

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	309°49.3'	178°24.7'	N 18°00.7'	145°57.9'	N 8°17.9'	337°41.6'	S 12°40.2'	356°52.5'	S 18°24.8'	156°03.2'	N 12°00.8'			
1	324°51.8'	193°24.8'	N 18°00.0'	160°57.6'	N 8°16.7'	352°44.3'	S 12°40.3'	11°55.2'	S 18°24.8'	171°04.2'	N 12°00.3'			
2	339°54.3'	208°24.8'	N 17°59.4'	175°57.3'	N 8°15.5'	7°47.1'	S 12°40.4'	26°57.8'	S 18°24.9'	186°05.1'	N 11°59.7'			
3	354°56.7'	223°24.8'	N 17°58.8'	190°57.0'	N 8°14.3'	22°49.8'	S 12°40.5'	42°00.5'	S 18°25.0'	201°06.1'	N 11°59.1'			
4	9°59.2'	238°24.9'	N 17°58.1'	205°56.7'	N 8°13.1'	37°52.5'	S 12°40.6'	57°03.1'	S 18°25.0'	216°07.1'	N 11°58.6'			
5	25°01.7'	253°24.9'	N 17°57.5'	220°56.4'	N 8°11.8'	52°55.3'	S 12°40.7'	72°05.8'	S 18°25.1'	231°08.0'	N 11°58.0'			
6	40°04.1'	268°24.9'	N 17°56.9'	235°56.1'	N 8°10.6'	67°58.0'	S 12°40.9'	87°08.4'	S 18°25.1'	246°09.0'	N 11°57.4'			
7	55°06.6'	283°25.0'	N 17°56.2'	250°55.8'	N 8°09.4'	83°00.8'	S 12°41.0'	102°11.1'	S 18°25.2'	261°10.0'	N 11°56.8'			
8	70°09.0'	298°25.0'	N 17°55.6'	265°55.5'	N 8°08.2'	98°03.5'	S 12°41.1'	117°13.7'	S 18°25.2'	276°10.9'	N 11°56.3'			
9	85°11.5'	313°25.1'	N 17°55.0'	280°55.2'	N 8°07.0'	113°06.2'	S 12°41.2'	132°16.4'	S 18°25.3'	291°11.9'	N 11°55.7'			
10	100°14.0'	328°25.1'	N 17°54.3'	295°54.9'	N 8°05.8'	128°09.0'	S 12°41.3'	147°19.0'	S 18°25.3'	306°12.9'	N 11°55.1'			
11	115°16.4'	343°25.1'	N 17°53.7'	310°54.7'	N 8°04.6'	143°11.7'	S 12°41.4'	162°21.7'	S 18°25.4'	321°13.8'	N 11°54.5'			
12	130°18.9'	358°25.2'	N 17°53.1'	325°54.4'	N 8°03.3'	158°14.4'	S 12°41.5'	177°24.3'	S 18°25.4'	336°14.8'	N 11°54.0'			
13	145°21.4'	13°25.2'	N 17°52.4'	340°54.1'	N 8°02.1'	173°17.2'	S 12°41.6'	192°27.0'	S 18°25.5'	351°15.8'	N 11°53.4'			
14	160°23.8'	28°25.3'	N 17°51.8'	355°53.8'	N 8°00.9'	188°19.9'	S 12°41.7'	207°29.6'	S 18°25.5'	6°16.8'	N 11°52.8'			
15	175°26.3'	43°25.3'	N 17°51.2'	10°53.5'	N 7°59.7'	203°22.6'	S 12°41.8'	222°32.3'	S 18°25.6'	21°17.7'	N 11°52.2'			
16	190°28.8'	58°25.4'	N 17°50.5'	25°53.2'	N 7°58.5'	218°25.4'	S 12°41.9'	237°34.9'	S 18°25.7'	36°18.7'	N 11°51.7'			
17	205°31.2'	73°25.4'	N 17°49.9'	40°52.9'	N 7°57.3'	233°28.1'	S 12°42.0'	252°37.6'	S 18°25.7'	51°19.7'	N 11°51.1'			
18	220°33.7'	88°25.4'	N 17°49.3'	55°52.6'	N 7°56.0'	248°30.9'	S 12°42.2'	267°40.2'	S 18°25.8'	66°20.6'	N 11°50.5'			
19	235°36.2'	103°25.5'	N 17°48.6'	70°52.3'	N 7°54.8'	263°33.6'	S 12°42.3'	282°42.9'	S 18°25.8'	81°21.6'	N 11°49.9'			
20	250°38.6'	118°25.5'	N 17°48.0'	85°52.1'	N 7°53.6'	278°36.3'	S 12°42.4'	297°45.6'	S 18°25.9'	96°22.6'	N 11°49.4'			
21	265°41.1'	133°25.6'	N 17°47.3'	100°51.8'	N 7°52.4'	293°39.1'	S 12°42.5'	312°48.2'	S 18°25.9'	111°23.6'	N 11°48.8'			
22	280°43.5'	148°25.6'	N 17°46.7'	115°51.5'	N 7°51.2'	308°41.8'	S 12°42.6'	327°50.9'	S 18°26.0'	126°24.5'	N 11°48.2'			
23	295°46.0'	163°25.7'	N 17°46.1'	130°51.2'	N 7°50.0'	323°44.6'	S 12°42.7'	342°53.5'	S 18°26.0'	141°25.5'	N 11°47.6'			
		SD 15.8' d -0.6'		v -0.3' d -1.2'		v 2.7' d -0.1'		v 2.7' d -0.1'		v 1.0' d -0.6'				
Mer. pass.		12 h 6 m 20 s		14 h 16 m		1 h 29 m		0 h 12 m		13 h 35 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Capella	-Rigel	-Aldebaran	+Fomalhaut	+Achernar	+Jupiter	+Saturn
0	267°44.8'	N 13°55.9'	15.0'	11.0'	54.3'	85°06.9'	44°55.3'	42°41.9'	26°21.6'	70°18.5'	72°31.0'	74°13.4'	93°33.4'
1	282°18.8'	N 14°06.9'	15.0'	11.0'	54.3'	84°39.6'	44°29.9'	42°23.2'	25°52.6'	70°46.9'	72°46.6'	74°43.3'	94°03.3'
2	296°52.8'	N 14°17.8'	14.9'	10.9'	54.3'	84°12.4'	44°04.7'	42°04.7'	25°23.7'	71°15.3'	73°02.3'	75°13.2'	94°33.1'
3	311°26.7'	N 14°28.7'	14.9'	10.8'	54.3'	83°45.2'	43°39.5'	41°46.4'	24°54.8'	71°43.7'	73°18.0'	75°43.2'	95°02.9'
4	326°00.6'	N 14°39.6'	14.9'	10.8'	54.3'	83°18.0'	43°14.4'	41°28.2'	24°25.9'	72°12.1'	73°33.8'	76°13.1'	95°32.8'
5	340°34.5'	N 14°50.3'	14.8'	10.7'	54.3'	82°50.8'	42°49.5'	41°10.2'	23°57.0'	72°40.6'	73°49.6'	76°43.0'	96°02.6'
6	355°08.3'	N 15°01.1'	14.8'	10.7'	54.3'	82°23.6'	42°24.5'	40°52.5'	23°28.2'	73°09.0'	74°05.5'	77°12.9'	96°32.4'
7	9°42.1'	N 15°11.7'	14.7'	10.6'	54.3'	81°56.4'	41°59.7'	40°34.9'	22°59.4'	73°37.4'	74°21.4'	77°42.7'	97°02.2'
8	24°15.8'	N 15°22.3'	14.7'	10.5'	54.2'	81°29.2'	41°35.0'	40°17.5'	22°30.7'	74°05.8'	74°37.4'	78°12.6'	97°32.0'
9	38°49.5'	N 15°32.8'	14.7'	10.5'	54.2'	81°02.0'	41°10.4'	40°00.3'	22°02.1'	74°34.2'	74°53.4'	78°42.5'	98°01.7'
10	53°23.1'	N 15°43.3'	14.6'	10.4'	54.2'	80°34.8'	40°45.8'	39°43.4'	21°33.4'	75°02.6'	75°09.5'	79°12.4'	98°31.5'
11	67°56.8'	N 15°53.7'	14.6'	10.3'	54.2'	80°07.7'	40°21.4'	39°26.6'	21°04.8'	75°31.0'	75°25.6'	79°42.2'	99°01.3'
12	82°30.3'	N 16°04.0'	14.5'	10.3'	54.2'	79°40.5'	39°57.1'	39°10.1'	20°36.3'	75°59.4'	75°41.7'	80°12.1'	99°31.0'
13	97°03.8'	N 16°14.3'	14.5'	10.2'	54.2'	79°13.4'	39°32.8'	38°53.8'	20°07.9'	76°27.8'	75°57.9'	80°41.9'	100°00.8'
14	111°37.3'	N 16°24.5'	14.4'	10.1'	54.2'	78°46.2'	39°08.7'	38°37.7'	19°39.4'	76°56.2'	76°14.1'	81°11.8'	100°30.5'
15	126°10.8'	N 16°34.6'	14.4'	10.1'	54.2'	78°19.1'	38°44.7'	38°21.8'	19°11.1'	77°24.7'	76°30.4'	81°41.6'	101°00.3'
16	140°44.1'	N 16°44.7'	14.3'	10.0'	54.2'	77°51.9'	38°20.8'	38°06.2'	18°42.8'	77°53.1'	76°46.7'	82°11.4'	101°30.0'
17	155°17.5'	N 16°54.6'	14.3'	9.9'	54.2'	77°24.8'	37°57.0'	37°50.8'	18°14.6'	78°21.5'	77°03.1'	82°41.3'	101°59.8'
18	169°50.8'	N 17°04.6'	14.2'	9.8'	54.2'	76°57.7'	37°33.4'		17°46.5'	78°49.9'	77°19.5'	83°11.1'	102°29.5'
19	184°24.0'	N 17°14.4'	14.2'	9.8'	54.2'	76°30.6'	37°09.8'		17°18.5'	79°18.3'	77°35.9'	83°40.9'	102°59.2'
20	198°57.2'	N 17°24.2'	14.1'	9.7'	54.2'	76°03.4'	36°46.4'		16°50.5'	79°46.7'	77°52.4'	84°10.8'	103°29.0'
21	213°30.3'	N 17°33.9'	14.1'	9.6'	54.2'	75°36.3'	36°23.1'		16°22.6'	80°15.1'	78°08.9'	84°40.6'	103°58.7'
22	228°03.4'	N 17°43.5'	14.0'	9.6'	54.2'	75°09.2'	35°60.0'		15°54.9'	80°43.5'	78°25.4'	85°10.4'	104°28.4'
23	242°36.5'	N 17°53.1'	14.0'	9.5'	54.2'	74°42.1'	35°37.0'		15°27.2'	81°12.0'	78°42.0'	85°40.2'	104°58.1'
Mer. pass.		6 h 20 m SD 14.8'		phase 46%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.3'	S 29°30.4'	Spica	+1.0	158°25.3'	S 11°16.3'	Betelgeuse	+0.5	270°55.4'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.4'	Acrux	+0.8	173°03.5'	S 63°13.2'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.8'	S 8°10.5'
Vega	+0.0	80°34.7'	N 38°48.4'	Pollux	+1.2	243°21.1'	N 27°58.5'	Aldebaran	+0.9	290°43.0'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.7'	Procyon	+0.4	244°54.1'	N 5°10.3'	Polaris	+2.0	315°23.1'	N 89°20.9'
Rigel Kent	-0.0	139°44.1'	S 60°55.6'	Adhara	+1.5	255°08.4'	S 28°59.9'	Achernar	+0.5	335°22.2'	S 57°07.4'
Arcturus	-0.1	145°50.5'	N 19°04.5'	Sirius	-1.4	258°29.0'	S 16°44.6'				
Hadar	+0.6	148°40.0'	S 60°28.7'	Canopus	-0.6	263°54.1'	S 52°42.2'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	310°48.5'	N 17°45.4'	178°25.7'	N 17°45.4'	145°50.9'	N 7°48.7'	338°47.3'	S 12°42.8'	357°56.2'	S 18°26.1'	156°26.5'	N 11°47.1'
1	325°50.9'	N 17°44.8'	193°25.7'	N 17°44.8'	160°50.6'	N 7°47.5'	353°50.0'	S 12°42.9'	12°58.8'	S 18°26.1'	171°27.4'	N 11°46.5'
2	340°53.4'	N 17°44.1'	208°25.8'	N 17°44.1'	175°50.3'	N 7°46.3'	8°52.8'	S 12°43.0'	28°01.5'	S 18°26.2'	186°28.4'	N 11°45.9'
3	355°55.9'	N 17°43.5'	223°25.8'	N 17°43.5'	190°50.0'	N 7°45.1'	23°55.5'	S 12°43.1'	43°04.1'	S 18°26.2'	201°29.4'	N 11°45.3'
4	10°58.3'	N 17°42.8'	238°25.9'	N 17°42.8'	205°49.8'	N 7°43.9'	38°58.2'	S 12°43.2'	58°06.8'	S 18°26.3'	216°30.4'	N 11°44.8'
5	26°00.8'	N 17°42.2'	253°25.9'	N 17°42.2'	220°49.5'	N 7°42.6'	54°01.0'	S 12°43.4'	73°09.4'	S 18°26.3'	231°31.3'	N 11°44.2'
6	41°03.3'	N 17°41.6'	268°26.0'	N 17°41.6'	235°49.2'	N 7°41.4'	69°03.7'	S 12°43.5'	88°12.1'	S 18°26.4'	246°32.3'	N 11°43.6'
7	56°05.7'	N 17°40.9'	283°26.0'	N 17°40.9'	250°48.9'	N 7°40.2'	84°06.5'	S 12°43.6'	103°14.7'	S 18°26.5'	261°33.3'	N 11°43.0'
