

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	340°08.4'	179°57.2' N 8°21.6'	192°37.4'	N 14°16.6'	333°12.2'	N 1°16.9'	16°40.3'	S 15°51.7'	275°11.8'	N 20°06.9'		
1	355°10.8'	194°57.4'	N 8°20.7'	207°36.9'	N 14°15.7'	348°14.9'	N 1°16.8'	31°42.9'	S 15°51.8'	290°12.8'	N 20°07.1'	
2	10°13.3'	209°57.6'	N 8°19.8'	222°36.3'	N 14°14.7'	3°17.6'	N 1°16.7'	46°45.5'	S 15°51.8'	305°13.9'	N 20°07.4'	
3	25°15.8'	224°57.8'	N 8°18.9'	237°35.8'	N 14°13.7'	18°20.3'	N 1°16.6'	61°48.2'	S 15°51.9'	320°15.0'	N 20°07.7'	
4	40°18.2'	239°58.0'	N 8°18.0'	252°35.2'	N 14°12.7'	33°23.0'	N 1°16.5'	76°50.8'	S 15°52.0'	335°16.0'	N 20°07.9'	
5	55°20.7'	254°58.2'	N 8°17.1'	267°34.7'	N 14°11.8'	48°25.7'	N 1°16.4'	91°53.4'	S 15°52.0'	350°17.1'	N 20°08.2'	
6	70°23.1'	269°58.4'	N 8°16.2'	282°34.1'	N 14°10.8'	63°28.4'	N 1°16.3'	106°56.1'	S 15°52.1'	5°18.2'	N 20°08.5'	
7	85°25.6'	284°58.6'	N 8°15.3'	297°33.5'	N 14°09.8'	78°31.1'	N 1°16.2'	121°58.7'	S 15°52.1'	20°19.2'	N 20°08.7'	
8	100°28.1'	299°58.8'	N 8°14.4'	312°33.0'	N 14°08.8'	93°33.8'	N 1°16.1'	137°01.3'	S 15°52.2'	35°20.3'	N 20°09.0'	
9	115°30.5'	314°59.0'	N 8°13.5'	327°32.4'	N 14°07.8'	108°36.5'	N 1°16.0'	152°04.0'	S 15°52.2'	50°21.4'	N 20°09.3'	
10	130°33.0'	329°59.2'	N 8°12.5'	342°31.9'	N 14°06.9'	123°39.2'	N 1°15.9'	167°06.6'	S 15°52.3'	65°22.4'	N 20°09.5'	
11	145°35.5'	344°59.4'	N 8°11.6'	357°31.3'	N 14°05.9'	138°41.9'	N 1°15.7'	182°09.2'	S 15°52.3'	80°23.5'	N 20°09.8'	
12	160°37.9'	359°59.6'	N 8°10.7'	12°30.8'	N 14°04.9'	153°44.6'	N 1°15.6'	197°11.9'	S 15°52.4'	95°24.6'	N 20°10.0'	
13	175°40.4'	14°59.8'	N 8°09.8'	27°30.2'	N 14°03.9'	168°47.3'	N 1°15.5'	212°14.5'	S 15°52.5'	110°25.6'	N 20°10.3'	
14	190°42.9'	29°60.0'	N 8°08.9'	42°29.7'	N 14°02.9'	183°50.0'	N 1°15.4'	227°17.1'	S 15°52.5'	125°26.7'	N 20°10.6'	
15	205°45.3'	45°00.2'	N 8°08.0'	57°29.1'	N 14°01.9'	198°52.7'	N 1°15.3'	242°19.8'	S 15°52.6'	140°27.8'	N 20°10.8'	
16	220°47.8'	60°00.4'	N 8°07.1'	72°28.6'	N 14°01.0'	213°55.4'	N 1°15.2'	257°22.4'	S 15°52.6'	155°28.8'	N 20°11.1'	
17	235°50.2'	75°00.6'	N 8°06.2'	87°28.0'	N 13°60.0'	228°58.1'	N 1°15.1'	272°25.0'	S 15°52.7'	170°29.9'	N 20°11.4'	
18	250°52.7'	90°00.8'	N 8°05.3'	102°27.5'	N 13°59.0'	244°00.8'	N 1°15.0'	287°27.7'	S 15°52.7'	185°31.0'	N 20°11.6'	
19	265°55.2'	105°01.0'	N 8°04.4'	117°26.9'	N 13°58.0'	259°03.5'	N 1°14.9'	302°30.3'	S 15°52.8'	200°32.1'	N 20°11.9'	
20	280°57.6'	120°01.2'	N 8°03.5'	132°26.4'	N 13°57.0'	274°06.2'	N 1°14.8'	317°32.9'	S 15°52.9'	215°33.1'	N 20°12.2'	
21	296°00.1'	135°01.4'	N 8°02.5'	147°25.8'	N 13°56.0'	289°08.9'	N 1°14.6'	332°35.6'	S 15°52.9'	230°34.2'	N 20°12.4'	
22	311°02.6'	150°01.6'	N 8°01.6'	162°25.3'	N 13°55.0'	304°11.6'	N 1°14.5'	347°38.2'	S 15°53.0'	245°35.3'	N 20°12.7'	
23	326°05.0'	165°01.8'	N 8°00.7'	177°24.7'	N 13°54.0'	319°14.3'	N 1°14.4'	2°40.8'	S 15°53.0'	260°36.4'	N 20°12.9'	
		SD 15.8' d -0.9'		v -0.6' d -1.0'		v 2.7' d -0.1'		v 2.6' d -0.1'		v 1.1' d 0.3'		
Mer. pass.		12 h 0 m 3 s		11 h 10 m		1 h 47 m		22 h 49 m		5 h 39 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Fomalhaut	-Saturn	-Altair	-Rigel Kent	-Antares	+Spica	+Arcturus	+Sun
0	128°15.5'	S 11°47.5'	12.5'	-13.9'	57.3'	118°36.3'	106°53.6'	88°02.5'	49°31.5'	36°42.9'	10°05.7'		55°12.4'
1	142°47.0'	S 12°01.4'	12.4'	-13.8'	57.4'	118°04.7'	106°20.2'	87°34.9'	49°14.9'	36°09.6'	10°36.6'		55°43.2'
2	157°18.5'	S 12°15.2'	12.4'	-13.8'	57.4'	117°33.1'	105°46.7'	87°07.4'	48°58.5'	35°36.4'	11°07.7'		56°13.9'
3	171°49.8'	S 12°29.0'	12.3'	-13.8'	57.4'	117°01.4'	105°13.3'	86°39.8'	48°42.3'	35°03.1'	11°39.0'		56°44.7'
4	186°21.1'	S 12°42.8'	12.2'	-13.7'	57.4'	116°29.7'	104°39.8'	86°12.2'	48°26.4'	34°29.8'	12°10.5'		57°15.5'
5	200°52.3'	S 12°56.5'	12.1'	-13.6'	57.5'	115°58.0'	104°06.3'	85°44.6'	48°10.6'	33°56.5'	12°42.2'		57°46.4'
6	215°23.5'	S 13°10.1'	12.0'	-13.6'	57.5'	115°26.2'	103°32.7'	85°17.0'	47°55.0'	33°23.2'	13°14.1'		58°17.2'
7	229°54.5'	S 13°23.7'	12.0'	-13.5'	57.5'	114°54.4'	102°59.2'	84°49.4'	47°39.7'	32°49.8'	13°46.1'	32°29.5'	58°48.1'
8	244°25.5'	S 13°37.3'	11.9'	-13.5'	57.5'	114°22.6'	102°25.6'	84°21.8'		32°16.4'	14°18.2'	32°44.5'	59°19.1'
9	258°56.4'	S 13°50.7'	11.8'	-13.4'	57.6'	113°50.7'	101°52.0'	83°54.1'		31°43.0'	14°50.5'	32°59.9'	59°50.0'
10	273°27.2'	S 14°04.2'	11.7'	-13.4'	57.6'	113°18.8'	101°18.4'	83°26.5'		31°09.6'	15°22.9'	33°15.8'	60°21.0'
11	287°57.9'	S 14°17.5'	11.6'	-13.3'	57.6'	112°46.8'	100°44.7'	82°58.8'		30°36.2'	15°55.3'	33°32.0'	60°51.9'
12	302°28.5'	S 14°30.8'	11.5'	-13.2'	57.6'	112°14.9'	100°11.0'	82°31.2'		30°02.7'	16°27.9'	33°48.7'	61°23.0'
13	316°59.1'	S 14°44.1'	11.5'	-13.2'	57.6'	111°42.8'	99°37.3'	82°03.5'		29°29.2'	17°00.5'	34°05.7'	61°54.0'
14	331°29.5'	S 14°57.3'	11.4'	-13.1'	57.7'	111°10.8'	99°03.6'	81°35.8'		28°55.7'	17°33.3'	34°23.1'	62°25.1'
15	345°59.9'	S 15°10.4'	11.3'	-13.0'	57.7'	110°38.7'	98°29.9'	81°08.2'		28°22.2'	18°06.1'	34°40.8'	62°56.2'
16	0°30.2'	S 15°23.4'	11.2'	-13.0'	57.7'	110°06.6'	97°56.1'	80°40.5'		27°48.7'	18°39.0'	34°58.9'	63°27.3'
17	15°00.4'	S 15°36.4'	11.1'	-12.9'	57.7'	109°34.4'	97°22.3'	80°12.8'		27°15.1'	19°11.9'	35°17.4'	63°58.4'
18	29°30.5'	S 15°49.3'	11.0'	-12.8'	57.8'	109°02.2'	96°48.5'	79°45.1'		26°41.5'	19°44.9'	35°36.2'	64°29.6'
19	44°00.5'	S 16°02.2'	10.9'	-12.8'	57.8'	108°30.0'	96°14.6'	79°17.4'		26°08.0'	20°18.0'	35°55.3'	65°00.8'
20	58°30.4'	S 16°14.9'	10.8'	-12.7'	57.8'	107°57.7'	95°40.7'	78°49.8'		25°34.3'	20°51.2'	36°14.7'	65°32.0'
21	73°00.2'	S 16°27.6'	10.7'	-12.6'	57.8'	107°25.4'	95°06.8'	78°22.1'		25°00.7'	21°24.3'	36°34.5'	66°03.3'
22	87°29.9'	S 16°40.2'	10.6'	-12.5'	57.8'	106°53.1'	94°32.9'	77°54.4'		24°27.1'	21°57.6'	36°54.6'	66°34.5'
23	101°59.6'	S 16°52.8'	10.5'	-12.5'	57.9'	106°20.7'	93°59.0'	77°26.7'		23°53.4'	22°30.9'	37°14.9'	67°05.8'
Mer. pass.		15 h 58 m SD 15.6'		phase 21%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.3'	N 7°24.8'
Deneb	+1.2	49°26.7'	N 45°21.8'	Acrux	+0.8	173°02.9'	S 63°13.5'	Capella	+0.1	280°24.9'	N 46°01.1'
Altair	+0.8	62°01.6'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.8'	S 8°10.4'
Vega	+0.0	80°34.3'	N 38°48.5'	Pollux	+1.2	243°20.0'	N 27°58.3'	Aldebaran	+0.9	290°41.9'	N 16°33.3'
Antares	+1.1	112°18.2'	S 26°28.9'	Procyon	+0.4	244°53.1'	N 5°10.2'	Polaris	+2.0	314°47.1'	N 89°21.2'
Rigel Kent	-0.0	139°43.3'	S 60°55.8'	Adhara	+1.5	255°07.6'	S 28°59.9'	Achernar	+0.5	335°21.3'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.1'	S 16°44.6'				
Hadar	+0.6	148°39.1'	S 60°29.0'	Canopus	-0.6	263°53.5'	S 52°42.1'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	341°07.5'	180°02.0' N 7°59.8'	192°24.2' N 13°53.1'	334°17.0' N 1°14.3'	17°43.5' S 15°53.1'	275°37.4' N 20°13.2'						
1	356°10.0'	195°02.2' N 7°58.9'	207°23.6' N 13°52.1'	349°19.7' N 1°14.2'	32°46.1' S 15°53.1'	290°38.5' N 20°13.5'						
2	11°12.4'	210°02.4' N 7°58.0'	222°23.1' N 13°51.1'	4°22.4' N 1°14.1'	47°48.7' S 15°53.2'	305°39.6' N 20°13.7'						
3	26°14.9'	225°02.6' N 7°57.1'	237°22.5' N 13°50.1'	19°25.1' N 1°14.0'	62°51.4' S 15°53.2'	320°40.7' N 20°14.0'						
4	41°17.4'	240°02.8' N 7°56.2'	252°22.0' N 13°49.1'	34°27.8' N 1°13.9'	77°54.0' S 15°53.3'	335°41.7' N 20°14.2'						
5	56°19.8'	255°03.0' N 7°55.3'	267°21.4' N 13°48.1'	49°30.5' N 1°13.8'	92°56.6' S 15°53.4'	350°42.8' N 20°14.5'						
6	71°22.3'	270°03.2' N 7°54.3'	282°20.9' N 13°47.1'	64°33.2' N 1°13.6'	107°59.3' S 15°53.4'	5°43.9' N 20°14.8'						
7	86°24.7'	285°03.4' N 7°53.4'	297°20.4' N 13°46.1'	79°35.9' N 1°13.5'	123°01.9' S 15°53.5'	20°45.0' N 20°15.0'						
8	101°27.2'	300°03.6' N 7°52.5'	312°19.8' N 13°45.1'	94°38.6' N 1°13.4'	138°04.5' S 15°53.5'	35°46.0' N 20°15.3'						
9	116°29.7'	315°03.8' N 7°51.6'	327°19.3' N 13°44.1'	109°41.3' N 1°13.3'	153°07.2' S 15°53.6'	50°47.1' N 20°15.5'						
10	131°32.1'	330°04.0' N 7°50.7'	342°18.7' N 13°43.1'	124°44.0' N 1°13.2'	168°09.8' S 15°53.6'	65°48.2' N 20°15.8'						
11	146°34.6'	345°04.2' N 7°49.8'	357°18.2' N 13°42.1'	139°46.7' N 1°13.1'	183°12.4' S 15°53.7'	80°49.3' N 20°16.1'						
12	161°37.1'	0°04.4' N 7°48.9'	12°17.6' N 13°41.1'	154°49.4' N 1°13.0'	198°15.1' S 15°53.7'	95°50.4' N 20°16.3'						
13	176°39.5'	15°04.6' N 7°48.0'	27°17.1' N 13°40.1'	169°52.1' N 1°12.9'	213°17.7' S 15°53.8'	110°51.4' N 20°16.6'						
14	191°42.0'	30°04.8' N 7°47.0'	42°16.6' N 13°39.1'	184°54.8' N 1°12.8'	228°20.3' S 15°53.9'	125°52.5' N 20°16.8'						
15	206°44.5'	45°05.0' N 7°46.1'	57°16.0' N 13°38.1'	199°57.5' N 1°12.6'	243°23.0' S 15°53.9'	140°53.6' N 20°17.1'						
16	221°46.9'	60°05.2' N 7°45.2'	72°15.5' N 13°37.1'	215°00.2' N 1°12.5'	258°25.6' S 15°54.0'	155°54.7' N 20°17.3'						
17	236°49.4'	75°05.4' N 7°44.3'	87°14.9' N 13°36.1'	230°03.0' N 1°12.4'	273°28.2' S 15°54.0'	170°55.8' N 20°17.6'						
18	251°51.9'	90°05.6' N 7°43.4'	102°14.4' N 13°35.1'	245°05.7' N 1°12.3'	288°30.9' S 15°54.1'	185°56.8' N 20°17.9'						
19	266°54.3'	105°05.8' N 7°42.5'	117°13.8' N 13°34.1'	260°08.4' N 1°12.2'	303°33.5' S 15°54.1'	200°57.9' N 20°18.1'						
20	281°56.8'	120°06.0' N 7°41.6'	132°13.3' N 13°33.1'	275°11.1' N 1°12.1'	318°36.1' S 15°54.2'	215°59.0' N 20°18.4'						
21	296°59.2'	135°06.2' N 7°40.6'	147°12.8' N 13°32.1'	290°13.8' N 1°12.0'	333°38.7' S 15°54.2'	231°00.1' N 20°18.6'						
22	312°01.7'	150°06.4' N 7°39.7'	162°12.2' N 13°31.1'	305°16.5' N 1°11.9'	348°41.4' S 15°54.3'	246°01.2' N 20°18.9'						
23	327°04.2'	165°06.6' N 7°38.8'	177°11.7' N 13°30.1'	320°19.2' N 1°11.8'	3°44.0' S 15°54.4'	261°02.3' N 20°19.1'						
		SD 15.8' d -0.9'	v -0.5' d -1.0'	v 2.7' d -0.1'	v 2.6' d -0.1'	v 1.1' d 0.3'						
Mer. pass.		11 h 59 m 43 s	11 h 11 m	1 h 43 m	22 h 45 m	5 h 37 m						

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Fomalhaut	-Achernar	-Saturn	-Altair	-Antares	+Spica	+Arcturus	+Sun
0	116°29.1'	S 17°05.2'	10.4'	-12.4'	57.9'	105°48.3'	103°56.4'	93°25.0'	76°59.1'	23°19.7'	23°04.2'	37°35.6'	67°37.1'
1	130°58.5'	S 17°17.6'	10.3'	-12.3'	57.9'	105°15.9'	103°38.1'	92°51.0'	76°31.4'	22°46.0'	23°37.6'	37°56.5'	68°08.5'
2	145°27.9'	S 17°29.9'	10.2'	-12.2'	57.9'	104°43.5'	103°19.8'	92°17.0'	76°03.8'	22°12.3'	24°11.1'	38°17.7'	68°39.9'
3	159°57.1'	S 17°42.2'	10.1'	-12.1'	58.0'	104°11.0'	103°01.4'	91°42.9'	75°36.1'	21°38.6'	24°44.5'	38°39.2'	69°11.3'
4	174°26.2'	S 17°54.3'	10.0'	-12.1'	58.0'	103°38.5'	102°42.9'	91°08.9'	75°08.5'	21°04.9'	25°18.1'	39°01.0'	69°42.7'
5	188°55.3'	S 18°06.3'	9.9'	-12.0'	58.0'	103°05.9'	102°24.4'	90°34.8'	74°40.8'	20°31.1'	25°51.6'	39°23.0'	70°14.1'
6	203°24.2'	S 18°18.3'	9.8'	-11.9'	58.0'	102°33.3'	102°05.8'	90°00.7'	74°13.2'	19°57.4'	26°25.3'	39°45.3'	70°45.6'
7	217°53.1'	S 18°30.2'	9.7'	-11.8'	58.0'	102°00.7'	101°47.1'	89°26.5'	73°45.6'	19°23.6'	26°58.9'	40°07.8'	71°17.1'
8	232°21.8'	S 18°42.0'	9.6'	-11.7'	58.1'	101°28.1'	101°28.4'	88°52.3'	73°18.0'	18°49.8'	27°32.6'	40°30.5'	71°48.6'
9	246°50.4'	S 18°53.7'	9.5'	-11.6'	58.1'	100°55.4'	101°09.6'	88°18.1'	72°50.4'	18°16.0'	28°06.3'	40°53.5'	72°20.2'
10	261°19.0'	S 19°05.3'	9.4'	-11.5'	58.1'	100°22.7'	100°50.7'	87°43.9'	72°22.9'	17°42.3'	28°40.1'	41°16.7'	72°51.8'
11	275°47.4'	S 19°16.8'	9.3'	-11.4'	58.1'	99°50.0'	100°31.8'	87°09.7'	71°55.3'	17°08.5'	29°13.9'	41°40.2'	73°23.4'
12	290°15.7'	S 19°28.2'	9.2'	-11.3'	58.2'	99°17.3'	100°12.9'	86°35.4'	71°27.8'	16°34.7'	29°47.7'	42°03.8'	73°55.0'
13	304°43.9'	S 19°39.5'	9.1'	-11.2'	58.2'	98°44.5'	99°53.8'	86°01.1'	71°00.3'	16°00.9'	30°21.6'	42°27.7'	74°26.7'
14	319°12.0'	S 19°50.7'	9.0'	-11.1'	58.2'	98°11.7'	99°34.8'	85°26.8'	70°32.8'	15°27.1'	30°55.5'	42°51.8'	74°58.3'
15	333°40.0'	S 20°01.8'	8.9'	-11.0'	58.2'	97°38.8'	99°15.6'	84°52.5'	70°05.4'	14°53.3'	31°29.5'	43°16.1'	75°30.0'
16	348°07.9'	S 20°12.8'	8.8'	-10.9'	58.2'	97°06.0'	98°56.4'	84°18.1'	69°37.9'	14°19.5'	32°03.5'	43°40.5'	76°01.8'
17	2°35.7'	S 20°23.7'	8.7'	-10.8'	58.3'	96°33.1'	98°37.2'	83°43.7'	69°10.5'	13°45.8'	32°37.5'	44°05.2'	76°33.5'
18	17°03.4'	S 20°34.5'	8.6'	-10.7'	58.3'	96°00.1'	98°17.9'	83°09.3'	68°43.1'	13°12.0'	33°11.5'	44°30.1'	77°05.3'
19	31°31.0'	S 20°45.2'	8.5'	-10.6'	58.3'	95°27.2'	97°58.6'	82°34.8'	68°15.8'	12°38.3'	33°45.6'	44°55.1'	77°37.1'
20	45°58.5'	S 20°55.7'	8.4'	-10.5'	58.3'	94°54.2'	97°39.2'	82°00.4'	67°48.5'	12°04.6'	34°19.7'	45°20.3'	78°09.0'
21	60°25.8'	S 21°06.2'	8.3'	-10.3'	58.4'	94°21.2'	97°19.8'	81°25.9'	67°21.2'	11°31.0'	34°53.9'	45°45.7'	78°40.8'
22	74°53.1'	S 21°16.6'	8.1'	-10.2'	58.4'	93°48.2'	97°00.3'	80°51.4'	66°53.9'	10°57.4'	35°28.1'	46°11.3'	79°12.7'
23	89°20.2'	S 21°26.8'	8.0'	-10.1'	58.4'	93°15.1'	96°40.8'	80°16.8'	66°26.7'	10°23.9'	36°02.3'	46°37.0'	79°44.6'
Mer. pass.		16 h 49 m SD 15.8'	phase 31%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.3'	N 7°24.8'
Deneb	+1.2	49°26.7'	N 45°21.8'	Acrux	+0.8	173°02.9'	S 63°13.5'	Capella	+0.1	280°24.9'	N 46°01.1'
Altair	+0.8	62°01.6'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.8'	S 8°10.4'
Vega	+0.0	80°34.3'	N 38°48.5'	Pollux	+1.2	243°20.0'	N 27°58.3'	Aldebaran	+0.9	290°41.9'	N 16°33.3'
Antares	+1.1	112°18.2'	S 26°28.9'	Procyon	+0.4	244°53.1'	N 5°10.2'	Polaris	+2.0	314°46.6'	N 89°21.3'
Rigil Kent	-0.0	139°43.3'	S 60°55.8'	Adhara	+1.5	255°07.6'	S 28°59.9'	Achernar	+0.5	335°21.2'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.1'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.5'	S 52°42.1'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	342°06.6'	180°06.8'	N 7°37.9'	192°11.2'	N 13°29.1'		335°21.9'	N 1°11.6'		18°46.6'	S 15°54.4'		276°03.3'	N 20°19.4'				
1	357°09.1'	195°07.0'	N 7°37.0'	207°10.6'	N 13°28.1'		350°24.6'	N 1°11.5'		33°49.3'	S 15°54.5'		291°04.4'	N 20°19.6'				
2	12°11.6'	210°07.2'	N 7°36.1'	222°10.1'	N 13°27.1'		5°27.3'	N 1°11.4'		48°51.9'	S 15°54.5'		306°05.5'	N 20°19.9'				
3	27°14.0'	225°07.4'	N 7°35.2'	237°09.5'	N 13°26.1'		20°30.0'	N 1°11.3'		63°54.5'	S 15°54.6'		321°06.6'	N 20°20.2'				
4	42°16.5'	240°07.6'	N 7°34.2'	252°09.0'	N 13°25.1'		35°32.7'	N 1°11.2'		78°57.2'	S 15°54.6'		336°07.7'	N 20°20.4'				
5	57°19.0'	255°07.8'	N 7°33.3'	267°08.5'	N 13°24.0'		50°35.4'	N 1°11.1'		93°59.8'	S 15°54.7'		351°08.8'	N 20°20.7'				
6	72°21.4'	270°08.0'	N 7°32.4'	282°07.9'	N 13°23.0'		65°38.1'	N 1°11.0'		109°02.4'	S 15°54.7'		6°09.9'	N 20°20.9'				
7	87°23.9'	285°08.2'	N 7°31.5'	297°07.4'	N 13°22.0'		80°40.8'	N 1°10.8'		124°05.1'	S 15°54.8'		21°10.9'	N 20°21.2'				
8	102°26.3'	300°08.5'	N 7°30.6'	312°06.9'	N 13°21.0'		95°43.6'	N 1°10.7'		139°07.7'	S 15°54.9'		36°12.0'	N 20°21.4'				
9	117°28.8'	315°08.7'	N 7°29.6'	327°06.3'	N 13°20.0'		110°46.3'	N 1°10.6'		154°10.3'	S 15°54.9'		51°13.1'	N 20°21.7'				
10	132°31.3'	330°08.9'	N 7°28.7'	342°05.8'	N 13°19.0'		125°49.0'	N 1°10.5'		169°12.9'	S 15°55.0'		66°14.2'	N 20°21.9'				
11	147°33.7'	345°09.1'	N 7°27.8'	357°05.3'	N 13°18.0'		140°51.7'	N 1°10.4'		184°15.6'	S 15°55.0'		81°15.3'	N 20°22.2'				
12	162°36.2'	0°09.3'	N 7°26.9'	12°04.7'	N 13°17.0'		155°54.4'	N 1°10.3'		199°18.2'	S 15°55.1'		96°16.4'	N 20°22.4'				
13	177°38.7'	15°09.5'	N 7°26.0'	27°04.2'	N 13°15.9'		170°57.1'	N 1°10.2'		214°20.8'	S 15°55.1'		111°17.5'	N 20°22.7'				
14	192°41.1'	30°09.7'	N 7°25.1'	42°03.7'	N 13°14.9'		185°59.8'	N 1°10.1'		229°23.5'	S 15°55.2'		126°18.6'	N 20°22.9'				
15	207°43.6'	45°09.9'	N 7°24.1'	57°03.1'	N 13°13.9'		201°02.5'	N 1°09.9'		244°26.1'	S 15°55.2'		141°19.7'	N 20°23.2'				
16	222°46.1'	60°10.1'	N 7°23.2'	72°02.6'	N 13°12.9'		216°05.2'	N 1°09.8'		259°28.7'	S 15°55.3'		156°20.8'	N 20°23.4'				
17	237°48.5'	75°10.3'	N 7°22.3'	87°02.1'	N 13°11.9'		231°07.9'	N 1°09.7'		274°31.4'	S 15°55.3'		171°21.9'	N 20°23.7'				
18	252°51.0'	90°10.5'	N 7°21.4'	102°01.5'	N 13°10.9'		246°10.6'	N 1°09.6'		289°34.0'	S 15°55.4'		186°22.9'	N 20°23.9'				
19	267°53.5'	105°10.7'	N 7°20.5'	117°01.0'	N 13°09.8'		261°13.4'	N 1°09.5'		304°36.6'	S 15°55.5'		201°24.0'	N 20°24.2'				
20	282°55.9'	120°10.9'	N 7°19.5'	132°00.5'	N 13°08.8'		276°16.1'	N 1°09.4'		319°39.2'	S 15°55.5'		216°25.1'	N 20°24.4'				
21	297°58.4'	135°11.1'	N 7°18.6'	146°59.9'	N 13°07.8'		291°18.8'	N 1°09.3'		334°41.9'	S 15°55.6'		231°26.2'	N 20°24.7'				
22	313°00.8'	150°11.3'	N 7°17.7'	161°59.4'	N 13°06.8'		306°21.5'	N 1°09.1'		349°44.5'	S 15°55.6'		246°27.3'	N 20°24.9'				
23	328°03.3'	165°11.5'	N 7°16.8'	176°58.9'	N 13°05.8'		321°24.2'	N 1°09.0'		4°47.1'	S 15°55.7'		261°28.4'	N 20°25.2'				
		SD 15.8'	d -0.9'	v -0.5'	d -1.0'		v 2.7'	d -0.1'		v 2.6'	d -0.1'		v 1.1'	d 0.3'				
Mer. pass.		11 h 59 m 24 s		11 h 12 m			1 h 38 m			22 h 41 m			5 h 35 m					

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Jupiter	-Fomalhaut	-Saturn	-Altair	-Antares	+Spica	+Arcturus	+Sun
0	103°47.3'	S 21°36.9'	7.9'	-10.0'	58.4'		92°42.1'	79°42.3'	65°59.5'	9°50.5'	36°36.5'	47°02.9'	80°16.6'
1	118°14.2'	S 21°46.9'	7.8'	-9.9'	58.4'		92°09.0'	79°07.7'	65°32.3'	9°17.2'	37°10.8'	47°28.9'	80°48.5'
2	132°41.0'	S 21°56.8'	7.7'	-9.8'	58.5'		91°35.8'	78°33.1'	65°05.2'	8°43.9'	37°45.1'	47°55.1'	81°20.5'
3	147°07.7'	S 22°06.6'	7.6'	-9.6'	58.5'		91°02.7'	77°58.4'	64°38.2'	8°10.9'	38°19.5'	48°21.5'	81°52.5'
4	161°34.3'	S 22°16.2'	7.5'	-9.5'	58.5'		90°29.5'	77°23.7'	64°11.1'	7°38.0'	38°53.8'	48°48.0'	82°24.6'
5	176°00.8'	S 22°25.7'	7.4'	-9.4'	58.5'		89°56.3'	76°49.1'	63°44.2'	7°05.4'	39°28.2'	49°14.6'	82°56.6'
6	190°27.2'	S 22°35.1'	7.3'	-9.3'	58.6'		89°23.0'	76°14.3'	63°17.2'	6°33.1'	40°02.6'	49°41.4'	83°28.7'
7	204°53.5'	S 22°44.4'	7.2'	-9.1'	58.6'		88°49.8'	75°39.6'	62°50.4'	6°01.3'	40°37.1'	50°08.4'	84°00.8'
8	219°19.7'	S 22°53.5'	7.1'	-9.0'	58.6'		88°16.5'	75°04.8'	62°23.5'	5°29.9'	41°11.6'	50°35.4'	84°33.0'
9	233°45.7'	S 23°02.5'	7.0'	-8.9'	58.6'		87°43.2'	74°30.0'	61°56.8'		41°46.1'	51°02.6'	85°05.2'
10	248°11.7'	S 23°11.3'	6.8'	-8.7'	58.6'		87°09.9'	73°55.2'	61°30.0'		42°20.7'	51°29.9'	85°37.4'
11	262°37.5'	S 23°20.1'	6.7'	-8.6'	58.7'	119°25.9'	86°36.5'	73°20.4'	61°03.4'		42°55.2'	51°57.4'	86°09.6'
12	277°03.3'	S 23°28.7'	6.6'	-8.5'	58.7'	118°50.8'	86°03.2'	72°45.5'	60°36.8'		43°29.8'	52°24.9'	86°41.8'
13	291°28.9'	S 23°37.1'	6.5'	-8.3'	58.7'	118°15.8'	85°29.8'	72°10.6'	60°10.3'		44°04.5'	52°52.6'	87°14.1'
14	305°54.4'	S 23°45.5'	6.4'	-8.2'	58.7'	117°40.7'	84°56.4'	71°35.7'	59°43.8'		44°39.1'	53°20.4'	87°46.4'
15	320°19.9'	S 23°53.6'	6.3'	-8.0'	58.8'	117°05.6'	84°22.9'	71°00.8'	59°17.4'		45°13.8'	53°48.4'	88°18.7'
16	334°45.2'	S 24°01.7'	6.2'	-7.9'	58.8'	116°30.4'	83°49.5'	70°25.8'	58°51.1'		45°48.6'	54°16.4'	88°51.1'
17	349°10.4'	S 24°09.6'	6.1'	-7.7'	58.8'	115°55.3'	83°16.0'	69°50.8'	58°24.8'		46°23.3'	54°44.5'	89°23.4'
18	3°35.5'	S 24°17.3'	6.0'	-7.6'	58.8'	115°20.1'	82°42.5'	69°15.8'	57°58.6'		46°58.1'	55°12.8'	89°55.8'
19	18°00.5'	S 24°24.9'	5.9'	-7.5'	58.8'	114°44.9'	82°08.9'	68°40.8'	57°32.5'		47°32.9'	55°41.2'	90°28.3'
20	32°25.4'	S 24°32.4'	5.8'	-7.3'	58.9'	114°09.7'	81°35.4'	68°05.7'	57°06.5'		48°07.7'	56°09.6'	91°00.7'
21	46°50.3'	S 24°39.7'	5.7'	-7.1'	58.9'	113°34.4'	81°01.8'	67°30.6'	56°40.6'		48°42.6'	56°38.2'	91°33.2'
22	61°15.0'	S 24°46.8'	5.6'	-7.0'	58.9'	112°59.1'	80°28.3'	66°55.5'	56°14.7'		49°17.5'	57°06.8'	92°05.7'
23	75°39.6'	S 24°53.8'	5.5'	-6.8'	58.9'	112°23.8'	79°54.7'	66°20.4'	55°49.0'		49°52.4'	57°35.6'	92°38.2'
Mer. pass.		17 h 45 m SD 15.9'	phase 42%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.3'	N 7°24.8'
Deneb	+1.2	49°26.7'	N 45°21.8'	Acrux	+0.8	173°02.9'	S 63°13.5'	Capella	+0.1	280°24.8'	N 46°01.1'
Altair	+0.8	62°01.6'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.8'	S 8°10.4'
Vega	+0.0	80°34.3'	N 38°48.5'	Pollux	+1.2	243°19.9'	N 27°58.3'	Aldebaran	+0.9	290°41.8'	N 16°33.3'
Antares	+1.1	112°18.2'	S 26°28.9'	Procyon	+0.4	244°53.1'	N 5°10.2'	Polaris	+2.0	314°46.0'	N 89°21.3'
Rigil Kent	-0.0	139°43.3'	S 60°55.8'	Adhara	+1.5	255°07.6'	S 28°59.9'	Achernar	+0.5	335°21.2'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.1'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.5'	S 52°42.1'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	343°05.8'	180°11.7' N 7°15.9'	191°58.4' N 13°04.7'	336°26.9' N 1°08.9'	19°49.8' S 15°55.7'	276°29.5' N 20°25.4'						
1	358°08.2'	195°11.9' N 7°14.9'	206°57.8' N 13°03.7'	351°29.6' N 1°08.8'	34°52.4' S 15°55.8'	291°30.6' N 20°25.7'						
2	13°10.7'	210°12.1' N 7°14.0'	221°57.3' N 13°02.7'	6°32.3' N 1°08.7'	49°55.0' S 15°55.8'	306°31.7' N 20°25.9'						
3	28°13.2'	225°12.4' N 7°13.1'	236°56.8' N 13°01.7'	21°35.1' N 1°08.6'	64°57.7' S 15°55.9'	321°32.8' N 20°26.2'						
4	43°15.6'	240°12.6' N 7°12.2'	251°56.2' N 13°00.7'	36°37.8' N 1°08.5'	80°00.3' S 15°55.9'	336°33.9' N 20°26.4'						
5	58°18.1'	255°12.8' N 7°11.3'	266°55.7' N 12°59.6'	51°40.5' N 1°08.3'	95°02.9' S 15°56.0'	351°35.0' N 20°26.7'						
6	73°20.6'	270°13.0' N 7°10.3'	281°55.2' N 12°58.6'	66°43.2' N 1°08.2'	110°05.5' S 15°56.1'	6°36.1' N 20°26.9'						
7	88°23.0'	285°13.2' N 7°09.4'	296°54.7' N 12°57.6'	81°45.9' N 1°08.1'	125°08.2' S 15°56.1'	21°37.2' N 20°27.2'						
8	103°25.5'	300°13.4' N 7°08.5'	311°54.1' N 12°56.5'	96°48.6' N 1°08.0'	140°10.8' S 15°56.2'	36°38.3' N 20°27.4'						
9	118°28.0'	315°13.6' N 7°07.6'	326°53.6' N 12°55.5'	111°51.3' N 1°07.9'	155°13.4' S 15°56.2'	51°39.4' N 20°27.7'						
10	133°30.4'	330°13.8' N 7°06.6'	341°53.1' N 12°54.5'	126°54.0' N 1°07.8'	170°16.1' S 15°56.3'	66°40.5' N 20°27.9'						
11	148°32.9'	345°14.0' N 7°05.7'	356°52.6' N 12°53.5'	141°56.8' N 1°07.7'	185°18.7' S 15°56.3'	81°41.6' N 20°28.2'						
12	163°35.3'	0°14.2' N 7°04.8'	11°52.0' N 12°52.4'	156°59.5' N 1°07.5'	200°21.3' S 15°56.4'	96°42.7' N 20°28.4'						
13	178°37.8'	15°14.4' N 7°03.9'	26°51.5' N 12°51.4'	172°02.2' N 1°07.4'	215°23.9' S 15°56.4'	111°43.8' N 20°28.7'						
14	193°40.3'	30°14.6' N 7°02.9'	41°51.0' N 12°50.4'	187°04.9' N 1°07.3'	230°26.6' S 15°56.5'	126°44.9' N 20°28.9'						
15	208°42.7'	45°14.8' N 7°02.0'	56°50.5' N 12°49.3'	202°07.6' N 1°07.2'	245°29.2' S 15°56.5'	141°46.0' N 20°29.2'						
16	223°45.2'	60°15.0' N 7°01.1'	71°49.9' N 12°48.3'	217°10.3' N 1°07.1'	260°31.8' S 15°56.6'	156°47.1' N 20°29.4'						
17	238°47.7'	75°15.3' N 7°00.2'	86°49.4' N 12°47.3'	232°13.0' N 1°07.0'	275°34.4' S 15°56.7'	171°48.2' N 20°29.7'						
18	253°50.1'	90°15.5' N 6°59.3'	101°48.9' N 12°46.2'	247°15.8' N 1°06.8'	290°37.1' S 15°56.7'	186°49.3' N 20°29.9'						
19	268°52.6'	105°15.7' N 6°58.3'	116°48.4' N 12°45.2'	262°18.5' N 1°06.7'	305°39.7' S 15°56.8'	201°50.4' N 20°30.1'						
20	283°55.1'	120°15.9' N 6°57.4'	131°47.9' N 12°44.2'	277°21.2' N 1°06.6'	320°42.3' S 15°56.8'	216°51.5' N 20°30.4'						
21	298°57.5'	135°16.1' N 6°56.5'	146°47.3' N 12°43.1'	292°23.9' N 1°06.5'	335°45.0' S 15°56.9'	231°52.6' N 20°30.6'						
22	313°60.0'	150°16.3' N 6°55.6'	161°46.8' N 12°42.1'	307°26.6' N 1°06.4'	350°47.6' S 15°56.9'	246°53.7' N 20°30.9'						
23	329°02.5'	165°16.5' N 6°54.6'	176°46.3' N 12°41.1'	322°29.3' N 1°06.3'	5°50.2' S 15°57.0'	261°54.9' N 20°31.1'						
		SD 15.9' d -0.9'	v -0.5' d -1.0'	v 2.7' d -0.1'	v 2.6' d -0.1'	v 1.1' d 0.2'						
Mer. pass.		11 h 59 m 4 s	11 h 13 m	1 h 34 m	22 h 37 m	5 h 34 m						

h	Moon					Lunar distance								
	GHA	dec	v	d	HP	-Achernar	-Fomalhaut	-Saturn	-Altair	+Antares	+Rigil Kent	+Hadar	+Sun	
0	90°04.1'	S 25°00.6'	5.4'	-6.7'	58.9'	88°22.7'	79°21.0'	65°45.2'	55°23.3'				93°10.8'	
1	104°28.5'	S 25°07.3'	5.3'	-6.5'	59.0'	88°02.6'	78°47.4'	65°10.0'	54°57.7'	5°32.4'			93°43.3'	
2	118°52.8'	S 25°13.9'	5.2'	-6.4'	59.0'	87°42.4'	78°13.7'	64°34.8'	54°32.3'	6°04.2'			94°15.9'	
3	133°17.0'	S 25°20.2'	5.1'	-6.2'	59.0'	87°22.2'	77°40.1'	63°59.6'	54°06.9'	6°36.6'			94°48.6'	
4	147°41.2'	S 25°26.4'	5.0'	-6.0'	59.0'	87°02.0'	77°06.4'	63°24.3'	53°41.7'	7°09.5'			95°21.2'	
5	162°05.2'	S 25°32.5'	4.9'	-5.9'	59.0'	86°41.8'	76°32.7'	62°49.0'	53°16.5'	7°42.7'			95°53.9'	
6	176°29.2'	S 25°38.4'	4.9'	-5.7'	59.1'	86°21.7'	75°58.9'	62°13.7'	52°51.5'	8°16.2'			96°26.6'	
7	190°53.0'	S 25°44.1'	4.8'	-5.6'	59.1'	86°01.5'	75°25.2'	61°38.4'	52°26.6'	8°50.0'			96°59.3'	
8	205°16.8'	S 25°49.6'	4.7'	-5.4'	59.1'	85°41.3'	74°51.4'	61°03.1'	52°01.8'	9°23.9'			97°32.1'	
9	219°40.5'	S 25°55.0'	4.6'	-5.2'	59.1'	85°21.1'	74°17.7'	60°27.7'	51°37.1'	9°58.1'			98°04.8'	
10	234°04.1'	S 26°00.2'	4.5'	-5.0'	59.1'	85°01.0'	73°43.9'	59°52.3'	51°12.6'	10°32.4'			98°37.6'	
11	248°27.6'	S 26°05.3'	4.4'	-4.9'	59.2'	84°40.8'	73°10.1'	59°16.9'	50°48.2'	11°06.8'			99°10.4'	
12	262°51.0'	S 26°10.2'	4.4'	-4.7'	59.2'	84°20.6'	72°36.3'	58°41.4'	50°24.0'	11°41.3'			99°43.3'	
13	277°14.4'	S 26°14.9'	4.3'	-4.5'	59.2'	84°00.5'	72°02.4'	58°06.0'	49°59.9'	12°16.0'			100°16.2'	
14	291°37.7'	S 26°19.4'	4.2'	-4.4'	59.2'	83°40.4'	71°28.6'	57°30.5'	49°35.9'	12°50.7'			100°49.1'	
15	306°00.9'	S 26°23.7'	4.1'	-4.2'	59.2'	83°20.3'	70°54.7'	56°55.0'	49°12.1'	13°25.5'			101°22.0'	
16	320°24.0'	S 26°27.9'	4.1'	-4.0'	59.3'	83°00.2'	70°20.9'	56°19.4'	48°48.4'	14°00.4'			101°54.9'	
17	334°47.0'	S 26°31.9'	4.0'	-3.8'	59.3'	82°40.1'	69°47.0'	55°43.9'	48°25.0'	14°35.4'			102°27.9'	
18	349°10.0'	S 26°35.7'	3.9'	-3.6'	59.3'	82°20.0'	69°13.1'	55°08.3'	48°01.6'	15°10.4'			103°00.9'	
19	3°32.9'	S 26°39.4'	3.8'	-3.5'	59.3'	81°60.0'	68°39.2'	54°32.7'	47°38.5'	15°45.5'		49°15.1'	103°33.9'	
20	17°55.8'	S 26°42.9'	3.8'	-3.3'	59.3'	81°40.0'	68°05.3'	53°57.1'	47°15.5'	16°20.6'		49°30.5'	103°33.9'	
21	32°18.6'	S 26°46.1'	3.7'	-3.1'	59.4'	81°20.0'	67°31.4'	53°21.4'	46°52.8'	16°55.8'		49°46.1'	104°06.9'	
22	46°41.3'	S 26°49.2'	3.7'	-2.9'	59.4'	80°60.0'	66°57.5'	52°45.8'	46°30.2'	17°31.1'		50°02.0'	104°40.0'	
23	61°03.9'	S 26°52.1'	3.6'	-2.7'	59.4'	80°40.0'	66°23.5'	52°10.1'	46°07.8'	18°06.3'		50°18.2'	105°13.0'	
												46°37.7'	50°34.6'	105°46.1'
Mer. pass.														

