

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	69°50.0'	182°47.8' S	21°45.6'	172°22.1' S	23°19.1'	70°17.4' S	1°45.1'	107°09.5' S	16°03.5'	352°06.8' N	24°57.5'	
1	84°52.5'	197°47.5' S	21°46.0'	187°21.1' S	23°19.4'	85°19.8' S	1°45.1'	122°11.8' S	16°03.4'	7°10.3' N	24°57.5'	
2	99°54.9'	212°47.3' S	21°46.4'	202°20.2' S	23°19.8'	100°22.2' S	1°45.0'	137°14.1' S	16°03.4'	22°13.8' N	24°57.6'	
3	114°57.4'	227°47.1' S	21°46.8'	217°19.3' S	23°20.2'	115°24.6' S	1°45.0'	152°16.4' S	16°03.3'	37°17.3' N	24°57.6'	
4	129°59.8'	242°46.8' S	21°47.2'	232°18.3' S	23°20.5'	130°27.0' S	1°44.9'	167°18.7' S	16°03.2'	52°20.8' N	24°57.6'	
5	145°02.3'	257°46.6' S	21°47.6'	247°17.4' S	23°20.9'	145°29.4' S	1°44.9'	182°21.0' S	16°03.2'	67°24.3' N	24°57.7'	
6	160°04.8'	272°46.4' S	21°48.0'	262°16.5' S	23°21.3'	160°31.8' S	1°44.9'	197°23.3' S	16°03.1'	82°27.9' N	24°57.7'	
7	175°07.2'	287°46.1' S	21°48.4'	277°15.5' S	23°21.6'	175°34.2' S	1°44.8'	212°25.6' S	16°03.1'	97°31.4' N	24°57.7'	
8	190°09.7'	302°45.9' S	21°48.8'	292°14.6' S	23°22.0'	190°36.6' S	1°44.8'	227°27.9' S	16°03.0'	112°34.9' N	24°57.8'	
9	205°12.2'	317°45.7' S	21°49.2'	307°13.7' S	23°22.3'	205°39.1' S	1°44.8'	242°30.2' S	16°03.0'	127°38.4' N	24°57.8'	
10	220°14.6'	332°45.4' S	21°49.5'	322°12.7' S	23°22.7'	220°41.5' S	1°44.7'	257°32.5' S	16°02.9'	142°41.9' N	24°57.8'	
11	235°17.1'	347°45.2' S	21°49.9'	337°11.8' S	23°23.1'	235°43.9' S	1°44.7'	272°34.9' S	16°02.9'	157°45.4' N	24°57.9'	
12	250°19.6'	2°45.0' S	21°50.3'	352°10.9' S	23°23.4'	250°46.3' S	1°44.7'	287°37.2' S	16°02.8'	172°48.9' N	24°57.9'	
13	265°22.0'	17°44.7' S	21°50.7'	7°09.9' S	23°23.8'	265°48.7' S	1°44.6'	302°39.5' S	16°02.8'	187°52.5' N	24°57.9'	
14	280°24.5'	32°44.5' S	21°51.1'	22°09.0' S	23°24.1'	280°51.1' S	1°44.6'	317°41.8' S	16°02.7'	202°56.0' N	24°58.0'	
15	295°27.0'	47°44.3' S	21°51.5'	37°08.1' S	23°24.5'	295°53.5' S	1°44.5'	332°44.1' S	16°02.7'	217°59.5' N	24°58.0'	
16	310°29.4'	62°44.0' S	21°51.8'	52°07.1' S	23°24.8'	310°55.9' S	1°44.5'	347°46.4' S	16°02.6'	233°03.0' N	24°58.0'	
17	325°31.9'	77°43.8' S	21°52.2'	67°06.2' S	23°25.2'	325°58.3' S	1°44.5'	2°48.7' S	16°02.6'	248°06.5' N	24°58.0'	
18	340°34.3'	92°43.6' S	21°52.6'	82°05.3' S	23°25.5'	341°00.7' S	1°44.4'	17°51.0' S	16°02.5'	263°10.0' N	24°58.1'	
19	355°36.8'	107°43.3' S	21°53.0'	97°04.3' S	23°25.9'	356°03.1' S	1°44.4'	32°53.3' S	16°02.5'	278°13.6' N	24°58.1'	
20	10°39.3'	122°43.1' S	21°53.4'	112°03.4' S	23°26.2'	11°05.5' S	1°44.4'	47°55.6' S	16°02.4'	293°17.1' N	24°58.1'	
21	25°41.7'	137°42.9' S	21°53.7'	127°02.5' S	23°26.6'	26°08.0' S	1°44.3'	62°57.9' S	16°02.4'	308°20.6' N	24°58.2'	
22	40°44.2'	152°42.6' S	21°54.1'	142°01.5' S	23°26.9'	41°10.4' S	1°44.3'	78°00.2' S	16°02.3'	323°24.1' N	24°58.2'	
23	55°46.7'	167°42.4' S	21°54.5'	157°00.6' S	23°27.2'	56°12.8' S	1°44.2'	93°02.5' S	16°02.2'	338°27.6' N	24°58.2'	
		SD 16.2' d -0.4'		v -0.9' d -0.4'		v 2.4' d 0.0'		v 2.3' d 0.1'		v 3.5' d 0.0'		
Mer. pass.		11 h 49 m 1 s		12 h 31 m		19 h 16 m		16 h 49 m		0 h 31 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Mars	-Rigel	-Aldebaran	-Jupiter	+Fomalhaut	+Saturn	+Altair	+Sun
0	83°01.5' S	10°32.7'	12.0'	14.8'	58.3'	95°14.7'	90°33.5'	85°56.4'	15°24.3'	19°03.5'	24°06.2'	52°21.1'	94°59.8'
1	97°32.5' S	10°17.9'	12.1'	14.9'	58.3'	94°39.4'	90°05.0'	85°22.4'	14°50.5'	19°21.6'	24°39.9'	52°45.2'	95°31.6'
2	112°03.6' S	10°03.0'	12.1'	14.9'	58.3'	94°04.2'	89°36.5'	84°48.5'	14°16.7'	19°40.4'	25°13.6'	53°09.4'	96°03.3'
3	126°34.7' S	9°48.1'	12.2'	14.9'	58.2'	93°29.0'	89°08.1'	84°14.5'	13°42.9'	19°59.8'	25°47.3'	53°33.7'	96°35.0'
4	141°05.9' S	9°33.2'	12.3'	15.0'	58.2'	92°53.9'	88°39.7'	83°40.6'	13°09.2'	20°19.8'	26°20.9'	53°58.1'	97°06.7'
5	155°37.2' S	9°18.2'	12.4'	15.0'	58.2'	92°18.7'	88°11.3'	83°06.7'	12°35.6'	20°40.4'	26°54.6'	54°22.6'	97°38.4'
6	170°08.6' S	9°03.3'	12.4'	15.0'	58.2'	91°43.6'	87°43.0'	82°32.9'	12°02.1'	21°01.5'	27°28.2'	54°47.2'	98°10.0'
7	184°40.0' S	8°48.2'	12.5'	15.0'	58.1'	91°08.6'	87°14.7'	81°59.1'	11°28.6'	21°23.1'	28°01.8'	55°11.9'	98°41.6'
8	199°11.5' S	8°33.2'	12.6'	15.1'	58.1'	90°33.5'	86°46.4'	81°25.3'	10°55.3'	21°45.3'	28°35.4'	55°36.7'	99°13.1'
9	213°43.0' S	8°18.1'	12.6'	15.1'	58.1'	89°58.5'	86°18.1'	80°51.5'	10°22.0'	22°07.9'	29°09.0'	56°01.6'	99°44.7'
10	228°14.7' S	8°03.0'	12.7'	15.1'	58.1'	89°23.5'	85°49.9'	80°17.8'	9°48.9'	22°30.9'	29°42.5'	56°26.6'	100°16.2'
11	242°46.4' S	7°47.9'	12.8'	15.2'	58.0'	88°48.6'	85°21.7'	79°44.1'	9°15.9'	22°54.4'	30°16.1'	56°51.6'	100°47.6'
12	257°18.1' S	7°32.7'	12.8'	15.2'	58.0'	88°13.6'	84°53.6'	79°10.4'	8°43.0'	23°18.2'	30°49.6'	57°16.7'	101°19.1'
13	271°49.9' S	7°17.5'	12.9'	15.2'	58.0'	87°38.7'	84°25.4'	78°36.8'	8°10.3'	23°42.5'	31°23.1'	57°41.9'	101°50.5'
14	286°21.8' S	7°02.3'	12.9'	15.2'	58.0'	87°03.9'	83°57.3'	78°03.1'	7°37.8'	24°07.0'	31°56.6'	58°07.2'	102°21.9'
15	300°53.7' S	6°47.1'	13.0'	15.2'	57.9'	86°29.0'	83°29.3'	77°29.6'	7°05.6'	24°31.9'	32°30.1'	58°32.5'	102°53.3'
16	315°25.7' S	6°31.9'	13.0'	15.3'	57.9'	85°54.2'	83°01.3'	76°56.0'	6°33.6'	24°57.1'	33°03.6'	58°58.0'	103°24.6'
17	329°57.8' S	6°16.6'	13.1'	15.3'	57.9'	85°19.4'	82°33.3'	76°22.5'	6°02.1'	25°22.6'	33°37.0'	59°23.4'	103°55.9'
18	344°29.9' S	6°01.4'	13.2'	15.3'	57.9'	84°44.6'	82°05.3'	75°49.0'	5°30.9'	25°48.4'	34°10.4'	59°49.0'	104°27.2'
19	359°02.0' S	5°46.1'	13.2'	15.3'	57.8'	84°09.9'	81°37.4'	75°15.5'	5°00.4'	26°14.5'	34°43.8'	60°14.6'	104°58.4'
20	13°34.2' S	5°30.8'	13.3'	15.3'	57.8'	83°35.2'	81°09.5'	74°42.1'		26°40.8'	35°17.2'	60°40.3'	105°29.6'
21	28°06.5' S	5°15.5'	13.3'	15.3'	57.8'	83°00.5'	80°41.7'	74°08.7'		27°07.3'	35°50.5'	61°06.0'	106°00.8'
22	42°38.8' S	5°00.1'	13.4'	15.3'	57.8'	82°25.9'	80°13.9'	73°35.3'		27°34.0'	36°23.8'	61°31.8'	106°32.0'
23	57°11.1' S	4°44.8'	13.4'	15.3'	57.7'	81°51.2'	79°46.1'	73°01.9'		28°01.0'	36°57.2'	61°57.6'	107°03.1'
Mer. pass.		19 h 4 m SD 15.9'		phase 54%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4'	S 29°30.3'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°53.7'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.9'	Acrux	+0.8	173°02.4'	S 63°13.2'	Capella	+0.1	280°24.0'	N 46°01.2'
Altair	+0.8	62°01.9'	N 8°55.8'	Regulus	+1.4	207°36.3'	N 11°51.4'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°19.2'	N 27°58.2'	Aldebaran	+0.9	290°41.3'	N 16°33.3'
Antares	+1.1	112°18.4'	S 26°28.9'	Procyon	+0.4	244°52.4'	N 5°10.0'	Polaris	+2.0	314°24.4'	N 89°21.7'
Rigil Kent	-0.0	139°43.3'	S 60°55.5'	Adhara	+1.5	255°06.9'	S 29°00.0'	Achernar	+0.5	335°21.1'	S 57°07.5'
Arcturus	-0.1	145°49.8'	N 19°03.8'	Sirius	-1.4	258°27.5'	S 16°44.7'				
Hadar	+0.6	148°39.0'	S 60°28.7'	Canopus	-0.6	263°52.7'	S 52°42.3'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec	GHA	dec		
0	70°49.1'	182°42.1'	S 21°54.9'	171°59.6'	S 23°27.6'	71°15.2'	S 1°44.2'	108°04.8'	S 16°02.2'	353°31.1'	N 24°58.2'							
1	85°51.6'	197°41.9'	S 21°55.2'	186°58.7'	S 23°27.9'	86°17.6'	S 1°44.2'	123°07.1'	S 16°02.1'	8°34.7'	N 24°58.3'							
2	100°54.1'	212°41.7'	S 21°55.6'	201°57.8'	S 23°28.3'	101°20.0'	S 1°44.1'	138°09.4'	S 16°02.1'	23°38.2'	N 24°58.3'							
3	115°56.5'	227°41.4'	S 21°56.0'	216°56.8'	S 23°28.6'	116°22.4'	S 1°44.1'	153°11.8'	S 16°02.0'	38°41.7'	N 24°58.3'							
4	130°59.0'	242°41.2'	S 21°56.4'	231°55.9'	S 23°28.9'	131°24.8'	S 1°44.1'	168°14.1'	S 16°02.0'	53°45.2'	N 24°58.3'							
5	146°01.5'	257°41.0'	S 21°56.7'	246°55.0'	S 23°29.3'	146°27.2'	S 1°44.0'	183°16.4'	S 16°01.9'	68°48.7'	N 24°58.4'							
6	161°03.9'	272°40.7'	S 21°57.1'	261°54.0'	S 23°29.6'	161°29.6'	S 1°44.0'	198°18.7'	S 16°01.9'	83°52.3'	N 24°58.4'							
7	176°06.4'	287°40.5'	S 21°57.5'	276°53.1'	S 23°29.9'	176°32.0'	S 1°43.9'	213°21.0'	S 16°01.8'	98°55.8'	N 24°58.4'							
8	191°08.8'	302°40.2'	S 21°57.9'	291°52.1'	S 23°30.3'	191°34.4'	S 1°43.9'	228°23.3'	S 16°01.8'	113°59.3'	N 24°58.5'							
9	206°11.3'	317°40.0'	S 21°58.2'	306°51.2'	S 23°30.6'	206°36.8'	S 1°43.9'	243°25.6'	S 16°01.7'	129°02.8'	N 24°58.5'							
10	221°13.8'	332°39.8'	S 21°58.6'	321°50.3'	S 23°30.9'	221°39.2'	S 1°43.8'	258°27.9'	S 16°01.7'	144°06.4'	N 24°58.5'							
11	236°16.2'	347°39.5'	S 21°59.0'	336°49.3'	S 23°31.3'	236°41.6'	S 1°43.8'	273°30.2'	S 16°01.6'	159°09.9'	N 24°58.5'							
12	251°18.7'	2°39.3'	S 21°59.3'	351°48.4'	S 23°31.6'	251°44.0'	S 1°43.7'	288°32.5'	S 16°01.6'	174°13.4'	N 24°58.6'							
13	266°21.2'	17°39.0'	S 21°59.7'	6°47.4'	S 23°31.9'	266°46.4'	S 1°43.7'	303°34.8'	S 16°01.5'	189°16.9'	N 24°58.6'							
14	281°23.6'	32°38.8'	S 22°00.1'	21°46.5'	S 23°32.2'	281°48.8'	S 1°43.7'	318°37.1'	S 16°01.4'	204°20.4'	N 24°58.6'							
15	296°26.1'	47°38.6'	S 22°00.4'	36°45.6'	S 23°32.6'	296°51.2'	S 1°43.6'	333°39.4'	S 16°01.4'	219°24.0'	N 24°58.6'							
16	311°28.6'	62°38.3'	S 22°00.8'	51°44.6'	S 23°32.9'	311°53.6'	S 1°43.6'	348°41.7'	S 16°01.3'	234°27.5'	N 24°58.6'							
17	326°31.0'	77°38.1'	S 22°01.2'	66°43.7'	S 23°33.2'	326°56.0'	S 1°43.5'	3°44.0'	S 16°01.3'	249°31.0'	N 24°58.7'							
18	341°33.5'	92°37.8'	S 22°01.5'	81°42.7'	S 23°33.5'	341°58.4'	S 1°43.5'	18°46.3'	S 16°01.2'	264°34.5'	N 24°58.7'							
19	356°35.9'	107°37.6'	S 22°01.9'	96°41.8'	S 23°33.8'	357°00.8'	S 1°43.5'	33°48.6'	S 16°01.2'	279°38.1'	N 24°58.7'							
20	11°38.4'	122°37.4'	S 22°02.2'	111°40.8'	S 23°34.1'	12°03.2'	S 1°43.4'	48°50.9'	S 16°01.1'	294°41.6'	N 24°58.7'							
21	26°40.9'	137°37.1'	S 22°02.6'	126°39.9'	S 23°34.5'	27°05.6'	S 1°43.4'	63°53.2'	S 16°01.1'	309°45.1'	N 24°58.8'							
22	41°43.3'	152°36.9'	S 22°03.0'	141°39.0'	S 23°34.8'	42°08.0'	S 1°43.3'	78°55.5'	S 16°01.0'	324°48.6'	N 24°58.8'							
23	56°45.8'	167°36.6'	S 22°03.3'	156°38.0'	S 23°35.1'	57°10.4'	S 1°43.3'	93°57.8'	S 16°01.0'	339°52.2'	N 24°58.8'							
		SD 16.2' d -0.4'		v -0.9' d -0.3'		v 2.4' d 0.0'		v 2.3' d 0.1'		v 3.5' d 0.0'								
Mer. pass.		11 h 49 m 24 s		12 h 33 m		19 h 12 m		16 h 45 m		0 h 26 m								

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Mars	-Rigel	-Aldebaran	-Jupiter	+Fomalhaut	+Saturn	+Altair	+Sun
0	71°43.5'	S 4°29.4'	13.4'	15.4'	57.7'	81°16.6'	79°18.4'	72°28.6'		28°28.1'	37°30.4'	62°23.5'	107°34.2'
1	86°16.0'	S 4°14.1'	13.5'	15.4'	57.7'	80°42.1'	78°50.8'	71°55.3'		28°55.5'	38°03.7'	62°49.4'	108°05.3'
2	100°48.5'	S 3°58.7'	13.5'	15.4'	57.7'	80°07.5'	78°23.1'	71°22.1'		29°23.0'	38°36.9'	63°15.4'	108°36.4'
3	115°21.0'	S 3°43.4'	13.6'	15.4'	57.6'	79°33.0'	77°55.6'	70°48.8'		29°50.7'	39°10.2'	63°41.4'	109°07.4'
4	129°53.6'	S 3°28.0'	13.6'	15.4'	57.6'	78°58.5'	77°28.0'	70°15.6'		30°18.5'	39°43.4'	64°07.5'	109°38.4'
5	144°26.2'	S 3°12.6'	13.7'	15.4'	57.6'	78°24.1'	77°00.5'	69°42.5'		30°46.5'	40°16.5'	64°33.6'	110°09.3'
6	158°58.9'	S 2°57.3'	13.7'	15.4'	57.6'	77°49.6'	76°33.1'	69°09.3'		31°14.7'	40°49.7'	64°59.7'	110°40.3'
7	173°31.6'	S 2°41.9'	13.7'	15.4'	57.5'	77°15.2'	76°05.7'	68°36.2'		31°42.9'	41°22.8'	65°25.9'	111°11.2'
8	188°04.3'	S 2°26.5'	13.8'	15.4'	57.5'	76°40.8'	75°38.4'	68°03.1'		32°11.3'	41°55.9'	65°52.1'	111°42.1'
9	202°37.1'	S 2°11.1'	13.8'	15.4'	57.5'	76°06.5'	75°11.1'	67°30.0'		32°39.8'	42°29.0'	66°18.4'	112°12.9'
10	217°09.9'	S 1°55.8'	13.8'	15.4'	57.5'	75°32.1'	74°43.8'	66°57.0'		33°08.5'	43°02.1'	66°44.7'	112°43.8'
11	231°42.7'	S 1°40.4'	13.9'	15.4'	57.4'	74°57.8'	74°16.6'	66°24.0'	4°58.8'	33°37.2'	43°35.1'	67°11.0'	113°14.6'
12	246°15.6'	S 1°25.0'	13.9'	15.4'	57.4'	74°23.5'	73°49.5'	65°51.1'	5°28.8'	34°06.0'	44°08.1'	67°37.4'	113°45.3'
13	260°48.5'	S 1°09.7'	13.9'	15.3'	57.4'	73°49.3'	73°22.4'	65°18.1'	5°59.4'	34°35.0'	44°41.1'	68°03.7'	114°16.1'
14	275°21.4'	S 0°54.3'	13.9'	15.3'	57.4'	73°15.1'	72°55.3'	64°45.2'	6°30.4'	35°04.0'	45°14.1'	68°30.2'	114°46.8'
15	289°54.3'	S 0°39.0'	14.0'	15.3'	57.3'	72°40.9'	72°28.4'	64°12.3'	7°01.8'	35°33.1'	45°47.0'	68°56.6'	115°17.5'
16	304°27.3'	S 0°23.7'	14.0'	15.3'	57.3'	72°06.7'	72°01.4'	63°39.5'	7°33.3'	36°02.3'	46°19.9'	69°23.0'	115°48.2'
17	319°00.3'	S 0°08.3'	14.0'	15.3'	57.3'	71°32.5'	71°34.6'	63°06.6'	8°05.1'	36°31.5'	46°52.8'	69°49.5'	116°18.8'
18	333°33.3'	N 0°07.0'	14.0'	15.3'	57.3'	70°58.4'	71°07.8'	62°33.9'	8°36.9'	37°00.9'	47°25.7'	70°16.0'	116°49.4'
19	348°06.4'	N 0°22.3'	14.1'	15.3'	57.2'	70°24.3'	70°41.0'	62°01.1'	9°08.9'	37°30.3'	47°58.5'	70°42.6'	117°20.0'
20	2°39.4'	N 0°37.6'	14.1'	15.3'	57.2'	69°50.2'	70°14.3'	61°28.4'	9°41.0'	37°59.8'	48°31.4'	71°09.1'	117°50.6'
21	17°12.5'	N 0°52.8'	14.1'	15.3'	57.2'	69°16.2'	69°47.7'	60°55.7'	10°13.2'	38°29.3'	49°04.2'	71°35.7'	118°21.1'
22	31°45.6'	N 1°08.1'	14.1'	15.2'	57.2'	68°42.2'	69°21.1'	60°23.0'	10°45.5'	38°58.9'	49°37.0'	72°02.3'	118°51.6'
23	46°18.8'	N 1°23.3'	14.1'	15.2'	57.2'	68°08.2'	68°54.6'	59°50.3'	11°17.7'	39°28.5'	50°09.7'	72°28.9'	119°22.1'
Mer. pass.		19 h 49 m SD 15.7'		phase 65%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4'	S 29°30.3'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°53.7'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.9'	Acrux	+0.8	173°02.4'	S 63°13.2'	Capella	+0.1	280°24.0'	N 46°01.2'
Altair	+0.8	62°01.9'	N 8°55.8'	Regulus	+1.4	207°36.3'	N 11°51.4'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°19.2'	N 27°58.2'	Aldebaran	+0.9	290°41.3'	N 16°33.3'
Antares	+1.1	112°18.4'	S 26°28.9'	Procyon	+0.4	244°52.4'	N 5°10.0'	Polaris	+2.0	314°24.6'	N 89°21.7'
Rigil Kent	-0.0	139°43.3'	S 60°55.5'	Adhara	+1.5	255°06.9'	S 29°00.0'	Achernar	+0.5	335°21.1'	S 57°07.5'
Arcturus	-0.1	145°49.8'	N 19°03.8'	Sirius	-1.4	258°27.5'	S 16°44.7'				
Hadar	+0.6	148°39.0'	S 60°28.7'	Canopus	-0.6	263°52.7'	S 52°42.3'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec	GHA	dec		
0	71°48.3'	182°36.4'	S 22°03.7'	171°37.1'	S 23°35.4'	72°12.8'	S 1°43.2'	109°00.1'	S 16°00.9'	354°55.7'	N 24°58.8'							
1	86°50.7'	197°36.1'	S 22°04.0'	186°36.1'	S 23°35.7'	87°15.2'	S 1°43.2'	124°02.4'	S 16°00.9'	9°59.2'	N 24°58.9'							
2	101°53.2'	212°35.9'	S 22°04.4'	201°35.2'	S 23°36.0'	102°17.6'	S 1°43.2'	139°04.7'	S 16°00.8'	25°02.8'	N 24°58.9'							
3	116°55.7'	227°35.7'	S 22°04.7'	216°34.2'	S 23°36.3'	117°20.0'	S 1°43.1'	154°07.0'	S 16°00.7'	40°06.3'	N 24°58.9'							
4	131°58.1'	242°35.4'	S 22°05.1'	231°33.3'	S 23°36.6'	132°22.4'	S 1°43.1'	169°09.3'	S 16°00.7'	55°09.8'	N 24°58.9'							
5	147°00.6'	257°35.2'	S 22°05.5'	246°32.4'	S 23°36.9'	147°24.8'	S 1°43.0'	184°11.6'	S 16°00.6'	70°13.3'	N 24°58.9'							
6	162°03.1'	272°34.9'	S 22°05.8'	261°31.4'	S 23°37.2'	162°27.2'	S 1°43.0'	199°13.9'	S 16°00.6'	85°16.9'	N 24°59.0'							
7	177°05.5'	287°34.7'	S 22°06.2'	276°30.5'	S 23°37.5'	177°29.6'	S 1°42.9'	214°16.2'	S 16°00.5'	100°20.4'	N 24°59.0'							
8	192°08.0'	302°34.4'	S 22°06.5'	291°29.5'	S 23°37.8'	192°32.0'	S 1°42.9'	229°18.5'	S 16°00.5'	115°23.9'	N 24°59.0'							
9	207°10.4'	317°34.2'	S 22°06.9'	306°28.6'	S 23°38.1'	207°34.4'	S 1°42.9'	244°20.8'	S 16°00.4'	130°27.4'	N 24°59.0'							
10	222°12.9'	332°33.9'	S 22°07.2'	321°27.6'	S 23°38.4'	222°36.7'	S 1°42.8'	259°23.1'	S 16°00.4'	145°31.0'	N 24°59.0'							
11	237°15.4'	347°33.7'	S 22°07.6'	336°26.7'	S 23°38.7'	237°39.1'	S 1°42.8'	274°25.4'	S 16°00.3'	160°34.5'	N 24°59.1'							
12	252°17.8'	2°33.5'	S 22°07.9'	351°25.7'	S 23°39.0'	252°41.5'	S 1°42.7'	289°27.7'	S 16°00.3'	175°38.0'	N 24°59.1'							
13	267°20.3'	17°33.2'	S 22°08.3'	6°24.8'	S 23°39.3'	267°43.9'	S 1°42.7'	304°30.0'	S 16°00.2'	190°41.6'	N 24°59.1'							
14	282°22.8'	32°33.0'	S 22°08.6'	21°23.8'	S 23°39.6'	282°46.3'	S 1°42.6'	319°32.3'	S 16°00.1'	205°45.1'	N 24°59.1'							
15	297°25.2'	47°32.7'	S 22°09.0'	36°22.9'	S 23°39.9'	297°48.7'	S 1°42.6'	334°34.6'	S 16°00.1'	220°48.6'	N 24°59.1'							
16	312°27.7'	62°32.5'	S 22°09.3'	51°21.9'	S 23°40.2'	312°51.1'	S 1°42.6'	349°36.9'	S 16°00.0'	235°52.2'	N 24°59.1'							
17	327°30.2'	77°32.2'	S 22°09.7'	66°21.0'	S 23°40.5'	327°53.5'	S 1°42.5'	4°39.2'	S 15°60.0'	250°55.7'	N 24°59.2'							
18	342°32.6'	92°32.0'	S 22°10.0'	81°20.0'	S 23°40.8'	342°55.9'	S 1°42.5'	19°41.5'	S 15°59.9'	265°59.2'	N 24°59.2'							
19	357°35.1'	107°31.7'	S 22°10.3'	96°19.1'	S 23°41.1'	357°58.3'	S 1°42.4'	34°43.8'	S 15°59.9'	281°02.7'	N 24°59.2'							
20	12°37.5'	122°31.5'	S 22°10.7'	111°18.1'	S 23°41.4'	13°00.7'	S 1°42.4'	49°46.1'	S 15°59.8'	296°06.3'	N 24°59.2'							
21	27°40.0'	137°31.2'	S 22°11.0'	126°17.2'	S 23°41.6'	28°03.1'	S 1°42.3'	64°48.4'	S 15°59.8'	311°09.8'	N 24°59.2'							
22	42°42.5'	152°31.0'	S 22°11.4'	141°16.3'	S 23°41.9'	43°05.4'	S 1°42.3'	79°50.7'	S 15°59.7'	326°13.3'	N 24°59.2'							
23	57°44.9'	167°30.7'	S 22°11.7'	156°15.3'	S 23°42.2'	58°07.8'	S 1°42.2'	94°53.0'	S 15°59.6'	341°16.9'	N 24°59.3'							
		SD 16.2' d -0.3'		v -0.9' d -0.3'		v 2.4' d 0.0'		v 2.3' d 0.1'		v 3.5' d 0.0'								
Mer. pass.		11 h 49 m 48 s		12 h 34 m		19 h 8 m		16 h 41 m		0 h 20 m								

h	Moon					Lunar distance								
	GHA	dec	v	d	HP	-Capella	-Rigel	-Mars	-Aldebaran	+Jupiter	+Fomalhaut	+Saturn	+Sun	
0	60°51.9'	N 1°38.5'	14.2'	15.2'	57.1'	74°08.7'	68°28.2'	67°34.2'	59°17.7'	11°50.1'		39°58.2'	50°42.5'	119°52.6'
1	75°25.1'	N 1°53.7'	14.2'	15.2'	57.1'	73°37.7'	68°01.8'	67°00.3'	58°45.1'	12°22.4'		40°28.0'	51°15.2'	
2	89°58.2'	N 2°08.9'	14.2'	15.2'	57.1'	73°06.8'	67°35.5'	66°26.3'	58°12.6'	12°54.8'		40°57.8'	51°47.9'	
3	104°31.4'	N 2°24.1'	14.2'	15.1'	57.1'	72°36.0'	67°09.2'	65°52.4'	57°40.0'	13°27.2'		41°27.6'	52°20.5'	
4	119°04.6'	N 2°39.2'	14.2'	15.1'	57.0'	72°05.1'	66°43.1'	65°18.6'	57°07.5'	13°59.6'		41°57.5'	52°53.2'	
5	133°37.8'	N 2°54.3'	14.2'	15.1'	57.0'	71°34.3'	66°17.0'	64°44.7'	56°35.1'	14°32.0'		42°27.4'	53°25.8'	
6	148°11.0'	N 3°09.4'	14.2'	15.1'	57.0'	71°03.5'	65°50.9'	64°10.9'	56°02.6'	15°04.4'		42°57.4'	53°58.4'	
7	162°44.2'	N 3°24.5'	14.2'	15.0'	57.0'	70°32.8'	65°25.0'	63°37.1'	55°30.2'	15°36.8'		43°27.4'	54°30.9'	
8	177°17.4'	N 3°39.5'	14.2'	15.0'	56.9'	70°02.1'	64°59.1'	63°03.3'	54°57.8'	16°09.3'		43°57.4'	55°03.5'	
9	191°50.7'	N 3°54.5'	14.2'	15.0'	56.9'	69°31.5'	64°33.3'	62°29.6'	54°25.5'	16°41.7'		44°27.4'	55°36.0'	
10	206°23.9'	N 4°09.5'	14.2'	15.0'	56.9'	69°00.8'	64°07.5'	61°55.8'	53°53.2'	17°14.1'		44°57.5'	56°08.5'	
11	220°57.1'	N 4°24.5'	14.2'	14.9'	56.9'	68°30.2'	63°41.9'	61°22.1'	53°20.9'	17°46.5'		45°27.6'	56°41.0'	
12	235°30.4'	N 4°39.4'	14.2'	14.9'	56.8'	67°59.7'	63°16.3'	60°48.4'	52°48.6'	18°18.9'		45°57.7'	57°13.5'	
13	250°03.6'	N 4°54.3'	14.2'	14.9'	56.8'	67°29.2'	62°50.8'	60°14.8'	52°16.4'	18°51.3'		46°27.9'	57°45.9'	
14	264°36.8'	N 5°09.2'	14.2'	14.8'	56.8'	66°58.7'	62°25.3'	59°41.1'	51°44.2'	19°23.6'		46°58.1'	58°18.3'	
15	279°10.1'	N 5°24.0'	14.2'	14.8'	56.8'	66°28.3'	61°60.0'	59°07.5'	51°12.0'	19°56.0'		47°28.3'	58°50.7'	
16	293°43.3'	N 5°38.8'	14.2'	14.8'	56.8'	65°57.9'	61°34.7'	58°33.9'	50°39.9'	20°28.3'		47°58.5'	59°23.1'	
17	308°16.5'	N 5°53.5'	14.2'	14.7'	56.7'	65°27.6'	61°09.6'	58°00.4'	50°07.8'	21°00.7'		48°28.7'	59°55.4'	
18	322°49.8'	N 6°08.3'	14.2'	14.7'	56.7'	64°57.3'	60°44.5'	57°26.8'	49°35.7'	21°33.0'		48°59.0'	60°27.8'	
19	337°23.0'	N 6°23.0'	14.2'	14.6'	56.7'	64°27.0'	60°19.5'	56°53.3'	49°03.7'	22°05.3'		49°29.3'	61°00.1'	
20	351°56.2'	N 6°37.6'	14.2'	14.6'	56.7'	63°56.8'	59°54.6'	56°19.8'	48°31.6'	22°37.6'		49°59.5'	61°32.3'	
21	6°29.4'	N 6°52.2'	14.2'	14.6'	56.6'	63°26.6'	59°29.8'	55°46.4'	47°59.7'	23°09.9'		50°29.8'	62°04.6'	
22	21°02.6'	N 7°06.8'	14.2'	14.5'	56.6'	62°56.5'	59°05.1'	55°12.9'	47°27.7'	23°42.1'		51°00.1'	62°36.8'	
23	35°35.8'	N 7°21.3'	14.2'	14.5'	56.6'	62°26.4'	58°40.4'	54°39.5'	46°55.8'	24°14.4'		51°30.5'	63°09.1'	
Mer. pass.		20 h 33 m SD 15.6'		phase 75%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4'	S 29°30.3'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°53.7'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.9'	Acrux	+0.8	173°02.4'	S 63°13.2'	Capella	+0.1	280°24.0'	N 46°01.2'
Altair	+0.8	62°01.9'	N 8°55.8'	Regulus	+1.4	207°36.3'	N 11°51.4'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°19.2'	N 27°58.2'	Aldebaran	+0.9	290°41.3'	N 16°33.3'
Antares	+1.1	112°18.4'	S 26°28.9'	Procyon	+0.4	244°52.4'	N 5°10.0'	Polaris	+2.0	314°24.7'	N 89°21.8'
Rigil Kent	-0.0	139°43.3'	S 60°55.5'	Adhara	+1.5	255°06.9'	S 29°00.0'	Achernar	+0.5	335°21.1'	S 57°07.5'
Arcturus	-0.1	145°49.8'	N 19°03.8'	Sirius	-1.4	258°27.5'	S 16°44.7'				
Hadar	+0.6	148°39.0'	S 60°28.7'	Canopus	-0.6	263°52.7'	S 52°42.3'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	72°47.4'	182°30.5'	S 22°12.1'	171°14.4'	S 23°42.5'	73°10.2'	S 1°42.2'	109°55.3'	S 15°59.6'	356°20.4'	N 24°59.3'	
1	87°49.9'	197°30.5'	S 22°12.4'	186°13.4'	S 23°42.8'	88°12.6'	S 1°42.2'	124°57.6'	S 15°59.5'	11°23.9'	N 24°59.3'	
2	102°52.3'	212°30.0'	S 22°12.7'	201°12.5'	S 23°43.0'	103°15.0'	S 1°42.1'	139°59.9'	S 15°59.5'	26°27.5'	N 24°59.3'	
3	117°54.8'	227°29.7'	S 22°13.1'	216°11.5'	S 23°43.3'	118°17.4'	S 1°42.1'	155°02.2'	S 15°59.4'	41°31.0'	N 24°59.3'	
4	132°57.3'	242°29.5'	S 22°13.4'	231°10.6'	S 23°43.6'	133°19.8'	S 1°42.0'	170°04.5'	S 15°59.4'	56°34.5'	N 24°59.3'	
5	147°59.7'	257°29.2'	S 22°13.7'	246°09.6'	S 23°43.9'	148°22.2'	S 1°42.0'	185°06.8'	S 15°59.3'	71°38.1'	N 24°59.4'	
6	163°02.2'	272°29.0'	S 22°14.1'	261°08.6'	S 23°44.2'	163°24.6'	S 1°41.9'	200°09.1'	S 15°59.3'	86°41.6'	N 24°59.4'	
7	178°04.7'	287°28.7'	S 22°14.4'	276°07.7'	S 23°44.4'	178°26.9'	S 1°41.9'	215°11.4'	S 15°59.2'	101°45.1'	N 24°59.4'	
8	193°07.1'	302°28.5'	S 22°14.7'	291°06.7'	S 23°44.7'	193°29.3'	S 1°41.8'	230°13.7'	S 15°59.1'	116°48.7'	N 24°59.4'	
9	208°09.6'	317°28.2'	S 22°15.1'	306°05.8'	S 23°45.0'	208°31.7'	S 1°41.8'	245°16.0'	S 15°59.1'	131°52.2'	N 24°59.4'	
10	223°12.0'	332°28.0'	S 22°15.4'	321°04.8'	S 23°45.2'	223°34.1'	S 1°41.7'	260°18.3'	S 15°59.0'	146°55.7'	N 24°59.4'	
11	238°14.5'	347°27.7'	S 22°15.7'	336°03.9'	S 23°45.5'	238°36.5'	S 1°41.7'	275°20.6'	S 15°59.0'	161°59.3'	N 24°59.4'	
12	253°17.0'	2°27.5'	S 22°16.1'	351°02.9'	S 23°45.8'	253°38.9'	S 1°41.7'	290°22.9'	S 15°58.9'	177°02.8'	N 24°59.5'	
13	268°19.4'	17°27.2'	S 22°16.4'	6°02.0'	S 23°46.0'	268°41.3'	S 1°41.6'	305°25.2'	S 15°58.9'	192°06.3'	N 24°59.5'	
14	283°21.9'	32°27.0'	S 22°16.7'	21°01.0'	S 23°46.3'	283°43.6'	S 1°41.6'	320°27.5'	S 15°58.8'	207°09.9'	N 24°59.5'	
15	298°24.4'	47°26.7'	S 22°17.1'	36°00.1'	S 23°46.6'	298°46.0'	S 1°41.5'	335°29.8'	S 15°58.8'	222°13.4'	N 24°59.5'	
16	313°26.8'	62°26.5'	S 22°17.4'	50°59.1'	S 23°46.8'	313°48.4'	S 1°41.5'	350°32.1'	S 15°58.7'	237°16.9'	N 24°59.5'	
17	328°29.3'	77°26.2'	S 22°17.7'	65°58.2'	S 23°47.1'	328°50.8'	S 1°41.4'	5°34.4'	S 15°58.6'	252°20.5'	N 24°59.5'	
18	343°31.8'	92°26.0'	S 22°18.1'	80°57.2'	S 23°47.3'	343°53.2'	S 1°41.4'	20°36.7'	S 15°58.6'	267°24.0'	N 24°59.5'	
19	358°34.2'	107°25.7'	S 22°18.4'	95°56.3'	S 23°47.6'	358°55.6'	S 1°41.3'	35°39.0'	S 15°58.5'	282°27.5'	N 24°59.5'	
20	13°36.7'	122°25.5'	S 22°18.7'	110°55.3'	S 23°47.9'	13°58.0'	S 1°41.3'	50°41.3'	S 15°58.5'	297°31.1'	N 24°59.5'	
21	28°39.2'	137°25.2'	S 22°19.0'	125°54.4'	S 23°48.1'	29°00.3'	S 1°41.2'	65°43.6'	S 15°58.4'	312°34.6'	N 24°59.6'	
22	43°41.6'	152°24.9'	S 22°19.4'	140°53.4'	S 23°48.4'	44°02.7'	S 1°41.2'	80°45.9'	S 15°58.4'	327°38.1'	N 24°59.6'	
23	58°44.1'	167°24.7'	S 22°19.7'	155°52.4'	S 23°48.6'	59°05.1'	S 1°41.1'	95°48.2'	S 15°58.3'	342°41.7'	N 24°59.6'	
		SD 16.2' d -0.3'		v -1.0' d -0.3'		v 2.4' d 0.0'		v 2.3' d 0.1'		v 3.5' d 0.0'		
Mer. pass.		11 h 50 m 11 s		12 h 36 m		19 h 4 m		16 h 38 m		0 h 15 m		