8	71°08.2'	N 17°40.3'	298°26.1'	N 17°40.3'	265°48.6'	N 7°39.0'	99°09.2'	S 12°43.7'	118°17.4'	S 18°26.5'	276°34.2'	N 11°42.4'
9	86°10.6'	N 17°39.6'	313°26.1'	N 17°39.6'	280°48.3'	N 7°37.7'	114°12.0'	S 12°43.8'	133°20.0'	S 18°26.6'	291°35.2'	N 11°41.9'
10	101°13.1'	N 17°39.0'	328°26.2'	N 17°39.0'	295°48.1'	N 7°36.5'	129°14.7'	S 12°43.9'	148°22.7'	S 18°26.6'	306°36.2'	N 11°41.3'
11	116°15.6'	N 17°38.3'	343°26.2'	N 17°38.3'	310°47.8'	N 7°35.3'	144°17.4'	S 12°44.0'	163°25.3'	S 18°26.7'	321°37.2'	N 11°40.7'
12	131°18.0'	N 17°37.7'	358°26.2'	N 17°37.7'	325°47.5'	N 7°34.1'	159°20.2'	S 12°44.1'	178°28.0'	S 18°26.7'	336°38.1'	N 11°40.1'
13	146°20.5'	N 17°37.0'	13°26.3'	N 17°37.0'	340°47.2'	N 7°32.9'	174°22.9'	S 12°44.2'	193°30.6'	S 18°26.8'	351°39.1'	N 11°39.6'
14	161°23.0'	N 17°36.4'	28°26.3'	N 17°36.4'	355°46.9'	N 7°31.6'	189°25.7'	S 12°44.3'	208°33.3'	S 18°26.8'	6°40.1'	N 11°39.0'
15	176°25.4'	N 17°35.7'	43°26.4'	N 17°35.7'	10°46.7'	N 7°30.4'	204°28.4'	S 12°44.5'	223°35.9'	S 18°26.9'	21°41.0'	N 11°38.4'
16	191°27.9'	N 17°35.1'	58°26.4'	N 17°35.1'	25°46.4'	N 7°29.2'	219°31.1'	S 12°44.6'	238°38.6'	S 18°26.9'	36°42.0'	N 11°37.8'
17	206°30.4'	N 17°34.4'	73°26.5'	N 17°34.4'	40°46.1'	N 7°28.0'	234°33.9'	S 12°44.7'	253°41.2'	S 18°27.0'	51°43.0'	N 11°37.2'
18	221°32.8'	N 17°33.8'	88°26.5'	N 17°33.8'	55°45.8'	N 7°26.7'	249°36.6'	S 12°44.8'	268°43.9'	S 18°27.0'	66°44.0'	N 11°36.7'
19	236°35.3'	N 17°33.1'	103°26.6'	N 17°33.1'	70°45.5'	N 7°25.5'	264°39.4'	S 12°44.9'	283°46.5'	S 18°27.1'	81°44.9'	N 11°36.1'
20	251°37.8'	N 17°32.5'	118°26.6'	N 17°32.5'	85°45.3'	N 7°24.3'	279°42.1'	S 12°45.0'	298°49.2'	S 18°27.2'	96°45.9'	N 11°35.5'
21	266°40.2'	N 17°31.8'	133°26.7'	N 17°31.8'	100°45.0'	N 7°23.1'	294°44.9'	S 12°45.1'	313°51.8'	S 18°27.2'	111°46.9'	N 11°34.9'
22	281°42.7'	N 17°31.2'	148°26.8'	N 17°31.2'	115°44.7'	N 7°21.8'	309°47.6'	S 12°45.2'	328°54.5'	S 18°27.3'	126°47.8'	N 11°34.4'
23	296°45.1'	N 17°30.5'	163°26.8'	N 17°30.5'	130°44.4'	N 7°20.6'	324°50.3'	S 12°45.3'	343°57.2'	S 18°27.3'	141°48.8'	N 11°33.8'
			SD 15.8' d -0.6'		v -0.3' d -1.2'		v 2.7' d -0.1'		v 2.7' d -0.1'		v 1.0' d -0.6'	
Mer. pass.			12 h 6 m 16 s		14 h 17 m		1 h 25 m		0 h 8 m		13 h 33 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Betelgeuse	-Capella	-Aldebaran	+Achernar	+Fomalhaut	+Jupiter	+Saturn
0	257°09.4'	N 18°02.6'	13.9	9.4	54.2'	74°15.0'	36°04.4'	35°14.1'	14°59.7'	78°58.6'	81°40.4'	86°10.1'	105°27.8'
1	271°42.4'	N 18°12.0'	13.9	9.3	54.2'	73°47.9'	35°39.1'	34°51.4'	14°32.3'	79°15.2'	82°08.8'	86°39.9'	105°57.6'
2	286°15.3'	N 18°21.3'	13.8	9.3	54.2'	73°20.8'	35°13.9'	34°28.8'	14°05.1'	79°31.9'	82°37.2'	87°09.7'	106°27.3'
3	300°48.1'	N 18°30.6'	13.8	9.2	54.2'	72°53.7'	34°48.8'	34°06.4'	13°38.0'	79°48.6'	83°05.7'	87°39.5'	106°57.0'
4	315°20.9'	N 18°39.8'	13.7	9.1	54.2'	72°26.6'	34°23.8'	33°44.2'	13°11.1'	80°05.4'	83°34.1'	88°09.3'	107°26.7'
5	329°53.6'	N 18°48.9'	13.7	9.0	54.2'	71°59.5'	33°58.9'	33°22.1'	12°44.4'	80°22.1'	84°02.5'	88°39.1'	107°56.4'
6	344°26.3'	N 18°57.9'	13.6	8.9	54.2'	71°32.3'	33°34.2'	33°00.2'	12°17.9'	80°38.9'	84°30.9'	89°09.0'	108°26.1'
7	358°58.9'	N 19°06.8'	13.6	8.9	54.2'	71°05.2'	33°09.5'	32°38.5'	11°51.7'	80°55.8'	84°59.4'	89°38.8'	108°55.9'
8	13°31.5'	N 19°15.7'	13.5	8.8	54.2'	70°38.1'	32°45.0'	32°17.0'	11°25.7'	81°12.6'	85°27.8'	90°08.6'	109°25.6'
9	28°04.0'	N 19°24.5'	13.4	8.7	54.2'	70°11.0'	32°20.6'	31°55.6'	11°00.0'	81°29.5'	85°56.3'	90°38.4'	109°55.3'
10	42°36.4'	N 19°33.2'	13.4	8.6	54.2'	69°43.9'	31°56.3'	31°34.5'	10°34.7'	81°46.4'	86°24.7'	91°08.3'	110°25.0'
11	57°08.8'	N 19°41.8'	13.3	8.5	54.2'	69°16.8'	31°32.2'	31°13.5'	10°09.7'	82°03.3'	86°53.2'	91°38.1'	110°54.7'
12	71°41.1'	N 19°50.3'	13.3	8.5	54.2'	68°49.7'	31°08.2'	30°52.8'	9°45.2'	82°20.3'	87°21.6'	92°07.9'	111°24.5'
13	86°13.4'	N 19°58.8'	13.2	8.4	54.2'	68°22.6'	30°44.3'	30°32.3'	9°21.1'	82°37.3'	87°50.1'	92°37.8'	111°54.2'
14	100°45.6'	N 20°07.2'	13.2	8.3	54.2'	67°55.5'	30°20.6'	30°12.0'	8°57.6'	82°54.3'	88°18.5'	93°07.6'	112°23.9'
15	115°17.8'	N 20°15.4'	13.1	8.2	54.2'	67°28.3'	29°57.0'	29°51.9'	8°34.7'	83°11.3'	88°47.0'	93°37.4'	112°53.7'
16	129°49.9'	N 20°23.6'	13.0	8.1	54.2'	67°01.2'	29°33.6'	29°32.1'		83°28.4'	89°15.5'	94°07.3'	113°23.4'
17	144°22.0'	N 20°31.7'	13.0	8.0	54.2'	66°34.1'	29°10.4'	29°12.5'		83°45.5'	89°43.9'	94°37.1'	113°53.1'
18	158°53.9'	N 20°39.8'	12.9	7.9	54.2'	66°07.0'	28°47.3'	28°53.2'		84°02.6'	90°12.4'	95°07.0'	114°22.9'
19	173°25.9'	N 20°47.7'	12.9	7.8	54.2'	65°39.8'	28°24.5'	28°34.1'		84°19.7'	90°40.9'	95°36.9'	114°52.6'
20	187°57.8'	N 20°55.5'	12.8	7.8	54.2'	65°12.7'	28°01.8'	28°15.4'		84°36.8'	91°09.4'	96°06.7'	115°22.4'
21	202°29.6'	N 21°03.3'	12.8	7.7	54.2'	64°45.5'	27°39.3'	27°56.9'		84°54.0'	91°37.9'	96°36.6'	115°52.1'
22	217°01.3'	N 21°11.0'	12.7	7.6	54.2'	64°18.4'	27°17.0'	27°38.7'		85°11.2'	92°06.4'	97°06.5'	116°21.9'
23	231°33.0'	N 21°18.5'	12.6	7.5	54.2'	63°51.2'	26°55.0'	27°20.8'		85°28.4'	92°34.9'	97°36.4'	116°51.7'
Mer. pass.			7 h 4 m SD 14.8'		phase 36%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.3'	S 29°30.4'	Spica	+1.0	158°25.3'	S 11°16.3'	Betelgeuse	+0.5	270°55.4'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.4'	Acrux	+0.8	173°03.5'	S 63°13.2'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.8'	S 8°10.5'
Vega	+0.0	80°34.7'	N 38°48.4'	Pollux	+1.2	243°21.1'	N 27°58.5'	Aldebaran	+0.9	290°43.0'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.7'	Procyon	+0.4	244°54.1'	N 5°10.3'	Polaris	+2.0	315°22.5'	N 89°20.9'
Rigel Kent	-0.0	139°44.1'	S 60°55.6'	Adhara	+1.5	255°08.4'	S 28°59.9'	Achernar	+0.5	335°22.2'	S 57°07.4'
Arcturus	-0.1	145°50.5'	N 19°04.5'	Sirius	-1.4	258°29.0'	S 16°44.6'				
Hadar	+0.6	148°40.0'	S 60°28.7'	Canopus	-0.6	263°54.1'	S 52°42.2'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	311°47.6'		178°26.8'	N 17°29.9'	145°44.1'	N 7°19.4'	339°53.1'	S 12°45.4'	358°59.8'	S 18°27.4'	156°49.8'	N 11°33.2'
1	326°50.1'		193°26.9'	N 17°29.2'	160°43.9'	N 7°18.1'	354°55.8'	S 12°45.6'	14°02.5'	S 18°27.4'	171°50.8'	N 11°32.6'
2	341°52.5'		208°26.9'	N 17°28.6'	175°43.6'	N 7°16.9'	9°58.6'	S 12°45.7'	29°05.1'	S 18°27.5'	186°51.7'	N 11°32.0'
3	356°55.0'		223°27.0'	N 17°27.9'	190°43.3'	N 7°15.7'	25°01.3'	S 12°45.8'	44°07.8'	S 18°27.5'	201°52.7'	N 11°31.5'
4	11°57.5'		238°27.0'	N 17°27.3'	205°43.0'	N 7°14.5'	40°04.1'	S 12°45.9'	59°10.4'	S 18°27.6'	216°53.7'	N 11°30.9'
5	26°59.9'		253°27.1'	N 17°26.6'	220°42.8'	N 7°13.2'	55°06.8'	S 12°46.0'	74°13.1'	S 18°27.6'	231°54.7'	N 11°30.3'
6	42°02.4'		268°27.1'	N 17°25.9'	235°42.5'	N 7°12.0'	70°09.5'	S 12°46.1'	89°15.7'	S 18°27.7'	246°55.6'	N 11°29.7'
7	57°04.9'		283°27.2'	N 17°25.3'	250°42.2'	N 7°10.8'	85°12.3'	S 12°46.2'	104°18.4'	S 18°27.7'	261°56.6'	N 11°29.1'
8	72°07.3'		298°27.2'	N 17°24.6'	265°41.9'	N 7°09.5'	100°15.0'	S 12°46.3'	119°21.0'	S 18°27.8'	276°57.6'	N 11°28.6'
9	87°09.8'		313°27.3'	N 17°24.0'	280°41.7'	N 7°08.3'	115°17.8'	S 12°46.4'	134°23.7'	S 18°27.9'	291°58.5'	N 11°28.0'
10	102°12.3'		328°27.3'	N 17°23.3'	295°41.4'	N 7°07.1'	130°20.5'	S 12°46.6'	149°26.3'	S 18°27.9'	306°59.5'	N 11°27.4'
11	117°14.7'		343°27.4'	N 17°22.7'	310°41.1'	N 7°05.9'	145°23.3'	S 12°46.7'	164°29.0'	S 18°28.0'	322°00.5'	N 11°26.8'
12	132°17.2'		358°27.4'	N 17°22.0'	325°40.8'	N 7°04.6'	160°26.0'	S 12°46.8'	179°31.6'	S 18°28.0'	337°01.5'	N 11°26.2'
13	147°19.6'		13°27.5'	N 17°21.3'	340°40.6'	N 7°03.4'	175°28.8'	S 12°46.9'	194°34.3'	S 18°28.1'	352°02.4'	N 11°25.7'
14	162°22.1'		28°27.6'	N 17°20.7'	355°40.3'	N 7°02.2'	190°31.5'	S 12°47.0'	209°36.9'	S 18°28.1'	7°03.4'	N 11°25.1'
15	177°24.6'		43°27.6'	N 17°20.0'	10°40.0'	N 7°00.9'	205°34.2'	S 12°47.1'	224°39.6'	S 18°28.2'	22°04.4'	N 11°24.5'
16	192°27.0'		58°27.7'	N 17°19.4'	25°39.8'	N 6°59.7'	220°37.0'	S 12°47.2'	239°42.2'	S 18°28.2'	37°05.4'	N 11°23.9'