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.3'	N 7°24.8'
Deneb	+1.2	49°26.7'	N 45°21.8'	Acrux	+0.8	173°02.9'	S 63°13.5'	Capella	+0.1	280°24.8'	N 46°01.1'
Altair	+0.8	62°01.6'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.8'	S 8°10.4'
Vega	+0.0	80°34.3'	N 38°48.5'	Pollux	+1.2	243°19.9'	N 27°58.3'	Aldebaran	+0.9	290°41.8'	N 16°33.3'
Antares	+1.1	112°18.2'	S 26°28.9'	Procyon	+0.4	244°53.1'	N 5°10.2'	Polaris	+2.0	314°45.5'	N 89°21.3'
Rigil Kent	-0.0	139°43.3'	S 60°55.8'	Adhara	+1.5	255°07.6'	S 28°59.9'	Achernar	+0.5	335°21.2'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.1'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.5'	S 52°42.1'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	344°04.9'	180°16.7'	N 6°53.7'	191°45.8'	N 12°40.0'	337°32.0'	N 1°06.2'	20°52.8'	S 15°57.0'	276°56.0'	N 20°31.4'
1	359°07.4'	195°16.9'	N 6°52.8'	206°45.2'	N 12°39.0'	352°34.8'	N 1°06.0'	35°55.5'	S 15°57.1'	291°57.1'	N 20°31.6'
2	14°09.8'	210°17.1'	N 6°51.9'	221°44.7'	N 12°38.0'	7°37.5'	N 1°05.9'	50°58.1'	S 15°57.1'	306°58.2'	N 20°31.9'
3	29°12.3'	225°17.3'	N 6°50.9'	236°44.2'	N 12°36.9'	22°40.2'	N 1°05.8'	66°00.7'	S 15°57.2'	321°59.3'	N 20°32.1'
4	44°14.8'	240°17.6'	N 6°50.0'	251°43.7'	N 12°35.9'	37°42.9'	N 1°05.7'	81°03.4'	S 15°57.2'	337°00.4'	N 20°32.3'
5	59°17.2'	255°17.8'	N 6°49.1'	266°43.2'	N 12°34.8'	52°45.6'	N 1°05.6'	96°06.0'	S 15°57.3'	352°01.5'	N 20°32.6'
6	74°19.7'	270°18.0'	N 6°48.1'	281°42.7'	N 12°33.8'	67°48.4'	N 1°05.5'	111°08.6'	S 15°57.4'	7°02.6'	N 20°32.8'
7	89°22.2'	285°18.2'	N 6°47.2'	296°42.1'	N 12°32.8'	82°51.1'	N 1°05.3'	126°11.2'	S 15°57.4'	22°03.7'	N 20°33.1'
8	104°24.6'	300°18.4'	N 6°46.3'	311°41.6'	N 12°31.7'	97°53.8'	N 1°05.2'	141°13.9'	S 15°57.5'	37°04.8'	N 20°33.3'
9	119°27.1'	315°18.6'	N 6°45.4'	326°41.1'	N 12°30.7'	112°56.5'	N 1°05.1'	156°16.5'	S 15°57.5'	52°05.9'	N 20°33.6'
10	134°29.6'	330°18.8'	N 6°44.4'	341°40.6'	N 12°29.6'	127°59.2'	N 1°05.0'	171°19.1'	S 15°57.6'	67°07.1'	N 20°33.8'
11	149°32.0'	345°19.0'	N 6°43.5'	356°40.1'	N 12°28.6'	143°01.9'	N 1°04.9'	186°21.7'	S 15°57.6'	82°08.2'	N 20°34.0'
12	164°34.5'	0°19.2'	N 6°42.6'	11°39.6'	N 12°27.6'	158°04.7'	N 1°04.8'	201°24.4'	S 15°57.7'	97°09.3'	N 20°34.3'
13	179°37.0'	15°19.4'	N 6°41.7'	26°39.0'	N 12°26.5'	173°07.4'	N 1°04.6'	216°27.0'	S 15°57.7'	112°10.4'	N 20°34.5'
14	194°39.4'	30°19.7'	N 6°40.7'	41°38.5'	N 12°25.5'	188°10.1'	N 1°04.5'	231°29.6'	S 15°57.8'	127°11.5'	N 20°34.8'
15	209°41.9'	45°19.9'	N 6°39.8'	56°38.0'	N 12°24.4'	203°12.8'	N 1°04.4'	246°32.2'	S 15°57.8'	142°12.6'	N 20°35.0'
16	224°44.3'	60°20.1'	N 6°38.9'	71°37.5'	N 12°23.4'	218°15.5'	N 1°04.3'	261°34.9'	S 15°57.9'	157°13.7'	N 20°35.2'
17	239°46.8'	75°20.3'	N 6°37.9'	86°37.0'	N 12°22.3'	233°18.3'	N 1°04.2'	276°37.5'	S 15°57.9'	172°14.9'	N 20°35.5'
18	254°49.3'	90°20.5'	N 6°37.0'	101°36.5'	N 12°21.3'	248°21.0'	N 1°04.0'	291°40.1'	S 15°58.0'	187°16.0'	N 20°35.7'
19	269°51.7'	105°20.7'	N 6°36.1'	116°36.0'	N 12°20.2'	263°23.7'	N 1°03.9'	306°42.7'	S 15°58.0'	202°17.1'	N 20°36.0'
20	284°54.2'	120°20.9'	N 6°35.2'	131°35.4'	N 12°19.2'	278°26.4'	N 1°03.8'	321°45.4'	S 15°58.1'	217°18.2'	N 20°36.2'
21	299°56.7'	135°21.1'	N 6°34.2'	146°34.9'	N 12°18.1'	293°29.1'	N 1°03.7'	336°48.0'	S 15°58.1'	232°19.3'	N 20°36.4'
22	314°59.1'	150°21.3'	N 6°33.3'	161°34.4'	N 12°17.1'	308°31.9'	N 1°03.6'	351°50.6'	S 15°58.2'	247°20.4'	N 20°36.7'
23	330°01.6'	165°21.5'	N 6°32.4'	176°33.9'	N 12°16.0'	323°34.6'	N 1°03.5'	6°53.3'	S 15°58.3'	262°21.6'	N 20°36.9'
		SD 15.9'	d -0.9'	v -0.5'	d -1.0'	v 2.7'	d -0.1'	v 2.6'	d -0.1'	v 1.1'	d 0.2'
Mer. pass.		11 h 58 m 44 s		11 h 13 m		1 h 30 m		22 h 33 m		5 h 32 m	

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Achernar	-Fomalhaut	-Saturn	-Altair	+Antares	+Rigel Kent	+Hadar	+Sun
0	75°26.5'	S 26°54.9'	3.5'	-2.5'	59.4'	80°20.1'	65°49.6'	51°34.4'	45°45.6'	18°41.7'	46°53.0'	50°51.3'	106°19.3'
1	89°49.1'	S 26°57.4'	3.5'	-2.4'	59.4'	80°00.2'	65°15.7'	50°58.7'	45°23.6'	19°17.1'	47°08.5'	51°08.2'	106°52.4'
2	104°11.5'	S 26°59.8'	3.4'	-2.2'	59.4'	79°40.4'	64°41.7'	50°22.9'	45°01.8'	19°52.5'	47°24.4'	51°25.3'	107°25.6'
3	118°34.0'	S 27°02.0'	3.4'	-2.0'	59.5'	79°20.6'	64°07.8'	49°47.1'	44°40.3'	20°27.9'	47°40.5'	51°42.7'	107°58.8'
4	132°56.4'	S 27°03.9'	3.3'	-1.8'	59.5'	79°00.8'	63°33.8'	49°11.4'	44°19.0'	21°03.4'	47°56.9'	52°00.3'	108°32.0'
5	147°18.7'	S 27°05.7'	3.3'	-1.6'	59.5'	78°41.0'	62°59.9'	48°35.6'	43°57.9'	21°38.9'	48°13.6'	52°18.2'	109°05.2'
6	161°41.0'	S 27°07.3'	3.2'	-1.4'	59.5'	78°21.3'	62°25.9'	47°59.7'	43°37.0'	22°14.5'	48°30.5'	52°36.3'	109°38.5'
7	176°03.2'	S 27°08.8'	3.2'	-1.2'	59.5'	78°01.7'	61°51.9'	47°23.9'	43°16.4'	22°50.1'	48°47.7'	52°54.6'	110°11.7'
8	190°25.4'	S 27°10.0'	3.2'	-1.0'	59.6'	77°42.1'	61°18.0'	46°48.0'	42°56.1'	23°25.7'	49°05.2'	53°13.1'	110°45.0'
9	204°47.6'	S 27°11.0'	3.1'	-0.8'	59.6'	77°22.5'	60°44.0'	46°12.1'	42°36.0'	24°01.4'	49°22.9'	53°31.8'	111°18.4'
10	219°09.7'	S 27°11.9'	3.1'	-0.7'	59.6'	77°03.0'	60°10.0'	45°36.2'	42°16.2'	24°37.1'	49°40.9'	53°50.8'	111°51.7'
11	233°31.8'	S 27°12.5'	3.1'	-0.5'	59.6'	76°43.5'	59°36.1'	45°00.3'	41°56.7'	25°12.8'	49°59.1'	54°10.0'	112°25.1'
12	247°53.9'	S 27°13.0'	3.0'	-0.3'	59.6'	76°24.1'	59°02.1'	44°24.4'	41°37.4'	25°48.5'	50°17.6'	54°29.3'	112°58.4'
13	262°15.9'	S 27°13.2'	3.0'	-0.1'	59.6'	76°04.7'	58°28.2'	43°48.4'	41°18.5'	26°24.3'	50°36.3'	54°48.9'	113°31.8'
14	276°38.0'	S 27°13.3'	3.0'	0.1'	59.6'	75°45.4'	57°54.2'	43°12.5'	40°59.8'	27°00.1'	50°55.3'	55°08.6'	114°05.3'
15	290°60.0'	S 27°13.2'	3.0'	0.3'	59.7'	75°26.1'	57°20.3'	42°36.5'	40°41.5'	27°36.0'	51°14.5'	55°28.6'	114°38.7'
16	305°21.9'	S 27°12.9'	3.0'	0.5'	59.7'	75°06.9'	56°46.4'	42°00.5'	40°23.4'	28°11.8'	51°33.9'	55°48.7'	115°12.1'
17	319°43.9'	S 27°12.3'	2.9'	0.7'	59.7'	74°47.8'	56°12.5'	41°24.5'	40°05.7'	28°47.7'	51°53.5'	56°09.1'	115°45.6'
18	334°05.8'	S 27°11.6'	2.9'	0.9'	59.7'	74°28.7'	55°38.5'	40°48.4'	39°48.3'	29°23.6'	52°13.3'	56°29.6'	116°19.1'
19	348°27.8'	S 27°10.7'	2.9'	1.1'	59.7'	74°09.7'	55°04.6'	40°12.4'	39°31.3'	29°59.5'	52°33.4'	56°50.3'	116°52.6'
20	2°49.7'	S 27°09.6'	2.9'	1.3'	59.7'	73°50.8'	54°30.8'	39°36.3'	39°14.6'	30°35.5'	52°53.7'	57°11.1'	117°26.2'
21	17°11.6'	S 27°08.4'	2.9'	1.5'	59.7'	73°31.9'	53°56.9'	39°00.2'	38°58.3'	31°11.5'	53°14.2'	57°32.2'	117°59.7'
22	31°33.5'	S 27°06.9'	2.9'	1.7'	59.8'	73°13.1'	53°23.0'	38°24.1'	38°42.3'	31°47.5'	53°34.8'	57°53.4'	118°33.3'
23	45°55.4'	S 27°05.2'	2.9'	1.9'	59.8'	72°54.4'	52°49.2'	37°48.0'	38°26.7'	32°23.5'	53°55.7'	58°14.8'	119°06.9'
Mer. pass.		19 h 48 m SD 16.2'		phase 64%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.3'	N 7°24.8'
Deneb	+1.2	49°26.7'	N 45°21.8'	Acrux	+0.8	173°02.9'	S 63°13.5'	Capella	+0.1	280°24.8'	N 46°01.1'
Altair	+0.8	62°01.6'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.8'	S 8°10.4'
Vega	+0.0	80°34.3'	N 38°48.5'	Pollux	+1.2	243°19.9'	N 27°58.3'	Aldebaran	+0.9	290°41.8'	N 16°33.3'
Antares	+1.1	112°18.2'	S 26°28.9'	Procyon	+0.4	244°53.1'	N 5°10.2'	Polaris	+2.0	314°44.9'	N 89°21.3'
Rigel Kent	-0.0	139°43.3'	S 60°55.8'	Adhara	+1.5	255°07.6'	S 28°59.9'	Achernar	+0.5	335°21.2'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.1'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.5'	S 52°42.1'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	345°04.1'	180°21.8'	N 6°31.4'	191°33.4'	N 12°15.0'	338°37.3'	N 1°03.3'	21°55.9'	S 15°58.3'	277°22.7'	N 20°37.2'
1	0°06.5'	195°22.0'	N 6°30.5'	206°32.9'	N 12°13.9'	353°40.0'	N 1°03.2'	36°58.5'	S 15°58.4'	292°23.8'	N 20°37.4'
2	15°09.0'	210°22.2'	N 6°29.6'	221°32.4'	N 12°12.9'	8°42.7'	N 1°03.1'	52°01.1'	S 15°58.4'	307°24.9'	N 20°37.6'
3	30°11.5'	225°22.4'	N 6°28.6'	236°31.9'	N 12°11.8'	23°45.5'	N 1°03.0'	67°03.8'	S 15°58.5'	322°26.0'	N 20°37.9'
4	45°13.9'	240°22.6'	N 6°27.7'	251°31.4'	N 12°10.8'	38°48.2'	N 1°02.9'	82°06.4'	S 15°58.5'	337°27.2'	N 20°38.1'
5	60°16.4'	255°22.8'	N 6°26.8'	266°30.9'	N 12°09.7'	53°50.9'	N 1°02.8'	97°09.0'	S 15°58.6'	352°28.3'	N 20°38.3'
6	75°18.8'	270°23.0'	N 6°25.9'	281°30.3'	N 12°08.7'	68°53.6'	N 1°02.6'	112°11.6'	S 15°58.6'	7°29.4'	N 20°38.6'
7	90°21.3'	285°23.2'	N 6°24.9'	296°29.8'	N 12°07.6'	83°56.3'	N 1°02.5'	127°14.3'	S 15°58.7'	22°30.5'	N 20°38.8'
8	105°23.8'	300°23.5'	N 6°24.0'	311°29.3'	N 12°06.5'	98°59.1'	N 1°02.4'	142°16.9'	S 15°58.7'	37°31.6'	N 20°39.1'
9	120°26.2'	315°23.7'	N 6°23.1'	326°28.8'	N 12°05.5'	114°01.8'	N 1°02.3'	157°19.5'	S 15°58.8'	52°32.8'	N 20°39.3'
10	135°28.7'	330°23.9'	N 6°22.1'	341°28.3'	N 12°04.4'	129°04.5'	N 1°02.2'	172°22.1'	S 15°58.8'	67°33.9'	N 20°39.5'
11	150°31.2'	345°24.1'	N 6°21.2'	356°27.8'	N 12°03.4'	144°07.2'	N 1°02.0'	187°24.8'	S 15°58.9'	82°35.0'	N 20°39.8'
12	165°33.6'	0°24.3'	N 6°20.3'	11°27.3'	N 12°02.3'	159°10.0'	N 1°01.9'	202°27.4'	S 15°58.9'	97°36.1'	N 20°40.0'
13	180°36.1'	15°24.5'	N 6°19.3'	26°26.8'	N 12°01.3'	174°12.7'	N 1°01.8'	217°30.0'	S 15°59.0'	112°37.3'	N 20°40.2'
14	195°38.6'	30°24.7'	N 6°18.4'	41°26.3'	N 12°00.2'	189°15.4'	N 1°01.7'	232°32.6'	S 15°59.0'	127°38.4'	N 20°40.5'
15	210°41.0'	45°24.9'	N 6°17.5'	56°25.8'	N 11°59.1'	204°18.1'	N 1°01.6'	247°35.2'	S 15°59.1'	142°39.5'	N 20°40.7'
16	225°43.5'	60°25.2'	N 6°16.5'	71°25.3'	N 11°58.1'	219°20.9'	N 1°01.4'	262°37.9'	S 15°59.2'	157°40.7'	N 20°40.9'
17	240°45.9'	75°25.4'	N 6°15.6'	86°24.8'	N 11°57.0'	234°23.6'	N 1°01.3'	277°40.5'	S 15°59.2'	172°41.8'	N 20°41.2'
18	255°48.4'	90°25.6'	N 6°14.7'	101°24.3'	N 11°56.0'	249°26.3'	N 1°01.2'	292°43.1'	S 15°59.3'	187°42.9'	N 20°41.4'
19	270°50.9'	105°25.8'	N 6°13.7'	116°23.8'	N 11°54.9'	264°29.0'	N 1°01.1'	307°45.7'	S 15°59.3'	202°44.0'	N 20°41.6'
20	285°53.3'	120°26.0'	N 6°12.8'	131°23.3'	N 11°53.8'	279°31.8'	N 1°01.0'	322°48.4'	S 15°59.4'	217°45.2'	N 20°41.9'
21	300°55.8'	135°26.2'	N 6°11.9'	146°22.8'	N 11°52.8'	294°34.5'	N 1°00.9'	337°51.0'	S 15°59.4'	232°46.3'	N 20°42.1'
22	315°58.3'	150°26.4'	N 6°10.9'	161°22.3'	N 11°51.7'	309°37.2'	N 1°00.7'	352°53.6'	S 15°59.5'	247°47.4'	N 20°42.3'
23	331°00.7'	165°26.6'	N 6°10.0'	176°21.8'	N 11°50.6'	324°39.9'	N 1°00.6'	7°56.2'	S 15°59.5'	262°48.6'	N 20°42.6'
		SD 15.9'	d -0.9'	v -0.5'	d -1.1'	v 2.7'	d -0.1'	v 2.6'	d -0.1'	v 1.1'	d 0.2'
Mer. pass.		11 h 58 m 24 s		11 h 14 m		1 h 25 m		22 h 28 m		5 h 30 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Jupiter	-Achernar	-Fomalhaut	-Saturn	+Antares	+Rigil Kent	+Hadar	+Sun
0	60°17.3'	S 27°03.3'	2.9'	2.1'	59.8'	83°04.2'	72°35.7'	52°15.4'	37°11.9'	32°59.5'	54°16.8'	58°36.3'	119°40.5'
1	74°39.2'	S 27°01.2'	2.9'	2.3'	59.8'	82°27.7'	72°17.1'	51°41.6'	36°35.8'	33°35.6'	54°38.1'	58°58.0'	
2	89°01.1'	S 26°59.0'	2.9'	2.5'	59.8'	81°51.3'	71°58.6'	51°07.8'	35°59.6'	34°11.7'	54°59.5'	59°19.9'	
3	103°23.1'	S 26°56.5'	2.9'	2.7'	59.8'	81°14.8'	71°40.2'	50°34.1'	35°23.5'	34°47.8'	55°21.1'	59°41.9'	
4	117°45.0'	S 26°53.9'	3.0'	2.8'	59.8'	80°38.3'	71°21.9'	50°00.3'	34°47.3'	35°23.9'	55°43.0'	60°04.1'	
5	132°07.0'	S 26°51.0'	3.0'	3.0'	59.9'	80°01.8'	71°03.7'	49°26.6'	34°11.2'	36°00.1'	56°04.9'	60°26.4'	
6	146°28.9'	S 26°48.0'	3.0'	3.2'	59.9'	79°25.2'	70°45.5'	48°53.0'	33°35.0'	36°36.3'	56°27.1'	60°48.8'	
7	160°50.9'	S 26°44.7'	3.0'	3.4'	59.9'	78°48.7'	70°27.5'	48°19.3'	32°58.8'	37°12.5'	56°49.4'	61°11.4'	
8	175°12.9'	S 26°41.3'	3.0'	3.6'	59.9'	78°12.1'	70°09.5'	47°45.7'	32°22.6'	37°48.7'	57°11.9'	61°34.2'	
9	189°35.0'	S 26°37.7'	3.1'	3.8'	59.9'	77°35.5'	69°51.7'	47°12.2'	31°46.4'	38°24.9'	57°34.6'	61°57.0'	
10	203°57.0'	S 26°33.9'	3.1'	4.0'	59.9'	76°58.9'	69°33.9'	46°38.6'	31°10.2'	39°01.1'	57°57.4'	62°20.0'	
11	218°19.1'	S 26°29.9'	3.1'	4.2'	59.9'	76°22.3'	69°16.3'	46°05.1'	30°34.0'	39°37.4'	58°20.4'	62°43.2'	
12	232°41.2'	S 26°25.7'	3.2'	4.4'	59.9'	75°45.7'	68°58.7'	45°31.7'	29°57.8'	40°13.7'	58°43.5'	63°06.4'	
13	247°03.4'	S 26°21.3'	3.2'	4.6'	59.9'	75°09.1'	68°41.3'	44°58.3'	29°21.6'	40°50.0'	59°06.8'	63°29.8'	
14	261°25.6'	S 26°16.7'	3.2'	4.8'	59.9'	74°32.4'	68°23.9'	44°24.9'	28°45.3'	41°26.3'	59°30.2'	63°53.3'	
15	275°47.8'	S 26°11.9'	3.3'	5.0'	60.0'	73°55.7'	68°06.7'	43°51.6'	28°09.1'	42°02.6'	59°53.7'	64°17.0'	
16	290°10.1'	S 26°07.0'	3.3'	5.1'	60.0'	73°19.1'	67°49.6'	43°18.4'	27°32.9'	42°38.9'	60°17.4'	64°40.7'	
17	304°32.4'	S 26°01.8'	3.4'	5.3'	60.0'	72°42.4'	67°32.6'	42°45.2'	26°56.7'	43°15.3'	60°41.2'	65°04.6'	
18	318°54.8'	S 25°56.5'	3.4'	5.5'	60.0'	72°05.6'	67°15.7'	42°12.1'	26°20.5'	43°51.7'	61°05.2'	65°28.5'	
19	333°17.2'	S 25°51.0'	3.5'	5.7'	60.0'	71°28.9'	66°59.0'	41°39.0'	25°44.3'	44°28.1'	61°29.3'	65°52.6'	
20	347°39.6'	S 25°45.3'	3.5'	5.9'	60.0'	70°52.2'	66°42.3'	41°06.0'	25°08.1'	45°04.4'	61°53.5'	66°16.8'	
21	2°02.2'	S 25°39.4'	3.6'	6.1'	60.0'	70°15.4'	66°25.8'	40°33.1'	24°31.9'	45°40.9'	62°17.8'	66°41.1'	
22	16°24.7'	S 25°33.3'	3.6'	6.2'	60.0'	69°38.7'	66°09.5'	40°00.2'	23°55.7'	46°17.3'	62°42.3'	67°05.5'	
23	30°47.4'	S 25°27.1'	3.7'	6.4'	60.0'	69°01.9'	65°53.2'	39°27.4'	23°19.5'	46°53.7'	63°06.9'	67°30.0'	
Mer. pass.		20 h 52 m SD 16.3'	phase 75%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.3'	N 7°24.8'
Deneb	+1.2	49°26.7'	N 45°21.8'	Acrux	+0.8	173°02.9'	S 63°13.5'	Capella	+0.1	280°24.8'	N 46°01.1'
Altair	+0.8	62°01.6'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.8'	S 8°10.4'
Vega	+0.0	80°34.3'	N 38°48.5'	Pollux	+1.2	243°19.9'	N 27°58.3'	Aldebaran	+0.9	290°41.8'	N 16°33.3'
Antares	+1.1	112°18.2'	S 26°28.9'	Procyon	+0.4	244°53.1'	N 5°10.2'	Polaris	+2.0	314°44.4'	N 89°21.3'
Rigil Kent	-0.0	139°43.3'	S 60°55.8'	Adhara	+1.5	255°07.6'	S 28°59.9'	Achernar	+0.5	335°21.2'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.1'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.5'	S 52°42.1'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	346°03.2'	180°26.9'	N 6°09.1'	191°21.2'	N 11°49.6'	339°42.7'	N 1°00.5'	22°58.9'	S 15°59.6'	277°49.7'	N 20°42.8'
1	1°05.7'	195°27.1'	N 6°08.1'	206°20.7'	N 11°48.5'	354°45.4'	N 1°00.4'	38°01.5'	S 15°59.6'	292°50.8'	N 20°43.0'
2	16°08.1'	210°27.3'	N 6°07.2'	221°20.2'	N 11°47.4'	9°48.1'	N 1°00.3'	53°04.1'	S 15°59.7'	307°51.9'	N 20°43.3'
3	31°10.6'	225°27.5'	N 6°06.3'	236°19.7'	N 11°46.4'	24°50.8'	N 1°00.1'	68°06.7'	S 15°59.7'	322°53.1'	N 20°43.5'
4	46°13.1'	240°27.7'	N 6°05.3'	251°19.2'	N 11°45.3'	39°53.6'	N 1°00.0'	83°09.4'	S 15°59.8'	337°54.2'	N 20°43.7'
5	61°15.5'	255°27.9'	N 6°04.4'	266°18.7'	N 11°44.2'	54°56.3'	N 0°59.9'	98°12.0'	S 15°59.8'	352°55.3'	N 20°44.0'
6	76°18.0'	270°28.1'	N 6°03.5'	281°18.2'	N 11°43.2'	69°59.0'	N 0°59.8'	113°14.6'	S 15°59.9'	7°56.5'	N 20°44.2'
7	91°20.4'	285°28.4'	N 6°02.5'	296°17.7'	N 11°42.1'	85°01.7'	N 0°59.7'	128°17.2'	S 15°59.9'	22°57.6'	N 20°44.4'
8	106°22.9'	300°28.6'	N 6°01.6'	311°17.2'	N 11°41.0'	100°04.5'	N 0°59.5'	143°19.8'	S 15°60.0'	37°58.7'	N 20°44.7'
9	121°25.4'	315°28.8'	N 6°00.7'	326°16.7'	N 11°40.0'	115°07.2'	N 0°59.4'	158°22.5'	S 16°00.0'	52°59.9'	N 20°44.9'
10	136°27.8'	330°29.0'	N 5°59.7'	341°16.2'	N 11°38.9'	130°09.9'	N 0°59.3'	173°25.1'	S 16°00.1'	68°01.0'	N 20°45.1'
11	151°30.3'	345°29.2'	N 5°58.8'	356°15.7'	N 11°37.8'	145°12.6'	N 0°59.2'	188°27.7'	S 16°00.1'	83°02.2'	N 20°45.4'
12	166°32.8'	0°29.4'	N 5°57.8'	11°15.2'	N 11°36.8'	160°15.4'	N 0°59.1'	203°30.3'	S 16°00.2'	98°03.3'	N 20°45.6'
13	181°35.2'	15°29.6'	N 5°56.9'	26°14.7'	N 11°35.7'	175°18.1'	N 0°58.9'	218°33.0'	S 16°00.2'	113°04.4'	N 20°45.8'
14	196°37.7'	30°29.9'	N 5°56.0'	41°14.3'	N 11°34.6'	190°20.8'	N 0°58.8'	233°35.6'	S 16°00.3'	128°05.6'	N 20°46.1'
15	211°40.2'	45°30.1'	N 5°55.0'	56°13.8'	N 11°33.5'	205°23.5'	N 0°58.7'	248°38.2'	S 16°00.3'	143°06.7'	N 20°46.3'
16	226°42.6'	60°30.3'	N 5°54.1'	71°13.3'	N 11°32.5'	220°26.3'	N 0°58.6'	263°40.8'	S 16°00.4'	158°07.8'	N 20°46.5'
17	241°45.1'	75°30.5'	N 5°53.2'	86°12.8'	N 11°31.4'	235°29.0'	N 0°58.5'	278°43.4'	S 16°00.5'	173°09.0'	N 20°46.7'
18	256°47.6'	90°30.7'	N 5°52.2'	101°12.3'	N 11°30.3'	250°31.7'	N 0°58.3'	293°46.1'	S 16°00.5'	188°10.1'	N 20°47.0'
19	271°50.0'	105°30.9'	N 5°51.3'	116°11.8'	N 11°29.2'	265°34.5'	N 0°58.2'	308°48.7'	S 16°00.6'	203°11.3'	N 20°47.2'
20	286°52.5'	120°31.2'	N 5°50.4'	131°11.3'	N 11°28.2'	280°37.2'	N 0°58.1'	323°51.3'	S 16°00.6'	218°12.4'	N 20°47.4'
21	301°54.9'	135°31.4'	N 5°49.4'	146°10.8'	N 11°27.1'	295°39.9'	N 0°58.0'	338°53.9'	S 16°00.7'	233°13.6'	N 20°47.7'
22	316°57.4'	150°31.6'	N 5°48.5'	161°10.3'	N 11°26.0'	310°42.6'	N 0°57.9'	353°56.6'	S 16°00.7'	248°14.7'	N 20°47.9'
23	331°59.9'	165°31.8'	N 5°47.5'	176°09.8'	N 11°24.9'	325°45.4'	N 0°57.7'	8°59.2'	S 16°00.8'	263°15.8'	N 20°48.1'
		SD 15.9'	d -0.9'	v -0.5'	d -1.1'	v 2.7'	d -0.1'	v 2.6'	d -0.1'	v 1.1'	d 0.2'
Mer. pass.		11 h 58 m 3 s		11 h 15 m		1 h 21 m		22 h 24 m		5 h 28 m	

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Jupiter	-Achernar	-Fomalhaut	-Saturn	+Antares	+Rigel Kent	+Hadar	+Acrux
0	45°10.0'	S 25°20.7'	3.7'	6.6'	60.0'	68°25.1'	65°37.1'	38°54.7'	22°43.3'	47°30.2'	63°31.6'	67°54.5'	77°28.1'
1	59°32.8'	S 25°14.0'	3.8'	6.8'	60.0'	67°48.4'	65°21.2'	38°22.1'	22°07.2'	48°06.6'	63°56.4'	68°19.2'	77°49.2'
2	73°55.6'	S 25°07.3'	3.9'	7.0'	60.0'	67°11.6'	65°05.3'	37°49.6'	21°31.1'	48°43.1'	64°21.3'	68°44.0'	78°10.3'
3	88°18.4'	S 25°00.3'	3.9'	7.1'	60.0'	66°34.7'	64°49.7'	37°17.2'	20°55.0'	49°19.6'	64°46.3'	69°08.8'	78°31.6'
4	102°41.4'	S 24°53.1'	4.0'	7.3'	60.0'	65°57.9'	64°34.1'	36°44.9'	20°18.9'	49°56.1'	65°11.4'	69°33.7'	78°52.8'
5	117°04.4'	S 24°45.8'	4.1'	7.5'	60.1'	65°21.1'	64°18.7'	36°12.7'	19°42.8'	50°32.6'	65°36.6'	69°58.8'	79°14.2'
6	131°27.5'	S 24°38.3'	4.1'	7.7'	60.1'	64°44.3'	64°03.5'	35°40.6'	19°06.8'	51°09.1'	66°02.0'	70°23.9'	79°35.5'
7	145°50.6'	S 24°30.7'	4.2'	7.8'	60.1'	64°07.4'		35°08.6'	18°30.9'	51°45.6'	66°27.4'	70°49.0'	79°57.0'
8	160°13.8'	S 24°22.8'	4.3'	8.0'	60.1'	63°30.6'		34°36.8'	17°54.9'	52°22.1'	66°52.9'	71°14.3'	80°18.5'
9	174°37.1'	S 24°14.8'	4.4'	8.2'	60.1'	62°53.7'		34°05.0'	17°19.0'	52°58.6'	67°18.5'	71°39.6'	80°40.0'
10	189°00.5'	S 24°06.7'	4.4'	8.3'	60.1'	62°16.9'		33°33.5'	16°43.2'	53°35.2'	67°44.2'	72°05.0'	81°01.6'
11	203°23.9'	S 23°58.3'	4.5'	8.5'	60.1'	61°40.0'		33°02.0'	16°07.4'	54°11.7'	68°09.9'	72°30.5'	81°23.2'
12	217°47.4'	S 23°49.8'	4.6'	8.7'	60.1'	61°03.1'		32°30.7'	15°31.7'	54°48.3'	68°35.8'	72°56.0'	81°44.9'
13	232°11.0'	S 23°41.1'	4.7'	8.8'	60.1'	60°26.2'		31°59.6'	14°56.1'	55°24.8'	69°01.7'	73°21.6'	82°06.6'
14	246°34.7'	S 23°32.3'	4.8'	9.0'	60.1'	59°49.4'		31°28.7'	14°20.6'	56°01.4'	69°27.7'	73°47.3'	82°28.3'
15	260°58.5'	S 23°23.3'	4.9'	9.2'	60.1'	59°12.5'		30°57.9'	13°45.1'	56°38.0'	69°53.8'	74°13.0'	82°50.1'
16	275°22.3'	S 23°14.1'	4.9'	9.3'	60.1'	58°35.6'		30°27.4'	13°09.8'	57°14.6'	70°20.0'	74°38.8'	83°11.9'
17	289°46.3'	S 23°04.8'	5.0'	9.5'	60.1'	57°58.7'		29°57.0'	12°34.6'	57°51.1'	70°46.2'	75°04.6'	83°33.8'
18	304°10.3'	S 22°55.4'	5.1'	9.6'	60.1'	57°21.8'		29°26.8'	11°59.6'	58°27.7'	71°12.5'	75°30.5'	83°55.7'
19	318°34.4'	S 22°45.7'	5.2'	9.8'	60.1'	56°44.9'		28°56.9'	11°24.7'	59°04.3'	71°38.9'	75°56.5'	84°17.6'
20	332°58.6'	S 22°36.0'	5.3'	9.9'	60.1'	56°08.0'		28°27.2'	10°50.1'	59°40.9'	72°05.3'	76°22.5'	84°39.5'
21	347°22.9'	S 22°26.0'	5.4'	10.1'	60.1'	55°31.1'		27°57.8'	10°15.7'	60°17.5'	72°31.8'	76°48.5'	85°01.5'
22	1°47.3'	S 22°16.0'	5.5'	10.2'	60.1'	54°54.2'		27°28.6'	9°41.6'	60°54.1'	72°58.3'	77°14.6'	85°23.4'
23	16°11.8'	S 22°05.7'	5.6'	10.4'	60.1'	54°17.3'		26°59.7'	9°07.9'	61°30.7'	73°24.9'	77°40.8'	85°45.4'
Mer. pass.		21 h 53 m SD 16.4'		phase 84%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.3'	N 7°24.8'
Deneb	+1.2	49°26.7'	N 45°21.8'	Acrux	+0.8	173°02.9'	S 63°13.5'	Capella	+0.1	280°24.8'	N 46°01.1'
Altair	+0.8	62°01.6'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.8'	S 8°10.4'
Vega	+0.0	80°34.4'	N 38°48.5'	Pollux	+1.2	243°19.9'	N 27°58.3'	Aldebaran	+0.9	290°41.8'	N 16°33.3'
Antares	+1.1	112°18.2'	S 26°28.9'	Procyon	+0.4	244°53.1'	N 5°10.2'	Polaris	+2.0	314°43.9'	N 89°21.3'
Rigel Kent	-0.0	139°43.3'	S 60°55.8'	Adhara	+1.5	255°07.6'	S 28°59.9'	Achernar	+0.5	335°21.2'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.1'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.4'	S 52°42.1'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	347°02.3'	180°32.0'	N 5°46.6'	191°09.3'	N 11°23.9'		340°48.1'	N 0°57.6'		24°01.8'	S 16°00.8'		278°17.0'	N 20°48.3'				
1	2°04.8'	195°32.2'	N 5°45.7'	206°08.8'	N 11°22.8'		355°50.8'	N 0°57.5'		39°04.4'	S 16°00.9'		293°18.1'	N 20°48.6'				
2	17°07.3'	210°32.4'	N 5°44.7'	221°08.3'	N 11°21.7'		10°53.6'	N 0°57.4'		54°07.0'	S 16°00.9'		308°19.3'	N 20°48.8'				
3	32°09.7'	225°32.7'	N 5°43.8'	236°07.8'	N 11°20.6'		25°56.3'	N 0°57.2'		69°09.7'	S 16°01.0'		323°20.4'	N 20°49.0'				
4	47°12.2'	240°32.9'	N 5°42.8'	251°07.3'	N 11°19.5'		40°59.0'	N 0°57.1'		84°12.3'	S 16°01.0'		338°21.6'	N 20°49.3'				
5	62°14.7'	255°33.1'	N 5°41.9'	266°06.8'	N 11°18.4'		56°01.8'	N 0°57.0'		99°14.9'	S 16°01.1'		353°22.7'	N 20°49.5'				
6	77°17.1'	270°33.3'	N 5°41.0'	281°06.3'	N 11°17.4'		71°04.5'	N 0°56.9'		114°17.5'	S 16°01.1'		8°23.8'	N 20°49.7'				
7	92°19.6'	285°33.5'	N 5°40.0'	296°05.8'	N 11°16.3'		86°07.2'	N 0°56.8'		129°20.1'	S 16°01.2'		23°25.0'	N 20°49.9'				
8	107°22.1'	300°33.7'	N 5°39.1'	311°05.4'	N 11°15.2'		101°09.9'	N 0°56.6'		144°22.8'	S 16°01.2'		38°26.1'	N 20°50.2'				
9	122°24.5'	315°34.0'	N 5°38.1'	326°04.9'	N 11°14.1'		116°12.7'	N 0°56.5'		159°25.4'	S 16°01.3'		53°27.3'	N 20°50.4'				
10	137°27.0'	330°34.2'	N 5°37.2'	341°04.4'	N 11°13.0'		131°15.4'	N 0°56.4'		174°28.0'	S 16°01.3'		68°28.4'	N 20°50.6'				
11	152°29.4'	345°34.4'	N 5°36.3'	356°03.9'	N 11°12.0'		146°18.1'	N 0°56.3'		189°30.6'	S 16°01.4'		83°29.6'	N 20°50.8'				
12	167°31.9'	0°34.6'	N 5°35.3'	11°03.4'	N 11°10.9'		161°20.9'	N 0°56.2'		204°33.2'	S 16°01.4'		98°30.7'	N 20°51.1'				
13	182°34.4'	15°34.8'	N 5°34.4'	26°02.9'	N 11°09.8'		176°23.6'	N 0°56.0'		219°35.9'	S 16°01.5'		113°31.9'	N 20°51.3'				
14	197°36.8'	30°35.0'	N 5°33.4'	41°02.4'	N 11°08.7'		191°26.3'	N 0°55.9'		234°38.5'	S 16°01.5'		128°33.0'	N 20°51.5'				
15	212°39.3'	45°35.3'	N 5°32.5'	56°01.9'	N 11°07.6'		206°29.1'	N 0°55.8'		249°41.1'	S 16°01.6'		143°34.2'	N 20°51.7'				
16	227°41.8'	60°35.5'	N 5°31.6'	71°01.4'	N 11°06.5'		221°31.8'	N 0°55.7'		264°43.7'	S 16°01.6'		158°35.3'	N 20°52.0'				
17	242°44.2'	75°35.7'	N 5°30.6'	86°01.0'	N 11°05.4'		236°34.5'	N 0°55.5'		279°46.3'	S 16°01.7'		173°36.5'	N 20°52.2'				
18	257°46.7'	90°35.9'	N 5°29.7'	101°00.5'	N 11°04.3'		251°37.3'	N 0°55.4'		294°49.0'	S 16°01.7'		188°37.6'	N 20°52.4'				
19	272°49.2'	105°36.1'	N 5°28.7'	115°60.0'	N 11°03.3'		266°40.0'	N 0°55.3'		309°51.6'	S 16°01.8'		203°38.8'	N 20°52.6'				
20	287°51.6'	120°36.3'	N 5°27.8'	130°59.5'	N 11°02.2'		281°42.7'	N 0°55.2'		324°54.2'	S 16°01.8'		218°39.9'	N 20°52.9'				
21	302°54.1'	135°36.6'	N 5°26.9'	145°59.0'	N 11°01.1'		296°45.5'	N 0°55.1'		339°56.8'	S 16°01.9'		233°41.1'	N 20°53.1'				
22	317°56.5'	150°36.8'	N 5°25.9'	160°58.5'	N 10°60.0'		311°48.2'	N 0°54.9'		354°59.4'	S 16°01.9'		248°42.3'	N 20°53.3'				
23	332°59.0'	165°37.0'	N 5°25.0'	175°58.0'	N 10°58.9'		326°50.9'	N 0°54.8'		10°02.1'	S 16°02.0'		263°43.4'	N 20°53.5'				
		SD 15.9'	d -0.9'	v -0.5'	d -1.1'		v 2.7'	d -0.1'		v 2.6'	d -0.1'		v 1.1'	d 0.2'				
Mer. pass.		11 h 57 m 43 s		11 h 16 m			1 h 17 m			22 h 20 m			5 h 26 m					