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Capella	-Rigel	-Mars	-Aldebaran	+Jupiter	+Fomalhaut	+Saturn	+Achernar
0	50°08.9'	N 7°35.8'	14.2'	14.4'	56.6'	61°56.3'	58°15.9'	54°06.1'	46°23.9'	24°46.6'	52°00.8'	63°41.2'	
1	64°42.1'	N 7°50.2'	14.1'	14.4'	56.6'	61°26.3'	57°51.5'	53°32.7'	45°52.1'	25°18.8'	52°31.1'	64°13.4'	
2	79°15.2'	N 8°04.6'	14.1'	14.4'	56.5'	60°56.3'	57°27.2'	52°59.3'	45°20.2'	25°51.0'	53°01.5'	64°45.6'	
3	93°48.4'	N 8°19.0'	14.1'	14.3'	56.5'	60°26.4'	57°02.9'	52°26.0'	44°48.5'	26°23.2'	53°31.8'	65°17.7'	
4	108°21.5'	N 8°33.3'	14.1'	14.3'	56.5'	59°56.6'	56°38.8'	51°52.7'	44°16.7'	26°55.3'	54°02.2'	65°49.8'	
5	122°54.6'	N 8°47.6'	14.1'	14.2'	56.5'	59°26.7'	56°14.8'	51°19.4'	43°45.0'	27°27.5'	54°32.5'	66°21.9'	
6	137°27.7'	N 9°01.8'	14.1'	14.2'	56.4'	58°57.0'	55°50.9'	50°46.1'	43°13.3'	27°59.6'	55°02.9'	66°53.9'	
7	152°00.7'	N 9°15.9'	14.0'	14.1'	56.4'	58°27.2'	55°27.1'	50°12.9'	42°41.6'	28°31.7'	55°33.3'	67°26.0'	
8	166°33.8'	N 9°30.1'	14.0'	14.1'	56.4'	57°57.5'	55°03.4'	49°39.6'	42°10.0'	29°03.8'	56°03.7'	67°58.0'	
9	181°06.8'	N 9°44.1'	14.0'	14.0'	56.4'	57°27.9'	54°39.8'	49°06.4'	41°38.4'	29°35.8'	56°34.0'	68°30.0'	
10	195°39.8'	N 9°58.1'	14.0'	14.0'	56.4'	56°58.3'	54°16.4'	48°33.3'	41°06.9'	30°07.9'	57°04.4'	69°02.0'	
11	210°12.8'	N 10°12.1'	14.0'	13.9'	56.3'	56°28.8'	53°53.0'	48°00.1'	40°35.4'	30°39.9'	57°34.8'	69°33.9'	
12	224°45.7'	N 10°26.0'	13.9'	13.9'	56.3'	55°59.3'	53°29.8'	47°27.0'	40°03.9'	31°11.9'	58°05.2'	70°05.9'	67°38.0'
13	239°18.7'	N 10°39.8'	13.9'	13.8'	56.3'	55°29.9'	53°06.7'	46°53.8'	39°32.5'	31°43.9'	58°35.5'	70°37.8'	67°53.1'
14	253°51.6'	N 10°53.6'	13.9'	13.7'	56.3'	55°00.6'	52°43.8'	46°20.7'	39°01.1'	32°15.9'	59°05.9'	71°09.7'	68°08.2'
15	268°24.5'	N 11°07.4'	13.9'	13.7'	56.3'	54°31.2'	52°20.9'	45°47.7'	38°29.7'	32°47.8'	59°36.3'	71°41.5'	68°23.5'
16	282°57.3'	N 11°21.1'	13.8'	13.6'	56.2'	54°02.0'	51°58.2'	45°14.6'	37°58.4'	33°19.7'	60°06.7'	72°13.4'	68°38.8'
17	297°30.1'	N 11°34.7'	13.8'	13.6'	56.2'	53°32.8'	51°35.6'	44°41.6'	37°27.1'	33°51.7'	60°37.1'	72°45.2'	68°54.2'
18	312°02.9'	N 11°48.3'	13.8'	13.5'	56.2'	53°03.6'	51°13.2'	44°08.6'	36°55.9'	34°23.5'	61°07.4'	73°17.0'	69°09.6'
19	326°35.7'	N 12°01.8'	13.7'	13.4'	56.2'	52°34.6'	50°50.9'	43°35.6'	36°24.7'	34°55.4'	61°37.8'	73°48.8'	69°25.2'
20	341°08.4'	N 12°15.2'	13.7'	13.4'	56.1'	52°05.5'	50°28.7'	43°02.6'	35°53.5'	35°27.3'	62°08.2'	74°20.6'	69°40.8'
21	355°41.1'	N 12°28.6'	13.7'	13.3'	56.1'	51°36.6'	50°06.7'	42°29.7'	35°22.4'	35°59.1'	62°38.5'	74°52.3'	69°56.5'
22	10°13.8'	N 12°41.9'	13.6'	13.3'	56.1'	51°07.7'	49°44.8'	41°56.7'	34°51.3'	36°30.9'	63°08.9'	75°24.1'	70°12.3'
23	24°46.5'	N 12°55.1'	13.6'	13.2'	56.1'	50°38.8'	49°23.1'	41°23.8'	34°20.3'	37°02.7'	63°39.2'	75°55.8'	70°28.1'
Mer. pass.		21 h 18 m SD 15.4'		phase 83%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°53.7'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.9'	Acrux	+0.8	173°02.4'	S 63°13.2'	Capella	+0.1	280°24.0'	N 46°01.2'
Altair	+0.8	62°01.9'	N 8°55.8'	Regulus	+1.4	207°36.3'	N 11°51.4'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°19.2'	N 27°58.2'	Aldebaran	+0.9	290°41.3'	N 16°33.3'
Antares	+1.1	112°18.4'	S 26°28.9'	Procyon	+0.4	244°52.4'	N 5°10.0'	Polaris	+2.0	314°24.9'	N 89°21.8'
Rigel Kent	-0.0	139°43.3'	S 60°55.5'	Adhara	+1.5	255°06.9'	S 29°00.0'	Achernar	+0.5	335°21.1'	S 57°07.5'
Arcturus	-0.1	145°49.8'	N 19°03.8'	Sirius	-1.4	258°27.5'	S 16°44.7'				
Hadar	+0.6	148°39.0'	S 60°28.7'	Canopus	-0.6	263°52.7'	S 52°42.3'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	73°46.5'		182°24.4'	S 22°20.0'	170°51.5'	S 23°48.9'	74°07.5'	S 1°41.1'	110°50.5'	S 15°58.2'	357°45.2'	N 24°59.6'
1	88°49.0'		197°24.2'	S 22°20.3'	185°50.5'	S 23°49.1'	89°09.9'	S 1°41.0'	125°52.8'	S 15°58.2'	12°48.7'	N 24°59.6'
2	103°51.5'		212°23.9'	S 22°20.6'	200°49.6'	S 23°49.4'	104°12.2'	S 1°41.0'	140°55.1'	S 15°58.1'	27°52.3'	N 24°59.6'
3	118°53.9'		227°23.7'	S 22°21.0'	215°48.6'	S 23°49.6'	119°14.6'	S 1°40.9'	155°57.3'	S 15°58.1'	42°55.8'	N 24°59.6'
4	133°56.4'		242°23.4'	S 22°21.3'	230°47.7'	S 23°49.9'	134°17.0'	S 1°40.9'	170°59.6'	S 15°58.0'	57°59.3'	N 24°59.6'
5	148°58.9'		257°23.2'	S 22°21.6'	245°46.7'	S 23°50.1'	149°19.4'	S 1°40.8'	186°01.9'	S 15°58.0'	73°02.9'	N 24°59.6'
6	164°01.3'		272°22.9'	S 22°21.9'	260°45.8'	S 23°50.3'	164°21.8'	S 1°40.8'	201°04.2'	S 15°57.9'	88°06.4'	N 24°59.6'
7	179°03.8'		287°22.6'	S 22°22.2'	275°44.8'	S 23°50.6'	179°24.1'	S 1°40.7'	216°06.5'	S 15°57.9'	103°09.9'	N 24°59.7'
8	194°06.3'		302°22.4'	S 22°22.6'	290°43.8'	S 23°50.8'	194°26.5'	S 1°40.7'	231°08.8'	S 15°57.8'	118°13.5'	N 24°59.7'
9	209°08.7'		317°22.1'	S 22°22.9'	305°42.9'	S 23°51.1'	209°28.9'	S 1°40.6'	246°11.1'	S 15°57.7'	133°17.0'	N 24°59.7'
10	224°11.2'		332°21.9'	S 22°23.2'	320°41.9'	S 23°51.3'	224°31.3'	S 1°40.6'	261°13.4'	S 15°57.7'	148°20.5'	N 24°59.7'
11	239°13.6'		347°21.6'	S 22°23.5'	335°41.0'	S 23°51.5'	239°33.7'	S 1°40.5'	276°15.7'	S 15°57.6'	163°24.1'	N 24°59.7'
12	254°16.1'		2°21.4'	S 22°23.8'	350°40.0'	S 23°51.8'	254°36.0'	S 1°40.5'	291°18.0'	S 15°57.6'	178°27.6'	N 24°59.7'
13	269°18.6'		17°21.1'	S 22°24.1'	5°39.1'	S 23°52.0'	269°38.4'	S 1°40.4'	306°20.3'	S 15°57.5'	193°31.2'	N 24°59.7'
14	284°21.0'		32°20.8'	S 22°24.4'	20°38.1'	S 23°52.2'	284°40.8'	S 1°40.4'	321°22.6'	S 15°57.5'	208°34.7'	N 24°59.7'
15	299°23.5'		47°20.6'	S 22°24.7'	35°37.1'	S 23°52.5'	299°43.2'	S 1°40.3'	336°24.9'	S 15°57.4'	223°38.2'	N 24°59.7'
16	314°26.0'		62°20.3'	S 22°25.1'	50°36.2'	S 23°52.7'	314°45.5'	S 1°40.3'	351°27.2'	S 15°57.3'	238°41.8'	N 24°59.7'
17	329°28.4'		77°20.1'	S 22°25.4'	65°35.2'	S 23°52.9'	329°47.9'	S 1°40.2'	6°29.5'	S 15°57.3'	253°45.3'	N 24°59.7'
18	344°30.9'		92°19.8'	S 22°25.7'	80°34.3'	S 23°53.2'	344°50.3'	S 1°40.2'	21°31.8'	S 15°57.2'	268°48.8'	N 24°59.7'
19	359°33.4'		107°19.5'	S 22°26.0'	95°33.3'	S 23°53.4'	359°52.7'	S 1°40.1'	36°34.0'	S 15°57.2'	283°52.4'	N 24°59.7'
20	14°35.8'		122°19.3'	S 22°26.3'	110°32.3'	S 23°53.6'	14°55.0'	S 1°40.1'	51°36.3'	S 15°57.1'	298°55.9'	N 24°59.7'
21	29°38.3'		137°19.0'	S 22°26.6'	125°31.4'	S 23°53.8'	29°57.4'	S 1°40.0'	66°38.6'	S 15°57.1'	313°59.4'	N 24°59.8'
22	44°40.8'		152°18.8'	S 22°26.9'	140°30.4'	S 23°54.1'	44°59.8'	S 1°40.0'	81°40.9'	S 15°57.0'	329°03.0'	N 24°59.8'
23	59°43.2'		167°18.5'	S 22°27.2'	155°29.5'	S 23°54.3'	60°02.2'	S 1°39.9'	96°43.2'	S 15°56.9'	344°06.5'	N 24°59.8'
			SD 16.2'	d -0.3'	v -1.0'	d -0.2'	v 2.4'	d 0.1'	v 2.3'	d 0.1'	v 3.5'	d 0.0'
Mer. pass.			11 h 50 m 36 s		12 h 37 m		19 h 1 m		16 h 34 m		0 h 9 m	

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Capella	-Rigel	-Mars	-Aldebaran	+Jupiter	+Fomalhaut	+Achernar	+Saturn
0	39°19.1'	N 13°08.3'	13.6'	13.1'	56.1'	50°10.1'	49°01.5'	40°51.0'	33°49.3'	37°34.5'	64°09.6'	70°44.0'	76°27.4'
1	53°51.7'	N 13°21.5'	13.5'	13.1'	56.0'	49°41.3'	48°40.1'	40°18.1'	33°18.4'	38°06.2'	64°39.9'	70°60.0'	76°59.1'
2	68°24.2'	N 13°34.5'	13.5'	13.0'	56.0'	49°12.7'	48°18.8'	39°45.2'	32°47.5'	38°38.0'	65°10.2'	71°16.0'	77°30.7'
3	82°56.7'	N 13°47.5'	13.5'	12.9'	56.0'	48°44.1'	47°57.7'	39°12.4'	32°16.7'	39°09.7'	65°40.6'	71°32.1'	78°02.4'
4	97°29.2'	N 14°00.4'	13.4'	12.8'	56.0'	48°15.6'	47°36.8'	38°39.6'	31°45.9'	39°41.4'	66°10.9'	71°48.3'	78°34.0'
5	112°01.6'	N 14°13.3'	13.4'	12.8'	56.0'	47°47.2'	47°16.0'	38°06.8'	31°15.1'	40°13.1'	66°41.2'	72°04.5'	79°05.5'
6	126°34.0'	N 14°26.0'	13.4'	12.7'	55.9'	47°18.8'	46°55.4'	37°34.1'	30°44.4'	40°44.7'	67°11.5'	72°20.8'	79°37.1'
7	141°06.4'	N 14°38.7'	13.3'	12.6'	55.9'	46°50.6'	46°35.0'	37°01.3'	30°13.8'	41°16.3'	67°41.8'	72°37.1'	80°08.7'
8	155°38.7'	N 14°51.4'	13.3'	12.6'	55.9'	46°22.3'	46°14.7'	36°28.6'	29°43.2'	41°48.0'	68°12.1'	72°53.5'	80°40.2'
9	170°11.0'	N 15°03.9'	13.2'	12.5'	55.9'	45°54.2'	45°54.7'	35°55.9'	29°12.7'	42°19.6'	68°42.4'	73°10.0'	81°11.7'
10	184°43.2'	N 15°16.4'	13.2'	12.4'	55.9'	45°26.2'	45°34.8'	35°23.2'	28°42.3'	42°51.1'	69°12.6'	73°26.5'	81°43.2'
11	199°15.4'	N 15°28.8'	13.2'	12.3'	55.8'	44°58.2'	45°15.1'	34°50.6'	28°11.9'	43°22.7'	69°42.9'	73°43.1'	82°14.6'
12	213°47.5'	N 15°41.1'	13.1'	12.3'	55.8'	44°30.3'	44°55.6'	34°17.9'	27°41.5'	43°54.2'	70°13.1'	73°59.7'	82°46.1'
13	228°19.7'	N 15°53.4'	13.1'	12.2'	55.8'	44°02.5'	44°36.3'	33°45.3'	27°11.3'	44°25.8'	70°43.4'	74°16.4'	83°17.5'
14	242°51.7'	N 16°05.6'	13.0'	12.1'	55.8'	43°34.8'	44°17.1'	33°12.7'	26°41.1'	44°57.3'	71°13.6'	74°33.1'	83°48.9'
15	257°23.8'	N 16°17.7'	13.0'	12.0'	55.8'	43°07.2'	43°58.2'	32°40.1'	26°11.0'	45°28.7'	71°43.8'	74°49.8'	84°20.3'
16	271°55.8'	N 16°29.7'	12.9'	11.9'	55.7'	42°39.6'	43°39.5'	32°07.6'	25°40.9'	46°00.2'	72°14.0'	75°06.7'	84°51.6'
17	286°27.7'	N 16°41.6'	12.9'	11.9'	55.7'	42°12.2'	42°21.0'	31°35.0'	25°10.9'	46°31.7'	72°44.2'	75°23.5'	85°23.0'
18	300°59.6'	N 16°53.5'	12.9'	11.8'	55.7'	41°44.8'	43°02.8'	31°02.5'	24°41.0'	47°03.1'	73°14.4'	75°40.4'	85°54.3'
19	315°31.4'	N 17°05.2'	12.8'	11.7'	55.7'	41°17.6'	42°44.7'	30°30.0'	24°11.2'	47°34.5'	73°44.6'	75°57.3'	86°25.6'
20	330°03.2'	N 17°16.9'	12.8'	11.6'	55.7'	40°50.4'	42°26.9'	29°57.5'	23°41.5'	48°05.9'	74°14.8'	76°14.3'	86°56.9'
21	344°35.0'	N 17°28.5'	12.7'	11.5'	55.7'	40°23.4'	42°09.2'	29°25.1'	23°11.9'	48°37.2'	74°44.9'	76°31.3'	87°28.1'
22	359°06.7'	N 17°40.0'	12.7'	11.4'	55.6'	39°56.5'	41°51.9'	28°52.6'	22°42.4'	49°08.6'	75°15.1'	76°48.4'	87°59.4'
23	13°38.4'	N 17°51.4'	12.6'	11.3'	55.6'	39°29.7'	41°34.7'	28°20.2'	22°13.0'	49°39.9'	75°45.2'	77°05.5'	88°30.6'
Mer. pass.			22 h 4 m SD 15.3'		phase 90%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°53.7'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.9'	Acrux	+0.8	173°02.3'	S 63°13.2'	Capella	+0.1	280°24.0'	N 46°01.2'
Altair	+0.8	62°01.9'	N 8°55.8'	Regulus	+1.4	207°36.2'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°19.2'	N 27°58.2'	Aldebaran	+0.9	290°41.3'	N 16°33.3'
Antares	+1.1	112°18.4'	S 26°28.9'	Procyon	+0.4	244°52.4'	N 5°10.0'	Polaris	+2.0	314°25.0'	N 89°21.8'
Rigel Kent	-0.0	139°43.3'	S 60°55.5'	Adhara	+1.5	255°06.9'	S 29°00.0'	Achernar	+0.5	335°21.1'	S 57°07.5'
Arcturus	-0.1	145°49.8'	N 19°03.8'	Sirius	-1.4	258°27.5'	S 16°44.7'				
Hadar	+0.6	148°39.0'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.3'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	74°45.7'	182°18.2'	S 22°27.5'	170°28.5'	S 23°54.5'	75°04.5'	S 1°39.9'	111°45.5'	S 15°56.9'	359°10.0'	N 24°59.8'	
1	89°48.1'	197°18.0'	S 22°27.8'	185°27.6'	S 23°54.7'	90°06.9'	S 1°39.8'	126°47.8'	S 15°56.8'	14°13.6'	N 24°59.8'	
2	104°50.6'	212°17.7'	S 22°28.1'	200°26.6'	S 23°54.9'	105°09.3'	S 1°39.8'	141°50.1'	S 15°56.8'	29°17.1'	N 24°59.8'	
3	119°53.1'	227°17.5'	S 22°28.4'	215°25.6'	S 23°55.2'	120°11.7'	S 1°39.7'	156°52.4'	S 15°56.7'	44°20.6'	N 24°59.8'	
4	134°55.5'	242°17.2'	S 22°28.7'	230°24.7'	S 23°55.4'	135°14.0'	S 1°39.7'	171°54.7'	S 15°56.6'	59°24.2'	N 24°59.8'	
5	149°58.0'	257°16.9'	S 22°29.0'	245°23.7'	S 23°55.6'	150°16.4'	S 1°39.6'	186°57.0'	S 15°56.6'	74°27.7'	N 24°59.8'	
6	165°00.5'	272°16.7'	S 22°29.3'	260°22.7'	S 23°55.8'	165°18.8'	S 1°39.6'	201°59.3'	S 15°56.5'	89°31.2'	N 24°59.8'	
7	180°02.9'	287°16.4'	S 22°29.6'	275°21.8'	S 23°56.0'	180°21.2'	S 1°39.5'	217°01.5'	S 15°56.5'	104°34.8'	N 24°59.8'	
8	195°05.4'	302°16.2'	S 22°29.9'	290°20.8'	S 23°56.2'	195°23.5'	S 1°39.5'	232°03.8'	S 15°56.4'	119°38.3'	N 24°59.8'	
9	210°07.9'	317°15.9'	S 22°30.2'	305°19.9'	S 23°56.4'	210°25.9'	S 1°39.4'	247°06.1'	S 15°56.4'	134°41.8'	N 24°59.8'	
10	225°10.3'	332°15.6'	S 22°30.5'	320°18.9'	S 23°56.6'	225°28.3'	S 1°39.3'	262°08.4'	S 15°56.3'	149°45.4'	N 24°59.8'	
11	240°12.8'	347°15.4'	S 22°30.8'	335°17.9'	S 23°56.8'	240°30.6'	S 1°39.3'	277°10.7'	S 15°56.2'	164°48.9'	N 24°59.8'	
12	255°15.3'	2°15.1'	S 22°31.1'	350°17.0'	S 23°57.1'	255°33.0'	S 1°39.2'	292°13.0'	S 15°56.2'	179°52.4'	N 24°59.8'	
13	270°17.7'	17°14.8'	S 22°31.4'	5°16.0'	S 23°57.3'	270°35.4'	S 1°39.2'	307°15.3'	S 15°56.1'	194°56.0'	N 24°59.8'	
14	285°20.2'	32°14.6'	S 22°31.7'	20°15.1'	S 23°57.5'	285°37.7'	S 1°39.1'	322°17.6'	S 15°56.1'	209°59.5'	N 24°59.8'	
15	300°22.6'	47°14.3'	S 22°32.0'	35°14.1'	S 23°57.7'	300°40.1'	S 1°39.1'	337°19.9'	S 15°56.0'	225°03.1'	N 24°59.8'	
16	315°25.1'	62°14.1'	S 22°32.3'	50°13.1'	S 23°57.9'	315°42.5'	S 1°39.0'	352°22.2'	S 15°56.0'	240°06.6'	N 24°59.8'	
17	330°27.6'	77°13.8'	S 22°32.6'	65°12.2'	S 23°58.1'	330°44.9'	S 1°39.0'	7°24.5'	S 15°55.9'	255°10.1'	N 24°59.8'	
18	345°30.0'	92°13.5'	S 22°32.9'	80°11.2'	S 23°58.3'	345°47.2'	S 1°38.9'	22°26.7'	S 15°55.8'	270°13.7'	N 24°59.8'	
19	0°32.5'	107°13.3'	S 22°33.1'	95°10.2'	S 23°58.5'	0°49.6'	S 1°38.9'	37°29.0'	S 15°55.8'	285°17.2'	N 24°59.8'	
20	15°35.0'	122°13.0'	S 22°33.4'	110°09.3'	S 23°58.7'	15°52.0'	S 1°38.8'	52°31.3'	S 15°55.7'	300°20.7'	N 24°59.8'	
21	30°37.4'	137°12.7'	S 22°33.7'	125°08.3'	S 23°58.8'	30°54.3'	S 1°38.8'	67°33.6'	S 15°55.7'	315°24.3'	N 24°59.8'	
22	45°39.9'	152°12.5'	S 22°34.0'	140°07.4'	S 23°59.0'	45°56.7'	S 1°38.7'	82°35.9'	S 15°55.6'	330°27.8'	N 24°59.8'	
23	60°42.4'	167°12.2'	S 22°34.3'	155°06.4'	S 23°59.2'	60°59.1'	S 1°38.6'	97°38.2'	S 15°55.5'	345°31.3'	N 24°59.8'	
		SD 16.2' d -0.3'		v -1.0' d -0.2'		v 2.4' d 0.1'		v 2.3' d 0.1'		v 3.5' d 0.0'		
Mer. pass.		11 h 51 m 1 s		12 h 39 m		18 h 57 m		16 h 30 m		0 h 3 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Rigel	-Capella	-Mars	-Aldebaran	+Jupiter	+Fomalhaut	+Achernar	+Saturn
0	28°10.0'	N 18°02.8'	12.6'	11.2'	55.6'	41°17.8'	39°02.9'	27°47.8'	21°43.6'	50°11.2'	76°15.3'	77°22.6'	89°01.8'
1	42°41.6'	N 18°14.0'	12.5'	11.2'	55.6'	41°01.1'	38°36.3'	27°15.4'	21°14.4'	50°42.5'	76°45.4'	77°39.8'	89°33.0'
2	57°13.1'	N 18°25.2'	12.5'	11.1'	55.6'	40°44.7'	38°09.9'	26°43.0'	20°45.4'	51°13.8'	77°15.5'	77°57.0'	90°04.2'
3	71°44.6'	N 18°36.3'	12.4'	11.0'	55.5'	40°28.6'	37°43.5'	26°10.7'	20°16.4'	51°45.1'	77°45.6'	78°14.2'	90°35.3'
4	86°16.0'	N 18°47.2'	12.4'	10.9'	55.5'	40°12.7'	37°17.3'	25°38.4'	19°47.6'	52°16.3'	78°15.7'	78°31.5'	91°06.5'
5	100°47.4'	N 18°58.1'	12.3'	10.8'	55.5'	39°57.0'	36°51.2'	25°06.1'	19°18.9'	52°47.5'	78°45.7'	78°48.8'	91°37.6'
6	115°18.7'	N 19°08.9'	12.3'	10.7'	55.5'	39°41.6'	36°25.3'	24°33.8'	18°50.4'	53°18.7'	79°15.7'	79°06.1'	92°08.7'
7	129°50.0'	N 19°19.6'	12.2'	10.6'	55.5'		35°59.4'	24°01.5'	18°22.1'	53°49.9'	79°45.8'	79°23.4'	92°39.7'
8	144°21.3'	N 19°30.2'	12.2'	10.5'	55.4'		35°33.8'	23°29.3'	17°53.9'	54°21.0'	80°15.8'	79°40.8'	93°10.8'
9	158°52.4'	N 19°40.7'	12.1'	10.4'	55.4'		35°08.2'	22°57.0'	17°25.9'	54°52.2'	80°45.8'	79°58.2'	93°41.8'
10	173°23.6'	N 19°51.1'	12.1'	10.3'	55.4'		34°42.8'	22°24.8'	16°58.2'	55°23.3'	81°15.8'	80°15.6'	94°12.8'
11	187°54.7'	N 20°01.4'	12.0'	10.2'	55.4'		34°17.6'	21°52.6'	16°30.6'	55°54.4'	81°45.7'	80°33.1'	94°43.8'
12	202°25.7'	N 20°11.6'	12.0'	10.1'	55.4'		33°52.6'	21°20.5'	16°03.3'	56°25.5'	82°15.7'	80°50.5'	95°14.8'
13	216°56.7'	N 20°21.8'	11.9'	10.0'	55.4'		33°27.7'	20°48.3'	15°36.2'	56°56.6'	82°45.6'	81°08.0'	95°45.8'
14	231°27.6'	N 20°31.8'	11.9'	9.9'	55.3'		33°02.9'	20°16.2'	15°09.4'	57°27.6'	83°15.5'	81°25.5'	96°16.7'
15	245°58.5'	N 20°41.7'	11.8'	9.8'	55.3'		32°38.4'	19°44.1'	14°42.9'	57°58.6'	83°45.5'	81°43.1'	96°47.6'
16	260°29.4'	N 20°51.5'	11.8'	9.7'	55.3'		32°14.0'	19°12.0'	14°16.7'	58°29.7'	84°15.3'	82°00.6'	97°18.5'
17	275°00.1'	N 21°01.2'	11.7'	9.6'	55.3'		31°49.9'	18°39.9'	13°50.9'	59°00.7'	84°45.2'	82°18.2'	97°49.4'
18	289°30.9'	N 21°10.8'	11.7'	9.5'	55.3'		31°25.9'	18°07.8'	13°25.4'	59°31.6'	85°15.1'	82°35.8'	98°20.3'
19	304°01.6'	N 21°20.3'	11.6'	9.4'	55.3'		31°02.1'	17°35.8'	13°00.4'	60°02.6'	85°44.9'	82°53.3'	98°51.1'
20	318°32.2'	N 21°29.7'	11.6'	9.3'	55.2'		30°38.6'	17°03.8'	12°35.8'	60°33.5'	86°14.8'	83°10.9'	99°22.0'
21	333°02.8'	N 21°39.0'	11.5'	9.2'	55.2'		30°15.2'	16°31.8'	12°11.8'	61°04.5'	86°44.6'	83°28.6'	99°52.8'
22	347°33.3'	N 21°48.2'	11.5'	9.1'	55.2'		29°52.1'	15°59.8'	11°48.3'	61°35.4'	87°14.4'	83°46.2'	100°23.6'
23	2°03.8'	N 21°57.2'	11.4'	9.0'	55.2'		29°29.3'	15°27.8'	11°25.3'	62°06.2'	87°44.2'	84°03.8'	100°54.3'
Mer. pass.		22 h 51 m SD 15.2'		phase 95%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°53.7'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.9'	Acrux	+0.8	173°02.3'	S 63°13.2'	Capella	+0.1	280°24.0'	N 46°01.2'
Altair	+0.8	62°01.9'	N 8°55.8'	Regulus	+1.4	207°36.2'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°19.2'	N 27°58.2'	Aldebaran	+0.9	290°41.3'	N 16°33.3'
Antares	+1.1	112°18.4'	S 26°28.9'	Procyon	+0.4	244°52.4'	N 5°10.0'	Polaris	+2.0	314°25.1'	N 89°21.8'
Rigil Kent	-0.0	139°43.3'	S 60°55.5'	Adhara	+1.5	255°06.9'	S 29°00.0'	Achernar	+0.5	335°21.1'	S 57°07.5'
Arcturus	-0.1	145°49.8'	N 19°03.8'	Sirius	-1.4	258°27.5'	S 16°44.8'				
Hadar	+0.6	148°39.0'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.3'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	75°44.8'	182°11.9'	S 22°34.6'	170°05.4'	S 23°59.4'	76°01.4'	S 1°38.6'	112°40.5'	S 15°55.5'	0°34.9'	N 24°59.8'
1	90°47.3'	197°11.7'	S 22°34.9'	185°04.5'	S 23°59.6'	91°03.8'	S 1°38.5'	127°42.8'	S 15°55.4'	15°38.4'	N 24°59.8'
2	105°49.8'	212°11.4'	S 22°35.2'	200°03.5'	S 23°59.8'	106°06.2'	S 1°38.5'	142°45.1'	S 15°55.4'	30°41.9'	N 24°59.8'
3	120°52.2'	227°11.1'	S 22°35.4'	215°02.5'	S 23°60.0'	121°08.5'	S 1°38.4'	157°47.3'	S 15°55.3'	45°45.5'	N 24°59.8'
4	135°54.7'	242°10.9'	S 22°35.7'	230°01.6'	S 24°00.2'	136°10.9'	S 1°38.4'	172°49.6'	S 15°55.3'	60°49.0'	N 24°59.8'
5	150°57.1'	257°10.6'	S 22°36.0'	245°00.6'	S 24°00.4'	151°13.3'	S 1°38.3'	187°51.9'	S 15°55.2'	75°52.5'	N 24°59.8'
6	165°59.6'	272°10.3'	S 22°36.3'	259°59.6'	S 24°00.5'	166°15.6'	S 1°38.3'	202°54.2'	S 15°55.1'	90°56.0'	N 24°59.8'
7	181°02.1'	287°10.1'	S 22°36.6'	274°58.7'	S 24°00.7'	181°18.0'	S 1°38.2'	217°56.5'	S 15°55.1'	105°59.6'	N 24°59.8'
8	196°04.5'	302°09.8'	S 22°36.8'	289°57.7'	S 24°00.9'	196°20.3'	S 1°38.1'	232°58.8'	S 15°55.0'	121°03.1'	N 24°59.8'
9	211°07.0'	317°09.5'	S 22°37.1'	304°56.7'	S 24°01.1'	211°22.7'	S 1°38.1'	248°01.1'	S 15°55.0'	136°06.6'	N 24°59.8'
10	226°09.5'	332°09.3'	S 22°37.4'	319°55.8'	S 24°01.2'	226°25.1'	S 1°38.0'	263°03.4'	S 15°54.9'	151°10.2'	N 24°59.8'
11	241°11.9'	347°09.0'	S 22°37.7'	334°54.8'	S 24°01.4'	241°27.4'	S 1°38.0'	278°05.6'	S 15°54.8'	166°13.7'	N 24°59.8'
12	256°14.4'	2°08.7'	S 22°38.0'	349°53.8'	S 24°01.6'	256°29.8'	S 1°37.9'	293°07.9'	S 15°54.8'	181°17.2'	N 24°59.8'
13	271°16.9'	17°08.5'	S 22°38.2'	4°52.9'	S 24°01.8'	271°32.2'	S 1°37.9'	308°10.2'	S 15°54.7'	196°20.8'	N 24°59.8'
14	286°19.3'	32°08.2'	S 22°38.5'	19°51.9'	S 24°01.9'	286°34.5'	S 1°37.8'	323°12.5'	S 15°54.7'	211°24.3'	N 24°59.8'
15	301°21.8'	47°07.9'	S 22°38.8'	34°50.9'	S 24°02.1'	301°36.9'	S 1°37.7'	338°14.8'	S 15°54.6'	226°27.8'	N 24°59.8'
16	316°24.3'	62°07.6'	S 22°39.1'	49°50.0'	S 24°02.3'	316°39.2'	S 1°37.7'	353°17.1'	S 15°54.5'	241°31.4'	N 24°59.8'
17	331°26.7'	77°07.4'	S 22°39.3'	64°49.0'	S 24°02.5'	331°41.6'	S 1°37.6'	8°19.4'	S 15°54.5'	256°34.9'	N 24°59.8'
18	346°29.2'	92°07.1'	S 22°39.6'	79°48.0'	S 24°02.6'	346°44.0'	S 1°37.6'	23°21.7'	S 15°54.4'	271°38.4'	N 24°59.8'
19	1°31.6'	107°06.8'	S 22°39.9'	94°47.1'	S 24°02.8'	1°46.3'	S 1°37.5'	38°23.9'	S 15°54.4'	286°41.9'	N 24°59.7'
20	16°34.1'	122°06.6'	S 22°40.1'	109°46.1'	S 24°03.0'	16°48.7'	S 1°37.5'	53°26.2'	S 15°54.3'	301°45.5'	N 24°59.7'
21	31°36.6'	137°06.3'	S 22°40.4'	124°45.1'	S 24°03.1'	31°51.0'	S 1°37.4'	68°28.5'	S 15°54.2'	316°49.0'	N 24°59.7'
22	46°39.0'	152°06.0'	S 22°40.7'	139°44.2'	S 24°03.3'	46°53.4'	S 1°37.3'	83°30.8'	S 15°54.2'	331°52.5'	N 24°59.7'
23	61°41.5'	167°05.8'	S 22°41.0'	154°43.2'	S 24°03.4'	61°55.8'	S 1°37.3'	98°33.1'	S 15°54.1'	346°56.1'	N 24°59.7'
		SD 16.2'	d -0.3'	v -1.0'	d -0.2'	v 2.4'	d 0.1'	v 2.3'	d 0.1'	v 3.5'	d -0.0'
Mer. pass.		11 h 51 m 26 s		12 h 40 m		18 h 53 m		16 h 27 m		23 h 52 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Betelgeuse	-Capella	-Mars	-Aldebaran	+Jupiter	+Achernar	+Fomalhaut	+Saturn
0	16°34.3'	N 22°06.2'	11.4'	8.9'	55.2'	32°21.1'	29°06.6'	14°55.9'	62°37.1'	11°03.1'	84°21.5'	88°13.9'	101°25.1'
1	31°04.7'	N 22°15.0'	11.3'	8.7'	55.1'	31°57.2'	28°44.2'	14°24.0'	63°08.0'	63°38.8'	84°39.1'	88°43.7'	101°55.8'
2	45°35.0'	N 22°23.8'	11.3'	8.6'	55.1'	31°33.4'	28°22.1'	13°52.1'	63°38.8'	64°09.6'	84°56.8'	89°13.4'	102°26.6'
3	60°05.3'	N 22°32.4'	11.2'	8.5'	55.1'	31°09.8'	28°00.2'	13°20.2'	64°09.6'	64°40.4'	85°14.5'	89°43.1'	102°57.3'
4	74°35.5'	N 22°40.9'	11.2'	8.4'	55.1'	30°46.5'	27°38.7'	12°48.3'	64°40.4'	65°11.2'	85°32.1'	90°12.8'	103°27.9'
5	89°05.7'	N 22°49.3'	11.1'	8.3'	55.1'	30°23.3'	27°17.4'	12°16.5'	65°11.2'	65°11.2'	85°49.8'	90°42.5'	103°58.6'
6	103°35.9'	N 22°57.6'	11.1'	8.2'	55.1'	30°00.4'	26°56.4'	11°44.6'	65°41.9'	66°12.7'	86°07.5'	91°12.2'	104°29.3'
7	118°06.0'	N 23°05.8'	11.1'	8.1'	55.0'	29°37.7'	26°35.7'	11°12.8'	66°12.7'	66°43.4'	86°25.2'	91°41.8'	104°59.9'
8	132°36.0'	N 23°13.9'	11.0'	7.9'	55.0'	29°15.3'	26°15.3'	10°41.0'	66°43.4'	67°14.1'	86°42.9'	92°11.4'	105°30.5'
9	147°06.0'	N 23°21.8'	11.0'	7.8'	55.0'	28°53.1'	25°55.3'	10°09.3'	67°14.1'	67°44.8'	87°00.6'	92°41.1'	106°01.1'
10	161°36.0'	N 23°29.7'	10.9'	7.7'	55.0'	28°31.1'	25°35.6'	9°37.5'	67°44.8'	68°15.5'	87°18.2'	93°10.7'	106°31.7'
11	176°05.9'	N 23°37.4'	10.9'	7.6'	55.0'	28°09.5'	25°16.3'	9°05.8'	68°15.5'	68°15.5'	87°35.9'	93°40.2'	107°02.2'
12	190°35.8'	N 23°45.0'	10.8'	7.5'	55.0'	27°48.1'	24°57.3'	8°34.1'	68°46.1'	69°16.8'	87°53.6'	94°09.8'	107°32.8'
13	205°05.6'	N 23°52.4'	10.8'	7.4'	55.0'	27°26.9'	24°38.7'	8°02.5'	69°16.8'	69°47.4'	88°11.3'	94°39.3'	108°03.3'
14	219°35.4'	N 23°59.8'	10.7'	7.2'	54.9'	27°06.1'	24°20.6'	7°30.8'	69°47.4'	70°18.0'	88°29.0'	95°08.8'	108°33.8'
15	234°05.1'	N 24°07.0'	10.7'	7.1'	54.9'	26°45.6'	24°02.8'	6°59.2'	70°18.0'	70°48.6'	88°46.6'	95°38.4'	109°04.3'
16	248°34.8'	N 24°14.2'	10.7'	7.0'	54.9'	26°25.4'	23°45.5'	6°27.6'	70°48.6'	71°19.2'	89°04.3'	96°07.8'	109°34.8'
17	263°04.5'	N 24°21.2'	10.6'	6.9'	54.9'	26°05.5'	23°28.6'	5°56.1'	71°19.2'	71°19.2'	89°22.0'	96°37.3'	110°05.2'
18	277°34.1'	N 24°28.0'	10.6'	6.8'	54.9'	25°46.0'	23°12.1'	5°24.6'	71°49.7'	72°20.2'	89°39.6'	97°06.7'	110°35.6'
19	292°03.7'	N 24°34.8'	10.5'	6.6'	54.9'	25°26.8'	22°56.1'	4°53.1'	72°20.2'	72°50.8'	89°57.2'	97°36.2'	111°06.1'
20	306°33.2'	N 24°41.4'	10.5'	6.5'	54.8'	25°08.0'		4°21.7'	72°50.8'	73°21.3'	90°14.9'	98°05.6'	111°36.5'
21	321°02.7'	N 24°47.9'	10.5'	6.4'	54.8'	24°49.6'		3°50.4'	73°21.3'	73°51.7'	90°32.5'	98°35.0'	112°06.8'
22	335°32.1'	N 24°54.3'	10.4'	6.3'	54.8'	24°31.6'		3°19.2'	73°51.7'	74°22.2'	90°50.1'	99°04.3'	112°37.2'
23	350°01.6'	N 25°00.6'	10.4'	6.1'	54.8'	24°13.9'		2°48.1'	74°22.2'		91°07.7'	99°33.7'	113°07.5'
Mer. pass.		23 h 41 m SD 15.0'		phase 99%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec		
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.4'	S 11°16.7'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'		
Deneb	+1.2	49°27.3'	N 45°21.9'	Acrux	+0.8	173°02.3'	S 63°13.2'	Capella	+0.1	280°24.0'	N 46°01.2'		
Altair	+0.8	62°01.9'	N 8°55.8'	Regulus	+1.4	207°36.2'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'		
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°19.2'	N 27°58.2'	Aldebaran	+0.9	290°41.3'	N 16°33.3'		
Antares	+1.1	112°18.4'	S 26°28.9'	Procyon	+0.4	244°52.4'	N 5°10.0'	Polaris	+2.0	314°25.2'	N 89°21.8'		
Rigil Kent	-0.0	139°43.3'	S 60°55.5'	Adhara	+1.5	255°06.9'	S 29°00.0'	Achernar	+0.5	335°21.1'	S 57°07.5'		
Arcturus	-0.1	145°49.8'	N 19°03.8'	Sirius	-1.4	258°27.5'	S 16°44.8'						
Hadar	+0.6	148°39.0'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.3'						

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	76°44.0'	182°05.5'	S 22°41.2'	169°42.2'	S 24°03.6'	76°58.1'	S 1°37.2'	113°35.4'	S 15°54.1'	1°59.6'	N 24°59.7'	
1	91°46.4'	197°05.2'	S 22°41.5'	184°41.3'	S 24°03.8'	92°00.5'	S 1°37.2'	128°37.7'	S 15°54.0'	17°03.1'	N 24°59.7'	
2	106°48.9'	212°04.9'	S 22°41.8'	199°40.3'	S 24°03.9'	107°02.8'	S 1°37.1'	143°39.9'	S 15°53.9'	32°06.7'	N 24°59.7'	
3	121°51.4'	227°04.7'	S 22°42.0'	214°39.3'	S 24°04.1'	122°05.2'	S 1°37.1'	158°42.2'	S 15°53.9'	47°10.2'	N 24°59.7'	
4	136°53.8'	242°04.4'	S 22°42.3'	229°38.4'	S 24°04.2'	137°07.6'	S 1°37.0'	173°44.5'	S 15°53.8'	62°13.7'	N 24°59.7'	
5	151°56.3'	257°04.1'	S 22°42.5'	244°37.4'	S 24°04.4'	152°09.9'	S 1°36.9'	188°46.8'	S 15°53.8'	77°17.2'	N 24°59.7'	
6	166°58.7'	272°03.9'	S 22°42.8'	259°36.4'	S 24°04.5'	167°12.3'	S 1°36.9'	203°49.1'	S 15°53.7'	92°20.8'	N 24°59.7'	
7	182°01.2'	287°03.6'	S 22°43.1'	274°35.5'	S 24°04.7'	182°14.6'	S 1°36.8'	218°51.4'	S 15°53.6'	107°24.3'	N 24°59.7'	
8	197°03.7'	302°03.3'	S 22°43.3'	289°34.5'	S 24°04.8'	197°17.0'	S 1°36.8'	233°53.6'	S 15°53.6'	122°27.8'	N 24°59.7'	
9	212°06.1'	317°03.0'	S 22°43.6'	304°33.5'	S 24°05.0'	212°19.3'	S 1°36.7'	248°55.9'	S 15°53.5'	137°31.3'	N 24°59.6'	
10	227°08.6'	332°02.8'	S 22°43.9'	319°32.6'	S 24°05.1'	227°21.7'	S 1°36.6'	263°58.2'	S 15°53.5'	152°34.9'	N 24°59.6'	
11	242°11.1'	347°02.5'	S 22°44.1'	334°31.6'	S 24°05.3'	242°24.0'	S 1°36.6'	279°00.5'	S 15°53.4'	167°38.4'	N 24°59.6'	
12	257°13.5'	2°02.2'	S 22°44.4'	349°30.6'	S 24°05.4'	257°26.4'	S 1°36.5'	294°02.8'	S 15°53.3'	182°41.9'	N 24°59.6'	
13	272°16.0'	17°01.9'	S 22°44.6'	4°29.6'	S 24°05.6'	272°28.8'	S 1°36.5'	309°05.1'	S 15°53.3'	197°45.4'	N 24°59.6'	
14	287°18.5'	32°01.7'	S 22°44.9'	19°28.7'	S 24°05.7'	287°31.1'	S 1°36.4'	324°07.3'	S 15°53.2'	212°49.0'	N 24°59.6'	
15	302°20.9'	47°01.4'	S 22°45.1'	34°27.7'	S 24°05.8'	302°33.5'	S 1°36.3'	339°09.6'	S 15°53.2'	227°52.5'	N 24°59.6'	
16	317°23.4'	62°01.1'	S 22°45.4'	49°26.7'	S 24°06.0'	317°35.8'	S 1°36.3'	354°11.9'	S 15°53.1'	242°56.0'	N 24°59.6'	
17	332°25.9'	77°00.9'	S 22°45.7'	64°25.8'	S 24°06.1'	332°38.2'	S 1°36.2'	9°14.2'	S 15°53.0'	257°59.5'	N 24°59.6'	
18	347°28.3'	92°00.6'	S 22°45.9'	79°24.8'	S 24°06.2'	347°40.5'	S 1°36.2'	24°16.5'	S 15°53.0'	273°03.1'	N 24°59.6'	
19	2°30.8'	107°00.3'	S 22°46.2'	94°23.8'	S 24°06.4'	2°42.9'	S 1°36.1'	39°18.8'	S 15°52.9'	288°06.6'	N 24°59.6'	
20	17°33.2'	122°00.0'	S 22°46.4'	109°22.9'	S 24°06.5'	17°45.2'	S 1°36.0'	54°21.0'	S 15°52.9'	303°10.1'	N 24°59.5'	
21	32°35.7'	136°59.8'	S 22°46.7'	124°21.9'	S 24°06.6'	32°47.6'	S 1°36.0'	69°23.3'	S 15°52.8'	318°13.6'	N 24°59.5'	
22	47°38.2'	151°59.5'	S 22°46.9'	139°20.9'	S 24°06.8'	47°49.9'	S 1°35.9'	84°25.6'	S 15°52.7'	333°17.2'	N 24°59.5'	
23	62°40.6'	166°59.2'	S 22°47.2'	154°20.0'	S 24°06.9'	62°52.3'	S 1°35.8'	99°27.9'	S 15°52.7'	348°20.7'	N 24°59.5'	
		SD 16.2' d -0.3'		v -1.0' d -0.1'		v 2.4' d 0.1'		v 2.3' d 0.1'		v 3.5' d -0.0'		
Mer. pass.		11 h 51 m 53 s		12 h 42 m		18 h 49 m		16 h 23 m		23 h 46 m		