17	207°29.5'		73°27.7'	N 17°18.7'	40°39.5'	N 6°58.5'	235°39.7'	S 12°47.3'	254°44.9'	S 18°28.3'	52°06.3'	N 11°23.3'
18	222°32.0'		88°27.8'	N 17°18.0'	55°39.2'	N 6°57.2'	250°42.5'	S 12°47.4'	269°47.5'	S 18°28.3'	67°07.3'	N 11°22.7'
19	237°34.4'		103°27.8'	N 17°17.4'	70°38.9'	N 6°56.0'	265°45.2'	S 12°47.5'	284°50.2'	S 18°28.4'	82°08.3'	N 11°22.2'
20	252°36.9'		118°27.9'	N 17°16.7'	85°38.7'	N 6°54.8'	280°48.0'	S 12°47.7'	299°52.8'	S 18°28.4'	97°09.3'	N 11°21.6'
21	267°39.4'		133°27.9'	N 17°16.1'	100°38.4'	N 6°53.5'	295°50.7'	S 12°47.8'	314°55.5'	S 18°28.5'	112°10.2'	N 11°21.0'
22	282°41.8'		148°28.0'	N 17°15.4'	115°38.1'	N 6°52.3'	310°53.5'	S 12°47.9'	329°58.1'	S 18°28.5'	127°11.2'	N 11°20.4'
23	297°44.3'		163°28.1'	N 17°14.7'	130°37.9'	N 6°51.1'	325°56.2'	S 12°48.0'	345°00.8'	S 18°28.6'	142°12.2'	N 11°19.8'
			SD 15.8' d -0.7'		v -0.3' d -1.2'		v 2.7' d -0.1'		v 2.7' d -0.1'		v 1.0' d -0.6'	
Mer. pass.			12 h 6 m 11 s		14 h 17 m		1 h 20 m		0 h 4 m		13 h 32 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Capella	-Betelgeuse	-Aldebaran	+Achernar	+Fomalhaut	+Jupiter	+Saturn
0	246°04.7'	N 21°26.0'	12.6'	7.4'	54.2'	63°24.1'	27°03.2'	26°33.1'		85°45.6'	93°03.4'	98°06.3'	117°21.4'
1	260°36.2'	N 21°33.4'	12.5'	7.3'	54.2'	62°56.9'	26°46.0'	26°11.5'		86°02.8'	93°31.9'	98°36.2'	117°51.2'
2	275°07.7'	N 21°40.7'	12.5'	7.2'	54.2'	62°29.7'	26°29.0'	25°50.1'		86°20.0'	94°00.4'	99°06.1'	118°21.0'
3	289°39.2'	N 21°47.9'	12.4'	7.1'	54.2'	62°02.6'	26°12.5'	25°29.0'		86°37.3'	94°28.9'	99°36.0'	118°50.8'
4	304°10.6'	N 21°55.0'	12.3'	7.0'	54.2'	61°35.4'	25°56.3'	25°08.2'		86°54.6'	94°57.5'	100°05.9'	119°20.6'
5	318°41.9'	N 22°02.0'	12.3'	6.9'	54.2'	61°08.2'	25°40.4'	24°47.6'		87°11.9'	95°26.0'	100°35.8'	119°50.4'
6	333°13.2'	N 22°09.0'	12.2'	6.8'	54.2'	60°41.0'	25°24.9'	24°27.3'		87°29.2'	95°54.5'	101°05.8'	
7	347°44.4'	N 22°15.8'	12.2'	6.7'	54.2'	60°13.8'		24°07.3'		87°46.5'	96°23.1'	101°35.7'	
8	2°15.6'	N 22°22.5'	12.1'	6.6'	54.2'	59°46.5'		23°47.6'		88°03.8'	96°51.7'	102°05.7'	
9	16°46.7'	N 22°29.1'	12.0'	6.5'	54.3'	59°19.3'		23°28.3'		88°21.1'	97°20.2'	102°35.6'	
10	31°17.7'	N 22°35.6'	12.0'	6.4'	54.3'	58°52.1'		23°09.2'		88°38.5'	97°48.8'	103°05.6'	
11	45°48.7'	N 22°42.1'	11.9'	6.3'	54.3'	58°24.8'		22°50.6'		88°55.8'	98°17.4'	103°35.6'	
12	60°19.6'	N 22°48.4'	11.9'	6.2'	54.3'	57°57.6'		22°32.3'		89°13.2'	98°46.0'	104°05.6'	
13	74°50.5'	N 22°54.6'	11.8'	6.1'	54.3'	57°30.3'		22°14.4'		89°30.6'	99°14.5'	104°35.6'	
14	89°21.3'	N 23°00.7'	11.7'	6.0'	54.3'	57°03.1'		21°56.9'		89°48.0'	99°43.1'	105°05.6'	
15	103°52.0'	N 23°06.7'	11.7'	5.9'	54.3'	56°35.8'		21°39.8'		90°05.3'	100°11.7'	105°35.6'	
16	118°22.7'	N 23°12.7'	11.6'	5.8'	54.3'	56°08.5'		21°23.1'		90°22.7'	100°40.4'	106°05.7'	
17	132°53.3'	N 23°18.5'	11.6'	5.7'	54.3'	55°41.2'		21°06.9'	8°24.2'	90°40.1'	101°09.0'	106°35.7'	
18	147°23.8'	N 23°24.2'	11.5'	5.6'	54.3'	55°13.9'	20°51.2'		8°47.0'	90°57.5'	101°37.6'	107°05.8'	
19	161°54.3'	N 23°29.8'	11.4'	5.5'	54.3'	54°46.6'			9°10.4'	91°15.0'	102°06.2'	107°35.9'	
20	176°24.8'	N 23°35.2'	11.4'	5.4'	54.3'	54°19.2'			9°34.4'	91°32.4'	102°34.9'	108°06.0'	
21	190°55.2'	N 23°40.6'	11.3'	5.3'	54.4'	53°51.9'			9°59.0'	91°49.8'	103°03.5'	108°36.1'	
22	205°25.5'	N 23°45.9'	11.3'	5.2'	54.4'	53°24.5'			10°24.0'	92°07.2'	103°32.2'	109°06.2'	
23	219°55.8'	N 23°51.1'	11.2'	5.1'	54.4'	52°57.2'			10°49.5'	92°24.6'	104°00.9'	109°36.3'	
Mer. pass.			7 h 51 m SD 14.8'		phase 28%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.3'	S 29°30.4'	Spica	+1.0	158°25.3'	S 11°16.3'	Betelgeuse	+0.5	270°55.4'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.4'	Acrux	+0.8	173°03.5'	S 63°13.2'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.8'	S 8°10.5'
Vega	+0.0	80°34.7'	N 38°48.4'	Pollux	+1.2	243°21.1'	N 27°58.5'	Aldebaran	+0.9	290°43.0'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.7'	Procyon	+0.4	244°54.1'	N 5°10.3'	Polaris	+2.0	315°22.0'	N 89°20.9'
Rigil Kent	-0.0	139°44.1'	S 60°55.6'	Adhara	+1.5	255°08.4'	S 28°59.9'	Achernar	+0.5	335°22.2'	S 57°07.4'
Arcturus	-0.1	145°50.5'	N 19°04.5'	Sirius	-1.4	258°29.0'	S 16°44.6'				
Hadar	+0.6	148°40.0'	S 60°28.7'	Canopus	-0.6	263°54.1'	S 52°42.2'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	312°46.8'		178°28.1'	N 17°14.1'	145°37.6'	N 6°49.8'	340°59.0'	S 12°48.1'	0°03.5'	S 18°28.7'	157°13.1'	N 11°19.3'
1	327°49.2'		193°28.2'	N 17°13.4'	160°37.3'	N 6°48.6'	356°01.7'	S 12°48.2'	15°06.1'	S 18°28.7'	172°14.1'	N 11°18.7'
2	342°51.7'		208°28.2'	N 17°12.7'	175°37.1'	N 6°47.4'	11°04.5'	S 12°48.3'	30°08.8'	S 18°28.8'	187°15.1'	N 11°18.1'
3	357°54.1'		223°28.3'	N 17°12.1'	190°36.8'	N 6°46.1'	26°07.2'	S 12°48.4'	45°11.4'	S 18°28.8'	202°16.1'	N 11°17.5'
4	12°56.6'		238°28.3'	N 17°11.4'	205°36.5'	N 6°44.9'	41°10.0'	S 12°48.6'	60°14.1'	S 18°28.9'	217°17.0'	N 11°16.9'
5	27°59.1'		253°28.4'	N 17°10.7'	220°36.3'	N 6°43.7'	56°12.7'	S 12°48.7'	75°16.7'	S 18°28.9'	232°18.0'	N 11°16.3'
6	43°01.5'		268°28.4'	N 17°10.1'	235°36.0'	N 6°42.4'	71°15.5'	S 12°48.8'	90°19.4'	S 18°29.0'	247°19.0'	N 11°15.8'
7	58°04.0'		283°28.5'	N 17°09.4'	250°35.7'	N 6°41.2'	86°18.2'	S 12°48.9'	105°22.0'	S 18°29.0'	262°20.0'	N 11°15.2'
8	73°06.5'		298°28.6'	N 17°08.7'	265°35.4'	N 6°39.9'	101°20.9'	S 12°49.0'	120°24.7'	S 18°29.1'	277°20.9'	N 11°14.6'
9	88°08.9'		313°28.6'	N 17°08.1'	280°35.2'	N 6°38.7'	116°23.7'	S 12°49.1'	135°27.3'	S 18°29.1'	292°21.9'	N 11°14.0'
10	103°11.4'		328°28.7'	N 17°07.4'	295°34.9'	N 6°37.5'	131°26.4'	S 12°49.2'	150°30.0'	S 18°29.2'	307°22.9'	N 11°13.4'
11	118°13.9'		343°28.7'	N 17°06.7'	310°34.7'	N 6°36.2'	146°29.2'	S 12°49.3'	165°32.6'	S 18°29.2'	322°23.9'	N 11°12.8'
12	133°16.3'		358°28.8'	N 17°06.0'	325°34.4'	N 6°35.0'	161°31.9'	S 12°49.4'	180°35.3'	S 18°29.3'	337°24.8'	N 11°12.3'
13	148°18.8'		13°28.9'	N 17°05.4'	340°34.1'	N 6°33.8'	176°34.7'	S 12°49.6'	195°37.9'	S 18°29.3'	352°25.8'	N 11°11.7'
14	163°21.3'		28°28.9'	N 17°04.7'	355°33.9'	N 6°32.5'	191°37.4'	S 12°49.7'	210°40.6'	S 18°29.4'	7°26.8'	N 11°11.1'
15	178°23.7'		43°29.0'	N 17°04.0'	10°33.6'	N 6°31.3'	206°40.2'	S 12°49.8'	225°43.2'	S 18°29.5'	22°27.8'	N 11°10.5'
16	193°26.2'		58°29.0'	N 17°03.4'	25°33.3'	N 6°30.0'	221°42.9'	S 12°49.9'	240°45.9'	S 18°29.5'	37°28.7'	N 11°09.9'
17	208°28.6'		73°29.1'	N 17°02.7'	40°33.1'	N 6°28.8'	236°45.7'	S 12°50.0'	255°48.5'	S 18°29.6'	52°29.7'	N 11°09.3'
18	223°31.1'		88°29.2'	N 17°02.0'	55°32.8'	N 6°27.6'	251°48.4'	S 12°50.1'	270°51.2'	S 18°29.6'	67°30.7'	N 11°08.8'
19	238°33.6'		103°29.2'	N 17°01.3'	70°32.5'	N 6°26.3'	266°51.2'	S 12°50.2'	285°53.8'	S 18°29.7'	82°31.7'	N 11°08.2'
20	253°36.0'		118°29.3'	N 17°00.7'	85°32.3'	N 6°25.1'	281°53.9'	S 12°50.3'	300°56.5'	S 18°29.7'	97°32.6'	N 11°07.6'
21	268°38.5'		133°29.3'	N 16°60.0'	100°32.0'	N 6°23.8'	296°56.7'	S 12°50.5'	315°59.1'	S 18°29.8'	112°33.6'	N 11°07.0'
22	283°41.0'		148°29.4'	N 16°59.3'	115°31.7'	N 6°22.6'	311°59.4'	S 12°50.6'	331°01.8'	S 18°29.8'	127°34.6'	N 11°06.4'
23	298°43.4'		163°29.5'	N 16°58.6'	130°31.5'	N 6°21.3'	327°02.2'	S 12°50.7'	346°04.4'	S 18°29.9'	142°35.6'	N 11°05.8'
			SD 15.8' d -0.7'		v -0.3' d -1.2'		v 2.7' d -0.1'		v 2.7' d -0.1'		v 1.0' d -0.6'	
Mer. pass.			12 h 6 m 6 s		14 h 18 m		1 h 16 m		23 h 56 m		13 h 30 m	

h	Moon					Lunar distance						
	GHA	dec	v	d	HP	-Sun	-Procyon	-Pollux	+Aldebaran	+Achernar	+Fomalhaut	+Jupiter
0	234°26.0'	N 23°56.1'	11.2'	4.9'	54.4'	52°29.8'	40°00.7'	34°32.2'	11°15.3'	92°42.0'	104°29.5'	110°06.4'
1	248°56.1'	N 24°01.1'	11.1'	4.8'	54.4'	52°02.4'	39°35.3'	34°02.4'	11°41.4'	92°59.5'	104°58.2'	110°36.6'
2	263°26.2'	N 24°05.9'	11.0'	4.7'	54.4'	51°35.0'	39°09.9'	33°32.6'	12°07.9'	93°16.9'	105°26.9'	111°06.8'
3	277°56.3'	N 24°10.6'	11.0'	4.6'	54.4'	51°07.6'	38°44.6'	33°02.7'	12°34.6'	93°34.3'	105°55.6'	111°36.9'