h	Moon					Lunar distance									
	GHA	dec	v	d	HP	-Rigel	-Jupiter	-Fomalhaut	-Saturn	+Altair	+Antares	+Rigel Kent	+Hadar		
0	30°36.3'	S 21°55.3'	5.7'	10.5'	60.1'	116°05.9'	53°40.3'	26°31.1'	8°34.5'		62°07.3'	73°51.6'	78°06.9'		
1	45°01.0'	S 21°44.8'	5.7'	10.7'	60.1'	115°37.1'	53°03.4'	26°02.8'	8°01.7'		62°43.9'	74°18.3'	78°33.2'		
2	59°25.7'	S 21°34.2'	5.8'	10.8'	60.1'	115°08.1'	52°26.5'	25°34.8'	7°29.4'		63°20.5'	74°45.1'	78°59.4'		
3	73°50.6'	S 21°23.4'	5.9'	10.9'	60.1'	114°39.2'	51°49.6'	25°07.2'			63°57.1'	75°11.9'	79°25.7'		
4	88°15.5'	S 21°12.4'	6.0'	11.1'	60.1'	114°10.1'	51°12.7'	24°39.9'			64°33.7'	75°38.8'	79°52.0'		
5	102°40.5'	S 21°01.3'	6.1'	11.2'	60.1'	113°41.0'	50°35.8'	24°13.1'			65°10.2'	76°05.7'	80°18.4'		
6	117°05.7'	S 20°50.1'	6.2'	11.3'	60.1'	113°11.8'	49°58.9'	23°46.6'			65°46.8'	76°32.6'	80°44.8'		
7	131°30.9'	S 20°38.8'	6.3'	11.5'	60.1'	112°42.6'	49°22.0'	23°20.6'			66°23.4'	76°59.6'	81°11.2'		
8	145°56.2'	S 20°27.3'	6.4'	11.6'	60.1'	112°13.3'	48°45.2'	22°55.0'			67°00.0'	77°26.6'	81°37.7'		
9	160°21.6'	S 20°15.7'	6.5'	11.7'	60.0'	111°43.9'	48°08.3'	22°30.0'			67°36.6'	77°53.7'	82°04.1'		
10	174°47.2'	S 20°04.0'	6.6'	11.9'	60.0'	111°14.5'	47°31.4'	22°05.4'			68°13.2'	78°20.8'	82°30.6'		
11	189°12.8'	S 19°52.1'	6.7'	12.0'	60.0'	110°45.1'	46°54.5'	21°41.4'		38°04.7'	68°49.7'	78°47.9'	82°57.1'		
12	203°38.5'	S 19°40.1'	6.8'	12.1'	60.0'	110°15.6'	46°17.6'	21°17.9'		38°19.9'	69°26.3'	79°15.1'	83°23.7'		
13	218°04.3'	S 19°28.0'	6.9'	12.2'	60.0'	109°46.1'	45°40.8'	20°55.1'		38°35.5'	70°02.9'	79°42.3'	83°50.2'		
14	232°30.2'	S 19°15.8'	7.0'	12.4'	60.0'	109°16.5'	45°03.9'	20°32.9'		38°51.5'	70°39.4'	80°09.5'	84°16.8'		
15	246°56.2'	S 19°03.4'	7.1'	12.5'	60.0'	108°46.9'	44°27.1'	20°11.3'		39°07.9'	71°16.0'	80°36.8'	84°43.4'		
16	261°22.3'	S 18°50.9'	7.2'	12.6'	60.0'	108°17.2'	43°50.2'	19°50.5'		39°24.6'	71°52.5'	81°04.0'	85°10.0'		
17	275°48.5'	S 18°38.4'	7.3'	12.7'	60.0'	107°47.5'	43°13.4'	19°30.4'		39°41.8'	72°29.0'	81°31.3'	85°36.6'		
18	290°14.8'	S 18°25.7'	7.4'	12.8'	60.0'	107°17.8'	42°36.6'			39°59.3'	73°05.6'	81°58.6'	86°03.2'		
19	304°41.2'	S 18°12.9'	7.5'	12.9'	60.0'	106°48.0'	41°59.8'			40°17.1'	73°42.1'	82°26.0'	86°29.8'		
20	319°07.7'	S 17°59.9'	7.6'	13.0'	60.0'	106°18.2'	41°23.0'			40°35.3'	74°18.6'	82°53.3'	86°56.4'		
21	333°34.3'	S 17°46.9'	7.7'	13.1'	60.0'	105°48.4'	40°46.2'			40°53.8'	74°55.1'	83°20.7'	87°23.1'		
22	348°01.0'	S 17°33.8'	7.8'	13.2'	59.9'	105°18.5'	40°09.4'			41°12.6'	75°31.6'	83°48.0'	87°49.7'		
23	2°27.8'	S 17°20.6'	7.9'	13.3'	59.9'	104°48.6'	39°32.6'		7°22.1'	41°31.8'	76°08.0'	84°15.4'	88°16.3'		
Mer. pass.		22 h 50 m SD 16.4'	phase 92%												

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.3'	N 7°24.8'
Deneb	+1.2	49°26.7'	N 45°21.8'	Acrux	+0.8	173°02.9'	S 63°13.5'	Capella	+0.1	280°24.8'	N 46°01.1'
Altair	+0.8	62°01.6'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.7'	S 8°10.4'
Vega	+0.0	80°34.4'	N 38°48.5'	Pollux	+1.2	243°19.9'	N 27°58.3'	Aldebaran	+0.9	290°41.8'	N 16°33.3'
Antares	+1.1	112°18.2'	S 26°28.9'	Procyon	+0.4	244°53.1'	N 5°10.2'	Polaris	+2.0	314°43.4'	N 89°21.3'
Rigel Kent	-0.0	139°43.3'	S 60°55.8'	Adhara	+1.5	255°07.6'	S 28°59.9'	Achernar	+0.5	335°21.2'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.1'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.4'	S 52°42.1'				



h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	348°01.5'		180°37.2'	N 5°24.0'	190°57.5'	N 10°57.8'	341°53.7'	N 0°54.7'	25°04.7'	S 16°02.0'	278°44.6'	N 20°53.7'
1	3°03.9'		195°37.4'	N 5°23.1'	205°57.1'	N 10°56.7'	356°56.4'	N 0°54.6'	40°07.3'	S 16°02.1'	293°45.7'	N 20°54.0'
2	18°06.4'		210°37.7'	N 5°22.2'	220°56.6'	N 10°55.6'	11°59.1'	N 0°54.4'	55°09.9'	S 16°02.1'	308°46.9'	N 20°54.2'
3	33°08.9'		225°37.9'	N 5°21.2'	235°56.1'	N 10°54.5'	27°01.9'	N 0°54.3'	70°12.5'	S 16°02.2'	323°48.0'	N 20°54.4'
4	48°11.3'		240°38.1'	N 5°20.3'	250°55.6'	N 10°53.4'	42°04.6'	N 0°54.2'	85°15.2'	S 16°02.2'	338°49.2'	N 20°54.6'
5	63°13.8'		255°38.3'	N 5°19.3'	265°55.1'	N 10°52.3'	57°07.3'	N 0°54.1'	100°17.8'	S 16°02.3'	353°50.4'	N 20°54.9'
6	78°16.3'		270°38.5'	N 5°18.4'	280°54.6'	N 10°51.2'	72°10.1'	N 0°54.0'	115°20.4'	S 16°02.3'	8°51.5'	N 20°55.1'
7	93°18.7'		285°38.7'	N 5°17.4'	295°54.2'	N 10°50.1'	87°12.8'	N 0°53.8'	130°23.0'	S 16°02.4'	23°52.7'	N 20°55.3'
8	108°21.2'		300°39.0'	N 5°16.5'	310°53.7'	N 10°49.1'	102°15.5'	N 0°53.7'	145°25.6'	S 16°02.4'	38°53.8'	N 20°55.5'
9	123°23.7'		315°39.2'	N 5°15.6'	325°53.2'	N 10°48.0'	117°18.3'	N 0°53.6'	160°28.3'	S 16°02.5'	53°55.0'	N 20°55.7'
10	138°26.1'		330°39.4'	N 5°14.6'	340°52.7'	N 10°46.9'	132°21.0'	N 0°53.5'	175°30.9'	S 16°02.5'	68°56.2'	N 20°56.0'
11	153°28.6'		345°39.6'	N 5°13.7'	355°52.2'	N 10°45.8'	147°23.7'	N 0°53.3'	190°33.5'	S 16°02.6'	83°57.3'	N 20°56.2'
12	168°31.0'		0°39.8'	N 5°12.7'	10°51.7'	N 10°44.7'	162°26.5'	N 0°53.2'	205°36.1'	S 16°02.6'	98°58.5'	N 20°56.4'
13	183°33.5'		15°40.0'	N 5°11.8'	25°51.3'	N 10°43.6'	177°29.2'	N 0°53.1'	220°38.7'	S 16°02.7'	113°59.6'	N 20°56.6'
14	198°36.0'		30°40.3'	N 5°10.8'	40°50.8'	N 10°42.5'	192°31.9'	N 0°53.0'	235°41.3'	S 16°02.7'	129°00.8'	N 20°56.8'
15	213°38.4'		45°40.5'	N 5°09.9'	55°50.3'	N 10°41.4'	207°34.7'	N 0°52.8'	250°44.0'	S 16°02.8'	144°02.0'	N 20°57.1'
16	228°40.9'		60°40.7'	N 5°08.9'	70°49.8'	N 10°40.3'	222°37.4'	N 0°52.7'	265°46.6'	S 16°02.8'	159°03.1'	N 20°57.3'
17	243°44.4'		75°40.9'	N 5°08.0'	85°49.3'	N 10°39.2'	237°40.2'	N 0°52.6'	280°49.2'	S 16°02.9'	174°04.3'	N 20°57.5'
18	258°45.8'		90°41.1'	N 5°07.1'	100°48.9'	N 10°38.1'	252°42.9'	N 0°52.5'	295°51.8'	S 16°02.9'	189°05.5'	N 20°57.7'
19	273°48.3'		105°41.4'	N 5°06.1'	115°48.4'	N 10°37.0'	267°45.6'	N 0°52.3'	310°54.4'	S 16°03.0'	204°06.6'	N 20°57.9'
20	288°50.8'		120°41.6'	N 5°05.2'	130°47.9'	N 10°35.9'	282°48.4'	N 0°52.2'	325°57.0'	S 16°03.0'	219°07.8'	N 20°58.2'
21	303°53.2'		135°41.8'	N 5°04.2'	145°47.4'	N 10°34.8'	297°51.1'	N 0°52.1'	340°59.7'	S 16°03.1'	234°09.0'	N 20°58.4'
22	318°55.7'		150°42.0'	N 5°03.3'	160°46.9'	N 10°33.7'	312°53.8'	N 0°52.0'	356°02.3'	S 16°03.1'	249°10.1'	N 20°58.6'
23	333°58.1'		165°42.2'	N 5°02.3'	175°46.5'	N 10°32.6'	327°56.6'	N 0°51.9'	11°04.9'	S 16°03.2'	264°11.3'	N 20°58.8'
			SD 15.9'	d -0.9'	v -0.5'	d -1.1'	v 2.7'	d -0.1'	v 2.6'	d -0.1'	v 1.2'	d 0.2'
Mer. pass.			11 h 57 m 22 s		11 h 17 m		1 h 12 m		22 h 16 m		5 h 25 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Rigel	-Mars	-Aldebaran	-Jupiter	+Saturn	+Altair	+Antares	+Rigel Kent
0	16°54.7'	S 17°07.2'	8.0'	13.4'	59.9'	104°18.7'	103°24.4'	102°22.8'	38°55.9'	7°54.1'	41°51.3'	76°44.5'	84°42.8'
1	31°21.7'	S 16°53.8'	8.1'	13.5'	59.9'	103°48.8'	102°49.2'	101°46.6'	38°19.1'	8°26.6'	42°11.0'	77°21.0'	85°10.2'
2	45°48.8'	S 16°40.3'	8.2'	13.6'	59.9'	103°18.9'	102°14.1'	101°10.5'	37°42.4'	8°59.7'	42°31.1'	77°57.4'	85°37.6'
3	60°16.0'	S 16°26.6'	8.3'	13.7'	59.9'	102°48.9'	101°38.9'	100°34.4'	37°05.7'	9°33.2'	42°51.5'	78°33.8'	86°05.0'
4	74°43.3'	S 16°12.9'	8.4'	13.8'	59.9'	102°18.9'	101°03.8'	99°58.3'	36°29.0'	10°07.1'	43°12.1'	79°10.2'	86°32.4'
5	89°10.6'	S 15°59.1'	8.5'	13.9'	59.9'	101°48.9'	100°28.6'	99°22.2'	35°52.3'	10°41.2'	43°33.0'	79°46.6'	86°59.8'
6	103°38.1'	S 15°45.2'	8.6'	14.0'	59.8'	101°18.9'	99°53.5'	98°46.1'	35°15.6'	11°15.6'	43°54.1'	80°23.0'	87°27.2'
7	118°05.7'	S 15°31.2'	8.7'	14.1'	59.8'	100°48.9'	99°18.4'	98°10.0'	34°38.9'	11°50.1'	44°15.5'	80°59.4'	87°54.6'
8	132°33.3'	S 15°17.2'	8.7'	14.2'	59.8'	100°18.8'	98°43.3'	97°33.9'	34°02.3'	12°24.9'	44°37.2'	81°35.7'	88°22.0'
9	147°01.1'	S 15°03.0'	8.8'	14.2'	59.8'	99°48.8'	98°08.3'	96°57.9'	33°25.7'	12°59.8'	44°59.1'	82°12.1'	88°49.4'
10	161°28.9'	S 14°48.8'	8.9'	14.3'	59.8'	99°18.7'	97°33.2'	96°21.8'	32°49.1'	13°34.8'	45°21.2'	82°48.4'	89°16.8'
11	175°56.8'	S 14°34.5'	9.0'	14.4'	59.8'	98°48.7'	96°58.2'	95°45.8'	32°12.5'	14°09.9'	45°43.6'	83°24.7'	89°44.1'
12	190°24.9'	S 14°20.1'	9.1'	14.5'	59.8'	98°18.6'	96°23.1'	95°09.8'	31°35.9'	14°45.2'	46°06.2'	84°01.0'	90°11.5'
13	204°53.0'	S 14°05.6'	9.2'	14.5'	59.7'	97°48.6'	95°48.1'	94°33.8'	30°59.4'	15°20.5'	46°28.9'	84°37.3'	90°38.8'
14	219°21.2'	S 13°51.0'	9.3'	14.6'	59.7'	97°18.5'	95°13.1'	93°57.9'	30°22.9'	15°55.8'	46°51.9'	85°13.5'	91°06.2'
15	233°49.5'	S 13°36.4'	9.4'	14.7'	59.7'	96°48.4'	94°38.2'	93°21.9'	29°46.3'	16°31.2'	47°15.1'	85°49.8'	91°33.5'
16	248°17.9'	S 13°21.7'	9.5'	14.8'	59.7'	96°18.4'	94°03.2'	92°46.0'	29°09.9'	17°06.7'	47°38.5'	86°26.0'	92°00.8'
17	262°46.3'	S 13°07.0'	9.6'	14.8'	59.7'	95°48.3'	93°28.3'	92°10.1'	28°33.4'	17°42.2'	48°02.1'	87°02.2'	92°28.0'
18	277°14.9'	S 12°52.2'	9.6'	14.9'	59.7'	95°18.2'	92°53.4'	91°34.2'	27°57.0'	18°17.8'	48°25.9'	87°38.3'	92°55.3'
19	291°43.6'	S 12°37.3'	9.7'	14.9'	59.6'	94°48.2'	92°18.5'	90°58.3'	27°20.5'	18°53.3'	48°49.8'	88°14.5'	93°22.5'
20	306°12.3'	S 12°22.3'	9.8'	15.0'	59.6'	94°18.2'	91°43.6'	90°22.5'	26°44.1'	19°28.9'	49°13.9'	88°50.6'	93°49.7'
21	320°41.1'	S 12°07.3'	9.9'	15.1'	59.6'	93°48.1'	91°08.8'	89°46.7'	26°07.8'	20°04.6'	49°38.2'	89°26.7'	94°16.9'
22	335°10.0'	S 11°52.3'	10.0'	15.1'	59.6'	93°18.1'	90°33.9'	89°10.9'	25°31.4'	20°40.2'	50°02.7'	90°02.8'	94°44.0'
23	349°39.0'	S 11°37.2'	10.1'	15.2'	59.6'	92°48.1'	89°59.1'	88°35.1'	24°55.1'	21°15.8'	50°27.3'	90°38.9'	95°11.1'
Mer. pass.			23 h 43 m	SD 16.3'	phase 97%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.2'	N 7°24.8'
Deneb	+1.2	49°26.7'	N 45°21.8'	Acrux	+0.8	173°02.9'	S 63°13.5'	Capella	+0.1	280°24.8'	N 46°01.1'
Altair	+0.8	62°01.6'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.7'	S 8°10.4'
Vega	+0.0	80°34.4'	N 38°48.5'	Pollux	+1.2	243°19.9'	N 27°58.3'	Aldebaran	+0.9	290°41.8'	N 16°33.3'
Antares	+1.1	112°18.2'	S 26°28.9'	Procyon	+0.4	244°53.0'	N 5°10.2'	Polaris	+2.0	314°43.0'	N 89°21.3'
Rigel Kent	-0.0	139°43.3'	S 60°55.8'	Adhara	+1.5	255°07.6'	S 28°59.9'	Achernar	+0.5	335°21.2'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.1'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.4'	S 52°42.1'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	349°00.6'	180°42.5' N 5°01.4'	190°46.0'	N 10°31.5'	342°59.3'	N 0°51.7'	26°07.5'	S 16°03.2'	279°12.5'	N 20°59.0'		
1	4°03.1'	195°42.7' N 5°00.4'	205°45.5'	N 10°30.3'	358°02.1'	N 0°51.6'	41°10.1'	S 16°03.3'	294°13.6'	N 20°59.2'		
2	19°05.5'	210°42.9' N 4°59.5'	220°45.0'	N 10°29.2'	13°04.8'	N 0°51.5'	56°12.8'	S 16°03.3'	309°14.8'	N 20°59.5'		
3	34°08.0'	225°43.1' N 4°58.5'	235°44.6'	N 10°28.1'	28°07.5'	N 0°51.4'	71°15.4'	S 16°03.4'	324°16.0'	N 20°59.7'		
4	49°10.5'	240°43.3' N 4°57.6'	250°44.1'	N 10°27.0'	43°10.3'	N 0°51.2'	86°18.0'	S 16°03.4'	339°17.1'	N 20°59.9'		
5	64°12.9'	255°43.6' N 4°56.7'	265°43.6'	N 10°25.9'	58°13.0'	N 0°51.1'	101°20.6'	S 16°03.5'	354°18.3'	N 21°00.1'		
6	79°15.4'	270°43.8' N 4°55.7'	280°43.1'	N 10°24.8'	73°15.7'	N 0°51.0'	116°23.2'	S 16°03.5'	9°19.5'	N 21°00.3'		
7	94°17.9'	285°44.0' N 4°54.8'	295°42.6'	N 10°23.7'	88°18.5'	N 0°50.9'	131°25.8'	S 16°03.6'	24°20.7'	N 21°00.5'		
8	109°20.3'	300°44.2' N 4°53.8'	310°42.2'	N 10°22.6'	103°21.2'	N 0°50.7'	146°28.4'	S 16°03.6'	39°21.8'	N 21°00.8'		
9	124°22.8'	315°44.4' N 4°52.9'	325°41.7'	N 10°21.5'	118°24.0'	N 0°50.6'	161°31.1'	S 16°03.7'	54°23.0'	N 21°01.0'		
10	139°25.3'	330°44.7' N 4°51.9'	340°41.2'	N 10°20.4'	133°26.7'	N 0°50.5'	176°33.7'	S 16°03.7'	69°24.2'	N 21°01.2'		
11	154°27.7'	345°44.9' N 4°51.0'	355°40.7'	N 10°19.3'	148°29.4'	N 0°50.4'	191°36.3'	S 16°03.8'	84°25.4'	N 21°01.4'		
12	169°30.2'	0°45.1' N 4°50.0'	10°40.3'	N 10°18.2'	163°32.2'	N 0°50.2'	206°38.9'	S 16°03.8'	99°26.5'	N 21°01.6'		
13	184°32.6'	15°45.3' N 4°49.1'	25°39.8'	N 10°17.1'	178°34.9'	N 0°50.1'	221°41.5'	S 16°03.9'	114°27.7'	N 21°01.8'		
14	199°35.1'	30°45.5' N 4°48.1'	40°39.3'	N 10°15.9'	193°37.7'	N 0°50.0'	236°44.1'	S 16°03.9'	129°28.9'	N 21°02.1'		
15	214°37.6'	45°45.8' N 4°47.2'	55°38.9'	N 10°14.8'	208°40.4'	N 0°49.9'	251°46.8'	S 16°04.0'	144°30.1'	N 21°02.3'		
16	229°40.0'	60°46.0' N 4°46.2'	70°38.4'	N 10°13.7'	223°43.1'	N 0°49.7'	266°49.4'	S 16°04.0'	159°31.2'	N 21°02.5'		
17	244°42.5'	75°46.2' N 4°45.3'	85°37.9'	N 10°12.6'	238°45.9'	N 0°49.6'	281°52.0'	S 16°04.1'	174°32.4'	N 21°02.7'		
18	259°45.0'	90°46.4' N 4°44.3'	100°37.4'	N 10°11.5'	253°48.6'	N 0°49.5'	296°54.6'	S 16°04.1'	189°33.6'	N 21°02.9'		
19	274°47.4'	105°46.6' N 4°43.4'	115°37.0'	N 10°10.4'	268°51.4'	N 0°49.4'	311°57.2'	S 16°04.2'	204°34.8'	N 21°03.1'		
20	289°49.9'	120°46.9' N 4°42.4'	130°36.5'	N 10°09.3'	283°54.1'	N 0°49.2'	326°59.8'	S 16°04.2'	219°36.0'	N 21°03.3'		
21	304°52.4'	135°47.1' N 4°41.5'	145°36.0'	N 10°08.2'	298°56.8'	N 0°49.1'	342°02.5'	S 16°04.3'	234°37.1'	N 21°03.5'		
22	319°54.8'	150°47.3' N 4°40.5'	160°35.6'	N 10°07.0'	313°59.6'	N 0°49.0'	357°05.1'	S 16°04.3'	249°38.3'	N 21°03.8'		
23	334°57.3'	165°47.5' N 4°39.6'	175°35.1'	N 10°05.9'	329°02.3'	N 0°48.9'	12°07.7'	S 16°04.4'	264°39.5'	N 21°04.0'		
		SD 15.9' d -0.9'	v -0.5' d -1.1'		v 2.7' d -0.1'		v 2.6' d -0.0'		v 1.2' d 0.2'			
Mer. pass.		11 h 57 m 1 s	11 h 17 m		1 h 8 m		22 h 12 m		5 h 23 m			

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Rigel	-Mars	-Aldebaran	-Jupiter	+Fomalhaut	+Saturn	+Altair	+Antares
0	4°08.1'	S 11°22.0'	10.1'	15.2'	59.5'	92°18.1'	89°24.3'	87°59.3'	24°18.8'		21°51.5'	50°52.0'	91°14.9'
1	18°37.2'	S 11°06.7'	10.2'	15.3'	59.5'	91°48.1'	88°49.6'	87°23.6'	23°42.6'		22°27.2'	51°16.9'	91°51.0'
2	33°06.4'	S 10°51.5'	10.3'	15.3'	59.5'	91°18.2'	88°14.8'	86°47.9'	23°06.3'		23°02.8'	51°41.9'	92°27.0'
3	47°35.8'	S 10°36.1'	10.4'	15.4'	59.5'	90°48.2'	87°40.1'	86°12.2'	22°30.1'		23°38.5'	52°07.1'	93°02.9'
4	62°05.1'	S 10°20.8'	10.5'	15.4'	59.5'	90°18.3'	87°05.4'	85°36.5'	21°53.9'	19°16.9'	24°14.2'	52°32.4'	93°38.9'
5	76°34.6'	S 10°05.3'	10.5'	15.5'	59.4'	89°48.4'	86°30.8'	85°00.9'	21°17.8'	19°36.1'	24°49.8'	52°57.8'	94°14.8'
6	91°04.1'	S 9°49.9'	10.6'	15.5'	59.4'	89°18.5'	85°56.1'	84°25.3'	20°41.7'	19°56.1'	25°25.5'	53°23.4'	94°50.7'
7	105°33.8'	S 9°34.4'	10.7'	15.5'	59.4'	88°48.7'	85°21.5'	83°49.7'	20°05.6'	20°16.7'	26°01.1'	53°49.1'	95°26.6'
8	120°03.5'	S 9°18.8'	10.8'	15.6'	59.4'	88°18.8'	84°46.9'	83°14.2'	19°29.6'	20°38.0'	26°36.8'	54°14.8'	96°02.4'
9	134°33.2'	S 9°03.2'	10.8'	15.6'	59.4'	87°49.0'	84°12.4'	82°38.6'	18°53.5'	20°59.9'	27°12.4'	54°40.7'	96°38.2'
10	149°03.1'	S 8°47.6'	10.9'	15.7'	59.3'	87°19.2'	83°37.9'	82°03.1'	18°17.6'	21°22.4'	27°48.0'	55°06.7'	97°14.0'
11	163°33.0'	S 8°32.0'	11.0'	15.7'	59.3'	86°49.5'	83°03.3'	81°27.7'	17°41.6'	21°45.4'	28°23.6'	55°32.8'	97°49.8'
12	178°02.9'	S 8°16.3'	11.0'	15.7'	59.3'	86°19.8'	82°28.9'	80°52.2'	17°05.7'	22°09.0'	28°59.2'	55°59.0'	98°25.5'
13	192°33.0'	S 8°00.5'	11.1'	15.8'	59.3'	85°50.1'	81°54.4'	80°16.8'	16°29.8'	22°33.0'	29°34.7'	56°25.3'	99°01.2'
14	207°03.1'	S 7°44.8'	11.2'	15.8'	59.2'	85°20.4'	81°20.0'	79°41.4'	15°54.0'	22°57.5'	30°10.3'	56°51.7'	99°36.9'
15	221°33.3'	S 7°29.0'	11.3'	15.8'	59.2'	84°50.8'	80°45.6'	79°06.1'	15°18.2'	23°22.4'	30°45.8'	57°18.2'	100°12.5'
16	236°03.5'	S 7°13.2'	11.3'	15.8'	59.2'	84°21.2'	80°11.3'	78°30.8'	14°42.5'	23°47.8'	31°21.3'	57°44.7'	100°48.1'
17	250°33.9'	S 6°57.4'	11.4'	15.9'	59.2'	83°51.7'	79°36.9'	77°55.5'	14°06.8'	24°13.5'	31°56.8'	58°11.3'	101°23.7'
18	265°04.2'	S 6°41.5'	11.4'	15.9'	59.1'	83°22.1'	79°02.6'	77°20.2'	13°31.2'	24°39.6'	32°32.3'	58°38.1'	101°59.2'
19	279°34.7'	S 6°25.6'	11.5'	15.9'	59.1'	82°52.7'	78°28.4'	76°45.0'	12°55.6'	25°06.1'	33°07.7'	59°04.8'	102°34.8'
20	294°05.2'	S 6°09.8'	11.6'	15.9'	59.1'	82°23.2'	77°54.1'	76°09.8'	12°20.1'	25°32.8'	33°43.2'	59°31.7'	103°10.3'
21	308°35.7'	S 5°53.8'	11.6'	15.9'	59.1'	81°53.8'	77°19.9'	75°34.7'	11°44.6'	25°59.9'	34°18.6'	59°58.6'	103°45.7'
22	323°06.4'	S 5°37.9'	11.7'	15.9'	59.0'	81°24.5'	76°45.7'	74°59.5'	11°09.2'	26°27.2'	34°53.9'	60°25.6'	104°21.1'
23	337°37.1'	S 5°22.0'	11.7'	16.0'	59.0'	80°55.2'	76°11.6'	74°24.5'	10°33.9'	26°54.8'	35°29.3'	60°52.7'	104°56.5'
Mer. pass.		0 h 33 m SD 16.2'	phase 100%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.2'	N 7°24.8'
Deneb	+1.2	49°26.7'	N 45°21.8'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.8'	N 46°01.1'
Altair	+0.8	62°01.6'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.7'	S 8°10.3'
Vega	+0.0	80°34.4'	N 38°48.5'	Pollux	+1.2	243°19.9'	N 27°58.3'	Aldebaran	+0.9	290°41.8'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°53.0'	N 5°10.2'	Polaris	+2.0	314°42.6'	N 89°21.3'
Rigel Kent	-0.0	139°43.4'	S 60°55.8'	Adhara	+1.5	255°07.5'	S 28°59.9'	Achernar	+0.5	335°21.2'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.1'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.4'	S 52°42.1'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	349°59.8'	180°47.7'	N 4°38.6'	190°34.6'	N 10°04.8'		344°05.1'	N 0°48.7'		27°10.3'	S 16°04.4'		279°40.7'	N 21°04.2'				
1	5°02.2'	195°48.0'	N 4°37.7'	205°34.1'	N 10°03.7'		359°07.8'	N 0°48.6'		42°12.9'	S 16°04.5'		294°41.9'	N 21°04.4'				
2	20°04.7'	210°48.2'	N 4°36.7'	220°33.7'	N 10°02.6'		14°10.5'	N 0°48.5'		57°15.5'	S 16°04.5'		309°43.0'	N 21°04.6'				
3	35°07.1'	225°48.4'	N 4°35.8'	235°33.2'	N 10°01.5'		29°13.3'	N 0°48.4'		72°18.1'	S 16°04.6'		324°44.2'	N 21°04.8'				
4	50°09.6'	240°48.6'	N 4°34.8'	250°32.7'	N 10°00.3'		44°16.0'	N 0°48.2'		87°20.8'	S 16°04.6'		339°45.4'	N 21°05.0'				
5	65°12.1'	255°48.8'	N 4°33.9'	265°32.3'	N 9°59.2'		59°18.8'	N 0°48.1'		102°23.4'	S 16°04.7'		354°46.6'	N 21°05.2'				
6	80°14.5'	270°49.1'	N 4°32.9'	280°31.8'	N 9°58.1'		74°21.5'	N 0°48.0'		117°26.0'	S 16°04.7'		9°47.8'	N 21°05.5'				
7	95°17.0'	285°49.3'	N 4°32.0'	295°31.3'	N 9°57.0'		89°24.2'	N 0°47.9'		132°28.6'	S 16°04.8'		24°49.0'	N 21°05.7'				
8	110°19.5'	300°49.5'	N 4°31.0'	310°30.9'	N 9°55.9'		104°27.0'	N 0°47.7'		147°31.2'	S 16°04.8'		39°50.2'	N 21°05.9'				
9	125°21.9'	315°49.7'	N 4°30.1'	325°30.4'	N 9°54.7'		119°29.7'	N 0°47.6'		162°33.8'	S 16°04.8'		54°51.3'	N 21°06.1'				
10	140°24.4'	330°49.9'	N 4°29.1'	340°29.9'	N 9°53.6'		134°32.5'	N 0°47.5'		177°36.4'	S 16°04.9'		69°52.5'	N 21°06.3'				
11	155°26.9'	345°50.2'	N 4°28.2'	355°29.5'	N 9°52.5'		149°35.2'	N 0°47.4'		192°39.0'	S 16°04.9'		84°53.7'	N 21°06.5'				
12	170°29.3'	0°50.4'	N 4°27.2'	10°29.0'	N 9°51.4'		164°38.0'	N 0°47.2'		207°41.7'	S 16°05.0'		99°54.9'	N 21°06.7'				
13	185°31.8'	15°50.6'	N 4°26.3'	25°28.5'	N 9°50.3'		179°40.7'	N 0°47.1'		222°44.3'	S 16°05.0'		114°56.1'	N 21°06.9'				
14	200°34.2'	30°50.8'	N 4°25.3'	40°28.1'	N 9°49.1'		194°43.4'	N 0°47.0'		237°46.9'	S 16°05.1'		129°57.3'	N 21°07.1'				
15	215°36.7'	45°51.0'	N 4°24.4'	55°27.6'	N 9°48.0'		209°46.2'	N 0°46.9'		252°49.5'	S 16°05.1'		144°58.5'	N 21°07.3'				
16	230°39.2'	60°51.3'	N 4°23.4'	70°27.1'	N 9°46.9'		224°48.9'	N 0°46.7'		267°52.1'	S 16°05.2'		159°59.7'	N 21°07.6'				
17	245°41.6'	75°51.5'	N 4°22.5'	85°26.7'	N 9°45.8'		239°51.7'	N 0°46.6'		282°54.7'	S 16°05.2'		175°00.9'	N 21°07.8'				
18	260°44.1'	90°51.7'	N 4°21.5'	100°26.2'	N 9°44.6'		254°54.4'	N 0°46.5'		297°57.3'	S 16°05.3'		190°02.0'	N 21°08.0'				
19	275°46.6'	105°51.9'	N 4°20.6'	115°25.7'	N 9°43.5'		269°57.2'	N 0°46.3'		312°60.0'	S 16°05.3'		205°03.2'	N 21°08.2'				
20	290°49.0'	120°52.2'	N 4°19.6'	130°25.3'	N 9°42.4'		284°59.9'	N 0°46.2'		328°02.6'	S 16°05.4'		220°04.4'	N 21°08.4'				
21	305°51.5'	135°52.4'	N 4°18.7'	145°24.8'	N 9°41.3'		300°02.7'	N 0°46.1'		343°05.2'	S 16°05.4'		235°05.6'	N 21°08.6'				
22	320°54.0'	150°52.6'	N 4°17.7'	160°24.3'	N 9°40.1'		315°05.4'	N 0°46.0'		358°07.8'	S 16°05.5'		250°06.8'	N 21°08.8'				
23	335°56.4'	165°52.8'	N 4°16.8'	175°23.9'	N 9°39.0'		330°08.1'	N 0°45.8'		13°10.4'	S 16°05.5'		265°08.0'	N 21°09.0'				
		SD 15.9' d -1.0'		v -0.5' d -1.1'			v 2.7' d -0.1'			v 2.6' d -0.0'			v 1.2' d 0.2'					
Mer. pass.		11 h 56 m 40 s		11 h 18 m			1 h 3 m			22 h 7 m			5 h 21 m					