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Procyon	-Pollux	-Betelgeuse	-Mars	+Aldebaran	+Jupiter	+Achernar	+Fomalhaut
0	4°30.9'	N 25°06.7'	10.3'	6.0'	54.8'	45°40.5'	39°39.9'	23°56.7'	2°17.3'		74°52.7'	91°25.3'	100°03.0'
1	19°00.3'	N 25°12.7'	10.3'	5.9'	54.8'	45°14.1'	39°09.3'	23°39.9'			75°23.1'	91°42.8'	100°32.3'
2	33°29.6'	N 25°18.6'	10.3'	5.8'	54.8'	44°47.7'	38°38.8'	23°23.6'			75°53.5'	92°00.4'	101°01.6'
3	47°58.8'	N 25°24.3'	10.2'	5.6'	54.7'	44°21.4'	38°08.3'	23°07.7'			76°23.9'	92°17.9'	101°30.9'
4	62°28.1'	N 25°30.0'	10.2'	5.5'	54.7'	43°55.3'	37°37.8'				76°54.3'	92°35.5'	102°00.2'
5	76°57.3'	N 25°35.5'	10.2'	5.4'	54.7'	43°29.2'	37°07.3'				77°24.7'	92°53.0'	102°29.4'
6	91°26.4'	N 25°40.8'	10.1'	5.2'	54.7'	43°03.1'	36°36.9'			10°48.7'	77°55.0'	93°10.4'	102°58.6'
7	105°55.6'	N 25°46.1'	10.1'	5.1'	54.7'	42°37.2'	36°06.4'			11°10.1'	78°25.4'	93°27.9'	103°27.8'
8	120°24.7'	N 25°51.2'	10.1'	5.0'	54.7'	42°11.4'	35°36.0'		2°02.6'	11°32.2'	78°55.7'	93°45.3'	103°57.0'
9	134°53.7'	N 25°56.1'	10.0'	4.8'	54.7'	41°45.7'	35°05.6'		2°33.1'	11°54.8'	79°26.0'	94°02.8'	104°26.1'
10	149°22.8'	N 26°01.0'	10.0'	4.7'	54.6'	41°20.1'	34°35.2'		3°03.9'	12°18.0'	79°56.3'	94°20.2'	104°55.2'
11	163°51.8'	N 26°05.7'	10.0'	4.6'	54.6'	40°54.6'	34°04.9'		3°34.9'	12°41.7'	80°26.5'	94°37.5'	105°24.3'
12	178°20.8'	N 26°10.3'	10.0'	4.5'	54.6'	40°29.1'	33°34.5'		4°05.9'	13°05.9'	80°56.8'	94°54.9'	105°53.4'
13	192°49.7'	N 26°14.8'	9.9'	4.3'	54.6'	40°03.8'	33°04.2'		4°37.0'	13°30.4'	81°27.0'	95°12.2'	106°22.5'
14	207°18.7'	N 26°19.1'	9.9'	4.2'	54.6'	39°38.6'	32°33.8'		5°08.1'	13°55.3'	81°57.3'	95°29.5'	106°51.5'
15	221°47.6'	N 26°23.3'	9.9'	4.1'	54.6'	39°13.6'	32°03.5'		5°39.3'	14°20.6'	82°27.5'	95°46.8'	107°20.5'
16	236°16.5'	N 26°27.3'	9.9'	3.9'	54.6'	38°48.6'	31°33.3'		6°10.4'	14°46.1'	82°57.7'	96°04.1'	107°49.5'
17	250°45.3'	N 26°31.2'	9.8'	3.8'	54.5'	38°23.8'	31°03.0'		6°41.6'	15°11.9'	83°27.8'	96°21.3'	108°18.5'
18	265°14.2'	N 26°35.0'	9.8'	3.7'	54.5'	37°59.1'	30°32.7'		7°12.8'	15°38.0'	83°58.0'	96°38.5'	108°47.5'
19	279°43.0'	N 26°38.7'	9.8'	3.5'	54.5'	37°34.5'	30°02.5'		7°43.9'	16°04.3'	84°28.1'	96°55.6'	109°16.4'
20	294°11.8'	N 26°42.2'	9.8'	3.4'	54.5'	37°10.0'	29°32.3'		8°15.1'	16°30.8'	84°58.3'	97°12.8'	109°45.3'
21	308°40.6'	N 26°45.6'	9.8'	3.3'	54.5'	36°45.7'	29°02.1'		8°46.2'	16°57.5'	85°28.4'	97°29.9'	110°14.2'
22	323°09.4'	N 26°48.9'	9.8'	3.1'	54.5'	36°21.5'	28°31.9'		9°17.4'	17°24.3'	85°58.5'	97°46.9'	110°43.0'
23	337°38.1'	N 26°52.0'	9.7'	3.0'	54.5'	35°57.5'	28°01.7'		9°48.5'	17°51.4'	86°28.6'	98°04.0'	111°11.9'
Mer. pass.		0 h 33 m SD 14.9'		phase 100%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.3'	S 11°16.7'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.9'	Acrux	+0.8	173°02.3'	S 63°13.2'	Capella	+0.1	280°24.0'	N 46°01.2'
Altair	+0.8	62°01.9'	N 8°55.8'	Regulus	+1.4	207°36.2'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°19.2'	N 27°58.2'	Aldebaran	+0.9	290°41.3'	N 16°33.3'
Antares	+1.1	112°18.4'	S 26°28.9'	Procyon	+0.4	244°52.4'	N 5°10.0'	Polaris	+2.0	314°25.3'	N 89°21.8'
Rigil Kent	-0.0	139°43.3'	S 60°55.5'	Adhara	+1.5	255°06.9'	S 29°00.0'	Achernar	+0.5	335°21.1'	S 57°07.5'
Arcturus	-0.1	145°49.8'	N 19°03.8'	Sirius	-1.4	258°27.5'	S 16°44.8'				
Hadar	+0.6	148°39.0'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.3'				

Friday 09 December 2022 UT1

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	77°43.1'	181°58.9'	S 22°47.4'	169°19.0'	S 24°07.0'	77°54.6'	S 1°35.8'	114°30.2'	S 15°52.6'	3°24.2'	N 24°59.5'	
1	92°45.6'	196°58.6'	S 22°47.7'	184°18.0'	S 24°07.2'	92°57.0'	S 1°35.7'	129°32.5'	S 15°52.6'	18°27.7'	N 24°59.5'	
2	107°48.0'	211°58.4'	S 22°47.9'	199°17.0'	S 24°07.3'	107°59.3'	S 1°35.7'	144°34.7'	S 15°52.5'	33°31.3'	N 24°59.5'	
3	122°50.5'	226°58.1'	S 22°48.2'	214°16.1'	S 24°07.4'	123°01.7'	S 1°35.6'	159°37.0'	S 15°52.4'	48°34.8'	N 24°59.5'	
4	137°53.0'	241°57.8'	S 22°48.4'	229°15.1'	S 24°07.5'	138°04.0'	S 1°35.5'	174°39.3'	S 15°52.4'	63°38.3'	N 24°59.4'	
5	152°55.4'	256°57.5'	S 22°48.6'	244°14.1'	S 24°07.7'	153°06.4'	S 1°35.5'	189°41.6'	S 15°52.3'	78°41.8'	N 24°59.4'	
6	167°57.9'	271°57.3'	S 22°48.9'	259°13.2'	S 24°07.8'	168°08.7'	S 1°35.4'	204°43.9'	S 15°52.3'	93°45.3'	N 24°59.4'	
7	183°00.4'	286°57.0'	S 22°49.1'	274°12.2'	S 24°07.9'	183°11.1'	S 1°35.3'	219°46.1'	S 15°52.2'	108°48.9'	N 24°59.4'	
8	198°02.8'	301°56.7'	S 22°49.4'	289°11.2'	S 24°08.0'	198°13.4'	S 1°35.3'	234°48.4'	S 15°52.1'	123°52.4'	N 24°59.4'	
9	213°05.3'	316°56.4'	S 22°49.6'	304°10.2'	S 24°08.1'	213°15.8'	S 1°35.2'	249°50.7'	S 15°52.1'	138°55.9'	N 24°59.4'	
10	228°07.7'	331°56.2'	S 22°49.9'	319°09.3'	S 24°08.2'	228°18.1'	S 1°35.2'	264°53.0'	S 15°52.0'	153°59.4'	N 24°59.4'	
11	243°10.2'	346°55.9'	S 22°50.1'	334°08.3'	S 24°08.4'	243°20.5'	S 1°35.1'	279°55.3'	S 15°51.9'	169°02.9'	N 24°59.4'	
12	258°12.7'	1°55.6'	S 22°50.3'	349°07.3'	S 24°08.5'	258°22.8'	S 1°35.0'	294°57.6'	S 15°51.9'	184°06.5'	N 24°59.3'	
13	273°15.1'	16°55.3'	S 22°50.6'	4°06.4'	S 24°08.6'	273°25.2'	S 1°35.0'	309°59.8'	S 15°51.8'	199°10.0'	N 24°59.3'	
14	288°17.6'	31°55.0'	S 22°50.8'	19°05.4'	S 24°08.7'	288°27.5'	S 1°34.9'	325°02.1'	S 15°51.8'	214°13.5'	N 24°59.3'	
15	303°20.1'	46°54.8'	S 22°51.1'	34°04.4'	S 24°08.8'	303°29.9'	S 1°34.8'	340°04.4'	S 15°51.7'	229°17.0'	N 24°59.3'	
16	318°22.5'	61°54.5'	S 22°51.3'	49°03.4'	S 24°08.9'	318°32.2'	S 1°34.8'	355°06.7'	S 15°51.6'	244°20.5'	N 24°59.3'	
17	333°25.0'	76°54.2'	S 22°51.5'	64°02.5'	S 24°09.0'	333°34.6'	S 1°34.7'	10°09.0'	S 15°51.6'	259°24.0'	N 24°59.3'	
18	348°27.5'	91°53.9'	S 22°51.8'	79°01.5'	S 24°09.1'	348°36.9'	S 1°34.7'	25°11.2'	S 15°51.5'	274°27.6'	N 24°59.3'	
19	3°29.9'	106°53.6'	S 22°52.0'	94°00.5'	S 24°09.2'	3°39.3'	S 1°34.6'	40°13.5'	S 15°51.5'	289°31.1'	N 24°59.2'	
20	18°32.4'	121°53.4'	S 22°52.2'	108°59.5'	S 24°09.3'	18°41.6'	S 1°34.5'	55°15.8'	S 15°51.4'	304°34.6'	N 24°59.2'	
21	33°34.9'	136°53.1'	S 22°52.5'	123°58.6'	S 24°09.4'	33°43.9'	S 1°34.5'	70°18.1'	S 15°51.3'	319°38.1'	N 24°59.2'	
22	48°37.3'	151°52.8'	S 22°52.7'	138°57.6'	S 24°09.5'	48°46.3'	S 1°34.4'	85°20.4'	S 15°51.3'	334°41.6'	N 24°59.2'	
23	63°39.8'	166°52.5'	S 22°52.9'	153°56.6'	S 24°09.6'	63°48.6'	S 1°34.3'	100°22.6'	S 15°51.2'	349°45.1'	N 24°59.2'	
		SD 16.2'	d -0.2'	v -1.0'	d -0.1'	v 2.3'	d 0.1'	v 2.3'	d 0.1'	v 3.5'	d -0.0'	
Mer. pass.		11 h 52 m 19 s		12 h 44 m		18 h 45 m		16 h 20 m		23 h 41 m		

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Arcturus	-Regulus	-Procyon	-Pollux	+Mars	+Aldebaran	+Capella	+Rigel
0	352°06.9'	N 26°55.0'	9.7'	2.8'	54.5'	112°10.9'	64°05.7'	35°33.6'	27°31.6'	10°19.6'	18°18.5'		
1	6°35.6'	N 26°57.8'	9.7'	2.7'	54.4'	111°45.2'	63°35.6'	35°09.9'	27°01.4'	10°50.7'	18°45.8'		
2	21°04.3'	N 27°00.5'	9.7'	2.6'	54.4'	111°19.4'	63°05.6'	34°46.3'	26°31.3'	11°21.8'	19°13.3'		
3	35°33.0'	N 27°03.1'	9.7'	2.4'	54.4'	110°53.6'	62°35.5'	34°22.9'	26°01.2'	11°52.9'	19°40.8'		
4	50°01.7'	N 27°05.5'	9.7'	2.3'	54.4'	110°27.8'	62°05.4'	33°59.6'	25°31.1'	12°24.0'	20°08.5'		
5	64°30.4'	N 27°07.8'	9.7'	2.2'	54.4'	110°02.0'	61°35.4'	33°36.5'	25°01.1'	12°55.1'	20°36.3'		
6	78°59.1'	N 27°10.0'	9.7'	2.0'	54.4'	109°36.1'	61°05.4'	33°13.6'	24°31.0'	13°26.1'	21°04.1'		
7	93°27.8'	N 27°12.0'	9.7'	1.9'	54.4'	109°10.3'	60°35.4'	32°50.9'	24°01.0'	13°57.2'	21°32.1'		
8	107°56.5'	N 27°13.9'	9.7'	1.8'	54.4'	108°44.4'	60°05.4'	32°28.4'	23°31.0'	14°28.2'	22°00.1'		
9	122°25.2'	N 27°15.7'	9.7'	1.6'	54.4'	108°18.5'	59°35.4'	32°06.0'	23°01.0'	14°59.2'	22°28.2'		
10	136°53.8'	N 27°17.3'	9.7'	1.5'	54.3'	107°52.6'	59°05.5'	31°43.9'	22°31.0'	15°30.2'	22°56.3'		
11	151°22.5'	N 27°18.8'	9.7'	1.4'	54.3'	107°26.7'	58°35.6'	31°22.0'	22°01.0'	16°01.2'	23°24.6'		
12	165°51.2'	N 27°20.2'	9.7'	1.2'	54.3'	107°00.8'	58°05.6'	31°00.2'	21°31.1'	16°32.2'	23°52.8'		
13	180°19.8'	N 27°21.4'	9.7'	1.1'	54.3'	106°34.9'	57°35.7'	30°38.7'	21°01.2'	17°03.2'	24°21.2'		
14	194°48.5'	N 27°22.5'	9.7'	0.9'	54.3'	106°09.0'	57°05.8'	30°17.5'	20°31.2'	17°34.1'	24°49.6'		
15	209°17.2'	N 27°23.4'	9.7'	0.8'	54.3'	105°43.1'	56°35.9'	29°56.4'	20°01.4'	18°05.0'	25°18.0'		
16	223°45.9'	N 27°24.2'	9.7'	0.7'	54.3'	105°17.1'	56°06.1'	29°35.6'	19°31.5'	18°36.0'	25°46.5'		
17	238°14.6'	N 27°24.9'	9.7'	0.5'	54.3'	104°51.2'	55°36.2'	29°15.1'	19°01.6'	19°06.9'	26°15.0'		
18	252°43.3'	N 27°25.4'	9.7'	0.4'	54.3'	104°25.2'	55°06.4'	28°54.8'	18°31.8'	19°37.8'	26°43.5'		
19	267°12.0'	N 27°25.8'	9.7'	0.3'	54.2'	103°59.3'	54°36.5'	28°34.8'	18°02.0'	20°08.7'	27°12.1'	22°48.3'	
20	281°40.7'	N 27°26.1'	9.7'	0.1'	54.2'	103°33.3'	54°06.7'	28°15.0'	17°32.2'	20°39.6'	27°40.7'	23°03.6'	
21	296°09.4'	N 27°26.2'	9.7'	-0.0'	54.2'	103°07.3'	53°36.9'	27°55.6'	17°02.4'	21°10.4'	28°09.4'	23°19.4'	
22	310°38.2'	N 27°26.2'	9.8'	-0.1'	54.2'	102°41.4'	53°07.2'	27°36.4'	16°32.7'	21°41.3'	28°38.1'	23°35.7'	40°06.9'
23	325°06.9'	N 27°26.1'	9.8'	-0.3'	54.2'	102°15.4'	52°37.4'	27°17.6'	16°03.0'	22°12.1'	29°06.8'	23°52.3'	40°21.9'
Mer. pass.		0 h 33 m SD 14.9'	phase 99%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.3'	S 11°16.7'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.9'	Acrux	+0.8	173°02.3'	S 63°13.2'	Capella	+0.1	280°24.0'	N 46°01.2'
Altair	+0.8	62°01.9'	N 8°55.8'	Regulus	+1.4	207°36.2'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°19.1'	N 27°58.2'	Aldebaran	+0.9	290°41.3'	N 16°33.3'
Antares	+1.1	112°18.4'	S 26°28.9'	Procyon	+0.4	244°52.4'	N 5°10.0'	Polaris	+2.0	314°25.4'	N 89°21.8'
Rigil Kent	-0.0	139°43.2'	S 60°55.5'	Adhara	+1.5	255°06.9'	S 29°00.1'	Achernar	+0.5	335°21.1'	S 57°07.5'
Arcturus	-0.1	145°49.8'	N 19°03.8'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.9'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.3'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	78°42.2'	S 22°53.2'	181°52.2'	S 22°53.2'	168°55.7'	S 24°09.7'	78°51.0'	S 1°34.3'	115°24.9'	S 15°51.1'	4°48.6'	N 24°59.2'
1	93°44.7'	S 22°53.4'	196°52.0'	S 22°53.4'	183°54.7'	S 24°09.8'	93°53.3'	S 1°34.2'	130°27.2'	S 15°51.1'	19°52.2'	N 24°59.1'
2	108°47.2'	S 22°53.6'	211°51.7'	S 22°53.6'	198°53.7'	S 24°09.9'	108°55.7'	S 1°34.1'	145°29.5'	S 15°51.0'	34°55.7'	N 24°59.1'
3	123°49.6'	S 22°53.8'	226°51.4'	S 22°53.8'	213°52.7'	S 24°10.0'	123°58.0'	S 1°34.1'	160°31.7'	S 15°51.0'	49°59.2'	N 24°59.1'
4	138°52.1'	S 22°54.1'	241°51.1'	S 22°54.1'	228°51.8'	S 24°10.1'	139°00.3'	S 1°34.0'	175°34.0'	S 15°50.9'	65°02.7'	N 24°59.1'
5	153°54.6'	S 22°54.3'	256°50.8'	S 22°54.3'	243°50.8'	S 24°10.2'	154°02.7'	S 1°33.9'	190°36.3'	S 15°50.8'	80°06.2'	N 24°59.1'
6	168°57.0'	S 22°54.5'	271°50.6'	S 22°54.5'	258°49.8'	S 24°10.3'	169°05.0'	S 1°33.9'	205°38.6'	S 15°50.8'	95°09.7'	N 24°59.0'
7	183°59.5'	S 22°54.7'	286°50.3'	S 22°54.7'	273°48.8'	S 24°10.4'	184°07.4'	S 1°33.8'	220°40.9'	S 15°50.7'	110°13.2'	N 24°59.0'
8	199°02.0'	S 22°55.0'	301°50.0'	S 22°55.0'	288°47.9'	S 24°10.5'	199°09.7'	S 1°33.7'	235°43.1'	S 15°50.7'	125°16.7'	N 24°59.0'
9	214°04.4'	S 22°55.2'	316°49.7'	S 22°55.2'	303°46.9'	S 24°10.5'	214°12.1'	S 1°33.7'	250°45.4'	S 15°50.6'	140°20.2'	N 24°59.0'
10	229°06.9'	S 22°55.4'	331°49.4'	S 22°55.4'	318°45.9'	S 24°10.6'	229°14.4'	S 1°33.6'	265°47.7'	S 15°50.5'	155°23.8'	N 24°59.0'
11	244°09.4'	S 22°55.6'	346°49.2'	S 22°55.6'	333°45.0'	S 24°10.7'	244°16.7'	S 1°33.5'	280°50.0'	S 15°50.5'	170°27.3'	N 24°59.0'
12	259°11.8'	S 22°55.9'	1°48.9'	S 22°55.9'	348°44.0'	S 24°10.8'	259°19.1'	S 1°33.5'	295°52.3'	S 15°50.4'	185°30.8'	N 24°58.9'
13	274°14.3'	S 22°56.1'	16°48.6'	S 22°56.1'	3°43.0'	S 24°10.9'	274°21.4'	S 1°33.4'	310°54.5'	S 15°50.3'	200°34.3'	N 24°58.9'
14	289°16.7'	S 22°56.3'	31°48.3'	S 22°56.3'	18°42.0'	S 24°11.0'	289°23.8'	S 1°33.3'	325°56.8'	S 15°50.3'	215°37.8'	N 24°58.9'
15	304°19.2'	S 22°56.5'	46°48.0'	S 22°56.5'	33°41.1'	S 24°11.0'	304°26.1'	S 1°33.3'	340°59.1'	S 15°50.2'	230°41.3'	N 24°58.9'
16	319°21.7'	S 22°56.7'	61°47.7'	S 22°56.7'	48°40.1'	S 24°11.1'	319°28.4'	S 1°33.2'	356°01.4'	S 15°50.2'	245°44.8'	N 24°58.9'
17	334°24.1'	S 22°57.0'	76°47.5'	S 22°57.0'	63°39.1'	S 24°11.2'	334°30.8'	S 1°33.1'	11°03.6'	S 15°50.1'	260°48.3'	N 24°58.8'
18	349°26.6'	S 22°57.2'	91°47.2'	S 22°57.2'	78°38.1'	S 24°11.3'	349°33.1'	S 1°33.1'	26°05.9'	S 15°50.0'	275°51.8'	N 24°58.8'
19	4°29.1'	S 22°57.4'	106°46.9'	S 22°57.4'	93°37.2'	S 24°11.3'	4°35.4'	S 1°33.0'	41°08.2'	S 15°50.0'	290°55.3'	N 24°58.8'
20	19°31.5'	S 22°57.6'	121°46.6'	S 22°57.6'	108°36.2'	S 24°11.4'	19°37.8'	S 1°32.9'	56°10.5'	S 15°49.9'	305°58.8'	N 24°58.8'
21	34°34.0'	S 22°57.8'	136°46.3'	S 22°57.8'	123°35.2'	S 24°11.5'	34°40.1'	S 1°32.9'	71°12.7'	S 15°49.8'	321°02.3'	N 24°58.8'
22	49°36.5'	S 22°58.0'	151°46.0'	S 22°58.0'	138°34.2'	S 24°11.5'	49°42.5'	S 1°32.8'	86°15.0'	S 15°49.8'	336°05.8'	N 24°58.7'
23	64°38.9'	S 22°58.2'	166°45.7'	S 22°58.2'	153°33.3'	S 24°11.6'	64°44.8'	S 1°32.7'	101°17.3'	S 15°49.7'	351°09.3'	N 24°58.7'
		SD 16.2' d -0.2'		v -1.0' d -0.1'		v 2.3' d 0.1'		v 2.3' d 0.1'		v 3.5' d -0.0'		
Mer. pass.		11 h 52 m 46 s		12 h 45 m		18 h 42 m		16 h 16 m		23 h 35 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Arcturus	-Regulus	-Procyon	-Pollux	+Betelgeuse	+Mars	+Capella	+Aldebaran
0	339°35.7'	N 27°25.8'	9.8'	-0.4'	54.2'	101°49.4'	52°07.6'	26°59.0'	15°33.3'		22°43.0'	24°09.3'	29°35.5'
1	354°04.5'	N 27°25.4'	9.8'	-0.5'	54.2'	101°23.4'	51°37.9'	26°40.8'	15°03.6'		23°13.8'	24°26.8'	30°04.3'
2	8°33.3'	N 27°24.8'	9.8'	-0.7'	54.2'	100°57.5'	51°08.2'	26°22.9'	14°33.9'		23°44.6'	24°44.5'	30°33.0'
3	23°02.2'	N 27°24.1'	9.9'	-0.8'	54.2'	100°31.5'	50°38.4'	26°05.4'	14°04.3'	22°51.2'	24°15.4'	25°02.7'	31°01.8'
4	37°31.0'	N 27°23.3'	9.9'	-1.0'	54.2'	100°05.5'	50°08.7'	25°48.2'	13°34.7'	23°06.2'	24°46.2'	25°21.1'	31°30.6'
5	51°59.9'	N 27°22.4'	9.9'	-1.1'	54.2'	99°39.5'	49°39.1'	25°31.4'	13°05.2'	23°21.7'	25°16.9'	25°39.9'	31°59.5'
6	66°28.8'	N 27°21.3'	9.9'	-1.2'	54.1'	99°13.5'	49°09.4'	25°15.0'	12°35.6'	23°37.6'	25°47.7'	25°59.1'	32°28.3'
7	80°57.7'	N 27°20.0'	9.9'	-1.4'	54.1'	98°47.5'	48°39.7'	24°58.9'	12°06.1'	23°53.9'	26°18.4'	26°18.5'	32°57.2'
8	95°26.6'	N 27°18.7'	10.0'	-1.5'	54.1'	98°21.5'	48°10.1'	24°43.3'	11°36.7'	24°10.6'	26°49.2'	26°38.2'	33°26.1'
9	109°55.6'	N 27°17.2'	10.0'	-1.6'	54.1'	97°55.5'	47°40.4'		11°07.3'	24°27.7'	27°19.9'	26°58.2'	33°55.0'
10	124°24.6'	N 27°15.6'	10.0'	-1.8'	54.1'	97°29.5'	47°10.8'		10°37.9'	24°45.1'	27°50.6'	27°18.4'	34°23.9'
11	138°53.6'	N 27°13.8'	10.1'	-1.9'	54.1'	97°03.6'	46°41.2'		10°08.6'	25°02.9'	28°21.3'	27°38.9'	34°52.8'
12	153°22.7'	N 27°12.0'	10.1'	-2.0'	54.1'	96°37.6'	46°11.6'		9°39.3'	25°21.1'	28°52.0'	27°59.7'	35°21.7'
13	167°51.8'	N 27°09.9'	10.1'	-2.1'	54.1'	96°11.6'	45°42.0'		9°10.1'	25°39.6'	29°22.7'	28°20.7'	35°50.6'
14	182°20.9'	N 27°07.8'	10.2'	-2.3'	54.1'	95°45.6'	45°12.5'		8°41.0'	25°58.4'	29°53.4'	28°41.9'	36°19.6'
15	196°50.0'	N 27°05.5'	10.2'	-2.4'	54.1'	95°19.6'	44°42.9'		8°11.9'	26°17.5'	30°24.1'	29°03.4'	36°48.5'
16	211°19.2'	N 27°03.1'	10.2'	-2.5'	54.1'	94°53.6'	44°13.4'		7°43.0'	26°36.9'	30°54.7'	29°25.1'	37°17.5'
17	225°48.4'	N 27°00.6'	10.3'	-2.7'	54.1'	94°27.7'	43°43.8'		7°14.2'	26°56.6'	31°25.4'	29°46.9'	37°46.5'
18	240°17.7'	N 26°57.9'	10.3'	-2.8'	54.1'	94°01.7'	43°14.3'		6°45.5'	27°16.6'	31°56.0'	30°09.0'	38°15.5'
19	254°47.0'	N 26°55.1'	10.3'	-2.9'	54.1'	93°35.7'	42°44.8'		6°16.9'	27°36.8'	32°26.6'	30°31.3'	38°44.4'
20	269°16.3'	N 26°52.2'	10.4'	-3.1'	54.1'	93°09.8'	42°15.3'		5°48.6'	27°57.3'	32°57.3'	30°53.7'	39°13.4'
21	283°45.7'	N 26°49.2'	10.4'	-3.2'	54.0'	92°43.8'	41°45.8'		5°20.5'	28°18.1'	33°27.9'	31°16.3'	39°42.4'
22	298°15.1'	N 26°46.0'	10.5'	-3.3'	54.0'	92°17.8'	41°16.4'		4°52.8'	28°39.0'	33°58.5'	31°39.1'	40°11.4'
23	312°44.6'	N 26°42.7'	10.5'	-3.4'	54.0'	91°51.9'	40°46.9'		4°25.5'	29°00.2'	34°29.1'	32°02.0'	40°40.4'
Mer. pass.		1 h 25 m SD 14.8'		phase 97%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.3'	S 11°16.7'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.9'	Acrux	+0.8	173°02.3'	S 63°13.2'	Capella	+0.1	280°24.0'	N 46°01.2'
Altair	+0.8	62°01.9'	N 8°55.8'	Regulus	+1.4	207°36.2'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°19.1'	N 27°58.2'	Aldebaran	+0.9	290°41.3'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.4'	N 5°10.0'	Polaris	+2.0	314°25.5'	N 89°21.8'
Rigil Kent	-0.0	139°43.2'	S 60°55.5'	Adhara	+1.5	255°06.9'	S 29°00.1'	Achernar	+0.5	335°21.1'	S 57°07.5'
Arcturus	-0.1	145°49.8'	N 19°03.8'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.9'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.3'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	79°41.4'	181°45.5'	S 22°58.5'	168°32.3'	S 24°11.7'	79°47.1'	S 1°32.7'	116°19.6'	S 15°49.6'	6°12.8'	N 24°58.7'	
1	94°43.9'	196°45.2'	S 22°58.7'	183°31.3'	S 24°11.7'	94°49.5'	S 1°32.6'	131°21.8'	S 15°49.6'	21°16.3'	N 24°58.7'	
2	109°46.3'	211°44.9'	S 22°58.9'	198°30.3'	S 24°11.8'	109°51.8'	S 1°32.5'	146°24.1'	S 15°49.5'	36°19.8'	N 24°58.6'	
3	124°48.8'	226°44.6'	S 22°59.1'	213°29.4'	S 24°11.9'	124°54.1'	S 1°32.5'	161°26.4'	S 15°49.5'	51°23.3'	N 24°58.6'	
4	139°51.2'	241°44.3'	S 22°59.3'	228°28.4'	S 24°11.9'	139°56.5'	S 1°32.4'	176°28.7'	S 15°49.4'	66°26.8'	N 24°58.6'	
5	154°53.7'	256°44.0'	S 22°59.5'	243°27.4'	S 24°12.0'	154°58.8'	S 1°32.3'	191°31.0'	S 15°49.3'	81°30.4'	N 24°58.6'	
6	169°56.2'	271°43.8'	S 22°59.7'	258°26.4'	S 24°12.1'	170°01.1'	S 1°32.3'	206°33.2'	S 15°49.3'	96°33.9'	N 24°58.6'	
7	184°58.6'	286°43.5'	S 22°59.9'	273°25.5'	S 24°12.1'	185°03.5'	S 1°32.2'	221°35.5'	S 15°49.2'	111°37.3'	N 24°58.5'	
8	200°01.1'	301°43.2'	S 23°00.1'	288°24.5'	S 24°12.2'	200°05.8'	S 1°32.1'	236°37.8'	S 15°49.1'	126°40.8'	N 24°58.5'	
9	215°03.6'	316°42.9'	S 23°00.3'	303°23.5'	S 24°12.2'	215°08.1'	S 1°32.1'	251°40.1'	S 15°49.1'	141°44.3'	N 24°58.5'	
10	230°06.0'	331°42.6'	S 23°00.5'	318°22.5'	S 24°12.3'	230°10.5'	S 1°32.0'	266°42.3'	S 15°49.0'	156°47.8'	N 24°58.5'	
11	245°08.5'	346°42.3'	S 23°00.7'	333°21.6'	S 24°12.3'	245°12.8'	S 1°31.9'	281°44.6'	S 15°49.0'	171°51.3'	N 24°58.4'	
12	260°11.0'	1°42.0'	S 23°00.9'	348°20.6'	S 24°12.4'	260°15.1'	S 1°31.8'	296°46.9'	S 15°48.9'	186°54.8'	N 24°58.4'	
13	275°13.4'	16°41.7'	S 23°01.1'	3°19.6'	S 24°12.4'	275°17.5'	S 1°31.8'	311°49.1'	S 15°48.8'	201°58.3'	N 24°58.4'	
14	290°15.9'	31°41.5'	S 23°01.3'	18°18.6'	S 24°12.5'	290°19.8'	S 1°31.7'	326°51.4'	S 15°48.8'	217°01.8'	N 24°58.4'	
15	305°18.3'	46°41.2'	S 23°01.5'	33°17.7'	S 24°12.5'	305°22.1'	S 1°31.6'	341°53.7'	S 15°48.7'	232°05.3'	N 24°58.3'	
16	320°20.8'	61°40.9'	S 23°01.7'	48°16.7'	S 24°12.6'	320°24.5'	S 1°31.6'	356°56.0'	S 15°48.6'	247°08.8'	N 24°58.3'	
17	335°23.3'	76°40.6'	S 23°01.9'	63°15.7'	S 24°12.6'	335°26.8'	S 1°31.5'	11°58.2'	S 15°48.6'	262°12.3'	N 24°58.3'	
18	350°25.7'	91°40.3'	S 23°02.1'	78°14.7'	S 24°12.7'	350°29.1'	S 1°31.4'	27°00.5'	S 15°48.5'	277°15.8'	N 24°58.3'	
19	5°28.2'	106°40.0'	S 23°02.3'	93°13.8'	S 24°12.7'	5°31.5'	S 1°31.4'	42°02.8'	S 15°48.4'	292°19.3'	N 24°58.2'	
20	20°30.7'	121°39.7'	S 23°02.5'	108°12.8'	S 24°12.7'	20°33.8'	S 1°31.3'	57°05.1'	S 15°48.4'	307°22.8'	N 24°58.2'	
21	35°33.1'	136°39.4'	S 23°02.7'	123°11.8'	S 24°12.8'	35°36.1'	S 1°31.2'	72°07.3'	S 15°48.3'	322°26.3'	N 24°58.2'	
22	50°35.6'	151°39.2'	S 23°02.9'	138°10.8'	S 24°12.8'	50°38.4'	S 1°31.1'	87°09.6'	S 15°48.3'	337°29.8'	N 24°58.2'	
23	65°38.1'	166°38.9'	S 23°03.1'	153°09.9'	S 24°12.9'	65°40.8'	S 1°31.1'	102°11.9'	S 15°48.2'	352°33.3'	N 24°58.1'	
		SD 16.2'	d -0.2'	v -1.0'	d -0.1'	v 2.3'	d 0.1'	v 2.3'	d 0.1'	v 3.5'	d -0.0'	
Mer. pass.		11 h 53 m 13 s		12 h 47 m		18 h 38 m		16 h 12 m		23 h 30 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Spica	-Arcturus	-Regulus	-Pollux	+Betelgeuse	+Capella	+Mars	+Aldebaran
0	327°14.1'	N 26°39.2'	10.5'	-3.6'	54.0'	94°16.6'	91°26.0'	40°17.4'	3°58.7'	29°21.6'	32°25.2'	34°59.7'	41°09.5'
1	341°43.6'	N 26°35.7'	10.6'	-3.7'	54.0'	93°47.0'	91°00.0'	39°48.0'		29°43.3'	32°48.4'	35°30.2'	41°38.5'
2	356°13.2'	N 26°32.0'	10.6'	-3.8'	54.0'	93°17.4'	90°34.1'	39°18.6'		30°05.1'	33°11.8'	36°00.8'	42°07.5'
3	10°42.8'	N 26°28.2'	10.7'	-3.9'	54.0'	92°47.8'	90°08.2'	38°49.2'		30°27.1'	33°35.3'	36°31.4'	42°36.5'
4	25°12.5'	N 26°24.3'	10.7'	-4.1'	54.0'	92°18.3'	89°42.2'	38°19.8'		30°49.3'	33°59.0'	37°01.9'	43°05.6'
5	39°42.2'	N 26°20.2'	10.8'	-4.2'	54.0'	91°48.7'	89°16.3'	37°50.4'		31°11.7'	34°22.8'	37°32.5'	43°34.6'
6	54°11.9'	N 26°16.0'	10.8'	-4.3'	54.0'	91°19.2'	88°50.4'	37°21.0'		31°34.2'	34°46.8'	38°03.0'	44°03.6'
7	68°41.7'	N 26°11.7'	10.9'	-4.4'	54.0'	90°49.6'	88°24.5'	36°51.7'		31°57.0'	35°10.8'	38°33.5'	44°32.7'
8	83°11.6'	N 26°07.3'	10.9'	-4.5'	54.0'	90°20.1'	87°58.6'	36°22.3'		32°19.8'	35°35.0'	39°04.1'	45°01.7'
9	97°41.5'	N 26°02.8'	11.0'	-4.7'	54.0'	89°50.5'	87°32.7'	35°53.0'		32°42.9'	35°59.2'	39°34.6'	45°30.8'
10	112°11.4'	N 25°58.1'	11.0'	-4.8'	54.0'	89°21.0'	87°06.9'	35°23.7'		33°06.1'	36°23.6'	40°05.1'	45°59.8'
11	126°41.4'	N 25°53.3'	11.1'	-4.9'	54.0'	88°51.5'	86°41.0'	34°54.4'		33°29.4'	36°48.1'	40°35.6'	46°28.9'
12	141°11.5'	N 25°48.4'	11.1'	-5.0'	54.0'	88°22.0'	86°15.1'	34°25.1'		33°52.9'	37°12.7'	41°06.1'	46°57.9'
13	155°41.6'	N 25°43.4'	11.2'	-5.1'	54.0'	87°52.5'	85°49.3'	33°55.8'		34°16.5'	37°37.4'	41°36.6'	47°27.0'
14	170°11.8'	N 25°38.2'	11.2'	-5.3'	54.0'	87°23.0'	85°23.4'	33°26.5'		34°40.2'	38°02.2'	42°07.1'	47°56.1'
15	184°42.0'	N 25°33.0'	11.3'	-5.4'	54.0'	86°53.5'	84°57.6'	32°57.2'	4°15.5'	35°04.1'	38°27.1'	42°37.6'	48°25.1'
16	199°12.2'	N 25°27.6'	11.3'	-5.5'	54.0'	86°24.0'	84°31.8'	32°28.0'	4°42.5'	35°28.1'	38°52.0'	43°08.0'	48°54.2'
17	213°42.6'	N 25°22.1'	11.4'	-5.6'	54.0'	85°54.5'	84°06.0'	31°58.7'	5°10.0'	35°52.2'	39°17.1'	43°38.5'	49°23.3'
18	228°12.9'	N 25°16.5'	11.4'	-5.7'	54.0'	85°25.0'	83°40.2'	31°29.5'	5°37.9'	36°16.4'	39°42.2'	44°09.0'	49°52.3'
19	242°43.3'	N 25°10.8'	11.5'	-5.8'	54.0'	84°55.5'	83°14.4'	31°00.3'	6°06.0'	36°40.7'	40°07.5'	44°39.4'	50°21.4'
20	257°13.8'	N 25°04.9'	11.5'	-6.0'	54.0'	84°26.0'	82°48.6'	30°31.1'	6°34.3'	37°05.1'	40°32.7'	45°09.9'	50°50.5'
21	271°44.4'	N 24°59.0'	11.6'	-6.1'	54.0'	83°56.6'	82°22.8'	30°01.9'	7°02.7'	37°29.7'	40°58.1'	45°40.3'	51°19.6'
22	286°15.0'	N 24°52.9'	11.6'	-6.2'	54.0'	83°27.1'	81°57.1'	29°32.8'	7°31.3'	37°54.3'	41°23.6'	46°10.8'	51°48.6'
23	300°45.6'	N 24°46.8'	11.7'	-6.3'	54.0'	82°57.6'	81°31.3'	29°03.6'	8°00.1'	38°19.0'	41°49.1'	46°41.2'	52°17.7'
Mer. pass.		2 h 16 m SD 14.7'	phase 93%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.3'	S 11°16.7'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.9'	Acrux	+0.8	173°02.2'	S 63°13.2'	Capella	+0.1	280°24.0'	N 46°01.2'
Altair	+0.8	62°01.9'	N 8°55.8'	Regulus	+1.4	207°36.2'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.1'	N 27°58.2'	Aldebaran	+0.9	290°41.3'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.4'	N 5°10.0'	Polaris	+2.0	314°25.6'	N 89°21.8'
Rigil Kent	-0.0	139°43.2'	S 60°55.5'	Adhara	+1.5	255°06.9'	S 29°00.1'	Achernar	+0.5	335°21.1'	S 57°07.5'
Arcturus	-0.1	145°49.8'	N 19°03.8'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.9'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.3'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	80°40.5'	S 23°03.3'	181°38.6'	S 23°03.3'	168°08.9'	S 24°12.9'	80°43.1'	S 1°31.0'	117°14.2'	S 15°48.1'	7°36.8'	N 24°58.1'
1	95°43.0'	S 23°03.5'	196°38.3'	S 23°03.5'	183°07.9'	S 24°12.9'	95°45.4'	S 1°30.9'	132°16.4'	S 15°48.1'	22°40.2'	N 24°58.1'
2	110°45.5'	S 23°03.7'	211°38.0'	S 23°03.7'	198°06.9'	S 24°13.0'	110°47.8'	S 1°30.9'	147°18.7'	S 15°48.0'	37°43.7'	N 24°58.1'
3	125°47.9'	S 23°03.9'	226°37.7'	S 23°03.9'	213°06.0'	S 24°13.0'	125°50.1'	S 1°30.8'	162°21.0'	S 15°47.9'	52°47.2'	N 24°58.0'
4	140°50.4'	S 23°04.1'	241°37.4'	S 23°04.1'	228°05.0'	S 24°13.0'	140°52.4'	S 1°30.7'	177°23.2'	S 15°47.9'	67°50.7'	N 24°58.0'
5	155°52.8'	S 23°04.2'	256°37.1'	S 23°04.2'	243°04.0'	S 24°13.0'	155°54.7'	S 1°30.6'	192°25.5'	S 15°47.8'	82°54.2'	N 24°58.0'
6	170°55.3'	S 23°04.4'	271°36.8'	S 23°04.4'	258°03.0'	S 24°13.1'	170°57.1'	S 1°30.6'	207°27.8'	S 15°47.7'	97°57.7'	N 24°58.0'
7	185°57.8'	S 23°04.6'	286°36.6'	S 23°04.6'	273°02.1'	S 24°13.1'	185°59.4'	S 1°30.5'	222°30.1'	S 15°47.7'	113°01.2'	N 24°57.9'
8	201°00.2'	S 23°04.8'	301°36.3'	S 23°04.8'	288°01.1'	S 24°13.1'	201°01.7'	S 1°30.4'	237°32.3'	S 15°47.6'	128°04.7'	N 24°57.9'
9	216°02.7'	S 23°05.0'	316°36.0'	S 23°05.0'	303°00.1'	S 24°13.1'	216°04.0'	S 1°30.3'	252°34.6'	S 15°47.6'	143°08.1'	N 24°57.9'
10	231°05.2'	S 23°05.2'	331°35.7'	S 23°05.2'	317°59.1'	S 24°13.2'	231°06.4'	S 1°30.3'	267°36.9'	S 15°47.5'	158°11.6'	N 24°57.8'
11	246°07.6'	S 23°05.4'	346°35.4'	S 23°05.4'	332°58.2'	S 24°13.2'	246°08.7'	S 1°30.2'	282°39.2'	S 15°47.4'	173°15.1'	N 24°57.8'
12	261°10.1'	S 23°05.5'	1°35.1'	S 23°05.5'	347°57.2'	S 24°13.2'	261°11.0'	S 1°30.1'	297°41.4'	S 15°47.4'	188°18.6'	N 24°57.8'
13	276°12.6'	S 23°05.7'	16°34.8'	S 23°05.7'	2°56.2'	S 24°13.2'	276°13.3'	S 1°30.1'	312°43.7'	S 15°47.3'	203°22.1'	N 24°57.8'
14	291°15.0'	S 23°05.9'	31°34.5'	S 23°05.9'	17°55.2'	S 24°13.2'	291°15.7'	S 1°30.0'	327°46.0'	S 15°47.2'	218°25.6'	N 24°57.7'
15	306°17.5'	S 23°06.1'	46°34.2'	S 23°06.1'	32°54.3'	S 24°13.3'	306°18.0'	S 1°29.9'	342°48.2'	S 15°47.2'	233°29.0'	N 24°57.7'
16	321°20.0'	S 23°06.3'	61°33.9'	S 23°06.3'	47°53.3'	S 24°13.3'	321°20.3'	S 1°29.8'	357°50.5'	S 15°47.1'	248°32.5'	N 24°57.7'
17	336°22.4'	S 23°06.4'	76°33.6'	S 23°06.4'	62°52.3'	S 24°13.3'	336°22.6'	S 1°29.8'	12°52.8'	S 15°47.0'	263°36.0'	N 24°57.6'
18	351°24.9'	S 23°06.6'	91°33.4'	S 23°06.6'	77°51.3'	S 24°13.3'	351°25.0'	S 1°29.7'	27°55.0'	S 15°47.0'	278°39.5'	N 24°57.6'
19	6°27.3'	S 23°06.8'	106°33.1'	S 23°06.8'	92°50.4'	S 24°13.3'	6°27.3'	S 1°29.6'	42°57.3'	S 15°46.9'	293°42.9'	N 24°57.6'
20	21°29.8'	S 23°07.0'	121°32.8'	S 23°07.0'	107°49.4'	S 24°13.3'	21°29.6'	S 1°29.5'	57°59.6'	S 15°46.8'	308°46.4'	N 24°57.6'
21	36°32.3'	S 23°07.2'	136°32.5'	S 23°07.2'	122°48.4'	S 24°13.3'	36°31.9'	S 1°29.5'	73°01.9'	S 15°46.8'	323°49.9'	N 24°57.5'
22	51°34.7'	S 23°07.3'	151°32.2'	S 23°07.3'	137°47.4'	S 24°13.3'	51°34.3'	S 1°29.4'	88°04.1'	S 15°46.7'	338°53.4'	N 24°57.5'
23	66°37.2'	S 23°07.5'	166°31.9'	S 23°07.5'	152°46.5'	S 24°13.3'	66°36.6'	S 1°29.3'	103°06.4'	S 15°46.6'	353°56.9'	N 24°57.5'
		SD 16.2' d -0.2'		v -1.0' d -0.0'		v 2.3' d 0.1'		v 2.3' d 0.1'		v 3.5' d -0.0'		
Mer. pass.		11 h 53 m 41 s		12 h 48 m		18 h 34 m		16 h 9 m		23 h 24 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Acrux	-Spica	-Arcturus	-Regulus	+Pollux	+Procyon	+Betelgeuse	+Capella
0	315°16.3'	N 24°40.5'	11.8'	-6.4'	54.0'	100°14.1'	82°28.2'	81°05.6'	28°34.5'	8°28.9'		38°43.8'	42°14.6'
1	329°47.1'	N 24°34.1'	11.8'	-6.5'	54.0'	99°56.7'	81°58.7'	80°39.9'	28°05.4'	8°57.7'		39°08.7'	42°40.3'
2	344°17.9'	N 24°27.6'	11.9'	-6.6'	54.0'	99°39.2'	81°29.3'	80°14.2'	27°36.3'	9°26.7'		39°33.7'	43°06.0'
3	358°48.8'	N 24°20.9'	11.9'	-6.7'	54.0'	99°21.8'	80°59.8'	79°48.5'	27°07.2'	9°55.7'		39°58.8'	43°31.8'
4	13°19.7'	N 24°14.2'	12.0'	-6.8'	54.0'	99°04.3'	80°30.3'	79°22.8'	26°38.1'	10°24.7'		40°23.9'	43°57.6'
5	27°50.7'	N 24°07.4'	12.0'	-6.9'	54.0'	98°46.7'	80°00.9'	78°57.1'	26°09.0'	10°53.8'		40°49.2'	44°23.5'
6	42°21.7'	N 24°00.4'	12.1'	-7.0'	54.0'	98°29.2'	79°31.4'	78°31.5'	25°40.0'	11°22.9'		41°14.5'	44°49.5'
7	56°52.8'	N 23°53.4'	12.2'	-7.2'	54.0'	98°11.6'	79°02.0'	78°05.8'	25°11.0'	11°52.1'		41°39.9'	45°15.5'
8	71°24.0'	N 23°46.2'	12.2'	-7.3'	54.0'	97°54.0'	78°32.6'	77°40.2'	24°42.0'	12°21.2'		42°05.3'	45°41.5'
9	85°55.2'	N 23°39.0'	12.3'	-7.4'	54.0'	97°36.3'	78°03.1'	77°14.6'	24°13.0'	12°50.4'		42°30.9'	46°07.7'
10	100°26.5'	N 23°31.6'	12.3'	-7.5'	54.0'	97°18.7'	77°33.7'	76°49.0'	23°44.0'	13°19.6'		42°56.5'	46°33.8'
11	114°57.9'	N 23°24.2'	12.4'	-7.6'	54.0'	97°01.0'	77°04.2'	76°23.4'	23°15.1'	13°48.9'		43°22.1'	47°00.1'
12	129°29.3'	N 23°16.6'	12.5'	-7.7'	54.0'	96°43.3'	76°34.8'	75°57.8'	22°46.2'	14°18.1'		43°47.9'	47°26.3'
13	144°00.7'	N 23°08.9'	12.5'	-7.8'	54.0'	96°25.6'	76°05.3'	75°32.3'	22°17.3'	14°47.4'		44°13.7'	47°52.6'
14	158°32.2'	N 23°01.1'	12.6'	-7.9'	54.0'	96°07.9'	75°35.9'	75°06.7'	21°48.4'	15°16.7'	24°37.9'	44°39.5'	48°19.0'
15	173°03.8'	N 22°53.3'	12.6'	-8.0'	54.0'	95°50.2'	75°06.5'	74°41.2'	21°19.6'	15°46.0'	24°53.2'	45°05.4'	48°45.4'
16	187°35.5'	N 22°45.3'	12.7'	-8.1'	54.0'	95°32.4'	74°37.0'	74°15.7'	20°50.8'	16°15.3'	25°08.9'	45°31.4'	49°11.9'
17	202°07.2'	N 22°37.2'	12.8'	-8.2'	54.0'	95°14.6'	74°07.6'	73°50.2'	20°22.0'	16°44.7'	25°25.0'	45°57.4'	49°38.4'
18	216°38.9'	N 22°29.1'	12.8'	-8.3'	54.0'	94°56.8'	73°38.1'	73°24.8'	19°53.2'	17°14.0'	25°41.5'	46°23.5'	50°04.9'
19	231°10.7'	N 22°20.8'	12.9'	-8.4'	54.0'	94°39.0'	73°08.7'	72°59.3'	19°24.5'	17°43.3'	25°58.3'	46°49.6'	50°31.5'
20	245°42.6'	N 22°12.4'	12.9'	-8.5'	54.0'	94°21.2'	72°39.2'	72°33.9'	18°55.8'	18°12.7'	26°15.5'	47°15.8'	50°58.1'
21	260°14.5'	N 22°04.0'	13.0'	-8.6'	54.0'	94°03.3'	72°09.8'	72°08.5'	18°27.2'	18°42.1'	26°33.1'	47°42.1'	51°24.8'
22	274°46.5'	N 21°55.4'	13.0'	-8.6'	54.0'	93°45.5'	71°40.3'	71°43.1'	17°58.6'	19°11.5'	26°50.9'	48°08.4'	51°51.5'
23	289°18.6'	N 21°46.8'	13.1'	-8.7'	54.0'	93°27.6'	71°10.9'	71°17.7'	17°30.1'	19°40.8'	27°09.1'	48°34.7'	52°18.2'
Mer. pass.		3 h 5 m SD 14.7' phase 87%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.3'	S 11°16.7'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.9'	Acrux	+0.8	173°02.2'	S 63°13.2'	Capella	+0.1	280°24.0'	N 46°01.2'
Altair	+0.8	62°01.9'	N 8°55.8'	Regulus	+1.4	207°36.2'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.1'	N 27°58.2'	Aldebaran	+0.9	290°41.3'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.4'	N 5°10.0'	Polaris	+2.0	314°25.8'	N 89°21.8'
Rigil Kent	-0.0	139°43.2'	S 60°55.5'	Adhara	+1.5	255°06.9'	S 29°00.1'	Achernar	+0.5	335°21.1'	S 57°07.5'
Arcturus	-0.1	145°49.8'	N 19°03.8'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.9'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.3'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	81°39.7'	181°31.6'	S 23°07.7'	167°45.5'	S 24°13.3'		81°38.9'	S 1°29.2'		118°08.7'	S 15°46.6'		9°00.3'	N 24°57.4'				
1	96°42.1'	196°31.3'	S 23°07.9'	182°44.5'	S 24°13.3'		96°41.2'	S 1°29.2'		133°10.9'	S 15°46.5'		24°03.8'	N 24°57.4'				
2	111°44.6'	211°31.0'	S 23°08.0'	197°43.5'	S 24°13.3'		111°43.5'	S 1°29.1'		148°13.2'	S 15°46.5'		39°07.3'	N 24°57.4'				
3	126°47.1'	226°30.7'	S 23°08.2'	212°42.6'	S 24°13.3'		126°45.9'	S 1°29.0'		163°15.5'	S 15°46.4'		54°10.8'	N 24°57.3'				
4	141°49.5'	241°30.4'	S 23°08.4'	227°41.6'	S 24°13.3'		141°48.2'	S 1°28.9'		178°17.7'	S 15°46.3'		69°14.2'	N 24°57.3'				
5	156°52.0'	256°30.1'	S 23°08.5'	242°40.6'	S 24°13.3'		156°50.5'	S 1°28.9'		193°20.0'	S 15°46.3'		84°17.7'	N 24°57.3'				
6	171°54.5'	271°29.8'	S 23°08.7'	257°39.6'	S 24°13.3'		171°52.8'	S 1°28.8'		208°22.3'	S 15°46.2'		99°21.2'	N 24°57.2'				
7	186°56.9'	286°29.5'	S 23°08.9'	272°38.6'	S 24°13.3'		186°55.1'	S 1°28.7'		223°24.6'	S 15°46.1'		114°24.6'	N 24°57.2'				
8	201°59.4'	301°29.3'	S 23°09.0'	287°37.7'	S 24°13.3'		201°57.5'	S 1°28.6'		238°26.8'	S 15°46.1'		129°28.1'	N 24°57.2'				
9	217°01.8'	316°29.0'	S 23°09.2'	302°36.7'	S 24°13.3'		216°59.8'	S 1°28.6'		253°29.1'	S 15°46.0'		144°31.6'	N 24°57.2'				
10	232°04.3'	331°28.7'	S 23°09.4'	317°35.7'	S 24°13.3'		232°02.1'	S 1°28.5'		268°31.4'	S 15°45.9'		159°35.0'	N 24°57.1'				
11	247°06.8'	346°28.4'	S 23°09.5'	332°34.7'	S 24°13.3'		247°04.4'	S 1°28.4'		283°33.6'	S 15°45.9'		174°38.5'	N 24°57.1'				
12	262°09.2'	1°28.1'	S 23°09.7'	347°33.8'	S 24°13.3'		262°06.7'	S 1°28.3'		298°35.9'	S 15°45.8'		189°42.0'	N 24°57.1'				
13	277°11.7'	16°27.8'	S 23°09.9'	2°32.8'	S 24°13.3'		277°09.1'	S 1°28.3'		313°38.2'	S 15°45.7'		204°45.4'	N 24°57.0'				
14	292°14.2'	31°27.5'	S 23°10.0'	17°31.8'	S 24°13.3'		292°11.4'	S 1°28.2'		328°40.4'	S 15°45.7'		219°48.9'	N 24°57.0'				
15	307°16.6'	46°27.2'	S 23°10.2'	32°30.8'	S 24°13.2'		307°13.7'	S 1°28.1'		343°42.7'	S 15°45.6'		234°52.4'	N 24°57.0'				
16	322°19.1'	61°26.9'	S 23°10.3'	47°29.9'	S 24°13.2'		322°16.0'	S 1°28.0'		358°45.0'	S 15°45.5'		249°55.8'	N 24°56.9'				
17	337°21.6'	76°26.6'	S 23°10.5'	62°28.9'	S 24°13.2'		337°18.3'	S 1°28.0'		13°47.2'	S 15°45.5'		264°59.3'	N 24°56.9'				
18	352°24.0'	91°26.3'	S 23°10.7'	77°27.9'	S 24°13.2'		352°20.6'	S 1°27.9'		28°49.5'	S 15°45.4'		280°02.8'	N 24°56.9'				
19	7°26.5'	106°26.0'	S 23°10.8'	92°26.9'	S 24°13.2'		7°22.9'	S 1°27.8'		43°51.8'	S 15°45.3'		295°06.2'	N 24°56.8'				
20	22°29.0'	121°25.7'	S 23°11.0'	107°26.0'	S 24°13.2'		22°25.3'	S 1°27.7'		58°54.0'	S 15°45.3'		310°09.7'	N 24°56.8'				
21	37°31.4'	136°25.4'	S 23°11.1'	122°25.0'	S 24°13.1'		37°27.6'	S 1°27.7'		73°56.3'	S 15°45.2'		325°13.1'	N 24°56.8'				
22	52°33.9'	151°25.1'	S 23°11.3'	137°24.0'	S 24°13.1'		52°29.9'	S 1°27.6'		88°58.6'	S 15°45.1'		340°16.6'	N 24°56.7'				
23	67°36.3'	166°24.8'	S 23°11.5'	152°23.0'	S 24°13.1'		67°32.2'	S 1°27.5'		104°00.8'	S 15°45.1'		355°20.1'	N 24°56.7'				
		SD 16.2'	d -0.2'	v -1.0'	d 0.0'		v 2.3'	d 0.1'		v 2.3'	d 0.1'		v 3.5'	d -0.0'				
Mer. pass.		11 h 54 m 9 s		12 h 50 m			18 h 31 m			16 h 5 m			23 h 19 m					

