' N	5°46.8'	
22	238°06.3'	149°37.9' N	23°25.8'	183°41.4' N	17°39.3'	231°46.8' N	1°22.8'	270°20.9' S	14°16.1'	219°48.7' N	5°47.4'	
23	253°08.7'	164°37.8' N	23°25.8'	198°40.9' N	17°40.1'	246°49.0' N	1°23.0'	285°23.4' S	14°16.1'	234°49.5' N	5°48.1'	
		SD 15.7' d 0.0'		v -0.5' d 0.8'		v 2.2' d 0.1'		v 2.5' d -0.0'		v 0.8' d 0.7'		
Mer. pass.		12 h 1 m 24 s		9 h 45 m		6 h 35 m		4 h 2 m		7 h 22 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Mars	-Jupiter	-Fomalhaut	+Saturn	+Altair	+Antares	+Rigel Kent
0	292°40.5'	S 16°03.9'	9.5'	13.2'	59.1'	117°01.7'	47°51.0'	35°49.0'			43°58.6'	80°09.3'	87°07.4'
1	307°08.9'	S 15°50.7'	9.6'	13.3'	59.1'	116°28.9'	47°17.5'	35°14.1'			44°19.5'	80°44.5'	87°33.7'
2	321°37.5'	S 15°37.5'	9.7'	13.3'	59.0'	115°56.1'	46°44.1'	34°39.3'		7°44.3'	44°40.5'	81°19.6'	87°60.0'
3	336°06.2'	S 15°24.1'	9.8'	13.4'	59.0'	115°23.4'	46°10.8'	34°04.6'		8°14.7'	45°01.8'	81°54.7'	88°26.2'
4	350°35.0'	S 15°10.7'	9.9'	13.5'	59.0'	114°50.7'	45°37.5'	33°29.8'		8°45.7'	45°23.3'	82°29.8'	88°52.4'
5	5°04.0'	S 14°57.2'	10.0'	13.5'	58.9'	114°18.1'	45°04.2'	32°55.2'		9°17.1'	45°44.9'	83°04.8'	89°18.6'
6	19°33.0'	S 14°43.7'	10.2'	13.6'	58.9'	113°45.5'	44°31.0'	32°20.5'		9°48.9'	46°06.8'	83°39.8'	89°44.8'
7	34°02.2'	S 14°30.1'	10.3'	13.7'	58.8'	113°12.9'	43°57.8'	31°46.0'		10°21.0'	46°28.8'	84°14.7'	90°10.9'
8	48°31.4'	S 14°16.5'	10.4'	13.7'	58.8'	112°40.4'	43°24.7'	31°11.5'		10°53.3'	46°51.0'	84°49.6'	90°37.0'
9	63°00.8'	S 14°02.7'	10.5'	13.8'	58.8'	112°08.0'	42°51.6'	30°37.0'		11°25.9'	47°13.3'	85°24.5'	91°03.0'
10	77°30.3'	S 13°49.0'	10.6'	13.8'	58.7'	111°35.6'	42°18.6'	30°02.6'		11°58.7'	47°35.9'	85°59.3'	91°29.0'
11	91°59.9'	S 13°35.1'	10.7'	13.9'	58.7'	111°03.2'	41°45.6'	29°28.2'		12°31.6'	47°58.5'	86°34.0'	91°55.0'
12	106°29.6'	S 13°21.3'	10.8'	13.9'	58.7'	110°30.9'	41°12.7'	28°53.9'		13°04.6'	48°21.4'	87°08.7'	92°20.9'
13	120°59.4'	S 13°07.3'	10.9'	14.0'	58.6'	109°58.6'	40°39.8'	28°19.6'		13°37.7'	48°44.3'	87°43.4'	92°46.8'
14	135°29.4'	S 12°53.3'	11.0'	14.0'	58.6'	109°26.4'	40°07.0'	27°45.4'		14°10.9'	49°07.5'	88°18.0'	93°12.7'
15	149°59.4'	S 12°39.3'	11.1'	14.1'	58.5'	108°54.2'	39°34.2'	27°11.2'		14°44.2'	49°30.7'	88°52.5'	93°38.5'
16	164°29.5'	S 12°25.2'	11.2'	14.1'	58.5'	108°22.1'	39°01.4'	26°37.1'		15°17.5'	49°54.1'	89°27.1'	94°04.2'
17	178°59.7'	S 12°11.1'	11.3'	14.2'	58.5'	107°50.0'	38°28.7'	26°03.0'		15°50.9'	50°17.6'	90°01.5'	94°30.0'
18	193°30.1'	S 11°56.9'	11.4'	14.2'	58.4'	107°18.0'	37°56.0'	25°29.0'		16°24.3'	50°41.2'	90°36.0'	94°55.6'
19	208°00.5'	S 11°42.7'	11.5'	14.2'	58.4'	106°46.0'	37°23.4'	24°55.0'		16°57.8'	51°05.0'	91°10.3'	95°21.3'
20	222°31.0'	S 11°28.5'	11.6'	14.3'	58.4'	106°14.0'	36°50.9'	24°21.1'		17°31.2'	51°28.9'	91°44.7'	95°46.8'
21	237°01.6'	S 11°14.2'	11.7'	14.3'	58.3'	105°42.1'	36°18.3'	23°47.3'	18°18.4'	18°04.7'	51°52.8'	92°19.0'	96°12.4'
22	251°32.3'	S 10°59.9'	11.8'	14.4'	58.3'	105°10.3'	35°45.9'	23°13.5'	18°35.0'	18°38.2'	52°16.9'	92°53.2'	96°37.8'
23	266°03.2'	S 10°45.5'	11.9'	14.4'	58.2'	104°38.5'	35°13.4'	22°39.7'	18°52.4'	19°11.7'	52°41.1'	93°27.4'	97°03.3'
Mer. pass.		4 h 39 m SD 16.1' phase 73%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.8'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.6'
Deneb	+1.2	49°26.9'	N 45°21.4'	Acrux	+0.8	173°02.3'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.6'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.2'	S 8°10.6'
Vega	+0.0	80°34.2'	N 38°48.2'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°23.1'	N 89°21.2'
Rigel Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.1'	S 57°07.2'
Arcturus	-0.1	145°49.6'	N 19°04.1'	Sirius	-1.4	258°28.4'	S 16°44.8'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.5'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	268°11.2'	179°37.6'	N 23°25.9'	213°40.3'	N 17°40.8'	261°51.1'	N 1°23.1'	300°26.0'	S 14°16.2'	249°50.3'	N 5°48.8'			
1	283°13.7'	194°37.5'	N 23°25.9'	228°39.8'	N 17°41.6'	276°53.3'	N 1°23.2'	315°28.5'	S 14°16.2'	264°51.0'	N 5°49.5'			
2	298°16.1'	209°37.3'	N 23°25.9'	243°39.2'	N 17°42.3'	291°55.5'	N 1°23.3'	330°31.0'	S 14°16.2'	279°51.8'	N 5°50.2'			
3	313°18.6'	224°37.2'	N 23°25.9'	258°38.7'	N 17°43.1'	306°57.7'	N 1°23.4'	345°33.5'	S 14°16.2'	294°52.6'	N 5°50.8'			
4	328°21.1'	239°37.1'	N 23°26.0'	273°38.1'	N 17°43.8'	321°59.9'	N 1°23.5'	0°36.0'	S 14°16.3'	309°53.4'	N 5°51.5'			
5	343°23.5'	254°36.9'	N 23°26.0'	288°37.6'	N 17°44.5'	337°02.1'	N 1°23.6'	15°38.6'	S 14°16.3'	324°54.2'	N 5°52.2'			
6	358°26.0'	269°36.8'	N 23°26.0'	303°37.0'	N 17°45.3'	352°04.3'	N 1°23.7'	30°41.1'	S 14°16.3'	339°55.0'	N 5°52.9'			
7	13°28.5'	284°36.7'	N 23°26.0'	318°36.5'	N 17°46.0'	7°06.5'	N 1°23.8'	45°43.6'	S 14°16.3'	354°55.7'	N 5°53.5'			
8	28°30.9'	299°36.5'	N 23°26.0'	333°35.9'	N 17°46.8'	22°08.7'	N 1°23.9'	60°46.1'	S 14°16.4'	9°56.5'	N 5°54.2'			
9	43°33.4'	314°36.4'	N 23°26.1'	348°35.3'	N 17°47.5'	37°10.9'	N 1°24.0'	75°48.6'	S 14°16.4'	24°57.3'	N 5°54.9'			
10	58°35.8'	329°36.3'	N 23°26.1'	3°34.8'	N 17°48.3'	52°13.1'	N 1°24.1'	90°51.2'	S 14°16.4'	39°58.1'	N 5°55.6'			
11	73°38.3'	344°36.1'	N 23°26.1'	18°34.2'	N 17°49.0'	67°15.3'	N 1°24.2'	105°53.7'	S 14°16.5'	54°58.9'	N 5°56.3'			
12	88°40.8'	359°36.0'	N 23°26.1'	33°33.7'	N 17°49.8'	82°17.5'	N 1°24.3'	120°56.2'	S 14°16.5'	69°59.7'	N 5°56.9'			
13	103°43.2'	14°35.8'	N 23°26.1'	48°33.1'	N 17°50.5'	97°19.7'	N 1°24.4'	135°58.7'	S 14°16.5'	85°00.4'	N 5°57.6'			
14	118°45.7'	29°35.7'	N 23°26.1'	63°32.6'	N 17°51.2'	112°21.9'	N 1°24.5'	151°01.2'	S 14°16.5'	100°01.2'	N 5°58.3'			
15	133°48.2'	44°35.6'	N 23°26.1'	78°32.0'	N 17°52.0'	127°24.1'	N 1°24.6'	166°03.8'	S 14°16.6'	115°02.0'	N 5°59.0'			
16	148°50.6'	59°35.4'	N 23°26.2'	93°31.4'	N 17°52.7'	142°26.3'	N 1°24.7'	181°06.3'	S 14°16.6'	130°02.8'	N 5°59.6'			
17	163°53.1'	74°35.3'	N 23°26.2'	108°30.9'	N 17°53.4'	157°28.5'	N 1°24.8'	196°08.8'	S 14°16.6'	145°03.6'	N 6°00.3'			
18	178°55.6'	89°35.2'	N 23°26.2'	123°30.3'	N 17°54.2'	172°30.7'	N 1°24.9'	211°11.3'	S 14°16.7'	160°04.4'	N 6°01.0'			
19	193°58.0'	104°35.0'	N 23°26.2'	138°29.8'	N 17°54.9'	187°32.9'	N 1°25.0'	226°13.9'	S 14°16.7'	175°05.1'	N 6°01.7'			
20	209°00.5'	119°34.9'	N 23°26.2'	153°29.2'	N 17°55.7'	202°35.1'	N 1°25.1'	241°16.4'	S 14°16.7'	190°05.9'	N 6°02.3'			
21	224°03.0'	134°34.8'	N 23°26.2'	168°28.6'	N 17°56.4'	217°37.3'	N 1°25.2'	256°18.9'	S 14°16.7'	205°06.7'	N 6°03.0'			
22	239°05.4'	149°34.6'	N 23°26.2'	183°28.1'	N 17°57.1'	232°39.5'	N 1°25.3'	271°21.4'	S 14°16.8'	220°07.5'	N 6°03.7'			
23	254°07.9'	164°34.5'	N 23°26.2'	198°27.5'	N 17°57.9'	247°41.7'	N 1°25.4'	286°24.0'	S 14°16.8'	235°08.3'	N 6°04.4'			
		SD 15.7' d 0.0'		v -0.6' d 0.7'		v 2.2' d 0.1'		v 2.5' d -0.0'		v 0.8' d 0.7'				
Mer. pass.		12 h 1 m 37 s		9 h 46 m		6 h 32 m		3 h 58 m		7 h 20 m				

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Venus	-Mars	-Jupiter	+Fomalhaut	+Saturn	+Altair	+Antares
0	280°34.1'	S 10°31.1'	12.0'	14.4'	58.2'	104°06.7'	71°48.7'	34°41.0'	22°06.0'	19°10.5'	19°45.2'	53°05.4'	94°01.6'
1	295°05.0'	S 10°16.7'	12.1'	14.5'	58.2'	103°35.0'	71°17.5'	34°08.7'	21°32.4'	19°29.3'	20°18.7'	53°29.7'	94°35.7'
2	309°36.1'	S 10°02.2'	12.2'	14.5'	58.1'	103°03.3'	70°46.4'	33°36.4'	20°58.8'	19°48.7'	20°52.1'	53°54.2'	95°09.7'
3	324°07.3'	S 9°47.7'	12.3'	14.5'	58.1'	102°31.6'	70°15.3'	33°04.1'	20°25.3'	20°08.7'	21°25.6'	54°18.7'	95°43.8'
4	338°38.5'	S 9°33.2'	12.3'	14.5'	58.1'	102°00.1'	69°44.3'	32°31.9'	19°51.8'	20°29.2'	21°59.1'	54°43.4'	96°17.7'
5	353°09.9'	S 9°18.7'	12.4'	14.6'	58.0'	101°28.5'	69°13.3'	31°59.8'	19°18.4'	20°50.3'	22°32.5'	55°08.1'	96°51.7'
6	7°41.3'	S 9°04.1'	12.5'	14.6'	58.0'	100°57.0'	68°42.4'	31°27.7'	18°45.0'	21°11.9'	23°06.0'	55°32.9'	97°25.5'
7	22°12.8'	S 8°49.5'	12.6'	14.6'	57.9'	100°25.6'	68°11.5'	30°55.6'	18°11.7'	21°34.0'	23°39.4'	55°57.7'	97°59.4'
8	36°44.4'	S 8°34.9'	12.7'	14.6'	57.9'	99°54.1'	67°40.6'	30°23.6'	17°38.5'	21°56.5'	24°12.8'	56°22.7'	98°33.2'
9	51°16.1'	S 8°20.3'	12.7'	14.7'	57.9'	99°22.8'	67°09.8'	29°51.6'	17°05.3'	22°19.5'	24°46.1'	56°47.7'	99°06.9'
10	65°47.8'	S 8°05.6'	12.8'	14.7'	57.8'	98°51.5'	66°39.1'	29°19.6'	16°32.2'	22°42.8'	25°19.5'	57°12.7'	99°40.2'
11	80°19.6'	S 7°50.9'	12.9'	14.7'	57.8'	98°20.2'	66°08.3'	28°47.7'	15°59.2'	23°06.5'	25°52.8'	57°37.9'	100°14.3'
12	94°51.5'	S 7°36.2'	13.0'	14.7'	57.8'	97°48.9'	65°37.7'	28°15.9'	15°26.2'	23°30.6'	26°26.1'	58°03.1'	100°47.9'
13	109°23.5'	S 7°21.5'	13.0'	14.7'	57.7'	97°17.7'	65°07.0'	27°44.1'	14°53.3'	23°55.0'	26°59.4'	58°28.3'	101°21.5'
14	123°55.6'	S 7°06.8'	13.1'	14.7'	57.7'	96°46.6'	64°36.5'	27°12.3'	14°20.5'	24°19.7'	27°32.6'	58°53.6'	101°55.0'
15	138°27.7'	S 6°52.0'	13.2'	14.8'	57.7'	96°15.5'	64°05.9'	26°40.6'	13°47.8'	24°44.7'	28°05.9'	59°19.0'	102°28.5'
16	152°59.9'	S 6°37.3'	13.3'	14.8'	57.6'	95°44.4'	63°35.4'	26°08.9'	13°15.1'	25°10.0'	28°39.0'	59°44.4'	103°02.0'
17	167°32.1'	S 6°22.5'	13.3'	14.8'	57.6'	95°13.4'	63°05.0'	25°37.3'	12°42.6'	25°35.6'	29°12.2'	60°09.8'	103°35.4'
18	182°04.4'	S 6°07.7'	13.4'	14.8'	57.5'	94°42.4'	62°34.6'	25°05.7'	12°10.1'	26°01.4'	29°45.3'	60°35.3'	104°08.7'