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Rigel	-Mars	-Aldebaran	-Jupiter	+Fomalhaut	+Saturn	+Altair	+Antares
0	352°07.8'	S 5°06.0'	11.8'	16.0'	59.0'	80°25.9'	75°37.5'	73°49.4'	9°58.6'	27°22.7'	36°04.6'	61°19.8'	105°31.9'
1	6°38.6'	S 4°50.1'	11.9'	16.0'	59.0'	79°56.7'	75°03.4'	73°14.4'	9°23.5'	27°50.8'	36°39.9'	61°46.9'	106°07.2'
2	21°09.4'	S 4°34.1'	11.9'	16.0'	58.9'	79°27.6'	74°29.4'	72°39.4'	8°48.4'	28°19.1'	37°15.2'	62°14.1'	106°42.5'
3	35°40.3'	S 4°18.1'	12.0'	16.0'	58.9'	78°58.5'	73°55.3'	72°04.4'	8°13.5'	28°47.7'	37°50.4'	62°41.4'	107°17.8'
4	50°11.3'	S 4°02.1'	12.0'	16.0'	58.9'	78°29.4'	73°21.4'	71°29.5'	7°38.6'	29°16.4'	38°25.6'	63°08.7'	107°53.0'
5	64°42.3'	S 3°46.1'	12.1'	16.0'	58.8'	78°00.4'	72°47.4'	70°54.7'	7°04.0'	29°45.3'	39°00.8'	63°36.1'	108°28.2'
6	79°13.4'	S 3°30.1'	12.1'	16.0'	58.8'	77°31.4'	72°13.5'	70°19.8'	6°29.5'	30°14.4'	39°36.0'	64°03.5'	109°03.3'
7	93°44.5'	S 3°14.1'	12.2'	16.0'	58.8'	77°02.5'	71°39.6'	69°45.0'	5°55.3'	30°43.7'	40°11.1'	64°31.0'	109°38.4'
8	108°15.6'	S 2°58.1'	12.2'	16.0'	58.8'	76°33.7'	71°05.8'	69°10.3'	5°21.3'	31°13.1'	40°46.2'	64°58.4'	110°13.5'
9	122°46.8'	S 2°42.1'	12.3'	16.0'	58.7'	76°04.9'	70°32.0'	68°35.5'	4°47.8'	31°42.7'	41°21.2'	65°26.0'	110°48.6'
10	137°18.1'	S 2°26.1'	12.3'	16.0'	58.7'	75°36.2'	69°58.2'	68°00.8'	4°14.7'	32°12.3'	41°56.3'	65°53.5'	111°23.6'
11	151°49.4'	S 2°10.1'	12.3'	16.0'	58.7'	75°07.5'	69°24.5'	67°26.2'		32°42.2'	42°31.3'	66°21.1'	111°58.6'
12	166°20.7'	S 1°54.1'	12.4'	16.0'	58.6'	74°38.9'	68°50.8'	66°51.6'		33°12.1'	43°06.2'	66°48.7'	112°33.5'
13	180°52.1'	S 1°38.2'	12.4'	16.0'	58.6'	74°10.4'	68°17.2'	66°17.0'		33°42.1'	43°41.2'	67°16.4'	113°08.4'
14	195°23.5'	S 1°22.2'	12.5'	16.0'	58.6'	73°41.9'	67°43.5'	65°42.5'		34°12.3'	44°16.1'	67°44.0'	113°43.3'
15	209°55.0'	S 1°06.2'	12.5'	15.9'	58.5'	73°13.5'	67°10.0'	65°08.0'		34°42.6'	44°50.9'	68°11.7'	114°18.1'
16	224°26.5'	S 0°50.3'	12.5'	15.9'	58.5'	72°45.1'	66°36.4'	64°33.5'		35°12.9'	45°25.7'	68°39.5'	114°52.9'
17	238°58.0'	S 0°34.3'	12.6'	15.9'	58.5'	72°16.8'	66°02.9'	63°59.1'		35°43.3'	46°00.5'	69°07.2'	115°27.6'
18	253°29.6'	S 0°18.4'	12.6'	15.9'	58.5'	71°48.6'	65°29.4'	63°24.8'		36°13.8'	46°35.3'	69°34.9'	116°02.3'
19	268°01.2'	S 0°02.5'	12.6'	15.9'	58.4'	71°20.5'	64°56.0'	62°50.5'		36°44.4'	47°10.0'	70°02.7'	116°37.0'
20	282°32.9'	N 0°13.4'	12.7'	15.9'	58.4'	70°52.4'	64°22.6'	62°16.2'		37°15.1'	47°44.7'	70°30.5'	117°11.7'
21	297°04.6'	N 0°29.2'	12.7'	15.9'	58.4'	70°24.4'	63°49.3'	61°41.9'		37°45.8'	48°19.3'	70°58.3'	117°46.2'
22	311°36.3'	N 0°45.1'	12.7'	15.8'	58.3'	69°56.5'	63°15.9'	61°07.7'		38°16.6'	48°54.0'	71°26.1'	118°20.8'
23	326°08.0'	N 1°00.9'	12.8'	15.8'	58.3'	69°28.6'	62°42.7'	60°33.6'	4°00.6'	38°47.4'	49°28.5'	71°53.9'	118°55.3'
Mer. pass.		0 h 33 m SD 16.1'	phase 99%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.2'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.8'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.7'	N 46°01.1'
Altair	+0.8	62°01.6'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.7'	S 8°10.3'
Vega	+0.0	80°34.4'	N 38°48.5'	Pollux	+1.2	243°19.9'	N 27°58.3'	Aldebaran	+0.9	290°41.8'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°53.0'	N 5°10.2'	Polaris	+2.0	314°42.3'	N 89°21.3'
Rigel Kent	-0.0	139°43.4'	S 60°55.8'	Adhara	+1.5	255°07.5'	S 28°59.9'	Achernar	+0.5	335°21.2'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.1'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.4'	S 52°42.1'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	350°58.9'	N 180°53.0'	N 4°15.8'	190°23.4'	N 9°37.9'	345°10.9'	N 0°45.7'	28°13.0'	S 16°05.6'	280°09.2'	N 21°09.2'	
1	6°01.4'	195°53.3'	N 4°14.9'	205°22.9'	N 9°36.7'	0°13.6'	N 0°45.6'	43°15.6'	S 16°05.6'	295°10.4'	N 21°09.4'	
2	21°03.8'	210°53.5'	N 4°13.9'	220°22.5'	N 9°35.6'	15°16.4'	N 0°45.5'	58°18.2'	S 16°05.7'	310°11.6'	N 21°09.6'	
3	36°06.3'	225°53.7'	N 4°13.0'	235°22.0'	N 9°34.5'	30°19.1'	N 0°45.3'	73°20.9'	S 16°05.7'	325°12.8'	N 21°09.8'	
4	51°08.7'	240°53.9'	N 4°12.0'	250°21.6'	N 9°33.4'	45°21.9'	N 0°45.2'	88°23.5'	S 16°05.8'	340°14.0'	N 21°10.1'	
5	66°11.2'	255°54.1'	N 4°11.1'	265°21.1'	N 9°32.2'	60°24.6'	N 0°45.1'	103°26.1'	S 16°05.8'	355°15.2'	N 21°10.3'	
6	81°13.7'	270°54.4'	N 4°10.1'	280°20.6'	N 9°31.1'	75°27.4'	N 0°45.0'	118°28.7'	S 16°05.9'	10°16.4'	N 21°10.5'	
7	96°16.1'	285°54.6'	N 4°09.2'	295°20.2'	N 9°30.0'	90°30.1'	N 0°44.8'	133°31.3'	S 16°05.9'	25°17.6'	N 21°10.7'	
8	111°18.6'	300°54.8'	N 4°08.2'	310°19.7'	N 9°28.8'	105°32.8'	N 0°44.7'	148°33.9'	S 16°06.0'	40°18.8'	N 21°10.9'	
9	126°21.1'	315°55.0'	N 4°07.3'	325°19.3'	N 9°27.7'	120°35.6'	N 0°44.6'	163°36.5'	S 16°06.0'	55°20.0'	N 21°11.1'	
10	141°23.5'	330°55.3'	N 4°06.3'	340°18.8'	N 9°26.6'	135°38.3'	N 0°44.4'	178°39.1'	S 16°06.0'	70°21.2'	N 21°11.3'	
11	156°26.0'	345°55.5'	N 4°05.3'	355°18.3'	N 9°25.4'	150°41.1'	N 0°44.3'	193°41.7'	S 16°06.1'	85°22.4'	N 21°11.5'	
12	171°28.5'	0°55.7'	N 4°04.4'	10°17.9'	N 9°24.3'	165°43.8'	N 0°44.2'	208°44.4'	S 16°06.1'	100°23.6'	N 21°11.7'	
13	186°30.9'	15°55.9'	N 4°03.4'	25°17.4'	N 9°23.2'	180°46.6'	N 0°44.1'	223°47.0'	S 16°06.2'	115°24.8'	N 21°11.9'	
14	201°33.4'	30°56.1'	N 4°02.5'	40°17.0'	N 9°22.0'	195°49.3'	N 0°43.9'	238°49.6'	S 16°06.2'	130°26.0'	N 21°12.1'	
15	216°35.8'	45°56.4'	N 4°01.5'	55°16.5'	N 9°20.9'	210°52.1'	N 0°43.8'	253°52.2'	S 16°06.3'	145°27.2'	N 21°12.3'	
16	231°38.3'	60°56.6'	N 4°00.6'	70°16.0'	N 9°19.8'	225°54.8'	N 0°43.7'	268°54.8'	S 16°06.3'	160°28.4'	N 21°12.5'	
17	246°40.8'	75°56.8'	N 3°59.6'	85°15.6'	N 9°18.6'	240°57.6'	N 0°43.6'	283°57.4'	S 16°06.4'	175°29.6'	N 21°12.7'	
18	261°43.2'	90°57.0'	N 3°58.7'	100°15.1'	N 9°17.5'	256°00.3'	N 0°43.4'	299°00.0'	S 16°06.4'	190°30.8'	N 21°12.9'	
19	276°45.7'	105°57.3'	N 3°57.7'	115°14.7'	N 9°16.4'	271°03.1'	N 0°43.3'	314°02.6'	S 16°06.5'	205°32.0'	N 21°13.1'	
20	291°48.2'	120°57.5'	N 3°56.8'	130°14.2'	N 9°15.2'	286°05.8'	N 0°43.2'	329°05.2'	S 16°06.5'	220°33.2'	N 21°13.3'	
21	306°50.6'	135°57.7'	N 3°55.8'	145°13.8'	N 9°14.1'	301°08.6'	N 0°43.1'	344°07.8'	S 16°06.6'	235°34.4'	N 21°13.5'	
22	321°53.1'	150°57.9'	N 3°54.8'	160°13.3'	N 9°13.0'	316°11.3'	N 0°42.9'	359°10.5'	S 16°06.6'	250°35.7'	N 21°13.7'	
23	336°55.6'	165°58.1'	N 3°53.9'	175°12.8'	N 9°11.8'	331°14.0'	N 0°42.8'	14°13.1'	S 16°06.7'	265°36.9'	N 21°13.9'	
		SD 15.9'	d -1.0'	v -0.5'	d -1.1'	v 2.7'	d -0.1'	v 2.6'	d -0.0'	v 1.2'	d 0.2'	
Mer. pass.		11 h 56 m 18 s		11 h 19 m		0 h 59 m		22 h 3 m		5 h 19 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Capella	-Rigel	-Mars	-Aldebaran	+Jupiter	+Fomalhaut	+Saturn	+Altair
0	340°39.8'	N 1°16.7'	12.8'	15.8'	58.3'	74°49.3'	69°00.9'	62°09.4'	59°59.5'	4°32.8'	39°18.3'	50°03.1'	72°21.8'
1	355°11.6'	N 1°32.5'	12.8'	15.8'	58.2'	74°17.1'	68°33.2'	61°36.2'	59°25.4'	5°05.6'	39°49.2'	50°37.6'	72°49.6'
2	9°43.4'	N 1°48.3'	12.9'	15.7'	58.2'	73°44.8'	68°05.6'	61°03.1'	58°51.4'	5°38.7'	40°20.2'	51°12.0'	73°17.4'
3	24°15.3'	N 2°04.0'	12.9'	15.7'	58.2'	73°12.6'	67°38.1'	60°30.0'	58°17.4'	6°12.1'	40°51.2'	51°46.5'	73°45.3'
4	38°47.2'	N 2°19.7'	12.9'	15.7'	58.1'	72°40.5'	67°10.6'	59°56.9'	57°43.5'	6°45.7'	41°22.3'	52°20.9'	74°13.1'
5	53°19.1'	N 2°35.4'	12.9'	15.6'	58.1'	72°08.4'	66°43.3'	59°23.9'	57°09.6'	7°19.4'	41°53.4'	52°55.2'	74°41.0'
6	67°51.0'	N 2°51.0'	13.0'	15.6'	58.1'	71°36.3'	66°16.0'	58°50.9'	56°35.7'	7°53.2'	42°24.5'	53°29.5'	75°08.8'
7	82°23.0'	N 3°06.6'	13.0'	15.6'	58.0'	71°04.3'	65°48.8'	58°17.9'	56°01.9'	8°27.1'	42°55.7'	54°03.8'	75°36.7'
8	96°54.9'	N 3°22.2'	13.0'	15.5'	58.0'	70°32.4'	65°21.7'	57°45.0'	55°28.2'	9°01.0'	43°26.9'	54°38.0'	76°04.5'
9	111°26.9'	N 3°37.8'	13.0'	15.5'	58.0'	70°00.5'	64°54.7'	57°12.1'	54°54.5'	9°34.9'	43°58.1'	55°12.2'	76°32.3'
10	125°58.9'	N 3°53.3'	13.0'	15.5'	57.9'	69°28.7'	64°27.8'	56°39.3'	54°20.8'	10°08.9'	44°29.3'	55°46.4'	77°00.2'
11	140°31.0'	N 4°08.8'	13.0'	15.4'	57.9'	68°56.9'	64°01.0'	56°06.5'	53°47.2'	10°42.8'	45°00.5'	56°20.5'	77°28.0'
12	155°03.0'	N 4°24.2'	13.1'	15.4'	57.9'	68°25.2'	63°34.3'	55°33.8'	53°13.6'	11°16.8'	45°31.8'	56°54.6'	77°55.8'
13	169°35.1'	N 4°39.6'	13.1'	15.4'	57.8'	67°53.5'	63°07.6'	55°01.1'	52°40.1'	11°50.8'	46°03.0'	57°28.6'	78°23.6'
14	184°07.2'	N 4°54.9'	13.1'	15.3'	57.8'	67°21.9'	62°41.1'	54°28.4'	52°06.7'	12°24.7'	46°34.3'	58°02.6'	78°51.4'
15	198°39.3'	N 5°10.3'	13.1'	15.3'	57.8'	66°50.3'	62°14.7'	53°55.8'	51°33.2'	12°58.7'	47°05.6'	58°36.6'	79°19.2'
16	213°11.4'	N 5°25.5'	13.1'	15.2'	57.7'	66°18.8'	61°48.3'	53°23.2'	50°59.9'	13°32.6'	47°36.9'	59°10.5'	79°46.9'
17	227°43.5'	N 5°40.8'	13.1'	15.2'	57.7'	65°47.4'	61°22.1'	52°50.7'	50°26.5'	14°06.5'	48°08.2'	59°44.3'	80°14.7'
18	242°15.6'	N 5°55.9'	13.1'	15.1'	57.7'	65°16.0'	60°56.0'	52°18.2'	49°53.3'	14°40.3'	48°39.5'	60°18.2'	80°42.4'
19	256°47.8'	N 6°11.1'	13.1'	15.1'	57.6'	64°44.7'	60°30.0'	51°45.7'	49°20.0'	15°14.2'	49°10.8'	60°52.0'	81°10.1'
20	271°19.9'	N 6°26.2'	13.2'	15.0'	57.6'	64°13.4'	60°04.1'	51°13.3'	48°46.9'	15°48.0'	49°42.1'	61°25.7'	81°37.8'
21	285°52.1'	N 6°41.2'	13.2'	15.0'	57.6'	63°42.2'	59°38.3'	50°40.9'	48°13.7'	16°21.8'	50°13.4'	61°59.4'	82°05.5'
22	300°24.2'	N 6°56.2'	13.2'	14.9'	57.5'	63°11.1'	59°12.6'	50°08.6'	47°40.7'	16°55.6'	50°44.8'	62°33.1'	82°33.2'
23	314°56.4'	N 7°11.2'	13.2'	14.9'	57.5'	62°40.0'	58°47.1'	49°36.3'	47°07.7'	17°29.3'	51°16.1'	63°06.7'	83°00.8'
Mer. pass.		1 h 20 m SD 15.9'	phase 97%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.2'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.8'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.7'	N 46°01.1'
Altair	+0.8	62°01.6'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.7'	S 8°10.3'
Vega	+0.0	80°34.4'	N 38°48.5'	Pollux	+1.2	243°19.9'	N 27°58.3'	Aldebaran	+0.9	290°41.8'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°53.0'	N 5°10.2'	Polaris	+2.0	314°41.9'	N 89°21.3'
Rigil Kent	-0.0	139°43.4'	S 60°55.8'	Adhara	+1.5	255°07.5'	S 28°59.9'	Achernar	+0.5	335°21.2'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.1'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.4'	S 52°42.1'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	351°58.0'	180°58.4'	N 3°52.9'	190°12.4'	N 9°10.7'	346°16.8'	N 0°42.7'	29°15.7'	S 16°06.7'	280°38.1'	N 21°14.1'
1	7°00.5'	195°58.6'	N 3°52.0'	205°11.9'	N 9°09.5'	1°19.5'	N 0°42.5'	44°18.3'	S 16°06.8'	295°39.3'	N 21°14.3'
2	22°03.0'	210°58.8'	N 3°51.0'	220°11.5'	N 9°08.4'	16°22.3'	N 0°42.4'	59°20.9'	S 16°06.8'	310°40.5'	N 21°14.5'
3	37°05.4'	225°59.0'	N 3°50.1'	235°11.0'	N 9°07.3'	31°25.0'	N 0°42.3'	74°23.5'	S 16°06.8'	325°41.7'	N 21°14.7'
4	52°07.9'	240°59.3'	N 3°49.1'	250°10.6'	N 9°06.1'	46°27.8'	N 0°42.2'	89°26.1'	S 16°06.9'	340°42.9'	N 21°15.0'
5	67°10.3'	255°59.5'	N 3°48.2'	265°10.1'	N 9°05.0'	61°30.5'	N 0°42.0'	104°28.7'	S 16°06.9'	355°44.1'	N 21°15.2'
6	82°12.8'	270°59.7'	N 3°47.2'	280°09.7'	N 9°03.8'	76°33.3'	N 0°41.9'	119°31.3'	S 16°07.0'	10°45.3'	N 21°15.4'
7	97°15.3'	285°59.9'	N 3°46.2'	295°09.2'	N 9°02.7'	91°36.0'	N 0°41.8'	134°33.9'	S 16°07.0'	25°46.6'	N 21°15.6'
8	112°17.7'	301°00.2'	N 3°45.3'	310°08.7'	N 9°01.6'	106°38.8'	N 0°41.6'	149°36.6'	S 16°07.1'	40°47.8'	N 21°15.8'
9	127°20.2'	316°00.4'	N 3°44.3'	325°08.3'	N 9°00.4'	121°41.5'	N 0°41.5'	164°39.2'	S 16°07.1'	55°49.0'	N 21°16.0'
10	142°22.7'	331°00.6'	N 3°43.4'	340°07.8'	N 8°59.3'	136°44.3'	N 0°41.4'	179°41.8'	S 16°07.2'	70°50.2'	N 21°16.2'
11	157°25.1'	346°00.8'	N 3°42.4'	355°07.4'	N 8°58.1'	151°47.0'	N 0°41.3'	194°44.4'	S 16°07.2'	85°51.4'	N 21°16.4'
12	172°27.6'	1°01.0'	N 3°41.5'	10°06.9'	N 8°57.0'	166°49.8'	N 0°41.1'	209°47.0'	S 16°07.3'	100°52.6'	N 21°16.6'
13	187°30.1'	16°01.3'	N 3°40.5'	25°06.5'	N 8°55.8'	181°52.5'	N 0°41.0'	224°49.6'	S 16°07.3'	115°53.8'	N 21°16.8'
14	202°32.5'	31°01.5'	N 3°39.6'	40°06.0'	N 8°54.7'	196°55.3'	N 0°40.9'	239°52.2'	S 16°07.4'	130°55.1'	N 21°17.0'
15	217°35.0'	46°01.7'	N 3°38.6'	55°05.6'	N 8°53.5'	211°58.0'	N 0°40.7'	254°54.8'	S 16°07.4'	145°56.3'	N 21°17.2'
16	232°37.4'	61°01.9'	N 3°37.6'	70°05.1'	N 8°52.4'	227°00.8'	N 0°40.6'	269°57.4'	S 16°07.4'	160°57.5'	N 21°17.4'
17	247°39.9'	76°02.2'	N 3°36.7'	85°04.7'	N 8°51.3'	242°03.5'	N 0°40.5'	285°00.0'	S 16°07.5'	175°58.7'	N 21°17.6'
18	262°42.4'	91°02.4'	N 3°35.7'	100°04.2'	N 8°50.1'	257°06.3'	N 0°40.4'	300°02.6'	S 16°07.5'	190°59.9'	N 21°17.8'
19	277°44.8'	106°02.6'	N 3°34.8'	115°03.8'	N 8°49.0'	272°09.0'	N 0°40.2'	315°05.2'	S 16°07.6'	206°01.2'	N 21°18.0'
20	292°47.3'	121°02.8'	N 3°33.8'	130°03.3'	N 8°47.8'	287°11.8'	N 0°40.1'	330°07.9'	S 16°07.6'	221°02.4'	N 21°18.2'
21	307°49.8'	136°03.0'	N 3°32.8'	145°02.9'	N 8°46.7'	302°14.5'	N 0°40.0'	345°10.5'	S 16°07.7'	236°03.6'	N 21°18.4'
22	322°52.2'	151°03.3'	N 3°31.9'	160°02.4'	N 8°45.5'	317°17.3'	N 0°39.8'	0°13.1'	S 16°07.7'	251°04.8'	N 21°18.5'
23	337°54.7'	166°03.5'	N 3°30.9'	175°02.0'	N 8°44.4'	332°20.0'	N 0°39.7'	15°15.7'	S 16°07.8'	266°06.1'	N 21°18.7'
		SD 15.9'	<i>d</i> -1.0'	<i>v</i> -0.5'	<i>d</i> -1.1'	<i>v</i> 2.7'	<i>d</i> -0.1'	<i>v</i> 2.6'	<i>d</i> -0.0'	<i>v</i> 1.2'	<i>d</i> 0.2'
Mer. pass.		11 h 55 m 57 s		11 h 20 m		0 h 55 m		21 h 59 m		5 h 17 m	

h	Moon				Lunar distance								
	GHA	dec	<i>v</i>	<i>d</i>	HP	-Capella	-Rigel	-Mars	-Aldebaran	+Jupiter	+Fomalhaut	+Saturn	+Achernar
0	329°28.6'	N 7°26.1'	13.2'	14.8'	57.5'	62°09.0'	58°21.6'	49°04.1'	46°34.7'	18°03.0'	51°47.4'	63°40.3'	
1	344°00.7'	N 7°40.9'	13.2'	14.8'	57.4'	61°38.0'	57°56.3'	48°31.9'	46°01.8'	18°36.7'	52°18.7'	64°13.9'	
2	358°32.9'	N 7°55.7'	13.2'	14.7'	57.4'	61°07.2'	57°31.1'	47°59.7'	45°28.9'	19°10.3'	52°49.9'	64°47.4'	
3	13°05.1'	N 8°10.4'	13.2'	14.7'	57.4'	60°36.3'	57°06.0'	47°27.6'	44°56.1'	19°43.9'	53°21.2'	65°20.9'	
4	27°37.3'	N 8°25.1'	13.2'	14.6'	57.3'	60°05.6'	56°41.0'	46°55.5'	44°23.3'	20°17.5'	53°52.5'	65°54.3'	
5	42°09.5'	N 8°39.7'	13.2'	14.6'	57.3'	59°34.9'	56°16.2'	46°23.5'	43°50.6'	20°51.0'	54°23.7'	66°27.7'	
6	56°41.6'	N 8°54.3'	13.2'	14.5'	57.3'	59°04.3'	55°51.5'	45°51.5'	43°17.9'	21°24.5'	54°55.0'	67°01.0'	
7	71°13.8'	N 9°08.8'	13.2'	14.4'	57.2'	58°33.7'	55°26.9'	45°19.6'	42°45.3'	21°57.9'	55°26.2'	67°34.3'	
8	85°46.0'	N 9°23.2'	13.2'	14.4'	57.2'	58°03.2'	55°02.4'	44°47.7'	42°12.8'	22°31.4'	55°57.4'	68°07.6'	66°31.4'
9	100°18.2'	N 9°37.6'	13.2'	14.3'	57.2'	57°32.8'	54°38.1'	44°15.9'	41°40.3'	23°04.7'	56°28.6'	68°40.8'	66°46.5'
10	114°50.3'	N 9°51.9'	13.2'	14.3'	57.1'	57°02.5'	54°13.9'	43°44.1'	41°07.9'	23°38.1'	56°59.8'	69°14.0'	67°01.6'
11	129°22.5'	N 10°06.2'	13.2'	14.2'	57.1'	56°32.2'	53°49.9'	43°12.3'	40°35.5'	24°11.4'	57°31.0'	69°47.1'	67°16.8'
12	143°54.7'	N 10°20.4'	13.1'	14.1'	57.1'	56°02.0'	53°26.0'	42°40.6'	40°03.1'	24°44.7'	58°02.2'	70°20.2'	67°32.1'
13	158°26.8'	N 10°34.5'	13.1'	14.1'	57.0'	55°31.9'	53°02.2'	42°08.9'	39°30.9'	25°17.9'	58°33.3'	70°53.3'	67°47.5'
14	172°59.0'	N 10°48.6'	13.1'	14.0'	57.0'	55°01.8'	52°38.6'	41°37.3'	38°58.7'	25°51.1'	59°04.4'	71°26.3'	68°03.0'
15	187°31.1'	N 11°02.6'	13.1'	13.9'	57.0'	54°31.9'	52°15.1'	41°05.7'	38°26.5'	26°24.2'	59°35.5'	71°59.3'	68°18.5'
16	202°03.2'	N 11°16.5'	13.1'	13.9'	56.9'	54°02.0'	51°51.8'	40°34.1'	37°54.4'	26°57.3'	60°06.6'	72°32.2'	68°34.1'
17	216°35.3'	N 11°30.4'	13.1'	13.8'	56.9'	53°32.1'	51°28.6'	40°02.6'	37°22.4'	27°30.4'	60°37.7'	73°05.1'	68°49.8'
18	231°07.4'	N 11°44.1'	13.1'	13.7'	56.9'	53°02.4'	51°05.6'	39°31.2'	36°50.4'	28°03.5'	61°08.7'	73°37.9'	69°05.6'
19	245°39.5'	N 11°57.9'	13.1'	13.6'	56.8'	52°32.7'	50°42.8'	38°59.7'	36°18.5'	28°36.4'	61°39.7'	74°10.7'	69°21.4'
20	260°11.6'	N 12°11.5'	13.1'	13.6'	56.8'	52°03.1'	50°20.1'	38°28.4'	35°46.6'	29°09.4'	62°10.7'	74°43.5'	69°37.4'
21	274°43.6'	N 12°25.1'	13.0'	13.5'	56.8'	51°33.6'	49°57.5'	37°57.0'	35°14.8'	29°42.3'	62°41.7'	75°16.2'	69°53.3'
22	289°15.7'	N 12°38.6'	13.0'	13.4'	56.7'	51°04.2'	49°35.2'	37°25.8'	34°43.1'	30°15.2'	63°12.7'	75°48.9'	70°09.4'
23	303°47.7'	N 12°52.0'	13.0'	13.4'	56.7'	50°34.9'	49°13.0'	36°54.5'	34°11.5'	30°48.0'	63°43.6'	76°21.6'	70°25.5'
Mer. pass.		2 h 6 m SD 15.7'	phase 92%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.2'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.8'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.7'	N 46°01.1'
Altair	+0.8	62°01.6'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.7'	S 8°10.3'
Vega	+0.0	80°34.4'	N 38°48.5'	Pollux	+1.2	243°19.9'	N 27°58.3'	Aldebaran	+0.9	290°41.8'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°53.0'	N 5°10.2'	Polaris	+2.0	314°41.4'	N 89°21.3'
Rigil Kent	-0.0	139°43.4'	S 60°55.8'	Adhara	+1.5	255°07.5'	S 28°59.9'	Achernar	+0.5	335°21.2'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.1'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.4'	S 52°42.1'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	352°57.2'	181°03.7'	N 3°30.0'	190°01.5'	N 8°43.2'	347°22.8'	N 0°39.6'	30°18.3'	S 16°07.8'	281°07.3'	N 21°18.9'
1	7°59.6'	196°03.9'	N 3°29.0'	205°01.1'	N 8°42.1'	2°25.5'	N 0°39.5'	45°20.9'	S 16°07.9'	296°08.5'	N 21°19.1'
2	23°02.1'	211°04.2'	N 3°28.1'	220°00.6'	N 8°40.9'	17°28.3'	N 0°39.3'	60°23.5'	S 16°07.9'	311°09.7'	N 21°19.3'
3	38°04.6'	226°04.4'	N 3°27.1'	235°00.2'	N 8°39.8'	32°31.0'	N 0°39.2'	75°26.1'	S 16°08.0'	326°11.0'	N 21°19.5'
4	53°07.0'	241°04.6'	N 3°26.1'	249°59.7'	N 8°38.6'	47°33.8'	N 0°39.1'	90°28.7'	S 16°08.0'	341°12.2'	N 21°19.7'
5	68°09.5'	256°04.8'	N 3°25.2'	264°59.3'	N 8°37.5'	62°36.5'	N 0°38.9'	105°31.3'	S 16°08.0'	356°13.4'	N 21°19.9'
6	83°11.9'	271°05.1'	N 3°24.2'	279°58.8'	N 8°36.3'	77°39.3'	N 0°38.8'	120°33.9'	S 16°08.1'	11°14.6'	N 21°20.1'
7	98°14.4'	286°05.3'	N 3°23.3'	294°58.4'	N 8°35.2'	92°42.0'	N 0°38.7'	135°36.5'	S 16°08.1'	26°15.9'	N 21°20.3'
8	113°16.9'	301°05.5'	N 3°22.3'	309°57.9'	N 8°34.0'	107°44.8'	N 0°38.6'	150°39.1'	S 16°08.2'	41°17.1'	N 21°20.5'
9	128°19.3'	316°05.7'	N 3°21.3'	324°57.5'	N 8°32.9'	122°47.5'	N 0°38.4'	165°41.7'	S 16°08.2'	56°18.3'	N 21°20.7'
10	143°21.8'	331°06.0'	N 3°20.4'	339°57.0'	N 8°31.7'	137°50.3'	N 0°38.3'	180°44.3'	S 16°08.3'	71°19.5'	N 21°20.9'
11	158°24.3'	346°06.2'	N 3°19.4'	354°56.6'	N 8°30.5'	152°53.1'	N 0°38.2'	195°47.0'	S 16°08.3'	86°20.8'	N 21°21.1'
12	173°26.7'	1°06.4'	N 3°18.5'	9°56.1'	N 8°29.4'	167°55.8'	N 0°38.0'	210°49.6'	S 16°08.4'	101°22.0'	N 21°21.3'
13	188°29.2'	16°06.6'	N 3°17.5'	24°55.7'	N 8°28.2'	182°58.6'	N 0°37.9'	225°52.2'	S 16°08.4'	116°23.2'	N 21°21.5'
14	203°31.7'	31°06.8'	N 3°16.6'	39°55.3'	N 8°27.1'	198°01.3'	N 0°37.8'	240°54.8'	S 16°08.5'	131°24.5'	N 21°21.7'
15	218°34.1'	46°07.1'	N 3°15.6'	54°54.8'	N 8°25.9'	213°04.1'	N 0°37.7'	255°57.4'	S 16°08.5'	146°25.7'	N 21°21.9'
16	233°36.6'	61°07.3'	N 3°14.6'	69°54.4'	N 8°24.8'	228°06.8'	N 0°37.5'	270°60.0'	S 16°08.5'	161°26.9'	N 21°22.1'
17	248°39.1'	76°07.5'	N 3°13.7'	84°53.9'	N 8°23.6'	243°09.6'	N 0°37.4'	286°02.6'	S 16°08.6'	176°28.2'	N 21°22.3'
18	263°41.5'	91°07.7'	N 3°12.7'	99°53.5'	N 8°22.5'	258°12.3'	N 0°37.3'	301°05.2'	S 16°08.6'	191°29.4'	N 21°22.5'
19	278°44.0'	106°08.0'	N 3°11.8'	114°53.0'	N 8°21.3'	273°15.1'	N 0°37.1'	316°07.8'	S 16°08.7'	206°30.6'	N 21°22.7'
20	293°46.4'	121°08.2'	N 3°10.8'	129°52.6'	N 8°20.1'	288°17.8'	N 0°37.0'	331°10.4'	S 16°08.7'	221°31.9'	N 21°22.9'
21	308°48.9'	136°08.4'	N 3°09.8'	144°52.1'	N 8°19.0'	303°20.6'	N 0°36.9'	346°13.0'	S 16°08.8'	236°33.1'	N 21°23.1'
22	323°51.4'	151°08.6'	N 3°08.9'	159°51.7'	N 8°17.8'	318°23.3'	N 0°36.8'	1°15.6'	S 16°08.8'	251°34.4'	N 21°23.2'
23	338°53.8'	166°08.9'	N 3°07.9'	174°51.3'	N 8°16.7'	333°26.1'	N 0°36.6'	16°18.2'	S 16°08.9'	266°35.6'	N 21°23.4'
		SD 15.9' d -1.0'		v -0.4' d -1.2'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.2' d 0.2'	
Mer. pass.		11 h 55 m 36 s		11 h 20 m		0 h 50 m		21 h 55 m		5 h 15 m	

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Capella	-Rigel	-Mars	-Aldebaran	+Jupiter	+Fomalhaut	+Achernar	+Saturn
0	318°19.7'	N 13°05.4'	13.0'	13.3'	56.7'	50°05.6'	48°50.9'	36°23.3'	33°39.9'	31°20.8'	64°14.5'	70°41.7'	76°54.2'
1	332°51.7'	N 13°18.7'	13.0'	13.2'	56.6'	49°36.4'	48°29.1'	35°52.2'	33°08.3'	31°53.6'	64°45.4'	70°57.9'	77°26.8'
2	347°23.7'	N 13°31.9'	13.0'	13.1'	56.6'	49°07.4'	48°07.4'	35°21.1'	32°36.9'	32°26.3'	65°16.3'	71°14.2'	77°59.3'
3	1°55.7'	N 13°45.0'	12.9'	13.0'	56.6'	48°38.4'	47°45.9'	34°50.0'	32°05.5'	32°59.0'	65°47.1'	71°30.6'	78°31.8'
4	16°27.6'	N 13°58.0'	12.9'	13.0'	56.5'	48°09.5'	47°24.6'	34°19.0'	31°34.1'	33°31.7'	66°17.9'	71°47.0'	79°04.2'
5	30°59.6'	N 14°11.0'	12.9'	12.9'	56.5'	47°40.6'	47°03.5'	33°48.0'	31°02.9'	34°04.3'	66°48.7'	72°03.4'	79°36.6'
6	45°31.5'	N 14°23.9'	12.9'	12.8'	56.5'	47°11.9'	46°42.6'	33°17.1'	30°31.7'	34°36.8'	67°19.4'	72°19.9'	80°09.0'
7	60°03.3'	N 14°36.7'	12.9'	12.7'	56.4'	46°43.3'	46°21.8'	32°46.2'	30°00.6'	35°09.4'	67°50.2'	72°36.5'	80°41.3'
8	74°35.2'	N 14°49.4'	12.8'	12.6'	56.4'	46°14.8'	46°01.3'	32°15.3'	29°29.5'	35°41.9'	68°20.9'	72°53.1'	81°13.6'
9	89°07.1'	N 15°02.0'	12.8'	12.6'	56.4'	45°46.3'	45°40.9'	31°44.5'	28°58.6'	36°14.3'	68°51.6'	73°09.8'	81°45.9'
10	103°38.9'	N 15°14.6'	12.8'	12.5'	56.3'	45°18.0'	45°20.8'	31°13.8'	28°27.7'	36°46.7'	69°22.2'	73°26.5'	82°18.1'
11	118°10.7'	N 15°27.1'	12.8'	12.4'	56.3'	44°49.8'	45°00.8'	30°43.1'	27°56.9'	37°19.1'	69°52.8'	73°43.3'	82°50.2'
12	132°42.4'	N 15°39.5'	12.7'	12.3'	56.3'	44°21.6'	44°41.1'	30°12.4'	27°26.2'	37°51.5'	70°23.4'	74°00.1'	83°22.4'
13	147°14.2'	N 15°51.8'	12.7'	12.2'	56.2'	43°53.6'	44°21.6'	29°41.8'	26°55.6'	38°23.8'	70°54.0'	74°16.9'	83°54.5'
14	161°45.9'	N 16°04.0'	12.7'	12.1'	56.2'	43°25.7'	44°02.3'	29°11.2'	26°25.0'	38°56.0'	71°24.6'	74°33.8'	84°26.5'
15	176°17.6'	N 16°16.1'	12.7'	12.0'	56.2'	42°57.9'	43°43.2'	28°40.7'	25°54.6'	39°28.3'	71°55.1'	74°50.7'	84°58.5'
16	190°49.3'	N 16°28.1'	12.6'	11.9'	56.2'	42°30.2'	43°24.3'	28°10.2'	25°24.2'	40°00.4'	72°25.6'	75°07.7'	85°30.5'
17	205°20.9'	N 16°40.1'	12.6'	11.9'	56.1'	42°02.6'	43°05.7'	27°39.8'	24°53.9'	40°32.6'	72°56.0'	75°24.7'	86°02.5'
18	219°52.5'	N 16°52.0'	12.6'	11.8'	56.1'	41°35.1'	42°47.3'	27°09.4'	24°23.8'	41°04.7'	73°26.4'	75°41.7'	86°34.4'
19	234°24.1'	N 17°03.7'	12.6'	11.7'	56.1'	41°07.8'	42°29.1'	26°39.0'	23°53.7'	41°36.8'	73°56.9'	75°58.8'	87°06.2'
20	248°55.7'	N 17°15.4'	12.5'	11.6'	56.0'	40°40.6'	42°11.2'	26°08.7'	23°23.7'	42°08.8'	74°27.2'	76°15.8'	87°38.1'
21	263°27.2'	N 17°27.0'	12.5'	11.5'	56.0'	40°13.5'	41°53.5'	25°38.5'	22°53.9'	42°40.8'	74°57.6'	76°33.0'	88°09.9'
22	277°58.7'	N 17°38.5'	12.5'	11.4'	56.0'	39°46.5'	41°36.0'	25°08.3'	22°24.2'	43°12.8'	75°27.9'	76°50.1'	88°41.6'
23	292°30.2'	N 17°49.9'	12.4'	11.3'	55.9'	39°19.6'	41°18.8'	24°38.1'	21°54.6'	43°44.8'	75°58.2'	77°07.3'	89°13.3'
Mer. pass.		2 h 52 m SD 15.5'	phase 85%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.2'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.8'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.7'	N 46°01.1'
Altair	+0.8	62°01.6'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.7'	S 8°10.3'
Vega	+0.0	80°34.4'	N 38°48.5'	Pollux	+1.2	243°19.9'	N 27°58.3'	Aldebaran	+0.9	290°41.8'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°53.0'	N 5°10.2'	Polaris	+2.0	314°41.0'	N 89°21.3'
Rigil Kent	-0.0	139°43.4'	S 60°55.8'	Adhara	+1.5	255°07.5'	S 28°59.9'	Achernar	+0.5	335°21.1'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.0'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.4'	S 52°42.1'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	353°56.3'	181°09.1'	N 3°06.9'	189°50.8'	N 8°15.5'	348°28.8'	N 0°36.5'	31°20.8'	S 16°08.9'	281°36.8'	N 21°23.6'
1	8°58.8'	196°09.3'	N 3°06.0'	204°50.4'	N 8°14.3'	3°31.6'	N 0°36.4'	46°23.4'	S 16°08.9'	296°38.1'	N 21°23.8'
2	24°01.2'	211°09.5'	N 3°05.0'	219°49.9'	N 8°13.2'	18°34.4'	N 0°36.2'	61°26.0'	S 16°09.0'	311°39.3'	N 21°24.0'
3	39°03.7'	226°09.7'	N 3°04.1'	234°49.5'	N 8°12.0'	33°37.1'	N 0°36.1'	76°28.6'	S 16°09.0'	326°40.6'	N 21°24.2'
4	54°06.2'	241°10.0'	N 3°03.1'	249°49.0'	N 8°10.9'	48°39.9'	N 0°36.0'	91°31.2'	S 16°09.1'	341°41.8'	N 21°24.4'
5	69°08.6'	256°10.2'	N 3°02.1'	264°48.6'	N 8°09.7'	63°42.6'	N 0°35.8'	106°33.8'	S 16°09.1'	356°43.0'	N 21°24.6'
6	84°11.1'	271°10.4'	N 3°01.2'	279°48.2'	N 8°08.5'	78°45.4'	N 0°35.7'	121°36.4'	S 16°09.2'	11°44.3'	N 21°24.8'
7	99°13.5'	286°10.6'	N 3°00.2'	294°47.7'	N 8°07.4'	93°48.1'	N 0°35.6'	136°39.0'	S 16°09.2'	26°45.5'	N 21°25.0'
8	114°16.0'	301°10.9'	N 2°59.3'	309°47.3'	N 8°06.2'	108°50.9'	N 0°35.5'	151°41.7'	S 16°09.3'	41°46.8'	N 21°25.2'
9	129°18.5'	316°11.1'	N 2°58.3'	324°46.8'	N 8°05.1'	123°53.6'	N 0°35.3'	166°44.3'	S 16°09.3'	56°48.0'	N 21°25.4'
10	144°20.9'	331°11.3'	N 2°57.3'	339°46.4'	N 8°03.9'	138°56.4'	N 0°35.2'	181°46.9'	S 16°09.3'	71°49.3'	N 21°25.6'
11	159°23.4'	346°11.5'	N 2°56.4'	354°46.0'	N 8°02.7'	153°59.1'	N 0°35.1'	196°49.5'	S 16°09.4'	86°50.5'	N 21°25.7'
12	174°25.9'	1°11.8'	N 2°55.4'	9°45.5'	N 8°01.6'	169°01.9'	N 0°34.9'	211°52.1'	S 16°09.4'	101°51.7'	N 21°25.9'
13	189°28.3'	16°12.0'	N 2°54.5'	24°45.1'	N 8°00.4'	184°04.7'	N 0°34.8'	226°54.7'	S 16°09.5'	116°53.0'	N 21°26.1'
14	204°30.8'	31°12.2'	N 2°53.5'	39°44.6'	N 7°59.2'	199°07.4'	N 0°34.7'	241°57.3'	S 16°09.5'	131°54.2'	N 21°26.3'
15	219°33.3'	46°12.4'	N 2°52.5'	54°44.2'	N 7°58.1'	214°10.2'	N 0°34.5'	256°59.9'	S 16°09.6'	146°55.5'	N 21°26.5'
16	234°35.7'	61°12.7'	N 2°51.6'	69°43.8'	N 7°56.9'	229°12.9'	N 0°34.4'	272°02.5'	S 16°09.6'	161°56.7'	N 21°26.7'
17	249°38.2'	76°12.9'	N 2°50.6'	84°43.3'	N 7°55.7'	244°15.7'	N 0°34.3'	287°05.1'	S 16°09.7'	176°58.0'	N 21°26.9'
18	264°40.7'	91°13.1'	N 2°49.6'	99°42.9'	N 7°54.6'	259°18.4'	N 0°34.2'	302°07.7'	S 16°09.7'	191°59.2'	N 21°27.1'
19	279°43.1'	106°13.3'	N 2°48.7'	114°42.4'	N 7°53.4'	274°21.2'	N 0°34.0'	317°10.3'	S 16°09.7'	207°00.5'	N 21°27.3'
20	294°45.6'	121°13.6'	N 2°47.7'	129°42.0'	N 7°52.2'	289°23.9'	N 0°33.9'	332°12.9'	S 16°09.8'	222°01.7'	N 21°27.5'
21	309°48.0'	136°13.8'	N 2°46.8'	144°41.6'	N 7°51.1'	304°26.7'	N 0°33.8'	347°15.5'	S 16°09.8'	237°03.0'	N 21°27.6'
22	324°50.5'	151°14.0'	N 2°45.8'	159°41.1'	N 7°49.9'	319°29.5'	N 0°33.6'	2°18.1'	S 16°09.9'	252°04.2'	N 21°27.8'
23	339°53.0'	166°14.2'	N 2°44.8'	174°40.7'	N 7°48.7'	334°32.2'	N 0°33.5'	17°20.7'	S 16°09.9'	267°05.5'	N 21°28.0'
		SD 15.9' d -1.0'		v -0.4' d -1.2'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.2' d 0.2'	
Mer. pass.		11 h 55 m 14 s		11 h 21 m		0 h 46 m		21 h 51 m		5 h 13 m	