h	Moon					Lunar distance											
	GHA	dec	v	d	HP	-Sun	-Arcturus	-Spica	-Regulus	+Pollux	+Procyon	+Betelgeuse	+Sirius				
0	303°50.7'	N 21°38.0'	13.2'	-8.8'	54.0'			70°52.3'	70°41.4'	17°01.6'	20°10.2'	27°27.6'	49°01.1'				
1	318°22.9'	N 21°29.2'	13.2'	-8.9'	54.0'			70°27.0'	70°11.9'	16°33.1'	20°39.7'	27°46.3'	49°27.5'				
2	332°55.1'	N 21°20.3'	13.3'	-9.0'	54.0'			70°01.7'	69°42.5'	16°04.7'	21°09.1'	28°05.4'	49°54.0'				
3	347°27.4'	N 21°11.3'	13.3'	-9.1'	54.0'			69°36.4'	69°13.0'	15°36.4'	21°38.5'	28°24.7'	50°20.5'				
4	1°59.7'	N 21°02.2'	13.4'	-9.2'	54.1'			69°11.1'	68°43.5'	15°08.2'	22°07.9'	28°44.3'	50°47.1'				
5	16°32.1'	N 20°53.0'	13.5'	-9.3'	54.1'			68°45.9'	68°14.1'	14°40.0'	22°37.4'	29°04.2'	51°13.7'				
6	31°04.5'	N 20°43.7'	13.5'	-9.4'	54.1'			68°20.6'	67°44.6'	14°11.9'	23°06.8'	29°24.3'	51°40.4'	53°45.5'			
7	45°37.1'	N 20°34.3'	13.6'	-9.5'	54.1'			67°55.4'	67°15.1'	13°44.0'	23°36.3'	29°44.7'	52°07.1'	54°00.5'			
8	60°09.6'	N 20°24.8'	13.6'	-9.6'	54.1'			67°30.2'	66°45.6'	13°16.1'	24°05.8'	30°05.3'	52°33.8'	54°15.7'			
9	74°42.2'	N 20°15.3'	13.7'	-9.6'	54.1'			67°05.1'	66°16.1'	12°48.3'	24°35.3'	30°26.1'	53°00.6'	54°30.9'			
10	89°14.9'	N 20°05.6'	13.7'	-9.7'	54.1'			66°40.0'	65°46.6'	12°20.7'	25°04.8'	30°47.1'	53°27.4'	54°46.3'			
11	103°47.6'	N 19°55.9'	13.8'	-9.8'	54.1'			66°14.8'	65°17.1'	11°53.2'	25°34.3'	31°08.4'	53°54.3'	55°01.9'			
12	118°20.4'	N 19°46.1'	13.8'	-9.9'	54.1'			65°49.8'	64°47.6'	11°25.9'	26°03.8'	31°29.8'	54°21.2'	55°17.6'			
13	132°53.3'	N 19°36.2'	13.9'	-10.0'	54.1'			65°24.7'	64°18.1'	10°58.8'	26°33.3'	31°51.5'	54°48.1'	55°33.4'			
14	147°26.2'	N 19°26.2'	13.9'	-10.1'	54.1'			64°59.7'	63°48.5'	10°31.9'	27°02.8'	32°13.3'	55°15.1'	55°49.3'			
15	161°59.1'	N 19°16.2'	14.0'	-10.1'	54.1'			64°34.7'	63°19.0'	10°05.2'	27°32.4'	32°35.4'	55°42.1'	56°05.4'			
16	176°32.1'	N 19°06.1'	14.1'	-10.2'	54.2'	119°48.5'		64°09.7'	62°49.5'	9°38.8'	28°01.9'	32°57.6'	56°09.1'	56°21.6'			
17	191°05.2'	N 18°55.8'	14.1'	-10.3'	54.2'	119°21.4'		63°44.8'	62°19.9'	9°12.7'	28°31.5'	33°20.0'	56°36.2'	56°37.9'			
18	205°38.3'	N 18°45.5'	14.2'	-10.4'	54.2'	118°54.4'		63°19.8'	61°50.4'	8°47.0'	29°01.0'	33°42.6'	57°03.3'	56°54.3'			
19	220°11.4'	N 18°35.2'	14.2'	-10.5'	54.2'	118°27.3'		62°55.0'	61°20.8'	8°21.7'	29°30.6'	34°05.3'	57°30.5'	57°10.9'			
20	234°44.6'	N 18°24.7'	14.3'	-10.5'	54.2'	118°00.3'		62°30.1'	60°51.2'	7°56.9'	30°00.2'	34°28.2'	57°57.7'	57°27.5'			
21	249°17.9'	N 18°14.2'	14.3'	-10.6'	54.2'	117°33.2'		62°05.3'	60°21.6'	7°32.7'	30°29.8'	34°51.3'	58°24.9'	57°44.3'			
22	263°51.2'	N 18°03.6'	14.4'	-10.7'	54.2'	117°06.1'		61°40.5'	59°52.0'	7°09.1'	30°59.4'	35°14.5'	58°52.1'	58°01.2'			
23	278°24.5'	N 17°52.9'	14.4'	-10.8'	54.2'	116°39.0'		61°15.7'	59°22.4'		31°29.1'	35°37.8'	59°19.4'	58°18.2'			
Mer. pass.		3 h 52 m SD 14.7'		phase 80%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.3'	S 11°16.7'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.9'	Acrux	+0.8	173°02.2'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.2'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.2'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.1'	N 27°58.2'	Aldebaran	+0.9	290°41.3'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.4'	N 5°10.0'	Polaris	+2.0	314°26.1'	N 89°21.8'
Rigil Kent	-0.0	139°43.2'	S 60°55.5'	Adhara	+1.5	255°06.9'	S 29°00.1'	Achernar	+0.5	335°21.2'	S 57°07.5'
Arcturus	-0.1	145°49.7'	N 19°03.8'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.9'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.3'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	82°38.8'	181°24.5'	S 23°11.6'	167°22.1'	S 24°13.0'	82°34.5'	S 1°27.4'	119°03.1'	S 15°45.0'	10°23.5'	N 24°56.7'
1	97°41.3'	196°24.2'	S 23°11.8'	182°21.1'	S 24°13.0'	97°36.8'	S 1°27.3'	134°05.4'	S 15°44.9'	25°27.0'	N 24°56.6'
2	112°43.7'	211°23.9'	S 23°11.9'	197°20.1'	S 24°13.0'	112°39.1'	S 1°27.3'	149°07.6'	S 15°44.9'	40°30.4'	N 24°56.6'
3	127°46.2'	226°23.6'	S 23°12.1'	212°19.1'	S 24°13.0'	127°41.5'	S 1°27.2'	164°09.9'	S 15°44.8'	55°33.9'	N 24°56.5'
4	142°48.7'	241°23.3'	S 23°12.2'	227°18.2'	S 24°12.9'	142°43.8'	S 1°27.1'	179°12.2'	S 15°44.7'	70°37.3'	N 24°56.5'
5	157°51.1'	256°23.1'	S 23°12.4'	242°17.2'	S 24°12.9'	157°46.1'	S 1°27.0'	194°14.4'	S 15°44.7'	85°40.8'	N 24°56.5'
6	172°53.6'	271°22.8'	S 23°12.5'	257°16.2'	S 24°12.9'	172°48.4'	S 1°27.0'	209°16.7'	S 15°44.6'	100°44.2'	N 24°56.4'
7	187°56.1'	286°22.5'	S 23°12.7'	272°15.2'	S 24°12.8'	187°50.7'	S 1°26.9'	224°19.0'	S 15°44.6'	115°47.7'	N 24°56.4'
8	202°58.5'	301°22.2'	S 23°12.8'	287°14.3'	S 24°12.8'	202°53.0'	S 1°26.8'	239°21.2'	S 15°44.5'	130°51.2'	N 24°56.4'
9	218°01.0'	316°21.9'	S 23°13.0'	302°13.3'	S 24°12.7'	217°55.3'	S 1°26.7'	254°23.5'	S 15°44.4'	145°54.6'	N 24°56.3'
10	233°03.4'	331°21.6'	S 23°13.1'	317°12.3'	S 24°12.7'	232°57.6'	S 1°26.6'	269°25.8'	S 15°44.4'	160°58.1'	N 24°56.3'
11	248°05.9'	346°21.3'	S 23°13.3'	332°11.3'	S 24°12.7'	247°60.0'	S 1°26.6'	284°28.0'	S 15°44.3'	176°01.5'	N 24°56.3'
12	263°08.4'	1°21.0'	S 23°13.4'	347°10.4'	S 24°12.6'	263°02.3'	S 1°26.5'	299°30.3'	S 15°44.2'	191°05.0'	N 24°56.2'
13	278°10.8'	16°20.7'	S 23°13.5'	2°09.4'	S 24°12.6'	278°04.6'	S 1°26.4'	314°32.6'	S 15°44.2'	206°08.4'	N 24°56.2'
14	293°13.3'	31°20.4'	S 23°13.7'	17°08.4'	S 24°12.5'	293°06.9'	S 1°26.3'	329°34.8'	S 15°44.1'	221°11.8'	N 24°56.2'
15	308°15.8'	46°20.1'	S 23°13.8'	32°07.4'	S 24°12.5'	308°09.2'	S 1°26.2'	344°37.1'	S 15°44.0'	236°15.3'	N 24°56.1'
16	323°18.2'	61°19.8'	S 23°14.0'	47°06.5'	S 24°12.4'	323°11.5'	S 1°26.2'	359°39.4'	S 15°44.0'	251°18.7'	N 24°56.1'
17	338°20.7'	76°19.5'	S 23°14.1'	62°05.5'	S 24°12.4'	338°13.8'	S 1°26.1'	14°41.6'	S 15°43.9'	266°22.2'	N 24°56.0'
18	353°23.2'	91°19.2'	S 23°14.3'	77°04.5'	S 24°12.3'	353°16.1'	S 1°26.0'	29°43.9'	S 15°43.8'	281°25.6'	N 24°56.0'
19	8°25.6'	106°18.9'	S 23°14.4'	92°03.5'	S 24°12.3'	8°18.4'	S 1°25.9'	44°46.2'	S 15°43.8'	296°29.1'	N 24°56.0'
20	23°28.1'	121°18.6'	S 23°14.5'	107°02.6'	S 24°12.2'	23°20.7'	S 1°25.8'	59°48.4'	S 15°43.7'	311°32.5'	N 24°55.9'
21	38°30.6'	136°18.3'	S 23°14.7'	122°01.6'	S 24°12.2'	38°23.0'	S 1°25.8'	74°50.7'	S 15°43.6'	326°36.0'	N 24°55.9'
22	53°33.0'	151°18.0'	S 23°14.8'	137°00.6'	S 24°12.1'	53°25.4'	S 1°25.7'	89°52.9'	S 15°43.6'	341°39.4'	N 24°55.9'
23	68°35.5'	166°17.7'	S 23°14.9'	151°59.6'	S 24°12.1'	68°27.7'	S 1°25.6'	104°55.2'	S 15°43.5'	356°42.8'	N 24°55.8'
		SD 16.2'	d -0.1'	v -1.0'	d 0.0'	v 2.3'	d 0.1'	v 2.3'	d 0.1'	v 3.4'	d -0.0'
Mer. pass.		11 h 54 m 38 s		12 h 51 m		18 h 27 m		16 h 1 m		23 h 13 m	

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Arcturus	-Spica	-Regulus	+Pollux	+Procyon	+Sirius	+Betelgeuse
0	292°57.9'	N 17°42.1'	14.4'	-10.8'	54.2'	116°11.9'	60°51.0'	58°52.8'		31°58.7'	36°01.3'	58°35.4'	59°46.7'
1	307°31.4'	N 17°31.3'	14.5'	-10.9'	54.3'	115°44.8'	60°26.3'	58°23.2'		32°28.4'	36°25.0'	58°52.6'	60°14.1'
2	322°04.9'	N 17°20.3'	14.5'	-11.0'	54.3'	115°17.7'	60°01.7'	57°53.6'		32°58.0'	36°48.7'	59°10.0'	60°41.5'
3	336°38.4'	N 17°09.4'	14.6'	-11.1'	54.3'	114°50.5'	59°37.1'	57°23.9'		33°27.7'	37°12.6'	59°27.4'	61°08.9'
4	351°12.0'	N 16°58.3'	14.6'	-11.1'	54.3'	114°23.4'	59°12.5'	56°54.3'		33°57.4'	37°36.7'	59°45.0'	61°36.4'
5	5°45.6'	N 16°47.2'	14.7'	-11.2'	54.3'	113°56.2'	58°48.0'	56°24.6'		34°27.1'	38°00.8'	60°02.6'	62°03.8'
6	20°19.3'	N 16°36.0'	14.7'	-11.3'	54.3'	113°29.0'	58°23.5'	55°54.9'		34°56.8'	38°25.1'	60°20.4'	62°31.3'
7	34°53.0'	N 16°24.7'	14.8'	-11.3'	54.3'	113°01.9'	57°59.0'	55°25.3'		35°26.6'	38°49.5'	60°38.3'	62°58.9'
8	49°26.8'	N 16°13.3'	14.8'	-11.4'	54.3'	112°34.7'	57°34.6'	54°55.6'		35°56.3'	39°14.0'	60°56.3'	63°26.5'
9	64°00.6'	N 16°01.9'	14.8'	-11.5'	54.4'	112°07.4'	57°10.2'	54°25.8'		36°26.1'	39°38.6'	61°14.3'	63°54.1'
10	78°34.4'	N 15°50.4'	14.9'	-11.6'	54.4'	111°40.2'	56°45.9'	53°56.1'		36°55.8'	40°03.4'	61°32.5'	64°21.7'
11	93°08.3'	N 15°38.9'	14.9'	-11.6'	54.4'	111°13.0'	56°21.6'	53°26.4'		37°25.6'	40°28.2'	61°50.8'	64°49.4'
12	107°42.2'	N 15°27.3'	15.0'	-11.7'	54.4'	110°45.7'	55°57.4'	52°56.6'		37°55.4'	40°53.1'	62°09.1'	65°17.1'
13	122°16.2'	N 15°15.6'	15.0'	-11.8'	54.4'	110°18.4'	55°33.2'	52°26.9'		38°25.3'	41°18.2'	62°27.6'	65°44.8'
14	136°50.2'	N 15°03.8'	15.0'	-11.8'	54.4'	109°51.1'	55°09.1'	51°57.1'		38°55.1'	41°43.3'	62°46.1'	66°12.6'
15	151°24.3'	N 14°52.0'	15.1'	-11.9'	54.5'	109°23.8'	54°45.0'	51°27.3'		39°25.0'	42°08.6'	63°04.8'	66°40.4'
16	165°58.3'	N 14°40.1'	15.1'	-11.9'	54.5'	108°56.5'	54°21.0'	50°57.5'		39°54.8'	42°33.9'	63°23.5'	67°08.2'
17	180°32.5'	N 14°28.2'	15.1'	-12.0'	54.5'	108°29.2'	53°57.0'	50°27.7'		40°24.7'	42°59.4'	63°42.3'	67°36.0'
18	195°06.6'	N 14°16.2'	15.2'	-12.1'	54.5'	108°01.8'	53°33.0'	49°57.8'		40°54.6'	43°24.9'	64°01.2'	68°03.9'
19	209°40.8'	N 14°04.1'	15.2'	-12.1'	54.5'	107°34.5'	53°09.2'	49°28.0'		41°24.6'	43°50.5'	64°20.2'	68°31.8'
20	224°15.0'	N 13°51.9'	15.2'	-12.2'	54.5'	107°07.1'	52°45.4'	48°58.1'		41°54.5'	44°16.2'	64°39.3'	68°59.8'
21	238°49.3'	N 13°39.7'	15.3'	-12.3'	54.6'	106°39.7'	52°21.6'	48°28.2'	7°20.2'	42°24.5'	44°42.0'	64°58.5'	69°27.7'
22	253°23.5'	N 13°27.5'	15.3'	-12.3'	54.6'	106°12.2'	51°57.9'	47°58.3'	7°44.4'	42°54.4'	45°07.9'	65°17.7'	69°55.7'
23	267°57.8'	N 13°15.2'	15.3'	-12.4'	54.6'	105°44.8'	51°34.3'	47°28.4'	8°09.2'	43°24.4'	45°33.8'	65°37.0'	70°23.8'
Mer. pass.		4 h 36 m SD 14.8'	phase 72%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.3'	S 11°16.7'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.9'	Acrux	+0.8	173°02.2'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.2'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.2'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.1'	N 27°58.2'	Aldebaran	+0.9	290°41.3'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.4'	N 5°10.0'	Polaris	+2.0	314°26.3'	N 89°21.8'
Rigil Kent	-0.0	139°43.2'	S 60°55.5'	Adhara	+1.5	255°06.9'	S 29°00.1'	Achernar	+0.5	335°21.2'	S 57°07.5'
Arcturus	-0.1	145°49.7'	N 19°03.8'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.9'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	83°37.9'	181°17.4'	S 23°15.1'	166°58.7'	S 24°12.0'	83°30.0'	S 1°25.5'	119°57.5'	S 15°43.4'	11°46.3'	N 24°55.8'	
1	98°40.4'	196°17.1'	S 23°15.2'	181°57.7'	S 24°11.9'	98°32.3'	S 1°25.4'	134°59.7'	S 15°43.4'	26°49.7'	N 24°55.7'	
2	113°42.9'	211°16.8'	S 23°15.3'	196°56.7'	S 24°11.9'	113°34.6'	S 1°25.4'	150°02.0'	S 15°43.3'	41°53.1'	N 24°55.7'	
3	128°45.3'	226°16.5'	S 23°15.5'	211°55.8'	S 24°11.8'	128°36.9'	S 1°25.3'	165°04.3'	S 15°43.2'	56°56.6'	N 24°55.7'	
4	143°47.8'	241°16.2'	S 23°15.6'	226°54.8'	S 24°11.8'	143°39.2'	S 1°25.2'	180°06.5'	S 15°43.2'	72°00.0'	N 24°55.6'	
5	158°50.3'	256°15.9'	S 23°15.7'	241°53.8'	S 24°11.7'	158°41.5'	S 1°25.1'	195°08.8'	S 15°43.1'	87°03.4'	N 24°55.6'	
6	173°52.7'	271°15.6'	S 23°15.9'	256°52.8'	S 24°11.6'	173°43.8'	S 1°25.0'	210°11.1'	S 15°43.0'	102°06.9'	N 24°55.5'	
7	188°55.2'	286°15.3'	S 23°16.0'	271°51.9'	S 24°11.6'	188°46.1'	S 1°25.0'	225°13.3'	S 15°43.0'	117°10.3'	N 24°55.5'	
8	203°57.7'	301°15.0'	S 23°16.1'	286°50.9'	S 24°11.5'	203°48.4'	S 1°24.9'	240°15.6'	S 15°42.9'	132°13.7'	N 24°55.5'	
9	219°00.1'	316°14.7'	S 23°16.3'	301°49.9'	S 24°11.4'	218°50.7'	S 1°24.8'	255°17.8'	S 15°42.8'	147°17.2'	N 24°55.4'	
10	234°02.6'	331°14.4'	S 23°16.4'	316°48.9'	S 24°11.4'	233°53.0'	S 1°24.7'	270°20.1'	S 15°42.7'	162°20.6'	N 24°55.4'	
11	249°05.1'	346°14.1'	S 23°16.5'	331°48.0'	S 24°11.3'	248°55.3'	S 1°24.6'	285°22.4'	S 15°42.7'	177°24.0'	N 24°55.3'	
12	264°07.5'	1°13.8'	S 23°16.6'	346°47.0'	S 24°11.2'	263°57.6'	S 1°24.5'	300°24.6'	S 15°42.6'	192°27.5'	N 24°55.3'	
13	279°10.0'	16°13.5'	S 23°16.8'	1°46.0'	S 24°11.1'	278°59.9'	S 1°24.5'	315°26.9'	S 15°42.5'	207°30.9'	N 24°55.3'	
14	294°12.4'	31°13.2'	S 23°16.9'	16°45.0'	S 24°11.1'	294°02.2'	S 1°24.4'	330°29.2'	S 15°42.5'	222°34.3'	N 24°55.2'	
15	309°14.9'	46°12.9'	S 23°17.0'	31°44.1'	S 24°11.0'	309°04.5'	S 1°24.3'	345°31.4'	S 15°42.4'	237°37.7'	N 24°55.2'	
16	324°17.4'	61°12.6'	S 23°17.1'	46°43.1'	S 24°10.9'	324°06.8'	S 1°24.2'	0°33.7'	S 15°42.3'	252°41.2'	N 24°55.1'	
17	339°19.8'	76°12.3'	S 23°17.2'	61°42.1'	S 24°10.8'	339°09.1'	S 1°24.1'	15°35.9'	S 15°42.3'	267°44.6'	N 24°55.1'	
18	354°22.3'	91°12.0'	S 23°17.4'	76°41.2'	S 24°10.7'	354°11.4'	S 1°24.1'	30°38.2'	S 15°42.2'	282°48.0'	N 24°55.1'	
19	9°24.8'	106°11.7'	S 23°17.5'	91°40.2'	S 24°10.7'	9°13.7'	S 1°24.0'	45°40.5'	S 15°42.1'	297°51.4'	N 24°55.0'	
20	24°27.2'	121°11.4'	S 23°17.6'	106°39.2'	S 24°10.6'	24°16.0'	S 1°23.9'	60°42.7'	S 15°42.1'	312°54.9'	N 24°55.0'	
21	39°29.7'	136°11.1'	S 23°17.7'	121°38.2'	S 24°10.5'	39°18.3'	S 1°23.8'	75°45.0'	S 15°42.0'	327°58.3'	N 24°54.9'	
22	54°32.2'	151°10.8'	S 23°17.8'	136°37.3'	S 24°10.4'	54°20.9'	S 1°23.7'	90°47.2'	S 15°41.9'	343°01.7'	N 24°54.9'	
23	69°34.6'	166°10.5'	S 23°18.0'	151°36.3'	S 24°10.3'	69°22.9'	S 1°23.6'	105°49.5'	S 15°41.9'	358°05.1'	N 24°54.9'	
		SD 16.2'	d -0.1'		v -1.0'	d 0.1'		v 2.3'	d 0.1'		v 3.4'	d -0.0'
Mer. pass.		11 h 55 m 6 s		12 h 53 m		18 h 23 m		15 h 58 m		23 h 8 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Acrux	-Arcturus	-Spica	+Regulus	+Pollux	+Procyon	+Sirius
0	282°32.2'	N 13°02.8'	15.4'	-12.4'	54.6'	105°17.3'	78°50.8'	51°10.7'	46°58.5'	8°34.6'	43°54.5'	45°59.8'	65°56.4'
1	297°06.6'	N 12°50.4'	15.4'	-12.5'	54.6'	104°49.8'	78°33.2'	50°47.2'	46°28.5'	9°00.5'	44°24.5'	46°26.0'	66°15.9'
2	311°41.0'	N 12°37.9'	15.4'	-12.5'	54.7'	104°22.3'	78°15.6'	50°23.8'	45°58.5'	9°26.8'	44°54.6'	46°52.1'	66°35.5'
3	326°15.4'	N 12°25.3'	15.5'	-12.6'	54.7'	103°54.8'	77°58.0'	50°00.4'	45°28.5'	9°53.5'	45°24.6'	47°18.4'	66°55.2'
4	340°49.8'	N 12°12.7'	15.5'	-12.7'	54.7'	103°27.3'	77°40.5'	49°37.2'	44°58.5'	10°20.5'	45°54.7'	47°44.8'	67°14.9'
5	355°24.3'	N 12°00.1'	15.5'	-12.7'	54.7'	102°59.7'	77°22.9'	49°14.0'	44°28.5'	10°47.8'	46°24.9'	48°11.2'	67°34.7'
6	9°58.8'	N 11°47.3'	15.5'	-12.8'	54.7'	102°32.1'	77°05.4'	48°50.8'	43°58.5'	11°15.4'	46°55.0'	48°37.7'	67°54.6'
7	24°33.3'	N 11°34.6'	15.5'	-12.8'	54.8'	102°04.5'	76°48.0'	48°27.8'	43°28.4'	11°43.2'	47°25.2'	49°04.2'	68°14.5'
8	39°07.9'	N 11°21.7'	15.6'	-12.9'	54.8'	101°36.9'	76°30.5'	48°04.8'	42°58.3'	12°11.2'	47°55.4'	49°30.9'	68°34.6'
9	53°42.5'	N 11°08.9'	15.6'	-12.9'	54.8'	101°09.3'	76°13.1'	47°41.9'	42°28.2'	12°39.4'	48°25.6'	49°57.6'	68°54.7'
10	68°17.1'	N 10°55.9'	15.6'	-13.0'	54.8'	100°41.6'	75°55.7'	47°19.1'	41°58.1'	13°07.7'	48°55.8'	50°24.3'	69°14.8'
11	82°51.7'	N 10°42.9'	15.6'	-13.0'	54.8'	100°13.9'	75°38.4'	46°56.4'	41°28.0'	13°36.3'	49°26.1'	50°51.2'	69°35.1'
12	97°26.3'	N 10°29.9'	15.6'	-13.1'	54.9'	99°46.2'	75°21.0'	46°33.8'	40°57.8'	14°04.9'	49°56.4'	51°18.1'	69°55.4'
13	112°00.9'	N 10°16.8'	15.7'	-13.1'	54.9'	99°18.4'	75°03.7'	46°11.3'	40°27.6'	14°33.7'	50°26.7'	51°45.1'	70°15.8'
14	126°35.6'	N 10°03.7'	15.7'	-13.2'	54.9'	98°50.7'	74°46.5'	45°48.9'	39°57.4'	15°02.6'	50°57.0'	52°12.1'	70°36.3'
15	141°10.3'	N 9°50.5'	15.7'	-13.2'	54.9'	98°22.9'	74°29.3'	45°26.5'	39°27.2'	15°31.7'	51°27.3'	52°39.2'	70°56.8'
16	155°45.0'	N 9°37.3'	15.7'	-13.3'	54.9'	97°55.1'	74°12.1'	45°04.3'	38°56.9'	16°00.8'	51°57.7'	53°06.4'	71°17.4'
17	170°19.7'	N 9°24.0'	15.7'	-13.3'	55.0'	97°27.2'	73°54.9'	44°42.2'	38°26.7'	16°30.0'	52°28.1'	53°33.6'	71°38.0'
18	184°54.4'	N 9°10.7'	15.7'	-13.4'	55.0'	96°59.4'	73°37.8'	44°20.2'	37°56.4'	16°59.4'	52°58.5'	54°00.9'	71°58.7'
19	199°29.1'	N 8°57.3'	15.7'	-13.4'	55.0'	96°31.5'	73°20.8'	43°58.3'	37°26.1'	17°28.8'	53°29.0'	54°28.3'	72°19.5'
20	214°03.9'	N 8°43.9'	15.7'	-13.5'	55.0'	96°03.6'	73°03.8'	43°36.6'	36°55.7'	17°58.3'	53°59.5'	54°55.7'	72°40.4'
21	228°38.6'	N 8°30.4'	15.8'	-13.5'	55.1'	95°35.6'	72°46.8'	43°14.9'	36°25.4'	18°27.8'	54°30.0'	55°23.1'	73°01.3'
22	243°13.4'	N 8°16.9'	15.8'	-13.6'	55.1'	95°07.7'	72°29.8'	42°53.4'	35°55.0'	18°57.5'	55°00.5'	55°50.7'	73°22.3'
23	257°48.1'	N 8°03.3'	15.8'	-13.6'	55.1'	94°39.7'	72°12.9'	42°32.0'	35°24.6'	19°27.2'	55°31.1'	56°18.3'	73°43.3'
Mer. pass.		5 h 19 m SD 14.9'		phase 63%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.3'	S 11°16.7'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.9'	Acrux	+0.8	173°02.2'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.3'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.2'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.1'	N 27°58.2'	Aldebaran	+0.9	290°41.3'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.3'	N 5°10.0'	Polaris	+2.0	314°26.6'	N 89°21.8'
Rigil Kent	-0.0	139°43.2'	S 60°55.5'	Adhara	+1.5	255°06.9'	S 29°00.1'	Achernar	+0.5	335°21.2'	S 57°07.5'
Arcturus	-0.1	145°49.7'	N 19°03.8'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.9'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.4'				