19	196°36.8'	S 5°52.9'	13.5'	14.8'	57.5'	94°11.5'	62°04.2'	24°34.1'	11°37.7'	26°27.4'	30°18.4'	61°00.8'	104°42.1'
20	211°09.3'	S 5°38.1'	13.5'	14.8'	57.5'	93°40.6'	61°33.9'	24°02.6'	11°05.5'	26°53.7'	30°51.5'	61°26.4'	105°15.3'
21	225°41.8'	S 5°23.3'	13.6'	14.8'	57.4'	93°09.7'	61°03.6'	23°31.2'	10°33.4'	27°20.1'	31°24.5'	61°52.1'	105°48.6'
22	240°14.4'	S 5°08.5'	13.6'	14.8'	57.4'	92°38.9'	60°33.3'	22°59.8'	10°01.4'	27°46.8'	31°57.5'	62°17.7'	106°21.8'
23	254°47.0'	S 4°53.7'	13.7'	14.8'	57.4'	92°08.2'	60°03.1'	22°28.4'	9°29.5'	28°13.6'	32°30.5'	62°43.4'	106°54.9'
Mer. pass.		5 h 28 m SD 15.9'		phase 62%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.8'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.7'
Deneb	+1.2	49°26.9'	N 45°21.4'	Acrux	+0.8	173°02.3'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.6'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°06.2'	S 8°10.6'
Vega	+0.0	80°34.2'	N 38°48.2'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°22.8'	N 89°21.2'
Rigil Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.1'	S 57°07.2'
Arcturus	-0.1	145°49.6'	N 19°04.1'	Sirius	-1.4	258°28.4'	S 16°44.8'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.5'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec		GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	269°10.3'	179°34.3'	N 23°26.2'	213°27.0'	N 17°58.6'		262°43.9'	N 1°25.5'	301°26.5'	S 14°16.8'	250°09.1'	N 6°05.0'		
1	284°12.8'	194°34.2'	N 23°26.2'	228°26.4'	N 17°59.3'		277°46.1'	N 1°25.6'	316°29.0'	S 14°16.9'	265°09.8'	N 6°05.7'		
2	299°15.3'	209°34.1'	N 23°26.2'	243°25.8'	N 18°00.1'		292°48.3'	N 1°25.7'	331°31.5'	S 14°16.9'	280°10.6'	N 6°06.4'		
3	314°17.7'	224°33.9'	N 23°26.3'	258°25.3'	N 18°00.8'		307°50.5'	N 1°25.8'	346°34.1'	S 14°16.9'	295°11.4'	N 6°07.1'		
4	329°20.2'	239°33.8'	N 23°26.3'	273°24.7'	N 18°01.5'		322°52.7'	N 1°25.9'	1°36.6'	S 14°16.9'	310°12.2'	N 6°07.7'		
5	344°22.7'	254°33.7'	N 23°26.3'	288°24.1'	N 18°02.2'		337°54.9'	N 1°26.0'	16°39.1'	S 14°17.0'	325°13.0'	N 6°08.4'		
6	359°25.1'	269°33.5'	N 23°26.3'	303°23.6'	N 18°03.0'		352°57.1'	N 1°26.1'	31°41.6'	S 14°17.0'	340°13.8'	N 6°09.1'		
7	14°27.6'	284°33.4'	N 23°26.3'	318°23.0'	N 18°03.7'		7°59.3'	N 1°26.3'	46°44.1'	S 14°17.0'	355°14.5'	N 6°09.8'		
8	29°30.1'	299°33.3'	N 23°26.3'	333°22.4'	N 18°04.4'		23°01.5'	N 1°26.4'	61°46.7'	S 14°17.1'	10°15.3'	N 6°10.4'		
9	44°32.5'	314°33.1'	N 23°26.3'	348°21.9'	N 18°05.2'		38°03.7'	N 1°26.5'	76°49.2'	S 14°17.1'	25°16.1'	N 6°11.1'		
10	59°35.0'	329°33.0'	N 23°26.3'	3°21.3'	N 18°05.9'		53°05.9'	N 1°26.6'	91°51.7'	S 14°17.1'	40°16.9'	N 6°11.8'		
11	74°37.5'	344°32.9'	N 23°26.3'	18°20.7'	N 18°06.6'		68°08.1'	N 1°26.7'	106°54.2'	S 14°17.1'	55°17.7'	N 6°12.5'		
12	89°39.9'	359°32.7'	N 23°26.3'	33°20.2'	N 18°07.3'		83°10.3'	N 1°26.8'	121°56.8'	S 14°17.2'	70°18.5'	N 6°13.1'		
13	104°42.4'	14°32.6'	N 23°26.3'	48°19.6'	N 18°08.0'		98°12.5'	N 1°26.9'	136°59.3'	S 14°17.2'	85°19.2'	N 6°13.8'		
14	119°44.8'	29°32.4'	N 23°26.3'	63°19.0'	N 18°08.8'		113°14.7'	N 1°27.0'	152°01.8'	S 14°17.2'	100°20.0'	N 6°14.5'		
15	134°47.3'	44°32.3'	N 23°26.3'	78°18.5'	N 18°09.5'		128°16.9'	N 1°27.1'	167°04.4'	S 14°17.3'	115°20.8'	N 6°15.2'		
16	149°49.8'	59°32.2'	N 23°26.3'	93°17.9'	N 18°10.2'		143°19.1'	N 1°27.2'	182°06.9'	S 14°17.3'	130°21.6'	N 6°15.8'		
17	164°52.2'	74°32.0'	N 23°26.2'	108°17.3'	N 18°10.9'		158°21.3'	N 1°27.3'	197°09.4'	S 14°17.3'	145°22.4'	N 6°16.5'		
18	179°54.7'	89°31.9'	N 23°26.2'	123°16.7'	N 18°11.7'		173°23.5'	N 1°27.4'	212°11.9'	S 14°17.4'	160°23.2'	N 6°17.2'		
19	194°57.2'	104°31.8'	N 23°26.2'	138°16.2'	N 18°12.4'		188°25.7'	N 1°27.5'	227°14.5'	S 14°17.4'	175°23.9'	N 6°17.9'		
20	209°59.6'	119°31.6'	N 23°26.2'	153°15.6'	N 18°13.1'		203°27.9'	N 1°27.6'	242°17.0'	S 14°17.4'	190°24.7'	N 6°18.5'		
21	225°02.1'	134°31.5'	N 23°26.2'	168°15.0'	N 18°13.8'		218°30.1'	N 1°27.7'	257°19.5'	S 14°17.4'	205°25.5'	N 6°19.2'		
22	240°04.6'	149°31.4'	N 23°26.2'	183°14.4'	N 18°14.5'		233°32.3'	N 1°27.8'	272°22.0'	S 14°17.5'	220°26.3'	N 6°19.9'		
23	255°07.0'	164°31.2'	N 23°26.2'	198°13.9'	N 18°15.2'		248°34.5'	N 1°27.9'	287°24.6'	S 14°17.5'	235°27.1'	N 6°20.5'		
		SD 15.7' d -0.0'		v -0.6' d 0.7'			v 2.2' d 0.1'		v 2.5' d -0.0'		v 0.8' d 0.7'			
Mer. pass.		12 h 1 m 50 s		9 h 47 m			6 h 28 m		3 h 54 m		7 h 19 m			

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Venus	-Mars	-Jupiter	+Fomalhaut	+Saturn	+Altair	+Rigel Kent
0	269°19.7'	S 4°38.9'	13.8'	14.8'	57.3'	91°37.4'	59°33.0'	21°57.0'	8°57.8'	28°40.6'	33°03.5'	63°09.1'	107°19.3'
1	283°52.5'	S 4°24.1'	13.8'	14.8'	57.3'	91°06.8'	59°02.9'	21°25.8'	8°26.3'	29°07.7'	33°36.4'	63°34.9'	107°43.0'
2	298°25.3'	S 4°09.3'	13.9'	14.8'	57.3'	90°36.1'	58°32.8'	20°54.5'	7°55.0'	29°35.1'	34°09.2'	64°00.7'	108°06.6'
3	312°58.2'	S 3°54.4'	13.9'	14.8'	57.2'	90°05.5'	58°02.8'	20°23.3'	7°24.0'	30°02.5'	34°42.1'	64°26.5'	108°30.2'
4	327°31.1'	S 3°39.6'	14.0'	14.8'	57.2'	89°34.9'	57°32.8'	19°52.1'	6°53.3'	30°30.1'	35°14.9'	64°52.4'	108°53.7'
5	342°04.1'	S 3°24.8'	14.0'	14.8'	57.2'	89°04.4'	57°02.8'	19°21.0'	6°22.9'	30°57.8'	35°47.7'	65°18.2'	109°17.1'
6	356°37.1'	S 3°10.0'	14.1'	14.8'	57.1'	88°33.9'	56°32.9'	18°49.9'	5°53.0'	31°25.6'	36°20.4'	65°44.1'	109°40.4'
7	11°10.2'	S 2°55.2'	14.1'	14.8'	57.1'	88°03.5'	56°03.1'	18°18.9'	5°23.7'	31°53.6'	36°53.1'	66°10.0'	110°03.7'
8	25°43.3'	S 2°40.4'	14.2'	14.8'	57.0'	87°33.1'	55°33.2'	17°47.9'		32°21.6'	37°25.8'	66°36.0'	110°26.8'
9	40°16.4'	S 2°25.6'	14.2'	14.8'	57.0'	87°02.7'	55°03.4'	17°16.9'		32°49.7'	37°58.4'	67°01.9'	110°49.9'
10	54°49.7'	S 2°10.8'	14.3'	14.8'	57.0'	86°32.4'	54°33.7'	16°46.0'		33°18.0'	38°31.1'	67°27.9'	111°12.9'
11	69°22.9'	S 1°56.0'	14.3'	14.8'	56.9'	86°02.1'	54°04.0'	16°15.1'		33°46.3'	39°03.6'	67°53.9'	111°35.8'
12	83°56.2'	S 1°41.2'	14.3'	14.8'	56.9'	85°31.9'	53°34.3'	15°44.3'		34°14.7'	39°36.2'	68°19.9'	111°58.6'
13	98°29.6'	S 1°26.5'	14.4'	14.8'	56.9'	85°01.7'	53°04.7'	15°13.5'		34°43.2'	40°08.7'	68°45.9'	112°21.3'
14	113°03.0'	S 1°11.7'	14.4'	14.7'	56.8'	84°31.5'	52°35.1'	14°42.7'		35°11.7'	40°41.2'	69°12.0'	112°43.9'
15	127°36.4'	S 0°57.0'	14.5'	14.7'	56.8'	84°01.4'	52°05.6'	14°12.0'		35°40.3'	41°13.6'	69°38.0'	113°06.5'
16	142°09.9'	S 0°42.2'	14.5'	14.7'	56.8'	83°31.3'	51°36.0'	13°41.3'		36°09.0'	41°46.0'	70°04.1'	113°28.9'
17	156°43.3'	S 0°27.5'	14.5'	14.7'	56.7'	83°01.2'	51°06.6'	13°10.7'		36°37.8'	42°18.4'	70°30.2'	113°51.2'
18	171°16.9'	S 0°12.8'	14.6'	14.7'	56.7'	82°31.2'	50°37.1'	12°40.1'		37°06.6'	42°50.7'	70°56.2'	114°13.5'
19	185°50.5'	N 0°01.9'	14.6'	14.7'	56.7'	82°01.2'	50°07.7'	12°09.6'		37°35.4'	43°23.0'	71°22.3'	114°35.6'
20	200°24.1'	N 0°16.5'	14.6'	14.6'	56.6'	81°31.3'	49°38.4'	11°39.1'		38°04.3'	43°55.3'	71°48.4'	114°57.6'
21	214°57.7'	N 0°31.2'	14.7'	14.6'	56.6'	81°01.4'	49°09.0'	11°08.6'		38°33.2'	44°27.5'	72°14.5'	115°19.6'
22	229°31.3'	N 0°45.8'	14.7'	14.6'	56.6'	80°31.5'	48°39.8'	10°38.2'		39°02.2'	44°59.8'	72°40.6'	115°41.4'
23	244°05.0'	N 1°00.4'	14.7'	14.6'	56.5'	80°01.7'	48°10.5'	10°07.8'		39°31.2'	45°31.9'	73°06.7'	116°03.2'
Mer. pass.		6 h 14 m SD 15.6'		phase 51%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.8'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.7'
Deneb	+1.2	49°26.9'	N 45°21.4'	Acrux	+0.8	173°02.3'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.6'	Regulus	+1.4	207°36.9'	N 11°51.6'	Rigel	+0.2	281°06.2'	S 8°10.6'
Vega	+0.0	80°34.2'	N 38°48.2'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°22.5'	N 89°21.2'
Rigel Kent	-0.0	139°42.7'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.1'	S 57°07.2'
Arcturus	-0.1	145°49.7'	N 19°04.1'	Sirius	-1.4	258°28.4'	S 16°44.8'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.5'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	270°09.5'	179°31.1' N 23°26.2'	213°13.3' N 18°16.0'	263°36.7' N 1°28.0'	302°27.1' S 14°17.5'	250°27.9' N 6°21.2'						
1	285°11.9'	194°30.9' N 23°26.2'	228°12.7' N 18°16.7'	278°38.9' N 1°28.1'	317°29.6' S 14°17.6'	265°28.7' N 6°21.9'						
2	300°14.4'	209°30.8' N 23°26.2'	243°12.1' N 18°17.4'	293°41.1' N 1°28.2'	332°32.2' S 14°17.6'	280°29.4' N 6°22.6'						
3	315°16.9'	224°30.7' N 23°26.2'	258°11.6' N 18°18.1'	308°43.3' N 1°28.3'	347°34.7' S 14°17.6'	295°30.2' N 6°23.2'						
4	330°19.3'	239°30.5' N 23°26.1'	273°11.0' N 18°18.8'	323°45.5' N 1°28.4'	2°37.2' S 14°17.7'	310°31.0' N 6°23.9'						
5	345°21.8'	254°30.4' N 23°26.1'	288°10.4' N 18°19.5'	338°47.7' N 1°28.5'	17°39.7' S 14°17.7'	325°31.8' N 6°24.6'						
6	0°24.3'	269°30.3' N 23°26.1'	303°09.8' N 18°20.2'	353°49.9' N 1°28.6'	32°42.3' S 14°17.7'	340°32.6' N 6°25.2'						
7	15°26.7'	284°30.1' N 23°26.1'	318°09.3' N 18°20.9'	8°52.2' N 1°28.6'	47°44.8' S 14°17.7'	355°33.4' N 6°25.9'						
8	30°29.2'	299°30.0' N 23°26.1'	333°08.7' N 18°21.6'	23°54.4' N 1°28.7'	62°47.3' S 14°17.8'	10°34.1' N 6°26.6'						
9	45°31.7'	314°29.9' N 23°26.1'	348°08.1' N 18°22.4'	38°56.6' N 1°28.8'	77°49.8' S 14°17.8'	25°34.9' N 6°27.3'						
10	60°34.1'	329°29.7' N 23°26.0'	3°07.5' N 18°23.1'	53°58.8' N 1°28.9'	92°52.4' S 14°17.8'	40°35.7' N 6°27.9'						