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Capella	-Mars	-Aldebaran	+Jupiter	+Fomalhaut	+Achernar	+Saturn
0	307°01.6'	N 18°01.2'	12.4'	11.2'	55.9'		38°52.9'	24°08.0'	21°25.1'	44°16.6'	76°28.4'	77°24.5'	89°45.0'
1	321°33.0'	N 18°12.4'	12.4'	11.1'	55.9'		38°26.3'	23°38.0'	20°55.7'	44°48.5'	76°58.7'	77°41.8'	90°16.7'
2	336°04.4'	N 18°23.5'	12.3'	11.0'	55.8'		37°59.8'	23°08.0'	20°26.5'	45°20.3'	77°28.9'	77°59.0'	90°48.3'
3	350°35.7'	N 18°34.5'	12.3'	10.9'	55.8'		37°33.5'	22°38.0'	19°57.4'	45°52.1'	77°59.1'	78°16.3'	91°19.8'
4	5°07.0'	N 18°45.4'	12.3'	10.8'	55.8'		37°07.4'	22°08.1'	19°28.5'	46°23.9'	78°29.2'	78°33.6'	91°51.4'
5	19°38.3'	N 18°56.3'	12.3'	10.7'	55.8'		36°41.3'	21°38.2'	18°59.8'	46°55.6'	78°59.3'	78°51.0'	92°22.9'
6	34°09.6'	N 19°07.0'	12.2'	10.6'	55.7'	119°45.9'	36°15.5'	21°08.4'	18°31.2'	47°27.3'	79°29.4'	79°08.3'	92°54.4'
7	48°40.8'	N 19°17.6'	12.2'	10.5'	55.7'	119°17.1'	35°49.8'	20°38.7'	18°02.8'	47°59.0'	79°59.5'	79°25.7'	93°25.8'
8	63°12.0'	N 19°28.1'	12.2'	10.4'	55.7'	118°48.3'	35°24.2'	20°09.0'	17°34.6'	48°30.6'	80°29.5'	79°43.1'	93°57.2'
9	77°43.1'	N 19°38.6'	12.1'	10.3'	55.6'	118°19.5'	34°58.8'	19°39.3'	17°06.6'	49°02.2'	80°59.5'	80°00.5'	94°28.6'
10	92°14.2'	N 19°48.9'	12.1'	10.2'	55.6'	117°50.8'	34°33.6'	19°09.8'	16°38.8'	49°33.7'	81°29.5'	80°17.9'	94°59.9'
11	106°45.3'	N 19°59.1'	12.1'	10.1'	55.6'	117°22.1'	34°08.5'	18°40.2'	16°11.3'	50°05.3'	81°59.4'	80°35.3'	95°31.2'
12	121°16.4'	N 20°09.2'	12.0'	10.0'	55.6'	116°53.5'	33°43.6'	18°10.8'	15°44.0'	50°36.7'	82°29.3'	80°52.8'	96°02.4'
13	135°47.4'	N 20°19.2'	12.0'	9.9'	55.5'	116°24.8'	33°19.0'	17°41.4'	15°17.0'	51°08.2'	82°59.2'	81°10.2'	96°33.7'
14	150°18.4'	N 20°29.1'	11.9'	9.8'	55.5'	115°56.2'	32°54.4'	17°12.1'	14°50.2'	51°39.6'	83°29.1'	81°27.7'	97°04.9'
15	164°49.3'	N 20°38.9'	11.9'	9.7'	55.5'	115°27.7'	32°30.1'	16°42.8'	14°23.8'	52°11.0'	83°58.9'	81°45.2'	97°36.0'
16	179°20.2'	N 20°48.6'	11.9'	9.6'	55.5'	114°59.1'	32°06.0'	16°13.6'	13°57.8'	52°42.4'	84°28.7'	82°02.7'	98°07.2'
17	193°51.1'	N 20°58.2'	11.8'	9.5'	55.4'	114°30.6'	31°42.1'	15°44.5'	13°32.1'	53°13.7'	84°58.5'	82°20.2'	98°38.3'
18	208°22.0'	N 21°07.7'	11.8'	9.4'	55.4'	114°02.2'	31°18.4'	15°15.4'	13°06.8'	53°45.0'	85°28.2'	82°37.7'	99°09.3'
19	222°52.8'	N 21°17.1'	11.8'	9.3'	55.4'	113°33.7'	30°54.9'	14°46.5'	12°41.9'	54°16.3'	85°57.9'	82°55.2'	99°40.4'
20	237°23.5'	N 21°26.4'	11.7'	9.2'	55.4'	113°05.3'	30°31.6'	14°17.6'	12°17.5'	54°47.5'	86°27.6'	83°12.7'	100°11.4'
21	251°54.3'	N 21°35.5'	11.7'	9.1'	55.3'	112°36.9'	30°08.6'	13°48.8'	11°53.6'	55°18.7'	86°57.3'	83°30.3'	100°42.4'
22	266°25.0'	N 21°44.6'	11.7'	8.9'	55.3'	112°08.6'	29°45.8'	13°20.1'	11°30.4'	55°49.9'	87°26.9'	83°47.8'	101°13.3'
23	280°55.6'	N 21°53.5'	11.6'	8.8'	55.3'	111°40.3'	29°23.3'	12°51.6'	11°07.7'	56°21.0'	87°56.5'	84°05.3'	101°44.2'
Mer. pass.		3 h 39 m SD 15.2'		phase 77%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.2'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.8'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.7'	N 46°01.1'
Altair	+0.8	62°01.6'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.7'	S 8°10.3'
Vega	+0.0	80°34.4'	N 38°48.5'	Pollux	+1.2	243°19.9'	N 27°58.3'	Aldebaran	+0.9	290°41.8'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°53.0'	N 5°10.2'	Polaris	+2.0	314°40.5'	N 89°21.3'
Rigil Kent	-0.0	139°43.4'	S 60°55.8'	Adhara	+1.5	255°07.5'	S 28°59.9'	Achernar	+0.5	335°21.1'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.0'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.4'	S 52°42.1'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	354°55.4'	181°14.4'	N 2°43.9'	189°40.3'	N 7°47.6'	349°35.0'	N 0°33.4'	32°23.3'	S 16°10.0'	282°06.8'	N 21°28.2'
1	9°57.9'	196°14.7'	N 2°42.9'	204°39.8'	N 7°46.4'	4°37.7'	N 0°33.2'	47°25.9'	S 16°10.0'	297°08.0'	N 21°28.4'
2	25°00.4'	211°14.9'	N 2°41.9'	219°39.4'	N 7°45.2'	19°40.5'	N 0°33.1'	62°28.5'	S 16°10.1'	312°09.3'	N 21°28.6'
3	40°02.8'	226°15.1'	N 2°41.0'	234°38.9'	N 7°44.1'	34°43.2'	N 0°33.0'	77°31.1'	S 16°10.1'	327°10.5'	N 21°28.8'
4	55°05.3'	241°15.3'	N 2°40.0'	249°38.5'	N 7°42.9'	49°46.0'	N 0°32.8'	92°33.7'	S 16°10.1'	342°11.8'	N 21°29.0'
5	70°07.8'	256°15.6'	N 2°39.0'	264°38.1'	N 7°41.7'	64°48.8'	N 0°32.7'	107°36.3'	S 16°10.2'	357°13.0'	N 21°29.2'
6	85°10.2'	271°15.8'	N 2°38.1'	279°37.6'	N 7°40.5'	79°51.5'	N 0°32.6'	122°38.9'	S 16°10.2'	12°14.3'	N 21°29.3'
7	100°12.7'	286°16.0'	N 2°37.1'	294°37.2'	N 7°39.4'	94°54.3'	N 0°32.5'	137°41.5'	S 16°10.3'	27°15.6'	N 21°29.5'
8	115°15.2'	301°16.2'	N 2°36.2'	309°36.8'	N 7°38.2'	109°57.0'	N 0°32.3'	152°44.1'	S 16°10.3'	42°16.8'	N 21°29.7'
9	130°17.6'	316°16.5'	N 2°35.2'	324°36.3'	N 7°37.0'	124°59.8'	N 0°32.2'	167°46.7'	S 16°10.4'	57°18.1'	N 21°29.9'
10	145°20.1'	331°16.7'	N 2°34.2'	339°35.9'	N 7°35.8'	140°02.5'	N 0°32.1'	182°49.3'	S 16°10.4'	72°19.3'	N 21°30.1'
11	160°22.5'	346°16.9'	N 2°33.3'	354°35.5'	N 7°34.7'	155°05.3'	N 0°31.9'	197°51.9'	S 16°10.4'	87°20.6'	N 21°30.3'
12	175°25.0'	1°17.1'	N 2°32.3'	9°35.0'	N 7°33.5'	170°08.1'	N 0°31.8'	212°54.5'	S 16°10.5'	102°21.9'	N 21°30.5'
13	190°27.5'	16°17.4'	N 2°31.3'	24°34.6'	N 7°32.3'	185°10.8'	N 0°31.7'	227°57.1'	S 16°10.5'	117°23.1'	N 21°30.7'
14	205°29.9'	31°17.6'	N 2°30.4'	39°34.2'	N 7°31.2'	200°13.6'	N 0°31.5'	242°59.7'	S 16°10.6'	132°24.4'	N 21°30.8'
15	220°32.4'	46°17.8'	N 2°29.4'	54°33.7'	N 7°30.0'	215°16.3'	N 0°31.4'	258°02.3'	S 16°10.6'	147°25.6'	N 21°31.0'
16	235°34.9'	61°18.0'	N 2°28.4'	69°33.3'	N 7°28.8'	230°19.1'	N 0°31.3'	273°04.9'	S 16°10.7'	162°26.9'	N 21°31.2'
17	250°37.3'	76°18.2'	N 2°27.5'	84°32.9'	N 7°27.6'	245°21.8'	N 0°31.1'	288°07.5'	S 16°10.7'	177°28.2'	N 21°31.4'
18	265°39.8'	91°18.5'	N 2°26.5'	99°32.4'	N 7°26.5'	260°24.6'	N 0°31.0'	303°10.1'	S 16°10.7'	192°29.4'	N 21°31.6'
19	280°42.3'	106°18.7'	N 2°25.5'	114°32.0'	N 7°25.3'	275°27.4'	N 0°30.9'	318°12.7'	S 16°10.8'	207°30.7'	N 21°31.8'
20	295°44.7'	121°18.9'	N 2°24.6'	129°31.6'	N 7°24.1'	290°30.1'	N 0°30.8'	333°15.3'	S 16°10.8'	222°32.0'	N 21°31.9'
21	310°47.2'	136°19.1'	N 2°23.6'	144°31.1'	N 7°22.9'	305°32.9'	N 0°30.6'	348°17.9'	S 16°10.9'	237°33.2'	N 21°32.1'
22	325°49.6'	151°19.4'	N 2°22.7'	159°30.7'	N 7°21.7'	320°35.6'	N 0°30.5'	3°20.5'	S 16°10.9'	252°34.5'	N 21°32.3'
23	340°52.1'	166°19.6'	N 2°21.7'	174°30.3'	N 7°20.6'	335°38.4'	N 0°30.4'	18°23.1'	S 16°11.0'	267°35.8'	N 21°32.5'
		SD 15.9' d -1.0'		v -0.4' d -1.2'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.3' d 0.2'	
Mer. pass.		11 h 54 m 53 s		11 h 22 m		0 h 42 m		21 h 47 m		5 h 11 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Capella	-Mars	-Aldebaran	+Jupiter	+Achernar	+Fomalhaut	+Saturn
0	295°26.3'	N 22°02.3'	11.6'	8.7'	55.2'	111°12.0'	29°01.0'	12°23.1'	10°45.7'	56°52.2'	84°22.9'	88°26.1'	102°15.1'
1	309°56.9'	N 22°11.1'	11.6'	8.6'	55.2'	110°43.7'	28°38.9'	11°54.8'		57°23.2'	84°40.4'	88°55.6'	102°46.0'
2	324°27.4'	N 22°19.7'	11.5'	8.5'	55.2'	110°15.5'	28°17.2'	11°26.6'		57°54.3'	84°58.0'	89°25.2'	103°16.8'
3	338°57.9'	N 22°28.2'	11.5'	8.4'	55.2'	109°47.3'	27°55.7'	10°58.5'		58°25.3'	85°15.5'	89°54.7'	103°47.6'
4	353°28.4'	N 22°36.6'	11.5'	8.3'	55.2'	109°19.1'	27°34.5'	10°30.7'		58°56.3'	85°33.1'	90°24.1'	104°18.4'
5	7°58.9'	N 22°44.8'	11.4'	8.2'	55.1'	108°50.9'	27°13.6'	10°03.0'		59°27.3'	85°50.6'	90°53.6'	104°49.1'
6	22°29.3'	N 22°53.0'	11.4'	8.0'	55.1'	108°22.8'	26°53.0'	9°35.5'		59°58.3'	86°08.1'	91°23.0'	105°19.8'
7	36°59.7'	N 23°01.0'	11.3'	7.9'	55.1'	107°54.7'	26°32.7'	9°08.2'		60°29.2'	86°25.7'	91°52.4'	105°50.5'
8	51°30.0'	N 23°09.0'	11.3'	7.8'	55.1'	107°26.6'	26°12.7'	8°41.2'		61°00.1'	86°43.2'	92°21.7'	106°21.1'
9	66°00.4'	N 23°16.8'	11.3'	7.7'	55.0'	106°58.6'	25°53.1'	8°14.5'		61°30.9'	87°00.7'	92°51.1'	106°51.8'
10	80°30.6'	N 23°24.5'	11.2'	7.6'	55.0'	106°30.6'	25°33.9'	7°48.2'		62°01.8'	87°18.2'	93°20.4'	107°22.4'
11	95°00.9'	N 23°32.1'	11.2'	7.5'	55.0'	106°02.6'	25°15.0'	7°22.2'		62°32.6'	87°35.8'	93°49.6'	107°52.9'
12	109°31.1'	N 23°39.5'	11.2'	7.3'	55.0'	105°34.6'	24°56.4'	6°56.7'		63°03.4'	87°53.3'	94°18.9'	108°23.5'
13	124°01.3'	N 23°46.9'	11.1'	7.2'	54.9'	105°06.7'	24°38.3'	6°31.8'		63°34.1'	88°10.8'	94°48.1'	108°54.0'
14	138°31.4'	N 23°54.1'	11.1'	7.1'	54.9'	104°38.7'	24°20.5'			64°04.9'	88°28.3'	95°17.3'	109°24.5'
15	153°01.5'	N 24°01.2'	11.1'	7.0'	54.9'	104°10.8'	24°03.2'			64°35.6'	88°45.7'	95°46.5'	109°55.0'
16	167°31.6'	N 24°08.2'	11.0'	6.9'	54.9'	103°43.0'	23°46.3'			65°06.3'	89°03.2'	96°15.7'	110°25.4'
17	182°01.7'	N 24°15.1'	11.0'	6.8'	54.9'	103°15.1'	23°29.8'			65°37.0'	89°20.7'	96°44.8'	110°55.8'
18	196°31.7'	N 24°21.8'	11.0'	6.6'	54.8'	102°47.3'	23°13.8'			66°07.6'	89°38.1'	97°13.9'	111°26.2'
19	211°01.6'	N 24°28.5'	10.9'	6.5'	54.8'	102°19.5'	22°58.2'			66°38.2'	89°55.5'	97°43.0'	111°56.6'
20	225°31.6'	N 24°35.0'	10.9'	6.4'	54.8'	101°51.7'				67°08.8'	90°13.0'	98°12.0'	112°27.0'
21	240°01.5'	N 24°41.4'	10.9'	6.3'	54.8'	101°24.0'				67°39.4'	90°30.4'	98°41.0'	112°57.3'
22	254°31.4'	N 24°47.6'	10.9'	6.1'	54.8'	100°56.2'				68°09.9'	90°47.8'	99°10.0'	113°27.6'
23	269°01.3'	N 24°53.8'	10.8'	6.0'	54.7'	100°28.5'				68°40.5'	91°05.2'	99°39.0'	113°57.9'
Mer. pass.		4 h 27 m SD 15.1'	phase 68%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.2'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.8'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.7'	N 46°01.1'
Altair	+0.8	62°01.6'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.7'	S 8°10.3'
Vega	+0.0	80°34.4'	N 38°48.5'	Pollux	+1.2	243°19.9'	N 27°58.3'	Aldebaran	+0.9	290°41.7'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°53.0'	N 5°10.2'	Polaris	+2.0	314°40.0'	N 89°21.3'
Rigel Kent	-0.0	139°43.4'	S 60°55.8'	Adhara	+1.5	255°07.5'	S 28°59.9'	Achernar	+0.5	335°21.1'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.0'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.4'	S 52°42.1'				



h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	355°54.6'	181°19.8'	N 2°20.7'	189°29.8'	N 7°19.4'	350°41.2'	N 0°30.2'	33°25.7'	S 16°11.0'	282°37.0'	N 21°32.7'	
1	10°57.0'	196°20.0'	N 2°19.8'	204°29.4'	N 7°18.2'	5°43.9'	N 0°30.1'	48°28.3'	S 16°11.0'	297°38.3'	N 21°32.9'	
2	25°59.5'	211°20.3'	N 2°18.8'	219°29.0'	N 7°17.0'	20°46.7'	N 0°30.0'	63°30.9'	S 16°11.1'	312°39.6'	N 21°33.1'	
3	41°02.0'	226°20.5'	N 2°17.8'	234°28.5'	N 7°15.9'	35°49.4'	N 0°29.8'	78°33.5'	S 16°11.1'	327°40.9'	N 21°33.2'	
4	56°04.4'	241°20.7'	N 2°16.9'	249°28.1'	N 7°14.7'	50°52.2'	N 0°29.7'	93°36.1'	S 16°11.2'	342°42.1'	N 21°33.4'	
5	71°06.9'	256°20.9'	N 2°15.9'	264°27.7'	N 7°13.5'	65°55.0'	N 0°29.6'	108°38.7'	S 16°11.2'	357°43.4'	N 21°33.6'	
6	86°09.4'	271°21.2'	N 2°14.9'	279°27.2'	N 7°12.3'	80°57.7'	N 0°29.4'	123°41.3'	S 16°11.3'	12°44.7'	N 21°33.8'	
7	101°11.8'	286°21.4'	N 2°14.0'	294°26.8'	N 7°11.1'	96°00.5'	N 0°29.3'	138°43.9'	S 16°11.3'	27°46.0'	N 21°34.0'	
8	116°14.3'	301°21.6'	N 2°13.0'	309°26.4'	N 7°10.0'	111°03.2'	N 0°29.2'	153°46.5'	S 16°11.3'	42°47.2'	N 21°34.2'	
9	131°16.8'	316°21.8'	N 2°12.0'	324°26.0'	N 7°08.8'	126°06.0'	N 0°29.0'	168°49.1'	S 16°11.4'	57°48.5'	N 21°34.3'	
10	146°19.2'	331°22.1'	N 2°11.1'	339°25.5'	N 7°07.6'	141°08.8'	N 0°28.9'	183°51.7'	S 16°11.4'	72°49.8'	N 21°34.5'	
11	161°21.7'	346°22.3'	N 2°10.1'	354°25.1'	N 7°06.4'	156°11.5'	N 0°28.8'	198°54.3'	S 16°11.5'	87°51.1'	N 21°34.7'	
12	176°24.1'	1°22.5'	N 2°09.1'	9°24.7'	N 7°05.2'	171°14.3'	N 0°28.7'	213°56.9'	S 16°11.5'	102°52.3'	N 21°34.9'	
13	191°26.6'	16°22.7'	N 2°08.2'	24°24.2'	N 7°04.0'	186°17.0'	N 0°28.5'	228°59.5'	S 16°11.6'	117°53.6'	N 21°35.1'	
14	206°29.1'	31°22.9'	N 2°07.2'	39°23.8'	N 7°02.9'	201°19.8'	N 0°28.4'	244°02.1'	S 16°11.6'	132°54.9'	N 21°35.2'	
15	221°31.5'	46°23.2'	N 2°06.2'	54°23.4'	N 7°01.7'	216°22.6'	N 0°28.3'	259°04.7'	S 16°11.6'	147°56.2'	N 21°35.4'	
16	236°34.0'	61°23.4'	N 2°05.3'	69°23.0'	N 7°00.5'	231°25.3'	N 0°28.1'	274°07.3'	S 16°11.7'	162°57.5'	N 21°35.6'	
17	251°36.5'	76°23.6'	N 2°04.3'	84°22.5'	N 6°59.3'	246°28.1'	N 0°28.0'	289°09.9'	S 16°11.7'	177°58.7'	N 21°35.8'	
18	266°38.9'	91°23.8'	N 2°03.3'	99°22.1'	N 6°58.1'	261°30.8'	N 0°27.9'	304°12.5'	S 16°11.8'	193°00.0'	N 21°36.0'	
19	281°41.4'	106°24.1'	N 2°02.4'	114°21.7'	N 6°56.9'	276°33.6'	N 0°27.7'	319°15.1'	S 16°11.8'	208°01.3'	N 21°36.2'	
20	296°43.9'	121°24.3'	N 2°01.4'	129°21.2'	N 6°55.8'	291°36.4'	N 0°27.6'	334°17.7'	S 16°11.9'	223°02.6'	N 21°36.3'	
21	311°46.3'	136°24.5'	N 2°00.4'	144°20.8'	N 6°54.6'	306°39.1'	N 0°27.5'	349°20.3'	S 16°11.9'	238°03.9'	N 21°36.5'	
22	326°48.8'	151°24.7'	N 1°59.5'	159°20.4'	N 6°53.4'	321°41.9'	N 0°27.3'	4°22.9'	S 16°11.9'	253°05.2'	N 21°36.7'	
23	341°51.3'	166°25.0'	N 1°58.5'	174°20.0'	N 6°52.2'	336°44.6'	N 0°27.2'	19°25.5'	S 16°12.0'	268°06.4'	N 21°36.9'	
		SD 15.9'	d -1.0'	v -0.4'	d -1.2'	v 2.8'	d -0.1'	v 2.6'	d -0.0'	v 1.3'	d 0.2'	
Mer. pass.		11 h 54 m 31 s		11 h 22 m		0 h 37 m		21 h 43 m		5 h 9 m		

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Procyon	-Pollux	-Betelgeuse	+Mars	+Aldebaran	+Jupiter	+Achernar
0	283°31.1'	N 24°59.8'	10.8'	5.9'	54.7'	100°00.8'	45°28.7'	39°31.8'	23°44.7'			69°11.0'	91°22.5'
1	298°00.9'	N 25°05.7'	10.8'	5.8'	54.7'	99°33.2'	45°02.6'	39°01.6'	23°28.2'			69°41.5'	91°39.9'
2	312°30.6'	N 25°11.5'	10.7'	5.7'	54.7'	99°05.5'	44°36.6'	38°31.5'	23°12.1'			70°11.9'	91°57.2'
3	327°00.4'	N 25°17.1'	10.7'	5.5'	54.7'	98°37.9'	44°10.7'	38°01.4'	22°56.5'			70°42.4'	92°14.5'
4	341°30.1'	N 25°22.7'	10.7'	5.4'	54.7'	98°10.3'	43°44.8'	37°31.4'				71°12.8'	92°31.8'
5	355°59.8'	N 25°28.1'	10.7'	5.3'	54.6'	97°42.7'	43°19.1'	37°01.3'			10°25.9'	71°43.2'	92°49.1'
6	10°29.4'	N 25°33.4'	10.6'	5.2'	54.6'	97°15.1'	42°53.4'	36°31.3'			10°46.6'	72°13.6'	93°06.3'
7	24°59.1'	N 25°38.5'	10.6'	5.0'	54.6'	96°47.6'	42°27.9'	36°01.3'			11°08.1'	72°44.0'	93°23.6'
8	39°28.7'	N 25°43.6'	10.6'	4.9'	54.6'	96°20.0'	42°02.4'	35°31.3'			11°30.1'	73°14.3'	93°40.8'
9	53°58.2'	N 25°48.5'	10.6'	4.8'	54.6'	95°52.5'	41°37.0'	35°01.3'			11°52.8'	73°44.6'	93°58.0'
10	68°27.8'	N 25°53.2'	10.5'	4.7'	54.6'	95°25.0'	41°11.8'	34°31.3'			12°15.9'	74°14.9'	94°15.1'
11	82°57.3'	N 25°57.9'	10.5'	4.5'	54.5'	94°57.6'	40°46.6'	34°01.4'	6°16.1'		12°39.5'	74°45.2'	94°32.3'
12	97°26.8'	N 26°02.4'	10.5'	4.4'	54.5'	94°30.1'	40°21.5'	33°31.5'	6°40.2'		13°03.5'	75°15.5'	94°49.4'
13	111°56.3'	N 26°06.8'	10.5'	4.3'	54.5'	94°02.7'	39°56.6'	33°01.6'	7°04.9'		13°27.9'	75°45.8'	95°06.5'
14	126°25.8'	N 26°11.1'	10.4'	4.1'	54.5'	93°35.2'	39°31.7'	32°31.7'	7°30.1'		13°52.6'	76°16.0'	95°23.6'
15	140°55.2'	N 26°15.2'	10.4'	4.0'	54.5'	93°07.8'	39°07.0'	32°01.9'	7°55.6'		14°17.7'	76°46.2'	95°40.6'
16	155°24.6'	N 26°19.2'	10.4'	3.9'	54.5'	92°40.4'	38°42.4'	31°32.0'	8°21.5'		14°43.0'	77°16.5'	95°57.6'
17	169°54.0'	N 26°23.1'	10.4'	3.8'	54.5'	92°13.0'	38°17.9'	31°02.2'	8°47.7'		15°08.6'	77°46.7'	96°14.6'
18	184°23.4'	N 26°26.9'	10.4'	3.6'	54.4'	91°45.7'	37°53.5'	30°32.4'	9°14.1'		15°34.4'	78°16.8'	96°31.6'
19	198°52.7'	N 26°30.5'	10.3'	3.5'	54.4'	91°18.3'	37°29.2'	30°02.6'	9°40.7'		16°00.4'	78°47.0'	96°48.5'
20	213°22.1'	N 26°34.0'	10.3'	3.4'	54.4'	90°51.0'	37°05.1'	29°32.8'	10°07.5'		16°26.7'	79°17.2'	97°05.4'
21	227°51.4'	N 26°37.4'	10.3'	3.2'	54.4'	90°23.7'	36°41.1'	29°03.1'	10°34.5'		16°53.1'	79°47.3'	97°22.3'
22	242°20.7'	N 26°40.6'	10.3'	3.1'	54.4'	89°56.3'	36°17.3'	28°33.3'	11°01.6'		17°19.7'	80°17.4'	97°39.2'
23	256°50.0'	N 26°43.7'	10.3'	3.0'	54.4'	89°29.1'	35°53.5'	28°03.6'	11°28.8'		17°46.4'	80°47.5'	97°56.0'
Mer. pass.		5 h 17 m SD 14.9'	phase 59%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.2'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.9'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.7'	N 46°01.1'
Altair	+0.8	62°01.6'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.7'	N 8°10.3'
Vega	+0.0	80°34.4'	N 38°48.5'	Pollux	+1.2	243°19.8'	N 27°58.3'	Aldebaran	+0.9	290°41.7'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°53.0'	N 5°10.2'	Polaris	+2.0	314°39.5'	N 89°21.3'
Rigil Kent	-0.0	139°43.4'	S 60°55.8'	Adhara	+1.5	255°07.5'	S 28°59.9'	Achernar	+0.5	335°21.1'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.0'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.4'	S 52°42.1'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	356°53.7'	181°25.2'	N 1°57.5'	189°19.5'	N 6°51.0'	351°47.4'	N 0°27.1'	34°28.1'	S 16°12.0'	283°07.7'	N 21°37.1'							
1	11°56.2'	196°25.4'	N 1°56.6'	204°19.1'	N 6°49.8'	6°50.2'	N 0°26.9'	49°30.6'	S 16°12.1'	298°09.0'	N 21°37.2'							
2	26°58.6'	211°25.6'	N 1°55.6'	219°18.7'	N 6°48.6'	21°52.9'	N 0°26.8'	64°33.2'	S 16°12.1'	313°10.3'	N 21°37.4'							
3	42°01.1'	226°25.9'	N 1°54.6'	234°18.3'	N 6°47.4'	36°55.7'	N 0°26.7'	79°35.8'	S 16°12.1'	328°11.6'	N 21°37.6'							
4	57°03.6'	241°26.1'	N 1°53.7'	249°17.8'	N 6°46.3'	51°58.5'	N 0°26.5'	94°38.4'	S 16°12.2'	343°12.9'	N 21°37.8'							
5	72°06.0'	256°26.3'	N 1°52.7'	264°17.4'	N 6°45.1'	67°01.2'	N 0°26.4'	109°41.0'	S 16°12.2'	358°14.2'	N 21°38.0'							
6	87°08.5'	271°26.5'	N 1°51.7'	279°17.0'	N 6°43.9'	82°04.0'	N 0°26.3'	124°43.6'	S 16°12.3'	13°15.5'	N 21°38.1'							
7	102°11.0'	286°26.7'	N 1°50.8'	294°16.6'	N 6°42.7'	97°06.7'	N 0°26.1'	139°46.2'	S 16°12.3'	28°16.8'	N 21°38.3'							
8	117°13.4'	301°27.0'	N 1°49.8'	309°16.1'	N 6°41.5'	112°09.5'	N 0°26.0'	154°48.8'	S 16°12.4'	43°18.0'	N 21°38.5'							
9	132°15.9'	316°27.2'	N 1°48.8'	324°15.7'	N 6°40.3'	127°12.3'	N 0°25.9'	169°51.4'	S 16°12.4'	58°19.3'	N 21°38.7'							
10	147°18.4'	331°27.4'	N 1°47.9'	339°15.3'	N 6°39.1'	142°15.0'	N 0°25.8'	184°54.0'	S 16°12.4'	73°20.6'	N 21°38.8'							
11	162°20.8'	346°27.6'	N 1°46.9'	354°14.9'	N 6°37.9'	157°17.8'	N 0°25.6'	199°56.6'	S 16°12.5'	88°21.9'	N 21°39.0'							
12	177°23.3'	1°27.9'	N 1°45.9'	9°14.4'	N 6°36.7'	172°20.5'	N 0°25.5'	214°59.2'	S 16°12.5'	103°23.2'	N 21°39.2'							
13	192°25.8'	16°28.1'	N 1°45.0'	24°14.0'	N 6°35.5'	187°23.3'	N 0°25.4'	230°01.8'	S 16°12.6'	118°24.5'	N 21°39.4'							
14	207°28.2'	31°28.3'	N 1°44.0'	39°13.6'	N 6°34.4'	202°26.1'	N 0°25.2'	245°04.4'	S 16°12.6'	133°25.8'	N 21°39.6'							
15	222°30.7'	46°28.5'	N 1°43.0'	54°13.2'	N 6°33.2'	217°28.8'	N 0°25.1'	260°07.0'	S 16°12.6'	148°27.1'	N 21°39.7'							
16	237°33.1'	61°28.8'	N 1°42.0'	69°12.7'	N 6°32.0'	232°31.6'	N 0°25.0'	275°09.6'	S 16°12.7'	163°28.4'	N 21°39.9'							
17	252°35.6'	76°29.0'	N 1°41.1'	84°12.3'	N 6°30.8'	247°34.4'	N 0°24.8'	290°12.2'	S 16°12.7'	178°29.7'	N 21°40.1'							
18	267°38.1'	91°29.2'	N 1°40.1'	99°11.9'	N 6°29.6'	262°37.1'	N 0°24.7'	305°14.8'	S 16°12.8'	193°31.0'	N 21°40.3'							
19	282°40.5'	106°29.4'	N 1°39.1'	114°11.5'	N 6°28.4'	277°39.9'	N 0°24.6'	320°17.4'	S 16°12.8'	208°32.3'	N 21°40.4'							
20	297°43.0'	121°29.6'	N 1°38.2'	129°11.1'	N 6°27.2'	292°42.7'	N 0°24.4'	335°20.0'	S 16°12.8'	223°33.6'	N 21°40.6'							
21	312°45.5'	136°29.9'	N 1°37.2'	144°10.6'	N 6°26.0'	307°45.4'	N 0°24.3'	350°22.5'	S 16°12.9'	238°34.9'	N 21°40.8'							
22	327°47.9'	151°30.1'	N 1°36.2'	159°10.2'	N 6°24.8'	322°48.2'	N 0°24.2'	5°25.1'	S 16°12.9'	253°36.2'	N 21°41.0'							
23	342°50.4'	166°30.3'	N 1°35.3'	174°09.8'	N 6°23.6'	337°50.9'	N 0°24.0'	20°27.7'	S 16°13.0'	268°37.5'	N 21°41.1'							
		SD 15.9' d -1.0'		v -0.4' d -1.2'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.3' d 0.2'								
Mer. pass.		11 h 54 m 10 s		11 h 23 m		0 h 33 m		21 h 38 m		5 h 7 m								

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Regulus	-Procyon	-Pollux	+Mars	+Aldebaran	+Capella	+Rigel
0	271°19.3'	N 26°46.7'	10.3'	2.8'	54.4'	89°01.8'	64°06.8'	35°29.9'	27°33.9'	11°56.1'	18°13.3'		
1	285°48.5'	N 26°49.5'	10.2'	2.7'	54.4'	88°34.5'	63°37.1'	35°06.5'	27°04.2'	12°23.5'	18°40.3'		
2	300°17.8'	N 26°52.3'	10.2'	2.6'	54.3'	88°07.2'	63°07.5'	34°43.2'	26°34.5'	12°51.0'	19°07.4'		
3	314°47.0'	N 26°54.9'	10.2'	2.5'	54.3'	87°40.0'	62°37.8'	34°20.1'	26°04.8'	13°18.5'	19°34.7'		
4	329°16.2'	N 26°57.3'	10.2'	2.3'	54.3'	87°12.8'	62°08.2'	33°57.1'	25°35.2'	13°46.1'	20°02.0'		
5	343°45.4'	N 26°59.6'	10.2'	2.2'	54.3'	86°45.5'	61°38.6'	33°34.3'	25°05.5'	14°13.8'	20°29.5'		
6	358°14.6'	N 27°01.8'	10.2'	2.1'	54.3'	86°18.3'	61°09.0'	33°11.7'	24°35.9'	14°41.5'	20°57.0'		
7	12°43.8'	N 27°03.9'	10.2'	1.9'	54.3'	85°51.1'	60°39.4'	32°49.2'	24°06.3'	15°09.3'	21°24.6'		
8	27°13.0'	N 27°05.8'	10.2'	1.8'	54.3'	85°23.9'	60°09.8'	32°26.9'	23°36.7'	15°37.1'	21°52.3'		
9	41°42.2'	N 27°07.6'	10.2'	1.7'	54.3'	84°56.7'	59°40.3'	32°04.8'	23°07.1'	16°04.9'	22°20.1'		
10	56°11.3'	N 27°09.3'	10.2'	1.5'	54.3'	84°29.6'	59°10.7'	31°42.9'	22°37.5'	16°32.8'	22°47.9'		
11	70°40.5'	N 27°10.8'	10.2'	1.4'	54.3'	84°02.4'	58°41.2'	31°21.2'	22°08.0'	17°00.7'	23°15.8'		
12	85°09.6'	N 27°12.3'	10.1'	1.3'	54.2'	83°35.2'	58°11.6'	30°59.7'	21°38.4'	17°28.6'	23°43.8'		
13	99°38.8'	N 27°13.5'	10.1'	1.1'	54.2'	83°08.1'	57°42.1'	30°38.4'	21°08.9'	17°56.6'	24°11.8'		
14	114°07.9'	N 27°14.7'	10.1'	1.0'	54.2'	82°40.9'	57°12.6'	30°17.4'	20°39.4'	18°24.6'	24°39.9'		
15	128°37.1'	N 27°15.7'	10.1'	0.9'	54.2'	82°13.8'	56°43.1'	29°56.5'	20°09.9'	18°52.6'	25°08.0'		
16	143°06.2'	N 27°16.6'	10.1'	0.7'	54.2'	81°46.7'	56°13.6'	29°35.9'	19°40.4'	19°20.6'	25°36.2'		
17	157°35.4'	N 27°17.3'	10.1'	0.6'	54.2'	81°19.5'	55°44.1'	29°15.5'	19°10.9'	19°48.6'	26°04.4'		
18	172°04.5'	N 27°17.9'	10.1'	0.5'	54.2'	80°52.4'	55°14.6'	28°55.3'	18°41.4'	20°16.7'	26°32.6'		
19	186°33.6'	N 27°18.4'	10.1'	0.4'	54.2'	80°25.3'	54°45.1'	28°35.5'	18°12.0'	20°44.7'	27°00.9'		
20	201°02.8'	N 27°18.8'	10.1'	0.2'	54.2'	79°58.2'	54°15.6'	28°15.8'	17°42.5'	21°12.8'	27°29.2'	23°04.7'	
21	215°31.9'	N 27°19.0'	10.2'	0.1'	54.2'	79°31.1'	53°46.2'	27°56.5'	17°13.1'	21°40.9'	27°57.6'	23°20.1'	
22	230°01.1'	N 27°19.1'	10.2'	-0.0'	54.2'	79°04.0'	53°16.7'	27°37.4'	16°43.7'	22°09.0'	28°26.0'	23°35.9'	
23	244°30.2'	N 27°19.0'	10.2'	-0.2'	54.2'	78°36.9'	52°47.3'	27°18.7'	16°14.3'	22°37.1'	28°54.4'	23°52.1'	40°10.2'
Mer. pass.		6 h 7 m SD 14.8'		phase 49%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.2'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.9'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.7'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.7'	S 8°10.3'
Vega	+0.0	80°34.4'	N 38°48.5'	Pollux	+1.2	243°19.8'	N 27°58.3'	Aldebaran	+0.9	290°41.7'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°53.0'	N 5°10.2'	Polaris	+2.0	314°39.0'	N 89°21.3'
Rigel Kent	-0.0	139°43.4'	S 60°55.8'	Adhara	+1.5	255°07.5'	S 28°59.9'	Achernar	+0.5	335°21.1'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.0'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.3'	S 52°42.1'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	357°52.9'	181°30.5'	N 1°34.3'	189°09.4'	N 6°22.4'	352°53.7'	N 0°23.9'	35°30.3'	S 16°13.0'	283°38.8'	N 21°41.3'							
1	12°55.3'	196°30.8'	N 1°33.3'	204°08.9'	N 6°21.2'	7°56.5'	N 0°23.8'	50°32.9'	S 16°13.1'	298°40.1'	N 21°41.5'							
2	27°57.8'	211°31.0'	N 1°32.4'	219°08.5'	N 6°20.0'	22°59.2'	N 0°23.6'	65°35.5'	S 16°13.1'	313°41.4'	N 21°41.7'							
3	43°00.2'	226°31.2'	N 1°31.4'	234°08.1'	N 6°18.8'	38°02.0'	N 0°23.5'	80°38.1'	S 16°13.1'	328°42.7'	N 21°41.8'							
4	58°02.7'	241°31.4'	N 1°30.4'	249°07.7'	N 6°17.6'	53°04.8'	N 0°23.4'	95°40.7'	S 16°13.2'	343°44.0'	N 21°42.0'							
5	73°05.2'	256°31.7'	N 1°29.5'	264°07.3'	N 6°16.4'	68°07.5'	N 0°23.2'	110°43.3'	S 16°13.2'	358°45.3'	N 21°42.2'							
6	88°07.6'	271°31.9'	N 1°28.5'	279°06.8'	N 6°15.2'	83°10.3'	N 0°23.1'	125°45.9'	S 16°13.3'	13°46.6'	N 21°42.4'							
7	103°10.1'	286°32.1'	N 1°27.5'	294°06.4'	N 6°14.1'	98°13.1'	N 0°23.0'	140°48.5'	S 16°13.3'	28°47.9'	N 21°42.5'							
8	118°12.6'	301°32.3'	N 1°26.5'	309°06.0'	N 6°12.9'	113°15.8'	N 0°22.8'	155°51.1'	S 16°13.3'	43°49.3'	N 21°42.7'							
9	133°15.0'	316°32.5'	N 1°25.6'	324°05.6'	N 6°11.7'	128°18.6'	N 0°22.7'	170°53.7'	S 16°13.4'	58°50.6'	N 21°42.9'							
10	148°17.5'	331°32.8'	N 1°24.6'	339°05.2'	N 6°10.5'	143°21.3'	N 0°22.6'	185°56.3'	S 16°13.4'	73°51.9'	N 21°43.1'							
11	163°20.0'	346°33.0'	N 1°23.6'	354°04.7'	N 6°09.3'	158°24.1'	N 0°22.4'	200°58.8'	S 16°13.5'	88°53.2'	N 21°43.2'							
12	178°22.4'	1°33.2'	N 1°22.7'	9°04.3'	N 6°08.1'	173°26.9'	N 0°22.3'	216°01.4'	S 16°13.5'	103°54.5'	N 21°43.4'							
13	193°24.9'	16°33.4'	N 1°21.7'	24°03.9'	N 6°06.9'	188°29.6'	N 0°22.2'	231°04.0'	S 16°13.5'	118°55.8'	N 21°43.6'							
14	208°27.4'	31°33.7'	N 1°20.7'	39°03.5'	N 6°05.7'	203°32.4'	N 0°22.0'	246°06.6'	S 16°13.6'	133°57.1'	N 21°43.8'							
15	223°29.8'	46°33.9'	N 1°19.8'	54°03.1'	N 6°04.5'	218°35.2'	N 0°21.9'	261°09.2'	S 16°13.6'	148°58.4'	N 21°43.9'							
16	238°32.3'	61°34.1'	N 1°18.8'	69°02.7'	N 6°03.3'	233°37.9'	N 0°21.8'	276°11.8'	S 16°13.7'	163°59.7'	N 21°44.1'							
17	253°34.7'	76°34.3'	N 1°17.8'	84°02.2'	N 6°02.1'	248°40.7'	N 0°21.6'	291°14.4'	S 16°13.7'	179°01.1'	N 21°44.3'							
18	268°37.2'	91°34.5'	N 1°16.8'	99°01.8'	N 6°00.9'	263°43.5'	N 0°21.5'	306°17.0'	S 16°13.7'	194°02.4'	N 21°44.4'							
19	283°39.7'	106°34.8'	N 1°15.9'	114°01.4'	N 5°59.7'	278°46.2'	N 0°21.4'	321°19.6'	S 16°13.8'	209°03.7'	N 21°44.6'							
20	298°42.1'	121°35.0'	N 1°14.9'	129°01.0'	N 5°58.5'	293°49.0'	N 0°21.2'	336°22.2'	S 16°13.8'	224°05.0'	N 21°44.8'							
21	313°44.6'	136°35.2'	N 1°13.9'	144°00.6'	N 5°57.3'	308°51.8'	N 0°21.1'	351°24.8'	S 16°13.9'	239°06.3'	N 21°45.0'							
22	328°47.1'	151°35.4'	N 1°13.0'	159°00.1'	N 5°56.1'	323°54.5'	N 0°21.0'	6°27.4'	S 16°13.9'	254°07.6'	N 21°45.1'							
23	343°49.5'	166°35.7'	N 1°12.0'	173°59.7'	N 5°54.9'	338°57.3'	N 0°20.8'	21°29.9'	S 16°13.9'	269°09.0'	N 21°45.3'							
		SD 15.9' d -1.0'		v -0.4' d -1.2'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.3' d 0.2'								
Mer. pass.		11 h 53 m 48 s		11 h 24 m		0 h 28 m		21 h 34 m		5 h 5 m								