Friday 16 December 2022 UT1

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	84°37.1'	181°10.2'	S 23°18.1'	166°35.3'	S 24°10.2'	84°25.2'	S 1°23.6'	120°51.8'	S 15°41.8'	13°08.5'	N 24°54.8'	
1	99°39.5'	196°09.9'	S 23°18.2'	181°34.3'	S 24°10.1'	99°27.5'	S 1°23.5'	135°54.0'	S 15°41.7'	28°12.0'	N 24°54.8'	
2	114°42.0'	211°09.6'	S 23°18.3'	196°33.4'	S 24°10.0'	114°29.8'	S 1°23.4'	150°56.3'	S 15°41.7'	43°15.4'	N 24°54.7'	
3	129°44.5'	226°09.3'	S 23°18.4'	211°32.4'	S 24°09.9'	129°32.1'	S 1°23.3'	165°58.6'	S 15°41.6'	58°18.8'	N 24°54.7'	
4	144°46.9'	241°09.0'	S 23°18.5'	226°31.4'	S 24°09.8'	144°34.4'	S 1°23.2'	181°00.8'	S 15°41.5'	73°22.2'	N 24°54.6'	
5	159°49.4'	256°08.7'	S 23°18.6'	241°30.5'	S 24°09.7'	159°36.7'	S 1°23.1'	196°03.1'	S 15°41.5'	88°25.6'	N 24°54.6'	
6	174°51.9'	271°08.4'	S 23°18.8'	256°29.5'	S 24°09.7'	174°39.0'	S 1°23.0'	211°05.3'	S 15°41.4'	103°29.0'	N 24°54.6'	
7	189°54.3'	286°08.1'	S 23°18.9'	271°28.5'	S 24°09.6'	189°41.3'	S 1°23.0'	226°07.6'	S 15°41.3'	118°32.4'	N 24°54.5'	
8	204°56.8'	301°07.8'	S 23°19.0'	286°27.5'	S 24°09.5'	204°43.6'	S 1°22.9'	241°09.9'	S 15°41.3'	133°35.8'	N 24°54.5'	
9	219°59.3'	316°07.4'	S 23°19.1'	301°26.6'	S 24°09.4'	219°45.9'	S 1°22.8'	256°12.1'	S 15°41.2'	148°39.3'	N 24°54.4'	
10	235°01.7'	331°07.1'	S 23°19.2'	316°25.6'	S 24°09.3'	234°48.2'	S 1°22.7'	271°14.4'	S 15°41.1'	163°42.7'	N 24°54.4'	
11	250°04.2'	346°06.8'	S 23°19.3'	331°24.6'	S 24°09.1'	249°50.5'	S 1°22.6'	286°16.6'	S 15°41.1'	178°46.1'	N 24°54.3'	
12	265°06.7'	1°06.5'	S 23°19.4'	346°23.7'	S 24°09.0'	264°52.8'	S 1°22.5'	301°18.9'	S 15°41.0'	193°49.5'	N 24°54.3'	
13	280°09.1'	16°06.2'	S 23°19.5'	1°22.7'	S 24°08.9'	279°55.1'	S 1°22.5'	316°21.1'	S 15°40.9'	208°52.9'	N 24°54.3'	
14	295°11.6'	31°05.9'	S 23°19.6'	16°21.7'	S 24°08.8'	294°57.4'	S 1°22.4'	331°23.4'	S 15°40.8'	223°56.3'	N 24°54.2'	
15	310°14.0'	46°05.6'	S 23°19.7'	31°20.7'	S 24°08.7'	309°59.7'	S 1°22.3'	346°25.7'	S 15°40.8'	238°59.7'	N 24°54.2'	
16	325°16.5'	61°05.3'	S 23°19.8'	46°19.8'	S 24°08.6'	325°02.0'	S 1°22.2'	1°27.9'	S 15°40.7'	254°03.1'	N 24°54.1'	
17	340°19.0'	76°05.0'	S 23°19.9'	61°18.8'	S 24°08.5'	340°04.3'	S 1°22.1'	16°30.2'	S 15°40.6'	269°06.5'	N 24°54.1'	
18	355°21.4'	91°04.7'	S 23°20.0'	76°17.8'	S 24°08.4'	355°06.6'	S 1°22.0'	31°32.4'	S 15°40.6'	284°09.9'	N 24°54.0'	
19	10°23.9'	106°04.4'	S 23°20.1'	91°16.9'	S 24°08.3'	10°08.9'	S 1°21.9'	46°34.7'	S 15°40.5'	299°13.3'	N 24°54.0'	
20	25°26.4'	121°04.1'	S 23°20.2'	106°15.9'	S 24°08.2'	25°11.2'	S 1°21.9'	61°37.0'	S 15°40.4'	314°16.7'	N 24°54.0'	
21	40°28.8'	136°03.8'	S 23°20.3'	121°14.9'	S 24°08.0'	40°13.5'	S 1°21.8'	76°39.2'	S 15°40.4'	329°20.1'	N 24°53.9'	
22	55°31.3'	151°03.5'	S 23°20.4'	136°13.9'	S 24°07.9'	55°15.7'	S 1°21.7'	91°41.5'	S 15°40.3'	344°23.5'	N 24°53.9'	
23	70°33.8'	166°03.2'	S 23°20.5'	151°13.0'	S 24°07.8'	70°18.0'	S 1°21.6'	106°43.7'	S 15°40.2'	359°26.9'	N 24°53.8'	
		SD 16.2' d -0.1'		v -1.0' d 0.1'		v 2.3' d 0.1'		v 2.3' d 0.1'		v 3.4' d -0.0'		
Mer. pass.		11 h 55 m 35 s		12 h 55 m		18 h 20 m		15 h 54 m		23 h 2 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Acrux	-Arcturus	-Spica	+Regulus	+Pollux	+Procyon	+Sirius
0	272°22.9'	N 7°49.7'	15.8'	-13.6'	55.1'	94°11.6'	71°56.1'	42°10.8'	34°54.2'	19°57.0'	56°01.7'	56°45.9'	74°04.4'
1	286°57.7'	N 7°36.1'	15.8'	-13.7'	55.2'	93°43.6'	71°39.3'	41°49.7'	34°23.7'	20°26.8'	56°32.3'	57°13.6'	74°25.6'
2	301°32.5'	N 7°22.4'	15.8'	-13.7'	55.2'	93°15.5'	71°22.5'	41°28.7'	33°53.3'	20°56.8'	57°03.0'	57°41.4'	74°46.8'
3	316°07.2'	N 7°08.7'	15.8'	-13.8'	55.2'	92°47.4'	71°05.8'	41°07.9'	33°22.8'	21°26.7'	57°33.6'	58°09.2'	75°08.1'
4	330°42.0'	N 6°54.9'	15.8'	-13.8'	55.2'	92°19.3'	70°49.2'	40°47.2'	32°52.2'	21°56.8'	58°04.3'	58°37.1'	75°29.4'
5	345°16.8'	N 6°41.1'	15.8'	-13.8'	55.3'	91°51.1'	70°32.6'	40°26.7'	32°21.7'	22°26.9'	58°35.1'	59°05.0'	75°50.8'
6	359°51.6'	N 6°27.3'	15.8'	-13.9'	55.3'	91°22.9'	70°16.0'	40°06.3'	31°51.1'	22°57.0'	59°05.8'	59°33.0'	76°12.2'
7	14°26.4'	N 6°13.4'	15.8'	-13.9'	55.3'	90°54.7'	69°59.5'	39°46.1'	31°20.6'	23°27.3'	59°36.6'	60°01.1'	76°33.7'
8	29°01.2'	N 5°59.5'	15.8'	-14.0'	55.4'	90°26.4'	69°43.1'	39°26.1'	30°49.9'	23°57.5'	60°07.5'	60°29.2'	76°55.3'
9	43°35.9'	N 5°45.5'	15.8'	-14.0'	55.4'	89°58.1'	69°26.7'	39°06.2'	30°19.3'	24°27.8'	60°38.3'	60°57.4'	77°16.9'
10	58°10.7'	N 5°31.5'	15.8'	-14.0'	55.4'	89°29.8'	69°10.4'	38°46.6'	29°48.7'	24°58.2'	61°09.2'	61°25.6'	77°38.6'
11	72°45.5'	N 5°17.5'	15.8'	-14.1'	55.4'	89°01.5'	68°54.1'	38°27.1'	29°18.0'	25°28.6'	61°40.1'	61°53.8'	78°00.3'
12	87°20.2'	N 5°03.4'	15.7'	-14.1'	55.5'	88°33.1'	68°37.9'	38°07.8'	28°47.3'	25°59.1'	62°11.1'	62°22.2'	78°22.1'
13	101°55.0'	N 4°49.3'	15.7'	-14.1'	55.5'	88°04.7'	68°21.8'	37°48.7'	28°16.5'	26°29.6'	62°42.1'	62°50.5'	78°43.9'
14	116°29.7'	N 4°35.2'	15.7'	-14.2'	55.5'	87°36.2'	68°05.7'	37°29.8'	27°45.8'	27°00.2'	63°13.1'	63°19.0'	79°05.8'
15	131°04.4'	N 4°21.0'	15.7'	-14.2'	55.6'	87°07.8'	67°49.7'	37°11.2'	27°15.0'	27°30.8'	63°44.2'	63°47.4'	79°27.7'
16	145°39.1'	N 4°06.8'	15.7'	-14.2'	55.6'	86°39.3'	67°33.7'	36°52.7'	26°44.2'	28°01.5'	64°15.2'	64°16.0'	79°49.7'
17	160°13.8'	N 3°52.6'	15.7'	-14.3'	55.6'	86°10.7'	67°17.9'	36°34.5'	26°13.4'	28°32.2'	64°46.4'	64°44.6'	80°11.7'
18	174°48.5'	N 3°38.4'	15.7'	-14.3'	55.6'	85°42.1'	67°02.1'	36°16.5'	25°42.6'	29°03.0'	65°17.5'	65°13.2'	80°33.8'
19	189°23.2'	N 3°24.1'	15.6'	-14.3'	55.7'	85°13.5'	66°46.3'	35°58.8'	25°11.7'	29°33.8'	65°48.7'	65°41.9'	80°55.9'
20	203°57.8'	N 3°09.7'	15.6'	-14.3'	55.7'	84°44.9'	66°30.7'	35°41.3'	24°40.8'	30°04.6'	66°19.9'	66°10.6'	81°18.1'
21	218°32.5'	N 2°55.4'	15.6'	-14.4'	55.7'	84°16.2'	66°15.1'	35°24.0'	24°09.9'	30°35.6'	66°51.2'	66°39.4'	81°40.3'
22	233°07.1'	N 2°41.0'	15.6'	-14.4'	55.8'	83°47.5'	65°59.6'	35°07.0'	23°39.0'	31°06.5'	67°22.5'	67°08.3'	82°02.5'
23	247°41.7'	N 2°26.6'	15.6'	-14.4'	55.8'	83°18.7'	65°44.2'	34°50.3'	23°08.1'	31°37.5'	67°53.8'	67°37.2'	82°24.8'
Mer. pass.		6 h 1 m SD 15.0'		phase 54%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.3'	S 11°16.7'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.9'	Acrux	+0.8	173°02.2'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.3'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.1'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.1'	N 27°58.2'	Aldebaran	+0.9	290°41.2'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.3'	N 5°10.0'	Polaris	+2.0	314°26.9'	N 89°21.8'
Rigil Kent	-0.0	139°43.2'	S 60°55.5'	Adhara	+1.5	255°06.8'	S 29°00.1'	Achernar	+0.5	335°21.2'	S 57°07.5'
Arcturus	-0.1	145°49.7'	N 19°03.8'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.9'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	85°36.2'	181°02.9' S	23°20.6'	166°12.0' S	24°07.7'	85°20.3' S	1°21.5'	121°46.0' S	15°40.2'	14°30.3' N	24°53.8'	
1	100°38.7'	196°02.6' S	23°20.7'	181°11.0' S	24°07.6'	100°22.6' S	1°21.4'	136°48.3' S	15°40.1'	29°33.7' N	24°53.7'	
2	115°41.2'	211°02.3' S	23°20.8'	196°10.1' S	24°07.4'	115°24.9' S	1°21.3'	151°50.5' S	15°40.0'	44°37.1' N	24°53.7'	
3	130°43.6'	226°02.0' S	23°20.9'	211°09.1' S	24°07.3'	130°27.2' S	1°21.2'	166°52.8' S	15°40.0'	59°40.5' N	24°53.6'	
4	145°46.1'	241°01.7' S	23°21.0'	226°08.1' S	24°07.2'	145°29.5' S	1°21.2'	181°55.0' S	15°39.9'	74°43.9' N	24°53.6'	
5	160°48.5'	256°01.4' S	23°21.1'	241°07.2' S	24°07.1'	160°31.8' S	1°21.1'	196°57.3' S	15°39.8'	89°47.2' N	24°53.6'	
6	175°51.0'	271°01.1' S	23°21.2'	256°06.2' S	24°06.9'	175°34.1' S	1°21.0'	211°59.5' S	15°39.7'	104°50.6' N	24°53.5'	
7	190°53.5'	286°00.8' S	23°21.3'	271°05.2' S	24°06.8'	190°36.4' S	1°20.9'	227°01.8' S	15°39.7'	119°54.0' N	24°53.5'	
8	205°55.9'	301°00.4' S	23°21.4'	286°04.3' S	24°06.7'	205°38.7' S	1°20.8'	242°04.1' S	15°39.6'	134°57.4' N	24°53.4'	
9	220°58.4'	316°00.1' S	23°21.4'	301°03.3' S	24°06.5'	220°41.0' S	1°20.7'	257°06.3' S	15°39.5'	150°00.8' N	24°53.4'	
10	236°00.9'	330°59.8' S	23°21.5'	316°02.3' S	24°06.4'	235°43.2' S	1°20.6'	272°08.6' S	15°39.5'	165°04.2' N	24°53.3'	
11	251°03.3'	345°59.5' S	23°21.6'	331°01.3' S	24°06.3'	250°45.5' S	1°20.5'	287°10.8' S	15°39.4'	180°07.6' N	24°53.3'	
12	266°05.8'	0°59.2' S	23°21.7'	346°00.4' S	24°06.1'	265°47.8' S	1°20.5'	302°13.1' S	15°39.3'	195°10.9' N	24°53.2'	
13	281°08.3'	15°58.9' S	23°21.8'	0°59.4' S	24°06.0'	280°50.1' S	1°20.4'	317°15.3' S	15°39.3'	210°14.3' N	24°53.2'	
14	296°10.7'	30°58.6' S	23°21.9'	15°58.4' S	24°05.9'	295°52.4' S	1°20.3'	332°17.6' S	15°39.2'	225°17.7' N	24°53.1'	
15	311°13.2'	45°58.3' S	23°22.0'	30°57.5' S	24°05.7'	310°54.7' S	1°20.2'	347°19.9' S	15°39.1'	240°21.1' N	24°53.1'	
16	326°15.6'	60°58.0' S	23°22.1'	45°56.5' S	24°05.6'	325°57.0' S	1°20.1'	2°22.1' S	15°39.1'	255°24.5' N	24°53.0'	
17	341°18.1'	75°57.7' S	23°22.1'	60°55.5' S	24°05.4'	340°59.3' S	1°20.0'	17°24.4' S	15°39.0'	270°27.8' N	24°53.0'	
18	356°20.6'	90°57.4' S	23°22.2'	75°54.6' S	24°05.3'	356°01.5' S	1°19.9'	32°26.6' S	15°38.9'	285°31.2' N	24°53.0'	
19	11°23.0'	105°57.1' S	23°22.3'	90°53.6' S	24°05.1'	11°03.8' S	1°19.8'	47°28.9' S	15°38.8'	300°34.6' N	24°52.9'	
20	26°25.5'	120°56.8' S	23°22.4'	105°52.6' S	24°05.0'	26°06.1' S	1°19.7'	62°31.1' S	15°38.8'	315°38.0' N	24°52.9'	
21	41°28.0'	135°56.5' S	23°22.5'	120°51.7' S	24°04.8'	41°08.4' S	1°19.7'	77°33.4' S	15°38.7'	330°41.3' N	24°52.8'	
22	56°30.4'	150°56.2' S	23°22.5'	135°50.7' S	24°04.7'	56°10.7' S	1°19.6'	92°35.6' S	15°38.6'	345°44.7' N	24°52.8'	
23	71°32.9'	165°55.9' S	23°22.6'	150°49.7' S	24°04.5'	71°13.0' S	1°19.5'	107°37.9' S	15°38.6'	0°48.1' N	24°52.7'	
		SD 16.2' d -0.1'		v -1.0' d 0.1'		v 2.3' d 0.1'		v 2.3' d 0.1'		v 3.4' d -0.0'		
Mer. pass.		11 h 56 m 5 s		12 h 56 m		18 h 16 m		15 h 51 m		22 h 57 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Acrux	-Arcturus	-Spica	+Regulus	+Procyon	+Pollux	+Adhara
0	262°16.2'	N 2°12.2'	15.5'	-14.5'	55.8'	82°49.9'	65°28.8'	34°33.9'	22°37.1'	32°08.5'	68°06.1'	68°25.2'	81°00.2'
1	276°50.8'	N 1°57.7'	15.5'	-14.5'	55.9'	82°21.1'	65°13.5'	34°17.7'	22°06.1'	32°39.6'	68°35.1'	68°56.6'	81°17.2'
2	291°25.3'	N 1°43.3'	15.5'	-14.5'	55.9'	81°52.3'	64°58.4'	34°01.8'	21°35.2'	33°10.8'	69°04.2'	69°28.0'	81°34.3'
3	305°59.8'	N 1°28.8'	15.5'	-14.5'	55.9'	81°23.4'	64°43.3'	33°46.3'	21°04.2'	33°42.0'	69°33.3'	69°59.5'	81°51.4'
4	320°34.3'	N 1°14.2'	15.4'	-14.5'	56.0'	80°54.4'			20°33.1'	34°13.2'	70°02.4'	70°31.0'	82°08.6'
5	335°08.7'	N 0°59.7'	15.4'	-14.6'	56.0'	80°25.5'			20°02.1'	34°44.5'	70°31.6'	71°02.6'	82°25.9'
6	349°43.1'	N 0°45.1'	15.4'	-14.6'	56.0'	79°56.4'			19°31.1'	35°15.8'	71°00.9'	71°34.2'	82°43.1'
7	4°17.5'	N 0°30.5'	15.3'	-14.6'	56.1'	79°27.4'			19°00.0'	35°47.1'	71°30.2'	72°05.8'	83°00.5'
8	18°51.8'	N 0°15.9'	15.3'	-14.6'	56.1'	78°58.3'			18°29.0'	36°18.5'	71°59.5'	72°37.5'	83°17.9'
9	33°26.1'	N 0°01.3'	15.3'	-14.6'	56.1'	78°29.2'			17°57.9'	36°50.0'	72°28.9'	73°09.2'	83°35.3'
10	48°00.4'	S 0°13.4'	15.2'	-14.7'	56.2'	78°00.0'			17°26.9'	37°21.5'	72°58.4'	73°40.9'	83°52.7'
11	62°34.6'	S 0°28.0'	15.2'	-14.7'	56.2'	77°30.8'			16°55.8'	37°53.1'	73°27.9'	74°12.7'	84°10.3'
12	77°08.9'	S 0°42.7'	15.2'	-14.7'	56.2'	77°01.6'			16°24.8'	38°24.6'	73°57.4'	74°44.5'	84°27.8'
13	91°43.0'	S 0°57.4'	15.1'	-14.7'	56.3'	76°32.3'			15°53.7'	38°56.3'	74°27.0'	75°16.4'	84°45.4'
14	106°17.1'	S 1°12.1'	15.1'	-14.7'	56.3'	76°03.0'			15°22.7'	39°28.0'	74°56.7'	75°48.3'	85°03.1'
15	120°51.2'	S 1°26.8'	15.0'	-14.7'	56.3'	75°33.6'			14°51.7'	39°59.7'	75°26.3'	76°20.3'	85°20.7'
16	135°25.3'	S 1°41.6'	15.0'	-14.8'	56.4'	75°04.2'			14°20.8'	40°31.5'	75°56.1'	76°52.3'	85°38.5'
17	149°59.3'	S 1°56.3'	14.9'	-14.8'	56.4'	74°34.8'			13°49.9'	41°03.3'	76°25.9'	77°24.3'	85°56.2'
18	164°33.2'	S 2°11.1'	14.9'	-14.8'	56.4'	74°05.3'			13°19.0'	41°35.2'	76°55.7'	77°56.4'	86°14.0'
19	179°07.1'	S 2°25.9'	14.9'	-14.8'	56.5'	73°35.8'			12°48.2'	42°07.1'	77°25.6'	78°28.5'	86°31.8'
20	193°41.0'	S 2°40.6'	14.8'	-14.8'	56.5'	73°06.2'			12°17.4'	42°39.1'	77°55.6'	79°00.7'	86°49.7'
21	208°14.8'	S 2°55.4'	14.8'	-14.8'	56.6'	72°36.6'			11°46.8'	43°11.1'	78°25.6'	79°32.9'	87°07.6'
22	222°48.5'	S 3°10.2'	14.7'	-14.8'	56.6'	72°06.9'			11°16.2'	43°43.1'	78°55.6'	80°05.1'	87°25.6'
23	237°22.2'	S 3°25.0'	14.6'	-14.8'	56.6'	71°37.2'			10°45.8'	44°15.2'	79°25.7'	80°37.4'	87°43.5'
Mer. pass.		6 h 42 m SD 15.2' phase 44%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.3'	S 11°16.7'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.8'	Acrux	+0.8	173°02.2'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.3'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.1'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.1'	N 27°58.2'	Aldebaran	+0.9	290°41.2'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.3'	N 5°10.0'	Polaris	+2.0	314°27.2'	N 89°21.8'
Rigil Kent	-0.0	139°43.1'	S 60°55.5'	Adhara	+1.5	255°06.8'	S 29°00.1'	Achernar	+0.5	335°21.2'	S 57°07.5'
Arcturus	-0.1	145°49.7'	N 19°03.7'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.9'	S 60°28.7'	Canopus	-0.6	263°52.6'	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	86°35.4'	180°55.6'	S 23°22.7'	165°48.8'	S 24°04.4'		86°15.3'	S 1°19.4'		122°40.2'	S 15°38.5'		15°51.5'	N 24°52.7'				
1	101°37.8'	195°55.2'	S 23°22.8'	180°47.8'	S 24°04.2'		101°17.5'	S 1°19.3'		137°42.4'	S 15°38.4'		30°54.8'	N 24°52.6'				
2	116°40.3'	210°54.9'	S 23°22.8'	195°46.8'	S 24°04.1'		116°19.8'	S 1°19.2'		152°44.7'	S 15°38.4'		45°58.2'	N 24°52.6'				
3	131°42.8'	225°54.6'	S 23°22.9'	210°45.9'	S 24°03.9'		131°22.1'	S 1°19.1'		167°46.9'	S 15°38.3'		61°01.6'	N 24°52.5'				
4	146°45.2'	240°54.3'	S 23°23.0'	225°44.9'	S 24°03.8'		146°24.4'	S 1°19.0'		182°49.2'	S 15°38.2'		76°04.9'	N 24°52.5'				
5	161°47.7'	255°54.0'	S 23°23.1'	240°43.9'	S 24°03.6'		161°26.7'	S 1°18.9'		197°51.4'	S 15°38.1'		91°08.3'	N 24°52.4'				
6	176°50.1'	270°53.7'	S 23°23.1'	255°43.0'	S 24°03.5'		176°29.0'	S 1°18.8'		212°53.7'	S 15°38.1'		106°11.7'	N 24°52.4'				
7	191°52.6'	285°53.4'	S 23°23.2'	270°42.0'	S 24°03.3'		191°31.2'	S 1°18.8'		227°55.9'	S 15°38.0'		121°15.0'	N 24°52.3'				
8	206°55.1'	300°53.1'	S 23°23.3'	285°41.0'	S 24°03.1'		206°33.5'	S 1°18.7'		242°58.2'	S 15°37.9'		136°18.4'	N 24°52.3'				
9	221°57.5'	315°52.8'	S 23°23.3'	300°40.1'	S 24°03.0'		221°35.8'	S 1°18.6'		258°00.4'	S 15°37.9'		151°21.7'	N 24°52.2'				
10	237°00.0'	330°52.5'	S 23°23.4'	315°39.1'	S 24°02.8'		236°38.1'	S 1°18.5'		273°02.7'	S 15°37.8'		166°25.1'	N 24°52.2'				
11	252°02.5'	345°52.2'	S 23°23.5'	330°38.1'	S 24°02.6'		251°40.4'	S 1°18.4'		288°04.9'	S 15°37.7'		181°28.5'	N 24°52.1'				
12	267°04.9'	0°51.9'	S 23°23.5'	345°37.2'	S 24°02.5'		266°42.7'	S 1°18.3'		303°07.2'	S 15°37.7'		196°31.8'	N 24°52.1'				
13	282°07.4'	15°51.6'	S 23°23.6'	0°36.2'	S 24°02.3'		281°44.9'	S 1°18.2'		318°09.5'	S 15°37.6'		211°35.2'	N 24°52.0'				
14	297°09.9'	30°51.3'	S 23°23.7'	15°35.2'	S 24°02.1'		296°47.2'	S 1°18.1'		333°11.7'	S 15°37.5'		226°38.5'	N 24°52.0'				
15	312°12.3'	45°50.9'	S 23°23.7'	30°34.3'	S 24°02.0'		311°49.5'	S 1°18.0'		348°14.0'	S 15°37.4'		241°41.9'	N 24°51.9'				
16	327°14.8'	60°50.6'	S 23°23.8'	45°33.3'	S 24°01.8'		326°51.8'	S 1°17.9'		3°16.2'	S 15°37.4'		256°45.2'	N 24°51.9'				
17	342°17.2'	75°50.3'	S 23°23.9'	60°32.4'	S 24°01.6'		341°54.1'	S 1°17.8'		18°18.5'	S 15°37.3'		271°48.6'	N 24°51.9'				
18	357°19.7'	90°50.0'	S 23°23.9'	75°31.4'	S 24°01.4'		356°56.3'	S 1°17.7'		33°20.7'	S 15°37.2'		286°51.9'	N 24°51.8'				
19	12°22.2'	105°49.7'	S 23°24.0'	90°30.4'	S 24°01.3'		11°58.6'	S 1°17.7'		48°23.0'	S 15°37.2'		301°55.3'	N 24°51.8'				
20	27°24.6'	120°49.4'	S 23°24.1'	105°29.5'	S 24°01.1'		27°00.9'	S 1°17.6'		63°25.2'	S 15°37.1'		316°58.6'	N 24°51.7'				
21	42°27.1'	135°49.1'	S 23°24.1'	120°28.5'	S 24°00.9'		42°03.2'	S 1°17.5'		78°27.5'	S 15°37.0'		332°02.0'	N 24°51.7'				
22	57°29.6'	150°48.8'	S 23°24.2'	135°27.5'	S 24°00.7'		57°05.5'	S 1°17.4'		93°29.7'	S 15°37.0'		347°05.3'	N 24°51.6'				
23	72°32.0'	165°48.5'	S 23°24.2'	150°26.6'	S 24°00.5'		72°07.7'	S 1°17.3'		108°32.0'	S 15°36.9'		2°08.7'	N 24°51.6'				
		SD 16.2' d -0.1'		v -1.0' d 0.2'			v 2.3' d 0.1'			v 2.3' d 0.1'			v 3.4' d -0.0'					
Mer. pass.		11 h 56 m 34 s		12 h 58 m			18 h 12 m			15 h 47 m			22 h 51 m					

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Hadar	-Antares	-Spica	+Regulus	+Procyon	+Pollux	+Adhara
0	251°55.9'	S 3°39.8'	14.6'	-14.8'	56.7'	71°07.5'	58°13.3'	55°33.3'	10°15.5'	44°47.4'	79°55.8'	81°09.7'	88°01.5'
1	266°29.4'	S 3°54.7'	14.5'	-14.8'	56.7'	70°37.7'	57°54.0'	55°00.9'	9°45.4'	45°19.6'	80°26.0'	81°42.1'	88°19.6'
2	281°03.0'	S 4°09.5'	14.5'	-14.8'	56.7'	70°07.9'	57°34.7'	54°28.5'	9°15.5'	45°51.8'	80°56.2'	82°14.5'	88°37.7'
3	295°36.5'	S 4°24.3'	14.4'	-14.8'	56.8'	69°38.0'	57°15.6'	53°56.1'	8°45.8'	46°24.1'	81°26.5'	82°47.0'	88°55.8'
4	310°09.9'	S 4°39.1'	14.4'	-14.8'	56.8'	69°08.1'	56°56.5'	53°23.6'	8°16.5'	46°56.5'	81°56.8'	83°19.5'	89°13.9'
5	324°43.2'	S 4°53.9'	14.3'	-14.8'	56.9'	68°38.1'	56°37.6'	52°51.1'	7°47.5'	47°28.8'	82°27.2'	83°52.1'	89°32.0'
6	339°16.5'	S 5°08.8'	14.2'	-14.8'	56.9'	68°08.1'	56°18.7'	52°18.5'	7°19.1'	48°01.3'	82°57.6'	84°24.7'	89°50.2'
7	353°49.8'	S 5°23.6'	14.2'	-14.8'	56.9'	67°38.1'	56°00.0'	51°45.9'	6°51.2'	48°33.8'	83°28.1'	84°57.3'	90°08.4'
8	8°22.9'	S 5°38.4'	14.1'	-14.8'	57.0'	67°08.0'	55°41.4'	51°13.2'		49°06.3'	83°58.6'	85°30.0'	90°26.7'
9	22°56.0'	S 5°53.2'	14.0'	-14.8'	57.0'	66°37.8'	55°22.9'	50°40.5'		49°38.9'	84°29.2'	86°02.8'	90°44.9'
10	37°29.1'	S 6°08.0'	14.0'	-14.8'	57.0'	66°07.7'	55°04.6'	50°07.7'		50°11.5'	84°59.8'	86°35.5'	91°03.2'
11	52°02.0'	S 6°22.8'	13.9'	-14.8'	57.1'	65°37.4'	54°46.3'	49°34.9'		50°44.2'	85°30.4'	87°08.4'	91°21.5'
12	66°34.9'	S 6°37.6'	13.8'	-14.8'	57.1'	65°07.2'	54°28.2'	49°02.0'		51°16.9'	86°01.1'	87°41.3'	91°39.8'
13	81°07.7'	S 6°52.4'	13.7'	-14.8'	57.2'	64°36.8'	54°10.2'	48°29.1'		51°49.7'	86°31.9'	88°14.2'	91°58.2'
14	95°40.5'	S 7°07.2'	13.7'	-14.8'	57.2'	64°06.5'	53°52.4'	47°56.2'		52°22.5'	87°02.7'	88°47.2'	92°16.5'
15	110°13.2'	S 7°21.9'	13.6'	-14.8'	57.2'	63°36.1'	53°34.7'	47°23.2'		52°55.4'	87°33.5'	89°20.2'	92°34.9'
16	124°45.8'	S 7°36.7'	13.5'	-14.7'	57.3'	63°05.6'	53°17.1'	46°50.2'		53°28.4'	88°04.4'	89°53.2'	92°53.3'
17	139°18.3'	S 7°51.4'	13.4'	-14.7'	57.3'	62°35.1'	52°59.7'	46°17.1'		54°01.3'	88°35.4'	90°26.4'	93°11.7'
18	153°50.7'	S 8°06.2'	13.4'	-14.7'	57.4'	62°04.5'	52°42.4'	45°43.9'		54°34.4'	89°06.3'	90°59.5'	93°30.2'
19	168°23.1'	S 8°20.9'	13.3'	-14.7'	57.4'	61°33.9'	52°25.3'	45°10.8'		55°07.4'	89°37.4'	91°32.7'	93°48.6'
20	182°55.4'	S 8°35.6'	13.2'	-14.7'	57.4'	61°03.3'	52°08.4'	44°37.5'		55°40.6'	90°08.4'	92°06.0'	94°07.1'
21	197°27.6'	S 8°50.3'	13.1'	-14.7'	57.5'	60°32.6'	51°51.6'	44°04.3'		56°13.7'	90°39.6'	92°39.3'	94°25.5'
22	211°59.7'	S 9°04.9'	13.0'	-14.6'	57.5'	60°01.9'	51°34.9'	43°30.9'		56°47.0'	91°10.7'	93°12.7'	94°44.0'
23	226°31.7'	S 9°19.5'	12.9'	-14.6'	57.6'	59°31.1'	51°18.5'	42°57.6'		57°20.2'	91°41.9'	93°46.1'	95°02.5'
Mer. pass.		7 h 25 m SD 15.5' phase 34%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.3'	S 11°16.7'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.8'	Acrux	+0.8	173°02.2'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.3'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.1'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.1'	N 27°58.2'	Aldebaran	+0.9	290°41.2'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.3'	N 5°10.0'	Polaris	+2.0	314°27.4'	N 89°21.8'
Rigil Kent	-0.0	139°43.1'	S 60°55.5'	Adhara	+1.5	255°06.8'	S 29°00.1'	Achernar	+0.5	335°21.2'	S 57°07.5'
Arcturus	-0.1	145°49.7'	N 19°03.7'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.8'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	87°34.5'	180°48.2'	S 23°24.3'	165°25.6'	S 24°00.4'	87°10.0'	S 1°17.2'	123°34.2'	S 15°36.8'	17°12.0'	N 24°51.5'	
1	102°37.0'	195°47.9'	S 23°24.3'	180°24.6'	S 24°00.2'	102°12.3'	S 1°17.1'	138°36.5'	S 15°36.7'	32°15.4'	N 24°51.5'	
2	117°39.4'	210°47.6'	S 23°24.4'	195°23.7'	S 23°60.0'	117°14.6'	S 1°17.0'	153°38.7'	S 15°36.7'	47°18.7'	N 24°51.4'	
3	132°41.9'	225°47.2'	S 23°24.5'	210°22.7'	S 23°59.8'	132°16.8'	S 1°16.9'	168°41.0'	S 15°36.6'	62°22.1'	N 24°51.4'	
4	147°44.4'	240°46.9'	S 23°24.5'	225°21.8'	S 23°59.6'	147°19.1'	S 1°16.8'	183°43.2'	S 15°36.5'	77°25.4'	N 24°51.3'	
5	162°46.8'	255°46.6'	S 23°24.6'	240°20.8'	S 23°59.4'	162°21.4'	S 1°16.7'	198°45.5'	S 15°36.5'	92°28.7'	N 24°51.3'	
6	177°49.3'	270°46.3'	S 23°24.6'	255°19.8'	S 23°59.2'	177°23.7'	S 1°16.6'	213°47.8'	S 15°36.4'	107°32.1'	N 24°51.2'	
7	192°51.7'	285°46.0'	S 23°24.7'	270°18.9'	S 23°59.0'	192°26.0'	S 1°16.5'	228°50.0'	S 15°36.3'	122°35.4'	N 24°51.2'	
8	207°54.2'	300°45.7'	S 23°24.7'	285°17.9'	S 23°58.9'	207°28.2'	S 1°16.4'	243°52.3'	S 15°36.2'	137°38.7'	N 24°51.1'	
9	222°56.7'	315°45.4'	S 23°24.8'	300°16.9'	S 23°58.7'	222°30.5'	S 1°16.4'	258°54.5'	S 15°36.2'	152°42.1'	N 24°51.1'	
10	237°59.1'	330°45.1'	S 23°24.8'	315°16.0'	S 23°58.5'	237°32.8'	S 1°16.3'	273°56.8'	S 15°36.1'	167°45.4'	N 24°51.0'	
11	253°01.6'	345°44.8'	S 23°24.9'	330°15.0'	S 23°58.3'	252°35.1'	S 1°16.2'	288°59.0'	S 15°36.0'	182°48.7'	N 24°51.0'	
12	268°04.1'	0°44.5'	S 23°24.9'	345°14.1'	S 23°58.1'	267°37.3'	S 1°16.1'	304°01.3'	S 15°36.0'	197°52.1'	N 24°50.9'	
13	283°06.5'	15°44.2'	S 23°25.0'	0°13.1'	S 23°57.9'	282°39.6'	S 1°16.0'	319°03.5'	S 15°35.9'	212°55.4'	N 24°50.9'	
14	298°09.0'	30°43.8'	S 23°25.0'	15°12.1'	S 23°57.7'	297°41.9'	S 1°15.9'	334°05.8'	S 15°35.8'	227°58.7'	N 24°50.8'	
15	313°11.5'	45°43.5'	S 23°25.1'	30°11.2'	S 23°57.5'	312°44.2'	S 1°15.8'	349°08.0'	S 15°35.7'	243°02.1'	N 24°50.8'	
16	328°13.9'	60°43.2'	S 23°25.1'	45°10.2'	S 23°57.3'	327°46.4'	S 1°15.7'	4°10.3'	S 15°35.7'	258°05.4'	N 24°50.7'	
17	343°16.4'	75°42.9'	S 23°25.1'	60°09.3'	S 23°57.1'	342°48.7'	S 1°15.6'	19°12.5'	S 15°35.6'	273°08.7'	N 24°50.7'	
18	358°18.9'	90°42.6'	S 23°25.2'	75°08.3'	S 23°56.9'	357°51.0'	S 1°15.5'	34°14.8'	S 15°35.5'	288°12.0'	N 24°50.6'	
19	13°21.3'	105°42.3'	S 23°25.2'	90°07.3'	S 23°56.6'	12°53.2'	S 1°15.4'	49°17.0'	S 15°35.5'	303°15.4'	N 24°50.5'	
20	28°23.8'	120°42.0'	S 23°25.3'	105°06.4'	S 23°56.4'	27°55.5'	S 1°15.3'	64°19.3'	S 15°35.4'	318°18.7'	N 24°50.5'	
21	43°26.2'	135°41.7'	S 23°25.3'	120°05.4'	S 23°56.2'	42°57.8'	S 1°15.2'	79°21.5'	S 15°35.3'	333°22.0'	N 24°50.4'	
22	58°28.7'	150°41.4'	S 23°25.4'	135°04.5'	S 23°56.0'	58°00.1'	S 1°15.1'	94°23.8'	S 15°35.2'	348°25.3'	N 24°50.4'	
23	73°31.2'	165°41.1'	S 23°25.4'	150°03.5'	S 23°55.8'	73°02.3'	S 1°15.0'	109°26.0'	S 15°35.2'	3°28.6'	N 24°50.3'	
		SD 16.2' d -0.0'		v -1.0' d 0.2'		v 2.3' d 0.1'		v 2.3' d 0.1'		v 3.3' d -0.1'		
Mer. pass.		11 h 57 m 4 s		12 h 59 m		18 h 9 m		15 h 43 m		22 h 46 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Rigil Kent	-Hadar	-Antares	+Spica	+Arcturus	+Regulus	+Procyon
0	241°03.6'	S 9°34.2'	12.9'	-14.6'	57.6'	59°00.2'	52°21.5'	51°02.2'	42°24.2'			57°53.6'	92°13.2'
1	255°35.5'	S 9°48.8'	12.8'	-14.6'	57.6'	58°29.4'	52°02.7'	50°46.1'	41°50.7'			58°26.9'	92°44.5'
2	270°07.3'	S 10°03.3'	12.7'	-14.5'	57.7'	57°58.4'	51°44.1'	50°30.2'	41°17.2'			59°00.4'	93°15.8'
3	284°38.9'	S 10°17.9'	12.6'	-14.5'	57.7'	57°27.4'	51°25.6'	50°14.4'	40°43.6'			59°33.9'	93°47.2'
4	299°10.5'	S 10°32.4'	12.5'	-14.5'	57.8'	56°56.4'	51°07.3'	49°58.9'	40°10.0'			60°07.4'	94°18.6'
5	313°42.0'	S 10°46.9'	12.4'	-14.5'	57.8'	56°25.3'	50°49.2'	49°43.5'	39°36.4'	7°21.8'		60°41.0'	94°50.1'
6	328°13.4'	S 11°01.3'	12.3'	-14.4'	57.8'	55°54.2'	50°31.2'		39°02.6'	7°51.3'		61°14.6'	95°21.6'
7	342°44.7'	S 11°15.7'	12.2'	-14.4'	57.9'	55°23.1'	50°13.4'		38°28.9'	8°21.5'		61°48.3'	95°53.2'
8	357°15.9'	S 11°30.1'	12.1'	-14.4'	57.9'	54°51.8'	49°55.7'		37°55.1'	8°52.1'		62°22.0'	96°24.8'
9	11°47.0'	S 11°44.5'	12.0'	-14.3'	58.0'	54°20.6'	49°38.2'		37°21.2'	9°23.1'		62°55.8'	96°56.4'
10	26°17.9'	S 11°58.8'	11.9'	-14.3'	58.0'	53°49.3'	49°21.0'		36°47.4'	9°54.5'		63°29.6'	97°28.1'
11	40°48.8'	S 12°13.1'	11.8'	-14.2'	58.0'	53°17.9'	49°03.9'		36°13.4'	10°26.2'		64°03.5'	97°59.8'
12	55°19.6'	S 12°27.3'	11.7'	-14.2'	58.1'	52°46.5'	48°47.0'		35°39.4'	10°58.1'		64°37.5'	98°31.6'
13	69°50.3'	S 12°41.5'	11.6'	-14.2'	58.1'	52°15.0'	48°30.3'		35°05.4'	11°30.4'		65°11.4'	99°03.4'
14	84°20.9'	S 12°55.7'	11.5'	-14.1'	58.2'	51°43.5'	48°13.8'		34°31.3'	12°02.8'		65°45.5'	99°35.2'
15	98°51.4'	S 13°09.8'	11.4'	-14.1'	58.2'	51°12.0'	47°57.5'		33°57.1'	12°35.4'		66°19.6'	100°07.1'
16	113°21.7'	S 13°23.9'	11.3'	-14.0'	58.2'	50°40.3'	47°41.5'		33°23.0'	13°08.3'		66°53.7'	100°39.0'
17	127°52.0'	S 13°37.9'	11.1'	-14.0'	58.3'	50°08.7'	47°25.6'		32°48.7'	13°41.2'	32°43.0'	67°27.9'	101°10.9'
18	142°22.1'	S 13°51.8'	11.0'	-13.9'	58.3'	49°37.0'	47°10.0'		32°14.4'	14°14.4'	32°58.4'	68°02.2'	101°42.9'
19	156°52.1'	S 14°05.8'	10.9'	-13.9'	58.4'	49°05.2'	46°54.6'		31°40.1'	14°47.6'	33°14.2'	68°36.5'	102°15.0'
20	171°22.0'	S 14°19.6'	10.8'	-13.8'	58.4'	48°33.4'			31°05.7'	15°21.0'	33°30.5'	69°10.8'	102°47.0'
21	185°51.8'	S 14°33.4'	10.7'	-13.8'	58.4'	48°01.6'			30°31.3'	15°54.6'	33°47.2'	69°45.2'	103°19.2'
22	200°21.5'	S 14°47.2'	10.6'	-13.7'	58.5'	47°29.7'			29°56.9'	16°28.2'	34°04.3'	70°19.7'	103°51.3'
23	214°51.1'	S 15°00.9'	10.4'	-13.6'	58.5'	46°57.8'			29°22.3'	17°02.0'	34°21.8'	70°54.2'	104°23.5'
Mer. pass.		8 h 11 m SD 15.7' phase 24%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.3'	S 11°16.7'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.8'	Acrux	+0.8	173°02.1'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.3'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.1'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.1'	N 27°58.2'	Aldebaran	+0.9	290°41.2'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.3'	N 5°10.0'	Polaris	+2.0	314°27.7'	N 89°21.8'
Rigil Kent	-0.0	139°43.1'	S 60°55.5'	Adhara	+1.5	255°06.8'	S 29°00.1'	Achernar	+0.5	335°21.2'	S 57°07.5'
Arcturus	-0.1	145°49.7'	N 19°03.7'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.8'	S 60°28.7'	Canopus	-0.6	263°52.6'	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	88°33.6'	180°40.7'	S 23°25.4'	165°02.5'	S 23°55.6'		88°04.6'	S 1°14.9'		124°28.3'	S 15°35.1'		18°31.9'	N 24°50.3'				
1	103°36.1'	195°40.4'	S 23°25.5'	180°01.6'	S 23°55.4'		103°06.9'	S 1°14.8'		139°30.5'	S 15°35.0'		33°35.3'	N 24°50.2'				
2	118°38.6'	210°40.1'	S 23°25.5'	195°00.6'	S 23°55.2'		118°09.1'	S 1°14.7'		154°32.8'	S 15°35.0'		48°38.6'	N 24°50.2'				
3	133°41.0'	225°39.8'	S 23°25.5'	209°59.7'	S 23°54.9'		133°11.4'	S 1°14.6'		169°35.0'	S 15°34.9'		63°41.9'	N 24°50.1'				
4	148°43.5'	240°39.5'	S 23°25.6'	224°58.7'	S 23°54.7'		148°13.7'	S 1°14.5'		184°37.3'	S 15°34.8'		78°45.2'	N 24°50.1'				
5	163°46.0'	255°39.2'	S 23°25.6'	239°57.8'	S 23°54.5'		163°16.0'	S 1°14.4'		199°39.5'	S 15°34.7'		93°48.5'	N 24°50.0'				
6	178°48.4'	270°38.9'	S 23°25.6'	254°56.8'	S 23°54.3'		178°18.2'	S 1°14.3'		214°41.8'	S 15°34.7'		108°51.8'	N 24°50.0'				
7	193°50.9'	285°38.6'	S 23°25.7'	269°55.8'	S 23°54.1'		193°20.5'	S 1°14.3'		229°44.0'	S 15°34.6'		123°55.1'	N 24°49.9'				
8	208°53.4'	300°38.3'	S 23°25.7'	284°54.9'	S 23°53.8'		208°22.8'	S 1°14.2'		244°46.3'	S 15°34.5'		138°58.4'	N 24°49.9'				
9	223°55.8'	315°38.0'	S 23°25.7'	299°53.9'	S 23°53.6'		223°25.0'	S 1°14.1'		259°48.5'	S 15°34.4'		154°01.7'	N 24°49.8'				
10	238°58.3'	330°37.6'	S 23°25.8'	314°53.0'	S 23°53.4'		238°27.3'	S 1°14.0'		274°50.8'	S 15°34.4'		169°05.0'	N 24°49.8'				
11	254°00.7'	345°37.3'	S 23°25.8'	329°52.0'	S 23°53.2'		253°29.6'	S 1°13.9'		289°53.0'	S 15°34.3'		184°08.3'	N 24°49.7'				
12	269°03.2'	0°37.0'	S 23°25.8'	344°51.1'	S 23°52.9'		268°31.8'	S 1°13.8'		304°55.2'	S 15°34.2'		199°11.7'	N 24°49.7'				
13	284°05.7'	15°36.7'	S 23°25.8'	359°50.1'	S 23°52.7'		283°34.1'	S 1°13.7'		319°57.5'	S 15°34.2'		214°15.0'	N 24°49.6'				
14	299°08.1'	30°36.4'	S 23°25.9'	14°49.1'	S 23°52.5'		298°36.4'	S 1°13.6'		334°59.7'	S 15°34.1'		229°18.3'	N 24°49.6'				
15	314°10.6'	45°36.1'	S 23°25.9'	29°48.2'	S 23°52.2'		313°38.6'	S 1°13.5'		350°02.0'	S 15°34.0'		244°21.5'	N 24°49.5'				
16	329°13.1'	60°35.8'	S 23°25.9'	44°47.2'	S 23°52.0'		328°40.9'	S 1°13.4'		5°04.2'	S 15°33.9'		259°24.8'	N 24°49.5'				
17	344°15.5'	75°35.5'	S 23°25.9'	59°46.3'	S 23°51.8'		343°43.2'	S 1°13.3'		20°06.5'	S 15°33.9'		274°28.1'	N 24°49.4'				
18	359°18.0'	90°35.2'	S 23°26.0'	74°45.3'	S 23°51.5'		358°45.4'	S 1°13.2'		35°08.7'	S 15°33.8'		289°31.4'	N 24°49.4'				
19	14°20.5'	105°34.8'	S 23°26.0'	89°44.4'	S 23°51.3'		13°47.7'	S 1°13.1'		50°11.0'	S 15°33.7'		304°34.7'	N 24°49.3'				
20	29°22.9'	120°34.5'	S 23°26.0'	104°43.4'	S 23°51.0'		28°50.0'	S 1°13.0'		65°13.2'	S 15°33.7'		319°38.0'	N 24°49.3'				
21	44°25.4'	135°34.2'	S 23°26.0'	119°42.5'	S 23°50.8'		43°52.2'	S 1°12.9'		80°15.5'	S 15°33.6'		334°41.3'	N 24°49.2'				
22	59°27.8'	150°33.9'	S 23°26.1'	134°41.5'	S 23°50.6'		58°54.5'	S 1°12.8'		95°17.7'	S 15°33.5'		349°44.6'	N 24°49.1'				
23	74°30.3'	165°33.6'	S 23°26.1'	149°40.6'	S 23°50.3'		73°56.8'	S 1°12.7'		110°20.0'	S 15°33.4'		4°47.9'	N 24°49.1'				
		SD 16.2'	d -0.0'		v -1.0'	d 0.2'		v 2.3'	d 0.1'		v 2.2'	d 0.1'		v 3.3'	d -0.1'			
Mer. pass.		11 h 57 m 33 s		13 h 1 m			18 h 5 m			15 h 40 m			22 h 41 m					