11	75°36.6'	344°29.5' N 23°26.0'	18°06.9' N 18°23.8'	69°01.0' N 1°29.0'	107°54.9' S 14°17.9'	55°36.5' N 6°28.6'						
12	90°39.1'	359°29.5' N 23°26.0'	33°06.4' N 18°24.5'	84°03.2' N 1°29.1'	122°57.4' S 14°17.9'	70°37.3' N 6°29.3'						
13	105°41.5'	14°29.3' N 23°26.0'	48°05.8' N 18°25.2'	99°05.4' N 1°29.2'	137°60.0' S 14°17.9'	85°38.1' N 6°29.9'						
14	120°44.0'	29°29.2' N 23°26.0'	63°05.2' N 18°25.9'	114°07.6' N 1°29.3'	153°02.5' S 14°18.0'	100°38.9' N 6°30.6'						
15	135°46.4'	44°29.0' N 23°26.0'	78°04.6' N 18°26.6'	129°09.8' N 1°29.4'	168°05.0' S 14°18.0'	115°39.6' N 6°31.3'						
16	150°48.9'	59°28.9' N 23°25.9'	93°04.0' N 18°27.3'	144°12.0' N 1°29.5'	183°07.6' S 14°18.0'	130°40.4' N 6°31.9'						
17	165°51.4'	74°28.8' N 23°25.9'	108°03.5' N 18°28.0'	159°14.2' N 1°29.6'	198°10.1' S 14°18.0'	145°41.2' N 6°32.6'						
18	180°53.8'	89°28.6' N 23°25.9'	123°02.9' N 18°28.7'	174°16.4' N 1°29.7'	213°12.6' S 14°18.1'	160°42.0' N 6°33.3'						
19	195°56.3'	104°28.5' N 23°25.9'	138°02.3' N 18°29.4'	189°18.7' N 1°29.8'	228°15.1' S 14°18.1'	175°42.8' N 6°34.0'						
20	210°58.8'	119°28.4' N 23°25.8'	153°01.7' N 18°30.1'	204°20.9' N 1°29.9'	243°17.7' S 14°18.1'	190°43.6' N 6°34.6'						
21	226°01.2'	134°28.2' N 23°25.8'	168°01.1' N 18°30.8'	219°23.1' N 1°30.0'	258°20.2' S 14°18.2'	205°44.4' N 6°35.3'						
22	241°03.7'	149°28.1' N 23°25.8'	183°00.5' N 18°31.5'	234°25.3' N 1°30.1'	273°22.7' S 14°18.2'	220°45.1' N 6°36.0'						
23	256°06.2'	164°28.0' N 23°25.8'	197°59.9' N 18°32.2'	249°27.5' N 1°30.2'	288°25.3' S 14°18.2'	235°45.9' N 6°36.6'						
		SD 15.7' d -0.0'	v -0.6' d 0.7'	v 2.2' d 0.1'	v 2.5' d -0.0'	v 0.8' d 0.7'						
Mer. pass.		12 h 2 m 3 s	9 h 48 m	6 h 25 m	3 h 50 m	7 h 18 m						

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Aldebaran	-Venus	-Mars	+Jupiter	+Fomalhaut	+Saturn	+Altair
0	258°38.8'	N 1°15.0'	14.7'	14.6'	56.5'	79°31.9'	58°51.5'	47°41.3'	9°37.5'		40°00.3'	46°04.1'	73°32.8'
1	273°12.5'	N 1°29.6'	14.8'	14.5'	56.5'	79°02.1'	58°19.7'	47°12.1'	9°07.2'	5°26.3'	40°29.4'	46°36.2'	73°58.9'
2	287°46.3'	N 1°44.1'	14.8'	14.5'	56.5'	78°32.4'	57°47.9'	46°43.0'	8°37.0'	5°55.1'	40°58.5'	47°08.3'	74°25.1'
3	302°20.1'	N 1°58.6'	14.8'	14.5'	56.4'	78°02.7'	57°16.1'	46°13.9'	8°06.8'	6°24.3'	41°27.7'	47°40.3'	74°51.2'
4	316°53.9'	N 2°13.1'	14.8'	14.5'	56.4'	77°33.1'	56°44.3'	45°44.8'	7°36.7'	6°53.9'	41°56.9'	48°12.3'	75°17.3'
5	331°27.7'	N 2°27.6'	14.9'	14.4'	56.4'	77°03.5'	56°12.6'	45°15.8'	7°06.6'	7°23.7'	42°26.1'	48°44.3'	75°43.4'
6	346°01.6'	N 2°42.1'	14.9'	14.4'	56.3'	76°33.9'	55°41.0'	44°46.8'	6°36.7'	7°53.8'	42°55.3'	49°16.3'	76°09.5'
7	0°35.5'	N 2°56.5'	14.9'	14.4'	56.3'	76°04.3'	55°09.3'	44°17.8'	6°06.7'	8°24.0'	43°24.6'	49°48.2'	76°35.6'
8	15°09.4'	N 3°10.9'	14.9'	14.4'	56.3'	75°34.8'	54°37.8'	43°48.9'	5°36.9'	8°54.4'	43°53.9'	50°20.1'	77°01.7'
9	29°43.3'	N 3°25.2'	14.9'	14.3'	56.2'	75°05.3'	54°06.2'	43°20.0'	5°07.1'	9°24.9'	44°23.2'	50°51.9'	77°27.8'
10	44°17.2'	N 3°39.6'	14.9'	14.3'	56.2'	74°35.9'	53°34.7'	42°51.1'	4°37.5'	9°55.5'	44°52.5'	51°23.8'	77°53.9'
11	58°51.1'	N 3°53.9'	15.0'	14.3'	56.2'	74°06.4'	53°03.2'	42°22.3'	4°08.0'	10°26.1'	45°21.8'	51°55.6'	78°20.0'
12	73°25.1'	N 4°08.2'	15.0'	14.2'	56.1'	73°37.1'	52°31.8'	41°53.5'	3°38.7'	10°56.8'	45°51.1'	52°27.3'	78°46.1'
13	87°59.1'	N 4°22.4'	15.0'	14.2'	56.1'	73°07.7'	52°00.4'	41°24.7'	3°09.6'	11°27.6'	46°20.5'	52°59.1'	79°12.1'
14	102°33.0'	N 4°36.6'	15.0'	14.2'	56.1'	72°38.4'	51°29.0'	40°56.0'	2°40.9'	11°58.4'	46°49.9'	53°30.8'	79°38.2'
15	117°07.0'	N 4°50.8'	15.0'	14.1'	56.1'	72°09.1'	50°57.7'	40°27.3'		12°29.2'	47°19.2'	54°02.5'	80°04.2'
16	131°41.0'	N 5°04.9'	15.0'	14.1'	56.0'	71°39.8'	50°26.4'	39°58.7'		12°60.0'	47°48.6'	54°34.1'	80°30.3'
17	146°15.0'	N 5°19.1'	15.0'	14.1'	56.0'	71°10.6'	49°55.1'	39°30.0'		13°30.8'	48°18.0'	55°05.7'	80°56.3'
18	160°49.0'	N 5°33.1'	15.0'	14.0'	56.0'	70°41.4'	49°23.9'	39°01.5'		14°01.7'	48°47.4'	55°37.3'	81°22.4'
19	175°23.0'	N 5°47.2'	15.0'	14.0'	55.9'	70°12.3'	48°52.7'	38°32.9'		14°32.5'	49°16.8'	56°08.9'	81°48.4'
20	189°57.0'	N 6°01.2'	15.0'	14.0'	55.9'	69°43.1'	48°21.6'	38°04.4'		15°03.4'	49°46.2'	56°40.4'	82°14.4'
21	204°31.1'	N 6°15.1'	15.0'	13.9'	55.9'	69°14.0'	47°50.5'	37°35.9'		15°34.3'	50°15.6'	57°11.9'	82°40.4'
22	219°05.1'	N 6°29.1'	15.0'	13.9'	55.9'	68°45.0'	47°19.4'	37°07.4'		16°05.1'	50°45.1'	57°43.4'	83°06.3'
23	233°39.1'	N 6°43.0'	15.0'	13.8'	55.8'	68°15.9'	46°48.4'	36°39.0'		16°36.0'	51°14.5'	58°14.8'	83°32.3'
Mer. pass.													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.7'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.7'
Deneb	+1.2	49°26.8'	N 45°21.4'	Acrux	+0.8	173°02.3'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.6'	Regulus	+1.4	207°36.9'	N 11°51.6'	Rigel	+0.2	281°06.2'	S 8°10.6'
Vega	+0.0	80°34.2'	N 38°48.2'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°22.1'	N 89°21.2'
Rigil Kent	-0.0	139°42.8'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.1'	S 57°07.2'
Arcturus	-0.1	145°49.7'	N 19°04.1'	Sirius	-1.4	258°28.4'	S 16°44.8'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	271°08.6'	179°27.8' N 23°25.7'	212°59.4' N 18°32.9'	264°29.7' N 1°30.3'	303°27.8' S 14°18.3'	250°46.7' N 6°37.3'						
1	286°11.1'	194°27.7' N 23°25.7'	227°58.8' N 18°33.6'	279°31.9' N 1°30.4'	318°30.3' S 14°18.3'	265°47.5' N 6°38.0'						
2	301°13.6'	209°27.6' N 23°25.7'	242°58.2' N 18°34.3'	294°34.1' N 1°30.5'	333°32.9' S 14°18.3'	280°48.3' N 6°38.6'						
3	316°16.0'	224°27.4' N 23°25.6'	257°57.6' N 18°35.0'	309°36.3' N 1°30.6'	348°35.4' S 14°18.4'	295°49.1' N 6°39.3'						
4	331°18.5'	239°27.3' N 23°25.6'	272°57.0' N 18°35.7'	324°38.6' N 1°30.7'	3°37.9' S 14°18.4'	310°49.9' N 6°40.0'						
5	346°20.9'	254°27.1' N 23°25.6'	287°56.4' N 18°36.4'	339°40.8' N 1°30.8'	18°40.5' S 14°18.4'	325°50.6' N 6°40.6'						
6	1°23.4'	269°27.0' N 23°25.6'	302°55.8' N 18°37.0'	354°43.0' N 1°30.9'	33°43.0' S 14°18.5'	340°51.4' N 6°41.3'						
7	16°25.9'	284°26.9' N 23°25.5'	317°55.2' N 18°37.7'	9°45.2' N 1°31.0'	48°45.5' S 14°18.5'	355°52.2' N 6°42.0'						
8	31°28.3'	299°26.7' N 23°25.5'	332°54.7' N 18°38.4'	24°47.4' N 1°31.1'	63°48.1' S 14°18.5'	10°53.0' N 6°42.6'						
9	46°30.8'	314°26.6' N 23°25.5'	347°54.1' N 18°39.1'	39°49.6' N 1°31.2'	78°50.6' S 14°18.5'	25°53.8' N 6°43.3'						
10	61°33.3'	329°26.5' N 23°25.4'	2°53.5' N 18°39.8'	54°51.8' N 1°31.3'	93°53.1' S 14°18.6'	40°54.6' N 6°44.0'						
11	76°35.7'	344°26.3' N 23°25.4'	17°52.9' N 18°40.5'	69°54.0' N 1°31.4'	108°55.7' S 14°18.6'	55°55.4' N 6°44.6'						
12	91°38.2'	359°26.2' N 23°25.3'	32°52.3' N 18°41.2'	84°56.3' N 1°31.5'	123°58.2' S 14°18.6'	70°56.1' N 6°45.3'						
13	106°40.7'	14°26.1' N 23°25.3'	47°51.7' N 18°41.9'	99°58.5' N 1°31.6'	139°00.7' S 14°18.7'	85°56.9' N 6°46.0'						
14	121°43.1'	29°25.9' N 23°25.3'	62°51.1' N 18°42.5'	115°00.7' N 1°31.7'	154°03.3' S 14°18.7'	100°57.7' N 6°46.6'						
15	136°45.6'	44°25.8' N 23°25.2'	77°50.5' N 18°43.2'	130°02.9' N 1°31.7'	169°05.8' S 14°18.7'	115°58.5' N 6°47.3'						
16	151°48.0'	59°25.7' N 23°25.2'	92°49.9' N 18°43.9'	145°05.1' N 1°31.8'	184°08.3' S 14°18.8'	130°59.3' N 6°48.0'						
17	166°50.5'	74°25.5' N 23°25.2'	107°49.3' N 18°44.6'	160°07.3' N 1°31.9'	199°10.9' S 14°18.8'	146°00.1' N 6°48.6'						
18	181°53.0'	89°25.4' N 23°25.1'	122°48.7' N 18°45.3'	175°09.5' N 1°32.0'	214°13.4' S 14°18.8'	161°00.9' N 6°49.3'						
19	196°55.4'	104°25.3' N 23°25.1'	137°48.1' N 18°46.0'	190°11.8' N 1°32.1'	229°15.9' S 14°18.9'	176°01.6' N 6°50.0'						
20	211°57.9'	119°25.1' N 23°25.0'	152°47.5' N 18°46.6'	205°14.0' N 1°32.2'	244°18.5' S 14°18.9'	191°02.4' N 6°50.6'						
21	227°00.4'	134°25.0' N 23°25.0'	167°46.9' N 18°47.3'	220°16.2' N 1°32.3'	259°21.0' S 14°18.9'	206°03.2' N 6°51.3'						
22	242°02.8'	149°24.8' N 23°24.9'	182°46.3' N 18°48.0'	235°18.4' N 1°32.4'	274°23.5' S 14°19.0'	221°04.0' N 6°52.0'						
23	257°05.3'	164°24.7' N 23°24.9'	197°45.7' N 18°48.7'	250°20.6' N 1°32.5'	289°26.1' S 14°19.0'	236°04.8' N 6°52.6'						
		SD 15.7' d -0.0'	v -0.6' d 0.7'	v 2.2' d 0.1'	v 2.5' d -0.0'	v 0.8' d 0.7'						
Mer. pass.		12 h 2 m 16 s	9 h 48 m	6 h 21 m	3 h 46 m	7 h 17 m						

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Rigel	-Aldebaran	-Venus	+Mars	+Jupiter	+Fomalhaut	+Saturn
0	248°13.1'	N 6°56.8'	15.0'	13.8'	55.8'	67°46.9'	57°48.9'	46°17.4'	36°10.6'	2°33.8'	17°06.8'	51°43.9'	58°46.3'
1	262°47.1'	N 7°10.6'	15.0'	13.8'	55.8'	67°17.9'	57°25.0'	45°46.4'	35°42.2'	3°02.0'	17°37.7'	52°13.3'	59°17.6'
2	277°21.2'	N 7°24.4'	15.0'	13.7'	55.8'	66°49.0'	57°01.2'	45°15.5'	35°13.8'	3°30.6'	18°08.5'	52°42.7'	59°49.0'
3	291°55.2'	N 7°38.1'	15.0'	13.7'	55.7'	66°20.1'	56°37.4'	44°44.6'	34°45.5'	3°59.4'	18°39.3'	53°12.2'	60°20.3'
4	306°29.2'	N 7°51.8'	15.0'	13.6'	55.7'	65°51.2'	56°13.8'	44°13.7'	34°17.3'	4°28.4'	19°10.1'	53°41.6'	60°51.7'
5	321°03.2'	N 8°05.4'	15.0'	13.6'	55.7'	65°22.3'	55°50.3'	43°42.9'	33°49.0'	4°57.4'	19°40.9'	54°11.0'	61°22.9'
6	335°37.2'	N 8°19.0'	15.0'	13.5'	55.6'	64°53.5'	55°26.9'	43°12.1'	33°20.8'	5°26.5'	20°11.7'	54°40.4'	61°54.2'