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Regulus	-Procyon	-Pollux	+Betelgeuse	+Mars	+Capella	+Aldebaran
0	258°59.4'	N 27°18.9'	10.2'	-0.3'	54.2'	78°09.9'	52°17.8'	27°00.2'	15°44.9'		23°05.2'	24°08.7'	29°22.9'
1	273°28.6'	N 27°18.6'	10.2'	-0.4'	54.2'	77°42.8'	51°48.4'	26°42.0'	15°15.6'		23°33.4'	24°25.7'	29°51.4'
2	287°57.7'	N 27°18.1'	10.2'	-0.6'	54.2'	77°15.7'	51°18.9'	26°24.2'	14°46.2'		24°01.5'	24°43.1'	30°19.9'
3	302°26.9'	N 27°17.6'	10.2'	-0.7'	54.2'	76°48.6'	50°49.5'	26°06.7'	14°16.9'		24°29.7'	25°00.8'	30°48.4'
4	316°56.1'	N 27°16.9'	10.2'	-0.8'	54.2'	76°21.5'	50°20.1'	25°49.5'	13°47.6'	22°54.1'	24°57.9'	25°18.9'	31°17.0'
5	331°25.3'	N 27°16.0'	10.2'	-1.0'	54.2'	75°54.5'	49°50.7'	25°32.7'	13°18.3'	23°09.3'	25°26.0'	25°37.3'	31°45.6'
6	345°54.5'	N 27°15.1'	10.2'	-1.1'	54.2'	75°27.4'	49°21.3'	25°16.2'	12°49.1'	23°25.0'	25°54.2'	25°56.0'	32°14.2'
7	0°23.8'	N 27°14.0'	10.2'	-1.2'	54.2'	75°00.3'	48°51.8'	25°00.1'	12°19.9'	23°41.1'	26°22.4'	26°15.0'	32°42.9'
8	14°53.0'	N 27°12.8'	10.3'	-1.4'	54.1'	74°33.3'	48°22.4'	24°44.4'	11°50.7'	23°57.6'	26°50.6'	26°34.3'	33°11.6'
9	29°22.3'	N 27°11.4'	10.3'	-1.5'	54.1'	74°06.2'	47°53.0'		11°21.5'	24°14.5'	27°18.9'	26°53.9'	33°40.2'
10	43°51.5'	N 27°09.9'	10.3'	-1.6'	54.1'	73°39.1'	47°23.6'		10°52.4'	24°31.8'	27°47.1'	27°13.8'	34°09.0'
11	58°20.8'	N 27°08.3'	10.3'	-1.7'	54.1'	73°12.1'	46°54.2'		10°23.3'	24°49.4'	28°15.3'	27°34.0'	34°37.7'
12	72°50.1'	N 27°06.6'	10.3'	-1.9'	54.1'	72°45.0'	46°24.8'		9°54.2'	25°07.4'	28°43.6'	27°54.4'	35°06.5'
13	87°19.4'	N 27°04.7'	10.3'	-2.0'	54.1'	72°18.0'	45°55.4'		9°25.2'	25°25.7'	29°11.8'	28°15.0'	35°35.2'
14	101°48.8'	N 27°02.7'	10.4'	-2.1'	54.1'	71°50.9'	45°26.0'		8°56.3'	25°44.4'	29°40.1'	28°35.9'	36°04.0'
15	116°18.1'	N 27°00.6'	10.4'	-2.3'	54.1'	71°23.8'	44°56.6'		8°27.4'	26°03.3'	30°08.3'	28°57.1'	36°32.8'
16	130°47.5'	N 26°58.3'	10.4'	-2.4'	54.1'	70°56.8'	44°27.3'		7°58.7'	26°22.6'	30°36.6'	29°18.4'	37°01.7'
17	145°16.9'	N 26°55.9'	10.4'	-2.5'	54.1'	70°29.7'	43°57.9'		7°30.0'	26°42.2'	31°04.9'	29°40.0'	37°30.5'
18	159°46.3'	N 26°53.4'	10.4'	-2.6'	54.1'	70°02.6'	43°28.5'		7°01.4'	27°02.0'	31°33.2'	30°01.8'	37°59.4'
19	174°15.7'	N 26°50.7'	10.5'	-2.8'	54.1'	69°35.5'	42°59.1'		6°33.0'	27°22.1'	32°01.5'	30°23.8'	38°28.3'
20	188°45.2'	N 26°48.0'	10.5'	-2.9'	54.1'	69°08.5'	42°29.7'		6°04.8'	27°42.5'	32°29.8'	30°45.9'	38°57.2'
21	203°14.7'	N 26°45.1'	10.5'	-3.0'	54.1'	68°41.4'	42°00.3'		5°36.8'	28°03.1'	32°58.1'	31°08.3'	39°26.1'
22	217°44.2'	N 26°42.0'	10.5'	-3.2'	54.2'	68°14.3'	41°30.9'		5°09.1'	28°24.0'	33°26.4'	31°30.8'	39°55.0'
23	232°13.7'	N 26°38.9'	10.6'	-3.3'	54.2'	67°47.2'	41°01.5'		4°41.8'	28°45.1'	33°54.8'	31°53.6'	40°24.0'
Mer. pass.		6 h 58 m SD 14.8'		phase 40%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.2'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.9'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.7'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.6'	Rigel	+0.2	281°05.7'	S 8°10.3'
Vega	+0.0	80°34.4'	N 38°48.5'	Pollux	+1.2	243°19.8'	N 27°58.3'	Aldebaran	+0.9	290°41.7'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°53.0'	N 5°10.2'	Polaris	+2.0	314°38.5'	N 89°21.3'
Rigil Kent	-0.0	139°43.4'	S 60°55.8'	Adhara	+1.5	255°07.5'	S 28°59.9'	Achernar	+0.5	335°21.1'	S 57°07.1'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.0'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.3'	S 52°42.1'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	358°52.0'	181°35.9'	N 1°11.0'	188°59.3'	N 5°53.7'	354°00.0'	N 0°20.7'	36°32.5'	S 16°14.0'	284°10.3'	N 21°45.5'							
1	13°54.5'	196°36.1'	N 1°10.1'	203°58.9'	N 5°52.5'	9°02.8'	N 0°20.6'	51°35.1'	S 16°14.0'	299°11.6'	N 21°45.7'							
2	28°56.9'	211°36.3'	N 1°09.1'	218°58.5'	N 5°51.2'	24°05.6'	N 0°20.4'	66°37.7'	S 16°14.1'	314°12.9'	N 21°45.8'							
3	43°59.4'	226°36.5'	N 1°08.1'	233°58.1'	N 5°50.0'	39°08.3'	N 0°20.3'	81°40.3'	S 16°14.1'	329°14.3'	N 21°46.0'							
4	59°01.9'	241°36.8'	N 1°07.1'	248°57.6'	N 5°48.8'	54°11.1'	N 0°20.2'	96°42.9'	S 16°14.1'	344°15.6'	N 21°46.2'							
5	74°04.3'	256°37.0'	N 1°06.2'	263°57.2'	N 5°47.6'	69°13.9'	N 0°20.0'	111°45.5'	S 16°14.2'	359°16.9'	N 21°46.3'							
6	89°06.8'	271°37.2'	N 1°05.2'	278°56.8'	N 5°46.4'	84°16.6'	N 0°19.9'	126°48.1'	S 16°14.2'	14°18.2'	N 21°46.5'							
7	104°09.2'	286°37.4'	N 1°04.2'	293°56.4'	N 5°45.2'	99°19.4'	N 0°19.8'	141°50.7'	S 16°14.3'	29°19.5'	N 21°46.7'							
8	119°11.7'	301°37.7'	N 1°03.3'	308°56.0'	N 5°44.0'	114°22.2'	N 0°19.6'	156°53.2'	S 16°14.3'	44°20.9'	N 21°46.8'							
9	134°14.2'	316°37.9'	N 1°02.3'	323°55.6'	N 5°42.8'	129°24.9'	N 0°19.5'	171°55.8'	S 16°14.3'	59°22.2'	N 21°47.0'							
10	149°16.6'	331°38.1'	N 1°01.3'	338°55.2'	N 5°41.6'	144°27.7'	N 0°19.4'	186°58.4'	S 16°14.4'	74°23.5'	N 21°47.2'							
11	164°19.1'	346°38.3'	N 1°00.3'	353°54.7'	N 5°40.4'	159°30.5'	N 0°19.3'	202°01.0'	S 16°14.4'	89°24.9'	N 21°47.4'							
12	179°21.6'	1°38.5'	N 0°59.4'	8°54.3'	N 5°39.2'	174°33.2'	N 0°19.1'	217°03.6'	S 16°14.4'	104°26.2'	N 21°47.5'							
13	194°24.0'	16°38.8'	N 0°58.4'	23°53.9'	N 5°38.0'	189°36.0'	N 0°19.0'	232°06.2'	S 16°14.5'	119°27.5'	N 21°47.7'							
14	209°26.5'	31°39.0'	N 0°57.4'	38°53.5'	N 5°36.8'	204°38.8'	N 0°18.9'	247°08.8'	S 16°14.5'	134°28.8'	N 21°47.9'							
15	224°29.0'	46°39.2'	N 0°56.5'	53°53.1'	N 5°35.6'	219°41.5'	N 0°18.7'	262°11.4'	S 16°14.6'	149°30.2'	N 21°48.0'							
16	239°31.4'	61°39.4'	N 0°55.5'	68°52.7'	N 5°34.4'	234°44.3'	N 0°18.6'	277°14.0'	S 16°14.6'	164°31.5'	N 21°48.2'							
17	254°33.9'	76°39.7'	N 0°54.5'	83°52.3'	N 5°33.2'	249°47.1'	N 0°18.5'	292°16.5'	S 16°14.6'	179°32.8'	N 21°48.4'							
18	269°36.3'	91°39.9'	N 0°53.6'	98°51.8'	N 5°32.0'	264°49.8'	N 0°18.3'	307°19.1'	S 16°14.7'	194°34.2'	N 21°48.5'							
19	284°38.8'	106°40.1'	N 0°52.6'	113°51.4'	N 5°30.8'	279°52.6'	N 0°18.2'	322°21.7'	S 16°14.7'	209°35.5'	N 21°48.7'							
20	299°41.3'	121°40.3'	N 0°51.6'	128°51.0'	N 5°29.5'	294°55.4'	N 0°18.1'	337°24.3'	S 16°14.8'	224°36.8'	N 21°48.9'							
21	314°43.7'	136°40.5'	N 0°50.6'	143°50.6'	N 5°28.3'	309°58.1'	N 0°17.9'	352°26.9'	S 16°14.8'	239°38.2'	N 21°49.0'							
22	329°46.2'	151°40.8'	N 0°49.7'	158°50.2'	N 5°27.1'	325°00.9'	N 0°17.8'	7°29.5'	S 16°14.8'	254°39.5'	N 21°49.2'							
23	344°48.7'	166°41.0'	N 0°48.7'	173°49.8'	N 5°25.9'	340°03.7'	N 0°17.7'	22°32.1'	S 16°14.9'	269°40.9'	N 21°49.4'							
		SD 15.9' d -1.0'		v -0.4' d -1.2'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.3' d 0.2'								
Mer. pass.		11 h 53 m 27 s		11 h 24 m		0 h 24 m		21 h 30 m		5 h 3 m								

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Regulus	-Pollux	+Betelgeuse	+Capella	+Mars	+Aldebaran	+Rigel
0	246°43.3'	N 26°35.6'	10.6'	-3.4'	54.2'	67°20.1'	40°32.2'	4°15.0'	29°06.5'	32°16.5'	34°23.1'	40°53.0'	47°25.0'
1	261°12.9'	N 26°32.2'	10.6'	-3.5'	54.2'	66°53.0'	40°02.8'		29°28.0'	32°39.5'	34°51.5'	41°22.0'	47°44.4'
2	275°42.5'	N 26°28.6'	10.6'	-3.7'	54.2'	66°25.9'	39°33.4'		29°49.8'	33°02.7'	35°19.8'	41°51.0'	48°04.0'
3	290°12.1'	N 26°25.0'	10.7'	-3.8'	54.2'	65°58.8'	39°04.0'		30°11.8'	33°26.1'	35°48.2'	42°20.0'	48°23.8'
4	304°41.8'	N 26°21.2'	10.7'	-3.9'	54.2'	65°31.7'	38°34.6'		30°34.0'	33°49.6'	36°16.6'	42°49.0'	48°43.7'
5	319°11.5'	N 26°17.3'	10.7'	-4.0'	54.2'	65°04.6'	38°05.2'		30°56.3'	34°13.3'	36°45.0'	43°18.1'	49°03.7'
6	333°41.2'	N 26°13.2'	10.8'	-4.2'	54.2'	64°37.5'	37°35.8'		31°18.9'	34°37.1'	37°13.4'	43°47.2'	49°23.8'
7	348°11.0'	N 26°09.1'	10.8'	-4.3'	54.2'	64°10.4'	37°06.4'		31°41.6'	35°01.0'	37°41.8'	44°16.2'	49°44.0'
8	2°40.8'	N 26°04.8'	10.8'	-4.4'	54.2'	63°43.2'	36°37.0'		32°04.5'	35°25.1'	38°10.2'	44°45.4'	50°04.4'
9	17°10.6'	N 26°00.4'	10.9'	-4.5'	54.2'	63°16.1'	36°07.6'		32°27.6'	35°49.3'	38°38.7'	45°14.5'	50°24.9'
10	31°40.5'	N 25°55.8'	10.9'	-4.7'	54.2'	62°48.9'	35°38.3'		32°50.9'	36°13.6'	39°07.1'	45°43.6'	50°45.5'
11	46°10.4'	N 25°51.2'	10.9'	-4.8'	54.2'	62°21.8'	35°08.9'		33°14.3'	36°38.0'	39°35.6'	46°12.8'	51°06.2'
12	60°40.3'	N 25°46.4'	11.0'	-4.9'	54.2'	61°54.6'	34°39.5'		33°37.8'	37°02.6'	40°04.1'	46°41.9'	51°27.0'
13	75°10.2'	N 25°41.5'	11.0'	-5.0'	54.2'	61°27.4'	34°10.1'		34°01.5'	37°27.3'	40°32.5'	47°11.1'	51°47.9'
14	89°40.2'	N 25°36.5'	11.0'	-5.1'	54.2'	61°00.3'	33°40.7'		34°25.4'	37°52.1'	41°01.0'	47°40.3'	52°09.0'
15	104°10.3'	N 25°31.3'	11.1'	-5.3'	54.2'	60°33.1'	33°11.2'	4°04.3'	34°49.4'	38°16.9'	41°29.5'	48°09.6'	52°30.1'
16	118°40.3'	N 25°26.0'	11.1'	-5.4'	54.2'	60°05.9'	32°41.8'	4°30.9'	35°13.5'	38°41.9'	41°58.1'	48°38.8'	52°51.3'
17	133°10.5'	N 25°20.7'	11.1'	-5.5'	54.2'	59°38.7'	32°12.4'	4°58.2'	35°37.7'	39°07.0'	42°26.6'	49°08.1'	53°12.7'
18	147°40.6'	N 25°15.1'	11.2'	-5.6'	54.2'	59°11.4'	31°43.0'	5°25.9'	36°02.1'	39°32.2'	42°55.2'	49°37.3'	53°34.1'
19	162°10.8'	N 25°09.5'	11.2'	-5.7'	54.3'	58°44.2'	31°13.6'	5°53.9'	36°26.6'	39°57.5'	43°23.7'	50°06.6'	53°55.7'
20	176°41.0'	N 25°03.8'	11.3'	-5.9'	54.3'	58°17.0'	30°44.2'	6°22.2'	36°51.2'	40°22.9'	43°52.3'	50°35.9'	54°17.3'
21	191°11.3'	N 24°57.9'	11.3'	-6.0'	54.3'	57°49.7'	30°14.8'	6°50.7'	37°16.0'	40°48.4'	44°20.9'	51°05.2'	54°39.1'
22	205°41.6'	N 24°51.9'	11.3'	-6.1'	54.3'	57°22.5'	29°45.4'	7°19.4'	37°40.8'	41°13.9'	44°49.5'	51°34.6'	55°00.9'
23	220°11.9'	N 24°45.8'	11.4'	-6.2'	54.3'	56°55.2'	29°16.0'	7°48.2'	38°05.8'	41°39.6'	45°18.1'	52°03.9'	55°22.8'
Mer. pass.		7 h 49 m SD 14.8'		phase 31%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.2'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.9'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.7'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.5'	Rigel	+0.2	281°05.7'	S 8°10.3'
Vega	+0.0	80°34.4'	N 38°48.5'	Pollux	+1.2	243°19.8'	N 27°58.3'	Aldebaran	+0.9	290°41.7'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°53.0'	N 5°10.2'	Polaris	+2.0	314°38.1'	N 89°21.3'
Rigel Kent	-0.0	139°43.4'	S 60°55.8'	Adhara	+1.5	255°07.5'	S 28°59.9'	Achernar	+0.5	335°21.1'	S 57°07.2'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.0'	S 16°44.6'				
Hadar	+0.6	148°39.2'	S 60°29.0'	Canopus	-0.6	263°53.3'	S 52°42.1'				

Wednesday 21 September 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	359°51.1'	181°41.2'	N 0°47.7'	188°49.4'	N 5°24.7'	355°06.4'	N 0°17.5'	37°34.7'	S 16°14.9'	284°42.2'	N 21°49.5'
1	14°53.6'	196°41.4'	N 0°46.8'	203°49.0'	N 5°23.5'	10°09.2'	N 0°17.4'	52°37.3'	S 16°15.0'	299°43.5'	N 21°49.7'
2	29°56.1'	211°41.7'	N 0°45.8'	218°48.5'	N 5°22.3'	25°12.0'	N 0°17.3'	67°39.8'	S 16°15.0'	314°44.9'	N 21°49.9'
3	44°58.5'	226°41.9'	N 0°44.8'	233°48.1'	N 5°21.1'	40°14.7'	N 0°17.1'	82°42.4'	S 16°15.0'	329°46.2'	N 21°50.0'
4	60°01.0'	241°42.1'	N 0°43.8'	248°47.7'	N 5°19.9'	55°17.5'	N 0°17.0'	97°45.0'	S 16°15.1'	344°47.5'	N 21°50.2'
5	75°03.5'	256°42.3'	N 0°42.9'	263°47.3'	N 5°18.7'	70°20.3'	N 0°16.9'	112°47.6'	S 16°15.1'	359°48.9'	N 21°50.4'
6	90°05.9'	271°42.5'	N 0°41.9'	278°46.9'	N 5°17.4'	85°23.0'	N 0°16.7'	127°50.2'	S 16°15.1'	14°50.2'	N 21°50.5'
7	105°08.4'	286°42.8'	N 0°40.9'	293°46.5'	N 5°16.2'	100°25.8'	N 0°16.6'	142°52.8'	S 16°15.2'	29°51.6'	N 21°50.7'
8	120°10.8'	301°43.0'	N 0°39.9'	308°46.1'	N 5°15.0'	115°28.6'	N 0°16.5'	157°55.4'	S 16°15.2'	44°52.9'	N 21°50.9'
9	135°13.3'	316°43.2'	N 0°39.0'	323°45.7'	N 5°13.8'	130°31.3'	N 0°16.3'	172°57.9'	S 16°15.3'	59°54.3'	N 21°51.0'
10	150°15.8'	331°43.4'	N 0°38.0'	338°45.2'	N 5°12.6'	145°34.1'	N 0°16.2'	188°00.5'	S 16°15.3'	74°55.6'	N 21°51.2'
11	165°18.2'	346°43.6'	N 0°37.0'	353°44.8'	N 5°11.4'	160°36.9'	N 0°16.0'	203°03.1'	S 16°15.3'	89°57.0'	N 21°51.4'
12	180°20.7'	1°43.9'	N 0°36.1'	8°44.4'	N 5°10.2'	175°39.6'	N 0°15.9'	218°05.7'	S 16°15.4'	104°58.3'	N 21°51.5'
13	195°23.2'	16°44.1'	N 0°35.1'	23°44.0'	N 5°09.0'	190°42.4'	N 0°15.8'	233°08.3'	S 16°15.4'	119°59.6'	N 21°51.7'
14	210°25.6'	31°44.3'	N 0°34.1'	38°43.6'	N 5°07.7'	205°45.2'	N 0°15.6'	248°10.9'	S 16°15.5'	135°01.0'	N 21°51.9'
15	225°28.1'	46°44.5'	N 0°33.1'	53°43.2'	N 5°06.5'	220°47.9'	N 0°15.5'	263°13.5'	S 16°15.5'	150°02.3'	N 21°52.0'
16	240°30.6'	61°44.7'	N 0°32.2'	68°42.8'	N 5°05.3'	235°50.7'	N 0°15.4'	278°16.0'	S 16°15.5'	165°03.7'	N 21°52.2'
17	255°33.0'	76°45.0'	N 0°31.2'	83°42.4'	N 5°04.1'	250°53.5'	N 0°15.2'	293°18.6'	S 16°15.6'	180°05.0'	N 21°52.4'
18	270°35.5'	91°45.2'	N 0°30.2'	98°42.0'	N 5°02.9'	265°56.2'	N 0°15.1'	308°21.2'	S 16°15.6'	195°06.4'	N 21°52.5'
19	285°38.0'	106°45.4'	N 0°29.3'	113°41.6'	N 5°01.7'	280°59.0'	N 0°15.0'	323°23.8'	S 16°15.6'	210°07.8'	N 21°52.7'
20	300°40.4'	121°45.6'	N 0°28.3'	128°41.2'	N 5°00.5'	296°01.8'	N 0°14.8'	338°26.4'	S 16°15.7'	225°09.1'	N 21°52.9'
21	315°42.9'	136°45.9'	N 0°27.3'	143°40.7'	N 4°59.2'	311°04.6'	N 0°14.7'	353°29.0'	S 16°15.7'	240°10.5'	N 21°53.0'
22	330°45.3'	151°46.1'	N 0°26.3'	158°40.3'	N 4°58.0'	326°07.3'	N 0°14.6'	8°31.6'	S 16°15.8'	255°11.8'	N 21°53.2'
23	345°47.8'	166°46.3'	N 0°25.4'	173°39.9'	N 4°56.8'	341°10.1'	N 0°14.4'	23°34.1'	S 16°15.8'	270°13.2'	N 21°53.4'
		SD 15.9' d -1.0'		v -0.4' d -1.2'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.3' d 0.2'	
Mer. pass.		11 h 53 m 6 s		11 h 25 m		0 h 20 m		21 h 26 m		5 h 1 m	

h	Moon				Lunar distance									
	GHA	dec	v	d	HP	-Sun	-Regulus	+Pollux	+Procyon	+Betelgeuse	+Capella	+Mars	+Aldebaran	
0	234°42.3'	N 24°39.6'	11.4'	-6.3'	54.3'	56°27.9'	28°46.6'	8°17.2'			38°30.8'	42°05.3'	45°46.7'	52°33.3'
1	249°12.7'	N 24°33.3'	11.5'	-6.4'	54.3'	56°00.6'	28°17.1'	8°46.2'			38°56.0'	42°31.1'	46°15.4'	53°02.7'
2	263°43.2'	N 24°26.8'	11.5'	-6.6'	54.3'	55°33.3'	27°47.7'	9°15.4'			39°21.3'	42°57.0'	46°44.0'	53°32.1'
3	278°13.7'	N 24°20.3'	11.5'	-6.7'	54.3'	55°06.0'	27°18.3'	9°44.6'			39°46.7'	43°23.0'	47°12.7'	54°01.6'
4	292°44.2'	N 24°13.6'	11.6'	-6.8'	54.3'	54°38.7'	26°48.9'	10°13.9'			40°12.1'	43°49.1'	47°41.4'	54°31.0'
5	307°14.8'	N 24°06.8'	11.6'	-6.9'	54.3'	54°11.3'	26°19.5'	10°43.3'			40°37.7'	44°15.2'	48°10.1'	55°00.5'
6	321°45.4'	N 23°59.9'	11.7'	-7.0'	54.4'	53°44.0'	25°50.1'	11°12.7'			41°03.4'	44°41.4'	48°38.8'	55°29.9'
7	336°16.1'	N 23°52.9'	11.7'	-7.1'	54.4'	53°16.6'	25°20.7'	11°42.2'			41°29.1'	45°07.7'	49°07.6'	55°59.5'
8	350°46.8'	N 23°45.8'	11.8'	-7.2'	54.4'	52°49.2'	24°51.3'	12°11.7'			41°54.9'	45°34.0'	49°36.3'	56°29.0'
9	5°17.6'	N 23°38.5'	11.8'	-7.4'	54.4'	52°21.8'	24°21.9'	12°41.3'			42°20.8'	46°00.4'	50°05.1'	56°58.5'
10	19°48.4'	N 23°31.2'	11.8'	-7.5'	54.4'	51°54.4'	23°52.5'	13°10.9'			42°46.9'	46°26.9'	50°33.9'	57°28.1'
11	34°19.2'	N 23°23.7'	11.9'	-7.6'	54.4'	51°27.0'	23°23.1'	13°40.6'			43°12.9'	46°53.5'	51°02.7'	57°57.6'
12	48°50.1'	N 23°16.1'	11.9'	-7.7'	54.4'	50°59.6'	22°53.8'	14°10.3'			43°39.1'	47°20.1'	51°31.5'	58°27.2'
13	63°21.0'	N 23°08.5'	12.0'	-7.8'	54.4'	50°32.1'	22°24.4'	14°40.0'	24°16.6'		44°05.3'	47°46.8'	52°00.4'	58°56.9'
14	77°52.0'	N 23°00.7'	12.0'	-7.9'	54.4'	50°04.6'	21°55.1'	15°09.7'	24°31.8'		44°31.7'	48°13.5'	52°29.2'	59°26.5'
15	92°23.0'	N 22°52.8'	12.1'	-8.0'	54.5'	49°37.2'	21°25.7'	15°39.5'	24°47.3'		44°58.1'	48°40.3'	52°58.1'	59°56.2'
16	106°54.1'	N 22°44.8'	12.1'	-8.1'	54.5'	49°09.7'	20°56.4'	16°09.3'	25°03.4'		45°24.5'	49°07.2'	53°27.0'	60°25.8'
17	121°25.2'	N 22°36.7'	12.2'	-8.2'	54.5'	48°42.2'	20°27.1'	16°39.2'	25°19.8'		45°51.1'	49°34.1'	53°55.9'	60°55.5'
18	135°56.3'	N 22°28.4'	12.2'	-8.3'	54.5'	48°14.6'	19°57.8'	17°09.0'	25°36.6'		46°17.7'	50°01.1'	54°24.8'	61°25.2'
19	150°27.5'	N 22°20.1'	12.2'	-8.4'	54.5'	47°47.1'	19°28.5'	17°38.9'	25°53.8'		46°44.3'	50°28.2'	54°53.8'	61°55.0'
20	164°58.8'	N 22°11.7'	12.3'	-8.5'	54.5'	47°19.5'	18°59.3'	18°08.9'	26°11.3'		47°11.1'	50°55.3'	55°22.8'	62°24.7'
21	179°30.0'	N 22°03.2'	12.3'	-8.6'	54.5'	46°51.9'	18°30.1'	18°38.8'	26°29.3'		47°37.9'	51°22.4'	55°51.7'	62°54.5'
22	194°01.4'	N 21°54.5'	12.4'	-8.7'	54.6'	46°24.4'	18°00.9'	19°08.8'	26°47.6'		48°04.8'	51°49.6'	56°20.8'	63°24.3'
23	208°32.7'	N 21°45.8'	12.4'	-8.8'	54.6'	45°56.7'	17°31.7'	19°38.8'	27°06.2'		48°31.7'	52°16.9'	56°49.8'	63°54.1'
Mer. pass.		8 h 38 m SD 14.8'		phase 22%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.2'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.9'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.6'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.5'	Rigel	+0.2	281°05.7'	N 8°10.3'
Vega	+0.0	80°34.4'	N 38°48.5'	Pollux	+1.2	243°19.8'	N 27°58.3'	Aldebaran	+0.9	290°41.7'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°53.0'	N 5°10.2'	Polaris	+2.0	314°37.7'	N 89°21.3'
Rigil Kent	-0.0	139°43.4'	S 60°55.8'	Adhara	+1.5	255°07.5'	S 28°59.9'	Achernar	+0.5	335°21.1'	S 57°07.2'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.0'	S 16°44.6'				
Hadar	+0.6	148°39.3'	S 60°29.0'	Canopus	-0.6	263°53.3'	S 52°42.1'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	0°50.3'	181°46.5'	N 0°24.4'	188°39.5'	N 4°55.6'	356°12.9'	N 0°14.3'	38°36.7'	S 16°15.8'	285°14.5'	N 21°53.5'
1	15°52.7'	196°46.7'	N 0°23.4'	203°39.1'	N 4°54.4'	11°15.6'	N 0°14.2'	53°39.3'	S 16°15.9'	300°15.9'	N 21°53.7'
2	30°55.2'	211°47.0'	N 0°22.4'	218°38.7'	N 4°53.2'	26°18.4'	N 0°14.0'	68°41.9'	S 16°15.9'	315°17.2'	N 21°53.8'
3	45°57.7'	226°47.2'	N 0°21.5'	233°38.3'	N 4°51.9'	41°21.2'	N 0°13.9'	83°44.5'	S 16°15.9'	330°18.6'	N 21°54.0'
4	61°00.1'	241°47.4'	N 0°20.5'	248°37.9'	N 4°50.7'	56°23.9'	N 0°13.8'	98°47.1'	S 16°16.0'	345°20.0'	N 21°54.2'
5	76°02.6'	256°47.6'	N 0°19.5'	263°37.5'	N 4°49.5'	71°26.7'	N 0°13.6'	113°49.6'	S 16°16.0'	0°21.3'	N 21°54.3'
6	91°05.1'	271°47.8'	N 0°18.6'	278°37.1'	N 4°48.3'	86°29.5'	N 0°13.5'	128°52.2'	S 16°16.1'	15°22.7'	N 21°54.5'
7	106°07.5'	286°48.1'	N 0°17.6'	293°36.7'	N 4°47.1'	101°32.2'	N 0°13.4'	143°54.8'	S 16°16.1'	30°24.0'	N 21°54.7'
8	121°10.0'	301°48.3'	N 0°16.6'	308°36.3'	N 4°45.9'	116°35.0'	N 0°13.2'	158°57.4'	S 16°16.1'	45°25.4'	N 21°54.8'
9	136°12.5'	316°48.5'	N 0°15.6'	323°35.8'	N 4°44.6'	131°37.8'	N 0°13.1'	173°60.0'	S 16°16.2'	60°26.8'	N 21°55.0'
10	151°14.9'	331°48.7'	N 0°14.7'	338°35.4'	N 4°43.4'	146°40.5'	N 0°13.0'	189°02.6'	S 16°16.2'	75°28.1'	N 21°55.1'
11	166°17.4'	346°48.9'	N 0°13.7'	353°35.0'	N 4°42.2'	161°43.3'	N 0°12.8'	204°05.1'	S 16°16.2'	90°29.5'	N 21°55.3'
12	181°19.8'	1°49.2'	N 0°12.7'	8°34.6'	N 4°41.0'	176°46.1'	N 0°12.7'	219°07.7'	S 16°16.3'	105°30.9'	N 21°55.5'
13	196°22.3'	16°49.4'	N 0°11.7'	23°34.2'	N 4°39.8'	191°48.8'	N 0°12.6'	234°10.3'	S 16°16.3'	120°32.2'	N 21°55.6'
14	211°24.8'	31°49.6'	N 0°10.8'	38°33.8'	N 4°38.5'	206°51.6'	N 0°12.4'	249°12.9'	S 16°16.3'	135°33.6'	N 21°55.8'
15	226°27.2'	46°49.8'	N 0°09.8'	53°33.4'	N 4°37.3'	221°54.4'	N 0°12.3'	264°15.5'	S 16°16.4'	150°35.0'	N 21°56.0'
16	241°29.7'	61°50.0'	N 0°08.8'	68°33.0'	N 4°36.1'	236°57.2'	N 0°12.2'	279°18.1'	S 16°16.4'	165°36.3'	N 21°56.1'
17	256°32.2'	76°50.3'	N 0°07.9'	83°32.6'	N 4°34.9'	251°59.9'	N 0°12.0'	294°20.6'	S 16°16.5'	180°37.7'	N 21°56.3'
18	271°34.6'	91°50.5'	N 0°06.9'	98°32.2'	N 4°33.7'	267°02.7'	N 0°11.9'	309°23.2'	S 16°16.5'	195°39.1'	N 21°56.4'
19	286°37.1'	106°50.7'	N 0°05.9'	113°31.8'	N 4°32.4'	282°05.5'	N 0°11.8'	324°25.8'	S 16°16.5'	210°40.4'	N 21°56.6'
20	301°39.6'	121°50.9'	N 0°04.9'	128°31.4'	N 4°31.2'	297°08.2'	N 0°11.6'	339°28.4'	S 16°16.6'	225°41.8'	N 21°56.8'
21	316°42.0'	136°51.1'	N 0°04.0'	143°31.0'	N 4°30.0'	312°11.0'	N 0°11.5'	354°31.0'	S 16°16.6'	240°43.2'	N 21°56.9'
22	331°44.5'	151°51.4'	N 0°03.0'	158°30.6'	N 4°28.8'	327°13.8'	N 0°11.4'	9°33.5'	S 16°16.6'	255°44.6'	N 21°57.1'
23	346°46.9'	166°51.6'	N 0°02.0'	173°30.2'	N 4°27.6'	342°16.5'	N 0°11.2'	24°36.1'	S 16°16.7'	270°45.9'	N 21°57.2'
		SD 15.9' d -1.0'		v -0.4' d -1.2'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.4' d 0.2'	
Mer. pass.		11 h 52 m 45 s		11 h 26 m		0 h 15 m		21 h 22 m		4 h 59 m	

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Regulus	+Pollux	+Procyon	+Betelgeuse	+Sirius	+Capella	+Mars
0	223°04.2'	N 21°36.9'	12.5'	-8.9'	54.6'	45°29.1'	17°02.6'	20°08.8'	27°25.1'	48°58.7'		52°44.2'	57°18.8'
1	237°35.6'	N 21°28.0'	12.5'	-9.0'	54.6'	45°01.5'	16°33.5'	20°38.9'	27°44.4'	49°25.8'		53°11.6'	57°47.9'
2	252°07.1'	N 21°18.9'	12.6'	-9.1'	54.6'	44°33.8'	16°04.5'	21°09.0'	28°03.9'	49°52.9'		53°39.0'	58°17.0'
3	266°38.7'	N 21°09.8'	12.6'	-9.2'	54.6'	44°06.1'	15°35.6'	21°39.1'	28°23.8'	50°20.1'	53°00.1'	54°06.5'	58°46.1'
4	281°10.3'	N 21°00.6'	12.6'	-9.3'	54.6'	43°38.4'	15°06.6'	22°09.2'	28°44.0'	50°47.4'	53°15.1'	54°34.1'	59°15.2'
5	295°41.9'	N 20°51.2'	12.7'	-9.4'	54.7'	43°10.7'	14°37.8'	22°39.4'	29°04.4'	51°14.7'	53°30.3'	55°01.6'	59°44.4'
6	310°13.6'	N 20°41.8'	12.7'	-9.5'	54.7'	42°43.0'	14°09.1'	23°09.5'	29°25.1'	51°42.0'	53°45.6'	55°29.3'	60°13.5'
7	324°45.3'	N 20°32.2'	12.8'	-9.6'	54.7'	42°15.2'	13°40.4'	23°39.7'	29°46.1'	52°09.5'	54°01.1'	55°57.0'	60°42.7'
8	339°17.1'	N 20°22.6'	12.8'	-9.7'	54.7'	41°47.5'	13°11.8'	24°10.0'	30°07.3'	52°36.9'	54°16.7'	56°24.7'	61°12.0'
9	353°48.9'	N 20°12.9'	12.9'	-9.8'	54.7'	41°19.7'	12°43.4'	24°40.2'	30°28.8'	53°04.5'	54°32.5'	56°52.5'	61°41.2'
10	8°20.8'	N 20°03.0'	12.9'	-9.9'	54.7'	40°51.9'	12°15.0'	25°10.5'	30°50.5'	53°32.0'	54°48.4'	57°20.3'	62°10.4'
11	22°52.7'	N 19°53.1'	12.9'	-10.0'	54.8'	40°24.1'	11°46.9'	25°40.8'	31°12.4'	53°59.7'	55°04.5'	57°48.1'	62°39.7'
12	37°24.6'	N 19°43.1'	13.0'	-10.1'	54.8'		11°18.9'	26°11.1'	31°34.6'	54°27.4'	55°20.7'	58°16.1'	63°09.0'
13	51°56.6'	N 19°33.0'	13.0'	-10.2'	54.8'		10°51.1'	26°41.5'	31°57.0'	54°55.1'	55°37.1'	58°44.0'	63°38.4'
14	66°28.6'	N 19°22.8'	13.1'	-10.3'	54.8'		10°23.5'	27°11.8'	32°19.6'	55°22.9'	55°53.6'	59°12.0'	64°07.7'
15	81°00.7'	N 19°12.5'	13.1'	-10.4'	54.8'		9°56.1'	27°42.2'	32°42.4'	55°50.7'	56°10.2'	59°40.1'	64°37.1'
16	95°32.8'	N 19°02.1'	13.2'	-10.5'	54.8'		9°29.1'	28°12.7'	33°05.4'	56°18.6'	56°27.0'	60°08.2'	65°06.5'
17	110°05.0'	N 18°51.6'	13.2'	-10.6'	54.9'		9°02.4'	28°43.1'	33°28.6'	56°46.6'	56°43.9'	60°36.3'	65°35.9'
18	124°37.2'	N 18°41.1'	13.2'	-10.7'	54.9'		8°36.1'	29°13.6'	33°52.0'	57°14.6'	57°01.0'	61°04.5'	66°05.3'
19	139°09.4'	N 18°30.4'	13.3'	-10.7'	54.9'		8°10.3'	29°44.1'	34°15.5'	57°42.6'	57°18.2'	61°32.7'	66°34.8'
20	153°41.7'	N 18°19.7'	13.3'	-10.8'	54.9'		7°45.0'	30°14.6'	34°39.3'	58°10.7'	57°35.5'	62°01.0'	67°04.3'
21	168°14.0'	N 18°08.9'	13.4'	-10.9'	54.9'		7°20.4'	30°45.1'	35°03.2'	58°38.8'	57°53.0'	62°29.3'	67°33.8'
22	182°46.4'	N 17°57.9'	13.4'	-11.0'	54.9'			31°15.7'	35°27.3'	59°07.0'	58°10.5'	62°57.7'	68°03.3'
23	197°18.8'	N 17°46.9'	13.4'	-11.1'	55.0'			31°46.3'	35°51.5'	59°35.2'	58°28.3'	63°26.1'	68°32.9'
Mer. pass.		9 h 26 m SD 14.9'	phase 15%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.1'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.9'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.6'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.5'	Rigel	+0.2	281°05.6'	S 8°10.3'
Vega	+0.0	80°34.4'	N 38°48.5'	Pollux	+1.2	243°19.8'	N 27°58.3'	Aldebaran	+0.9	290°41.7'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°53.0'	N 5°10.2'	Polaris	+2.0	314°37.3'	N 89°21.3'
Rigil Kent	-0.0	139°43.4'	S 60°55.8'	Adhara	+1.5	255°07.5'	S 28°59.9'	Achernar	+0.5	335°21.1'	S 57°07.2'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.0'	S 16°44.6'				
Hadar	+0.6	148°39.3'	S 60°29.0'	Canopus	-0.6	263°53.3'	S 52°42.1'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	1°49.4'	N 0°01.0'	181°51.8'	N 0°01.0'	188°29.8'	N 4°26.3'	357°19.3'	N 0°11.1'	39°38.7'	S 16°16.7'	285°47.3'	N 21°57.4'
1	16°51.9'	N 0°00.1'	196°52.0'	N 0°00.1'	203°29.3'	N 4°25.1'	12°22.1'	N 0°11.0'	54°41.3'	S 16°16.8'	300°48.7'	N 21°57.6'
2	31°54.3'	S 0°00.9'	211°52.2'	S 0°00.9'	218°28.9'	N 4°23.9'	27°24.8'	N 0°10.8'	69°43.9'	S 16°16.8'	315°50.1'	N 21°57.7'
3	46°56.8'	S 0°01.9'	226°52.4'	S 0°01.9'	233°28.5'	N 4°22.7'	42°27.6'	N 0°10.7'	84°46.4'	S 16°16.8'	330°51.4'	N 21°57.9'
4	61°59.3'	S 0°02.8'	241°52.7'	S 0°02.8'	248°28.1'	N 4°21.4'	57°30.4'	N 0°10.6'	99°49.0'	S 16°16.9'	345°52.8'	N 21°58.0'
5	77°01.7'	S 0°03.8'	256°52.9'	S 0°03.8'	263°27.7'	N 4°20.2'	72°33.2'	N 0°10.4'	114°51.6'	S 16°16.9'	0°54.2'	N 21°58.2'
6	92°04.2'	S 0°04.8'	271°53.1'	S 0°04.8'	278°27.3'	N 4°19.0'	87°35.9'	N 0°10.3'	129°54.2'	S 16°16.9'	15°55.6'	N 21°58.4'
7	107°06.7'	S 0°05.8'	286°53.3'	S 0°05.8'	293°26.9'	N 4°17.8'	102°38.7'	N 0°10.2'	144°56.8'	S 16°17.0'	30°56.9'	N 21°58.5'
8	122°09.1'	S 0°06.7'	301°53.5'	S 0°06.7'	308°26.5'	N 4°16.5'	117°41.5'	N 0°10.0'	159°59.3'	S 16°17.0'	45°58.3'	N 21°58.7'
9	137°11.6'	S 0°07.7'	316°53.8'	S 0°07.7'	323°26.1'	N 4°15.3'	132°44.2'	N 0°09.9'	175°01.9'	S 16°17.0'	60°59.7'	N 21°58.8'
10	152°14.1'	S 0°08.7'	331°54.0'	S 0°08.7'	338°25.7'	N 4°14.1'	147°47.0'	N 0°09.8'	190°04.5'	S 16°17.1'	76°01.1'	N 21°59.0'
11	167°16.5'	S 0°09.7'	346°54.2'	S 0°09.7'	353°25.3'	N 4°12.9'	162°49.8'	N 0°09.6'	205°07.1'	S 16°17.1'	91°02.5'	N 21°59.1'
12	182°19.0'	S 0°10.6'	1°54.4'	S 0°10.6'	8°24.9'	N 4°11.6'	177°52.5'	N 0°09.5'	220°09.7'	S 16°17.1'	106°03.9'	N 21°59.3'
13	197°21.4'	S 0°11.6'	16°54.6'	S 0°11.6'	23°24.5'	N 4°10.4'	192°55.3'	N 0°09.4'	235°12.2'	S 16°17.2'	121°05.2'	N 21°59.5'
14	212°23.9'	S 0°12.6'	31°54.9'	S 0°12.6'	38°24.1'	N 4°09.2'	207°58.1'	N 0°09.2'	250°14.8'	S 16°17.2'	136°06.6'	N 21°59.6'
15	227°26.4'	S 0°13.6'	46°55.1'	S 0°13.6'	53°23.7'	N 4°08.0'	223°00.9'	N 0°09.1'	265°17.4'	S 16°17.3'	151°08.0'	N 21°59.8'
16	242°28.8'	S 0°14.5'	61°55.3'	S 0°14.5'	68°23.3'	N 4°06.7'	238°03.6'	N 0°09.0'	280°20.0'	S 16°17.3'	166°09.4'	N 21°59.9'
17	257°31.3'	S 0°15.5'	76°55.5'	S 0°15.5'	83°22.9'	N 4°05.5'	253°06.4'	N 0°08.8'	295°22.6'	S 16°17.3'	181°10.8'	N 22°00.1'
18	272°33.8'	S 0°16.5'	91°55.7'	S 0°16.5'	98°22.5'	N 4°04.3'	268°09.2'	N 0°08.7'	310°25.1'	S 16°17.4'	196°12.2'	N 22°00.2'
19	287°36.2'	S 0°17.5'	106°55.9'	S 0°17.5'	113°22.1'	N 4°03.1'	283°11.9'	N 0°08.6'	325°27.7'	S 16°17.4'	211°13.6'	N 22°00.4'
20	302°38.7'	S 0°18.4'	121°56.2'	S 0°18.4'	128°21.7'	N 4°01.8'	298°14.7'	N 0°08.4'	340°30.3'	S 16°17.4'	226°15.0'	N 22°00.6'
21	317°41.2'	S 0°19.4'	136°56.4'	S 0°19.4'	143°21.3'	N 4°00.6'	313°17.5'	N 0°08.3'	355°32.9'	S 16°17.5'	241°16.4'	N 22°00.7'
22	332°43.6'	S 0°20.4'	151°56.6'	S 0°20.4'	158°20.9'	N 3°59.4'	328°20.2'	N 0°08.2'	10°35.5'	S 16°17.5'	256°17.7'	N 22°00.9'
23	347°46.1'	S 0°21.3'	166°56.8'	S 0°21.3'	173°20.5'	N 3°58.2'	343°23.0'	N 0°08.0'	25°38.0'	S 16°17.5'	271°19.1'	N 22°01.0'
			SD 15.9' d -1.0'		v -0.4' d -1.2'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.4' d 0.2'	
Mer. pass.			11 h 52 m 24 s		11 h 26 m		0 h 11 m		21 h 18 m		4 h 56 m	