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Antares	+Spica	+Arcturus	+Regulus	+Adhara	+Procyon	+Pollux
0	229°20.5'	S 15°14.5'	10.3'	-13.6'	58.6'	46°25.8'	28°47.8'	17°35.8'	34°39.7'	71°28.7'	102°43.3'	104°55.7'	107°57.3'
1	243°49.9'	S 15°28.1'	10.2'	-13.5'	58.6'	45°53.7'	28°13.2'	18°09.8'	34°58.1'	72°03.3'	103°01.5'	105°27.9'	108°32.0'
2	258°19.1'	S 15°41.6'	10.1'	-13.5'	58.6'	45°21.7'	27°38.5'	18°43.8'	35°16.8'	72°38.0'	103°19.7'	106°00.2'	109°06.7'
3	272°48.2'	S 15°55.1'	10.0'	-13.4'	58.7'	44°49.5'	27°03.8'	19°18.0'	35°35.9'	73°12.7'	103°37.8'	106°32.5'	109°41.5'
4	287°17.1'	S 16°08.5'	9.8'	-13.3'	58.7'	44°17.4'	26°29.1'	19°52.2'	35°55.3'	73°47.4'	103°55.9'	107°04.9'	110°16.4'
5	301°46.0'	S 16°21.8'	9.7'	-13.2'	58.8'	43°45.1'	25°54.3'	20°26.5'	36°15.1'	74°22.2'	104°14.0'	107°37.2'	110°51.3'
6	316°14.7'	S 16°35.0'	9.6'	-13.2'	58.8'	43°12.9'	25°19.5'	21°00.9'	36°35.3'	74°57.1'	104°32.0'	108°09.6'	111°26.2'
7	330°43.3'	S 16°48.2'	9.5'	-13.1'	58.8'	42°40.5'	24°44.6'	21°35.4'	36°55.8'	75°32.0'	104°50.0'	108°42.1'	112°01.2'
8	345°11.7'	S 17°01.3'	9.3'	-13.0'	58.9'	42°08.2'	24°09.7'	22°09.9'	37°16.7'	76°06.9'	105°07.9'	109°14.5'	112°36.3'
9	359°40.1'	S 17°14.3'	9.2'	-12.9'	58.9'	41°35.8'	23°34.7'	22°44.5'	37°37.9'	76°41.9'	105°25.8'	109°47.0'	113°11.3'
10	14°08.3'	S 17°27.3'	9.1'	-12.9'	59.0'	41°03.3'	22°59.7'	23°19.2'	37°59.4'	77°17.0'	105°43.7'	110°19.6'	113°46.5'
11	28°36.4'	S 17°40.1'	8.9'	-12.8'	59.0'	40°30.8'	22°24.7'	23°54.0'	38°21.2'	77°52.1'	106°01.5'	110°52.1'	114°21.7'
12	43°04.3'	S 17°52.9'	8.8'	-12.7'	59.0'		21°49.6'	24°28.8'	38°43.4'	78°27.3'	106°19.2'	111°24.7'	114°56.9'
13	57°32.1'	S 18°05.6'	8.7'	-12.6'	59.1'		21°14.4'	25°03.7'	39°05.8'	79°02.5'	106°36.9'	111°57.3'	115°32.2'
14	71°59.8'	S 18°18.2'	8.6'	-12.5'	59.1'		20°39.3'	25°38.7'	39°28.6'	79°37.7'	106°54.5'	112°29.9'	116°07.6'
15	86°27.4'	S 18°30.8'	8.4'	-12.4'	59.1'		20°04.1'	26°13.7'	39°51.6'	80°13.0'	107°12.1'	113°02.5'	116°43.0'
16	100°54.8'	S 18°43.2'	8.3'	-12.3'	59.2'		19°28.8'	26°48.8'	40°14.9'	80°48.4'	107°29.6'	113°35.2'	117°18.4'
17	115°22.1'	S 18°55.5'	8.2'	-12.2'	59.2'		18°53.6'	27°24.0'	40°38.5'	81°23.8'	107°47.1'	114°07.9'	117°53.9'
18	129°49.2'	S 19°07.8'	8.0'	-12.1'	59.3'		18°18.3'	27°59.2'	41°02.3'	81°59.2'	108°04.5'	114°40.6'	118°29.4'
19	144°16.3'	S 19°19.9'	7.9'	-12.1'	59.3'		17°42.9'	28°34.5'	41°26.4'	82°34.7'	108°21.8'	115°13.3'	119°05.0'
20	158°43.1'	S 19°32.0'	7.7'	-11.9'	59.3'		17°07.6'	29°09.8'	41°50.8'	83°10.3'	108°39.0'	115°46.0'	119°40.6'
21	173°09.9'	S 19°43.9'	7.6'	-11.8'	59.4'		16°32.2'	29°45.2'	42°15.4'	83°45.9'	108°56.2'	116°18.8'	
22	187°36.5'	S 19°55.8'	7.5'	-11.7'	59.4'		15°56.8'	30°20.7'	42°40.3'	84°21.5'	109°13.3'	116°51.5'	
23	202°03.0'	S 20°07.5'	7.3'	-11.6'	59.4'		15°21.3'	30°56.2'	43°05.4'	84°57.2'	109°30.3'	117°24.3'	
Mer. pass.		9 h 1 m SD 16.0'	phase 16%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.3'	S 11°16.7'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.8'	Acrux	+0.8	173°02.1'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.3'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.1'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.1'	N 27°58.2'	Aldebaran	+0.9	290°41.2'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.3'	N 5°10.0'	Polaris	+2.0	314°27.9'	N 89°21.8'
Rigil Kent	-0.0	139°43.1'	S 60°55.5'	Adhara	+1.5	255°06.8'	S 29°00.1'	Achernar	+0.5	335°21.2'	S 57°07.5'
Arcturus	-0.1	145°49.7'	N 19°03.7'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.8'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	89°32.8'	180°33.3'	S 23°26.1'	164°39.6'	S 23°50.1'	88°59.0'	S 1°12.6'	125°22.2'	S 15°33.4'	19°51.2'	N 24°49.0'	
1	104°35.2'	195°33.0'	S 23°26.1'	179°38.6'	S 23°49.8'	104°01.3'	S 1°12.5'	140°24.5'	S 15°33.3'	34°54.5'	N 24°49.0'	
2	119°37.7'	210°32.7'	S 23°26.1'	194°37.7'	S 23°49.6'	119°03.5'	S 1°12.4'	155°26.7'	S 15°33.2'	49°57.8'	N 24°48.9'	
3	134°40.2'	225°32.4'	S 23°26.1'	209°36.7'	S 23°49.3'	134°05.8'	S 1°12.3'	170°29.0'	S 15°33.1'	65°01.0'	N 24°48.9'	
4	149°42.6'	240°32.0'	S 23°26.2'	224°35.8'	S 23°49.1'	149°08.1'	S 1°12.2'	185°31.2'	S 15°33.1'	80°04.3'	N 24°48.8'	
5	164°45.1'	255°31.7'	S 23°26.2'	239°34.8'	S 23°48.8'	164°10.3'	S 1°12.1'	200°33.4'	S 15°33.0'	95°07.6'	N 24°48.8'	
6	179°47.6'	270°31.4'	S 23°26.2'	254°33.9'	S 23°48.6'	179°12.6'	S 1°12.0'	215°35.7'	S 15°32.9'	110°10.9'	N 24°48.7'	
7	194°50.0'	285°31.1'	S 23°26.2'	269°32.9'	S 23°48.3'	194°14.9'	S 1°11.9'	230°37.9'	S 15°32.9'	125°14.2'	N 24°48.7'	
8	209°52.5'	300°30.8'	S 23°26.2'	284°32.0'	S 23°48.1'	209°17.1'	S 1°11.8'	245°40.2'	S 15°32.8'	140°17.4'	N 24°48.6'	
9	224°55.0'	315°30.5'	S 23°26.2'	299°31.0'	S 23°47.8'	224°19.4'	S 1°11.7'	260°42.4'	S 15°32.7'	155°20.7'	N 24°48.6'	
10	239°57.4'	330°30.2'	S 23°26.2'	314°30.1'	S 23°47.6'	239°21.6'	S 1°11.6'	275°44.7'	S 15°32.6'	170°24.0'	N 24°48.5'	
11	254°59.9'	345°29.9'	S 23°26.2'	329°29.1'	S 23°47.3'	254°23.9'	S 1°11.5'	290°46.9'	S 15°32.6'	185°27.3'	N 24°48.5'	
12	270°02.3'	0°29.6'	S 23°26.2'	344°28.2'	S 23°47.0'	269°26.2'	S 1°11.4'	305°49.2'	S 15°32.5'	200°30.5'	N 24°48.4'	
13	285°04.8'	15°29.2'	S 23°26.3'	359°27.2'	S 23°46.8'	284°28.4'	S 1°11.3'	320°51.4'	S 15°32.4'	215°33.8'	N 24°48.3'	
14	300°07.3'	30°28.9'	S 23°26.3'	14°26.3'	S 23°46.5'	299°30.7'	S 1°11.2'	335°53.7'	S 15°32.3'	230°37.1'	N 24°48.3'	
15	315°09.7'	45°28.6'	S 23°26.3'	29°25.3'	S 23°46.3'	314°32.9'	S 1°11.1'	350°55.9'	S 15°32.3'	245°40.3'	N 24°48.2'	
16	330°12.2'	60°28.3'	S 23°26.3'	44°24.4'	S 23°46.0'	329°35.2'	S 1°11.0'	5°58.2'	S 15°32.2'	260°43.6'	N 24°48.2'	
17	345°14.7'	75°28.0'	S 23°26.3'	59°23.4'	S 23°45.7'	344°37.5'	S 1°10.9'	21°00.4'	S 15°32.1'	275°46.9'	N 24°48.1'	
18	0°17.1'	90°27.7'	S 23°26.3'	74°22.5'	S 23°45.5'	359°39.7'	S 1°10.8'	36°02.6'	S 15°32.0'	290°50.1'	N 24°48.1'	
19	15°19.6'	105°27.4'	S 23°26.3'	89°21.5'	S 23°45.2'	14°42.0'	S 1°10.7'	51°04.9'	S 15°32.0'	305°53.4'	N 24°48.0'	
20	30°22.1'	120°27.1'	S 23°26.3'	104°20.6'	S 23°44.9'	29°44.2'	S 1°10.6'	66°07.1'	S 15°31.9'	320°56.7'	N 24°48.0'	
21	45°24.5'	135°26.8'	S 23°26.3'	119°19.6'	S 23°44.7'	44°46.5'	S 1°10.5'	81°09.4'	S 15°31.8'	335°59.9'	N 24°47.9'	
22	60°27.0'	150°26.4'	S 23°26.3'	134°18.7'	S 23°44.4'	59°48.8'	S 1°10.4'	96°11.6'	S 15°31.8'	351°03.2'	N 24°47.9'	
23	75°29.5'	165°26.1'	S 23°26.3'	149°17.7'	S 23°44.1'	74°51.0'	S 1°10.3'	111°13.9'	S 15°31.7'	6°06.4'	N 24°47.8'	
		SD 16.2'	d -0.0'		v -1.0'	d 0.3'		v 2.3'	d 0.1'		v 3.3'	d -0.1'
Mer. pass.		11 h 58 m 3 s		13 h 2 m		18 h 1 m		15 h 36 m		22 h 36 m		

h	Moon				Lunar distance							
	GHA	dec	v	d	HP	-Antares	+Spica	+Arcturus	+Regulus	+Adhara	+Procyon	+Sirius
0	216°29.3'	S 20°19.1'	7.2'	-11.5'	59.5'	14°45.9'	31°31.7'	43°30.8'	85°32.9'	109°47.2'	117°57.1'	119°40.8'
1	230°55.5'	S 20°30.7'	7.1'	-11.4'	59.5'	14°10.4'	32°07.4'	43°56.3'	86°08.7'	110°04.1'	118°29.9'	
2	245°21.6'	S 20°42.1'	6.9'	-11.3'	59.6'	13°34.9'	32°43.0'	44°22.1'	86°44.5'	110°20.9'	119°02.7'	
3	259°47.5'	S 20°53.4'	6.8'	-11.2'	59.6'	12°59.5'	33°18.8'	44°48.1'	87°20.4'	110°37.6'	119°35.5'	
4	274°13.3'	S 21°04.6'	6.6'	-11.1'	59.6'	12°24.0'	33°54.5'	45°14.3'	87°56.3'	110°54.1'		
5	288°38.9'	S 21°15.6'	6.5'	-10.9'	59.7'	11°48.5'	34°30.4'	45°40.8'	88°32.3'	111°10.6'		
6	303°04.4'	S 21°26.6'	6.4'	-10.8'	59.7'	11°13.1'	35°06.3'	46°07.4'	89°08.3'	111°27.1'		
7	317°29.8'	S 21°37.4'	6.2'	-10.7'	59.7'	10°37.6'	35°42.2'	46°34.2'	89°44.3'	111°43.4'		
8	331°55.0'	S 21°48.1'	6.1'	-10.6'	59.8'	10°02.3'	36°18.2'	47°01.3'	90°20.4'	111°59.6'		
9	346°20.1'	S 21°58.7'	6.0'	-10.4'	59.8'	9°27.0'	36°54.2'	47°28.5'	90°56.6'	112°15.7'		
10	0°45.1'	S 22°09.1'	5.8'	-10.3'	59.8'	8°51.7'	37°30.3'	47°55.9'	91°32.7'	112°31.7'		
11	15°09.9'	S 22°19.4'	5.7'	-10.2'	59.9'	8°16.6'	38°06.5'	48°23.5'	92°09.0'	112°47.5'		
12	29°34.6'	S 22°29.6'	5.5'	-10.0'	59.9'	7°41.6'	38°42.7'	48°51.2'	92°45.2'	113°03.3'		
13	43°59.2'	S 22°39.6'	5.4'	-9.9'	59.9'	7°06.8'	39°18.9'	49°19.1'	93°21.6'	113°19.0'		
14	58°23.6'	S 22°49.5'	5.3'	-9.8'	60.0'	6°32.3'	39°55.2'	49°47.2'	93°57.9'	113°34.5'		
15	72°47.8'	S 22°59.3'	5.1'	-9.6'	60.0'	5°58.1'	40°31.5'	50°15.5'	94°34.3'	113°49.9'		
16	87°12.0'	S 23°08.9'	5.0'	-9.5'	60.0'	5°24.4'	41°07.9'	50°43.9'	95°10.7'	114°05.2'		
17	101°36.0'	S 23°18.4'	4.9'	-9.3'	60.1'		41°44.3'	51°12.5'	95°47.2'	114°20.4'		
18	115°59.9'	S 23°27.7'	4.7'	-9.2'	60.1'		42°20.7'	51°41.2'	96°23.7'			
19	130°23.6'	S 23°36.9'	4.6'	-9.0'	60.1'		42°57.2'	52°10.1'	97°00.3'			
20	144°47.2'	S 23°45.9'	4.5'	-8.9'	60.2'		43°33.8'	52°39.1'	97°36.9'			
21	159°10.7'	S 23°54.8'	4.4'	-8.7'	60.2'		44°10.4'	53°08.3'	98°13.5'			
22	173°34.1'	S 24°03.5'	4.2'	-8.6'	60.2'		44°47.0'	53°37.6'	98°50.2'			
23	187°57.3'	S 24°12.1'	4.1'	-8.4'	60.2'		45°23.7'	54°07.0'	99°26.9'			
Mer. pass.		9 h 57 m SD 16.2'	phase 8%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.2'	S 11°16.7'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.8'	Acrux	+0.8	173°02.1'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.3'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.1'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.1'	N 27°58.2'	Aldebaran	+0.9	290°41.2'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.3'	N 5°10.0'	Polaris	+2.0	314°28.1'	N 89°21.8'
Rigil Kent	-0.0	139°43.1'	S 60°55.5'	Adhara	+1.5	255°06.8'	S 29°00.1'	Achernar	+0.5	335°21.2'	S 57°07.5'
Arcturus	-0.1	145°49.7'	N 19°03.7'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.8'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	90°31.9'	180°25.8'	S 23°26.3'	164°16.8'	S 23°43.8'	89°53.3'	S 1°10.2'	126°16.1'	S 15°31.6'	21°09.7'	N 24°47.8'	
1	105°34.4'	195°25.5'	S 23°26.3'	179°15.8'	S 23°43.6'	104°55.5'	S 1°10.1'	141°18.4'	S 15°31.5'	36°13.0'	N 24°47.7'	
2	120°36.8'	210°25.2'	S 23°26.3'	194°14.9'	S 23°43.3'	119°57.8'	S 1°10.0'	156°20.6'	S 15°31.5'	51°16.2'	N 24°47.6'	
3	135°39.3'	225°24.9'	S 23°26.3'	209°13.9'	S 23°43.0'	135°00.0'	S 1°09.9'	171°22.8'	S 15°31.4'	66°19.5'	N 24°47.6'	
4	150°41.8'	240°24.6'	S 23°26.3'	224°13.0'	S 23°42.7'	150°02.3'	S 1°09.8'	186°25.1'	S 15°31.3'	81°22.7'	N 24°47.5'	
5	165°44.2'	255°24.3'	S 23°26.3'	239°12.0'	S 23°42.4'	165°04.5'	S 1°09.7'	201°27.3'	S 15°31.2'	96°26.0'	N 24°47.5'	
6	180°46.7'	270°23.9'	S 23°26.3'	254°11.1'	S 23°42.2'	180°06.8'	S 1°09.6'	216°29.6'	S 15°31.2'	111°29.2'	N 24°47.4'	
7	195°49.2'	285°23.6'	S 23°26.3'	269°10.2'	S 23°41.9'	195°09.1'	S 1°09.5'	231°31.8'	S 15°31.1'	126°32.5'	N 24°47.4'	
8	210°51.6'	300°23.3'	S 23°26.2'	284°09.2'	S 23°41.6'	210°11.3'	S 1°09.4'	246°34.1'	S 15°31.0'	141°35.7'	N 24°47.3'	
9	225°54.1'	315°23.0'	S 23°26.2'	299°08.3'	S 23°41.3'	225°13.6'	S 1°09.3'	261°36.3'	S 15°30.9'	156°38.9'	N 24°47.3'	
10	240°56.6'	330°22.7'	S 23°26.2'	314°07.3'	S 23°41.0'	240°15.8'	S 1°09.2'	276°38.5'	S 15°30.9'	171°42.2'	N 24°47.2'	
11	255°59.0'	345°22.4'	S 23°26.2'	329°06.4'	S 23°40.7'	255°18.1'	S 1°09.1'	291°40.8'	S 15°30.8'	186°45.4'	N 24°47.2'	
12	271°01.5'	0°22.1'	S 23°26.2'	344°05.4'	S 23°40.4'	270°20.3'	S 1°09.0'	306°43.0'	S 15°30.7'	201°48.7'	N 24°47.1'	
13	286°04.0'	15°21.8'	S 23°26.2'	359°04.5'	S 23°40.1'	285°22.6'	S 1°08.8'	321°45.3'	S 15°30.6'	216°51.9'	N 24°47.1'	
14	301°06.4'	30°21.5'	S 23°26.2'	14°03.5'	S 23°39.9'	300°24.8'	S 1°08.7'	336°47.5'	S 15°30.6'	231°55.2'	N 24°47.0'	
15	316°08.9'	45°21.1'	S 23°26.2'	29°02.6'	S 23°39.6'	315°27.1'	S 1°08.6'	351°49.8'	S 15°30.5'	246°58.4'	N 24°46.9'	
16	331°11.3'	60°20.8'	S 23°26.2'	44°01.7'	S 23°39.3'	330°29.3'	S 1°08.5'	6°52.0'	S 15°30.4'	262°01.6'	N 24°46.9'	
17	346°13.8'	75°20.5'	S 23°26.1'	59°00.7'	S 23°39.0'	345°31.6'	S 1°08.4'	21°54.2'	S 15°30.3'	277°04.9'	N 24°46.8'	
18	1°16.3'	90°20.2'	S 23°26.1'	73°59.8'	S 23°38.7'	0°33.8'	S 1°08.3'	36°56.5'	S 15°30.3'	292°08.1'	N 24°46.8'	
19	16°18.7'	105°19.9'	S 23°26.1'	88°58.8'	S 23°38.4'	15°36.1'	S 1°08.2'	51°58.7'	S 15°30.2'	307°11.3'	N 24°46.7'	
20	31°21.2'	120°19.6'	S 23°26.1'	103°57.9'	S 23°38.1'	30°38.3'	S 1°08.1'	67°01.0'	S 15°30.1'	322°14.6'	N 24°46.7'	
21	46°23.7'	135°19.3'	S 23°26.1'	118°56.9'	S 23°37.8'	45°40.6'	S 1°08.0'	82°03.2'	S 15°30.1'	337°17.8'	N 24°46.6'	
22	61°26.1'	150°19.0'	S 23°26.1'	133°56.0'	S 23°37.5'	60°42.9'	S 1°07.9'	97°05.5'	S 15°30.0'	352°21.0'	N 24°46.6'	
23	76°28.6'	165°18.6'	S 23°26.0'	148°55.1'	S 23°37.2'	75°45.1'	S 1°07.8'	112°07.7'	S 15°29.9'	7°24.2'	N 24°46.5'	
		SD 16.3'	d 0.0'		v -0.9'	d 0.3'		v 2.3'	d 0.1'		v 3.2'	d -0.1'
Mer. pass.		11 h 58 m 33 s		13 h 4 m		17 h 58 m		15 h 33 m		22 h 31 m		

h	Moon				Lunar distance				
	GHA	dec	v	d	HP	+Antares	+Spica	+Arcturus	+Regulus
0	202°20.4'	S 24°20.5'	4.0'	-8.2'	60.3'		46°00.4'	54°36.6'	100°03.6'
1	216°43.3'	S 24°28.7'	3.8'	-8.1'	60.3'		46°37.1'	55°06.3'	100°40.4'
2	231°06.2'	S 24°36.8'	3.7'	-7.9'	60.3'		47°13.9'	55°36.1'	101°17.2'
3	245°28.9'	S 24°44.7'	3.6'	-7.7'	60.4'		47°50.8'	56°06.1'	101°54.1'
4	259°51.5'	S 24°52.5'	3.5'	-7.6'	60.4'		48°27.6'	56°36.2'	102°31.0'
5	274°14.0'	S 25°00.0'	3.4'	-7.4'	60.4'		49°04.5'	57°06.4'	103°07.9'
6	288°36.4'	S 25°07.4'	3.2'	-7.2'	60.4'		49°41.5'	57°36.7'	103°44.9'
7	302°58.6'	S 25°14.7'	3.1'	-7.1'	60.5'		50°18.5'	58°07.1'	104°21.9'
8	317°20.7'	S 25°21.7'	3.0'	-6.9'	60.5'	5°21.1'	50°55.5'	58°37.6'	104°58.9'
9	331°42.7'	S 25°28.6'	2.9'	-6.7'	60.5'	5°55.4'	51°32.5'	59°08.2'	105°35.9'
10	346°04.6'	S 25°35.3'	2.8'	-6.5'	60.5'	6°30.2'	52°09.6'	59°39.0'	106°13.0'
11	0°26.4'	S 25°41.8'	2.7'	-6.3'	60.6'	7°05.4'	52°46.7'	60°09.8'	106°50.1'
12	14°48.1'	S 25°48.1'	2.6'	-6.1'	60.6'	7°41.0'	53°23.9'	60°40.7'	107°27.3'
13	29°09.7'	S 25°54.3'	2.5'	-6.0'	60.6'	8°16.9'	54°01.1'	61°11.7'	108°04.5'
14	43°31.2'	S 26°00.2'	2.4'	-5.8'	60.6'	8°53.0'	54°38.3'	61°42.9'	108°41.7'
15	57°52.6'	S 26°06.0'	2.3'	-5.6'	60.7'	9°29.3'	55°15.5'	62°14.1'	109°18.9'
16	72°13.8'	S 26°11.6'	2.2'	-5.4'	60.7'	10°05.7'	55°52.8'	62°45.4'	109°56.2'
17	86°35.0'	S 26°17.0'	2.1'	-5.2'	60.7'	10°42.3'	56°30.1'	63°16.7'	110°33.5'
18	100°56.1'	S 26°22.1'	2.0'	-5.0'	60.7'	11°18.9'	57°07.4'	63°48.2'	111°10.8'
19	115°17.1'	S 26°27.1'	1.9'	-4.8'	60.7'				
20	129°38.0'	S 26°31.9'	1.8'	-4.6'	60.8'				
21	143°58.9'	S 26°36.5'	1.7'	-4.4'	60.8'				
22	158°19.6'	S 26°40.9'	1.7'	-4.2'	60.8'				
23	172°40.3'	S 26°45.1'	1.6'	-4.0'	60.8'				
Mer. pass.	10 h 58 m SD 16.4'	phase 3%							

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.2'	S 11°16.7'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.8'	Acrux	+0.8	173°02.1'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.3'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.1'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.1'	N 27°58.2'	Aldebaran	+0.9	290°41.2'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.3'	N 5°10.0'	Polaris	+2.0	314°28.3'	N 89°21.9'
Rigil Kent	-0.0	139°43.1'	S 60°55.5'	Adhara	+1.5	255°06.8'	S 29°00.1'	Achernar	+0.5	335°21.2'	S 57°07.5'
Arcturus	-0.1	145°49.7'	N 19°03.7'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.8'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.4'				

Friday 23 December 2022 UT1

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	91°31.1'	180°18.3' S	23°26.0'	163°54.1'	23°36.9'	90°47.4'	S 1°07.7'	127°09.9'	S 15°29.8'	22°27.5'	N 24°46.5'	
1	106°33.5'	195°18.0'	S 23°26.0'	178°53.2'	S 23°36.5'	105°49.6'	S 1°07.6'	142°12.2'	S 15°29.8'	37°30.7'	N 24°46.4'	
2	121°36.0'	210°17.7'	S 23°26.0'	193°52.2'	S 23°36.2'	120°51.9'	S 1°07.5'	157°14.4'	S 15°29.7'	52°33.9'	N 24°46.3'	
3	136°38.5'	225°17.4'	S 23°25.9'	208°51.3'	S 23°35.9'	135°54.1'	S 1°07.4'	172°16.7'	S 15°29.6'	67°37.1'	N 24°46.3'	
4	151°40.9'	240°17.1'	S 23°25.9'	223°50.3'	S 23°35.6'	150°56.3'	S 1°07.3'	187°18.9'	S 15°29.5'	82°40.3'	N 24°46.2'	
5	166°43.4'	255°16.8'	S 23°25.9'	238°49.4'	S 23°35.3'	165°58.6'	S 1°07.2'	202°21.1'	S 15°29.5'	97°43.6'	N 24°46.2'	
6	181°45.8'	270°16.5'	S 23°25.9'	253°48.5'	S 23°35.0'	181°00.8'	S 1°07.1'	217°23.4'	S 15°29.4'	112°46.8'	N 24°46.1'	
7	196°48.3'	285°16.2'	S 23°25.8'	268°47.5'	S 23°34.7'	196°03.1'	S 1°07.0'	232°25.6'	S 15°29.3'	127°50.0'	N 24°46.1'	
8	211°50.8'	300°15.8'	S 23°25.8'	283°46.6'	S 23°34.4'	211°05.3'	S 1°06.9'	247°27.9'	S 15°29.2'	142°53.2'	N 24°46.0'	
9	226°53.2'	315°15.5'	S 23°25.8'	298°45.7'	S 23°34.1'	226°07.6'	S 1°06.8'	262°30.1'	S 15°29.2'	157°56.4'	N 24°46.0'	
10	241°55.7'	330°15.2'	S 23°25.8'	313°44.7'	S 23°33.7'	241°09.8'	S 1°06.6'	277°32.3'	S 15°29.1'	172°59.6'	N 24°45.9'	
11	256°58.2'	345°14.9'	S 23°25.7'	328°43.8'	S 23°33.4'	256°12.1'	S 1°06.5'	292°34.6'	S 15°29.0'	188°02.8'	N 24°45.9'	
12	272°00.6'	0°14.6'	S 23°25.7'	343°42.8'	S 23°33.1'	271°14.3'	S 1°06.4'	307°36.8'	S 15°28.9'	203°06.1'	N 24°45.8'	
13	287°03.1'	15°14.3'	S 23°25.7'	358°41.9'	S 23°32.8'	286°16.6'	S 1°06.3'	322°39.1'	S 15°28.9'	218°09.3'	N 24°45.7'	
14	302°05.6'	30°14.0'	S 23°25.6'	13°41.0'	S 23°32.5'	301°18.8'	S 1°06.2'	337°41.3'	S 15°28.8'	233°12.5'	N 24°45.7'	
15	317°08.0'	45°13.7'	S 23°25.6'	28°40.0'	S 23°32.1'	316°21.1'	S 1°06.1'	352°43.5'	S 15°28.7'	248°15.7'	N 24°45.6'	
16	332°10.5'	60°13.3'	S 23°25.6'	43°39.1'	S 23°31.8'	331°23.3'	S 1°06.0'	7°45.8'	S 15°28.6'	263°18.9'	N 24°45.6'	
17	347°13.0'	75°13.0'	S 23°25.5'	58°38.2'	S 23°31.5'	346°25.6'	S 1°05.9'	22°48.0'	S 15°28.6'	278°22.1'	N 24°45.5'	
18	2°15.4'	90°12.7'	S 23°25.5'	73°37.2'	S 23°31.1'	1°27.8'	S 1°05.8'	37°50.3'	S 15°28.5'	293°25.3'	N 24°45.5'	
19	17°17.9'	105°12.4'	S 23°25.5'	88°36.3'	S 23°30.8'	16°30.1'	S 1°05.7'	52°52.5'	S 15°28.4'	308°28.5'	N 24°45.4'	
20	32°20.3'	120°12.1'	S 23°25.4'	103°35.3'	S 23°30.5'	31°32.3'	S 1°05.6'	67°54.7'	S 15°28.3'	323°31.7'	N 24°45.4'	
21	47°22.8'	135°11.8'	S 23°25.4'	118°34.4'	S 23°30.2'	46°34.5'	S 1°05.5'	82°57.0'	S 15°28.3'	338°34.9'	N 24°45.3'	
22	62°25.3'	150°11.5'	S 23°25.3'	133°33.5'	S 23°29.8'	61°36.8'	S 1°05.4'	97°59.2'	S 15°28.2'	353°38.1'	N 24°45.2'	
23	77°27.7'	165°11.2'	S 23°25.3'	148°32.5'	S 23°29.5'	76°39.0'	S 1°05.3'	113°01.5'	S 15°28.1'	8°41.3'	N 24°45.2'	
		SD 16.3'	d 0.0'	v -0.9'	d 0.3'	v 2.2'	d 0.1'	v 2.2'	d 0.1'	v 3.2'	d -0.1'	
Mer. pass.		11 h 59 m 3 s		13 h 5 m		17 h 54 m		15 h 29 m		22 h 25 m		

h	Moon				
	GHA	dec	v	d	HP
0	187°00.9'	S 26°49.1'	1.5'	-3.8'	60.8'
1	201°21.4'	S 26°52.9'	1.4'	-3.6'	60.9'
2	215°41.9'	S 26°56.5'	1.4'	-3.4'	60.9'
3	230°02.2'	S 26°59.9'	1.3'	-3.2'	60.9'
4	244°22.6'	S 27°03.1'	1.3'	-3.0'	60.9'
5	258°42.8'	S 27°06.0'	1.2'	-2.8'	60.9'
6	273°03.0'	S 27°08.8'	1.1'	-2.5'	60.9'
7	287°23.2'	S 27°11.3'	1.1'	-2.3'	61.0'
8	301°43.3'	S 27°13.7'	1.0'	-2.1'	61.0'
9	316°03.3'	S 27°15.8'	1.0'	-1.9'	61.0'
10	330°23.3'	S 27°17.7'	1.0'	-1.7'	61.0'
11	344°43.3'	S 27°19.4'	0.9'	-1.5'	61.0'
12	359°03.2'	S 27°20.9'	0.9'	-1.3'	61.0'
13	13°23.1'	S 27°22.2'	0.9'	-1.1'	61.0'
14	27°42.9'	S 27°23.2'	0.8'	-0.8'	61.0'
15	42°02.8'	S 27°24.1'	0.8'	-0.6'	61.0'
16	56°22.6'	S 27°24.7'	0.8'	-0.4'	61.1'
17	70°42.4'	S 27°25.1'	0.8'	-0.2'	61.1'
18	85°02.2'	S 27°25.3'	0.8'	0.0'	61.1'
19	99°21.9'	S 27°25.2'	0.8'	0.2'	61.1'
20	113°41.7'	S 27°25.0'	0.8'	0.5'	61.1'
21	128°01.5'	S 27°24.5'	0.8'	0.7'	61.1'
22	142°21.2'	S 27°23.8'	0.8'	0.9'	61.1'
23	156°41.0'	S 27°22.9'	0.8'	1.1'	61.1'
Mer. pass.	12 h 4 m	SD 16.6'	phase 0%		