7	350°11.2'	N 8°32.5'	15.0'	13.5'	55.6'	64°24.7'	55°03.6'	42°41.4'	32°52.6'	5°55.6'	20°42.4'	55°09.8'	62°25.4'
8	4°45.1'	N 8°46.0'	15.0'	13.4'	55.6'	63°55.9'	54°40.4'	42°10.7'	32°24.4'	6°24.8'	21°13.2'	55°39.3'	62°56.6'
9	19°19.1'	N 8°59.5'	15.0'	13.4'	55.6'	63°27.1'	54°17.3'	41°40.0'	31°56.3'	6°54.0'	21°43.9'	56°08.7'	63°27.8'
10	33°53.1'	N 9°12.9'	14.9'	13.4'	55.5'	62°58.4'	53°54.4'	41°09.4'	31°28.2'	7°23.2'	22°14.6'	56°38.1'	63°59.0'
11	48°27.0'	N 9°26.2'	14.9'	13.3'	55.5'	62°29.7'	53°31.5'	40°38.8'	31°00.1'	7°52.3'	22°45.3'	57°07.5'	64°30.1'
12	63°00.9'	N 9°39.5'	14.9'	13.3'	55.5'	62°01.0'	53°08.8'	40°08.2'	30°32.1'	8°21.5'	23°15.9'	57°36.9'	65°01.2'
13	77°34.9'	N 9°52.8'	14.9'	13.2'	55.5'	61°32.4'	52°46.1'	39°37.7'	30°04.1'	8°50.7'	23°46.6'	58°06.2'	65°32.3'
14	92°08.8'	N 10°06.0'	14.9'	13.1'	55.4'	61°03.8'	52°23.6'	39°07.2'	29°36.1'	9°19.8'	24°17.2'	58°35.6'	66°03.3'
15	106°42.6'	N 10°19.1'	14.9'	13.1'	55.4'	60°35.2'	52°01.3'	38°36.8'	29°08.1'	9°49.0'	24°47.9'	59°05.0'	66°34.4'
16	121°16.5'	N 10°32.2'	14.9'	13.0'	55.4'	60°06.6'	51°39.0'	38°06.4'	28°40.2'	10°18.1'	25°18.5'	59°34.4'	67°05.4'
17	135°50.4'	N 10°45.2'	14.8'	13.0'	55.4'	59°38.1'	51°16.9'	37°36.0'	28°12.3'	10°47.2'	25°49.0'	60°03.7'	67°36.3'
18	150°24.2'	N 10°58.2'	14.8'	12.9'	55.3'	59°09.6'	50°54.9'	37°05.7'	27°44.4'	11°16.3'	26°19.6'	60°33.1'	68°07.3'
19	164°58.0'	N 11°11.2'	14.8'	12.9'	55.3'	58°41.1'	50°33.0'	36°35.4'	27°16.6'	11°45.4'	26°50.1'	61°02.5'	68°38.2'
20	179°31.8'	N 11°24.0'	14.8'	12.8'	55.3'	58°12.6'	50°11.2'	36°05.1'	26°48.8'	12°14.5'	27°20.7'	61°31.8'	69°09.2'
21	194°05.6'	N 11°36.9'	14.8'	12.8'	55.3'	57°44.2'	49°49.6'	35°34.9'	26°21.0'	12°43.5'	27°51.2'	62°01.1'	69°40.0'
22	208°39.3'	N 11°49.6'	14.7'	12.7'	55.3'	57°15.7'	49°28.2'	35°04.8'	25°53.2'	13°12.5'	28°21.7'	62°30.5'	70°10.9'
23	223°13.1'	N 12°02.3'	14.7'	12.6'	55.2'	56°47.4'	49°06.8'	34°34.6'	25°25.5'	13°41.5'	28°52.1'	62°59.8'	70°41.7'
Mer. pass.													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.7'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.7'
Deneb	+1.2	49°26.8'	N 45°21.4'	Acrux	+0.8	173°02.3'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.6'	Regulus	+1.4	207°36.9'	N 11°51.6'	Rigel	+0.2	281°06.2'	S 8°10.6'
Vega	+0.0	80°34.2'	N 38°48.2'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°21.7'	N 89°21.2'
Rigil Kent	-0.0	139°42.8'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.0'	S 57°07.2'
Arcturus	-0.1	145°49.7'	N 19°04.1'	Sirius	-1.4	258°28.4'	S 16°44.8'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.4'				

Friday 24 June 2022 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	272°07.8'	179°24.6'	N 23°24.9'	212°45.1'	N 18°49.4'	265°22.8'	N 1°32.6'	304°28.6'	S 14°19.0'	251°05.6'	N 6°53.3'			
1	287°10.2'	194°24.4'	N 23°24.8'	227°44.5'	N 18°50.0'	280°25.1'	N 1°32.7'	319°31.1'	S 14°19.1'	266°06.4'	N 6°54.0'			
2	302°12.7'	209°24.3'	N 23°24.8'	242°43.9'	N 18°50.7'	295°27.3'	N 1°32.8'	334°33.7'	S 14°19.1'	281°07.1'	N 6°54.6'			
3	317°15.2'	224°24.2'	N 23°24.7'	257°43.3'	N 18°51.4'	310°29.5'	N 1°32.9'	349°36.2'	S 14°19.1'	296°07.9'	N 6°55.3'			
4	332°17.6'	239°24.0'	N 23°24.7'	272°42.7'	N 18°52.1'	325°31.7'	N 1°33.0'	4°38.7'	S 14°19.2'	311°08.7'	N 6°56.0'			
5	347°20.1'	254°23.9'	N 23°24.6'	287°42.1'	N 18°52.7'	340°33.9'	N 1°33.1'	19°41.3'	S 14°19.2'	326°09.5'	N 6°56.6'			
6	2°22.5'	269°23.8'	N 23°24.6'	302°41.5'	N 18°53.4'	355°36.2'	N 1°33.2'	34°43.8'	S 14°19.2'	341°10.3'	N 6°57.3'			
7	17°25.0'	284°23.6'	N 23°24.5'	317°40.9'	N 18°54.1'	10°38.4'	N 1°33.3'	49°46.3'	S 14°19.3'	356°11.1'	N 6°57.9'			
8	32°27.5'	299°23.5'	N 23°24.5'	332°40.3'	N 18°54.8'	25°40.6'	N 1°33.4'	64°48.9'	S 14°19.3'	11°11.9'	N 6°58.6'			
9	47°29.9'	314°23.4'	N 23°24.4'	347°39.7'	N 18°55.4'	40°42.8'	N 1°33.4'	79°51.4'	S 14°19.3'	26°12.7'	N 6°59.3'			
10	62°32.4'	329°23.2'	N 23°24.4'	2°39.1'	N 18°56.1'	55°45.0'	N 1°33.5'	94°54.0'	S 14°19.4'	41°13.4'	N 6°59.9'			
11	77°34.9'	344°23.1'	N 23°24.3'	17°38.5'	N 18°56.8'	70°47.2'	N 1°33.6'	109°56.5'	S 14°19.4'	56°14.2'	N 7°00.6'			
12	92°37.3'	359°23.0'	N 23°24.3'	32°37.9'	N 18°57.4'	85°49.5'	N 1°33.7'	124°59.0'	S 14°19.4'	71°15.0'	N 7°01.3'			
13	107°39.8'	14°22.8'	N 23°24.2'	47°37.3'	N 18°58.1'	100°51.7'	N 1°33.8'	140°01.6'	S 14°19.5'	86°15.8'	N 7°01.9'			
14	122°42.3'	29°22.7'	N 23°24.2'	62°36.7'	N 18°58.8'	115°53.9'	N 1°33.9'	155°04.1'	S 14°19.5'	101°16.6'	N 7°02.6'			
15	137°44.7'	44°22.6'	N 23°24.1'	77°36.1'	N 18°59.4'	130°56.1'	N 1°34.0'	170°06.6'	S 14°19.5'	116°17.4'	N 7°03.3'			
16	152°47.2'	59°22.4'	N 23°24.0'	92°35.5'	N 19°00.1'	145°58.3'	N 1°34.1'	185°09.2'	S 14°19.6'	131°18.2'	N 7°03.9'			
17	167°49.7'	74°22.3'	N 23°24.0'	107°34.9'	N 19°00.8'	161°00.6'	N 1°34.2'	200°11.7'	S 14°19.6'	146°19.0'	N 7°04.6'			
18	182°52.1'	89°22.2'	N 23°23.9'	122°34.3'	N 19°01.4'	176°02.8'	N 1°34.3'	215°14.3'	S 14°19.6'	161°19.7'	N 7°05.2'			
19	197°54.6'	104°22.0'	N 23°23.9'	137°33.7'	N 19°02.1'	191°05.0'	N 1°34.4'	230°16.8'	S 14°19.7'	176°20.5'	N 7°05.9'			
20	212°57.0'	119°21.9'	N 23°23.8'	152°33.1'	N 19°02.7'	206°07.2'	N 1°34.5'	245°19.3'	S 14°19.7'	191°21.3'	N 7°06.6'			
21	227°59.5'	134°21.8'	N 23°23.8'	167°32.5'	N 19°03.4'	221°09.5'	N 1°34.6'	260°21.9'	S 14°19.7'	206°22.1'	N 7°07.2'			
22	243°02.0'	149°21.6'	N 23°23.7'	182°31.9'	N 19°04.1'	236°11.7'	N 1°34.6'	275°24.4'	S 14°19.8'	221°22.9'	N 7°07.9'			
23	258°04.4'	164°21.5'	N 23°23.6'	197°31.3'	N 19°04.7'	251°13.9'	N 1°34.7'	290°26.9'	S 14°19.8'	236°23.7'	N 7°08.5'			
		SD 15.7' d -0.1'		v -0.6' d 0.7'		v 2.2' d 0.1'		v 2.5' d -0.0'		v 0.8' d 0.7'				
Mer. pass.		12 h 2 m 29 s		9 h 49 m		6 h 18 m		3 h 41 m		7 h 15 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Rigel	-Aldebaran	-Venus	+Mars	+Jupiter	+Fomalhaut	+Achernar
0	237°46.8'	N 12°15.0'	14.7'	12.6'	55.2'	56°19.0'	48°45.6'	34°04.5'	24°57.8'	14°10.5'	29°22.6'	63°29.1'	69°50.1'
1	252°20.4'	N 12°27.6'	14.7'	12.5'	55.2'	55°50.6'	48°24.6'	33°34.5'	24°30.1'	14°39.5'	29°53.0'	63°58.4'	70°05.4'
2	266°54.1'	N 12°40.1'	14.6'	12.5'	55.2'	55°22.3'	48°03.7'	33°04.5'	24°02.5'	15°08.4'	30°23.4'	64°27.7'	70°20.8'
3	281°27.7'	N 12°52.6'	14.6'	12.4'	55.1'	54°54.0'	47°42.9'	32°34.5'	23°34.8'	15°37.4'	30°53.8'	64°57.0'	70°36.3'
4	296°01.3'	N 13°05.0'	14.6'	12.3'	55.1'	54°25.7'	47°22.3'	32°04.6'	23°07.3'	16°06.3'	31°24.2'	65°26.3'	70°51.8'
5	310°34.9'	N 13°17.3'	14.5'	12.3'	55.1'	53°57.5'	47°01.9'	31°34.7'	22°39.7'	16°35.2'	31°54.6'	65°55.5'	71°07.4'
6	325°08.4'	N 13°29.6'	14.5'	12.2'	55.1'	53°29.3'	46°41.6'	31°04.9'	22°12.2'	17°04.1'	32°24.9'	66°24.8'	71°23.0'
7	339°41.9'	N 13°41.8'	14.5'	12.2'	55.1'	53°01.0'	46°21.5'	30°35.1'	21°44.7'	17°32.9'	32°55.2'	66°54.0'	71°38.7'
8	354°15.4'	N 13°54.0'	14.5'	12.1'	55.0'	52°32.9'	46°01.5'	30°05.4'	21°17.2'	18°01.7'	33°25.5'	67°23.3'	71°54.5'
9	8°48.9'	N 14°06.0'	14.4'	12.0'	55.0'	52°04.7'	45°41.7'	29°35.7'	20°49.7'	18°30.6'	33°55.8'	67°52.5'	72°10.3'
10	23°22.3'	N 14°18.1'	14.4'	12.0'	55.0'	51°36.6'	45°22.1'	29°06.1'	20°22.3'	18°59.4'	34°26.1'	68°21.7'	72°26.1'
11	37°55.7'	N 14°30.0'	14.4'	11.9'	55.0'	51°08.4'	45°02.6'	28°36.5'	19°55.0'	19°28.1'	34°56.3'	68°50.9'	72°42.0'
12	52°29.0'	N 14°41.9'	14.3'	11.8'	55.0'	50°40.3'	44°43.3'	28°06.9'	19°27.6'	19°56.9'	35°26.6'	69°20.1'	72°58.0'
13	67°02.4'	N 14°53.7'	14.3'	11.7'	54.9'	50°12.2'	44°24.2'	27°37.5'	19°00.3'	20°25.6'	35°56.8'	69°49.3'	73°14.0'
14	81°35.7'	N 15°05.5'	14.3'	11.7'	54.9'	49°44.2'	44°05.3'	27°08.0'	18°33.0'	20°54.4'	36°27.0'	70°18.5'	73°30.1'
15	96°08.9'	N 15°17.1'	14.2'	11.6'	54.9'	49°16.2'	43°46.6'	26°38.7'	18°05.7'	21°23.1'	36°57.1'	70°47.7'	73°46.2'
16	110°42.1'	N 15°28.7'	14.2'	11.5'	54.9'	48°48.1'	43°28.0'	26°09.4'	17°38.5'	21°51.8'	37°27.3'	71°16.9'	74°02.3'
17	125°15.3'	N 15°40.3'	14.1'	11.5'	54.9'	48°20.1'	43°09.7'	25°40.1'	17°11.3'	22°20.4'	37°57.5'	71°46.0'	74°18.5'
18	139°48.4'	N 15°51.7'	14.1'	11.4'	54.8'	47°52.2'	42°51.5'	25°10.9'	16°44.2'	22°49.1'	38°27.6'	72°15.1'	74°34.8'
19	154°21.5'	N 16°03.1'	14.1'	11.3'	54.8'	47°24.2'	42°33.5'	24°41.8'	16°17.0'	23°17.7'	38°57.7'	72°44.3'	74°51.1'
20	168°54.6'	N 16°14.5'	14.0'	11.2'	54.8'	46°56.3'	42°15.8'	24°12.7'	15°50.0'	23°46.3'	39°27.8'	73°13.4'	75°07.4'
21	183°27.6'	N 16°25.7'	14.0'	11.2'	54.8'	46°28.3'	41°58.2'	23°43.8'	15°22.9'	24°15.0'	39°57.9'	73°42.5'	75°23.8'
22	198°00.6'	N 16°36.9'	13.9'	11.1'	54.8'	46°00.4'	41°40.9'	23°14.8'	14°55.9'	24°43.5'	40°27.9'	74°11.6'	75°40.2'
23	212°33.6'	N 16°48.0'	13.9'	11.0'	54.7'	45°32.6'	41°23.7'	22°46.0'	14°29.0'	25°12.1'	40°58.0'	74°40.7'	75°56.7'
Mer. pass.		8 h 24 m SD 15.1'		phase 22%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.7'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.7'
Deneb	+1.2	49°26.8'	N 45°21.4'	Acrux	+0.8	173°02.4'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.6'	Regulus	+1.4	207°36.9'	N 11°51.6'	Rigel	+0.2	281°06.2'	S 8°10.5'
Vega	+0.0	80°34.2'	N 38°48.2'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°21.3'	N 89°21.2'
Rigil Kent	-0.0	139°42.8'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.0'	S 57°07.2'