4	292°26.2'	N 24°15.2'	10.9'	4.5'	54.4'	50°40.2'	38°19.4'	32°32.9'	13°01.6'	93°51.7'	106°24.3'	112°07.1'
5	306°56.2'	N 24°19.7'	10.9'	4.4'	54.4'	50°12.7'	37°54.3'	32°03.1'	13°28.8'	94°09.1'	106°53.0'	112°37.3'
6	321°26.0'	N 24°24.1'	10.8'	4.3'	54.5'	49°45.3'	37°29.3'	31°33.2'	13°56.2'	94°26.5'	107°21.8'	113°07.6'
7	335°55.9'	N 24°28.4'	10.8'	4.2'	54.5'	49°17.8'	37°04.4'	31°03.4'	14°23.8'	94°43.9'	107°50.5'	113°37.8'
8	350°25.6'	N 24°32.5'	10.7'	4.0'	54.5'	48°50.3'	36°39.5'	30°33.5'	14°51.5'	95°01.3'	108°19.2'	114°08.1'
9	4°55.3'	N 24°36.6'	10.7'	3.9'	54.5'	48°22.8'	36°14.8'	30°03.6'	15°19.4'	95°18.7'	108°48.0'	114°38.3'
10	19°25.0'	N 24°40.5'	10.6'	3.8'	54.5'	47°55.3'	35°50.2'	29°33.7'	15°47.5'	95°36.1'	109°16.7'	115°08.6'
11	33°54.6'	N 24°44.3'	10.6'	3.7'	54.5'	47°27.8'	35°25.6'	29°03.8'	16°15.6'	95°53.5'	109°45.5'	115°38.9'
12	48°24.2'	N 24°48.0'	10.5'	3.6'	54.5'	47°00.2'	35°01.2'	28°33.9'	16°43.9'	96°10.9'	110°14.3'	116°09.3'
13	62°53.7'	N 24°51.5'	10.5'	3.4'	54.5'	46°32.7'	34°36.9'	28°04.0'	17°12.4'	96°28.2'	110°43.0'	116°39.6'
14	77°23.1'	N 24°55.0'	10.4'	3.3'	54.6'	46°05.1'	34°12.7'	27°34.0'	17°40.9'	96°45.6'	111°11.8'	117°10.0'
15	91°52.5'	N 24°58.3'	10.4'	3.2'	54.6'	45°37.6'	33°48.7'	27°04.1'	18°09.5'	97°02.9'	111°40.6'	117°40.3'
16	106°21.9'	N 25°01.5'	10.3'	3.1'	54.6'	45°10.0'	33°24.8'	26°34.1'	18°38.2'	97°20.2'	112°09.4'	118°10.7'
17	120°51.2'	N 25°04.6'	10.3'	3.0'	54.6'	44°42.3'	33°01.0'	26°04.2'	19°07.1'	97°37.5'	112°38.2'	118°41.1'
18	135°20.5'	N 25°07.6'	10.2'	2.8'	54.6'	44°14.7'	32°37.4'	25°34.2'	19°36.0'	97°54.8'	113°07.0'	119°11.5'
19	149°49.7'	N 25°10.4'	10.2'	2.7'	54.6'	43°47.1'	32°13.9'	25°04.2'	20°04.9'	98°12.1'	113°35.9'	119°42.0'
20	164°18.9'	N 25°13.2'	10.1'	2.6'	54.6'	43°19.4'	31°50.5'	24°34.2'	20°34.0'	98°29.4'	114°04.7'	
21	178°48.0'	N 25°15.8'	10.1'	2.5'	54.7'	42°51.8'	31°27.3'	24°04.2'	21°03.1'	98°46.6'	114°33.5'	
22	193°17.1'	N 25°18.2'	10.0'	2.4'	54.7'	42°24.1'	31°04.3'	23°34.2'	21°32.3'	99°03.9'	115°02.4'	
23	207°46.1'	N 25°20.6'	10.0'	2.2'	54.7'	41°56.4'	30°41.5'	23°04.2'	22°01.6'	99°21.1'	115°31.2'	
Mer. pass.			8 h 40 m SD 14.8'		phase 20%							

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.3'	S 29°30.4'	Spica	+1.0	158°25.3'	S 11°16.3'	Betelgeuse	+0.5	270°55.4'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.5'	S 63°13.2'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.8'	S 8°10.5'
Vega	+0.0	80°34.7'	N 38°48.4'	Pollux	+1.2	243°21.1'	N 27°58.5'	Aldebaran	+0.9	290°43.0'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.7'	Procyon	+0.4	244°54.1'	N 5°10.3'	Polaris	+2.0	315°21.4'	N 89°20.9'
Rigil Kent	-0.0	139°44.1'	S 60°55.6'	Adhara	+1.5	255°08.4'	S 28°59.9'	Achernar	+0.5	335°22.2'	S 57°07.4'
Arcturus	-0.1	145°50.5'	N 19°04.5'	Sirius	-1.4	258°29.0'	S 16°44.6'				
Hadar	+0.6	148°40.0'	S 60°28.7'	Canopus	-0.6	263°54.1'	S 52°42.2'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	313°45.9'	178°29.5'	N 16°58.0'	145°31.2'	N 6°20.1'		342°04.9'	S 12°50.8'		1°07.1'	S 18°29.9'		157°36.5'	N 11°05.2'				
1	328°48.4'	193°29.6'	N 16°57.3'	160°31.0'	N 6°18.9'		357°07.7'	S 12°50.9'		16°09.7'	S 18°30.0'		172°37.5'	N 11°04.7'				
2	343°50.8'	208°29.7'	N 16°56.6'	175°30.7'	N 6°17.6'		12°10.4'	S 12°51.0'		31°12.4'	S 18°30.0'		187°38.5'	N 11°04.1'				
3	358°53.3'	223°29.7'	N 16°55.9'	190°30.4'	N 6°16.4'		27°13.2'	S 12°51.1'		46°15.1'	S 18°30.1'		202°39.5'	N 11°03.5'				
4	13°55.7'	238°29.8'	N 16°55.2'	205°30.2'	N 6°15.1'		42°15.9'	S 12°51.2'		61°17.7'	S 18°30.1'		217°40.4'	N 11°02.9'				
5	28°58.2'	253°29.8'	N 16°54.6'	220°29.9'	N 6°13.9'		57°18.7'	S 12°51.4'		76°20.4'	S 18°30.2'		232°41.4'	N 11°02.3'				
6	44°00.7'	268°29.9'	N 16°53.9'	235°29.7'	N 6°12.7'		72°21.4'	S 12°51.5'		91°23.0'	S 18°30.3'		247°42.4'	N 11°01.7'				
7	59°03.1'	283°30.0'	N 16°53.2'	250°29.4'	N 6°11.4'		87°24.2'	S 12°51.6'		106°25.7'	S 18°30.3'		262°43.4'	N 11°01.1'				
8	74°05.6'	298°30.0'	N 16°52.5'	265°29.1'	N 6°10.2'		102°27.0'	S 12°51.7'		121°28.3'	S 18°30.4'		277°44.3'	N 11°00.6'				
9	89°08.1'	313°30.1'	N 16°51.8'	280°28.9'	N 6°08.9'		117°29.7'	S 12°51.8'		136°31.0'	S 18°30.4'		292°45.3'	N 10°60.0'				
10	104°10.5'	328°30.2'	N 16°51.2'	295°28.6'	N 6°07.7'		132°32.5'	S 12°51.9'		151°33.6'	S 18°30.5'		307°46.3'	N 10°59.4'				
11	119°13.0'	343°30.2'	N 16°50.5'	310°28.4'	N 6°06.4'		147°35.2'	S 12°52.0'		166°36.3'	S 18°30.5'		322°47.3'	N 10°58.8'				
12	134°15.5'	358°30.3'	N 16°49.8'	325°28.1'	N 6°05.2'		162°38.0'	S 12°52.1'		181°38.9'	S 18°30.6'		337°48.3'	N 10°58.2'				
13	149°17.9'	13°30.4'	N 16°49.1'	340°27.9'	N 6°03.9'		177°40.7'	S 12°52.3'		196°41.6'	S 18°30.6'		352°49.2'	N 10°57.6'				
14	164°20.4'	28°30.4'	N 16°48.4'	355°27.6'	N 6°02.7'		192°43.5'	S 12°52.4'		211°44.2'	S 18°30.7'		7°50.2'	N 10°57.0'				
15	179°22.9'	43°30.5'	N 16°47.8'	10°27.3'	N 6°01.5'		207°46.2'	S 12°52.5'		226°46.9'	S 18°30.7'		22°51.2'	N 10°56.4'				
16	194°25.3'	58°30.6'	N 16°47.1'	25°27.1'	N 6°00.2'		222°49.0'	S 12°52.6'		241°49.5'	S 18°30.8'		37°52.2'	N 10°55.9'				
17	209°27.8'	73°30.6'	N 16°46.4'	40°26.8'	N 5°59.0'		237°51.7'	S 12°52.7'		256°52.2'	S 18°30.8'		52°53.1'	N 10°55.3'				
18	224°30.2'	88°30.7'	N 16°45.7'	55°26.6'	N 5°57.7'		252°54.5'	S 12°52.8'		271°54.8'	S 18°30.9'		67°54.1'	N 10°54.7'				
19	239°32.7'	103°30.8'	N 16°45.0'	70°26.3'	N 5°56.5'		267°57.2'	S 12°52.9'		286°57.5'	S 18°30.9'		82°55.1'	N 10°54.1'				
20	254°35.2'	118°30.8'	N 16°44.3'	85°26.1'	N 5°55.2'		282°60.0'	S 12°53.0'		302°00.1'	S 18°31.0'		97°56.1'	N 10°53.5'				
21	269°37.6'	133°30.9'	N 16°43.6'	100°25.8'	N 5°54.0'		298°02.7'	S 12°53.2'		317°02.8'	S 18°31.1'		112°57.0'	N 10°52.9'				
22	284°40.1'	148°31.0'	N 16°43.0'	115°25.5'	N 5°52.7'		313°05.5'	S 12°53.3'		332°05.4'	S 18°31.1'		127°58.0'	N 10°52.3'				
23	299°42.6'	163°31.0'	N 16°42.3'	130°25.3'	N 5°51.5'		328°08.2'	S 12°53.4'		347°08.1'	S 18°31.2'		142°59.0'	N 10°51.7'				
		SD 15.8' d -0.7'		v -0.3' d -1.2'			v 2.8' d -0.1'			v 2.7' d -0.1'			v 1.0' d -0.6'					
Mer. pass.		12 h 6 m 0 s		14 h 18 m			1 h 11 m			23 h 51 m			13 h 29 m					

h	Moon					Lunar distance											
	GHA	dec	v	d	HP	-Sun	-Procyon	-Pollux	+Betelgeuse	+Aldebaran	+Capella	+Rigel	+Achernar				
0	222°15.1'	N 25°22.8'	10.0'	2.1'	54.7'	41°28.6'	30°18.8'	22°34.1'			22°30.9'		99°38.3'				
1	236°44.0'	N 25°24.9'	9.9'	2.0'	54.7'	41°00.9'	29°56.4'	22°04.1'			23°00.3'		99°55.5'				
2	251°12.9'	N 25°26.9'	9.9'	1.8'	54.7'	40°33.2'	29°34.1'	21°34.0'			23°29.7'		100°12.6'				
3	265°41.8'	N 25°28.7'	9.8'	1.7'	54.7'	40°05.4'	29°12.0'	21°04.0'			23°59.2'		100°29.8'				
4	280°10.6'	N 25°30.5'	9.8'	1.6'	54.8'		28°50.2'	20°33.9'			24°28.7'		100°46.9'				
5	294°39.4'	N 25°32.1'	9.8'	1.5'	54.8'		28°28.6'	20°03.9'			24°58.4'		101°04.0'				
6	309°08.2'	N 25°33.5'	9.7'	1.3'	54.8'		28°07.2'	19°33.8'			25°28.0'	37°08.8'	101°21.0'				
7	323°36.9'	N 25°34.9'	9.7'	1.2'	54.8'		27°46.0'	19°03.8'			25°57.7'	37°24.0'	101°38.1'				
8	338°05.6'	N 25°36.1'	9.6'	1.1'	54.8'		27°25.2'	18°33.7'			26°27.5'	37°39.4'	101°55.1'				
9	352°34.2'	N 25°37.2'	9.6'	1.0'	54.8'		27°04.5'	18°03.7'			26°57.3'	37°55.0'	102°12.1'				
10	7°02.9'	N 25°38.1'	9.6'	0.8'	54.9'		26°44.2'	17°33.6'			27°27.1'	38°11.0'	102°29.0'				
11	21°31.4'	N 25°38.9'	9.6'	0.7'	54.9'		26°24.1'	17°03.6'			27°57.0'	38°27.2'	102°46.0'				
12	35°60.0'	N 25°39.6'	9.5'	0.6'	54.9'		26°04.4'	16°33.5'			28°26.9'	25°14.5'	38°43.6'	103°02.9'			
13	50°28.5'	N 25°40.2'	9.5'	0.4'	54.9'		25°44.9'	16°03.5'	20°29.2'		28°56.9'	25°30.1'	39°00.4'	103°19.7'			
14	64°57.0'	N 25°40.6'	9.5'	0.3'	54.9'		25°25.8'	15°33.5'	20°44.6'		29°26.9'	25°46.2'	39°17.3'	103°36.5'			
15	79°25.5'	N 25°40.9'	9.4'	0.2'	55.0'		25°07.0'	15°03.5'	21°00.5'		29°56.9'	26°02.7'	39°34.5'	103°53.3'			
16	93°53.9'	N 25°41.1'	9.4'	0.0'	55.0'		24°48.6'	14°33.5'	21°17.0'		30°27.0'	26°19.6'	39°51.9'	104°10.1'			