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.2'	S 11°16.7'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.8'	Acrux	+0.8	173°02.1'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.3'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.1'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.0'	N 27°58.2'	Aldebaran	+0.9	290°41.2'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.3'	N 5°10.0'	Polaris	+2.0	314°28.4'	N 89°21.9'
Rigil Kent	-0.0	139°43.1'	S 60°55.5'	Adhara	+1.5	255°06.8'	S 29°00.1'	Achernar	+0.5	335°21.2'	S 57°07.5'
Arcturus	-0.1	145°49.7'	N 19°03.7'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.8'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	92°30.2'	180°10.9'	S 23°25.3'	163°31.6'	S 23°29.2'	91°41.3'	S 1°05.2'	128°03.7'	S 15°28.0'	23°44.4'	N 24°45.1'	
1	107°32.7'	195°10.5'	S 23°25.2'	178°30.7'	S 23°28.8'	106°43.5'	S 1°05.0'	143°05.9'	S 15°28.0'	38°47.6'	N 24°45.1'	
2	122°35.1'	210°10.2'	S 23°25.2'	193°29.7'	S 23°28.5'	121°45.8'	S 1°04.9'	158°08.2'	S 15°27.9'	53°50.8'	N 24°45.0'	
3	137°37.6'	225°09.9'	S 23°25.1'	208°28.8'	S 23°28.1'	136°48.0'	S 1°04.8'	173°10.4'	S 15°27.8'	68°54.0'	N 24°45.0'	
4	152°40.1'	240°09.6'	S 23°25.1'	223°27.9'	S 23°27.8'	151°50.2'	S 1°04.7'	188°12.7'	S 15°27.7'	83°57.2'	N 24°44.9'	
5	167°42.5'	255°09.3'	S 23°25.0'	238°26.9'	S 23°27.5'	166°52.5'	S 1°04.6'	203°14.9'	S 15°27.6'	99°00.4'	N 24°44.9'	
6	182°45.0'	270°09.0'	S 23°25.0'	253°26.0'	S 23°27.1'	181°54.7'	S 1°04.5'	218°17.1'	S 15°27.6'	114°03.6'	N 24°44.8'	
7	197°47.5'	285°08.7'	S 23°25.0'	268°25.1'	S 23°26.8'	196°57.0'	S 1°04.4'	233°19.4'	S 15°27.5'	129°06.7'	N 24°44.8'	
8	212°49.9'	300°08.4'	S 23°24.9'	283°24.1'	S 23°26.4'	211°59.2'	S 1°04.3'	248°21.6'	S 15°27.4'	144°09.9'	N 24°44.7'	
9	227°52.4'	315°08.0'	S 23°24.9'	298°23.2'	S 23°26.1'	227°01.4'	S 1°04.2'	263°23.8'	S 15°27.3'	159°13.1'	N 24°44.6'	
10	242°54.8'	330°07.7'	S 23°24.8'	313°22.3'	S 23°25.7'	242°03.7'	S 1°04.1'	278°26.1'	S 15°27.3'	174°16.3'	N 24°44.6'	
11	257°57.3'	345°07.4'	S 23°24.8'	328°21.3'	S 23°25.4'	257°05.9'	S 1°04.0'	293°28.3'	S 15°27.2'	189°19.5'	N 24°44.5'	
12	272°59.8'	0°07.1'	S 23°24.7'	343°20.4'	S 23°25.0'	272°08.2'	S 1°03.9'	308°30.6'	S 15°27.1'	204°22.6'	N 24°44.5'	
13	288°02.2'	15°06.8'	S 23°24.7'	358°19.5'	S 23°24.7'	287°10.4'	S 1°03.7'	323°32.8'	S 15°27.0'	219°25.8'	N 24°44.4'	
14	303°04.7'	30°06.5'	S 23°24.6'	13°18.6'	S 23°24.3'	302°12.7'	S 1°03.6'	338°35.0'	S 15°27.0'	234°29.0'	N 24°44.4'	
15	318°07.2'	45°06.2'	S 23°24.6'	28°17.6'	S 23°24.0'	317°14.9'	S 1°03.5'	353°37.3'	S 15°26.9'	249°32.2'	N 24°44.3'	
16	333°09.6'	60°05.9'	S 23°24.5'	43°16.7'	S 23°23.6'	332°17.1'	S 1°03.4'	8°39.5'	S 15°26.8'	264°35.3'	N 24°44.3'	
17	348°12.1'	75°05.6'	S 23°24.4'	58°15.8'	S 23°23.3'	347°19.4'	S 1°03.3'	23°41.7'	S 15°26.7'	279°38.5'	N 24°44.2'	
18	3°14.6'	90°05.2'	S 23°24.4'	73°14.8'	S 23°22.9'	2°21.6'	S 1°03.2'	38°44.0'	S 15°26.7'	294°41.7'	N 24°44.2'	
19	18°17.0'	105°04.9'	S 23°24.3'	88°13.9'	S 23°22.5'	17°23.8'	S 1°03.1'	53°46.2'	S 15°26.6'	309°44.8'	N 24°44.1'	
20	33°19.5'	120°04.6'	S 23°24.3'	103°13.0'	S 23°22.2'	32°26.1'	S 1°03.0'	68°48.5'	S 15°26.5'	324°48.0'	N 24°44.0'	
21	48°22.0'	135°04.3'	S 23°24.2'	118°12.1'	S 23°21.8'	47°28.3'	S 1°02.9'	83°50.7'	S 15°26.4'	339°51.1'	N 24°44.0'	
22	63°24.4'	150°04.0'	S 23°24.2'	133°11.1'	S 23°21.5'	62°30.8'	S 1°02.8'	98°52.9'	S 15°26.4'	354°54.3'	N 24°43.9'	
23	78°26.9'	165°03.7'	S 23°24.1'	148°10.2'	S 23°21.1'	77°32.8'	S 1°02.6'	113°55.2'	S 15°26.3'	9°57.5'	N 24°43.9'	
		SD 16.3'	d 0.1'		v -0.9'	d 0.4'		v 2.2'	d 0.1'		v 3.2'	d -0.1'
Mer. pass.		11 h 59 m 33 s		13 h 7 m		17 h 51 m		15 h 25 m		22 h 20 m		

h	Moon					Lunar distance					
	GHA	dec	v	d	HP	-Jupiter	-Achernar	-Fomalhaut	-Saturn	-Altair	-Venus
0	171°00.7'	S 27°21.8'	0.8'	1.3'	61.1'						
1	185°20.5'	S 27°20.5'	0.8'	1.5'	61.1'						
2	199°40.3'	S 27°18.9'	0.8'	1.8'	61.1'	78°46.2'	73°18.1'	53°45.1'	40°14.3'	39°04.2'	6°46.3'
3	214°00.1'	S 27°17.2'	0.8'	2.0'	61.1'	78°08.5'	72°58.4'	53°09.6'	39°36.8'	38°47.4'	
4	228°19.9'	S 27°15.2'	0.8'	2.2'	61.1'	77°30.8'	72°38.9'	52°34.1'	38°59.3'	38°31.1'	
5	242°39.8'	S 27°13.0'	0.9'	2.4'	61.1'	76°53.2'	72°19.5'	51°58.6'	38°21.8'	38°15.2'	
6	256°59.6'	S 27°10.6'	0.9'	2.6'	61.1'	76°15.5'	72°00.2'	51°23.2'	37°44.3'	37°59.8'	
7	271°19.5'	S 27°08.0'	0.9'	2.8'	61.1'	75°37.8'	71°41.0'	50°47.8'	37°06.8'		
8	285°39.5'	S 27°05.1'	1.0'	3.1'	61.1'	75°00.1'	71°21.8'	50°12.5'	36°29.3'		
9	299°59.5'	S 27°02.1'	1.0'	3.3'	61.1'	74°22.4'	71°02.8'	49°37.2'	35°51.8'		
10	314°19.5'	S 26°58.8'	1.1'	3.5'	61.1'	73°44.8'	70°43.9'	49°02.0'	35°14.3'		
11	328°39.6'	S 26°55.3'	1.1'	3.7'	61.1'	73°07.1'	70°25.1'	48°26.8'	34°36.8'		
12	342°59.7'	S 26°51.6'	1.2'	3.9'	61.1'	72°29.4'	70°06.5'	47°51.7'	33°59.4'		
13	357°19.8'	S 26°47.7'	1.2'	4.1'	61.1'	71°51.7'	69°47.9'	47°16.7'	33°21.9'		
14	11°40.1'	S 26°43.6'	1.3'	4.3'	61.1'	71°14.1'	69°29.5'	46°41.7'	32°44.5'		
15	26°00.3'	S 26°39.3'	1.3'	4.5'	61.1'	70°36.4'	69°11.1'	46°06.7'	32°07.1'		
16	40°20.7'	S 26°34.8'	1.4'	4.7'	61.1'	69°58.8'	68°52.9'	45°31.9'	31°29.7'		
17	54°41.1'	S 26°30.0'	1.5'	4.9'	61.1'	69°21.1'	68°34.9'	44°57.1'	30°52.3'		
18	69°01.6'	S 26°25.1'	1.5'	5.1'	61.1'	68°43.5'	68°17.0'	44°22.3'	30°14.9'		
19	83°22.1'	S 26°20.0'	1.6'	5.3'	61.1'	68°05.9'	67°59.2'	43°47.7'	29°37.6'		
20	97°42.7'	S 26°14.6'	1.7'	5.5'	61.1'	67°28.3'	67°41.5'	43°13.1'	29°00.3'		
21	112°03.4'	S 26°09.1'	1.8'	5.7'	61.1'	66°50.7'	67°24.0'	42°38.6'	28°23.0'		
22	126°24.2'	S 26°03.3'	1.9'	5.9'	61.1'	66°13.1'	67°06.6'	42°04.3'	27°45.7'		6°43.5'
23	140°45.1'	S 25°57.4'	1.9'	6.1'	61.1'	65°35.5'	66°49.4'	41°30.0'	27°08.5'		7°13.6'
Mer. pass.		13 h 11 m SD 16.7'	phase 1%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.2'	S 11°16.7'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.8'	Acrux	+0.8	173°02.0'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.3'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.1'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.0'	N 27°58.2'	Aldebaran	+0.9	290°41.2'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.3'	N 5°10.0'	Polaris	+2.0	314°28.7'	N 89°21.9'
Rigil Kent	-0.0	139°43.0'	S 60°55.5'	Adhara	+1.5	255°06.8'	S 29°00.1'	Achernar	+0.5	335°21.2'	S 57°07.5'
Arcturus	-0.1	145°49.7'	N 19°03.7'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.7'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	93°29.3'	S 23°24.0'	180°03.4'	S 23°24.0'	163°09.3'	S 23°20.7'	92°35.0'	S 1°02.5'	128°57.4'	S 15°26.2'	25°00.6'	N 24°43.8'
1	108°31.8'	S 23°24.0'	195°03.1'	S 23°24.0'	178°08.3'	S 23°20.4'	107°37.3'	S 1°02.4'	143°59.6'	S 15°26.1'	40°03.8'	N 24°43.8'
2	123°34.3'	S 23°23.9'	210°02.8'	S 23°23.9'	193°07.4'	S 23°20.0'	122°39.5'	S 1°02.3'	159°01.9'	S 15°26.1'	55°06.9'	N 24°43.7'
3	138°36.7'	S 23°23.9'	225°02.4'	S 23°23.9'	208°06.5'	S 23°19.6'	137°41.7'	S 1°02.2'	174°04.1'	S 15°26.0'	70°10.1'	N 24°43.7'
4	153°39.2'	S 23°23.8'	240°02.1'	S 23°23.8'	223°05.6'	S 23°19.3'	152°44.0'	S 1°02.1'	189°06.3'	S 15°25.9'	85°13.2'	N 24°43.6'
5	168°41.7'	S 23°23.7'	255°01.8'	S 23°23.7'	238°04.6'	S 23°18.9'	167°46.2'	S 1°02.0'	204°08.6'	S 15°25.8'	100°16.4'	N 24°43.6'
6	183°44.1'	S 23°23.7'	270°01.5'	S 23°23.7'	253°03.7'	S 23°18.5'	182°48.4'	S 1°01.9'	219°10.8'	S 15°25.7'	115°19.5'	N 24°43.5'
7	198°46.6'	S 23°23.6'	285°01.2'	S 23°23.6'	268°02.8'	S 23°18.1'	197°50.7'	S 1°01.8'	234°13.1'	S 15°25.7'	130°22.7'	N 24°43.4'
8	213°49.1'	S 23°23.5'	300°00.9'	S 23°23.5'	283°01.9'	S 23°17.8'	212°52.9'	S 1°01.7'	249°15.3'	S 15°25.6'	145°25.8'	N 24°43.4'
9	228°51.5'	S 23°23.5'	315°00.6'	S 23°23.5'	298°00.9'	S 23°17.4'	227°55.1'	S 1°01.5'	264°17.5'	S 15°25.5'	160°29.0'	N 24°43.3'
10	243°54.0'	S 23°23.4'	330°00.3'	S 23°23.4'	313°00.0'	S 23°17.0'	242°57.4'	S 1°01.4'	279°19.8'	S 15°25.4'	175°32.1'	N 24°43.3'
11	258°56.5'	S 23°23.3'	344°60.0'	S 23°23.3'	327°59.1'	S 23°16.6'	257°59.6'	S 1°01.3'	294°22.0'	S 15°25.4'	190°35.3'	N 24°43.2'
12	273°58.9'	S 23°23.2'	359°59.6'	S 23°23.2'	342°58.2'	S 23°16.3'	273°01.8'	S 1°01.2'	309°24.2'	S 15°25.3'	205°38.4'	N 24°43.2'
13	289°01.4'	S 23°23.2'	14°59.3'	S 23°23.2'	357°57.3'	S 23°15.9'	288°04.1'	S 1°01.1'	324°26.5'	S 15°25.2'	220°41.5'	N 24°43.1'
14	304°03.8'	S 23°23.1'	29°59.0'	S 23°23.1'	12°56.3'	S 23°15.5'	303°06.3'	S 1°01.0'	339°28.7'	S 15°25.1'	235°44.7'	N 24°43.1'
15	319°06.3'	S 23°23.0'	44°58.7'	S 23°23.0'	27°55.4'	S 23°15.1'	318°08.5'	S 1°00.9'	354°30.9'	S 15°25.1'	250°47.8'	N 24°43.0'
16	334°08.8'	S 23°23.0'	59°58.4'	S 23°23.0'	42°54.5'	S 23°14.7'	333°10.8'	S 1°00.8'	9°33.2'	S 15°25.0'	265°51.0'	N 24°43.0'
17	349°11.2'	S 23°22.9'	74°58.1'	S 23°22.9'	57°53.6'	S 23°14.3'	348°13.0'	S 1°00.6'	24°35.4'	S 15°24.9'	280°54.1'	N 24°42.9'
18	4°13.7'	S 23°22.8'	89°57.8'	S 23°22.8'	72°52.6'	S 23°14.0'	3°15.2'	S 1°00.5'	39°37.6'	S 15°24.8'	295°57.2'	N 24°42.8'
19	19°16.2'	S 23°22.7'	104°57.5'	S 23°22.7'	87°51.7'	S 23°13.6'	18°17.5'	S 1°00.4'	54°39.9'	S 15°24.7'	311°00.3'	N 24°42.8'
20	34°18.6'	S 23°22.7'	119°57.2'	S 23°22.7'	102°50.8'	S 23°13.2'	33°19.7'	S 1°00.3'	69°42.1'	S 15°24.7'	326°03.5'	N 24°42.7'
21	49°21.1'	S 23°22.6'	134°56.9'	S 23°22.6'	117°49.9'	S 23°12.8'	48°21.9'	S 1°00.2'	84°44.3'	S 15°24.6'	341°06.6'	N 24°42.7'
22	64°23.6'	S 23°22.5'	149°56.5'	S 23°22.5'	132°49.0'	S 23°12.4'	63°24.2'	S 1°00.1'	99°46.6'	S 15°24.5'	356°09.7'	N 24°42.6'
23	79°26.0'	S 23°22.4'	164°56.2'	S 23°22.4'	147°48.0'	S 23°12.0'	78°26.4'	S 0°60.0'	114°48.8'	S 15°24.4'	11°12.9'	N 24°42.6'
		SD 16.3' d 0.1'		v -0.9' d 0.4'		v 2.2' d 0.1'		v 2.2' d 0.1'		v 3.1' d -0.1'		
Mer. pass.		12 h 0 m 3 s		13 h 8 m		17 h 47 m		15 h 22 m		22 h 15 m		

h	Moon					Lunar distance						
	GHA	dec	v	d	HP	-Aldebaran	-Rigel	-Achernar	-Jupiter	-Fomalhaut	-Saturn	+Venus
0	155°06.0'	S 25°51.3'	2.0'	6.3'	61.1'			66°32.3'	64°57.9'	40°55.8'	26°31.2'	7°44.4'
1	169°27.0'	S 25°44.9'	2.1'	6.5'	61.1'			66°15.3'	64°20.3'	40°21.7'	25°54.1'	8°15.6'
2	183°48.1'	S 25°38.4'	2.2'	6.7'	61.0'			65°58.5'	63°42.8'	39°47.7'	25°16.9'	8°47.3'
3	198°09.3'	S 25°31.7'	2.3'	6.9'	61.0'			65°41.9'	63°05.3'	39°13.8'	24°39.8'	9°19.3'
4	212°30.6'	S 25°24.8'	2.4'	7.1'	61.0'			65°25.4'	62°27.8'	38°40.0'	24°02.7'	9°51.7'
5	226°52.0'	S 25°17.7'	2.5'	7.3'	61.0'			65°09.1'	61°50.3'	38°06.3'	23°25.7'	10°24.2'
6	241°13.5'	S 25°10.4'	2.6'	7.5'	61.0'			64°53.0'	61°12.8'	37°32.8'	22°48.7'	10°56.9'
7	255°35.1'	S 25°03.0'	2.7'	7.6'	61.0'			64°37.0'	60°35.3'	36°59.4'	22°11.7'	11°29.8'
8	269°56.8'	S 24°55.3'	2.8'	7.8'	61.0'			64°21.2'	59°57.9'	36°26.2'	21°34.8'	12°02.9'
9	284°18.6'	S 24°47.5'	2.9'	8.0'	61.0'			64°05.6'	59°20.4'	35°53.1'	20°57.9'	12°36.1'
10	298°40.5'	S 24°39.5'	3.0'	8.2'	61.0'			63°50.1'	58°43.0'	35°20.1'	20°21.1'	13°09.3'
11	313°02.5'	S 24°31.3'	3.1'	8.4'	60.9'			63°34.8'	58°05.6'	34°47.3'	19°44.4'	13°42.7'
12	327°24.7'	S 24°23.0'	3.2'	8.5'	60.9'				57°28.3'	34°14.6'	19°07.7'	14°16.1'
13	341°46.9'	S 24°14.4'	3.4'	8.7'	60.9'				56°50.9'	33°42.1'	18°31.1'	14°49.6'
14	356°09.3'	S 24°05.7'	3.5'	8.9'	60.9'				56°13.6'	33°09.8'	17°54.6'	15°23.1'
15	10°31.7'	S 23°56.9'	3.6'	9.0'	60.9'				55°36.3'	32°37.7'	17°18.1'	15°56.7'
16	24°54.3'	S 23°47.8'	3.7'	9.2'	60.9'				54°59.0'	32°05.8'	16°41.7'	16°30.3'
17	39°17.0'	S 23°38.6'	3.8'	9.4'	60.8'				54°21.8'	31°34.1'	16°05.4'	17°04.0'
18	53°39.8'	S 23°29.3'	3.9'	9.5'	60.8'				53°44.5'	31°02.6'	15°29.2'	17°37.7'
19	68°02.8'	S 23°19.7'	4.1'	9.7'	60.8'		119°57.6'		53°07.3'	30°31.3'	14°53.2'	18°11.3'
20	82°25.8'	S 23°10.0'	4.2'	9.8'	60.8'		119°28.9'		52°30.1'	30°00.3'	14°17.2'	18°45.1'
21	96°49.0'	S 23°00.2'	4.3'	10.0'	60.8'		119°00.1'		51°53.0'	29°29.5'	13°41.4'	19°18.8'
22	111°12.3'	S 22°50.2'	4.4'	10.1'	60.8'	119°58.3'	118°31.3'		51°15.9'	28°59.0'	13°05.8'	19°52.5'
23	125°35.7'	S 22°40.1'	4.6'	10.3'	60.7'	119°21.4'	118°02.4'		50°38.8'	28°28.7'	12°30.3'	20°26.2'
Mer. pass.		14 h 16 m SD 16.7' phase 4%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.2'	S 11°16.8'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.8'	Acrux	+0.8	173°02.0'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.3'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.1'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.0'	N 27°58.2'	Aldebaran	+0.9	290°41.2'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.3'	N 5°10.0'	Polaris	+2.0	314°28.9'	N 89°21.9'
Rigel Kent	-0.0	139°43.0'	S 60°55.5'	Adhara	+1.5	255°06.8'	S 29°00.1'	Achernar	+0.5	335°21.2'	S 57°07.5'
Arcturus	-0.1	145°49.7'	N 19°03.7'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.7'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	94°28.5'		179°55.9'	S 23°22.4'	162°47.1'	S 23°11.6'	93°28.6'	S 0°59.9'	129°51.0'	S 15°24.4'	26°16.0'	N 24°42.5'
1	109°31.0'		194°55.6'	S 23°22.3'	177°46.2'	S 23°11.2'	108°30.9'	S 0°59.7'	144°53.3'	S 15°24.3'	41°19.1'	N 24°42.5'
2	124°33.4'		209°55.3'	S 23°22.2'	192°45.3'	S 23°10.8'	123°33.1'	S 0°59.6'	159°55.5'	S 15°24.2'	56°22.2'	N 24°42.4'
3	139°35.9'		224°55.0'	S 23°22.1'	207°44.4'	S 23°10.4'	138°35.3'	S 0°59.5'	174°57.7'	S 15°24.1'	71°25.3'	N 24°42.4'
4	154°38.3'		239°54.7'	S 23°22.0'	222°43.5'	S 23°10.0'	153°37.5'	S 0°59.4'	189°60.0'	S 15°24.1'	86°28.5'	N 24°42.3'
5	169°40.8'		254°54.4'	S 23°21.9'	237°42.5'	S 23°09.6'	168°39.8'	S 0°59.3'	205°02.2'	S 15°24.0'	101°31.6'	N 24°42.2'
6	184°43.3'		269°54.1'	S 23°21.9'	252°41.6'	S 23°09.2'	183°42.0'	S 0°59.2'	220°04.4'	S 15°23.9'	116°34.7'	N 24°42.2'
7	199°45.7'		284°53.8'	S 23°21.8'	267°40.7'	S 23°08.8'	198°44.2'	S 0°59.1'	235°06.7'	S 15°23.8'	131°37.8'	N 24°42.1'
8	214°48.2'		299°53.4'	S 23°21.7'	282°39.8'	S 23°08.4'	213°46.5'	S 0°58.9'	250°08.9'	S 15°23.7'	146°40.9'	N 24°42.1'
9	229°50.7'		314°53.1'	S 23°21.6'	297°38.9'	S 23°08.0'	228°48.7'	S 0°58.8'	265°11.1'	S 15°23.7'	161°44.0'	N 24°42.0'
10	244°53.1'		329°52.8'	S 23°21.5'	312°38.0'	S 23°07.6'	243°50.9'	S 0°58.7'	280°13.4'	S 15°23.6'	176°47.1'	N 24°42.0'
11	259°55.6'		344°52.5'	S 23°21.4'	327°37.0'	S 23°07.2'	258°53.1'	S 0°58.6'	295°15.6'	S 15°23.5'	191°50.2'	N 24°41.9'
12	274°58.1'		359°52.2'	S 23°21.3'	342°36.1'	S 23°06.8'	273°55.4'	S 0°58.5'	310°17.8'	S 15°23.4'	206°53.3'	N 24°41.9'
13	290°00.5'		14°51.9'	S 23°21.2'	357°35.2'	S 23°06.4'	288°57.6'	S 0°58.4'	325°20.1'	S 15°23.4'	221°56.4'	N 24°41.8'
14	305°03.0'		29°51.6'	S 23°21.1'	12°34.3'	S 23°05.9'	303°59.8'	S 0°58.3'	340°22.3'	S 15°23.3'	236°59.5'	N 24°41.8'
15	320°05.4'		44°51.3'	S 23°21.1'	27°33.4'	S 23°05.5'	319°02.0'	S 0°58.1'	355°24.5'	S 15°23.2'	252°02.6'	N 24°41.7'
16	335°07.9'		59°51.0'	S 23°21.0'	42°32.5'	S 23°05.1'	334°04.3'	S 0°58.0'	10°26.8'	S 15°23.1'	267°05.7'	N 24°41.7'
17	350°10.4'		74°50.7'	S 23°20.9'	57°31.6'	S 23°04.7'	349°06.5'	S 0°57.9'	25°29.0'	S 15°23.0'	282°08.8'	N 24°41.6'
18	5°12.8'		89°50.4'	S 23°20.8'	72°30.7'	S 23°04.3'	4°08.7'	S 0°57.8'	40°31.2'	S 15°23.0'	297°11.9'	N 24°41.6'
19	20°15.3'		104°50.0'	S 23°20.7'	87°29.7'	S 23°03.9'	19°10.9'	S 0°57.7'	55°33.5'	S 15°22.9'	312°15.0'	N 24°41.5'
20	35°17.8'		119°49.7'	S 23°20.6'	102°28.8'	S 23°03.4'	34°13.2'	S 0°57.6'	70°35.7'	S 15°22.8'	327°18.1'	N 24°41.4'
21	50°20.2'		134°49.4'	S 23°20.5'	117°27.9'	S 23°03.0'	49°15.4'	S 0°57.4'	85°37.9'	S 15°22.7'	342°21.2'	N 24°41.4'
22	65°22.7'		149°49.1'	S 23°20.4'	132°27.0'	S 23°02.6'	64°17.6'	S 0°57.3'	100°40.2'	S 15°22.7'	357°24.3'	N 24°41.3'
23	80°25.2'		164°48.8'	S 23°20.3'	147°26.1'	S 23°02.2'	79°19.8'	S 0°57.2'	115°42.4'	S 15°22.6'	12°27.4'	N 24°41.3'
			SD 16.3'	d 0.1'	v -0.9'	d 0.4'	v 2.2'	d 0.1'	v 2.2'	d 0.1'	v 3.1'	d -0.1'
Mer. pass.			12 h 0 m 33 s		13 h 10 m		17 h 43 m		15 h 18 m		22 h 10 m	

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Capella	-Rigel	-Jupiter	-Fomalhaut	-Saturn	+Venus	+Altair	+Sun
0	139°59.3'	S 22°29.8'	4.7'	10.4'	60.7'		117°33.4'	50°01.7'	27°58.7'	11°55.0'	20°60.0'		
1	154°23.0'	S 22°19.3'	4.8'	10.6'	60.7'		117°04.3'	49°24.6'	27°29.0'	11°19.9'	21°33.7'		
2	168°46.8'	S 22°08.7'	4.9'	10.7'	60.7'		116°35.2'	48°47.6'	26°59.7'	10°45.1'	22°07.4'		
3	183°10.7'	S 21°58.0'	5.1'	10.9'	60.7'		116°06.1'	48°10.6'	26°30.6'	10°10.6'	22°41.1'		
4	197°34.8'	S 21°47.1'	5.2'	11.0'	60.6'		115°36.9'	47°33.7'	26°01.9'	9°36.4'	23°14.8'		
5	211°58.9'	S 21°36.1'	5.3'	11.2'	60.6'		115°07.6'	46°56.8'	25°33.6'	9°02.6'	23°48.5'		
6	226°23.3'	S 21°24.9'	5.4'	11.3'	60.6'		114°38.3'	46°19.9'	25°05.7'	8°29.3'	24°22.2'		40°07.8'
7	240°47.7'	S 21°13.6'	5.6'	11.4'	60.6'		114°08.9'	45°43.0'	24°38.1'	7°56.5'	24°55.9'		40°42.2'
8	255°12.3'	S 21°02.2'	5.7'	11.6'	60.5'		113°39.5'	45°06.2'	24°11.0'		25°29.6'		41°16.6'
9	269°37.0'	S 20°50.7'	5.8'	11.7'	60.5'		113°10.1'	44°29.4'	23°44.4'		26°03.2'		41°51.0'
10	284°01.8'	S 20°39.0'	6.0'	11.8'	60.5'		112°40.6'	43°52.6'	23°18.2'		26°36.8'		42°25.3'
11	298°26.8'	S 20°27.2'	6.1'	11.9'	60.5'		112°11.1'	43°15.9'	22°52.5'		27°10.4'		42°59.7'
12	312°51.9'	S 20°15.3'	6.2'	12.0'	60.4'		111°41.6'	42°39.2'	22°27.3'		27°44.0'		43°34.0'
13	327°17.1'	S 20°03.2'	6.4'	12.2'	60.4'		111°12.0'	42°02.5'	22°02.7'		28°17.6'		44°08.2'
14	341°42.4'	S 19°51.0'	6.5'	12.3'	60.4'		110°42.4'	41°25.9'	21°38.6'		28°51.1'	38°06.5'	44°42.4'
15	356°07.9'	S 19°38.8'	6.6'	12.4'	60.4'		110°12.7'	40°49.3'	21°15.2'		29°24.6'	38°21.7'	45°16.6'
16	10°33.5'	S 19°26.4'	6.7'	12.5'	60.3'		109°43.1'	40°12.7'	20°52.4'		29°58.1'	38°37.3'	45°50.8'
17	24°59.3'	S 19°13.9'	6.9'	12.6'	60.3'		109°13.4'	39°36.2'	20°30.3'		30°31.6'	38°53.3'	46°25.0'
18	39°25.1'	S 19°01.2'	7.0'	12.7'	60.3'	119°58.1'	108°43.7'	38°59.7'	20°08.9'		31°05.0'	39°09.7'	46°59.1'
19	53°51.1'	S 18°48.5'	7.1'	12.8'	60.3'	119°24.1'	108°14.0'	38°23.3'	19°48.2'		31°38.4'	39°26.5'	47°33.1'
20	68°17.2'	S 18°35.7'	7.2'	12.9'	60.2'	118°50.2'	107°44.3'	37°46.8'			32°11.8'	39°43.6'	48°07.2'
21	82°43.5'	S 18°22.7'	7.4'	13.0'	60.2'	118°16.2'	107°14.5'	37°10.5'			32°45.1'	40°01.0'	48°41.2'
22	97°09.9'	S 18°09.7'	7.5'	13.1'	60.2'	117°42.3'	106°44.8'	36°34.1'			33°18.4'	40°18.8'	49°15.1'
23	111°36.4'	S 17°56.6'	7.6'	13.2'	60.2'	117°08.3'	106°15.0'	35°57.8'			33°51.7'	40°37.0'	49°49.1'
Mer. pass.			15 h 16 m	SD 16.6'	phase 10%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.2'	S 11°16.8'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.8'	Acrux	+0.8	173°02.0'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.3'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.1'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.0'	N 27°58.2'	Aldebaran	+0.9	290°41.2'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.3'	N 5°10.0'	Polaris	+2.0	314°29.2'	N 89°21.9'
Rigil Kent	-0.0	139°43.0'	S 60°55.5'	Adhara	+1.5	255°06.8'	S 29°00.1'	Achernar	+0.5	335°21.2'	S 57°07.5'
Arcturus	-0.1	145°49.6'	N 19°03.7'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.7'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars			
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec		
0	95°27.6'	S 23°20.2'	179°48.5'	S 23°20.2'	162°25.2'	S 23°01.8'	94°22.1'	S 0°57.1'	130°44.6'	S 15°22.5'	27°30.5'	N 24°41.2'		
1	110°30.1'	S 23°20.1'	194°48.2'	S 23°20.1'	177°24.3'	S 23°01.3'	109°24.3'	S 0°57.0'	145°46.9'	S 15°22.4'	42°33.6'	N 24°41.2'		
2	125°32.6'	S 23°20.0'	209°47.9'	S 23°20.0'	192°23.4'	S 23°00.9'	124°26.5'	S 0°56.9'	160°49.1'	S 15°22.3'	57°36.6'	N 24°41.1'		
3	140°35.0'	S 23°19.9'	224°47.6'	S 23°19.9'	207°22.5'	S 23°00.5'	139°28.7'	S 0°56.8'	175°51.3'	S 15°22.3'	72°39.7'	N 24°41.1'		
4	155°37.5'	S 23°19.8'	239°47.3'	S 23°19.8'	222°21.6'	S 23°00.1'	154°31.0'	S 0°56.6'	190°53.6'	S 15°22.2'	87°42.8'	N 24°41.0'		
5	170°39.9'	S 23°19.7'	254°47.0'	S 23°19.7'	237°20.6'	S 22°59.6'	169°33.2'	S 0°56.5'	205°55.8'	S 15°22.1'	102°45.9'	N 24°41.0'		
6	185°42.4'	S 23°19.6'	269°46.6'	S 23°19.6'	252°19.7'	S 22°59.2'	184°35.4'	S 0°56.4'	220°58.0'	S 15°22.0'	117°49.0'	N 24°40.9'		
7	200°44.9'	S 23°19.5'	284°46.3'	S 23°19.5'	267°18.8'	S 22°58.8'	199°37.6'	S 0°56.3'	236°00.2'	S 15°22.0'	132°52.0'	N 24°40.9'		
8	215°47.3'	S 23°19.4'	299°46.0'	S 23°19.4'	282°17.9'	S 22°58.3'	214°39.8'	S 0°56.2'	251°02.5'	S 15°21.9'	147°55.1'	N 24°40.8'		
9	230°49.8'	S 23°19.3'	314°45.7'	S 23°19.3'	297°17.0'	S 22°57.9'	229°42.1'	S 0°56.1'	266°04.7'	S 15°21.8'	162°58.2'	N 24°40.8'		
10	245°52.3'	S 23°19.2'	329°45.4'	S 23°19.2'	312°16.1'	S 22°57.5'	244°44.3'	S 0°55.9'	281°06.9'	S 15°21.7'	178°01.3'	N 24°40.7'		
11	260°54.7'	S 23°19.0'	344°45.1'	S 23°19.0'	327°15.2'	S 22°57.0'	259°46.5'	S 0°55.8'	296°09.2'	S 15°21.6'	193°04.3'	N 24°40.6'		
12	275°57.2'	S 23°18.9'	359°44.8'	S 23°18.9'	342°14.3'	S 22°56.6'	274°48.7'	S 0°55.7'	311°11.4'	S 15°21.6'	208°07.4'	N 24°40.6'		
13	290°59.7'	S 23°18.8'	14°44.5'	S 23°18.8'	357°13.4'	S 22°56.1'	289°50.9'	S 0°55.6'	326°13.6'	S 15°21.5'	223°10.5'	N 24°40.5'		
14	306°02.1'	S 23°18.7'	29°44.2'	S 23°18.7'	12°12.5'	S 22°55.7'	304°53.2'	S 0°55.5'	341°15.9'	S 15°21.4'	238°13.5'	N 24°40.5'		
15	321°04.6'	S 23°18.6'	44°43.9'	S 23°18.6'	27°11.6'	S 22°55.3'	319°55.4'	S 0°55.3'	356°18.1'	S 15°21.3'	253°16.6'	N 24°40.4'		
16	336°07.1'	S 23°18.5'	59°43.6'	S 23°18.5'	42°10.7'	S 22°54.8'	334°57.6'	S 0°55.2'	11°20.3'	S 15°21.2'	268°19.7'	N 24°40.4'		
17	351°09.5'	S 23°18.4'	74°43.3'	S 23°18.4'	57°09.8'	S 22°54.4'	349°59.8'	S 0°55.1'	26°22.5'	S 15°21.2'	283°22.7'	N 24°40.3'		
18	6°12.0'	S 23°18.3'	89°43.0'	S 23°18.3'	72°08.9'	S 22°53.9'	5°02.0'	S 0°55.0'	41°24.8'	S 15°21.1'	298°25.8'	N 24°40.3'		
19	21°14.4'	S 23°18.1'	104°42.6'	S 23°18.1'	87°08.0'	S 22°53.5'	20°04.3'	S 0°54.9'	56°27.0'	S 15°21.0'	313°28.8'	N 24°40.2'		
20	36°16.9'	S 23°18.0'	119°42.3'	S 23°18.0'	102°07.1'	S 22°53.0'	35°06.5'	S 0°54.8'	71°29.2'	S 15°20.9'	328°31.9'	N 24°40.2'		
21	51°19.4'	S 23°17.9'	134°42.0'	S 23°17.9'	117°06.2'	S 22°52.6'	50°08.7'	S 0°54.6'	86°31.5'	S 15°20.9'	343°35.0'	N 24°40.1'		
22	66°21.8'	S 23°17.8'	149°41.7'	S 23°17.8'	132°05.3'	S 22°52.1'	65°10.9'	S 0°54.5'	101°33.7'	S 15°20.8'	358°38.0'	N 24°40.1'		
23	81°24.3'	S 23°17.7'	164°41.4'	S 23°17.7'	147°04.4'	S 22°51.7'	80°13.1'	S 0°54.4'	116°35.9'	S 15°20.7'	13°41.1'	N 24°40.0'		
Mer. pass.			SD 16.3' d 0.1'	v -0.9' d 0.4'			v 2.2' d 0.1'			v 2.2' d 0.1'			v 3.1' d -0.1'	
Mer. pass.			12 h 1 m 2 s	13 h 11 m			17 h 40 m			15 h 15 m			22 h 5 m	