Arcturus	-0.1	145°49.7'	N 19°04.1'	Sirius	-1.4	258°28.4'	S 16°44.8'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	273°06.9'	179°21.4' N	23°23.6'	212°30.6' N	19°05.4'	266°16.1' N	1°34.8'	305°29.5' S	14°19.8'	251°24.5' N	7°09.2'	
1	288°09.4'	194°21.2' N	23°23.5'	227°30.0' N	19°06.0'	281°18.3' N	1°34.9'	320°32.0' S	14°19.9'	266°25.3' N	7°09.9'	
2	303°11.8'	209°21.1' N	23°23.4'	242°29.4' N	19°06.7'	296°20.6' N	1°35.0'	335°34.6' S	14°19.9'	281°26.0' N	7°10.5'	
3	318°14.3'	224°21.0' N	23°23.4'	257°28.8' N	19°07.4'	311°22.8' N	1°35.1'	350°37.1' S	14°19.9'	296°26.8' N	7°11.2'	
4	333°16.8'	239°20.8' N	23°23.3'	272°28.2' N	19°08.0'	326°25.0' N	1°35.2'	5°39.6' S	14°20.0'	311°27.6' N	7°11.9'	
5	348°19.2'	254°20.7' N	23°23.3'	287°27.6' N	19°08.7'	341°27.2' N	1°35.3'	20°42.2' S	14°20.0'	326°28.4' N	7°12.5'	
6	3°21.7'	269°20.5' N	23°23.2'	302°27.0' N	19°09.3'	356°29.5' N	1°35.4'	35°44.7' S	14°20.0'	341°29.2' N	7°13.2'	
7	18°24.1'	284°20.4' N	23°23.1'	317°26.4' N	19°10.0'	11°31.7' N	1°35.5'	50°47.3' S	14°20.1'	356°30.0' N	7°13.8'	
8	33°26.6'	299°20.3' N	23°23.1'	332°25.7' N	19°10.6'	26°33.9' N	1°35.6'	65°49.8' S	14°20.1'	11°30.8' N	7°14.5'	
9	48°29.1'	314°20.1' N	23°23.0'	347°25.1' N	19°11.3'	41°36.1' N	1°35.6'	80°52.3' S	14°20.1'	26°31.6' N	7°15.2'	
10	63°31.5'	329°20.0' N	23°22.9'	2°24.5' N	19°11.9'	56°38.4' N	1°35.7'	95°54.9' S	14°20.2'	41°32.3' N	7°15.8'	
11	78°34.0'	344°19.9' N	23°22.8'	17°23.9' N	19°12.6'	71°40.6' N	1°35.8'	110°57.4' S	14°20.2'	56°33.1' N	7°16.5'	
12	93°36.5'	359°19.7' N	23°22.8'	32°23.3' N	19°13.2'	86°42.8' N	1°35.9'	125°60.0' S	14°20.2'	71°33.9' N	7°17.1'	
13	108°38.9'	14°19.6' N	23°22.7'	47°22.7' N	19°13.9'	101°45.0' N	1°36.0'	141°02.5' S	14°20.3'	86°34.7' N	7°17.8'	
14	123°41.4'	29°19.5' N	23°22.6'	62°22.1' N	19°14.5'	116°47.3' N	1°36.1'	156°05.0' S	14°20.3'	101°35.5' N	7°18.4'	
15	138°43.9'	44°19.3' N	23°22.6'	77°21.4' N	19°15.2'	131°49.5' N	1°36.2'	171°07.6' S	14°20.3'	116°36.3' N	7°19.1'	
16	153°46.3'	59°19.2' N	23°22.5'	92°20.8' N	19°15.8'	146°51.7' N	1°36.3'	186°10.1' S	14°20.4'	131°37.1' N	7°19.8'	
17	168°48.8'	74°19.1' N	23°22.4'	107°20.2' N	19°16.5'	161°54.0' N	1°36.4'	201°12.7' S	14°20.4'	146°37.9' N	7°20.4'	
18	183°51.3'	89°18.9' N	23°22.3'	122°19.6' N	19°17.1'	176°56.2' N	1°36.5'	216°15.2' S	14°20.4'	161°38.7' N	7°21.1'	
19	198°53.7'	104°18.8' N	23°22.3'	137°19.0' N	19°17.7'	191°58.4' N	1°36.5'	231°17.7' S	14°20.5'	176°39.4' N	7°21.7'	
20	213°56.2'	119°18.7' N	23°22.2'	152°18.4' N	19°18.4'	207°00.6' N	1°36.6'	246°20.3' S	14°20.5'	191°40.2' N	7°22.4'	
21	228°58.6'	134°18.5' N	23°22.1'	167°17.7' N	19°19.0'	222°02.9' N	1°36.7'	261°22.8' S	14°20.5'	206°41.0' N	7°23.1'	
22	244°01.1'	149°18.4' N	23°22.0'	182°17.1' N	19°19.7'	237°05.1' N	1°36.8'	276°25.4' S	14°20.6'	221°41.8' N	7°23.7'	
23	259°03.6'	164°18.3' N	23°22.0'	197°16.5' N	19°20.3'	252°07.3' N	1°36.9'	291°27.9' S	14°20.6'	236°42.6' N	7°24.4'	
		SD 15.7' d -0.1'		v -0.6' d 0.6'		v 2.2' d 0.1'		v 2.5' d -0.0'		v 0.8' d 0.7'		
Mer. pass.		12 h 2 m 42 s		9 h 50 m		6 h 14 m		3 h 37 m		7 h 14 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Capella	-Aldebaran	-Venus	+Mars	+Jupiter	+Fomalhaut	+Achernar
0	227°06.5' N	17°59.0'	13.9'	10.9'	54.7'	45°04.7'	40°13.3'	22°17.3'	14°02.0'	25°40.7'	41°28.0'	75°09.8'	76°13.2'
1	241°39.3' N	17°09.9'	13.8'	10.9'	54.7'	44°36.9'	39°47.7'	21°48.6'	13°35.2'	26°09.2'	41°58.0'	75°38.8'	76°29.7'
2	256°12.1' N	17°20.8'	13.8'	10.8'	54.7'	44°09.0'	39°22.2'	21°20.0'	13°08.4'	26°37.7'	42°28.1'	76°07.9'	76°46.2'
3	270°44.9' N	17°31.5'	13.7'	10.7'	54.7'	43°41.2'	38°56.8'	20°51.5'	12°41.6'	27°06.2'	42°58.0'	76°36.9'	77°02.8'
4	285°17.7' N	17°42.3'	13.7'	10.6'	54.7'	43°13.5'	38°31.6'	20°23.1'	12°14.9'	27°34.7'	43°28.0'	77°06.0'	77°19.5'
5	299°50.4' N	17°52.9'	13.6'	10.5'	54.6'	42°45.7'	38°06.4'	19°54.9'	11°48.2'	28°03.2'	43°58.0'	77°35.0'	77°36.1'
6	314°23.0' N	18°03.4'	13.6'	10.5'	54.6'	42°17.9'	37°41.4'	19°26.7'	11°21.7'	28°31.6'	44°27.9'	78°04.0'	77°52.8'
7	328°55.6' N	18°13.9'	13.6'	10.4'	54.6'	41°50.2'	37°16.5'	18°58.6'	10°55.2'	29°00.1'	44°57.9'	78°33.0'	78°09.6'
8	343°28.2' N	18°24.2'	13.5'	10.3'	54.6'	41°22.5'	36°51.7'	18°30.7'	10°28.7'	29°28.5'	45°27.8'	79°02.0'	78°26.3'
9	358°00.7' N	18°34.5'	13.5'	10.2'	54.6'	40°54.8'	36°27.1'	18°02.9'	10°02.4'	29°56.9'	45°57.7'	79°31.0'	78°43.1'
10	12°33.2' N	18°44.7'	13.4'	10.1'	54.6'	40°27.1'	36°02.5'	17°35.3'	9°36.1'	30°25.3'	46°27.6'	79°60.0'	78°59.9'
11	27°05.6' N	18°54.9'	13.4'	10.0'	54.5'		35°38.2'	17°07.7'	9°10.0'	30°53.7'	46°57.4'	80°28.9'	79°16.8'
12	41°38.0' N	19°04.9'	13.3'	9.9'	54.5'		35°13.9'	16°40.4'	8°44.0'	31°22.1'	47°27.3'	80°57.9'	79°33.6'
13	56°10.3' N	19°14.8'	13.3'	9.9'	54.5'		34°49.8'	16°13.2'	8°18.1'	31°50.4'	47°57.1'	81°26.8'	79°50.5'
14	70°42.6' N	19°24.7'	13.2'	9.8'	54.5'		34°25.9'	15°46.3'	7°52.4'	32°18.8'	48°27.0'	81°55.8'	80°07.4'
15	85°14.8' N	19°34.5'	13.2'	9.7'	54.5'		34°02.1'	15°19.5'	7°26.8'	32°47.1'	48°56.8'	82°24.7'	80°24.4'
16	99°47.0' N	19°44.2'	13.1'	9.6'	54.5'		33°38.5'	14°52.9'	7°01.5'	33°15.4'	49°26.6'	82°53.6'	80°41.3'
17	114°19.2' N	19°53.8'	13.1'	9.5'	54.5'		33°15.0'	14°26.6'	6°36.4'	33°43.7'	49°56.4'	83°22.5'	80°58.3'
18	128°51.3' N	20°03.3'	13.0'	9.4'	54.4'		32°51.7'	14°00.6'	6°11.7'	34°12.0'	50°26.2'	83°51.4'	81°15.3'
19	143°23.3' N	20°12.7'	13.0'	9.3'	54.4'		32°28.6'	13°34.8'	5°47.2'	34°40.3'	50°56.0'	84°20.3'	81°32.4'
20	157°55.3' N	20°22.0'	13.0'	9.2'	54.4'		32°05.7'	13°09.3'	5°23.3'	35°08.6'	51°25.7'	84°49.1'	81°49.4'
21	172°27.3' N	20°31.2'	12.9'	9.1'	54.4'		31°42.9'	12°44.2'	4°59.8'	35°36.8'	51°55.5'	85°18.0'	82°06.5'
22	186°59.2' N	20°40.4'	12.9'	9.0'	54.4'		31°20.4'	12°19.4'		36°05.1'	52°25.2'	85°46.8'	82°23.5'
23	201°31.0' N	20°49.4'	12.8'	8.9'	54.4'		30°58.0'	11°55.1'		36°33.3'	52°55.0'	86°15.7'	82°40.6'
Mer. pass.		9 h 8 m SD 14.9'		phase 15%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.7'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.7'
Deneb	+1.2	49°26.8'	N 45°21.4'	Acrux	+0.8	173°02.4'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.6'	Regulus	+1.4	207°36.9'	N 11°51.6'	Rigel	+0.2	281°06.2'	S 8°10.5'
Vega	+0.0	80°34.2'	N 38°48.2'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°20.8'	N 89°21.2'
Rigil Kent	-0.0	139°42.8'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.0'	S 57°07.2'
Arcturus	-0.1	145°49.7'	N 19°04.1'	Sirius	-1.4	258°28.4'	S 16°44.8'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.4'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	274°06.0'	179°18.2'	N 23°21.9'	212°15.9'	N 19°20.9'	267°09.6'	N 1°37.0'	306°30.5'	S 14°20.6'	251°43.4'	N 7°25.0'			
1	289°08.5'	194°18.0'	N 23°21.8'	227°15.2'	N 19°21.6'	282°11.8'	N 1°37.1'	321°33.0'	S 14°20.7'	266°44.2'	N 7°25.7'			
2	304°11.0'	209°17.9'	N 23°21.7'	242°14.6'	N 19°22.2'	297°14.0'	N 1°37.2'	336°35.5'	S 14°20.7'	281°45.0'	N 7°26.3'			
3	319°13.4'	224°17.8'	N 23°21.6'	257°14.0'	N 19°22.9'	312°16.2'	N 1°37.3'	351°38.1'	S 14°20.7'	296°45.8'	N 7°27.0'			
4	334°15.9'	239°17.6'	N 23°21.6'	272°13.4'	N 19°23.5'	327°18.5'	N 1°37.3'	6°40.6'	S 14°20.8'	311°46.5'	N 7°27.7'			
5	349°18.4'	254°17.5'	N 23°21.5'	287°12.8'	N 19°24.1'	342°20.7'	N 1°37.4'	21°43.2'	S 14°20.8'	326°47.3'	N 7°28.3'			
6	4°20.8'	269°17.4'	N 23°21.4'	302°12.1'	N 19°24.8'	357°22.9'	N 1°37.5'	36°45.7'	S 14°20.8'	341°48.1'	N 7°29.0'			
7	19°23.3'	284°17.2'	N 23°21.3'	317°11.5'	N 19°25.4'	12°25.2'	N 1°37.6'	51°48.3'	S 14°20.9'	356°48.9'	N 7°29.6'			
8	34°25.8'	299°17.1'	N 23°21.2'	332°10.9'	N 19°26.0'	27°27.4'	N 1°37.7'	66°50.8'	S 14°20.9'	11°49.7'	N 7°30.3'			
9	49°28.2'	314°17.0'	N 23°21.1'	347°10.3'	N 19°26.7'	42°29.6'	N 1°37.8'	81°53.3'	S 14°21.0'	26°50.5'	N 7°30.9'			
10	64°30.7'	329°16.8'	N 23°21.0'	2°09.6'	N 19°27.3'	57°31.9'	N 1°37.9'	96°55.9'	S 14°21.0'	41°51.3'	N 7°31.6'			
11	79°33.1'	344°16.7'	N 23°21.0'	17°09.0'	N 19°27.9'	72°34.1'	N 1°38.0'	111°58.4'	S 14°21.0'	56°52.1'	N 7°32.2'			
12	94°35.6'	359°16.6'	N 23°20.9'	32°08.4'	N 19°28.5'	87°36.3'	N 1°38.0'	127°01.0'	S 14°21.1'	71°52.9'	N 7°32.9'			
13	109°38.1'	14°16.4'	N 23°20.8'	47°07.8'	N 19°29.2'	102°38.6'	N 1°38.1'	142°03.5'	S 14°21.1'	86°53.6'	N 7°33.6'			
14	124°40.5'	29°16.3'	N 23°20.7'	62°07.1'	N 19°29.8'	117°40.8'	N 1°38.2'	157°06.1'	S 14°21.1'	101°54.4'	N 7°34.2'			
15	139°43.0'	44°16.2'	N 23°20.6'	77°06.5'	N 19°30.4'	132°43.0'	N 1°38.3'	172°08.6'	S 14°21.2'	116°55.2'	N 7°34.9'			
16	154°45.5'	59°16.0'	N 23°20.5'	92°05.9'	N 19°31.0'	147°45.3'	N 1°38.4'	187°11.1'	S 14°21.2'	131°56.0'	N 7°35.5'			
17	169°47.9'	74°15.9'	N 23°20.4'	107°05.2'	N 19°31.7'	162°47.5'	N 1°38.5'	202°13.7'	S 14°21.2'	146°56.8'	N 7°36.2'			
18	184°50.4'	89°15.8'	N 23°20.3'	122°04.6'	N 19°32.3'	177°49.7'	N 1°38.6'	217°16.2'	S 14°21.3'	161°57.6'	N 7°36.8'			
19	199°52.9'	104°15.6'	N 23°20.2'	137°04.0'	N 19°32.9'	192°52.0'	N 1°38.7'	232°18.8'	S 14°21.3'	176°58.4'	N 7°37.5'			
20	214°55.3'	119°15.5'	N 23°20.1'	152°03.3'	N 19°33.5'	207°54.2'	N 1°38.7'	247°21.3'	S 14°21.3'	191°59.2'	N 7°38.1'			
21	229°57.8'	134°15.4'	N 23°20.1'	167°02.7'	N 19°34.2'	222°56.4'	N 1°38.8'	262°23.9'	S 14°21.4'	206°60.0'	N 7°38.8'			