17	108°22.3'	N 25°41.1'	9.4'	-0.1'	55.0'		24°30.5'	14°03.6'	21°34.0'		30°57.2'	26°36.9'	40°09.6'	104°26.8'			
18	122°50.7'	N 25°41.0'	9.4'	-0.2'	55.0'		24°12.9'	13°33.7'	21°51.4'		31°27.3'	26°54.6'	40°27.5'	104°43.5'			
19	137°19.1'	N 25°40.8'	9.3'	-0.4'	55.0'		23°55.6'	13°03.8'	22°09.3'		31°57.6'	27°12.6'	40°45.6'	105°00.2'			
20	151°47.4'	N 25°40.4'	9.3'	-0.5'	55.0'		23°38.7'	12°34.0'	22°27.7'		32°27.8'	27°31.0'	41°04.0'	105°16.8'			
21	166°15.7'	N 25°39.9'	9.3'	-0.6'	55.1'		23°22.3'	12°04.2'	22°46.5'		32°58.1'	27°49.8'	41°22.5'	105°33.3'			
22	180°44.0'	N 25°39.3'	9.3'	-0.8'	55.1'		23°06.4'	11°34.5'	23°05.8'		33°28.4'	28°08.9'	41°41.3'	105°49.9'			
23	195°12.3'	N 25°38.6'	9.3'	-0.9'	55.1'		22°50.8'	11°04.9'	23°25.4'		33°58.8'	28°28.3'	42°00.3'	106°06.4'			
Mer. pass.		9 h 31 m SD 14.9'		phase 13%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.3'	S 29°30.4'	Spica	+1.0	158°25.3'	S 11°16.3'	Betelgeuse	+0.5	270°55.4'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.5'	S 63°13.2'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°02.3'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.8'	S 8°10.5'
Vega	+0.0	80°34.7'	N 38°48.4'	Pollux	+1.2	243°21.1'	N 27°58.5'	Aldebaran	+0.9	290°43.0'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.7'	Procyon	+0.4	244°54.1'	N 5°10.3'	Polaris	+2.0	315°20.8'	N 89°20.9'
Rigil Kent	-0.0	139°44.1'	S 60°55.6'	Adhara	+1.5	255°08.4'	S 28°59.9'	Achernar	+0.5	335°22.2'	S 57°07.4'
Arcturus	-0.1	145°50.5'	N 19°04.5'	Sirius	-1.4	258°29.0'	S 16°44.6'				
Hadar	+0.6	148°40.0'	S 60°28.7'	Canopus	-0.6	263°54.1'	S 52°42.2'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	314°45.0'	178°31.1'	N 16°41.6'	145°25.0'	N 5°50.2'	343°11.0'	S 12°53.5'	2°10.7'	S 18°31.2'	157°60.0'	N 10°51.2'			
1	329°47.5'	193°31.2'	N 16°40.9'	160°24.8'	N 5°49.0'	358°13.8'	S 12°53.6'	17°13.4'	S 18°31.3'	173°00.9'	N 10°50.6'			
2	344°50.0'	208°31.2'	N 16°40.2'	175°24.5'	N 5°47.7'	13°16.5'	S 12°53.7'	32°16.0'	S 18°31.3'	188°01.9'	N 10°50.0'			
3	359°52.4'	223°31.3'	N 16°39.5'	190°24.3'	N 5°46.5'	28°19.3'	S 12°53.8'	47°18.7'	S 18°31.4'	203°02.9'	N 10°49.4'			
4	14°54.9'	238°31.4'	N 16°38.8'	205°24.0'	N 5°45.2'	43°22.0'	S 12°54.0'	62°21.3'	S 18°31.4'	218°03.9'	N 10°48.8'			
5	29°57.4'	253°31.4'	N 16°38.1'	220°23.8'	N 5°44.0'	58°24.8'	S 12°54.1'	77°24.0'	S 18°31.5'	233°04.9'	N 10°48.2'			
6	44°59.8'	268°31.5'	N 16°37.4'	235°23.5'	N 5°42.7'	73°27.5'	S 12°54.2'	92°26.6'	S 18°31.5'	248°05.8'	N 10°47.6'			
7	60°02.3'	283°31.6'	N 16°36.8'	250°23.3'	N 5°41.5'	88°30.3'	S 12°54.3'	107°29.3'	S 18°31.6'	263°06.8'	N 10°47.0'			
8	75°04.7'	298°31.7'	N 16°36.1'	265°23.0'	N 5°40.2'	103°33.0'	S 12°54.4'	122°31.9'	S 18°31.6'	278°07.8'	N 10°46.4'			
9	90°07.2'	313°31.7'	N 16°35.4'	280°22.8'	N 5°39.0'	118°35.8'	S 12°54.5'	137°34.6'	S 18°31.7'	293°08.8'	N 10°45.9'			
10	105°09.7'	328°31.8'	N 16°34.7'	295°22.5'	N 5°37.7'	133°38.6'	S 12°54.6'	152°37.2'	S 18°31.7'	308°09.7'	N 10°45.3'			
11	120°12.1'	343°31.9'	N 16°34.0'	310°22.3'	N 5°36.5'	148°41.3'	S 12°54.8'	167°39.9'	S 18°31.8'	323°10.7'	N 10°44.7'			
12	135°14.6'	358°31.9'	N 16°33.3'	325°22.0'	N 5°35.2'	163°44.1'	S 12°54.9'	182°42.6'	S 18°31.8'	338°11.7'	N 10°44.1'			
13	150°17.1'	13°32.0'	N 16°32.6'	340°21.8'	N 5°34.0'	178°46.8'	S 12°55.0'	197°45.2'	S 18°31.9'	353°12.7'	N 10°43.5'			
14	165°19.5'	28°32.1'	N 16°31.9'	355°21.5'	N 5°32.7'	193°49.6'	S 12°55.1'	212°47.9'	S 18°32.0'	8°13.7'	N 10°42.9'			
15	180°22.0'	43°32.2'	N 16°31.2'	10°21.3'	N 5°31.5'	208°52.3'	S 12°55.2'	227°50.5'	S 18°32.0'	23°14.6'	N 10°42.3'			
16	195°24.5'	58°32.2'	N 16°30.5'	25°21.0'	N 5°30.2'	223°55.1'	S 12°55.3'	242°53.2'	S 18°32.1'	38°15.6'	N 10°41.7'			
17	210°26.9'	73°32.3'	N 16°29.8'	40°20.8'	N 5°29.0'	238°57.8'	S 12°55.4'	257°55.8'	S 18°32.1'	53°16.6'	N 10°41.1'			
18	225°29.4'	88°32.4'	N 16°29.1'	55°20.5'	N 5°27.7'	254°00.6'	S 12°55.5'	272°58.5'	S 18°32.2'	68°17.6'	N 10°40.5'			
19	240°31.9'	103°32.5'	N 16°28.4'	70°20.3'	N 5°26.5'	269°03.4'	S 12°55.7'	288°01.1'	S 18°32.2'	83°18.5'	N 10°40.0'			
20	255°34.3'	118°32.5'	N 16°27.7'	85°20.0'	N 5°25.2'	284°06.1'	S 12°55.8'	303°03.8'	S 18°32.3'	98°19.5'	N 10°39.4'			
21	270°36.8'	133°32.6'	N 16°27.0'	100°19.8'	N 5°24.0'	299°08.9'	S 12°55.9'	318°06.4'	S 18°32.3'	113°20.5'	N 10°38.8'			
22	285°39.2'	148°32.7'	N 16°26.3'	115°19.5'	N 5°22.7'	314°11.6'	S 12°56.0'	333°09.1'	S 18°32.4'	128°21.5'	N 10°38.2'			
23	300°41.7'	163°32.7'	N 16°25.6'	130°19.3'	N 5°21.5'	329°14.4'	S 12°56.1'	348°11.7'	S 18°32.4'	143°22.5'	N 10°37.6'			
		SD 15.8' d -0.7'		v -0.3' d -1.3'		v 2.8' d -0.1'		v 2.7' d -0.1'		v 1.0' d -0.6'				
Mer. pass.		12 h 5 m 53 s		14 h 19 m		1 h 7 m		23 h 47 m		13 h 27 m				

h	Moon					Lunar distance					
	GHA	dec	v	d	HP	-Pollux	+Betelgeuse	+Capella	+Aldebaran	+Rigel	+Achernar
0	209°40.5'	N 25°37.7'	9.2'	-1.0'	55.1'	10°35.3'	23°45.5'	28°48.1'	34°29.2'	42°19.4'	106°22.8'
1	224°08.8'	N 25°36.6'	9.2'	-1.2'	55.1'	10°05.9'	24°05.9'	29°08.2'	34°59.6'	42°38.8'	106°39.2'
2	238°37.0'	N 25°35.5'	9.2'	-1.3'	55.2'	9°36.6'	24°26.6'	29°28.5'	35°30.0'	42°58.4'	106°55.5'
3	253°05.2'	N 25°34.2'	9.2'	-1.4'	55.2'	9°07.4'	24°47.7'	29°49.2'	36°00.5'	43°18.2'	107°11.8'
4	267°33.4'	N 25°32.7'	9.2'	-1.6'	55.2'	8°38.4'	25°09.2'	30°10.1'	36°31.1'	43°38.1'	107°28.1'
5	282°01.6'	N 25°31.2'	9.2'	-1.7'	55.2'	8°09.7'	25°31.0'	30°31.3'	37°01.6'	43°58.3'	107°44.3'
6	296°29.7'	N 25°29.5'	9.2'	-1.8'	55.2'	7°41.2'	25°53.0'	30°52.8'	37°32.2'	44°18.6'	108°00.4'
7	310°57.9'	N 25°27.6'	9.1'	-2.0'	55.3'	7°13.0'	26°15.4'	31°14.5'	38°02.9'	44°39.1'	108°16.5'
8	325°26.0'	N 25°25.7'	9.1'	-2.1'	55.3'	6°45.2'	26°38.1'	31°36.5'	38°33.5'	44°59.8'	108°32.5'
9	339°54.2'	N 25°23.6'	9.1'	-2.2'	55.3'	6°17.9'	27°01.0'	31°58.7'	39°04.2'	45°20.7'	108°48.5'
10	354°22.3'	N 25°21.3'	9.1'	-2.4'	55.3'	5°51.2'	27°24.2'	32°21.2'	39°35.0'	45°41.7'	109°04.4'
11	8°50.4'	N 25°18.9'	9.1'	-2.5'	55.3'		27°47.7'	32°43.9'	40°05.7'	46°02.9'	109°20.3'
12	23°18.6'	N 25°16.4'	9.1'	-2.6'	55.4'		28°11.4'	33°06.8'	40°36.5'	46°24.2'	109°36.1'
13	37°46.7'	N 25°13.8'	9.1'	-2.8'	55.4'		28°35.3'	33°30.0'	41°07.4'	46°45.7'	109°51.8'
14	52°14.8'	N 25°11.0'	9.1'	-2.9'	55.4'		28°59.5'	33°53.3'	41°38.2'	47°07.4'	110°07.5'
15	66°42.9'	N 25°08.1'	9.1'	-3.0'	55.4'		29°23.9'	34°16.8'	42°09.1'	47°29.2'	110°23.1'
16	81°11.0'	N 25°05.0'	9.1'	-3.2'	55.4'		29°48.5'	34°40.6'	42°40.1'	47°51.2'	110°38.6'
17	95°39.2'	N 25°01.9'	9.1'	-3.3'	55.5'		30°13.3'	35°04.5'	43°11.0'	48°13.3'	110°54.1'
18	110°07.3'	N 24°58.5'	9.1'	-3.5'	55.5'		30°38.4'	35°28.6'	43°42.0'	48°35.5'	111°09.5'
19	124°35.4'	N 24°55.1'	9.1'	-3.6'	55.5'		31°03.6'	35°52.9'	44°13.0'	48°57.9'	111°24.8'
20	139°03.5'	N 24°51.5'	9.1'	-3.7'	55.5'		31°29.0'	36°17.4'	44°44.1'	49°20.5'	111°40.1'
21	153°31.7'	N 24°47.8'	9.1'	-3.9'	55.6'		31°54.5'	36°42.1'	45°15.2'	49°43.1'	111°55.3'
22	167°59.8'	N 24°43.9'	9.1'	-4.0'	55.6'		32°20.3'	37°06.9'	45°46.3'	50°06.0'	112°10.4'
23	182°27.9'	N 24°39.9'	9.2'	-4.1'	55.6'		32°46.2'	37°31.9'	46°17.4'	50°28.9'	
Mer. pass.		10 h 23 m SD 15.0'		phase 7%							

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.3'	S 29°30.4'	Spica	+1.0	158°25.3'	S 11°16.3'	Betelgeuse	+0.5	270°55.3'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.5'	S 63°13.2'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°02.3'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.8'	S 8°10.5'
Vega	+0.0	80°34.7'	N 38°48.4'	Pollux	+1.2	243°21.1'	N 27°58.5'	Aldebaran	+0.9	290°43.0'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.7'	Procyon	+0.4	244°54.1'	N 5°10.3'	Polaris	+2.0	315°20.3'	N 89°20.9'
Rigil Kent	-0.0	139°44.1'	S 60°55.6'	Adhara	+1.5	255°08.4'	S 28°59.9'	Achernar	+0.5	335°22.2'	S 57°07.4'
Arcturus	-0.1	145°50.5'	N 19°04.5'	Sirius	-1.4	258°29.0'	S 16°44.6'				