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Regulus	+Pollux	+Procyon	+Sirius	+Betelgeuse	+Capella	+Mars	+Rigel
0	211°51.2'	N 17°35.9'	13.5'	-11.2'	55.0'		32°16.9'	36°15.9'	58°46.1'	60°03.5'	63°54.5'	69°02.5'	74°44.3'
1	226°23.7'	N 17°24.7'	13.5'	-11.3'	55.0'		32°47.5'	36°40.5'	59°04.0'	60°31.8'	64°23.0'	69°32.1'	75°09.4'
2	240°56.2'	N 17°13.4'	13.6'	-11.3'	55.0'		33°18.2'	37°05.2'	59°22.1'	61°00.2'	64°51.5'	70°01.7'	75°34.6'
3	255°28.8'	N 17°02.1'	13.6'	-11.4'	55.0'		33°48.9'	37°30.1'	59°40.3'	61°28.6'	65°20.0'	70°31.4'	75°59.8'
4	270°01.4'	N 16°50.7'	13.6'	-11.5'	55.1'		34°19.6'	37°55.1'	59°58.6'	61°57.1'	65°48.6'	71°01.1'	76°25.0'
5	284°34.0'	N 16°39.2'	13.7'	-11.6'	55.1'		34°50.4'	38°20.2'	60°17.0'	62°25.6'	66°17.3'	71°30.8'	76°50.2'
6	299°06.7'	N 16°27.6'	13.7'	-11.7'	55.1'		35°21.1'	38°45.5'	60°35.6'	62°54.1'	66°45.9'	72°00.5'	77°15.6'
7	313°39.4'	N 16°16.0'	13.7'	-11.7'	55.1'		35°51.9'	39°10.9'	60°54.3'	63°22.7'	67°14.6'	72°30.2'	77°40.9'
8	328°12.1'	N 16°04.2'	13.8'	-11.8'	55.1'		36°22.7'	39°36.4'	61°13.0'	63°51.3'	67°43.4'	73°00.0'	78°06.3'
9	342°44.9'	N 15°52.4'	13.8'	-11.9'	55.2'		36°53.6'	40°02.1'	61°31.9'	64°19.9'	68°12.2'	73°29.8'	78°31.7'
10	357°17.7'	N 15°40.5'	13.8'	-12.0'	55.2'		37°24.5'	40°27.9'	61°50.9'	64°48.7'	68°41.0'	73°59.7'	78°57.2'
11	1°50.5'	N 15°28.6'	13.9'	-12.0'	55.2'		37°55.4'	40°53.8'	62°10.0'	65°17.4'	69°09.9'	74°29.5'	79°27.7'
12	26°23.4'	N 15°16.5'	13.9'	-12.1'	55.2'		38°26.3'	41°19.8'	62°29.2'	65°46.2'	69°38.8'	74°59.4'	79°48.2'
13	40°56.3'	N 15°04.4'	13.9'	-12.2'	55.2'		38°57.2'	41°45.9'	62°48.5'	66°15.0'	70°07.7'	75°29.3'	80°13.8'
14	55°29.3'	N 14°52.2'	14.0'	-12.3'	55.3'		39°28.2'	42°12.1'	63°07.9'	66°43.9'	70°36.7'	75°59.3'	80°39.4'
15	70°02.2'	N 14°39.9'	14.0'	-12.3'	55.3'		39°59.2'	42°38.5'	63°27.4'	67°12.8'	71°05.7'	76°29.2'	81°05.0'
16	84°35.3'	N 14°27.6'	14.0'	-12.4'	55.3'		40°30.2'	43°04.9'	63°47.0'	67°41.7'	71°34.7'	76°59.2'	81°30.7'
17	99°08.3'	N 14°15.2'	14.1'	-12.5'	55.3'		41°01.3'	43°31.5'	64°06.7'	68°10.7'	72°03.8'	77°29.2'	81°56.4'
18	113°41.4'	N 14°02.7'	14.1'	-12.5'	55.3'		41°32.4'	43°58.2'	64°26.6'	68°39.7'	72°32.9'	77°59.3'	82°22.2'
19	128°14.4'	N 13°50.2'	14.1'	-12.6'	55.4'		42°03.5'	44°24.9'	64°46.5'	69°08.8'	73°02.1'	78°29.4'	82°47.9'
20	142°47.6'	N 13°37.6'	14.2'	-12.7'	55.4'	7°29.5'	42°34.6'	44°51.8'	65°06.5'	69°37.9'	73°31.3'	78°59.5'	83°13.8'
21	157°20.7'	N 13°24.9'	14.2'	-12.8'	55.4'	7°54.9'	43°05.8'	45°18.7'	65°26.6'	70°07.0'	74°00.5'	79°29.6'	83°39.6'
22	171°53.9'	N 13°12.1'	14.2'	-12.8'	55.4'	8°20.9'	43°36.9'	45°45.8'	65°46.7'	70°36.2'	74°29.7'	79°59.7'	84°05.5'
23	186°27.1'	N 12°59.3'	14.2'	-12.9'	55.4'	8°47.5'	44°08.2'	46°12.9'	66°07.0'	71°05.4'	74°59.0'	80°29.9'	84°31.4'
Mer. pass.			10 h 11 m SD 15.0'		phase 9%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.1'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.9'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.6'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.8'	Regulus	+1.4	207°36.8'	N 11°51.5'	Rigel	+0.2	281°05.6'	S 8°10.3'
Vega	+0.0	80°34.4'	N 38°48.5'	Pollux	+1.2	243°19.8'	N 27°58.3'	Aldebaran	+0.9	290°41.7'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°53.0'	N 5°10.2'	Polaris	+2.0	314°36.9'	N 89°21.3'
Rigil Kent	-0.0	139°43.4'	S 60°55.8'	Adhara	+1.5	255°07.5'	S 28°59.9'	Achernar	+0.5	335°21.1'	S 57°07.2'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.0'	S 16°44.6'				
Hadar	+0.6	148°39.3'	S 60°29.0'	Canopus	-0.6	263°53.3'	S 52°42.1'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	2°48.5'	181°57.0' S	0°22.3'	188°20.1' N	3°56.9'	358°25.8' N	0°07.9'	40°40.6' S	16°17.6'	286°20.5' N	22°01.2'	
1	17°51.0'	196°57.3' S	0°23.3'	203°19.7' N	3°55.7'	13°28.6' N	0°07.8'	55°43.2' S	16°17.6'	301°21.9' N	22°01.3'	
2	32°53.5'	211°57.5' S	0°24.3'	218°19.3' N	3°54.5'	28°31.3' N	0°07.6'	70°45.8' S	16°17.6'	316°23.3' N	22°01.5'	
3	47°55.9'	226°57.7' S	0°25.2'	233°18.9' N	3°53.2'	43°34.1' N	0°07.5'	85°48.3' S	16°17.7'	331°24.7' N	22°01.7'	
4	62°58.4'	241°57.9' S	0°26.2'	248°18.5' N	3°52.0'	58°36.9' N	0°07.4'	100°50.9' S	16°17.7'	346°26.1' N	22°01.8'	
5	78°00.9'	256°58.1' S	0°27.2'	263°18.1' N	3°50.8'	73°39.6' N	0°07.2'	115°53.5' S	16°17.7'	1°27.5' N	22°02.0'	
6	93°03.3'	271°58.3' S	0°28.2'	278°17.7' N	3°49.6'	88°42.4' N	0°07.1'	130°56.1' S	16°17.8'	16°28.9' N	22°02.1'	
7	108°05.8'	286°58.6' S	0°29.1'	293°17.3' N	3°48.3'	103°45.2' N	0°07.0'	145°58.7' S	16°17.8'	31°30.3' N	22°02.3'	
8	123°08.3'	301°58.8' S	0°30.1'	308°16.9' N	3°47.1'	118°47.9' N	0°06.8'	161°01.2' S	16°17.9'	46°31.7' N	22°02.4'	
9	138°10.7'	316°59.0' S	0°31.1'	323°16.5' N	3°45.9'	133°50.7' N	0°06.7'	176°03.8' S	16°17.9'	61°33.1' N	22°02.6'	
10	153°13.2'	331°59.2' S	0°32.1'	338°16.1' N	3°44.6'	148°53.5' N	0°06.5'	191°06.4' S	16°17.9'	76°34.5' N	22°02.7'	
11	168°15.7'	346°59.4' S	0°33.0'	353°15.7' N	3°43.4'	163°56.3' N	0°06.4'	206°09.0' S	16°18.0'	91°35.9' N	22°02.9'	
12	183°18.1'	1°59.6' S	0°34.0'	8°15.3' N	3°42.2'	178°59.0' N	0°06.3'	221°11.5' S	16°18.0'	106°37.3' N	22°03.1'	
13	198°20.6'	16°59.9' S	0°35.0'	23°14.9' N	3°41.0'	194°01.8' N	0°06.1'	236°14.1' S	16°18.0'	121°38.7' N	22°03.2'	
14	213°23.0'	32°00.1' S	0°36.0'	38°14.5' N	3°39.7'	209°04.6' N	0°06.0'	251°16.7' S	16°18.1'	136°40.1' N	22°03.4'	
15	228°25.5'	47°00.3' S	0°36.9'	53°14.1' N	3°38.5'	224°07.3' N	0°05.9'	266°19.3' S	16°18.1'	151°41.5' N	22°03.5'	
16	243°28.0'	62°00.5' S	0°37.9'	68°13.7' N	3°37.3'	239°10.1' N	0°05.7'	281°21.8' S	16°18.1'	166°42.9' N	22°03.7'	
17	258°30.4'	77°00.7' S	0°38.9'	83°13.3' N	3°36.0'	254°12.9' N	0°05.6'	296°24.4' S	16°18.2'	181°44.4' N	22°03.8'	
18	273°32.9'	92°00.9' S	0°39.8'	98°12.9' N	3°34.8'	269°15.7' N	0°05.5'	311°27.0' S	16°18.2'	196°45.8' N	22°04.0'	
19	288°35.4'	107°01.2' S	0°40.8'	113°12.5' N	3°33.6'	284°18.4' N	0°05.3'	326°29.6' S	16°18.2'	211°47.2' N	22°04.1'	
20	303°37.8'	122°01.4' S	0°41.8'	128°12.1' N	3°32.3'	299°21.2' N	0°05.2'	341°32.1' S	16°18.3'	226°48.6' N	22°04.3'	
21	318°40.3'	137°01.6' S	0°42.8'	143°11.7' N	3°31.1'	314°24.0' N	0°05.1'	356°34.7' S	16°18.3'	241°50.0' N	22°04.4'	
22	333°42.8'	152°01.8' S	0°43.7'	158°11.3' N	3°29.9'	329°26.7' N	0°04.9'	11°37.3' S	16°18.3'	256°51.4' N	22°04.6'	
23	348°45.2'	167°02.0' S	0°44.7'	173°10.9' N	3°28.6'	344°29.5' N	0°04.8'	26°39.9' S	16°18.4'	271°52.8' N	22°04.7'	
		SD 15.9' d -1.0'		v -0.4' d -1.2'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.4' d 0.2'		
Mer. pass.		11 h 52 m 3 s		11 h 27 m		0 h 6 m		21 h 14 m		4 h 54 m		

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	+Regulus	+Pollux	+Procyon	+Sirius	+Adhara	+Betelgeuse	+Capella	+Mars
0	201°00.3'	N 12°46.4'	14.3'	-12.9'	55.5'	9°14.6'	44°39.4'	46°40.1'	66°27.4'		71°34.6'	75°28.3'	81°00.1'
1	215°33.6'	N 12°33.5'	14.3'	-13.0'	55.5'	9°42.2'	45°10.7'	47°07.4'	66°47.8'		72°03.9'	75°57.7'	81°30.3'
2	230°06.9'	N 12°20.5'	14.3'	-13.1'	55.5'	10°10.1'	45°42.0'	47°34.8'	67°08.4'		72°33.2'	76°27.1'	82°00.6'
3	244°40.2'	N 12°07.4'	14.3'	-13.1'	55.5'	10°38.4'	46°13.3'	48°02.3'	67°29.0'		73°02.6'	76°56.5'	82°30.9'
4	259°13.5'	N 11°54.2'	14.4'	-13.2'	55.6'	11°07.0'	46°44.6'	48°29.9'	67°49.7'		73°32.0'	77°26.0'	83°01.2'
5	273°46.9'	N 11°41.0'	14.4'	-13.3'	55.6'	11°35.8'	47°16.0'	48°57.5'	68°10.5'		74°01.4'	77°55.5'	83°31.5'
6	288°20.2'	N 11°27.8'	14.4'	-13.3'	55.6'	12°04.9'	47°47.4'	49°25.2'	68°31.4'		74°30.9'	78°25.0'	84°01.9'
7	302°53.6'	N 11°14.5'	14.4'	-13.4'	55.6'	12°34.2'	48°18.8'	49°53.0'	68°52.3'	70°43.2'	75°00.4'	78°54.5'	84°32.3'
8	317°27.1'	N 11°01.1'	14.4'	-13.4'	55.6'	13°03.7'	48°50.3'	50°20.9'	69°13.4'	70°58.3'	75°29.9'	79°24.1'	85°02.7'
9	332°00.5'	N 10°47.6'	14.5'	-13.5'	55.7'	13°33.3'	49°21.8'	50°48.8'	69°34.5'	71°13.4'	75°59.4'	79°53.7'	85°33.2'
10	346°33.9'	N 10°34.2'	14.5'	-13.5'	55.7'	14°03.1'	49°53.3'	51°16.9'	69°55.7'	71°28.7'	76°29.0'	80°23.4'	86°03.7'
11	1°07.4'	N 10°20.6'	14.5'	-13.6'	55.7'	14°33.1'	50°24.8'	51°45.0'	70°16.9'	71°44.0'	76°58.7'	80°53.1'	86°34.2'
12	15°40.9'	N 10°07.0'	14.5'	-13.7'	55.7'	15°03.1'	50°56.4'	52°13.1'	70°38.3'	71°59.4'	77°28.3'	81°22.8'	87°04.7'
13	30°14.4'	N 9°53.4'	14.5'	-13.7'	55.8'	15°33.4'	51°28.0'	52°41.4'	70°59.7'	72°15.0'	77°58.0'	81°52.5'	87°35.3'
14	44°47.9'	N 9°39.6'	14.5'	-13.8'	55.8'	16°03.7'	51°59.6'	53°09.7'	71°21.2'	72°30.5'	78°27.7'	82°22.3'	88°05.8'
15	59°21.5'	N 9°25.9'	14.5'	-13.8'	55.8'	16°34.1'	52°31.2'	53°38.0'	71°42.7'	72°46.2'	78°57.5'	82°52.1'	88°36.5'
16	73°55.0'	N 9°12.1'	14.6'	-13.9'	55.8'	17°04.6'	53°02.9'	54°06.5'	72°04.4'	73°02.0'	79°27.3'	83°21.9'	89°07.1'
17	88°28.6'	N 8°58.2'	14.6'	-13.9'	55.8'	17°35.2'	53°34.6'	54°35.0'	72°26.1'	73°17.8'	79°57.1'	83°51.8'	89°37.8'
18	103°02.2'	N 8°44.3'	14.6'	-14.0'	55.9'	18°06.0'	54°06.3'	55°03.6'	72°47.8'	73°33.7'	80°27.0'	84°21.6'	90°08.5'
19	117°35.7'	N 8°30.3'	14.6'	-14.0'	55.9'	18°36.7'	54°38.1'	55°32.2'	73°09.7'	73°49.7'	80°56.9'	84°51.6'	90°39.2'
20	132°09.3'	N 8°16.3'	14.6'	-14.1'	55.9'	19°07.6'	55°09.9'	56°00.9'	73°31.5'	74°05.8'	81°26.8'	85°21.5'	91°10.0'
21	146°42.9'	N 8°02.3'	14.6'	-14.1'	55.9'	19°38.6'	55°41.7'	56°29.6'	73°53.5'	74°21.9'	81°56.7'	85°51.5'	91°40.7'
22	161°16.6'	N 7°48.2'	14.6'	-14.1'	56.0'	20°09.6'	56°13.5'	56°58.5'	74°15.5'	74°38.2'	82°26.7'	86°21.5'	92°11.6'
23	175°50.2'	N 7°34.0'	14.6'	-14.2'	56.0'	20°40.7'	56°45.4'	57°27.3'	74°37.6'	74°54.5'	82°56.7'	86°51.5'	92°42.4'
Mer. pass.		10 h 55 m SD 15.1'		phase 4%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.1'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.9'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.6'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.8'	Regulus	+1.4	207°36.7'	N 11°51.5'	Rigel	+0.2	281°05.6'	S 8°10.3'
Vega	+0.0	80°34.5'	N 38°48.5'	Pollux	+1.2	243°19.8'	N 27°58.3'	Aldebaran	+0.9	290°41.7'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°53.0'	N 5°10.2'	Polaris	+2.0	314°36.6'	N 89°21.3'
Rigil Kent	-0.0	139°43.5'	S 60°55.8'	Adhara	+1.5	255°07.4'	S 28°59.9'	Achernar	+0.5	335°21.1'	S 57°07.2'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.0'	S 16°44.6'				
Hadar	+0.6	148°39.3'	S 60°28.9'	Canopus	-0.6	263°53.3'	S 52°42.1'				



Sunday 25 September 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	3°47.7'	182°02.2'	S 0°45.7'	188°10.5'	N 3°27.4'	359°32.3'	N 0°04.7'	41°42.4'	S 16°18.4'	286°54.2'	N 22°04.9'
1	18°50.1'	197°02.5'	S 0°46.7'	203°10.1'	N 3°26.2'	14°35.1'	N 0°04.5'	56°45.0'	S 16°18.4'	301°55.6'	N 22°05.0'
2	33°52.6'	212°02.7'	S 0°47.6'	218°09.7'	N 3°24.9'	29°37.8'	N 0°04.4'	71°47.6'	S 16°18.5'	316°57.1'	N 22°05.2'
3	48°55.1'	227°02.9'	S 0°48.6'	233°09.3'	N 3°23.7'	44°40.6'	N 0°04.3'	86°50.2'	S 16°18.5'	331°58.5'	N 22°05.4'
4	63°57.5'	242°03.1'	S 0°49.6'	248°08.9'	N 3°22.5'	59°43.4'	N 0°04.1'	101°52.7'	S 16°18.5'	346°59.9'	N 22°05.5'
5	79°00.0'	257°03.3'	S 0°50.6'	263°08.5'	N 3°21.2'	74°46.1'	N 0°04.0'	116°55.3'	S 16°18.6'	2°01.3'	N 22°05.7'
6	94°02.5'	272°03.5'	S 0°51.5'	278°08.1'	N 3°20.0'	89°48.9'	N 0°03.9'	131°57.9'	S 16°18.6'	17°02.7'	N 22°05.8'
7	109°04.9'	287°03.8'	S 0°52.5'	293°07.7'	N 3°18.8'	104°51.7'	N 0°03.7'	147°00.5'	S 16°18.6'	32°04.1'	N 22°06.0'
8	124°07.4'	302°04.0'	S 0°53.5'	308°07.3'	N 3°17.5'	119°54.4'	N 0°03.6'	162°03.0'	S 16°18.7'	47°05.6'	N 22°06.1'
9	139°09.9'	317°04.2'	S 0°54.5'	323°06.9'	N 3°16.3'	134°57.2'	N 0°03.5'	177°05.6'	S 16°18.7'	62°07.0'	N 22°06.3'
10	154°12.3'	332°04.4'	S 0°55.4'	338°06.5'	N 3°15.1'	149°60.0'	N 0°03.3'	192°08.2'	S 16°18.7'	77°08.4'	N 22°06.4'
11	169°14.8'	347°04.6'	S 0°56.4'	353°06.1'	N 3°13.8'	165°02.8'	N 0°03.2'	207°10.7'	S 16°18.8'	92°09.8'	N 22°06.6'
12	184°17.3'	2°04.8'	S 0°57.4'	8°05.7'	N 3°12.6'	180°05.5'	N 0°03.1'	222°13.3'	S 16°18.8'	107°11.3'	N 22°06.7'
13	199°19.7'	17°05.0'	S 0°58.4'	23°05.3'	N 3°11.4'	195°08.3'	N 0°02.9'	237°15.9'	S 16°18.8'	122°12.7'	N 22°06.9'
14	214°22.2'	32°05.3'	S 0°59.3'	38°04.9'	N 3°10.1'	210°11.1'	N 0°02.8'	252°18.5'	S 16°18.9'	137°14.1'	N 22°07.0'
15	229°24.6'	47°05.5'	S 1°00.3'	53°04.5'	N 3°08.9'	225°13.8'	N 0°02.7'	267°21.0'	S 16°18.9'	152°15.5'	N 22°07.2'
16	244°27.1'	62°05.7'	S 1°01.3'	68°04.1'	N 3°07.7'	240°16.6'	N 0°02.5'	282°23.6'	S 16°18.9'	167°17.0'	N 22°07.3'
17	259°29.6'	77°05.9'	S 1°02.2'	83°03.7'	N 3°06.4'	255°19.4'	N 0°02.4'	297°26.2'	S 16°19.0'	182°18.4'	N 22°07.5'
18	274°32.0'	92°06.1'	S 1°03.2'	98°03.3'	N 3°05.2'	270°22.2'	N 0°02.3'	312°28.8'	S 16°19.0'	197°19.8'	N 22°07.6'
19	289°34.5'	107°06.3'	S 1°04.2'	113°02.9'	N 3°03.9'	285°24.9'	N 0°02.1'	327°31.3'	S 16°19.0'	212°21.2'	N 22°07.8'
20	304°37.0'	122°06.6'	S 1°05.2'	128°02.5'	N 3°02.7'	300°27.7'	N 0°02.0'	342°33.9'	S 16°19.1'	227°22.7'	N 22°07.9'
21	319°39.4'	137°06.8'	S 1°06.1'	143°02.1'	N 3°01.5'	315°30.5'	N 0°01.9'	357°36.5'	S 16°19.1'	242°24.1'	N 22°08.1'
22	334°41.9'	152°07.0'	S 1°07.1'	158°01.7'	N 3°00.2'	330°33.2'	N 0°01.7'	12°39.0'	S 16°19.1'	257°25.5'	N 22°08.2'
23	349°44.4'	167°07.2'	S 1°08.1'	173°01.3'	N 2°59.0'	345°36.0'	N 0°01.6'	27°41.6'	S 16°19.2'	272°27.0'	N 22°08.4'
		SD 15.9'	<i>d</i> -1.0'	<i>v</i> -0.4'	<i>d</i> -1.2'	<i>v</i> 2.8'	<i>d</i> -0.1'	<i>v</i> 2.6'	<i>d</i> -0.0'	<i>v</i> 1.4'	<i>d</i> 0.2'
Mer. pass.		11 h 51 m 42 s		11 h 28 m		0 h 2 m		21 h 10 m		4 h 52 m	

h	Moon				Lunar distance								
	GHA	dec	<i>v</i>	<i>d</i>	HP	+Regulus	+Pollux	+Procyon	+Sirius	+Adhara	+Betelgeuse	+Capella	+Mars
0	190°23.8'	N 7°19.8'	14.6'	-14.2'	56.0'	21°11.8'	57°17.3'	57°56.3'	74°59.8'	75°10.8'	83°26.7'	87°21.6'	93°13.3'
1	204°57.4'	N 7°05.6'	14.6'	-14.3'	56.0'	21°43.0'	57°49.2'	58°25.3'	75°22.0'	75°27.3'	83°56.8'	87°51.7'	93°44.2'
2	219°31.1'	N 6°51.3'	14.6'	-14.3'	56.0'	22°14.3'	58°21.2'	58°54.3'	75°44.2'	75°43.8'	84°26.9'	88°21.8'	94°15.1'
3	234°04.7'	N 6°37.0'	14.7'	-14.4'	56.1'	22°45.6'	58°53.1'	59°23.4'	76°06.6'	76°00.4'	84°57.0'	88°51.9'	94°46.0'
4	248°38.4'	N 6°22.6'	14.7'	-14.4'	56.1'								
5	263°12.0'	N 6°08.2'	14.7'	-14.4'	56.1'								
6	277°45.7'	N 5°53.8'	14.7'	-14.5'	56.1'								
7	292°19.4'	N 5°39.3'	14.7'	-14.5'	56.2'								
8	306°53.0'	N 5°24.8'	14.7'	-14.5'	56.2'								
9	321°26.7'	N 5°10.3'	14.7'	-14.6'	56.2'								
10	336°00.3'	N 4°55.7'	14.6'	-14.6'	56.2'								
11	350°34.0'	N 4°41.1'	14.6'	-14.6'	56.3'								
12	5°07.6'	N 4°26.5'	14.6'	-14.7'	56.3'								
13	19°41.2'	N 4°11.8'	14.6'	-14.7'	56.3'								
14	34°14.9'	N 3°57.1'	14.6'	-14.7'	56.3'								
15	48°48.5'	N 3°42.3'	14.6'	-14.8'	56.3'								
16	63°22.1'	N 3°27.6'	14.6'	-14.8'	56.4'								
17	77°55.7'	N 3°12.8'	14.6'	-14.8'	56.4'								
18	92°29.3'	N 2°58.0'	14.6'	-14.8'	56.4'								
19	107°02.9'	N 2°43.1'	14.6'	-14.9'	56.4'								
20	121°36.5'	N 2°28.3'	14.6'	-14.9'	56.5'								
21	136°10.1'	N 2°13.4'	14.6'	-14.9'	56.5'								
22	150°43.6'	N 1°58.5'	14.5'	-14.9'	56.5'								
23	165°17.2'	N 1°43.5'	14.5'	-14.9'	56.5'								
Mer. pass.	11 h 39 m	SD 15.3'	phase 1%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.1'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.9'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.6'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.8'	Regulus	+1.4	207°36.7'	N 11°51.5'	Rigel	+0.2	281°05.6'	S 8°10.3'
Vega	+0.0	80°34.5'	N 38°48.5'	Pollux	+1.2	243°19.8'	N 27°58.3'	Aldebaran	+0.9	290°41.7'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.9'	N 5°10.2'	Polaris	+2.0	314°36.3'	N 89°21.3'
Rigil Kent	-0.0	139°43.5'	S 60°55.8'	Adhara	+1.5	255°07.4'	S 28°59.9'	Achernar	+0.5	335°21.1'	S 57°07.2'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.0'	S 16°44.6'				
Hadar	+0.6	148°39.3'	S 60°28.9'	Canopus	-0.6	263°53.3'	S 52°42.1'				

Monday 26 September 2022 UT1

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	4°46.8'	182°07.4' S	1°09.1'	188°00.9' N	2°57.8'	0°38.8' N	0°01.5'	42°44.2' S	16°19.2'	287°28.4' N	22°08.5'	
1	19°49.3'	197°07.6' S	1°10.0'	203°00.5' N	2°56.5'	15°41.6' N	0°01.3'	57°46.8' S	16°19.2'	302°29.8' N	22°08.7'	
2	34°51.8'	212°07.8' S	1°11.0'	218°00.1' N	2°55.3'	30°44.3' N	0°01.2'	72°49.3' S	16°19.3'	317°31.3' N	22°08.8'	
3	49°54.2'	227°08.1' S	1°12.0'	232°59.7' N	2°54.0'	45°47.1' N	0°01.1'	87°51.9' S	16°19.3'	332°32.7' N	22°09.0'	
4	64°56.7'	242°08.3' S	1°13.0'	247°59.3' N	2°52.8'	60°49.9' N	0°00.9'	102°54.5' S	16°19.3'	347°34.1' N	22°09.1'	
5	79°59.1'	257°08.5' S	1°13.9'	262°58.9' N	2°51.6'	75°52.6' N	0°00.8'	117°57.0' S	16°19.4'	2°35.6' N	22°09.3'	
6	95°01.6'	272°08.7' S	1°14.9'	277°58.5' N	2°50.3'	90°55.4' N	0°00.7'	132°59.6' S	16°19.4'	17°37.0' N	22°09.4'	
7	110°04.1'	287°08.9' S	1°15.9'	292°58.1' N	2°49.1'	105°58.2' N	0°00.5'	148°02.2' S	16°19.4'	32°38.5' N	22°09.6'	
8	125°06.5'	302°09.1' S	1°16.9'	307°57.7' N	2°47.9'	121°01.0' N	0°00.4'	163°04.7' S	16°19.5'	47°39.9' N	22°09.7'	
9	140°09.0'	317°09.3' S	1°17.8'	322°57.3' N	2°46.6'	136°03.7' N	0°00.3'	178°07.3' S	16°19.5'	62°41.3' N	22°09.9'	
10	155°11.5'	332°09.5' S	1°18.8'	337°56.9' N	2°45.4'	151°06.5' N	0°00.1'	193°09.9' S	16°19.5'	77°42.8' N	22°10.0'	
11	170°13.9'	347°09.8' S	1°19.8'	352°56.5' N	2°44.1'	166°09.3' S	0°00.0'	208°12.5' S	16°19.6'	92°44.2' N	22°10.2'	
12	185°16.4'	2°10.0' S	1°20.8'	7°56.1' N	2°42.9'	181°12.0' S	0°00.1'	223°15.0' S	16°19.6'	107°45.7' N	22°10.3'	
13	200°18.9'	17°10.2' S	1°21.7'	22°55.8' N	2°41.7'	196°14.8' S	0°00.3'	238°17.6' S	16°19.6'	122°47.1' N	22°10.4'	
14	215°21.3'	32°10.4' S	1°22.7'	37°55.4' N	2°40.4'	211°17.6' S	0°00.4'	253°20.2' S	16°19.7'	137°48.6' N	22°10.6'	
15	230°23.8'	47°10.6' S	1°23.7'	52°55.0' N	2°39.2'	226°20.4' S	0°00.5'	268°22.7' S	16°19.7'	152°50.0' N	22°10.7'	
16	245°26.2'	62°10.8' S	1°24.6'	67°54.6' N	2°37.9'	241°23.1' S	0°00.7'	283°25.3' S	16°19.7'	167°51.5' N	22°10.9'	
17	260°28.7'	77°11.0' S	1°25.6'	82°54.2' N	2°36.7'	256°25.9' S	0°00.8'	298°27.9' S	16°19.8'	182°52.9' N	22°11.0'	
18	275°31.2'	92°11.3' S	1°26.6'	97°53.8' N	2°35.5'	271°28.7' S	0°00.9'	313°30.4' S	16°19.8'	197°54.4' N	22°11.2'	
19	290°33.6'	107°11.5' S	1°27.6'	112°53.4' N	2°34.2'	286°31.4' S	0°01.1'	328°33.0' S	16°19.8'	212°55.8' N	22°11.3'	
20	305°36.1'	122°11.7' S	1°28.5'	127°53.0' N	2°33.0'	301°34.2' S	0°01.2'	343°35.6' S	16°19.9'	227°57.3' N	22°11.5'	
21	320°38.6'	137°11.9' S	1°29.5'	142°52.6' N	2°31.7'	316°37.0' S	0°01.3'	358°38.1' S	16°19.9'	242°58.7' N	22°11.6'	
22	335°41.0'	152°12.1' S	1°30.5'	157°52.2' N	2°30.5'	331°39.8' S	0°01.5'	13°40.7' S	16°19.9'	258°00.2' N	22°11.8'	
23	350°43.5'	167°12.3' S	1°31.5'	172°51.8' N	2°29.3'	346°42.5' S	0°01.6'	28°43.3' S	16°20.0'	273°01.6' N	22°11.9'	
		SD 15.9' d -1.0'		v -0.4' d -1.2'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.4' d 0.1'		
Mer. pass.		11 h 51 m 21 s		11 h 28 m		23 h 53 m		21 h 5 m		4 h 50 m		

h	Moon					Lunar distance				
	GHA	dec	v	d	HP	-Altair	-Rigel Kent	-Antares	-Hadar	-Spica
0	179°50.7'	N 1°28.6'	14.5'	-15.0'	56.6'					
1	194°24.2'	N 1°13.6'	14.5'	-15.0'	56.6'					
2	208°57.7'	N 0°58.6'	14.5'	-15.0'	56.6'					
3	223°31.1'	N 0°43.6'	14.4'	-15.0'	56.6'					
4	238°04.6'	N 0°28.6'	14.4'	-15.0'	56.6'					
5	252°38.0'	N 0°13.6'	14.4'	-15.0'	56.7'					
6	267°11.4'	S 0°01.5'	14.4'	-15.1'	56.7'					
7	281°44.8'	S 0°16.5'	14.4'	-15.1'	56.7'					
8	296°18.2'	S 0°31.6'	14.3'	-15.1'	56.7'					
9	310°51.5'	S 0°46.7'	14.3'	-15.1'	56.8'					
10	325°24.8'	S 1°01.7'	14.3'	-15.1'	56.8'					
11	339°58.1'	S 1°16.8'	14.3'	-15.1'	56.8'					
12	354°31.3'	S 1°31.9'	14.2'	-15.1'	56.8'					
13	9°04.6'	S 1°47.0'	14.2'	-15.1'	56.9'					
14	23°37.7'	S 2°02.2'	14.2'	-15.1'	56.9'					
15	38°10.9'	S 2°17.3'	14.1'	-15.1'	56.9'					
16	52°44.0'	S 2°32.4'	14.1'	-15.1'	56.9'					
17	67°17.1'	S 2°47.5'	14.1'	-15.1'	56.9'					
18	81°50.2'	S 3°02.6'	14.0'	-15.1'	57.0'	104°34.7'	61°17.8'	56°42.5'	59°00.1'	11°22.0'
19	96°23.2'	S 3°17.7'	14.0'	-15.1'	57.0'	104°07.9'	60°55.9'	56°09.5'	58°40.2'	10°51.0'
20	110°56.2'	S 3°32.8'	13.9'	-15.1'	57.0'	103°41.0'	60°34.1'	55°36.4'	58°20.3'	10°20.1'
21	125°29.1'	S 3°47.9'	13.9'	-15.1'	57.0'	103°14.0'	60°12.4'	55°03.4'	58°00.6'	9°49.5'
22	140°02.1'	S 4°03.0'	13.9'	-15.1'	57.1'	102°47.0'	59°50.7'	54°30.3'	57°41.0'	9°19.1'
23	154°34.9'	S 4°18.1'	13.8'	-15.1'	57.1'	102°19.9'	59°29.2'	53°57.2'	57°21.5'	8°49.0'
Mer. pass.		12 h 23 m SD 15.4'		phase 0%						