22	245°00.3'	149°15.2'	N 23°20.0'	182°02.1'	N 19°34.8'	237°58.7'	N 1°38.9'	277°26.4'	S 14°21.4'	222°00.8'	N 7°39.4'			
23	260°02.7'	164°15.1'	N 23°19.9'	197°01.5'	N 19°35.4'	253°00.9'	N 1°39.0'	292°29.0'	S 14°21.5'	237°01.5'	N 7°40.1'			
		SD 15.7' d -0.1'		v -0.6' d 0.6'		v 2.2' d 0.1'		v 2.5' d -0.0'		v 0.8' d 0.7'				
Mer. pass.		12 h 2 m 54 s		9 h 51 m		6 h 10 m		3 h 33 m		7 h 13 m				

h	Moon					Lunar distance						
	GHA	dec	v	d	HP	-Betelgeuse	-Capella	-Aldebaran	-Venus	+Mars	+Jupiter	+Achernar
0	216°02.8'	N 20°58.4'	12.8'	8.9'	54.4'	32°54.3'	30°35.9'	11°31.2'	37°01.5'	53°24.7'	82°57.8'	86°44.5'
1	230°34.6'	N 21°07.2'	12.7'	8.8'	54.3'	32°30.4'	30°13.9'	11°07.8'	37°29.7'	53°54.4'	83°14.9'	87°13.3'
2	245°06.3'	N 21°16.0'	12.7'	8.7'	54.3'	32°06.7'	29°52.2'	10°44.9'	37°57.9'	54°24.1'	83°32.0'	87°42.1'
3	259°38.0'	N 21°24.6'	12.6'	8.6'	54.3'	31°43.2'	29°30.7'	10°22.6'	38°26.1'	54°53.7'	83°49.2'	88°10.9'
4	274°09.6'	N 21°33.2'	12.6'	8.5'	54.3'	31°19.8'	29°09.5'	10°01.1'	38°54.3'	55°23.4'	84°06.3'	88°39.7'
5	288°41.1'	N 21°41.7'	12.5'	8.4'	54.3'	30°56.6'	28°48.5'		39°22.4'	55°53.1'	84°23.5'	89°08.5'
6	303°12.6'	N 21°50.0'	12.5'	8.3'	54.3'	30°33.6'	28°27.7'		39°50.6'	56°22.7'	84°40.7'	89°37.3'
7	317°44.1'	N 21°58.3'	12.4'	8.2'	54.3'	30°10.8'	28°07.2'		40°18.7'	56°52.4'	84°57.9'	90°06.0'
8	332°15.5'	N 22°06.5'	12.4'	8.1'	54.3'	29°48.2'	27°47.0'		40°46.9'	57°22.0'	85°15.1'	90°34.8'
9	346°46.9'	N 22°14.5'	12.3'	8.0'	54.3'	29°25.7'	27°27.0'		41°15.0'	57°51.6'	85°32.3'	91°03.5'
10	1°18.2'	N 22°22.5'	12.3'	7.9'	54.2'	29°03.5'	27°07.3'		41°43.1'	58°21.2'	85°49.6'	91°32.2'
11	15°49.5'	N 22°30.4'	12.2'	7.8'	54.2'	28°41.6'	26°48.0'		42°11.2'	58°50.8'	86°06.8'	92°00.9'
12	30°20.7'	N 22°38.1'	12.2'	7.7'	54.2'	28°19.8'	26°28.9'		42°39.3'	59°20.4'	86°24.0'	92°29.6'
13	44°51.9'	N 22°45.8'	12.1'	7.6'	54.2'	27°58.3'	26°10.2'		43°07.4'	59°50.0'	86°41.3'	92°58.3'
14	59°23.0'	N 22°53.3'	12.1'	7.4'	54.2'	27°37.0'	25°51.8'		43°35.4'	60°19.6'	86°58.5'	93°27.0'
15	73°54.1'	N 23°00.8'	12.0'	7.3'	54.2'	27°16.0'	25°33.7'		44°03.5'	60°49.2'	87°15.8'	93°55.7'
16	88°25.1'	N 23°08.1'	12.0'	7.2'	54.2'	26°55.2'	25°16.0'		44°31.6'	61°18.7'	87°33.0'	94°24.3'
17	102°56.1'	N 23°15.4'	11.9'	7.1'	54.2'	26°34.7'	24°58.6'		5°22.2'	44°59.6'	61°48.3'	87°50.3'
18	117°27.0'	N 23°22.5'	11.9'	7.0'	54.2'	26°14.5'	24°41.6'		5°46.0'	45°27.6'	62°17.8'	88°07.5'
19	131°57.9'	N 23°29.5'	11.8'	6.9'	54.1'	25°54.6'	24°25.0'		6°10.1'	45°55.7'	62°47.3'	88°24.8'
20	146°28.7'	N 23°36.4'	11.8'	6.8'	54.1'	25°35.0'	24°08.9'		6°34.6'	46°23.7'	63°16.9'	88°42.0'
21	160°59.5'	N 23°43.2'	11.7'	6.7'	54.1'	25°15.7'	23°53.1'		6°59.4'	46°51.7'	63°46.4'	88°59.3'
22	175°30.3'	N 23°49.9'	11.7'	6.6'	54.1'	24°56.7'			7°24.4'	47°19.7'	64°15.9'	89°16.5'
23	190°01.0'	N 23°56.5'	11.7'	6.5'	54.1'	24°38.1'			7°49.6'	47°47.7'	64°45.4'	89°33.8'
Mer. pass.		9 h 55 m SD 14.8'		phase 9%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.7'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.7'
Deneb	+1.2	49°26.8'	N 45°21.4'	Acrux	+0.8	173°02.4'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.6'	Regulus	+1.4	207°36.9'	N 11°51.6'	Rigel	+0.2	281°06.2'	S 8°10.5'
Vega	+0.0	80°34.2'	N 38°48.2'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.4'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°20.4'	N 89°21.2'
Rigil Kent	-0.0	139°42.8'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.2'	Achernar	+0.5	335°22.0'	S 57°07.2'
Arcturus	-0.1	145°49.7'	N 19°04.1'	Sirius	-1.4	258°28.4'	S 16°44.8'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.4'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec		GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	275°05.2'	179°15.0'	N 23°19.8'	212°00.8'	N 19°36.0'	268°03.1'	N 1°39.1'	307°31.5'	S 14°21.5'	252°02.3'	N 7°40.7'			
1	290°07.6'	194°14.9'	N 23°19.7'	227°00.2'	N 19°36.6'	283°05.4'	N 1°39.2'	322°34.1'	S 14°21.5'	267°03.1'	N 7°41.4'			
2	305°10.1'	209°14.7'	N 23°19.6'	241°59.6'	N 19°37.3'	298°07.6'	N 1°39.3'	337°36.6'	S 14°21.6'	282°03.9'	N 7°42.1'			
3	320°12.6'	224°14.6'	N 23°19.5'	256°58.9'	N 19°37.9'	313°09.8'	N 1°39.3'	352°39.1'	S 14°21.6'	297°04.7'	N 7°42.7'			
4	335°15.0'	239°14.5'	N 23°19.4'	271°58.3'	N 19°38.5'	328°12.1'	N 1°39.4'	7°41.7'	S 14°21.6'	312°05.5'	N 7°43.4'			
5	350°17.5'	254°14.3'	N 23°19.3'	286°57.7'	N 19°39.1'	343°14.3'	N 1°39.5'	22°44.2'	S 14°21.7'	327°06.3'	N 7°44.0'			
6	5°20.0'	269°14.2'	N 23°19.2'	301°57.0'	N 19°39.7'	358°16.5'	N 1°39.6'	37°46.8'	S 14°21.7'	342°07.1'	N 7°44.7'			
7	20°22.4'	284°14.1'	N 23°19.1'	316°56.4'	N 19°40.3'	13°18.8'	N 1°39.7'	52°49.3'	S 14°21.7'	357°07.9'	N 7°45.3'			
8	35°24.9'	299°13.9'	N 23°19.0'	331°55.7'	N 19°40.9'	28°21.0'	N 1°39.8'	67°51.9'	S 14°21.8'	12°08.7'	N 7°46.0'			
9	50°27.4'	314°13.8'	N 23°18.9'	346°55.1'	N 19°41.5'	43°23.3'	N 1°39.9'	82°54.4'	S 14°21.8'	27°09.4'	N 7°46.6'			
10	65°29.8'	329°13.7'	N 23°18.8'	1°54.5'	N 19°42.2'	58°25.5'	N 1°39.9'	97°57.0'	S 14°21.8'	42°10.2'	N 7°47.3'			
11	80°32.3'	344°13.5'	N 23°18.7'	16°53.8'	N 19°42.8'	73°27.7'	N 1°40.0'	112°59.5'	S 14°21.9'	57°11.0'	N 7°47.9'			
12	95°34.8'	359°13.4'	N 23°18.6'	31°53.2'	N 19°43.4'	88°30.0'	N 1°40.1'	128°02.1'	S 14°21.9'	72°11.8'	N 7°48.6'			
13	110°37.2'	14°13.3'	N 23°18.5'	46°52.6'	N 19°44.0'	103°32.2'	N 1°40.2'	143°04.6'	S 14°22.0'	87°12.6'	N 7°49.2'			
14	125°39.7'	29°13.2'	N 23°18.3'	61°51.9'	N 19°44.6'	118°34.4'	N 1°40.3'	158°07.2'	S 14°22.0'	102°13.4'	N 7°49.9'			
15	140°42.1'	44°13.0'	N 23°18.2'	76°51.3'	N 19°45.2'	133°36.7'	N 1°40.4'	173°09.7'	S 14°22.0'	117°14.2'	N 7°50.5'			
16	155°44.6'	59°12.9'	N 23°18.1'	91°50.6'	N 19°45.8'	148°38.9'	N 1°40.4'	188°12.3'	S 14°22.1'	132°15.0'	N 7°51.2'			
17	170°47.1'	74°12.8'	N 23°18.0'	106°50.0'	N 19°46.4'	163°41.2'	N 1°40.5'	203°14.8'	S 14°22.1'	147°15.8'	N 7°51.8'			
18	185°49.5'	89°12.6'	N 23°17.9'	121°49.4'	N 19°47.0'	178°43.4'	N 1°40.6'	218°17.4'	S 14°22.1'	162°16.6'	N 7°52.5'			
19	200°52.0'	104°12.5'	N 23°17.8'	136°48.7'	N 19°47.6'	193°45.6'	N 1°40.7'	233°19.9'	S 14°22.2'	177°17.4'	N 7°53.1'			
20	215°54.5'	119°12.4'	N 23°17.7'	151°48.1'	N 19°48.2'	208°47.9'	N 1°40.8'	248°22.5'	S 14°22.2'	192°18.1'	N 7°53.8'			
21	230°56.9'	134°12.2'	N 23°17.6'	166°47.4'	N 19°48.8'	223°50.1'	N 1°40.9'	263°25.0'	S 14°22.3'	207°18.9'	N 7°54.4'			
22	245°59.4'	149°12.1'	N 23°17.5'	181°46.8'	N 19°49.4'	238°52.4'	N 1°40.9'	278°27.6'	S 14°22.3'	222°19.7'	N 7°55.1'			
23	261°01.9'	164°12.0'	N 23°17.4'	196°46.1'	N 19°50.0'	253°54.6'	N 1°41.0'	293°30.1'	S 14°22.3'	237°20.5'	N 7°55.7'			
		SD 15.7' d -0.1'		v -0.6' d 0.6'		v 2.2' d 0.1'		v 2.5' d -0.0'		v 0.8' d 0.7'				
Mer. pass.		12 h 3 m 7 s		9 h 52 m		6 h 7 m		3 h 29 m		7 h 11 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Betelgeuse	+Aldebaran	+Venus	+Mars	+Jupiter	+Achernar	+Fomalhaut	+Saturn
0	204°31.6'	N 24°03.0'	11.6'	6.4'	54.1'	24°19.8'		8°14.9'	48°15.7'	65°14.9'	89°51.0'	98°13.3'	107°27.6'
1	219°02.3'	N 24°09.3'	11.6'	6.2'	54.1'	24°01.9'		8°40.4'	48°43.7'	65°44.4'	90°08.3'	98°41.8'	107°57.3'
2	233°32.8'	N 24°15.6'	11.5'	6.1'	54.1'	23°44.3'		9°06.0'	49°11.6'	66°13.9'	90°25.5'	99°10.4'	108°27.1'
3	248°03.4'	N 24°21.7'	11.5'	6.0'	54.1'	23°27.2'		9°31.7'	49°39.6'	66°43.3'	90°42.7'	99°38.9'	108°56.9'
4	262°33.8'	N 24°27.7'	11.4'	5.9'	54.1'	23°10.4'		9°57.5'	50°07.6'	67°12.8'	90°59.9'	100°07.5'	109°26.6'
5	277°04.3'	N 24°33.6'	11.4'	5.8'	54.1'	22°54.1'		10°23.4'	50°35.5'	67°42.3'	91°17.2'	100°36.0'	109°56.3'
6	291°34.7'	N 24°39.4'	11.4'	5.7'	54.1'	22°38.2'		10°49.3'	51°03.5'	68°11.7'	91°34.4'	101°04.5'	110°26.1'
7	306°05.0'	N 24°45.1'	11.3'	5.6'	54.0'			11°15.3'	51°31.4'	68°41.2'	91°51.6'	101°33.0'	110°55.8'
8	320°35.3'	N 24°50.6'	11.3'	5.4'	54.0'		9°46.2'	11°41.3'	51°59.3'	69°10.6'	92°08.8'	102°01.5'	111°25.5'
9	335°05.6'	N 24°56.1'	11.2'	5.3'	54.0'			10°07.1'	12°07.4'	52°27.2'	69°40.0'	92°25.9'	102°30.0'
10	349°35.8'	N 25°01.4'	11.2'	5.2'	54.0'			10°28.7'	12°33.5'	52°55.2'	70°09.5'	92°43.1'	102°58.5'
11	4°06.0'	N 25°06.6'	11.2'	5.1'	54.0'			10°50.9'	12°59.6'	53°23.1'	70°38.9'	93°00.3'	103°24.6'
12	18°36.2'	N 25°11.7'	11.1'	5.0'	54.0'			11°13.6'	13°25.8'	53°51.0'	71°08.3'	93°17.4'	103°55.4'
13	33°06.3'	N 25°16.7'	11.1'	4.9'	54.0'			11°36.9'	13°52.0'	54°18.9'	71°37.7'	93°34.5'	104°23.8'
14	47°36.4'	N 25°21.5'	11.0'	4.7'	54.0'			12°00.7'	14°18.3'	54°46.8'	72°07.1'	93°51.6'	104°52.2'
15	62°06.4'	N 25°26.3'	11.0'	4.6'	54.0'			12°24.8'	14°44.5'	55°14.7'	72°36.5'	94°08.7'	105°20.7'
16	76°36.4'	N 25°30.9'	11.0'	4.5'	54.0'			12°49.4'	15°10.8'	55°42.6'	73°05.9'	94°25.8'	105°49.1'
17	91°06.4'	N 25°35.4'	10.9'	4.4'	54.0'			13°14.2'	15°37.1'	56°10.4'	73°35.3'	94°42.9'	106°17.5'
18	105°36.3'	N 25°39.8'	10.9'	4.3'	54.0'			13°39.4'	16°03.4'	56°38.3'	74°04.7'	94°59.9'	106°45.8'
19	120°06.2'	N 25°44.0'	10.9'	4.1'	54.0'			14°04.9'	16°29.7'	57°06.2'	74°34.1'	95°17.0'	107°14.2'
20	134°36.1'	N 25°48.1'	10.8'	4.0'	54.0'			14°30.6'	16°56.0'	57°34.1'	75°03.5'	95°34.0'	107°42.6'
21	149°05.9'	N 25°52.1'	10.8'	3.9'	54.0'			14°56.6'	17°22.3'	58°01.9'	75°32.9'	95°51.0'	108°10.9'