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Rigel	-Mars	-Aldebaran	-Jupiter	+Saturn	+Venus	+Altair	+Sun
0	126°03.0'	S 17°43.3'	7.8'	13.3'	60.1'	105°45.2'	104°48.9'	104°06.5'	35°21.6'		34°25.0'	40°55.4'	50°23.0'
1	140°29.8'	S 17°30.0'	7.9'	13.4'	60.1'	105°15.4'	104°11.8'	103°30.3'	34°45.4'		34°58.2'	41°14.2'	50°56.8'
2	154°56.6'	S 17°16.6'	8.0'	13.5'	60.1'	104°45.7'	103°34.7'	102°54.2'	34°09.2'		35°31.4'	41°33.2'	51°30.7'
3	169°23.6'	S 17°03.1'	8.1'	13.6'	60.0'	104°15.9'	102°57.7'	102°18.0'	33°33.1'		36°04.6'	41°52.6'	52°04.5'
4	183°50.8'	S 16°49.5'	8.2'	13.7'	60.0'	103°46.1'	102°20.7'	101°42.0'	32°57.0'		36°37.7'	42°12.3'	52°38.2'
5	198°18.0'	S 16°35.8'	8.4'	13.8'	60.0'	103°16.3'	101°43.7'	101°05.9'	32°20.9'	7°26.2'	37°10.8'	42°32.2'	53°12.0'
6	212°45.4'	S 16°22.0'	8.5'	13.9'	59.9'	102°46.5'	101°06.8'	100°29.9'	31°44.9'	7°57.6'	37°43.8'	42°52.4'	53°45.6'
7	227°12.9'	S 16°08.2'	8.6'	13.9'	59.9'	102°16.7'	100°29.9'	99°53.9'	31°08.9'	8°29.6'	38°16.9'	43°12.8'	54°19.3'
8	241°40.5'	S 15°54.2'	8.7'	14.0'	59.9'	101°46.9'	99°53.1'	99°18.0'	30°33.0'	9°02.1'	38°49.8'	43°33.6'	54°52.9'
9	256°08.2'	S 15°40.2'	8.8'	14.1'	59.9'	101°17.2'	99°16.3'	98°42.1'	29°57.1'	9°35.0'	39°22.8'	43°54.5'	55°26.5'
10	270°36.0'	S 15°26.2'	9.0'	14.2'	59.8'	100°47.4'	98°39.5'	98°06.2'	29°21.3'	10°08.2'	39°55.7'	44°15.7'	55°60.0'
11	285°04.0'	S 15°12.0'	9.1'	14.2'	59.8'	100°17.6'	98°02.8'	97°30.4'	28°45.5'	10°41.7'	40°28.6'	44°37.2'	56°33.5'
12	299°32.1'	S 14°57.8'	9.2'	14.3'	59.8'	99°47.9'	97°26.1'	96°54.7'	28°09.7'	11°15.3'	41°01.4'	44°58.8'	57°06.9'
13	314°00.3'	S 14°43.5'	9.3'	14.4'	59.7'	99°18.2'	96°49.5'	96°18.9'	27°34.0'	11°49.2'	41°34.2'	45°20.7'	57°40.4'
14	328°28.6'	S 14°29.1'	9.4'	14.4'	59.7'	98°48.5'	96°12.9'	95°43.2'	26°58.4'	12°23.2'	42°07.0'	45°42.8'	58°13.7'
15	342°57.0'	S 14°14.7'	9.5'	14.5'	59.7'	98°18.8'	95°36.4'	95°07.6'	26°22.8'	12°57.3'	42°39.7'	46°05.1'	58°47.1'
16	357°25.5'	S 14°00.2'	9.6'	14.6'	59.6'	97°49.1'	94°59.9'	94°31.9'	25°47.2'	13°31.5'	43°12.4'	46°27.5'	59°20.4'
17	11°54.1'	S 13°45.6'	9.7'	14.6'	59.6'	97°19.4'	94°23.4'	93°56.4'	25°11.7'	14°05.8'	43°45.1'	46°50.2'	59°53.6'
18	26°22.9'	S 13°31.0'	9.9'	14.7'	59.6'	96°49.8'	93°47.0'	93°20.8'	24°36.2'	14°40.1'	44°17.7'	47°13.1'	60°26.9'
19	40°51.8'	S 13°16.3'	10.0'	14.7'	59.5'	96°20.1'	93°10.6'	92°45.3'	24°00.7'	15°14.5'	44°50.3'	47°36.1'	61°00.0'
20	55°20.7'	S 13°01.6'	10.1'	14.8'	59.5'	95°50.5'	92°34.3'	92°09.9'	23°25.4'	15°49.0'	45°22.8'	47°59.3'	61°33.2'
21	69°49.8'	S 12°46.8'	10.2'	14.8'	59.5'	95°20.9'	91°58.0'	91°34.4'	22°50.0'	16°23.5'	45°55.3'	48°22.7'	62°06.3'
22	84°19.0'	S 12°32.0'	10.3'	14.9'	59.4'	94°51.4'	91°21.8'	90°59.1'	22°14.8'	16°58.0'	46°27.7'	48°46.2'	62°39.3'
23	98°48.2'	S 12°17.1'	10.4'	14.9'	59.4'	94°21.8'	90°45.6'	90°23.7'	21°39.5'	17°32.6'	47°00.2'	49°09.9'	63°12.3'
Mer. pass. 16 h 11 m SD 16.4' phase 18%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.2'	S 11°16.8'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.8'	Acrux	+0.8	173°02.0'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.3'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.1'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.0'	N 27°58.2'	Aldebaran	+0.9	290°41.2'	N 16°33.3'
Antares	+1.1	112°18.2'	S 26°28.9'	Procyon	+0.4	244°52.3'	N 5°10.0'	Polaris	+2.0	314°29.6'	N 89°21.9'
Rigel Kent	-0.0	139°43.0'	S 60°55.5'	Adhara	+1.5	255°06.8'	S 29°00.1'	Achernar	+0.5	335°21.2'	S 57°07.5'
Arcturus	-0.1	145°49.6'	N 19°03.7'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.7'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	96°26.8'	179°41.1' S	23°17.6'	162°03.5' S	22°51.2'	95°15.3' S	0°54.3'	131°38.2' S	15°20.6'	28°44.1' N	24°40.0'	
1	111°29.2'	194°40.8' S	23°17.4'	177°02.6' S	22°50.8'	110°17.6' S	0°54.2'	146°40.4' S	15°20.5'	43°47.2' N	24°39.9'	
2	126°31.7'	209°40.5' S	23°17.3'	192°01.7' S	22°50.3'	125°19.8' S	0°54.0'	161°42.6' S	15°20.5'	58°50.2' N	24°39.9'	
3	141°34.2'	224°40.2' S	23°17.2'	207°00.8' S	22°49.9'	140°22.0' S	0°53.9'	176°44.8' S	15°20.4'	73°53.2' N	24°39.8'	
4	156°36.6'	239°39.9' S	23°17.1'	221°59.9' S	22°49.4'	155°24.2' S	0°53.8'	191°47.1' S	15°20.3'	88°56.3' N	24°39.8'	
5	171°39.1'	254°39.6' S	23°17.0'	236°59.0' S	22°48.9'	170°26.4' S	0°53.7'	206°49.3' S	15°20.2'	103°59.3' N	24°39.7'	
6	186°41.5'	269°39.3' S	23°16.8'	251°58.1' S	22°48.5'	185°28.6' S	0°53.6'	221°51.5' S	15°20.1'	119°02.4' N	24°39.7'	
7	201°44.0'	284°39.0' S	23°16.7'	266°57.2' S	22°48.0'	200°30.9' S	0°53.5'	236°53.8' S	15°20.1'	134°05.4' N	24°39.6'	
8	216°46.5'	299°38.7' S	23°16.6'	281°56.3' S	22°47.6'	215°33.1' S	0°53.3'	251°56.0' S	15°20.0'	149°08.5' N	24°39.6'	
9	231°48.9'	314°38.4' S	23°16.5'	296°55.4' S	22°47.1'	230°35.3' S	0°53.2'	266°58.2' S	15°19.9'	164°11.5' N	24°39.5'	
10	246°51.4'	329°38.0' S	23°16.3'	311°54.5' S	22°46.6'	245°37.5' S	0°53.1'	282°00.4' S	15°19.8'	179°14.5' N	24°39.4'	
11	261°53.9'	344°37.7' S	23°16.2'	326°53.6' S	22°46.2'	260°39.7' S	0°53.0'	297°02.7' S	15°19.7'	194°17.6' N	24°39.4'	
12	276°56.3'	359°37.4' S	23°16.1'	341°52.7' S	22°45.7'	275°41.9' S	0°52.9'	312°04.9' S	15°19.7'	209°20.6' N	24°39.3'	
13	291°58.8'	14°37.1' S	23°15.9'	356°51.8' S	22°45.2'	290°44.1' S	0°52.7'	327°07.1' S	15°19.6'	224°23.6' N	24°39.3'	
14	307°01.3'	29°36.8' S	23°15.8'	11°50.9' S	22°44.8'	305°46.4' S	0°52.6'	342°09.4' S	15°19.5'	239°26.7' N	24°39.2'	
15	322°03.7'	44°36.5' S	23°15.7'	26°50.0' S	22°44.3'	320°48.6' S	0°52.5'	357°11.6' S	15°19.4'	254°29.7' N	24°39.2'	
16	337°06.2'	59°36.2' S	23°15.5'	41°49.1' S	22°43.8'	335°50.8' S	0°52.4'	12°13.8' S	15°19.4'	269°32.7' N	24°39.1'	
17	352°08.7'	74°35.9' S	23°15.4'	56°48.2' S	22°43.3'	350°53.0' S	0°52.3'	27°16.0' S	15°19.3'	284°35.7' N	24°39.1'	
18	7°11.1'	89°35.6' S	23°15.3'	71°47.3' S	22°42.9'	5°55.2' S	0°52.1'	42°18.3' S	15°19.2'	299°38.8' N	24°39.0'	
19	22°13.6'	104°35.3' S	23°15.1'	86°46.4' S	22°42.4'	20°57.4' S	0°52.0'	57°20.5' S	15°19.1'	314°41.8' N	24°39.0'	
20	37°16.0'	119°35.0' S	23°15.0'	101°45.6' S	22°41.9'	35°59.6' S	0°51.9'	72°22.7' S	15°19.0'	329°44.8' N	24°38.9'	
21	52°18.5'	134°34.7' S	23°14.9'	116°44.7' S	22°41.4'	51°01.8' S	0°51.8'	87°24.9' S	15°19.0'	344°47.8' N	24°38.9'	
22	67°21.0'	149°34.4' S	23°14.7'	131°43.8' S	22°40.9'	66°04.1' S	0°51.6'	102°27.2' S	15°18.9'	359°50.8' N	24°38.8'	
23	82°23.4'	164°34.1' S	23°14.6'	146°42.9' S	22°40.5'	81°06.3' S	0°51.5'	117°29.4' S	15°18.8'	14°53.8' N	24°38.8'	
		SD 16.3' d 0.1'		v -0.9' d 0.5'		v 2.2' d 0.1'		v 2.2' d 0.1'		v 3.0' d -0.1'		
Mer. pass.		12 h 1 m 32 s		13 h 13 m		17 h 36 m		15 h 11 m		22 h 1 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Rigel	-Mars	-Aldebaran	-Jupiter	+Fomalhaut	+Saturn	+Venus	+Sun
0	113°17.6'	S 12°02.1'	10.5'	15.0'	59.4'	93°52.3'	90°09.4'	89°48.4'	21°04.3'		18°07.1'	47°32.5'	63°45.3'
1	127°47.1'	S 11°47.1'	10.6'	15.0'	59.3'	93°22.9'	89°33.3'	89°13.2'	20°29.2'		18°41.7'	48°04.9'	64°18.2'
2	142°16.7'	S 11°32.1'	10.7'	15.1'	59.3'	92°53.4'	88°57.2'	88°38.0'	19°54.1'		19°16.2'	48°37.2'	64°51.1'
3	156°46.4'	S 11°17.0'	10.8'	15.1'	59.3'	92°24.0'	88°21.2'	88°02.8'	19°19.1'		19°50.8'	49°09.4'	65°24.0'
4	171°16.1'	S 11°01.9'	10.9'	15.2'	59.2'	91°54.6'	87°45.2'	87°27.7'	18°44.1'		20°25.4'	49°41.6'	65°56.8'
5	185°46.0'	S 10°46.8'	11.0'	15.2'	59.2'	91°25.2'	87°09.3'	86°52.6'	18°09.2'		20°59.9'	50°13.8'	66°29.5'
6	200°16.0'	S 10°31.6'	11.1'	15.2'	59.2'	90°55.9'	86°33.4'	86°17.6'	17°34.4'	19°02.7'	21°34.5'	50°45.9'	67°02.3'
7	214°46.0'	S 10°16.3'	11.1'	15.3'	59.1'	90°26.6'	85°57.5'	85°42.6'	16°59.6'	19°20.7'	22°09.0'	51°18.0'	67°34.9'
8	229°16.2'	S 10°01.1'	11.2'	15.3'	59.1'	89°57.3'	85°21.7'	85°07.6'	16°24.8'	19°39.5'	22°43.5'	51°50.1'	68°07.6'
9	243°46.4'	S 9°45.8'	11.3'	15.3'	59.1'	89°28.1'	84°46.0'	84°32.7'	15°50.2'	19°59.0'	23°18.0'	52°22.1'	68°40.2'
10	258°16.7'	S 9°30.4'	11.4'	15.4'	59.0'	88°58.9'	84°10.3'	83°57.9'	15°15.5'	20°19.2'	23°52.5'	52°54.0'	69°12.7'
11	272°47.1'	S 9°15.1'	11.5'	15.4'	59.0'	88°29.8'	83°34.6'	83°23.0'	14°41.0'	20°39.9'	24°27.0'	53°26.0'	69°45.2'
12	287°17.6'	S 8°59.7'	11.6'	15.4'	59.0'	88°00.7'	82°59.0'	82°48.3'	14°06.5'	21°01.3'	25°01.4'	53°57.9'	70°17.7'
13	301°48.2'	S 8°44.3'	11.7'	15.4'	58.9'	87°31.6'	82°23.4'	82°13.5'	13°32.1'	21°23.2'	25°35.8'	54°29.7'	70°50.1'
14	316°18.9'	S 8°28.8'	11.7'	15.5'	58.9'	87°02.6'	81°47.8'	81°38.8'	12°57.8'	21°45.6'	26°10.2'	55°01.5'	71°22.5'
15	330°49.6'	S 8°13.4'	11.8'	15.5'	58.9'	86°33.6'	81°12.4'	81°04.2'	12°23.5'	22°08.5'	26°44.6'	55°33.3'	71°54.8'
16	345°20.5'	S 7°57.9'	11.9'	15.5'	58.8'	86°04.6'	80°36.9'	80°29.6'	11°49.4'	22°31.9'	27°18.9'	56°05.0'	72°27.1'
17	359°51.4'	S 7°42.4'	12.0'	15.5'	58.8'	85°35.7'	80°01.5'	79°55.0'	11°15.3'	22°55.7'	27°53.2'	56°36.6'	72°59.4'
18	14°22.3'	S 7°26.8'	12.1'	15.5'	58.8'	85°06.9'	79°26.1'	79°20.5'	10°41.4'	23°19.9'	28°27.5'	57°08.3'	73°31.6'
19	28°53.4'	S 7°11.3'	12.1'	15.6'	58.7'	84°38.1'	78°50.8'	78°46.0'	10°07.5'	23°44.5'	29°01.7'	57°39.9'	74°03.8'
20	43°24.5'	S 6°55.7'	12.2'	15.6'	58.7'	84°09.3'	78°15.5'	78°11.6'	9°33.8'	24°09.5'	29°35.9'	58°11.4'	74°35.9'
21	57°55.8'	S 6°40.1'	12.3'	15.6'	58.6'	83°40.6'	77°40.3'	77°37.2'	9°00.2'	24°34.8'	30°10.1'	58°42.9'	75°08.0'
22	72°27.0'	S 6°24.5'	12.3'	15.6'	58.6'	83°11.9'	77°05.1'	77°02.9'	8°26.7'	25°00.5'	30°44.3'	59°14.4'	75°40.0'
23	86°58.4'	S 6°08.9'	12.4'	15.6'	58.6'	82°43.3'	76°30.0'	76°28.6'	7°53.5'	25°26.4'	31°18.4'	59°45.8'	76°12.0'
Mer. pass.		17 h 1 m	SD 16.2'	phase 28%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.2'	S 11°16.8'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.8'	Acrux	+0.8	173°02.0'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.3'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.0'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.0'	N 27°58.2'	Aldebaran	+0.9	290°41.2'	N 16°33.3'
Antares	+1.1	112°18.2'	S 26°28.9'	Procyon	+0.4	244°52.3'	N 5°10.0'	Polaris	+2.0	314°30.0'	N 89°21.9'
Rigil Kent	-0.0	139°43.0'	S 60°55.5'	Adhara	+1.5	255°06.8'	S 29°00.1'	Achernar	+0.5	335°21.3'	S 57°07.5'
Arcturus	-0.1	145°49.6'	N 19°03.7'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.7'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	97°25.9'	S 23°14.5'	179°33.8'	S 23°14.5'	161°42.0'	S 22°40.0'	96°08.5'	S 0°51.4'	132°31.6'	S 15°18.7'	29°56.9'	N 24°38.7'
1	112°28.4'	S 23°14.3'	194°33.5'	S 23°14.3'	176°41.1'	S 22°39.5'	111°10.7'	S 0°51.3'	147°33.9'	S 15°18.6'	44°59.9'	N 24°38.7'
2	127°30.8'	S 23°14.2'	209°33.2'	S 23°14.2'	191°40.2'	S 22°39.0'	126°12.9'	S 0°51.2'	162°36.1'	S 15°18.6'	60°02.9'	N 24°38.6'
3	142°33.3'	S 23°14.0'	224°32.9'	S 23°14.0'	206°39.3'	S 22°38.5'	141°15.1'	S 0°51.0'	177°38.3'	S 15°18.5'	75°05.9'	N 24°38.6'
4	157°35.8'	S 23°13.9'	239°32.6'	S 23°13.9'	221°38.4'	S 22°38.0'	156°17.3'	S 0°50.9'	192°40.5'	S 15°18.4'	90°08.9'	N 24°38.5'
5	172°38.2'	S 23°13.8'	254°32.3'	S 23°13.8'	236°37.5'	S 22°37.6'	171°19.5'	S 0°50.8'	207°42.8'	S 15°18.3'	105°11.9'	N 24°38.5'
6	187°40.7'	S 23°13.6'	269°32.0'	S 23°13.6'	251°36.7'	S 22°37.1'	186°21.7'	S 0°50.7'	222°45.0'	S 15°18.2'	120°14.9'	N 24°38.4'
7	202°43.2'	S 23°13.5'	284°31.6'	S 23°13.5'	266°35.8'	S 22°36.6'	201°23.9'	S 0°50.6'	237°47.2'	S 15°18.2'	135°17.9'	N 24°38.4'
8	217°45.6'	S 23°13.3'	299°31.3'	S 23°13.3'	281°34.9'	S 22°36.1'	216°26.1'	S 0°50.4'	252°49.4'	S 15°18.1'	150°20.9'	N 24°38.3'
9	232°48.1'	S 23°13.2'	314°31.0'	S 23°13.2'	296°34.0'	S 22°35.6'	231°28.4'	S 0°50.3'	267°51.7'	S 15°18.0'	165°23.9'	N 24°38.3'
10	247°50.5'	S 23°13.0'	329°30.7'	S 23°13.0'	311°33.1'	S 22°35.1'	246°30.6'	S 0°50.2'	282°53.9'	S 15°17.9'	180°26.9'	N 24°38.2'
11	262°53.0'	S 23°12.9'	344°30.4'	S 23°12.9'	326°32.2'	S 22°34.6'	261°32.8'	S 0°50.1'	297°56.1'	S 15°17.8'	195°29.9'	N 24°38.2'
12	277°55.5'	S 23°12.7'	359°30.1'	S 23°12.7'	341°31.3'	S 22°34.1'	276°35.0'	S 0°49.9'	312°58.3'	S 15°17.8'	210°32.9'	N 24°38.1'
13	292°57.9'	S 23°12.6'	14°29.8'	S 23°12.6'	356°30.4'	S 22°33.6'	291°37.2'	S 0°49.8'	328°00.6'	S 15°17.7'	225°35.9'	N 24°38.1'
14	308°00.4'	S 23°12.4'	29°29.5'	S 23°12.4'	11°29.6'	S 22°33.1'	306°39.4'	S 0°49.7'	343°02.8'	S 15°17.6'	240°38.9'	N 24°38.0'
15	323°02.9'	S 23°12.3'	44°29.2'	S 23°12.3'	26°28.7'	S 22°32.6'	321°41.6'	S 0°49.6'	358°05.0'	S 15°17.5'	255°41.9'	N 24°38.0'
16	338°05.3'	S 23°12.1'	59°28.9'	S 23°12.1'	41°27.8'	S 22°32.1'	336°43.8'	S 0°49.4'	13°07.2'	S 15°17.4'	270°44.9'	N 24°37.9'
17	353°07.8'	S 23°12.0'	74°28.6'	S 23°12.0'	56°26.9'	S 22°31.6'	351°46.0'	S 0°49.3'	28°09.5'	S 15°17.4'	285°47.9'	N 24°37.9'
18	8°10.3'	S 23°11.8'	89°28.3'	S 23°11.8'	71°26.0'	S 22°31.1'	6°48.2'	S 0°49.2'	43°11.7'	S 15°17.3'	300°50.8'	N 24°37.8'
19	23°12.7'	S 23°11.7'	104°28.0'	S 23°11.7'	86°25.1'	S 22°30.6'	21°50.4'	S 0°49.1'	58°13.9'	S 15°17.2'	315°53.8'	N 24°37.8'
20	38°15.2'	S 23°11.5'	119°27.7'	S 23°11.5'	101°24.3'	S 22°30.1'	36°52.6'	S 0°49.0'	73°16.1'	S 15°17.1'	330°56.8'	N 24°37.7'
21	53°17.6'	S 23°11.4'	134°27.4'	S 23°11.4'	116°23.4'	S 22°29.6'	51°54.8'	S 0°48.8'	88°18.4'	S 15°17.0'	345°59.8'	N 24°37.7'
22	68°20.1'	S 23°11.2'	149°27.1'	S 23°11.2'	131°22.5'	S 22°29.1'	66°57.0'	S 0°48.7'	103°20.6'	S 15°17.0'	1°02.8'	N 24°37.6'
23	83°22.6'	S 23°11.1'	164°26.8'	S 23°11.1'	146°21.6'	S 22°28.6'	81°59.2'	S 0°48.6'	118°22.8'	S 15°16.9'	16°05.7'	N 24°37.6'
			SD 16.3' d 0.1'		v -0.9' d 0.5'		v 2.2' d 0.1'		v 2.2' d 0.1'		v 3.0' d -0.0'	
Mer. pass.			12 h 2 m 1 s		13 h 14 m		17 h 33 m		15 h 8 m		21 h 56 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Rigel	-Mars	-Aldebaran	-Jupiter	+Fomalhaut	+Saturn	+Altair	+Sun
0	101°29.8'	S 5°53.3'	12.5'	15.6'	58.5'	82°14.7'	75°54.9'	75°54.3'	7°20.4'	25°52.6'	31°52.5'	59°39.0'	76°44.0'
1	116°01.3'	S 5°37.7'	12.6'	15.6'	58.5'	81°46.2'	75°19.8'	75°20.1'	6°47.6'	26°19.1'	32°26.5'	60°05.2'	77°15.9'
2	130°32.8'	S 5°22.1'	12.6'	15.6'	58.5'	81°17.7'	74°44.8'	74°46.0'	6°15.1'	26°45.8'	33°00.5'	60°31.4'	77°47.8'
3	145°04.5'	S 5°06.4'	12.7'	15.6'	58.4'	80°49.3'	74°09.9'	74°11.8'	5°43.0'	27°12.8'	33°34.5'	60°57.7'	78°19.6'
4	159°36.1'	S 4°50.8'	12.7'	15.6'	58.4'	80°20.9'	73°35.0'	73°37.8'	5°11.4'	27°40.0'	34°08.5'	61°24.0'	78°51.4'
5	174°07.9'	S 4°35.1'	12.8'	15.7'	58.4'	79°52.6'	73°00.1'	73°03.7'		28°07.4'	34°42.4'	61°50.4'	79°23.2'
6	188°39.7'	S 4°19.5'	12.9'	15.7'	58.3'	79°24.3'	72°25.2'	72°29.7'		28°35.0'	35°16.2'	62°16.9'	79°54.9'
7	203°11.5'	S 4°03.8'	12.9'	15.7'	58.3'	78°56.1'	71°50.5'	71°55.8'		29°02.8'	35°50.1'	62°43.3'	80°26.5'
8	217°43.4'	S 3°48.2'	13.0'	15.7'	58.3'	78°28.0'	71°15.7'	71°21.9'		29°30.8'	36°23.9'	63°09.9'	80°58.2'
9	232°15.4'	S 3°32.5'	13.0'	15.7'	58.2'	77°59.9'	70°41.0'	70°48.0'		29°58.9'	36°57.6'	63°36.4'	81°29.7'
10	246°47.4'	S 3°16.9'	13.1'	15.6'	58.2'	77°31.8'	70°06.3'	70°14.2'		30°27.2'	37°31.4'	64°03.0'	82°01.3'
11	261°19.5'	S 3°01.2'	13.1'	15.6'	58.2'	77°03.9'	69°31.7'	69°40.4'		30°55.7'	38°05.1'	64°29.6'	82°32.8'
12	275°51.7'	S 2°45.6'	13.2'	15.6'	58.1'	76°35.9'	68°57.2'	69°06.7'		31°24.2'	38°38.7'	64°56.2'	83°04.2'
13	290°23.8'	S 2°29.9'	13.2'	15.6'	58.1'	76°08.1'	68°22.6'	68°33.0'		31°52.9'	39°12.4'	65°22.9'	83°35.6'
14	304°56.1'	S 2°14.3'	13.3'	15.6'	58.1'	75°40.3'	67°48.1'	67°59.4'		32°21.7'	39°45.9'	65°49.6'	84°07.0'
15	319°28.4'	S 1°58.7'	13.3'	15.6'	58.0'	75°12.6'	67°13.7'	67°25.8'		32°50.7'	40°19.5'	66°16.4'	84°38.3'
16	334°00.7'	S 1°43.1'	13.4'	15.6'	58.0'	74°44.9'	66°39.3'	66°52.3'		33°19.7'	40°53.0'	66°43.1'	85°09.6'
17	348°33.0'	S 1°27.5'	13.4'	15.6'	57.9'	74°17.3'	66°04.9'	66°18.7'		33°48.8'	41°26.5'	67°09.9'	85°40.9'
18	3°05.5'	S 1°11.9'	13.5'	15.6'	57.9'	73°49.7'	65°30.6'	65°45.3'		34°18.1'	41°59.9'	67°36.7'	86°12.1'
19	17°37.9'	S 0°56.3'	13.5'	15.6'	57.9'	73°22.3'	64°56.3'	65°11.9'		34°47.4'	42°33.3'	68°03.5'	86°43.3'
20	32°10.4'	S 0°40.8'	13.5'	15.5'	57.8'	72°54.9'	64°22.1'	64°38.5'	4°42.3'	35°16.8'	43°06.7'	68°30.3'	87°14.4'
21	46°42.9'	S 0°25.2'	13.6'	15.5'	57.8'	72°27.5'	63°47.9'	64°05.2'	5°12.8'	35°46.2'	43°40.0'	68°57.2'	87°45.5'
22	61°15.5'	S 0°09.7'	13.6'	15.5'	57.8'	72°00.3'	63°13.8'	63°31.9'	5°43.7'	36°15.8'	44°13.3'	69°24.0'	88°16.5'
23	75°48.1'	N 0°05.8'	13.6'	15.5'	57.7'	71°33.1'	62°39.6'	62°58.6'	6°15.1'	36°45.4'	44°46.5'	69°50.9'	88°47.5'
Mer. pass. 17 h 47 m SD 16.0' phase 39%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.2'	S 11°16.8'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.8'	Acrux	+0.8	173°02.0'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.3'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.0'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.3'	Pollux	+1.2	243°19.0'	N 27°58.2'	Aldebaran	+0.9	290°41.2'	N 16°33.3'
Antares	+1.1	112°18.2'	S 26°28.9'	Procyon	+0.4	244°52.3'	N 5°10.0'	Polaris	+2.0	314°30.4'	N 89°21.9'
Rigil Kent	-0.0	139°43.0'	S 60°55.5'	Adhara	+1.5	255°06.8'	S 29°00.2'	Achernar	+0.5	335°21.3'	S 57°07.5'
Arcturus	-0.1	145°49.6'	N 19°03.7'	Sirius	-1.4	258°27.4'	S 16°44.8'				
Hadar	+0.6	148°38.7'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	98°25.0'	S 23°10.9'	179°26.5'	S 23°10.9'	161°20.7'	S 22°28.1'	97°01.4'	S 0°48.5'	133°25.0'	S 15°16.8'	31°08.7'	N 24°37.5'
1	113°27.5'	S 23°10.7'	194°26.2'	S 23°10.6'	176°19.9'	S 22°27.6'	112°03.6'	S 0°48.3'	148°27.3'	S 15°16.7'	46°11.7'	N 24°37.5'
2	128°30.0'	S 23°10.6'	209°25.9'	S 23°10.6'	191°19.0'	S 22°27.0'	127°05.9'	S 0°48.2'	163°29.5'	S 15°16.6'	61°14.7'	N 24°37.4'
3	143°32.4'	S 23°10.4'	224°25.6'	S 23°10.4'	206°18.1'	S 22°26.5'	142°08.1'	S 0°48.1'	178°31.7'	S 15°16.6'	76°17.6'	N 24°37.4'
4	158°34.9'	S 23°10.3'	239°25.3'	S 23°10.3'	221°17.2'	S 22°26.0'	157°10.3'	S 0°48.0'	193°33.9'	S 15°16.5'	91°20.6'	N 24°37.3'
5	173°37.4'	S 23°10.1'	254°25.0'	S 23°10.1'	236°16.4'	S 22°25.5'	172°12.5'	S 0°47.8'	208°36.2'	S 15°16.4'	106°23.6'	N 24°37.3'
6	188°39.8'	S 23°09.9'	269°24.7'	S 23°09.9'	251°15.5'	S 22°25.0'	187°14.7'	S 0°47.7'	223°38.4'	S 15°16.3'	121°26.5'	N 24°37.3'
7	203°42.3'	S 23°09.8'	284°24.4'	S 23°09.8'	266°14.6'	S 22°24.5'	202°16.9'	S 0°47.6'	238°40.6'	S 15°16.2'	136°29.5'	N 24°37.2'
8	218°44.8'	S 23°09.6'	299°24.1'	S 23°09.6'	281°13.7'	S 22°23.9'	217°19.1'	S 0°47.5'	253°42.8'	S 15°16.1'	151°32.5'	N 24°37.2'
9	233°47.2'	S 23°09.4'	314°23.8'	S 23°09.4'	296°12.8'	S 22°23.4'	232°21.3'	S 0°47.3'	268°45.1'	S 15°16.1'	166°35.4'	N 24°37.1'
10	248°49.7'	S 23°09.3'	329°23.5'	S 23°09.3'	311°12.0'	S 22°22.9'	247°23.5'	S 0°47.2'	283°47.3'	S 15°16.0'	181°38.4'	N 24°37.1'
11	263°52.1'	S 23°09.1'	344°23.2'	S 23°09.1'	326°11.1'	S 22°22.4'	262°25.7'	S 0°47.1'	298°49.5'	S 15°15.9'	196°41.4'	N 24°37.0'
12	278°54.6'	S 23°08.9'	359°22.9'	S 23°08.9'	341°10.2'	S 22°21.9'	277°27.9'	S 0°47.0'	313°51.7'	S 15°15.8'	211°44.3'	N 24°37.0'
13	293°57.1'	S 23°08.8'	14°22.6'	S 23°08.8'	356°09.3'	S 22°21.3'	292°30.1'	S 0°46.8'	328°54.0'	S 15°15.7'	226°47.3'	N 24°36.9'
14	308°59.5'	S 23°08.6'	29°22.3'	S 23°08.6'	11°08.5'	S 22°20.8'	307°32.3'	S 0°46.7'	343°56.2'	S 15°15.7'	241°50.2'	N 24°36.9'
15	324°02.0'	S 23°08.4'	44°22.0'	S 23°08.4'	26°07.6'	S 22°20.3'	322°34.5'	S 0°46.6'	358°58.4'	S 15°15.6'	256°53.2'	N 24°36.8'
16	339°04.5'	S 23°08.3'	59°21.7'	S 23°08.3'	41°06.7'	S 22°19.7'	337°36.7'	S 0°46.5'	14°00.6'	S 15°15.5'	271°56.1'	N 24°36.8'
17	354°06.9'	S 23°08.1'	74°21.4'	S 23°08.1'	56°05.9'	S 22°19.2'	352°38.9'	S 0°46.3'	29°02.8'	S 15°15.4'	286°59.1'	N 24°36.7'
18	9°09.4'	S 23°07.9'	89°21.1'	S 23°07.9'	71°05.0'	S 22°18.7'	7°41.1'	S 0°46.2'	44°05.1'	S 15°15.3'	302°02.0'	N 24°36.7'
19	24°11.9'	S 23°07.8'	104°20.8'	S 23°07.8'	86°04.1'	S 22°18.2'	22°43.3'	S 0°46.1'	59°07.3'	S 15°15.3'	317°05.0'	N 24°36.6'
20	39°14.3'	S 23°07.6'	119°20.5'	S 23°07.6'	101°03.2'	S 22°17.6'	37°45.5'	S 0°46.0'	74°09.5'	S 15°15.2'	332°07.9'	N 24°36.6'
21	54°16.8'	S 23°07.4'	134°20.2'	S 23°07.4'	116°02.4'	S 22°17.1'	52°47.7'	S 0°45.8'	89°11.7'	S 15°15.1'	347°10.9'	N 24°36.5'
22	69°19.3'	S 23°07.2'	149°19.9'	S 23°07.2'	131°01.5'	S 22°16.6'	67°49.9'	S 0°45.7'	104°14.0'	S 15°15.0'	2°13.8'	N 24°36.5'
23	84°21.7'	S 23°07.1'	164°19.6'	S 23°07.1'	146°00.6'	S 22°16.0'	82°52.1'	S 0°45.6'	119°16.2'	S 15°14.9'	17°16.7'	N 24°36.4'
		SD 16.3' d 0.2'		v -0.9' d 0.5'		v 2.2' d 0.1'		v 2.2' d 0.1'		v 3.0' d -0.0'		
Mer. pass.		12 h 2 m 30 s		13 h 15 m		17 h 29 m		15 h 4 m		21 h 51 m		

h	Moon				HP	Lunar distance							
	GHA	dec	v	d		-Capella	-Rigel	-Aldebaran	-Mars	+Jupiter	+Fomalhaut	+Saturn	+Sun
0	90°20.8'	N 0°21.3'	13.7'	15.5'	57.7'	77°01.8'	71°05.9'	62°25.4'	62°05.6'	6°46.7'	37°15.1'	45°19.7'	89°18.5'
1	104°53.4'	N 0°36.8'	13.7'	15.4'	57.7'	76°30.3'	70°38.9'	61°52.3'	61°31.6'	7°18.5'	37°44.8'	45°52.9'	89°49.4'
2	119°26.1'	N 0°52.2'	13.7'	15.4'	57.6'	75°58.8'	70°11.9'	61°19.1'	60°57.6'	7°50.5'	38°14.6'	46°26.1'	90°20.3'
3	133°58.9'	N 1°07.7'	13.8'	15.4'	57.6'	75°27.3'	69°45.0'	60°46.1'	60°23.6'	8°22.7'	38°44.4'	46°59.2'	90°51.2'
4	148°31.6'	N 1°23.1'	13.8'	15.4'	57.6'	74°56.0'	69°18.1'	60°13.0'	59°49.7'	8°54.9'	39°14.3'	47°32.2'	91°22.0'
5	163°04.4'	N 1°38.4'	13.8'	15.4'	57.5'	74°24.6'	68°51.3'	59°40.0'	59°15.9'	9°27.1'	39°44.2'	48°05.3'	91°52.8'
6	177°37.3'	N 1°53.8'	13.8'	15.3'	57.5'	73°53.3'	68°24.7'	59°07.1'	58°42.0'	9°59.5'	40°14.2'	48°38.3'	92°23.5'
7	192°10.1'	N 2°09.1'	13.9'	15.3'	57.5'	73°22.1'	67°58.0'	58°34.2'	58°08.2'	10°31.9'	40°44.2'	49°11.2'	92°54.2'
8	206°43.0'	N 2°24.4'	13.9'	15.3'	57.4'	72°50.9'	67°31.5'	58°01.3'	57°34.5'	11°04.3'	41°14.3'	49°44.1'	93°24.8'
9	221°15.9'	N 2°39.7'	13.9'	15.2'	57.4'	72°19.7'	67°05.1'	57°28.5'	57°00.8'	11°36.7'	41°44.4'	50°17.0'	93°55.5'
10	235°48.8'	N 2°54.9'	13.9'	15.2'	57.4'	71°48.6'	66°38.7'	56°55.7'	56°27.1'	12°09.1'	42°14.5'	50°49.9'	94°26.0'
11	250°21.7'	N 3°10.2'	14.0'	15.2'	57.3'	71°17.5'	66°12.4'	56°23.0'	55°53.5'	12°41.5'	42°44.6'	51°22.7'	94°56.6'
12	264°54.7'	N 3°25.3'	14.0'	15.2'	57.3'	70°46.5'	65°46.2'	55°50.3'	55°19.9'	13°14.0'	43°14.8'	51°55.5'	95°27.1'
13	279°27.7'	N 3°40.5'	14.0'	15.1'	57.3'	70°15.6'	65°20.0'	55°17.7'	54°46.4'	13°46.4'	43°45.0'	52°28.2'	95°57.5'
14	294°00.7'	N 3°55.6'	14.0'	15.1'	57.2'	69°44.7'	64°54.0'	54°45.1'	54°12.9'	14°18.8'	44°15.2'	53°00.9'	96°28.0'
15	308°33.7'	N 4°10.7'	14.0'	15.0'	57.2'	69°13.8'	64°28.0'	54°12.5'	53°39.4'	14°51.2'	44°45.4'	53°33.6'	96°58.4'
16	323°06.7'	N 4°25.7'	14.0'	15.0'	57.2'	68°43.0'	64°02.2'	53°40.0'	53°05.9'	15°23.6'	45°15.7'	54°06.2'	97°28.7'
17	337°39.7'	N 4°40.8'	14.0'	15.0'	57.1'	68°12.2'	63°36.4'	53°07.5'	52°32.6'	15°56.0'	45°45.9'	54°38.8'	97°59.0'
18	352°12.8'	N 4°55.7'	14.1'	14.9'	57.1'	67°41.5'	63°10.7'	52°35.1'	51°59.2'	16°28.4'	46°16.2'	55°11.4'	98°29.3'
19	6°45.8'	N 5°10.7'	14.1'	14.9'	57.1'	67°10.9'	62°45.1'	52°02.7'	51°25.9'	17°00.7'	46°46.5'	55°43.9'	98°59.6'
20	21°18.9'	N 5°25.6'	14.1'	14.9'	57.0'	66°40.3'	62°19.6'	51°30.4'	50°52.6'	17°33.0'	47°16.8'	56°16.4'	99°29.8'
21	35°51.9'	N 5°40.4'	14.1'	14.8'	57.0'	66°09.7'	61°54.2'	50°58.1'	50°19.3'	18°05.3'	47°47.1'	56°48.9'	99°59.9'
22	50°25.0'	N 5°55.2'	14.1'	14.8'	57.0'	65°39.2'	61°28.8'	50°25.8'	49°46.1'	18°37.6'	48°17.4'	57°21.3'	100°30.1'
23	64°58.1'	N 6°10.0'	14.1'	14.7'	57.0'	65°08.7'	61°03.6'	49°53.6'	49°13.0'	19°09.8'	48°47.7'	57°53.7'	101°00.2'
Mer. pass.		18 h 32 m SD 15.7'		phase 49%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.2'	S 11°16.8'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.3'	N 45°21.8'	Acrux	+0.8	173°02.0'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.3'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.0'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.2'	Pollux	+1.2	243°19.0'	N 27°58.2'	Aldebaran	+0.9	290°41.2'	N 16°33.3'
Antares	+1.1	112°18.2'	S 26°28.9'	Procyon	+0.4	244°52.3'	N 5°10.0'	Polaris	+2.0	314°30.8'	N 89°21.9'
Rigil Kent	-0.0	139°43.0'	S 60°55.5'	Adhara	+1.5	255°06.8'	S 29°00.2'	Achernar	+0.5	335°21.3'	S 57°07.5'
Arcturus	-0.1	145°49.6'	N 19°03.7'	Sirius	-1.4	258°27.4'	S 16°44.9'				
Hadar	+0.6	148°38.7'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	99°24.2'	179°19.3' S	23°06.9'	160°59.8' S	22°15.5'	97°54.3' S	0°45.4'	134°18.4' S	15°14.9'	32°19.7' N	24°36.4'	
1	114°26.6'	194°19.0' S	23°06.7'	175°58.9' S	22°14.9'	112°56.5' S	0°45.3'	149°20.6' S	15°14.8'	47°22.6' N	24°36.3'	
2	129°29.1'	209°18.7' S	23°06.5'	190°58.0' S	22°14.4'	127°58.7' S	0°45.2'	164°22.8' S	15°14.7'	62°25.6' N	24°36.3'	
3	144°31.6'	224°18.4' S	23°06.3'	205°57.1' S	22°13.9'	143°00.9' S	0°45.1'	179°25.1' S	15°14.6'	77°28.5' N	24°36.3'	
4	159°34.0'	239°18.1' S	23°06.2'	220°56.3' S	22°13.3'	158°03.1' S	0°44.9'	194°27.3' S	15°14.5'	92°31.4' N	24°36.2'	
5	174°36.5'	254°17.8' S	23°06.0'	235°55.4' S	22°12.8'	173°05.3' S	0°44.8'	209°29.5' S	15°14.4'	107°34.4' N	24°36.2'	
6	189°39.0'	269°17.5' S	23°05.8'	250°54.5' S	22°12.2'	188°07.4' S	0°44.7'	224°31.7' S	15°14.4'	122°37.3' N	24°36.1'	
7	204°41.4'	284°17.2' S	23°05.6'	265°53.7' S	22°11.7'	203°09.6' S	0°44.6'	239°34.0' S	15°14.3'	137°40.2' N	24°36.1'	
8	219°43.9'	299°16.9' S	23°05.4'	280°52.8' S	22°11.1'	218°11.8' S	0°44.4'	254°36.2' S	15°14.2'	152°43.1' N	24°36.0'	
9	234°46.4'	314°16.6' S	23°05.2'	295°52.0' S	22°10.6'	233°14.0' S	0°44.3'	269°38.4' S	15°14.1'	167°46.1' N	24°36.0'	
10	249°48.8'	329°16.3' S	23°05.1'	310°51.1' S	22°10.0'	248°16.2' S	0°44.2'	284°40.6' S	15°14.0'	182°49.0' N	24°35.9'	
11	264°51.3'	344°16.0' S	23°04.9'	325°50.2' S	22°09.5'	263°18.4' S	0°44.0'	299°42.8' S	15°14.0'	197°51.9' N	24°35.9'	
12	279°53.7'	359°15.7' S	23°04.7'	340°49.4' S	22°08.9'	278°20.6' S	0°43.9'	314°45.1' S	15°13.9'	212°54.8' N	24°35.8'	
13	294°56.2'	14°15.4' S	23°04.5'	355°48.5' S	22°08.4'	293°22.8' S	0°43.8'	329°47.3' S	15°13.8'	227°57.7' N	24°35.8'	
14	309°58.7'	29°15.1' S	23°04.3'	10°47.6' S	22°07.8'	308°25.0' S	0°43.7'	344°49.5' S	15°13.7'	243°00.7' N	24°35.7'	
15	325°01.1'	44°14.8' S	23°04.1'	25°46.8' S	22°07.3'	323°27.2' S	0°43.5'	359°51.7' S	15°13.6'	258°03.6' N	24°35.7'	
16	340°03.6'	59°14.5' S	23°03.9'	40°45.9' S	22°06.7'	338°29.4' S	0°43.4'	14°53.9' S	15°13.5'	273°06.5' N	24°35.7'	
17	355°06.1'	74°14.2' S	23°03.7'	55°45.0' S	22°06.2'	353°31.6' S	0°43.3'	29°56.2' S	15°13.5'	288°09.4' N	24°35.6'	
18	10°08.5'	89°13.9' S	23°03.5'	70°44.2' S	22°05.6'	8°33.8' S	0°43.1'	44°58.4' S	15°13.4'	303°12.3' N	24°35.6'	
19	25°11.0'	104°13.6' S	23°03.4'	85°43.3' S	22°05.0'	23°36.0' S	0°43.0'	60°00.6' S	15°13.3'	318°15.2' N	24°35.5'	
20	40°13.5'	119°13.3' S	23°03.2'	100°42.5' S	22°04.5'	38°38.2' S	0°42.9'	75°02.8' S	15°13.2'	333°18.1' N	24°35.5'	
21	55°15.9'	134°13.0' S	23°03.0'	115°41.6' S	22°03.9'	53°40.4' S	0°42.8'	90°05.1' S	15°13.1'	348°21.0' N	24°35.4'	
22	70°18.4'	149°12.7' S	23°02.8'	130°40.7' S	22°03.3'	68°42.7' S	0°42.6'	105°07.3' S	15°13.1'	3°23.9' N	24°35.4'	
23	85°20.9'	164°12.4' S	23°02.6'	145°39.9' S	22°02.8'	83°44.7' S	0°42.5'	120°09.5' S	15°13.0'	18°26.8' N	24°35.3'	
		SD 16.3' d 0.2'		v -0.9' d 0.6'		v 2.2' d 0.1'		v 2.2' d 0.1'		v 2.9' d -0.0'		
Mer. pass.		12 h 2 m 59 s		13 h 17 m		17 h 26 m		15 h 1 m		21 h 46 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Capella	-Rigel	-Aldebaran	-Mars	+Jupiter	+Fomalhaut	+Saturn	+Sun
0	79°31.2'	N 6°24.8'	14.1'	14.7'	56.9'	64°38.3'	60°38.5'	49°21.4'	48°39.8'	19°42.1'	49°18.1'	58°26.1'	101°30.2'
1	94°04.3'	N 6°39.4'	14.1'	14.6'	56.9'	64°08.0'	60°13.4'	48°49.3'	48°06.7'	20°14.3'	49°48.4'	58°58.4'	102°00.3'
2	108°37.4'	N 6°54.1'	14.1'	14.6'	56.9'	63°37.7'	59°48.5'	48°17.2'	47°33.7'	20°46.4'	50°18.8'	59°30.7'	102°30.3'
3	123°10.5'	N 7°08.7'	14.1'	14.6'	56.8'	63°07.4'	59°23.7'	47°45.2'	47°00.6'	21°18.6'	50°49.1'	60°03.0'	103°00.2'
4	137°43.6'	N 7°23.2'	14.1'	14.5'	56.8'	62°37.2'	58°59.0'	47°13.2'	46°27.6'	21°50.7'	51°19.5'	60°35.2'	103°30.1'
5	152°16.6'	N 7°37.7'	14.1'	14.5'	56.8'	62°07.1'	58°34.3'	46°41.2'	45°54.7'	22°22.8'	51°49.8'	61°07.4'	104°00.0'
6	166°49.7'	N 7°52.2'	14.1'	14.4'	56.7'	61°37.0'	58°09.8'	46°09.3'	45°21.8'	22°54.9'	52°20.1'	61°39.6'	104°29.9'
7	181°22.8'	N 8°06.6'	14.1'	14.4'	56.7'	61°07.0'	57°45.4'	45°37.4'	44°48.9'	23°26.9'	52°50.5'	62°11.7'	104°59.7'
8	195°55.9'	N 8°21.0'	14.1'	14.3'	56.7'	60°37.0'	57°21.1'	45°05.6'	44°16.0'	23°58.9'	53°20.8'	62°43.8'	105°29.5'
9	210°29.0'	N 8°35.3'	14.1'	14.3'	56.6'	60°07.1'	56°56.9'	44°33.8'	43°43.2'	24°30.9'	53°51.2'	63°15.9'	105°59.3'
10	225°02.0'	N 8°49.5'	14.1'	14.2'	56.6'	59°37.2'	56°32.8'	44°02.1'	43°10.4'	25°02.9'	54°21.5'	63°47.9'	106°29.0'
11	239°35.1'	N 9°03.7'	14.0'	14.2'	56.6'	59°07.4'	56°08.9'	43°30.4'	42°37.7'	25°34.8'	54°51.8'	64°19.9'	106°58.7'
12	254°08.1'	N 9°17.9'	14.0'	14.1'	56.6'	58°37.7'	55°45.0'	42°58.7'	42°05.0'	26°06.7'	55°22.2'	64°51.9'	107°28.3'
13	268°41.2'	N 9°32.0'	14.0'	14.0'	56.5'	58°08.0'	55°21.3'	42°27.1'	41°32.3'	26°38.6'	55°52.5'	65°23.8'	107°58.0'
14	283°14.2'	N 9°46.0'	14.0'	14.0'	56.5'	57°38.4'	54°57.7'	41°55.5'	40°59.6'	27°10.4'	56°22.8'	65°55.7'	108°27.6'
15	297°47.2'	N 10°00.0'	14.0'	13.9'	56.5'	57°08.8'	54°34.2'	41°24.0'	40°27.0'	27°42.2'	56°53.1'	66°27.6'	108°57.1'
16	312°20.2'	N 10°13.9'	14.0'	13.9'	56.4'	56°39.3'	54°10.8'	40°52.5'	39°54.4'	28°14.0'	57°23.4'	66°59.4'	109°26.6'
17	326°53.2'	N 10°27.8'	14.0'	13.8'	56.4'	56°09.8'	53°47.6'	40°21.1'	39°21.9'	28°45.8'	57°53.7'	67°31.3'	109°56.1'
18	341°26.1'	N 10°41.6'	14.0'	13.8'	56.4'	55°40.4'	53°24.5'	39°49.7'	38°49.4'	29°17.5'	58°24.0'	68°03.0'	110°25.6'
19	355°59.1'	N 10°55.4'	13.9'	13.7'	56.4'	55°11.1'	53°01.5'	39°18.4'	38°16.9'	29°49.2'	58°54.3'	68°34.8'	110°55.0'
20	10°32.0'	N 11°09.1'	13.9'	13.6'	56.3'	54°41.8'	52°38.7'	38°47.1'	37°44.4'	30°20.9'	59°24.6'	69°06.5'	111°24.4'
21	25°04.9'	N 11°22.7'	13.9'	13.6'	56.3'	54°12.6'	52°15.9'	38°15.9'	37°12.0'	30°52.5'	59°54.8'	69°38.2'	111°53.8'
22	39°37.8'	N 11°36.3'	13.9'	13.5'	56.3'	53°43.5'	51°53.4'	37°44.7'	36°39.6'	31°24.1'	60°25.1'	70°09.9'	112°23.2'
23	54°10.7'	N 11°49.8'	13.9'	13.4'	56.2'	53°14.4'	51°30.9'	37°13.5'	36°07.2'	31°55.7'	60°55.3'	70°41.5'	112°52.5'
Mer. pass.		19 h 17 m SD 15.5'		phase 60%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.5'	S 29°30.3'	Spica	+1.0	158°24.2'	S 11°16.8'	Betelgeuse	+0.5	270°53.6'	N 7°24.7'
Deneb	+1.2	49°27.4'	N 45°21.8'	Acrux	+0.8	173°01.9'	S 63°13.2'	Capella	+0.1	280°23.9'	N 46°01.3'
Altair	+0.8	62°01.9'	N 8°55.7'	Regulus	+1.4	207°36.0'	N 11°51.3'	Rigel	+0.2	281°05.2'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.2'	Pollux	+1.2	243°19.0'	N 27°58.2'	Aldebaran	+0.9	290°41.2'	N 16°33.3'
Antares	+1.1	112°18.2'	S 26°28.9'	Procyon	+0.4	244°52.3'	N 5°10.0'	Polaris	+2.0	314°31.1'	N 89°21.9'
Rigel Kent	-0.0	139°43.0'	S 60°55.5'	Adhara	+1.5	255°06.8'	S 29°00.2'	Achernar	+0.5	335°21.3'	S 57°07.5'
Arcturus	-0.1	145°49.6'	N 19°03.7'	Sirius	-1.4	258°27.4'	S 16°44.9'				
Hadar	+0.6	148°38.7'	S 60°28.7'	Canopus	-0.6	263°52.6'	S 52°42.4'				