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.1'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.9'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.6'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.8'	Regulus	+1.4	207°36.7'	N 11°51.5'	Rigel	+0.2	281°05.6'	S 8°10.3'
Vega	+0.0	80°34.5'	N 38°48.5'	Pollux	+1.2	243°19.8'	N 27°58.3'	Aldebaran	+0.9	290°41.7'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.9'	N 5°10.2'	Polaris	+2.0	314°35.9'	N 89°21.4'
Rigel Kent	-0.0	139°43.5'	S 60°55.8'	Adhara	+1.5	255°07.4'	S 28°59.9'	Achernar	+0.5	335°21.1'	S 57°07.2'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.0'	S 16°44.6'				
Hadar	+0.6	148°39.3'	S 60°28.9'	Canopus	-0.6	263°53.3'	S 52°42.1'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	5°46.0'	182°12.5'	S 1°32.4'	187°51.4'	N 2°28.0'	1°45.3'	S 0°01.7'	43°45.8'	S 16°20.0'	288°03.1'	N 22°12.1'
1	20°48.4'	197°12.7'	S 1°33.4'	202°51.0'	N 2°26.8'	16°48.1'	S 0°01.9'	58°48.4'	S 16°20.0'	303°04.5'	N 22°12.2'
2	35°50.9'	212°13.0'	S 1°34.4'	217°50.6'	N 2°25.5'	31°50.8'	S 0°02.0'	73°51.0'	S 16°20.0'	318°06.0'	N 22°12.4'
3	50°53.4'	227°13.2'	S 1°35.4'	232°50.2'	N 2°24.3'	46°53.6'	S 0°02.1'	88°53.6'	S 16°20.1'	333°07.4'	N 22°12.5'
4	65°55.8'	242°13.4'	S 1°36.3'	247°49.8'	N 2°23.0'	61°56.4'	S 0°02.3'	103°56.1'	S 16°20.1'	348°08.9'	N 22°12.6'
5	80°58.3'	257°13.6'	S 1°37.3'	262°49.4'	N 2°21.8'	76°59.2'	S 0°02.4'	118°58.7'	S 16°20.1'	3°10.4'	N 22°12.8'
6	96°00.7'	272°13.8'	S 1°38.3'	277°49.0'	N 2°20.6'	92°01.9'	S 0°02.5'	134°01.3'	S 16°20.2'	18°11.8'	N 22°12.9'
7	111°03.2'	287°14.0'	S 1°39.3'	292°48.6'	N 2°19.3'	107°04.7'	S 0°02.7'	149°03.8'	S 16°20.2'	33°13.3'	N 22°13.1'
8	126°05.7'	302°14.2'	S 1°40.2'	307°48.2'	N 2°18.1'	122°07.5'	S 0°02.8'	164°06.4'	S 16°20.2'	48°14.7'	N 22°13.2'
9	141°08.1'	317°14.4'	S 1°41.2'	322°47.9'	N 2°16.8'	137°10.2'	S 0°02.9'	179°09.0'	S 16°20.3'	63°16.2'	N 22°13.4'
10	156°10.6'	332°14.7'	S 1°42.2'	337°47.5'	N 2°15.6'	152°13.0'	S 0°03.1'	194°11.5'	S 16°20.3'	78°17.7'	N 22°13.5'
11	171°13.1'	347°14.9'	S 1°43.1'	352°47.1'	N 2°14.3'	167°15.8'	S 0°03.2'	209°14.1'	S 16°20.3'	93°19.1'	N 22°13.7'
12	186°15.5'	2°15.1'	S 1°44.1'	7°46.7'	N 2°13.1'	182°18.6'	S 0°03.3'	224°16.6'	S 16°20.4'	108°20.6'	N 22°13.8'
13	201°18.0'	17°15.3'	S 1°45.1'	22°46.3'	N 2°11.9'	197°21.3'	S 0°03.5'	239°19.2'	S 16°20.4'	123°22.1'	N 22°13.9'
14	216°20.5'	32°15.5'	S 1°46.1'	37°45.9'	N 2°10.6'	212°24.1'	S 0°03.6'	254°21.8'	S 16°20.4'	138°23.5'	N 22°14.1'
15	231°22.9'	47°15.7'	S 1°47.0'	52°45.5'	N 2°09.4'	227°26.9'	S 0°03.7'	269°24.3'	S 16°20.5'	153°25.0'	N 22°14.2'
16	246°25.4'	62°15.9'	S 1°48.0'	67°45.1'	N 2°08.1'	242°29.6'	S 0°03.9'	284°26.9'	S 16°20.5'	168°26.5'	N 22°14.4'
17	261°27.8'	77°16.1'	S 1°49.0'	82°44.7'	N 2°06.9'	257°32.4'	S 0°04.0'	299°29.5'	S 16°20.5'	183°27.9'	N 22°14.5'
18	276°30.3'	92°16.3'	S 1°50.0'	97°44.3'	N 2°05.6'	272°35.2'	S 0°04.1'	314°32.0'	S 16°20.5'	198°29.4'	N 22°14.7'
19	291°32.8'	107°16.6'	S 1°50.9'	112°43.9'	N 2°04.4'	287°38.0'	S 0°04.3'	329°34.6'	S 16°20.6'	213°30.9'	N 22°14.8'
20	306°35.2'	122°16.8'	S 1°51.9'	127°43.5'	N 2°03.2'	302°40.7'	S 0°04.4'	344°37.2'	S 16°20.6'	228°32.3'	N 22°15.0'
21	321°37.7'	137°17.0'	S 1°52.9'	142°43.1'	N 2°01.9'	317°43.5'	S 0°04.5'	359°39.7'	S 16°20.6'	243°33.8'	N 22°15.1'
22	336°40.2'	152°17.2'	S 1°53.9'	157°42.7'	N 2°00.7'	332°46.3'	S 0°04.7'	14°42.3'	S 16°20.7'	258°35.3'	N 22°15.2'
23	351°42.6'	167°17.4'	S 1°54.8'	172°42.3'	N 1°59.4'	347°49.0'	S 0°04.8'	29°44.9'	S 16°20.7'	273°36.8'	N 22°15.4'
		SD 15.9' d -1.0'		v -0.4' d -1.2'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.5' d 0.1'	
Mer. pass.		11 h 51 m 1 s		11 h 29 m		23 h 49 m		21 h 1 m		4 h 47 m	

h	Moon				Lunar distance							
	GHA	dec	v	d	HP	-Saturn	-Achernar	-Altair	-Rigil Kent	-Hadar	-Antares	-Spica
0	169°07.7'	S 4°33.2'	13.8'	-15.1'	57.1'			101°52.8'	59°07.7'	57°02.1'	53°24.0'	8°19.2'
1	183°40.5'	S 4°48.3'	13.7'	-15.1'	57.1'			101°25.7'	58°46.4'	56°42.8'	52°50.9'	7°49.9'
2	198°13.3'	S 5°03.4'	13.7'	-15.1'	57.1'			100°58.5'	58°25.1'	56°23.7'	52°17.7'	7°21.2'
3	212°46.0'	S 5°18.4'	13.7'	-15.0'	57.2'			100°31.3'	58°04.0'	56°04.7'	51°44.5'	6°53.1'
4	227°18.6'	S 5°33.5'	13.6'	-15.0'	57.2'	119°52.8'		100°04.1'	57°42.9'	55°45.8'	51°11.2'	
5	241°51.2'	S 5°48.5'	13.6'	-15.0'	57.2'	119°19.5'		99°36.8'	57°22.0'	55°27.1'	50°38.0'	
6	256°23.8'	S 6°03.5'	13.5'	-15.0'	57.2'	118°46.2'		99°09.4'	57°01.2'	55°08.5'	50°04.7'	
7	270°56.3'	S 6°18.5'	13.5'	-15.0'	57.2'	118°12.8'		98°42.1'	56°40.5'	54°50.0'	49°31.4'	
8	285°28.8'	S 6°33.5'	13.4'	-15.0'	57.3'	117°39.5'		98°14.7'	56°19.9'	54°31.7'	48°58.1'	
9	300°01.2'	S 6°48.5'	13.4'	-14.9'	57.3'	117°06.1'		97°47.2'	55°59.4'	54°13.5'	48°24.8'	
10	314°33.5'	S 7°03.4'	13.3'	-14.9'	57.3'	116°32.6'		97°19.8'	55°39.0'	53°55.5'	47°51.4'	
11	329°05.8'	S 7°18.3'	13.2'	-14.9'	57.3'	115°59.2'		96°52.2'	55°18.8'	53°37.7'	47°18.0'	
12	343°38.1'	S 7°33.2'	13.2'	-14.9'	57.4'	115°25.7'		96°24.7'	54°58.7'	53°20.0'	46°44.6'	
13	358°10.3'	S 7°48.1'	13.1'	-14.8'	57.4'	114°52.2'		95°57.2'	54°38.7'	53°02.4'	46°11.2'	
14	12°42.4'	S 8°02.9'	13.1'	-14.8'	57.4'	114°18.7'		95°29.6'	54°18.9'	52°45.1'	45°37.7'	
15	27°14.5'	S 8°17.8'	13.0'	-14.8'	57.4'	113°45.2'		95°01.9'	53°59.2'	52°27.9'	45°04.2'	
16	41°46.5'	S 8°32.5'	13.0'	-14.8'	57.4'	113°11.6'		94°34.3'	53°39.6'	52°10.9'	44°30.7'	
17	56°18.5'	S 8°47.3'	12.9'	-14.7'	57.5'	112°38.0'		94°06.6'	53°20.2'	51°54.0'	43°57.2'	
18	70°50.4'	S 9°02.0'	12.8'	-14.7'	57.5'	112°04.4'	113°50.5'	93°38.9'	53°01.0'	51°37.4'	43°23.7'	
19	85°22.2'	S 9°16.7'	12.8'	-14.7'	57.5'	111°30.8'	113°35.4'	93°11.2'	52°41.9'	51°20.9'	42°50.1'	
20	99°54.0'	S 9°31.4'	12.7'	-14.6'	57.5'	110°57.1'	113°20.1'	92°43.4'	52°23.0'	51°04.6'	42°16.5'	
21	114°25.7'	S 9°46.0'	12.7'	-14.6'	57.5'	110°23.4'	113°04.8'	92°15.7'	52°04.2'	50°48.5'	41°42.9'	
22	128°57.4'	S 10°00.6'	12.6'	-14.6'	57.6'	109°49.8'	112°49.3'	91°47.9'	51°45.6'	50°32.6'	41°09.3'	
23	143°28.9'	S 10°15.2'	12.5'	-14.5'	57.6'	109°16.0'	112°33.8'	91°20.0'	51°27.1'	50°17.0'	40°35.7'	
Mer. pass.		13 h 8 m SD 15.6'		phase 1%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.1'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.9'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.6'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.8'	Regulus	+1.4	207°36.7'	N 11°51.5'	Rigel	+0.2	281°05.6'	S 8°10.3'
Vega	+0.0	80°34.5'	N 38°48.5'	Pollux	+1.2	243°19.8'	N 27°58.3'	Aldebaran	+0.9	290°41.7'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.9'	N 5°10.2'	Polaris	+2.0	314°35.6'	N 89°21.4'
Rigil Kent	-0.0	139°43.5'	S 60°55.8'	Adhara	+1.5	255°07.4'	S 28°59.9'	Achernar	+0.5	335°21.1'	S 57°07.2'
Arcturus	-0.1	145°49.9'	N 19°04.1'	Sirius	-1.4	258°28.0'	S 16°44.6'				
Hadar	+0.6	148°39.3'	S 60°28.9'	Canopus	-0.6	263°53.3'	S 52°42.1'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	6°45.1'	182°17.6'	S 1°55.8'	187°41.9'	N 1°58.2'	2°51.8'	S 0°04.9'	44°47.4'	S 16°20.7'	288°38.2'	N 22°15.5'
1	21°47.6'	197°17.8'	S 1°56.8'	202°41.6'	N 1°56.9'	17°54.6'	S 0°05.1'	59°50.0'	S 16°20.8'	303°39.7'	N 22°15.7'
2	36°50.0'	212°18.0'	S 1°57.7'	217°41.2'	N 1°55.7'	32°57.4'	S 0°05.2'	74°52.6'	S 16°20.8'	318°41.2'	N 22°15.8'
3	51°52.5'	227°18.2'	S 1°58.7'	232°40.8'	N 1°54.4'	48°00.1'	S 0°05.3'	89°55.1'	S 16°20.8'	333°42.7'	N 22°16.0'
4	66°55.0'	242°18.4'	S 1°59.7'	247°40.4'	N 1°53.2'	63°02.9'	S 0°05.5'	104°57.7'	S 16°20.9'	348°44.2'	N 22°16.1'
5	81°57.4'	257°18.7'	S 2°00.7'	262°40.0'	N 1°52.0'	78°05.7'	S 0°05.6'	120°00.2'	S 16°20.9'	3°45.6'	N 22°16.2'
6	96°59.9'	272°18.9'	S 2°01.6'	277°39.6'	N 1°50.7'	93°08.4'	S 0°05.7'	135°02.8'	S 16°20.9'	18°47.1'	N 22°16.4'
7	112°02.3'	287°19.1'	S 2°02.6'	292°39.2'	N 1°49.5'	108°11.2'	S 0°05.9'	150°05.4'	S 16°20.9'	33°48.6'	N 22°16.5'
8	127°04.8'	302°19.3'	S 2°03.6'	307°38.8'	N 1°48.2'	123°14.0'	S 0°06.0'	165°07.9'	S 16°21.0'	48°50.1'	N 22°16.7'
9	142°07.3'	317°19.5'	S 2°04.6'	322°38.4'	N 1°47.0'	138°16.8'	S 0°06.1'	180°10.5'	S 16°21.0'	63°51.6'	N 22°16.8'
10	157°09.7'	332°19.7'	S 2°05.5'	337°38.0'	N 1°45.7'	153°19.5'	S 0°06.3'	195°13.1'	S 16°21.0'	78°53.0'	N 22°17.0'
11	172°12.2'	347°19.9'	S 2°06.5'	352°37.6'	N 1°44.5'	168°22.3'	S 0°06.4'	210°15.6'	S 16°21.1'	93°54.5'	N 22°17.1'
12	187°14.7'	2°20.1'	S 2°07.5'	7°37.2'	N 1°43.2'	183°25.1'	S 0°06.5'	225°18.2'	S 16°21.1'	108°56.0'	N 22°17.2'
13	202°17.1'	17°20.3'	S 2°08.4'	22°36.8'	N 1°42.0'	198°27.8'	S 0°06.7'	240°20.8'	S 16°21.1'	123°57.5'	N 22°17.4'
14	217°19.6'	32°20.5'	S 2°09.4'	37°36.4'	N 1°40.7'	213°30.6'	S 0°06.8'	255°23.3'	S 16°21.2'	138°59.0'	N 22°17.5'
15	232°22.1'	47°20.7'	S 2°10.4'	52°36.1'	N 1°39.5'	228°33.4'	S 0°06.9'	270°25.9'	S 16°21.2'	154°00.5'	N 22°17.7'
16	247°24.5'	62°21.0'	S 2°11.4'	67°35.7'	N 1°38.2'	243°36.2'	S 0°07.1'	285°28.4'	S 16°21.2'	169°02.0'	N 22°17.8'
17	262°27.0'	77°21.2'	S 2°12.3'	82°35.3'	N 1°37.0'	258°38.9'	S 0°07.2'	300°31.0'	S 16°21.2'	184°03.5'	N 22°17.9'
18	277°29.4'	92°21.4'	S 2°13.3'	97°34.9'	N 1°35.7'	273°41.7'	S 0°07.3'	315°33.6'	S 16°21.3'	199°05.0'	N 22°18.1'
19	292°31.9'	107°21.6'	S 2°14.3'	112°34.5'	N 1°34.5'	288°44.5'	S 0°07.5'	330°36.1'	S 16°21.3'	214°06.4'	N 22°18.2'
20	307°34.4'	122°21.8'	S 2°15.3'	127°34.1'	N 1°33.3'	303°47.2'	S 0°07.6'	345°38.7'	S 16°21.3'	229°07.9'	N 22°18.4'
21	322°36.8'	137°22.0'	S 2°16.2'	142°33.7'	N 1°32.0'	318°50.0'	S 0°07.7'	0°41.2'	S 16°21.4'	244°09.4'	N 22°18.5'
22	337°39.3'	152°22.2'	S 2°17.2'	157°33.3'	N 1°30.8'	333°52.8'	S 0°07.9'	15°43.8'	S 16°21.4'	259°10.9'	N 22°18.6'
23	352°41.8'	167°22.4'	S 2°18.2'	172°32.9'	N 1°29.5'	348°55.6'	S 0°08.0'	30°46.4'	S 16°21.4'	274°12.4'	N 22°18.8'
		SD 16.0' d -1.0'		v -0.4' d -1.2'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.5' d 0.1'	
Mer. pass.		11 h 50 m 41 s		11 h 30 m		23 h 44 m		20 h 57 m		4 h 45 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Fomalhaut	-Achernar	-Altair	-Rigel Kent	-Hadar	-Antares	+Spica	+Arcturus
0	158°00.5'	S 10°29.7'	12.4'	-14.5'	57.6'		112°18.1'	90°52.2'	51°08.8'	50°01.5'	40°02.0'	7°04.1'	
1	172°31.9'	S 10°44.2'	12.4'	-14.4'	57.6'		112°02.2'	90°24.4'	50°50.8'	49°46.2'	39°28.3'	7°33.0'	
2	187°03.3'	S 10°58.6'	12.3'	-14.4'	57.6'		111°46.3'	89°56.5'	50°32.8'		38°54.6'	8°02.4'	
3	201°34.6'	S 11°13.0'	12.2'	-14.3'	57.7'		111°30.3'	89°28.6'	50°15.1'		38°20.9'	8°32.5'	
4	216°05.8'	S 11°27.3'	12.2'	-14.3'	57.7'	119°35.3'	111°14.1'	89°00.7'	49°57.6'		37°47.2'	9°03.0'	
5	230°37.0'	S 11°41.6'	12.1'	-14.3'	57.7'	119°03.3'	110°57.8'	88°32.8'	49°40.2'		37°13.4'	9°33.8'	
6	245°08.1'	S 11°55.9'	12.0'	-14.2'	57.7'	118°31.2'	110°41.5'	88°04.8'	49°23.1'		36°39.6'	10°05.0'	
7	259°39.1'	S 12°10.1'	11.9'	-14.2'	57.7'	117°59.1'	110°25.0'	87°36.9'	49°06.2'		36°05.8'	10°36.5'	
8	274°10.1'	S 12°24.2'	11.9'	-14.1'	57.7'	117°27.0'	110°08.4'	87°08.9'	48°49.4'		35°32.0'	11°08.3'	
9	288°41.0'	S 12°38.3'	11.8'	-14.0'	57.8'	116°54.8'	109°51.7'	86°41.0'	48°32.9'		34°58.2'	11°40.2'	
10	303°11.7'	S 12°52.4'	11.7'	-14.0'	57.8'	116°22.6'	109°34.9'	86°13.0'	48°16.6'		34°24.3'	12°12.4'	
11	317°42.5'	S 13°06.4'	11.6'	-13.9'	57.8'	115°50.3'	109°18.0'	85°45.0'	48°00.5'		33°50.5'	12°44.7'	
12	332°13.1'	S 13°20.3'	11.6'	-13.9'	57.8'	115°18.0'	109°01.0'	85°17.0'	47°44.7'		33°16.6'	13°17.2'	
13	346°43.7'	S 13°34.2'	11.5'	-13.8'	57.8'	114°45.7'	108°44.0'	84°49.0'	47°29.0'		32°42.7'	13°49.8'	32°40.0'
14	1°14.1'	S 13°48.0'	11.4'	-13.8'	57.9'	114°13.4'	108°26.8'	84°21.0'	47°13.7'		32°08.8'	14°22.5'	32°55.3'
15	15°44.5'	S 14°01.8'	11.3'	-13.7'	57.9'	113°41.0'	108°09.5'	83°53.0'			31°34.9'	14°55.4'	33°11.1'
16	30°14.9'	S 14°15.4'	11.2'	-13.6'	57.9'	113°08.5'	107°52.1'	83°24.9'			31°00.9'	15°28.3'	33°27.3'
17	44°45.1'	S 14°29.1'	11.2'	-13.6'	57.9'	112°36.1'	107°34.7'	82°56.9'			30°26.9'	16°01.3'	33°43.9'
18	59°15.3'	S 14°42.6'	11.1'	-13.5'	57.9'	112°03.6'	107°17.1'	82°28.9'			29°53.0'	16°34.5'	34°00.9'
19	73°45.3'	S 14°56.1'	11.0'	-13.4'	58.0'	111°31.1'	106°59.5'	82°00.9'			29°19.0'	17°07.7'	34°18.3'
20	88°15.3'	S 15°09.6'	10.9'	-13.4'	58.0'	110°58.6'	106°41.8'	81°32.8'			28°45.0'	17°41.0'	34°36.0'
21	102°45.2'	S 15°22.9'	10.8'	-13.3'	58.0'	110°26.0'	106°24.0'	81°04.8'			28°10.9'	18°14.3'	34°54.1'
22	117°15.0'	S 15°36.2'	10.7'	-13.2'	58.0'	109°53.4'	106°06.1'	80°36.8'			27°36.9'	18°47.7'	35°12.6'
23	131°44.7'	S 15°49.4'	10.6'	-13.1'	58.0'	109°20.8'	105°48.1'	80°08.8'			27°02.9'	19°21.2'	35°31.4'
Mer. pass.		13 h 55 m SD 15.7'		phase 5%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.1'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.9'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.6'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.8'	Regulus	+1.4	207°36.7'	N 11°51.5'	Rigel	+0.2	281°05.6'	S 8°10.3'
Vega	+0.0	80°34.5'	N 38°48.5'	Pollux	+1.2	243°19.8'	N 27°58.3'	Aldebaran	+0.9	290°41.7'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.9'	N 5°10.2'	Polaris	+2.0	314°35.2'	N 89°21.4'
Rigel Kent	-0.0	139°43.5'	S 60°55.8'	Adhara	+1.5	255°07.4'	S 28°59.9'	Achernar	+0.5	335°21.1'	S 57°07.2'
Arcturus	-0.1	145°50.0'	N 19°04.1'	Sirius	-1.4	258°27.9'	S 16°44.6'				
Hadar	+0.6	148°39.3'	S 60°28.9'	Canopus	-0.6	263°53.2'	S 52°42.1'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	7°44.2'	182°22.6'	S 2°19.1'	187°32.5'	N 1°28.3'	3°58.3'	S 0°08.1'	45°48.9'	S 16°21.4'	289°13.9'	N 22°18.9'
1	22°46.7'	197°22.8'	S 2°20.1'	202°32.1'	N 1°27.0'	19°01.1'	S 0°08.3'	60°51.5'	S 16°21.5'	304°15.4'	N 22°19.1'
2	37°49.2'	212°23.0'	S 2°21.1'	217°31.7'	N 1°25.8'	34°03.9'	S 0°08.4'	75°54.0'	S 16°21.5'	319°16.9'	N 22°19.2'
3	52°51.6'	227°23.2'	S 2°22.1'	232°31.3'	N 1°24.5'	49°06.6'	S 0°08.5'	90°56.6'	S 16°21.5'	334°18.4'	N 22°19.3'
4	67°54.1'	242°23.5'	S 2°23.0'	247°31.0'	N 1°23.3'	64°09.4'	S 0°08.7'	105°59.2'	S 16°21.6'	349°19.9'	N 22°19.5'
5	82°56.6'	257°23.7'	S 2°24.0'	262°30.6'	N 1°22.0'	79°12.2'	S 0°08.8'	121°01.7'	S 16°21.6'	4°21.4'	N 22°19.6'
6	97°59.0'	272°23.9'	S 2°25.0'	277°30.2'	N 1°20.8'	94°15.0'	S 0°08.9'	136°04.3'	S 16°21.6'	19°22.9'	N 22°19.8'
7	113°01.5'	287°24.1'	S 2°26.0'	292°29.8'	N 1°19.5'	109°17.7'	S 0°09.1'	151°06.8'	S 16°21.6'	34°24.4'	N 22°19.9'
8	128°03.9'	302°24.3'	S 2°26.9'	307°29.4'	N 1°18.3'	124°20.5'	S 0°09.2'	166°09.4'	S 16°21.7'	49°25.9'	N 22°20.0'
9	143°06.4'	317°24.5'	S 2°27.9'	322°29.0'	N 1°17.0'	139°23.3'	S 0°09.3'	181°12.0'	S 16°21.7'	64°27.4'	N 22°20.2'
10	158°08.9'	332°24.7'	S 2°28.9'	337°28.6'	N 1°15.8'	154°26.0'	S 0°09.5'	196°14.5'	S 16°21.7'	79°28.9'	N 22°20.3'
11	173°11.3'	347°24.9'	S 2°29.8'	352°28.2'	N 1°14.5'	169°28.8'	S 0°09.6'	211°17.1'	S 16°21.8'	94°30.5'	N 22°20.5'
12	188°13.8'	2°25.1'	S 2°30.8'	7°27.8'	N 1°13.3'	184°31.6'	S 0°09.7'	226°19.6'	S 16°21.8'	109°32.0'	N 22°20.6'
13	203°16.3'	17°25.3'	S 2°31.8'	22°27.4'	N 1°12.0'	199°34.3'	S 0°09.9'	241°22.2'	S 16°21.8'	124°33.5'	N 22°20.7'
14	218°18.7'	32°25.5'	S 2°32.8'	37°27.0'	N 1°10.8'	214°37.1'	S 0°10.0'	256°24.8'	S 16°21.9'	139°35.0'	N 22°20.9'
15	233°21.2'	47°25.7'	S 2°33.7'	52°26.6'	N 1°09.5'	229°39.9'	S 0°10.1'	271°27.3'	S 16°21.9'	154°36.5'	N 22°21.0'
16	248°23.7'	62°25.9'	S 2°34.7'	67°26.3'	N 1°08.3'	244°42.7'	S 0°10.3'	286°29.9'	S 16°21.9'	169°38.0'	N 22°21.2'
17	263°26.1'	77°26.1'	S 2°35.7'	82°25.9'	N 1°07.0'	259°45.4'	S 0°10.4'	301°32.4'	S 16°21.9'	184°39.5'	N 22°21.3'
18	278°28.6'	92°26.4'	S 2°36.6'	97°25.5'	N 1°05.8'	274°48.2'	S 0°10.5'	316°35.0'	S 16°22.0'	199°41.0'	N 22°21.4'
19	293°31.1'	107°26.6'	S 2°37.6'	112°25.1'	N 1°04.5'	289°51.0'	S 0°10.6'	331°37.6'	S 16°22.0'	214°42.5'	N 22°21.6'
20	308°33.5'	122°26.8'	S 2°38.6'	127°24.7'	N 1°03.3'	304°53.7'	S 0°10.8'	346°40.1'	S 16°22.0'	229°44.1'	N 22°21.7'
21	323°36.0'	137°27.0'	S 2°39.6'	142°24.3'	N 1°02.0'	319°56.5'	S 0°10.9'	1°42.7'	S 16°22.0'	244°45.6'	N 22°21.8'
22	338°38.4'	152°27.2'	S 2°40.5'	157°23.9'	N 1°00.8'	334°59.3'	S 0°11.0'	16°45.2'	S 16°22.1'	259°47.1'	N 22°22.0'
23	353°40.9'	167°27.4'	S 2°41.5'	172°23.5'	N 0°59.5'	350°02.1'	S 0°11.2'	31°47.8'	S 16°22.1'	274°48.6'	N 22°22.1'
		SD 16.0' <i>d</i> -1.0'		<i>v</i> -0.4' <i>d</i> -1.2'		<i>v</i> 2.8' <i>d</i> -0.1'		<i>v</i> 2.6' <i>d</i> -0.0'		<i>v</i> 1.5' <i>d</i> 0.1'	
Mer. pass.		11 h 50 m 21 s		11 h 30 m		23 h 40 m		20 h 53 m		4 h 43 m	

h	Moon				Lunar distance								
	GHA	dec	<i>v</i>	<i>d</i>	HP	-Fomalhaut	-Achernar	-Saturn	-Altair	-Antares	+Spica	+Arcturus	+Sun
0	146°14.4'	S 16°02.5'	10.5'	-13.1'	58.0'	108°48.1'	105°30.1'	95°06.4'	79°40.8'	26°28.8'	19°54.7'	35°50.6'	
1	160°43.9'	S 16°15.6'	10.5'	-13.0'	58.1'	108°15.4'	105°12.0'	94°32.2'	79°12.8'	25°54.7'	20°28.3'	36°10.1'	
2	175°13.4'	S 16°28.6'	10.4'	-12.9'	58.1'	107°42.7'	104°53.8'	93°57.9'	78°44.8'	25°20.6'	21°01.9'	36°29.9'	
3	189°42.7'	S 16°41.5'	10.3'	-12.8'	58.1'	107°10.0'	104°35.5'	93°23.7'	78°16.8'	24°46.5'	21°35.6'	36°50.0'	
4	204°12.0'	S 16°54.3'	10.2'	-12.7'	58.1'	106°37.2'	104°17.2'	92°49.4'	77°48.8'	24°12.4'	22°09.3'	37°10.4'	40°13.9'
5	218°41.2'	S 17°07.0'	10.1'	-12.7'	58.1'	106°04.4'	103°58.8'	92°15.1'	77°20.8'	23°38.3'	22°43.1'	37°31.2'	40°45.6'
6	233°10.3'	S 17°19.7'	10.0'	-12.6'	58.1'	105°31.6'	103°40.3'	91°40.8'	76°52.9'	23°04.2'	23°16.9'	37°52.2'	41°17.3'
7	247°39.3'	S 17°32.3'	9.9'	-12.5'	58.2'	104°58.8'	103°21.7'	91°06.4'	76°24.9'	22°30.0'	23°50.7'	38°13.5'	41°49.1'
8	262°08.2'	S 17°44.7'	9.8'	-12.4'	58.2'	104°25.9'	103°03.1'	90°32.1'	75°57.0'	21°55.9'	24°24.6'	38°35.1'	42°20.8'
9	276°37.0'	S 17°57.1'	9.7'	-12.3'	58.2'	103°53.0'	102°44.4'	89°57.7'	75°29.1'	21°21.8'	24°58.5'	38°56.9'	42°52.6'
10	291°05.7'	S 18°09.4'	9.6'	-12.2'	58.2'	103°20.1'	102°25.7'	89°23.3'	75°01.2'	20°47.6'	25°32.5'	39°19.0'	43°24.4'
11	305°34.3'	S 18°21.6'	9.5'	-12.1'	58.2'	102°47.2'	102°06.9'	88°48.9'	74°33.3'	20°13.4'	26°06.4'	39°41.4'	43°56.2'
12	320°02.8'	S 18°33.8'	9.4'	-12.0'	58.2'	102°14.2'	101°48.0'	88°14.5'	74°05.4'	19°39.3'	26°40.5'	40°04.0'	44°28.1'
13	334°31.2'	S 18°45.8'	9.3'	-11.9'	58.3'	101°41.3'	101°29.0'	87°40.1'	73°37.6'	19°05.1'	27°14.5'	40°26.9'	44°59.9'
14	348°59.6'	S 18°57.7'	9.2'	-11.8'	58.3'	101°08.3'	101°10.1'	87°05.6'	73°09.8'	18°30.9'	27°48.6'	40°50.0'	45°31.8'
15	3°27.8'	S 19°09.5'	9.1'	-11.7'	58.3'	100°35.2'	100°51.0'	86°31.2'	72°42.0'	17°56.8'	28°22.7'	41°13.3'	46°03.7'
16	17°55.9'	S 19°21.2'	9.0'	-11.6'	58.3'	100°02.2'	100°31.9'	85°56.7'	72°14.2'	17°22.6'	28°56.8'	41°36.8'	46°35.6'
17	32°24.0'	S 19°32.9'	8.9'	-11.5'	58.3'	99°29.2'	100°12.8'	85°22.2'	71°46.5'	16°48.4'	29°31.0'	42°00.6'	47°07.5'
18	46°51.9'	S 19°44.4'	8.8'	-11.4'	58.3'	98°56.1'	99°53.6'	84°47.7'	71°18.7'	16°14.3'	30°05.2'	42°24.6'	47°39.5'
19	61°19.8'	S 19°55.8'	8.7'	-11.3'	58.3'	98°23.0'	99°34.3'	84°13.2'	70°51.1'	15°40.1'	30°39.4'	42°48.7'	48°11.4'
20	75°47.5'	S 20°07.1'	8.6'	-11.2'	58.4'	97°49.9'	99°15.0'	83°38.6'	70°23.4'	15°06.0'	31°13.6'	43°13.1'	48°43.4'
21	90°15.2'	S 20°18.3'	8.5'	-11.1'	58.4'	97°16.7'	98°55.6'	83°04.1'	69°55.8'	14°31.8'	31°47.9'	43°37.7'	49°15.4'
22	104°42.7'	S 20°29.4'	8.4'	-11.0'	58.4'	96°43.6'	98°36.2'	82°29.5'	69°28.2'	13°57.7'	32°22.2'	44°02.4'	49°47.4'
23	119°10.2'	S 20°40.3'	8.3'	-10.9'	58.4'	96°10.4'	98°16.8'	81°54.9'	69°00.6'	13°23.7'	32°56.5'	44°27.4'	50°19.4'
Mer. pass.		14 h 46 m SD 15.8'		phase 11%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.1'	N 7°24.8'
Deneb	+1.2	49°26.8'	N 45°21.9'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.6'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.8'	Regulus	+1.4	207°36.7'	N 11°51.5'	Rigel	+0.2	281°05.6'	S 8°10.3'
Vega	+0.0	80°34.5'	N 38°48.5'	Pollux	+1.2	243°19.8'	N 27°58.3'	Aldebaran	+0.9	290°41.7'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.9'	N 5°10.1'	Polaris	+2.0	314°34.8'	N 89°21.4'
Rigil Kent	-0.0	139°43.5'	S 60°55.8'	Adhara	+1.5	255°07.4'	S 28°59.9'	Achernar	+0.5	335°21.1'	S 57°07.2'
Arcturus	-0.1	145°50.0'	N 19°04.1'	Sirius	-1.4	258°27.9'	S 16°44.6'				
Hadar	+0.6	148°39.3'	S 60°28.9'	Canopus	-0.6	263°53.2'	S 52°42.1'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	8°43.4'	182°27.6'	S 2°42.5'	187°23.1'	N 0°58.3'	5°04.8'	S 0°11.3'	46°50.3'	S 16°22.1'	289°50.1'	N 22°22.3'
1	23°45.8'	197°27.8'	S 2°43.4'	202°22.7'	N 0°57.0'	20°07.6'	S 0°11.4'	61°52.9'	S 16°22.2'	304°51.7'	N 22°22.4'
2	38°48.3'	212°28.0'	S 2°44.4'	217°22.3'	N 0°55.8'	35°10.4'	S 0°11.6'	76°55.5'	S 16°22.2'	319°53.2'	N 22°22.5'
3	53°50.8'	227°28.2'	S 2°45.4'	232°22.0'	N 0°54.5'	50°13.1'	S 0°11.7'	91°58.0'	S 16°22.2'	334°54.7'	N 22°22.7'
4	68°53.2'	242°28.4'	S 2°46.4'	247°21.6'	N 0°53.3'	65°15.9'	S 0°11.8'	107°00.6'	S 16°22.2'	349°56.2'	N 22°22.8'
5	83°55.7'	257°28.6'	S 2°47.3'	262°21.2'	N 0°52.0'	80°18.7'	S 0°12.0'	122°03.1'	S 16°22.3'	4°57.7'	N 22°22.9'
6	98°58.2'	272°28.8'	S 2°48.3'	277°20.8'	N 0°50.8'	95°21.4'	S 0°12.1'	137°05.7'	S 16°22.3'	19°59.3'	N 22°23.1'
7	114°00.6'	287°29.0'	S 2°49.3'	292°20.4'	N 0°49.5'	110°24.2'	S 0°12.2'	152°08.2'	S 16°22.3'	35°00.8'	N 22°23.2'
8	129°03.1'	302°29.2'	S 2°50.2'	307°20.0'	N 0°48.3'	125°27.0'	S 0°12.4'	167°10.8'	S 16°22.4'	50°02.3'	N 22°23.4'
9	144°05.5'	317°29.4'	S 2°51.2'	322°19.6'	N 0°47.0'	140°29.8'	S 0°12.5'	182°13.3'	S 16°22.4'	65°03.8'	N 22°23.5'
10	159°08.0'	332°29.6'	S 2°52.2'	337°19.2'	N 0°45.8'	155°32.5'	S 0°12.6'	197°15.9'	S 16°22.4'	80°05.4'	N 22°23.6'
11	174°10.5'	347°29.8'	S 2°53.2'	352°18.8'	N 0°44.5'	170°35.3'	S 0°12.8'	212°18.5'	S 16°22.4'	95°06.9'	N 22°23.8'
12	189°12.9'	2°30.0'	S 2°54.1'	7°18.4'	N 0°43.3'	185°38.1'	S 0°12.9'	227°21.0'	S 16°22.5'	110°08.4'	N 22°23.9'
13	204°15.4'	17°30.2'	S 2°55.1'	22°18.0'	N 0°42.0'	200°40.8'	S 0°13.0'	242°23.6'	S 16°22.5'	125°10.0'	N 22°24.0'
14	219°17.9'	32°30.5'	S 2°56.1'	37°17.6'	N 0°40.8'	215°43.6'	S 0°13.2'	257°26.1'	S 16°22.5'	140°11.5'	N 22°24.2'
15	234°20.3'	47°30.7'	S 2°57.0'	52°17.3'	N 0°39.5'	230°46.4'	S 0°13.3'	272°28.7'	S 16°22.5'	155°13.0'	N 22°24.3'
16	249°22.8'	62°30.9'	S 2°58.0'	67°16.9'	N 0°38.3'	245°49.2'	S 0°13.4'	287°31.2'	S 16°22.6'	170°14.6'	N 22°24.4'
17	264°25.3'	77°31.1'	S 2°59.0'	82°16.5'	N 0°37.0'	260°51.9'	S 0°13.6'	302°33.8'	S 16°22.6'	185°16.1'	N 22°24.6'
18	279°27.7'	92°31.3'	S 2°59.9'	97°16.1'	N 0°35.8'	275°54.7'	S 0°13.7'	317°36.3'	S 16°22.6'	200°17.6'	N 22°24.7'
19	294°30.2'	107°31.5'	S 3°00.9'	112°15.7'	N 0°34.5'	290°57.5'	S 0°13.8'	332°38.9'	S 16°22.7'	215°19.2'	N 22°24.8'
20	309°32.7'	122°31.7'	S 3°01.9'	127°15.3'	N 0°33.3'	306°00.2'	S 0°13.9'	347°41.4'	S 16°22.7'	230°20.7'	N 22°25.0'
21	324°35.1'	137°31.9'	S 3°02.9'	142°14.9'	N 0°32.0'	321°03.0'	S 0°14.1'	2°44.0'	S 16°22.7'	245°22.3'	N 22°25.1'
22	339°37.6'	152°32.1'	S 3°03.8'	157°14.5'	N 0°30.8'	336°05.8'	S 0°14.2'	17°46.6'	S 16°22.7'	260°23.8'	N 22°25.3'
23	354°40.0'	167°32.3'	S 3°04.8'	172°14.1'	N 0°29.5'	351°08.5'	S 0°14.3'	32°49.1'	S 16°22.8'	275°25.3'	N 22°25.4'
		SD 16.0'	d -1.0'	v -0.4'	d -1.3'	v 2.8'	d -0.1'	v 2.6'	d -0.0'	v 1.5'	d 0.1'
Mer. pass.		11 h 50 m 1 s		11 h 31 m		23 h 35 m		20 h 49 m		4 h 40 m	

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Jupiter	-Fomalhaut	-Saturn	-Altair	-Antares	+Spica	+Arcturus	+Sun
0	133°37.5'	S 20°51.2'	8.3'	-10.7'	58.4'		95°37.2'	81°20.3'	68°33.1'	12°49.6'	33°30.8'	44°52.5'	50°51.5'
1	148°04.8'	S 21°02.0'	8.2'	-10.6'	58.4'		95°04.0'	80°45.7'	68°05.6'	12°15.6'	34°05.2'	45°17.8'	51°23.5'
2	162°31.9'	S 21°12.6'	8.1'	-10.5'	58.4'		94°30.8'	80°11.1'	67°38.2'	11°41.6'	34°39.5'	45°43.3'	51°55.6'
3	176°59.0'	S 21°23.1'	8.0'	-10.4'	58.5'		93°57.6'	79°36.5'	67°10.8'	11°07.7'	35°13.9'	46°08.9'	52°27.7'
4	191°25.9'	S 21°33.5'	7.9'	-10.3'	58.5'		93°24.3'	79°01.8'	66°43.5'	10°33.8'	35°48.3'	46°34.7'	52°59.8'
5	205°52.8'	S 21°43.8'	7.8'	-10.1'	58.5'		92°51.1'	78°27.1'	66°16.2'	9°60.0'	36°22.8'	47°00.6'	53°31.9'
6	220°19.5'	S 21°53.9'	7.7'	-10.0'	58.5'		92°17.8'	77°52.5'	65°48.9'	9°26.3'	36°57.2'	47°26.7'	54°04.1'
7	234°46.2'	S 22°03.9'	7.6'	-9.9'	58.5'		91°44.5'	77°17.8'	65°21.7'	8°52.7'	37°31.7'	47°53.0'	54°36.2'
8	249°12.7'	S 22°13.8'	7.5'	-9.8'	58.5'		91°11.2'	76°43.1'	64°54.5'	8°19.2'	38°06.2'	48°19.4'	55°08.4'
9	263°39.2'	S 22°23.6'	7.4'	-9.6'	58.5'		90°37.9'	76°08.3'	64°27.4'	7°45.9'	38°40.7'	48°45.9'	55°40.6'
10	278°05.6'	S 22°33.2'	7.3'	-9.5'	58.6'	119°42.1'	90°04.5'	75°33.6'	64°00.4'	7°12.8'	39°15.3'	49°12.6'	56°12.8'
11	292°31.8'	S 22°42.7'	7.2'	-9.4'	58.6'	119°07.0'	89°31.2'	74°58.9'	63°33.4'	6°40.0'	39°49.8'	49°39.4'	56°45.0'
12	306°58.0'	S 22°52.1'	7.1'	-9.2'	58.6'	118°32.0'	88°57.8'	74°24.1'	63°06.5'	6°07.5'	40°24.4'	50°06.4'	57°17.2'
13	321°24.1'	S 23°01.4'	7.0'	-9.1'	58.6'	117°56.9'	88°24.4'	73°49.3'	62°39.6'	5°35.5'	40°59.0'	50°33.4'	57°49.4'
14	335°50.0'	S 23°10.5'	6.9'	-9.0'	58.6'	117°21.8'	87°51.0'	73°14.5'	62°12.8'	5°04.0'	41°33.6'	51°00.6'	58°21.7'
15	350°15.9'	S 23°19.4'	6.8'	-8.8'	58.6'	116°46.7'	87°17.6'	72°39.7'	61°46.0'		42°08.2'	51°27.9'	58°54.0'
16	4°41.7'	S 23°28.3'	6.7'	-8.7'	58.6'	116°11.6'	86°44.2'	72°04.9'	61°19.4'		42°42.8'	51°55.4'	59°26.2'
17	19°07.4'	S 23°37.0'	6.6'	-8.6'	58.6'	115°36.5'	86°10.8'	71°30.1'	60°52.8'		43°17.5'	52°22.9'	59°58.5'
18	33°33.0'	S 23°45.5'	6.5'	-8.4'	58.7'	115°01.3'	85°37.4'	70°55.3'	60°26.2'		43°52.1'	52°50.6'	60°30.8'
19	47°58.5'	S 23°53.9'	6.4'	-8.3'	58.7'	114°26.2'	85°04.0'	70°20.4'	59°59.8'		44°26.8'	53°18.3'	61°03.2'
20	62°23.9'	S 24°02.2'	6.3'	-8.1'	58.7'	113°51.0'	84°30.5'	69°45.6'	59°33.4'		45°01.5'	53°46.2'	61°35.5'
21	76°49.2'	S 24°10.3'	6.2'	-8.0'	58.7'	113°15.8'	83°57.0'	69°10.7'	59°07.1'		45°36.2'	54°14.2'	62°07.8'
22	91°14.4'	S 24°18.3'	6.1'	-7.8'	58.7'	112°40.6'	83°23.6'	68°35.8'	58°40.9'		46°11.0'	54°42.2'	62°40.2'
23	105°39.6'	S 24°26.1'	6.0'	-7.7'	58.7'	112°05.4'	82°50.1'	68°00.9'	58°14.8'		46°45.7'	55°10.4'	63°12.6'
Mer. pass.		15 h 41 m SD 15.9'	phase 18%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3'	S 29°30.1'	Spica	+1.0	158°24.6'	S 11°16.6'	Betelgeuse	+0.5	270°54.1'	N 7°24.8'
Deneb	+1.2	49°26.9'	N 45°21.9'	Acrux	+0.8	173°02.9'	S 63°13.4'	Capella	+0.1	280°24.6'	N 46°01.1'
Altair	+0.8	62°01.7'	N 8°55.8'	Regulus	+1.4	207°36.7'	N 11°51.5'	Rigel	+0.2	281°05.6'	S 8°10.3'
Vega	+0.0	80°34.5'	N 38°48.5'	Pollux	+1.2	243°19.7'	N 27°58.3'	Aldebaran	+0.9	290°41.6'	N 16°33.3'
Antares	+1.1	112°18.3'	S 26°28.9'	Procyon	+0.4	244°52.9'	N 5°10.1'	Polaris	+2.0	314°34.3'	N 89°21.4'
Rigil Kent	-0.0	139°43.5'	S 60°55.7'	Adhara	+1.5	255°07.4'	S 28°59.9'	Achernar	+0.5	335°21.1'	S 57°07.2'
Arcturus	-0.1	145°50.0'	N 19°04.1'	Sirius	-1.4	258°27.9'	S 16°44.6'				
Hadar	+0.6	148°39.3'	S 60°28.9'	Canopus	-0.6	263°53.2'	S 52°42.1'				