22	163°35.7'	N 25°56.0'	10.8'	3.8'	54.0'			15°22.7'	17°48.7'	58°29.8'	76°02.2'	96°07.9'	108°39.3'
23	178°05.5'	N 25°59.8'	10.7'	3.6'	53.9'			15°49.1'	18°15.1'	58°57.6'	76°31.6'	96°24.9'	109°07.6'
Mer. pass.		10 h 43 m SD 14.8'		phase 4%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.7'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.7'
Deneb	+1.2	49°26.8'	N 45°21.4'	Acrux	+0.8	173°02.4'	S 63°13.6'	Capella	+0.1	280°25.5'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.6'	Regulus	+1.4	207°36.9'	N 11°51.6'	Rigel	+0.2	281°06.2'	S 8°10.5'
Vega	+0.0	80°34.2'	N 38°48.2'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.3'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°19.9'	N 89°21.2'
Rigil Kent	-0.0	139°42.8'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.1'	Achernar	+0.5	335°22.0'	S 57°07.2'
Arcturus	-0.1	145°49.7'	N 19°04.1'	Sirius	-1.4	258°28.4'	S 16°44.8'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.4'				

Tuesday 28 June 2022 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec		GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	276°04.3'	179°11.9'	N 23°17.2'	211°45.5'	N 19°50.6'		268°56.9'	N 1°41.1'	308°32.7'	S 14°22.4'	252°21.3'	N 7°56.4'		
1	291°06.8'	194°11.7'	N 23°17.1'	226°44.9'	N 19°51.2'		283°59.1'	N 1°41.2'	323°35.2'	S 14°22.4'	267°22.1'	N 7°57.0'		
2	306°09.2'	209°11.6'	N 23°17.0'	241°44.2'	N 19°51.8'		299°01.3'	N 1°41.3'	338°37.8'	S 14°22.4'	282°22.9'	N 7°57.7'		
3	321°11.7'	224°11.5'	N 23°16.9'	256°43.6'	N 19°52.4'		314°03.6'	N 1°41.4'	353°40.3'	S 14°22.5'	297°23.7'	N 7°58.3'		
4	336°14.2'	239°11.3'	N 23°16.8'	271°42.9'	N 19°53.0'		329°05.8'	N 1°41.4'	8°42.9'	S 14°22.5'	312°24.5'	N 7°59.0'		
5	351°16.6'	254°11.2'	N 23°16.7'	286°42.3'	N 19°53.6'		344°08.1'	N 1°41.5'	23°45.4'	S 14°22.6'	327°25.3'	N 7°59.6'		
6	6°19.1'	269°11.1'	N 23°16.6'	301°41.6'	N 19°54.2'		359°10.3'	N 1°41.6'	38°48.0'	S 14°22.6'	342°26.1'	N 8°00.3'		
7	21°21.6'	284°11.0'	N 23°16.4'	316°41.0'	N 19°54.8'		14°12.5'	N 1°41.7'	53°50.5'	S 14°22.6'	357°26.9'	N 8°00.9'		
8	36°24.0'	299°10.8'	N 23°16.3'	331°40.3'	N 19°55.4'		29°14.8'	N 1°41.8'	68°53.1'	S 14°22.7'	12°27.6'	N 8°01.6'		
9	51°26.5'	314°10.7'	N 23°16.2'	346°39.7'	N 19°56.0'		44°17.0'	N 1°41.9'	83°55.6'	S 14°22.7'	27°28.4'	N 8°02.2'		
10	66°29.0'	329°10.6'	N 23°16.1'	1°39.0'	N 19°56.5'		59°19.3'	N 1°41.9'	98°58.2'	S 14°22.7'	42°29.2'	N 8°02.9'		
11	81°31.4'	344°10.4'	N 23°16.0'	16°38.4'	N 19°57.1'		74°21.5'	N 1°42.0'	114°00.7'	S 14°22.8'	57°30.0'	N 8°03.5'		
12	96°33.9'	359°10.3'	N 23°15.8'	31°37.7'	N 19°57.7'		89°23.8'	N 1°42.1'	129°03.3'	S 14°22.8'	72°30.8'	N 8°04.1'		
13	111°36.4'	14°10.2'	N 23°15.7'	46°37.1'	N 19°58.3'		104°26.0'	N 1°42.2'	144°05.8'	S 14°22.9'	87°31.6'	N 8°04.8'		
14	126°38.8'	29°10.1'	N 23°15.6'	61°36.4'	N 19°58.9'		119°28.3'	N 1°42.3'	159°08.4'	S 14°22.9'	102°32.4'	N 8°05.4'		
15	141°41.3'	44°09.9'	N 23°15.5'	76°35.8'	N 19°59.5'		134°30.5'	N 1°42.3'	174°10.9'	S 14°22.9'	117°33.2'	N 8°06.1'		
16	156°43.7'	59°09.8'	N 23°15.3'	91°35.1'	N 20°00.1'		149°32.8'	N 1°42.4'	189°13.5'	S 14°23.0'	132°34.0'	N 8°06.7'		
17	171°46.2'	74°09.7'	N 23°15.2'	106°34.5'	N 20°00.6'		164°35.0'	N 1°42.5'	204°16.0'	S 14°23.0'	147°34.8'	N 8°07.4'		
18	186°48.7'	89°09.5'	N 23°15.1'	121°33.8'	N 20°01.2'		179°37.2'	N 1°42.6'	219°18.6'	S 14°23.0'	162°35.6'	N 8°08.0'		
19	201°51.1'	104°09.4'	N 23°15.0'	136°33.2'	N 20°01.8'		194°39.5'	N 1°42.7'	234°21.1'	S 14°23.1'	177°36.4'	N 8°08.7'		
20	216°53.6'	119°09.3'	N 23°14.8'	151°32.5'	N 20°02.4'		209°41.7'	N 1°42.8'	249°23.7'	S 14°23.1'	192°37.1'	N 8°09.3'		
21	231°56.1'	134°09.2'	N 23°14.7'	166°31.9'	N 20°03.0'		224°44.0'	N 1°42.8'	264°26.2'	S 14°23.2'	207°37.9'	N 8°10.0'		
22	246°58.5'	149°09.0'	N 23°14.6'	181°31.2'	N 20°03.5'		239°46.2'	N 1°42.9'	279°28.8'	S 14°23.2'	222°38.2'	N 8°10.6'		
23	262°01.0'	164°08.9'	N 23°14.5'	196°30.6'	N 20°04.1'		254°48.5'	N 1°43.0'	294°31.3'	S 14°23.2'	237°39.5'	N 8°11.2'		
		SD 15.7' d -0.1'		v -0.6' d 0.6'			v 2.2' d 0.1'		v 2.6' d -0.0'		v 0.8' d 0.6'			
Mer. pass.		12 h 3 m 19 s		9 h 53 m			6 h 3 m		3 h 25 m		7 h 10 m			

h	Moon				Lunar distance							
	GHA	dec	v	d	HP	+Aldebaran	+Venus	+Mars	+Jupiter	+Achernar	+Fomalhaut	+Saturn
0	192°35.3'	N 26°03.4'	10.7'	3.5'	53.9'	16°15.6'	18°41.4'	59°25.5'	77°01.0'	96°41.8'	109°35.9'	119°20.2'
1	207°05.0'	N 26°07.0'	10.7'	3.4'	53.9'	16°42.3'	19°07.8'	59°53.3'	77°30.3'	96°58.7'	110°04.2'	119°49.8'
2	221°34.7'	N 26°10.3'	10.7'	3.3'	53.9'	17°09.2'	19°34.2'	60°21.2'	77°59.7'	97°15.6'	110°32.5'	
3	236°04.3'	N 26°13.6'	10.6'	3.1'	53.9'	17°36.2'	20°00.6'	60°49.0'	78°29.0'	97°32.5'	111°00.8'	
4	250°34.0'	N 26°16.7'	10.6'	3.0'	53.9'	18°03.3'	20°27.0'	61°16.8'	78°58.4'	97°49.3'	111°29.0'	
5	265°03.6'	N 26°19.8'	10.6'	2.9'	53.9'	18°30.5'	20°53.4'	61°44.7'	79°27.7'	98°06.1'	111°57.3'	
6	279°33.2'	N 26°22.7'	10.6'	2.8'	53.9'							
7	294°02.7'	N 26°25.4'	10.5'	2.6'	53.9'							
8	308°32.3'	N 26°28.1'	10.5'	2.5'	53.9'							
9	323°01.8'	N 26°30.6'	10.5'	2.4'	53.9'							
10	337°31.3'	N 26°33.0'	10.5'	2.3'	53.9'							
11	352°00.8'	N 26°35.2'	10.5'	2.1'	53.9'							
12	6°30.2'	N 26°37.4'	10.4'	2.0'	53.9'							
13	20°59.7'	N 26°39.4'	10.4'	1.9'	53.9'							
14	35°29.1'	N 26°41.2'	10.4'	1.7'	53.9'							
15	49°58.5'	N 26°43.0'	10.4'	1.6'	53.9'							
16	64°27.9'	N 26°44.6'	10.4'	1.5'	53.9'							
17	78°57.3'	N 26°46.1'	10.4'	1.4'	53.9'							
18	93°26.7'	N 26°47.5'	10.4'	1.2'	53.9'							
19	107°56.1'	N 26°48.7'	10.4'	1.1'	53.9'							
20	122°25.4'	N 26°49.8'	10.3'	1.0'	53.9'							
21	136°54.8'	N 26°50.8'	10.3'	0.8'	53.9'							
22	151°24.1'	N 26°51.6'	10.3'	0.7'	53.9'							
23	165°53.4'	N 26°52.3'	10.3'	0.6'	53.9'							
Mer. pass.		11 h 33 m SD 14.7'		phase 1%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.7'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.7'
Deneb	+1.2	49°26.8'	N 45°21.4'	Acrux	+0.8	173°02.4'	S 63°13.6'	Capella	+0.1	280°25.4'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.6'	Regulus	+1.4	207°36.9'	N 11°51.6'	Rigel	+0.2	281°06.2'	S 8°10.5'
Vega	+0.0	80°34.2'	N 38°48.2'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.3'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.4'	N 5°10.1'	Polaris	+2.0	315°19.4'	N 89°21.2'
Rigil Kent	-0.0	139°42.8'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.1'	Achernar	+0.5	335°22.0'	S 57°07.2'
Arcturus	-0.1	145°49.7'	N 19°04.1'	Sirius	-1.4	258°28.4'	S 16°44.8'				
Hadar	+0.6	148°38.6'	S 60°29.0'	Canopus	-0.6	263°53.9'	S 52°42.4'				

Wednesday 29 June 2022 UT1

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	277°03.5'		179°08.8'	N 23°14.3'	211°29.9'	N 20°04.7'	269°50.7'	N 1°43.1'	309°33.9'	S 14°23.3'	252°40.3'	N 8°11.9'
1	292°05.9'		194°08.6'	N 23°14.2'	226°29.3'	N 20°05.3'	284°53.0'	N 1°43.2'	324°36.4'	S 14°23.3'	267°41.1'	N 8°12.5'
2	307°08.4'		209°08.5'	N 23°14.1'	241°28.6'	N 20°05.8'	299°55.2'	N 1°43.2'	339°39.0'	S 14°23.3'	282°41.9'	N 8°13.2'
3	322°10.9'		224°08.4'	N 23°13.9'	256°28.0'	N 20°06.4'	314°57.5'	N 1°43.3'	354°41.5'	S 14°23.4'	297°42.7'	N 8°13.8'
4	337°13.3'		239°08.3'	N 23°13.8'	271°27.3'	N 20°07.0'	329°59.7'	N 1°43.4'	9°44.1'	S 14°23.4'	312°43.5'	N 8°14.5'
5	352°15.8'		254°08.1'	N 23°13.7'	286°26.6'	N 20°07.6'	345°02.0'	N 1°43.5'	24°46.6'	S 14°23.5'	327°44.3'	N 8°15.1'
6	7°18.2'		269°08.0'	N 23°13.5'	301°26.0'	N 20°08.1'	0°04.2'	N 1°43.6'	39°49.2'	S 14°23.5'	342°45.1'	N 8°15.8'
7	22°20.7'		284°07.9'	N 23°13.4'	316°25.3'	N 20°08.7'	15°06.5'	N 1°43.6'	54°51.8'	S 14°23.5'	357°45.9'	N 8°16.4'
8	37°23.2'		299°07.8'	N 23°13.3'	331°24.7'	N 20°09.3'	30°08.7'	N 1°43.7'	69°54.3'	S 14°23.6'	12°46.7'	N 8°17.0'
9	52°25.6'		314°07.6'	N 23°13.1'	346°24.0'	N 20°09.9'	45°11.0'	N 1°43.8'	84°56.9'	S 14°23.6'	27°47.5'	N 8°17.7'
10	67°28.1'		329°07.5'	N 23°13.0'	1°23.4'	N 20°10.4'	60°13.2'	N 1°43.9'	99°59.4'	S 14°23.7'	42°48.2'	N 8°18.3'
11	82°30.6'		344°07.4'	N 23°12.8'	16°22.7'	N 20°11.0'	75°15.5'	N 1°44.0'	115°02.0'	S 14°23.7'	57°49.0'	N 8°19.0'
12	97°33.0'		359°07.2'	N 23°12.7'	31°22.0'	N 20°11.6'	90°17.7'	N 1°44.0'	130°04.5'	S 14°23.7'	72°49.8'	N 8°19.6'
13	112°35.5'		14°07.1'	N 23°12.6'	46°21.4'	N 20°12.1'	105°20.0'	N 1°44.1'	145°07.1'	S 14°23.8'	87°50.6'	N 8°20.3'
14	127°38.0'		29°07.0'	N 23°12.4'	61°20.7'	N 20°12.7'	120°22.2'	N 1°44.2'	160°09.6'	S 14°23.8'	102°51.4'	N 8°20.9'
15	142°40.4'		44°06.9'	N 23°12.3'	76°20.1'	N 20°13.2'	135°24.5'	N 1°44.3'	175°12.2'	S 14°23.8'	117°52.2'	N 8°21.5'
16	157°42.9'		59°06.7'	N 23°12.1'	91°19.4'	N 20°13.8'	150°26.7'	N 1°44.3'	190°14.7'	S 14°23.9'	132°53.0'	N 8°22.2'
17	172°45.4'		74°06.6'	N 23°12.0'	106°18.7'	N 20°14.4'	165°29.0'	N 1°44.4'	205°17.3'	S 14°23.9'	147°53.8'	N 8°22.8'
18	187°47.8'		89°06.5'	N 23°11.9'	121°18.1'	N 20°14.9'	180°31.2'	N 1°44.5'	220°19.9'	S 14°24.0'	162°54.6'	N 8°23.5'
19	202°50.3'		104°06.4'	N 23°11.7'	136°17.4'	N 20°15.5'	195°33.5'	N 1°44.6'	235°22.4'	S 14°24.0'	177°55.4'	N 8°24.1'
20	217°52.7'		119°06.2'	N 23°11.6'	151°16.7'	N 20°16.1'	210°35.7'	N 1°44.7'	250°25.0'	S 14°24.0'	192°56.2'	N 8°24.8'