Hadar	+0.6	148°40.0'	S 60°28.7'	Canopus	-0.6	263°54.1'	S 52°42.2'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	315°44.2'	178°32.8'	N 16°24.9'	145°19.0'	N 5°20.2'		344°17.1'	S 12°56.2'		3°14.4'	S 18°32.5'		158°23.4'	N 10°37.0'				
1	330°46.6'	193°32.9'	N 16°24.2'	160°18.8'	N 5°18.9'		359°19.9'	S 12°56.3'		18°17.0'	S 18°32.5'		173°24.4'	N 10°36.4'				
2	345°49.1'	208°33.0'	N 16°23.5'	175°18.5'	N 5°17.7'		14°22.7'	S 12°56.5'		33°19.7'	S 18°32.6'		188°25.4'	N 10°35.8'				
3	0°51.6'	223°33.0'	N 16°22.8'	190°18.3'	N 5°16.4'		29°25.4'	S 12°56.6'		48°22.3'	S 18°32.6'		203°26.4'	N 10°35.2'				
4	15°54.0'	238°33.1'	N 16°22.1'	205°18.0'	N 5°15.2'		44°28.2'	S 12°56.7'		63°25.0'	S 18°32.7'		218°27.3'	N 10°34.6'				
5	30°56.5'	253°33.2'	N 16°21.4'	220°17.8'	N 5°13.9'		59°30.9'	S 12°56.8'		78°27.6'	S 18°32.7'		233°28.3'	N 10°34.0'				
6	45°59.0'	268°33.3'	N 16°20.7'	235°17.5'	N 5°12.7'		74°33.7'	S 12°56.9'		93°30.3'	S 18°32.8'		248°29.3'	N 10°33.4'				
7	61°01.4'	283°33.4'	N 16°20.0'	250°17.3'	N 5°11.4'		89°36.5'	S 12°57.0'		108°32.9'	S 18°32.9'		263°30.3'	N 10°32.9'				
8	76°03.9'	298°33.4'	N 16°19.3'	265°17.1'	N 5°10.2'		104°39.2'	S 12°57.1'		123°35.6'	S 18°32.9'		278°31.3'	N 10°32.3'				
9	91°06.3'	313°33.5'	N 16°18.6'	280°16.8'	N 5°08.9'		119°42.0'	S 12°57.3'		138°38.2'	S 18°33.0'		293°32.2'	N 10°31.7'				
10	106°08.8'	328°33.6'	N 16°17.9'	295°16.6'	N 5°07.6'		134°44.7'	S 12°57.4'		153°40.9'	S 18°33.0'		308°33.2'	N 10°31.1'				
11	121°11.3'	343°33.7'	N 16°17.2'	310°16.3'	N 5°06.4'		149°47.5'	S 12°57.5'		168°43.5'	S 18°33.1'		323°34.2'	N 10°30.5'				
12	136°13.7'	358°33.7'	N 16°16.5'	325°16.1'	N 5°05.1'		164°50.2'	S 12°57.6'		183°46.2'	S 18°33.1'		338°35.2'	N 10°29.9'				
13	151°16.2'	13°33.8'	N 16°15.8'	340°15.8'	N 5°03.9'		179°53.0'	S 12°57.7'		198°48.8'	S 18°33.2'		353°36.2'	N 10°29.3'				
14	166°18.7'	28°33.9'	N 16°15.1'	355°15.6'	N 5°02.6'		194°55.8'	S 12°57.8'		213°51.5'	S 18°33.2'		8°37.1'	N 10°28.7'				
15	181°21.1'	43°34.0'	N 16°14.4'	10°15.3'	N 5°01.4'		209°58.5'	S 12°57.9'		228°54.1'	S 18°33.3'		23°38.1'	N 10°28.1'				
16	196°23.6'	58°34.0'	N 16°13.7'	25°15.1'	N 5°00.1'		225°01.3'	S 12°58.1'		243°56.8'	S 18°33.3'		38°39.1'	N 10°27.5'				
17	211°26.1'	73°34.1'	N 16°13.0'	40°14.9'	N 4°58.8'		240°04.0'	S 12°58.2'		258°59.4'	S 18°33.4'		53°40.1'	N 10°26.9'				
18	226°28.5'	88°34.2'	N 16°12.3'	55°14.6'	N 4°57.6'		255°06.8'	S 12°58.3'		274°02.1'	S 18°33.4'		68°41.0'	N 10°26.3'				
19	241°31.0'	103°34.3'	N 16°11.6'	70°14.4'	N 4°56.3'		270°09.6'	S 12°58.4'		289°04.7'	S 18°33.5'		83°42.0'	N 10°25.7'				
20	256°33.5'	118°34.4'	N 16°10.9'	85°14.1'	N 4°55.1'		285°12.3'	S 12°58.5'		304°07.4'	S 18°33.5'		98°43.0'	N 10°25.1'				
21	271°35.9'	133°34.4'	N 16°10.2'	100°13.9'	N 4°53.8'		300°15.1'	S 12°58.6'		319°10.0'	S 18°33.6'		113°44.0'	N 10°24.6'				
22	286°38.4'	148°34.5'	N 16°09.4'	115°13.7'	N 4°52.5'		315°17.8'	S 12°58.8'		334°12.7'	S 18°33.6'		128°45.0'	N 10°24.0'				
23	301°40.8'	163°34.6'	N 16°08.7'	130°13.4'	N 4°51.3'		330°20.6'	S 12°58.9'		349°15.3'	S 18°33.7'		143°45.9'	N 10°23.4'				
		SD 15.8' d -0.7'		v -0.2' d -1.3'			v 2.8' d -0.1'			v 2.7' d -0.1'			v 1.0' d -0.6'					
Mer. pass.		12 h 5 m 46 s		14 h 19 m			1 h 3 m			23 h 43 m			13 h 26 m					

h	Moon					Lunar distance					
	GHA	dec	v	d	HP	+Pollux	+Procyon	+Betelgeuse	+Capella	+Aldebaran	+Rigel
0	196°56.1'	N 24°35.8'	9.2'	-4.3'	55.6'			33°12.3'	37°57.0'	46°48.6'	50°52.0'
1	211°24.3'	N 24°31.6'	9.2'	-4.4'	55.6'			33°38.5'	38°22.3'	47°19.8'	51°15.2'
2	225°52.4'	N 24°27.2'	9.2'	-4.5'	55.7'			34°04.9'	38°47.7'	47°51.0'	51°38.5'
3	240°20.6'	N 24°22.6'	9.2'	-4.7'	55.7'			34°31.5'	39°13.3'	48°22.3'	52°01.9'
4	254°48.8'	N 24°18.0'	9.2'	-4.8'	55.7'			34°58.1'	39°39.0'	48°53.6'	52°25.5'
5	269°17.0'	N 24°13.2'	9.2'	-4.9'	55.7'			35°25.0'	40°04.9'	49°24.9'	52°49.2'
6	283°45.3'	N 24°08.3'	9.2'	-5.1'	55.8'	6°18.6'		35°51.9'	40°30.9'	49°56.3'	53°13.0'
7	298°13.5'	N 24°03.2'	9.3'	-5.2'	55.8'	6°46.5'		36°19.0'	40°57.0'	50°27.7'	53°36.9'
8	312°41.8'	N 23°58.0'	9.3'	-5.3'	55.8'	7°14.8'		36°46.2'	41°23.3'	50°59.1'	54°00.9'
9	327°10.0'	N 23°52.7'	9.3'	-5.4'	55.8'	7°43.7'		37°13.6'	41°49.7'	51°30.6'	54°25.0'
10	341°38.3'	N 23°47.3'	9.3'	-5.6'	55.8'	8°12.8'		37°41.0'	42°16.2'	52°02.0'	54°49.3'
11	356°06.7'	N 23°41.7'	9.3'	-5.7'	55.9'	8°42.4'		38°08.6'	42°42.8'	52°33.5'	55°13.6'
12	10°35.0'	N 23°36.0'	9.4'	-5.8'	55.9'	9°12.1'		38°36.3'	43°09.5'	53°05.1'	55°38.1'
13	25°03.3'	N 23°30.2'	9.4'	-6.0'	55.9'	9°42.2'		39°04.1'	43°36.4'	53°36.7'	56°02.6'
14	39°31.7'	N 23°24.2'	9.4'	-6.1'	55.9'	10°12.4'		39°32.0'	44°03.4'	54°08.3'	56°27.3'
15	54°00.1'	N 23°18.1'	9.4'	-6.2'	56.0'	10°42.8'		40°00.0'	44°30.4'	54°39.9'	56°52.0'
16	68°28.6'	N 23°11.9'	9.5'	-6.3'	56.0'	11°13.4'		40°28.1'	44°57.6'	55°11.5'	57°16.9'
17	82°57.0'	N 23°05.6'	9.5'	-6.5'	56.0'	11°44.1'		40°56.3'	45°24.9'	55°43.2'	57°41.8'
18	97°25.5'	N 22°59.1'	9.5'	-6.6'	56.0'	12°14.9'		41°24.7'	45°52.3'	56°15.0'	58°06.9'
19	111°54.0'	N 22°52.5'	9.5'	-6.7'	56.0'	12°45.8'	22°34.8'	41°53.1'	46°19.8'	56°46.7'	58°32.0'
20	126°22.5'	N 22°45.7'	9.6'	-6.9'	56.1'						
21	140°51.1'	N 22°38.9'	9.6'	-7.0'	56.1'						
22	155°19.7'	N 22°31.9'	9.6'	-7.1'	56.1'						
23	169°48.3'	N 22°24.8'	9.6'	-7.2'	56.1'						
Mer. pass.		11 h 16 m SD 15.2'		phase 3%							

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.3'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.3'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.5'	S 63°13.2'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°02.3'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.5'
Vega	+0.0	80°34.7'	N 38°48.4'	Pollux	+1.2	243°21.1'	N 27°58.5'	Aldebaran	+0.9	290°43.0'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.8'	Procyon	+0.4	244°54.1'	N 5°10.3'	Polaris	+2.0	315°19.7'	N 89°20.9'
Rigil Kent	-0.0	139°44.1'	S 60°55.6'	Adhara	+1.5	255°08.4'	S 28°59.9'	Achernar	+0.5	335°22.2'	S 57°07.4'
Arcturus	-0.1	145°50.5'	N 19°04.5'	Sirius	-1.4	258°29.0'	S 16°44.6'				
Hadar	+0.6	148°40.0'	S 60°28.7'	Canopus	-0.6	263°54.1'	S 52°42.2'				

Sunday 08 August 2021 UT1

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	316°43.3'		178°34.7'	N 16°08.0'	145°13.2'	N 4°50.0'	345°23.4'	S 12°59.0'	4°18.0'	S 18°33.7'	158°46.9'	N 10°22.8'
1	331°45.8'		193°34.8'	N 16°07.3'	160°12.9'	N 4°48.8'	0°26.1'	S 12°59.1'	19°20.6'	S 18°33.8'	173°47.9'	N 10°22.2'
2	346°48.2'		208°34.8'	N 16°06.6'	175°12.7'	N 4°47.5'	15°28.9'	S 12°59.2'	34°23.3'	S 18°33.9'	188°48.9'	N 10°21.6'
3	1°50.7'		223°34.9'	N 16°05.9'	190°12.5'	N 4°46.2'	30°31.6'	S 12°59.3'	49°25.9'	S 18°33.9'	203°49.9'	N 10°21.0'
4	16°53.2'		238°35.0'	N 16°05.2'	205°12.2'	N 4°45.0'	45°34.4'	S 12°59.4'	64°28.6'	S 18°34.0'	218°50.8'	N 10°20.4'
5	31°55.6'		253°35.1'	N 16°04.5'	220°12.0'	N 4°43.7'	60°37.2'	S 12°59.6'	79°31.2'	S 18°34.0'	233°51.8'	N 10°19.8'
6	46°58.1'		268°35.2'	N 16°03.8'	235°11.7'	N 4°42.5'	75°39.9'	S 12°59.7'	94°33.9'	S 18°34.1'	248°52.8'	N 10°19.2'
7	62°00.6'		283°35.3'	N 16°03.0'	250°11.5'	N 4°41.2'	90°42.7'	S 12°59.8'	109°36.5'	S 18°34.1'	263°53.8'	N 10°18.6'
8	77°03.0'		298°35.3'	N 16°02.3'	265°11.3'	N 4°39.9'	105°45.5'	S 12°59.9'	124°39.2'	S 18°34.2'	278°54.8'	N 10°18.0'
9	92°05.5'		313°35.4'	N 16°01.6'	280°11.0'	N 4°38.7'	120°48.2'	S 13°00.0'	139°41.8'	S 18°34.2'	293°55.7'	N 10°17.4'
10	107°08.0'		328°35.5'	N 16°00.9'	295°10.8'	N 4°37.4'	135°51.0'	S 13°00.1'	154°44.5'	S 18°34.3'	308°56.7'	N 10°16.8'
11	122°10.4'		343°35.6'	N 16°00.2'	310°10.5'	N 4°36.2'	150°53.7'	S 13°00.2'	169°47.1'	S 18°34.3'	323°57.7'	N 10°16.2'
12	137°12.9'		358°35.7'	N 15°59.5'	325°10.3'	N 4°34.9'	165°56.5'	S 13°00.4'	184°49.8'	S 18°34.4'	338°58.7'	N 10°15.6'
13	152°15.3'		13°35.8'	N 15°58.8'	340°10.1'	N 4°33.6'	180°59.3'	S 13°00.5'	199°52.5'	S 18°34.4'	353°59.7'	N 10°15.0'
14	167°17.8'		28°35.8'	N 15°58.0'	355°09.8'	N 4°32.4'	196°02.0'	S 13°00.6'	214°55.1'	S 18°34.5'	9°00.6'	N 10°14.4'
15	182°20.3'		43°35.9'	N 15°57.3'	10°09.6'	N 4°31.1'	211°04.8'	S 13°00.7'	229°57.8'	S 18°34.5'	24°01.6'	N 10°13.8'
16	197°22.7'		58°36.0'	N 15°56.6'	25°09.4'	N 4°29.8'	226°07.5'	S 13°00.8'	245°00.4'	S 18°34.6'	39°02.6'	N 10°13.2'
17	212°25.2'		73°36.1'	N 15°55.9'	40°09.1'	N 4°28.6'	241°10.3'	S 13°00.9'	260°03.1'	S 18°34.6'	54°03.6'	N 10°12.7'
18	227°27.7'		88°36.2'	N 15°55.2'	55°08.9'	N 4°27.3'	256°13.1'	S 13°01.1'	275°05.7'	S 18°34.7'	69°04.6'	N 10°12.1'
19	242°30.1'		103°36.3'	N 15°54.4'	70°08.6'	N 4°26.1'	271°15.8'	S 13°01.2'	290°08.4'	S 18°34.7'	84°05.5'	N 10°11.5'
20	257°32.6'		118°36.4'	N 15°53.7'	85°08.4'	N 4°24.8'	286°18.6'	S 13°01.3'	305°11.0'	S 18°34.8'	99°06.5'	N 10°10.9'
21	272°35.1'		133°36.4'	N 15°53.0'	100°08.2'	N 4°23.5'	301°21.4'	S 13°01.4'	320°13.7'	S 18°34.8'	114°07.5'	N 10°10.3'
22	287°37.5'		148°36.5'	N 15°52.3'	115°07.9'	N 4°22.3'	316°24.1'	S 13°01.5'	335°16.3'	S 18°34.9'	129°08.5'	N 10°09.7'
23	302°40.0'		163°36.6'	N 15°51.6'	130°07.7'	N 4°21.0'	331°26.9'	S 13°01.6'	350°19.0'	S 18°35.0'	144°09.5'	N 10°09.1'
			SD 15.8' d -0.7'		v -0.2' d -1.3'		v 2.8' d -0.1'		v 2.7' d -0.1'		v 1.0' d -0.6'	
Mer. pass.			12 h 5 m 38 s		14 h 19 m		0 h 58 m		23 h 39 m		13 h 24 m	

h	Moon				
	GHA	dec	v	d	HP
0	184°16.9'	N 22°17.6'	9.7'	-7.3'	56.2'
1	198°45.6'	N 22°10.2'	9.7'	-7.5'	56.2'
2	213°14.3'	N 22°02.8'	9.7'	-7.6'	56.2'
3	227°43.1'	N 21°55.2'	9.8'	-7.7'	56.2'
4	242°11.8'	N 21°47.5'	9.8'	-7.8'	56.2'
5	256°40.6'	N 21°39.6'	9.8'	-8.0'	56.3'
6	271°09.5'	N 21°31.7'	9.9'	-8.1'	56.3'
7	285°38.4'	N 21°23.6'	9.9'	-8.2'	56.3'
8	300°07.3'	N 21°15.4'	9.9'	-8.3'	56.3'
9	314°36.2'	N 21°07.1'	10.0'	-8.4'	56.4'
10	329°05.2'	N 20°58.7'	10.0'	-8.5'	56.4'
11	343°34.2'	N 20°50.1'	10.1'	-8.7'	56.4'
12	358°03.3'	N 20°41.5'	10.1'	-8.8'	56.4'
13	12°32.4'	N 20°32.7'	10.1'	-8.9'	56.5'
14	27°01.5'	N 20°23.8'	10.2'	-9.0'	56.5'
15	41°30.6'	N 20°14.8'	10.2'	-9.1'	56.5'
16	55°59.9'	N 20°05.7'	10.2'	-9.2'	56.5'
17	70°29.1'	N 19°56.5'	10.3'	-9.3'	56.5'
18	84°58.4'	N 19°47.1'	10.3'	-9.4'	56.6'
19	99°27.7'	N 19°37.7'	10.4'	-9.6'	56.6'
20	113°57.0'	N 19°28.1'	10.4'	-9.7'	56.6'
21	128°26.4'	N 19°18.5'	10.4'	-9.8'	56.6'
22	142°55.9'	N 19°08.7'	10.5'	-9.9'	56.7'
23	157°25.4'	N 18°58.8'	10.5'	-10.0'	56.7'
Mer. pass.	12 h 8 m SD 15.3'	phase 1%			

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.3'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.3'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.5'	S 63°13.2'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°02.3'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°21.1'	N 27°58.5'	Aldebaran	+0.9	290°43.0'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.8'	Procyon	+0.4	244°54.1'	N 5°10.3'	Polaris	+2.0	315°19.2'	N 89°20.9'
Rigil Kent	-0.0	139°44.1'	S 60°55.6'	Adhara	+1.5	255°08.4'	S 28°59.9'	Achernar	+0.5	335°22.1'	S 57°07.4'
Arcturus	-0.1	145°50.5'	N 19°04.5'	Sirius	-1.4	258°29.0'	S 16°44.6'				
Hadar	+0.6	148°40.0'	S 60°28.7'	Canopus	-0.6	263°54.0'	S 52°42.2'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	317°42.5'	178°36.7' N	15°50.9'	145°07.5' N	4°19.7'	346°29.7' S	13°01.7'	5°21.6' S	18°35.0'	159°10.5' N	10°08.5'	
1	332°44.9'	193°36.8' N	15°50.1'	160°07.2' N	4°18.5'	1°32.4' S	13°01.9'	20°24.3' S	18°35.1'	174°11.4' N	10°07.9'	
2	347°47.4'	208°36.9' N	15°49.4'	175°07.0' N	4°17.2'	16°35.2' S	13°02.0'	35°26.9' S	18°35.1'	189°12.4' N	10°07.3'	
3	2°49.8'	223°37.0' N	15°48.7'	190°06.8' N	4°15.9'	31°37.9' S	13°02.1'	50°29.6' S	18°35.2'	204°13.4' N	10°06.7'	
4	17°52.3'	238°37.0' N	15°48.0'	205°06.5' N	4°14.7'	46°40.7' S	13°02.2'	65°32.2' S	18°35.2'	219°14.4' N	10°06.1'	
5	32°54.8'	253°37.1' N	15°47.2'	220°06.3' N	4°13.4'	61°43.5' S	13°02.3'	80°34.9' S	18°35.3'	234°15.4' N	10°05.5'	
6	47°57.2'	268°37.2' N	15°46.5'	235°06.1' N	4°12.1'	76°46.2' S	13°02.4'	95°37.5' S	18°35.3'	249°16.3' N	10°04.9'	
7	62°59.7'	283°37.3' N	15°45.8'	250°05.8' N	4°10.9'	91°49.0' S	13°02.6'	110°40.2' S	18°35.4'	264°17.3' N	10°04.3'	
8	78°02.2'	298°37.4' N	15°45.1'	265°05.6' N	4°09.6'	106°51.8' S	13°02.7'	125°42.8' S	18°35.4'	279°18.3' N	10°03.7'	
9	93°04.6'	313°37.5' N	15°44.3'	280°05.4' N	4°08.3'	121°54.5' S	13°02.8'	140°45.5' S	18°35.5'	294°19.3' N	10°03.1'	
10	108°07.1'	328°37.6' N	15°43.6'	295°05.1' N	4°07.1'	136°57.3' S	13°02.9'	155°48.1' S	18°35.5'	309°20.3' N	10°02.5'	
11	123°09.6'	343°37.7' N	15°42.9'	310°04.9' N	4°05.8'	152°00.1' S	13°03.0'	170°50.8' S	18°35.6'	324°21.2' N	10°01.9'	
12	138°12.0'	358°37.8' N	15°42.2'	325°04.7' N	4°04.5'	167°02.8' S	13°03.1'	185°53.4' S	18°35.6'	339°22.2' N	10°01.3'	
13	153°14.5'	13°37.8' N	15°41.4'	340°04.4' N	4°03.3'	182°05.6' S	13°03.3'	200°56.1' S	18°35.7'	354°23.2' N	10°00.7'	
14	168°16.9'	28°37.9' N	15°40.7'	355°04.2' N	4°02.0'	197°08.3' S	13°03.4'	215°58.7' S	18°35.7'	9°24.2' N	10°00.1'	
15	183°19.4'	43°38.0' N	15°40.0'	10°04.0' N	4°00.7'	212°11.1' S	13°03.5'	231°01.4' S	18°35.8'	24°25.2' N	9°59.5'	
16	198°21.9'	58°38.1' N	15°39.3'	25°03.8' N	3°59.5'	227°13.9' S	13°03.6'	246°04.0' S	18°35.8'	39°26.2' N	9°58.9'	
17	213°24.3'	73°38.2' N	15°38.5'	40°03.5' N	3°58.2'	242°16.6' S	13°03.7'	261°06.7' S	18°35.9'	54°27.1' N	9°58.3'	
18	228°26.8'	88°38.3' N	15°37.8'	55°03.3' N	3°56.9'	257°19.4' S	13°03.8'	276°09.3' S	18°35.9'	69°28.1' N	9°57.7'	
19	243°29.3'	103°38.4' N	15°37.1'	70°03.1' N	3°55.7'	272°22.2' S	13°03.9'	291°12.0' S	18°36.0'	84°29.1' N	9°57.1'	
20	258°31.7'	118°38.5' N	15°36.3'	85°02.8' N	3°54.4'	287°24.9' S	13°04.1'	306°14.6' S	18°36.1'	99°30.1' N	9°56.5'	
21	273°34.2'	133°38.6' N	15°35.6'	100°02.6' N	3°53.1'	302°27.7' S	13°04.2'	321°17.3' S	18°36.1'	114°31.1' N	9°55.9'	
22	288°36.7'	148°38.7' N	15°34.9'	115°02.4' N	3°51.9'	317°30.5' S	13°04.3'	336°19.9' S	18°36.2'	129°32.0' N	9°55.3'	
23	303°39.1'	163°38.8' N	15°34.2'	130°02.2' N	3°50.6'	332°33.2' S	13°04.4'	351°22.6' S	18°36.2'	144°33.0' N	9°54.7'	
		SD 15.8' d -0.7'		v -0.2' d -1.3'		v 2.8' d -0.1'		v 2.6' d -0.1'		v 1.0' d -0.6'		
Mer. pass.		12 h 5 m 30 s		14 h 20 m		0 h 54 m		23 h 34 m		13 h 22 m		

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Antares	-Rigel Kent	-Hadar	-Acrux	-Arcturus	-Spica	-Venus	-Mars
0	171°54.9' N	18°48.8'	10.6'	-10.1'	56.7'								
1	186°24.4' N	18°38.8'	10.6'	-10.2'	56.7'								
2	200°54.0' N	18°28.6'	10.6'	-10.3'	56.8'								
3	215°23.6' N	18°18.3'	10.7'	-10.4'	56.8'								
4	229°53.3' N	18°07.9'	10.7'	-10.5'	56.8'								
5	244°23.0' N	17°57.4'	10.8'	-10.6'	56.8'								
6	258°52.8' N	17°46.8'	10.8'	-10.7'	56.8'								
7	273°22.6' N	17°36.1'	10.8'	-10.8'	56.9'								
8	287°52.4' N	17°25.3'	10.9'	-10.9'	56.9'	104°11.8'	95°57.7'	91°56.3'	85°34.9'	60°26.9'	58°19.6'	25°57.6'	11°06.3'
9	302°22.3' N	17°14.4'	10.9'	-11.0'	56.9'	103°39.0'	95°33.8'	91°33.1'	85°16.0'	59°58.9'	57°46.9'	25°28.0'	10°37.2'
10	316°52.2' N	17°03.4'	11.0'	-11.1'	56.9'	103°06.1'	95°09.8'	91°09.8'	84°57.2'	59°30.9'	57°14.1'	24°58.3'	10°08.2'
11	331°22.2' N	16°52.3'	11.0'	-11.2'	57.0'	102°33.2'	94°45.8'	90°46.6'	84°38.3'	59°02.9'	56°41.3'	24°28.7'	9°39.5'
12	345°52.2' N	16°41.2'	11.0'	-11.3'	57.0'	102°00.2'	94°21.8'	90°23.3'	84°19.5'	58°35.0'	56°08.5'	23°59.1'	9°11.0'
13	0°22.2' N	16°29.9'	11.1'	-11.4'	57.0'	101°27.3'	93°57.7'	89°60.0'	84°00.7'	58°07.1'	55°35.7'	23°29.4'	8°42.9'
14	14°52.3' N	16°18.5'	11.1'	-11.4'	57.0'	100°54.3'	93°33.6'	89°36.6'	83°41.8'	57°39.2'	55°02.8'	22°59.8'	8°15.1'
15	29°22.4' N	16°07.1'	11.1'	-11.5'	57.0'	100°21.3'	93°09.5'	89°13.3'	83°23.0'	57°11.4'	54°30.0'	22°30.1'	7°47.8'
16	43°52.5' N	15°55.6'	11.2'	-11.6'	57.1'	99°48.2'	92°45.4'	88°49.9'	83°04.2'	56°43.6'	53°57.1'	22°00.4'	7°21.0'