21	232°55.2'		134°06.1'	N 23°11.4'	166°16.1'	N 20°16.6'	225°38.0'	N 1°44.7'	265°27.5'	S 14°24.1'	207°57.0'	N 8°25.4'
22	247°57.7'		149°06.0'	N 23°11.3'	181°15.4'	N 20°17.2'	240°40.2'	N 1°44.8'	280°30.1'	S 14°24.1'	222°57.8'	N 8°26.0'
23	263°00.1'		164°05.9'	N 23°11.1'	196°14.7'	N 20°17.7'	255°42.5'	N 1°44.9'	295°32.6'	S 14°24.2'	237°58.6'	N 8°26.7'
			SD 15.7' d -0.1'		v -0.7' d 0.6'		v 2.3' d 0.1'		v 2.6' d -0.0'		v 0.8' d 0.6'	
Mer. pass.			12 h 3 m 32 s		9 h 54 m		6 h 0 m		3 h 21 m		7 h 9 m	

h	Moon					Lunar distance					
	GHA	dec	v	d	HP	-Hadar	-Acrux	-Spica	-Arcturus	-Regulus	-Pollux
0	180°22.8'	N 26°52.9'	10.3'	0.5'	53.9'						
1	194°52.1'	N 26°53.4'	10.3'	0.3'	53.9'						
2	209°21.4'	N 26°53.7'	10.3'	0.2'	53.9'						
3	223°50.7'	N 26°53.9'	10.3'	0.1'	53.9'						
4	238°20.0'	N 26°54.0'	10.3'	-0.1'	53.9'						
5	252°49.4'	N 26°53.9'	10.3'	-0.2'	53.9'						
6	267°18.7'	N 26°53.8'	10.3'	-0.3'	53.9'						
7	281°48.0'	N 26°53.5'	10.3'	-0.4'	53.9'						
8	296°17.3'	N 26°53.0'	10.3'	-0.6'	53.9'						
9	310°46.7'	N 26°52.4'	10.3'	-0.7'	53.9'						
10	325°16.0'	N 26°51.7'	10.3'	-0.8'	53.9'						
11	339°45.3'	N 26°50.9'	10.4'	-1.0'	53.9'						
12	354°14.7'	N 26°49.9'	10.4'	-1.1'	53.9'						
13	8°44.1'	N 26°48.9'	10.4'	-1.2'	53.9'						
14	23°13.4'	N 26°47.6'	10.4'	-1.3'	53.9'						
15	37°42.8'	N 26°46.3'	10.4'	-1.5'	53.9'						
16	52°12.2'	N 26°44.8'	10.4'	-1.6'	53.9'						
17	66°41.6'	N 26°43.2'	10.4'	-1.7'	53.9'						
18	81°11.0'	N 26°41.5'	10.4'	-1.9'	53.9'						
19	95°40.5'	N 26°39.6'	10.5'	-2.0'	53.9'						
20	110°09.9'	N 26°37.6'	10.5'	-2.1'	53.9'						
21	124°39.4'	N 26°35.5'	10.5'	-2.2'	53.9'						
22	139°08.9'	N 26°33.3'	10.5'	-2.4'	53.9'						
23	153°38.4'	N 26°30.9'	10.5'	-2.5'	53.9'	118°41.6'	108°10.8'	96°58.6'	94°02.0'	42°57.0'	6°39.1'
Mer. pass.			12 h 24 m SD 14.7'	phase 0%							

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.7'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.7'
Deneb	+1.2	49°26.8'	N 45°21.5'	Acrux	+0.8	173°02.4'	S 63°13.6'	Capella	+0.1	280°25.4'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.6'	Regulus	+1.4	207°36.9'	N 11°51.6'	Rigel	+0.2	281°06.2'	S 8°10.5'
Vega	+0.0	80°34.2'	N 38°48.3'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.3'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.3'	N 5°10.1'	Polaris	+2.0	315°18.9'	N 89°21.2'
Rigil Kent	-0.0	139°42.8'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.1'	Achernar	+0.5	335°22.0'	S 57°07.1'
Arcturus	-0.1	145°49.7'	N 19°04.1'	Sirius	-1.4	258°28.4'	S 16°44.8'				
Hadar	+0.6	148°38.7'	S 60°29.1'	Canopus	-0.6	263°53.9'	S 52°42.4'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	278°02.6'	179°05.7'	N 23°11.0'	211°14.1'	N 20°18.3'		270°44.8'	N 1°45.0'		310°35.2'	S 14°24.2'		252°59.4'	N 8°27.3'				
1	293°05.1'	194°05.6'	N 23°10.8'	226°13.4'	N 20°18.8'		285°47.0'	N 1°45.0'		325°37.8'	S 14°24.2'		268°00.1'	N 8°28.0'				
2	308°07.5'	209°05.5'	N 23°10.7'	241°12.8'	N 20°19.4'		300°49.3'	N 1°45.1'		340°40.3'	S 14°24.3'		283°00.9'	N 8°28.6'				
3	323°10.0'	224°05.4'	N 23°10.5'	256°12.1'	N 20°19.9'		315°51.5'	N 1°45.2'		355°42.9'	S 14°24.3'		298°01.7'	N 8°29.2'				
4	338°12.5'	239°05.2'	N 23°10.4'	271°11.4'	N 20°20.5'		330°53.8'	N 1°45.3'		10°45.4'	S 14°24.4'		313°02.5'	N 8°29.9'				
5	353°14.9'	254°05.1'	N 23°10.2'	286°10.7'	N 20°21.0'		345°56.0'	N 1°45.4'		25°48.0'	S 14°24.4'		328°03.3'	N 8°30.5'				
6	8°17.4'	269°05.0'	N 23°10.1'	301°10.1'	N 20°21.6'		0°58.3'	N 1°45.4'		40°50.5'	S 14°24.4'		343°04.1'	N 8°31.2'				
7	23°19.9'	284°04.9'	N 23°09.9'	316°09.4'	N 20°22.1'		16°00.5'	N 1°45.5'		55°53.1'	S 14°24.5'		358°04.9'	N 8°31.8'				
8	38°22.3'	299°04.7'	N 23°09.8'	331°08.7'	N 20°22.7'		31°02.8'	N 1°45.6'		70°55.7'	S 14°24.5'		13°05.7'	N 8°32.4'				
9	53°24.8'	314°04.6'	N 23°09.6'	346°08.1'	N 20°23.2'		46°05.1'	N 1°45.7'		85°58.2'	S 14°24.6'		28°06.5'	N 8°33.1'				
10	68°27.2'	329°04.5'	N 23°09.5'	1°07.4'	N 20°23.8'		61°07.3'	N 1°45.7'		101°00.8'	S 14°24.6'		43°07.3'	N 8°33.7'				
11	83°29.7'	344°04.4'	N 23°09.3'	16°06.7'	N 20°24.3'		76°09.6'	N 1°45.8'		116°03.3'	S 14°24.6'		58°08.1'	N 8°34.3'				
12	98°32.2'	359°04.2'	N 23°09.2'	31°06.1'	N 20°24.9'		91°11.8'	N 1°45.9'		131°05.9'	S 14°24.7'		73°08.9'	N 8°35.0'				
13	113°34.6'	14°04.1'	N 23°09.0'	46°05.4'	N 20°25.4'		106°14.1'	N 1°46.0'		146°08.4'	S 14°24.7'		88°09.7'	N 8°35.6'				
14	128°37.1'	29°04.0'	N 23°08.9'	61°04.7'	N 20°26.0'		121°16.3'	N 1°46.0'		161°11.0'	S 14°24.8'		103°10.5'	N 8°36.3'				
15	143°39.6'	44°03.9'	N 23°08.7'	76°04.1'	N 20°26.5'		136°18.6'	N 1°46.1'		176°13.6'	S 14°24.8'		118°11.3'	N 8°36.9'				
16	158°42.0'	59°03.8'	N 23°08.5'	91°03.4'	N 20°27.0'		151°20.9'	N 1°46.2'		191°16.1'	S 14°24.8'		133°12.1'	N 8°37.5'				
17	173°44.5'	74°03.6'	N 23°08.4'	106°02.7'	N 20°27.6'		166°23.1'	N 1°46.3'		206°18.7'	S 14°24.9'		148°12.9'	N 8°38.2'				
18	188°47.0'	89°03.5'	N 23°08.2'	121°02.0'	N 20°28.1'		181°25.4'	N 1°46.3'		221°21.2'	S 14°24.9'		163°13.7'	N 8°38.8'				
19	203°49.4'	104°03.4'	N 23°08.1'	136°01.4'	N 20°28.7'		196°27.6'	N 1°46.4'		236°23.8'	S 14°25.0'		178°14.4'	N 8°39.5'				
20	218°51.9'	119°03.3'	N 23°07.9'	151°00.7'	N 20°29.2'		211°29.9'	N 1°46.5'		251°26.4'	S 14°25.0'		193°15.2'	N 8°40.1'				
21	233°54.4'	134°03.1'	N 23°07.7'	166°00.0'	N 20°29.7'		226°32.2'	N 1°46.6'		266°28.9'	S 14°25.0'		208°16.0'	N 8°40.7'				
22	248°56.8'	149°03.0'	N 23°07.6'	180°59.3'	N 20°30.3'		241°34.4'	N 1°46.6'		281°31.5'	S 14°25.1'		223°16.8'	N 8°41.4'				
23	263°59.3'	164°02.9'	N 23°07.4'	195°58.7'	N 20°30.8'		256°36.7'	N 1°46.7'		296°34.0'	S 14°25.1'		238°17.6'	N 8°42.0'				
		SD 15.7' d -0.2'		v -0.7' d 0.5'			v 2.3' d 0.1'			v 2.6' d -0.0'			v 0.8' d 0.6'					
Mer. pass.		12 h 3 m 44 s		9 h 56 m			5 h 56 m			3 h 17 m			7 h 8 m					

h	Moon					Lunar distance						
	GHA	dec	v	d	HP	-Rigel Kent	-Hadar	-Acruz	-Spica	-Arcturus	-Regulus	-Pollux
0	168°08.0'	N 26°28.4'	10.6'	-2.6'	53.9'		118°23.3'	107°55.0'	96°29.2'	93°36.0'	42°27.6'	6°11.3'
1	182°37.5'	N 26°25.8'	10.6'	-2.7'	53.9'		118°04.9'	107°39.1'	95°59.7'	93°09.9'	41°58.2'	5°43.7'
2	197°07.1'	N 26°23.1'	10.6'	-2.9'	53.9'		117°46.5'	107°23.2'	95°30.2'	92°43.9'	41°28.9'	5°16.5'
3	211°36.7'	N 26°20.2'	10.6'	-3.0'	53.9'		117°28.0'	107°07.2'	95°00.7'	92°17.8'	40°59.5'	4°49.8'
4	226°06.3'	N 26°17.2'	10.7'	-3.1'	53.9'		117°09.4'	106°51.1'	94°31.2'	91°51.8'	40°30.1'	
5	240°36.0'	N 26°14.1'	10.7'	-3.2'	53.9'		116°50.7'	106°35.0'	94°01.7'	91°25.7'	40°00.8'	
6	255°05.7'	N 26°10.8'	10.7'	-3.4'	53.9'		116°31.9'	106°18.8'	93°32.2'	90°59.7'	39°31.4'	
7	269°35.4'	N 26°07.5'	10.7'	-3.5'	53.9'		116°13.1'	106°02.6'	93°02.7'	90°33.6'	39°02.1'	
8	284°05.1'	N 26°04.0'	10.8'	-3.6'	53.9'		115°54.2'	105°46.3'	92°33.2'	90°07.6'	38°32.7'	
9	298°34.9'	N 26°00.4'	10.8'	-3.7'	53.9'	119°58.4'	115°35.2'	105°29.9'	92°03.6'	89°41.5'	38°03.3'	
10	313°04.7'	N 25°56.6'	10.8'	-3.9'	53.9'	119°39.4'	115°16.1'	105°13.5'	91°34.1'	89°15.4'	37°34.0'	
11	327°34.5'	N 25°52.7'	10.9'	-4.0'	53.9'	119°20.3'	114°57.0'	104°57.1'	91°04.6'	88°49.4'	37°04.6'	
12	342°04.4'	N 25°48.8'	10.9'	-4.1'	53.9'	119°01.1'	114°37.8'	104°40.6'	90°35.1'	88°23.3'	36°35.3'	
13	356°34.3'	N 25°44.7'	10.9'	-4.2'	53.9'	118°41.8'	114°18.5'	104°24.1'	90°05.6'	87°57.2'	36°06.0'	
14	11°04.2'	N 25°40.4'	11.0'	-4.4'	53.9'	118°22.5'	113°59.1'	104°07.5'	89°36.0'	87°31.1'	35°36.6'	
15	25°34.2'	N 25°36.1'	11.0'	-4.5'	54.0'	118°03.0'	113°39.7'	103°50.9'	89°06.5'	87°05.1'	35°07.3'	
16	40°04.1'	N 25°31.6'	11.0'	-4.6'	54.0'	117°43.5'	113°20.2'	103°34.2'	88°36.9'	86°39.0'	34°37.9'	
17	54°34.2'	N 25°27.0'	11.1'	-4.7'	54.0'	117°23.9'	113°00.7'	103°17.5'	88°07.4'	86°12.9'	34°08.6'	
18	69°04.2'	N 25°22.3'	11.1'	-4.8'	54.0'	117°04.2'	112°41.0'	103°00.7'	87°37.8'	85°46.8'	33°39.3'	
19	83°34.4'	N 25°17.5'	11.1'	-4.9'	54.0'	116°44.4'	112°21.4'	102°43.9'	87°08.3'	85°20.8'	33°09.9'	
20	98°04.5'	N 25°12.5'	11.2'	-5.1'	54.0'	116°24.6'	112°01.6'	102°27.0'	86°38.7'	84°54.7'	32°40.6'	4°36.6'
21	112°34.7'	N 25°07.5'	11.2'	-5.2'	54.0'	116°04.7'	111°41.8'	102°10.1'	86°09.2'	84°28.6'	32°11.3'	5°03.1'
22	127°04.9'	N 25°02.3'	11.3'	-5.3'	54.0'	115°44.7'	111°22.0'	101°53.2'	85°39.6'	84°02.5'	31°42.0'	5°30.2'
23	141°35.2'	N 24°57.0'	11.3'	-5.4'	54.0'	115°24.7'	111°02.0'	101°36.2'	85°10.0'	83°36.5'	31°12.7'	5°57.6'
Mer. pass.		13 h 14 m SD 14.7'		phase 1%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.7'	S 29°30.1'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°54.7'	N 7°24.7'
Deneb	+1.2	49°26.8'	N 45°21.5'	Acruz	+0.8	173°02.4'	S 63°13.6'	Capella	+0.1	280°25.4'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.6'	Regulus	+1.4	207°36.9'	N 11°51.6'	Rigel	+0.2	281°06.2'	S 8°10.5'
Vega	+0.0	80°34.2'	N 38°48.3'	Pollux	+1.2	243°20.2'	N 27°58.4'	Aldebaran	+0.9	290°42.3'	N 16°33.2'
Antares	+1.1	112°18.1'	S 26°28.9'	Procyon	+0.4	244°53.3'	N 5°10.1'	Polaris	+2.0	315°18.4'	N 89°21.2'
Rigel Kent	-0.0	139°42.8'	S 60°55.8'	Adhara	+1.5	255°07.9'	S 29°00.1'	Achernar	+0.5	335°22.0'	S 57°07.1'
Arcturus	-0.1	145°49.7'	N 19°04.1'	Sirius	-1.4	258°28.4'	S 16°44.8'				
Hadar	+0.6	148°38.7'	S 60°29.1'	Canopus	-0.6	263°53.9'	S 52°42.4'				