17	58°22.7' N	15°43.9'	11.2'	-11.7'	57.1'	99°15.2'	92°21.2'	88°26.6'	82°45.4'	56°15.9'	53°24.1'	21°30.8'	6°54.9'
18	72°52.9' N	15°32.2'	11.3'	-11.8'	57.1'	98°42.1'	91°57.0'	88°03.2'	82°26.7'	55°48.2'	52°51.2'	21°01.1'	
19	87°23.2' N	15°20.4'	11.3'	-11.9'	57.1'	98°09.0'	91°32.8'	87°39.8'	82°07.9'	55°20.5'	52°18.2'	20°31.4'	
20	101°53.5' N	15°08.5'	11.3'	-12.0'	57.1'	97°35.9'	91°08.5'	87°16.4'	81°49.1'	54°52.9'	51°45.3'	20°01.8'	
21	116°23.8' N	14°56.5'	11.4'	-12.1'	57.2'	97°02.7'	90°44.3'	86°53.0'	81°30.4'	54°25.4'	51°12.3'	19°32.1'	
22	130°54.2' N	14°44.5'	11.4'	-12.1'	57.2'	96°29.5'	90°20.0'	86°29.5'	81°11.7'	53°57.9'	50°39.2'	19°02.5'	
23	145°24.6' N	14°32.3'	11.5'	-12.2'	57.2'	95°56.3'	89°55.7'	86°06.1'	80°53.0'	53°30.5'	50°06.2'	18°32.8'	
Mer. pass.		12 h 58 m SD 15.5'		phase 0%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.3' S	29°30.4'	Spica	+1.0	158°25.4' S	11°16.3'	Betelgeuse	+0.5	270°55.3' N	7°24.7'
Deneb	+1.2	49°27.2' N	45°21.5'	Acrux	+0.8	173°03.6' S	63°13.2'	Capella	+0.1	280°26.3' N	46°01.0'
Altair	+0.8	62°02.3' N	8°55.6'	Regulus	+1.4	207°37.7' N	11°51.9'	Rigel	+0.2	281°06.7' S	8°10.5'
Vega	+0.0	80°34.8' N	38°48.4'	Pollux	+1.2	243°21.1' N	27°58.5'	Aldebaran	+0.9	290°42.9' N	16°33.1'
Antares	+1.1	112°19.1' S	26°28.8'	Procyon	+0.4	244°54.1' N	5°10.3'	Polaris	+2.0	315°18.8' N	89°20.9'
Rigel Kent	-0.0	139°44.1' S	60°55.6'	Adhara	+1.5	255°08.4' S	28°59.9'	Achernar	+0.5	335°22.1' S	57°07.4'
Arcturus	-0.1	145°50.5' N	19°04.5'	Sirius	-1.4	258°29.0' S	16°44.6'				
Hadar	+0.6	148°40.0' S	60°28.7'	Canopus	-0.6	263°54.0' S	52°42.2'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	318°41.6'	178°38.9'	N 15°33.4'	145°01.9'	N 3°49.3'	347°36.0'	S 13°04.5'	6°25.2'	S 18°36.3'	159°34.0'	N 9°54.1'			
1	333°44.1'	193°38.9'	N 15°32.7'	160°01.7'	N 3°48.0'	2°38.8'	S 13°04.6'	21°27.9'	S 18°36.3'	174°35.0'	N 9°53.5'			
2	348°46.5'	208°39.0'	N 15°32.0'	175°01.5'	N 3°46.8'	17°41.5'	S 13°04.8'	36°30.5'	S 18°36.4'	189°36.0'	N 9°52.9'			
3	3°49.0'	223°39.1'	N 15°31.2'	190°01.2'	N 3°45.5'	32°44.3'	S 13°04.9'	51°33.2'	S 18°36.4'	204°37.0'	N 9°52.3'			
4	18°51.4'	238°39.2'	N 15°30.5'	205°01.0'	N 3°44.2'	47°47.1'	S 13°05.0'	66°35.8'	S 18°36.5'	219°37.9'	N 9°51.7'			
5	33°53.9'	253°39.3'	N 15°29.8'	220°00.8'	N 3°43.0'	62°49.8'	S 13°05.1'	81°38.4'	S 18°36.5'	234°38.9'	N 9°51.1'			
6	48°56.4'	268°39.4'	N 15°29.0'	235°00.6'	N 3°41.7'	77°52.6'	S 13°05.2'	96°41.1'	S 18°36.6'	249°39.9'	N 9°50.5'			
7	63°58.8'	283°39.5'	N 15°28.3'	250°00.3'	N 3°40.4'	92°55.4'	S 13°05.3'	111°43.7'	S 18°36.6'	264°40.9'	N 9°49.9'			
8	79°01.3'	298°39.6'	N 15°27.6'	265°00.1'	N 3°39.2'	107°58.1'	S 13°05.5'	126°46.4'	S 18°36.7'	279°41.9'	N 9°49.3'			
9	94°03.8'	313°39.7'	N 15°26.8'	279°59.9'	N 3°37.9'	123°00.9'	S 13°05.6'	141°49.0'	S 18°36.7'	294°42.9'	N 9°48.7'			
10	109°06.2'	328°39.8'	N 15°26.1'	294°59.7'	N 3°36.6'	138°03.7'	S 13°05.7'	156°51.7'	S 18°36.8'	309°43.8'	N 9°48.1'			
11	124°08.7'	343°39.9'	N 15°25.4'	309°59.4'	N 3°35.3'	153°06.4'	S 13°05.8'	171°54.3'	S 18°36.8'	324°44.8'	N 9°47.5'			
12	139°11.2'	358°40.0'	N 15°24.6'	324°59.2'	N 3°34.1'	168°09.2'	S 13°05.9'	186°57.0'	S 18°36.9'	339°45.8'	N 9°46.9'			
13	154°13.6'	13°40.1'	N 15°23.9'	339°59.0'	N 3°32.8'	183°12.0'	S 13°06.0'	201°59.6'	S 18°36.9'	354°46.8'	N 9°46.3'			
14	169°16.1'	28°40.2'	N 15°23.1'	354°58.7'	N 3°31.5'	198°14.7'	S 13°06.2'	217°02.3'	S 18°37.0'	9°47.8'	N 9°45.7'			
15	184°18.6'	43°40.3'	N 15°22.4'	9°58.5'	N 3°30.3'	213°17.5'	S 13°06.3'	232°04.9'	S 18°37.0'	24°48.7'	N 9°45.1'			
16	199°21.0'	58°40.4'	N 15°21.7'	24°58.3'	N 3°29.0'	228°20.3'	S 13°06.4'	247°07.6'	S 18°37.1'	39°49.7'	N 9°44.5'			
17	214°23.5'	73°40.5'	N 15°20.9'	39°58.1'	N 3°27.7'	243°23.0'	S 13°06.5'	262°10.2'	S 18°37.1'	54°50.7'	N 9°43.9'			
18	229°25.9'	88°40.6'	N 15°20.2'	54°57.9'	N 3°26.4'	258°25.8'	S 13°06.6'	277°12.9'	S 18°37.2'	69°51.7'	N 9°43.3'			
19	244°28.4'	103°40.7'	N 15°19.5'	69°57.6'	N 3°25.2'	273°28.6'	S 13°06.7'	292°15.5'	S 18°37.2'	84°52.7'	N 9°42.7'			
20	259°30.9'	118°40.8'	N 15°18.7'	84°57.4'	N 3°23.9'	288°31.3'	S 13°06.9'	307°18.2'	S 18°37.3'	99°53.7'	N 9°42.1'			
21	274°33.3'	133°40.9'	N 15°18.0'	99°57.2'	N 3°22.6'	303°34.1'	S 13°07.0'	322°20.8'	S 18°37.3'	114°54.6'	N 9°41.5'			
22	289°35.8'	148°41.0'	N 15°17.2'	114°57.0'	N 3°21.3'	318°36.9'	S 13°07.1'	337°23.5'	S 18°37.4'	129°55.6'	N 9°40.9'			
23	304°38.3'	163°41.1'	N 15°16.5'	129°56.7'	N 3°20.1'	333°39.6'	S 13°07.2'	352°26.1'	S 18°37.5'	144°56.6'	N 9°40.3'			
		SD 15.8' d -0.7'		v -0.2' d -1.3'		v 2.8' d -0.1'		v 2.6' d -0.1'		v 1.0' d -0.6'				
Mer. pass.		12 h 5 m 21 s		14 h 20 m		0 h 49 m		23 h 30 m		13 h 21 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Antares	-Rigel Kent	-Hadar	-Arcturus	-Spica	-Venus	-Mars	+Regulus
0	159°55.1'	N 14°20.1'	11.5'	-12.3'	57.2'	95°23.1'	89°31.4'	85°42.7'	53°03.1'	49°33.2'	18°03.2'		
1	174°25.6'	N 14°07.8'	11.5'	-12.4'	57.3'	94°49.9'	89°07.0'	85°19.2'	52°35.8'	49°00.1'	17°33.6'		
2	188°56.1'	N 13°55.4'	11.6'	-12.5'	57.3'	94°16.6'	88°42.7'	84°55.8'	52°08.5'	48°27.0'	17°04.0'		
3	203°26.7'	N 13°43.0'	11.6'	-12.5'	57.3'	93°43.3'	88°18.3'	84°32.3'	51°41.3'	47°53.9'	16°34.4'		8°01.1'
4	217°57.2'	N 13°30.4'	11.6'	-12.6'	57.3'	93°10.0'	87°54.0'	84°08.9'	51°14.2'	47°20.7'	16°04.9'		8°29.0'
5	232°27.9'	N 13°17.8'	11.7'	-12.7'	57.3'	92°36.6'	87°29.6'	83°45.4'	50°47.1'	46°47.6'	15°35.4'		8°57.6'
6	246°58.5'	N 13°05.1'	11.7'	-12.8'	57.4'	92°03.3'	87°05.2'	83°22.0'	50°20.2'	46°14.4'	15°05.9'		9°26.7'
7	261°29.2'	N 12°52.4'	11.7'	-12.8'	57.4'	91°29.9'	86°40.8'	82°58.5'	49°53.3'	45°41.2'	14°36.5'		9°56.3'
8	275°59.9'	N 12°39.6'	11.8'	-12.9'	57.4'	90°56.5'	86°16.4'	82°35.1'	49°26.4'	45°08.0'	14°07.2'		10°26.3'
9	290°30.7'	N 12°26.6'	11.8'	-13.0'	57.4'	90°23.0'	85°51.9'	82°11.7'	48°59.7'	44°34.8'	13°37.9'		10°56.6'
10	305°01.5'	N 12°13.7'	11.8'	-13.0'	57.4'	89°49.6'	85°27.5'	81°48.2'	48°33.0'	44°01.6'	13°08.6'		11°27.3'
11	319°32.3'	N 12°00.6'	11.9'	-13.1'	57.5'	89°16.1'	85°03.1'	81°24.8'	48°06.5'	43°28.4'	12°39.5'		11°58.2'
12	334°03.2'	N 11°47.5'	11.9'	-13.2'	57.5'	88°42.6'	84°38.7'	81°01.4'	47°40.0'	42°55.1'	12°10.5'		12°29.4'
13	348°34.1'	N 11°34.3'	11.9'	-13.2'	57.5'	88°09.1'	84°14.2'	80°38.0'	47°13.7'	42°21.8'	11°41.5'		13°00.8'
14	3°05.0'	N 11°21.1'	11.9'	-13.3'	57.5'	87°35.5'	83°49.8'	80°14.6'	46°47.4'	41°48.5'	11°12.7'		13°32.4'
15	17°35.9'	N 11°07.8'	12.0'	-13.4'	57.5'	87°02.0'	83°25.4'	79°51.3'	46°21.2'	41°15.2'	10°44.1'	7°13.6'	14°04.2'
16	32°06.9'	N 10°54.4'	12.0'	-13.4'	57.6'	86°28.4'	83°00.9'	79°27.9'	45°55.2'	40°41.9'	10°15.6'	7°40.7'	14°36.1'
17	46°37.9'	N 10°41.0'	12.0'	-13.5'	57.6'	85°54.8'	82°36.5'	79°04.6'	45°29.2'	40°08.6'	9°47.3'	8°08.4'	15°08.2'
18	61°08.9'	N 10°27.5'	12.0'	-13.6'	57.6'	85°21.1'	82°12.1'	78°41.3'	45°03.4'	39°35.2'	9°19.2'	8°36.6'	15°40.4'
19	75°39.9'	N 10°13.9'	12.1'	-13.6'	57.6'	84°47.5'	81°47.7'	78°18.0'	44°37.7'	39°01.9'	8°51.5'	9°05.3'	16°12.7'
20	90°11.0'	N 10°00.3'	12.1'	-13.7'	57.6'	84°13.8'	81°23.2'	77°54.7'	44°12.1'	38°28.5'	8°24.0'	9°34.3'	16°45.1'
21	104°42.1'	N 9°46.6'	12.1'	-13.7'	57.7'	83°40.1'	80°58.8'	77°31.4'	43°46.7'	37°55.1'	7°57.0'	10°03.7'	17°17.7'
22	119°13.2'	N 9°32.9'	12.1'	-13.8'	57.7'	83°06.4'	80°34.5'	77°08.2'	43°21.4'	37°21.7'	7°30.4'	10°33.4'	17°50.3'
23	133°44.4'	N 9°19.1'	12.2'	-13.8'	57.7'	82°32.7'	80°10.1'	76°45.0'	42°56.2'	36°48.4'	7°04.3'	11°03.3'	18°23.0'
Mer. pass.		13 h 47 m SD 15.6'		phase 2%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.3'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.3'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.6'	S 63°13.2'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°02.3'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°21.1'	N 27°58.5'	Aldebaran	+0.9	290°42.9'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.8'	Procyon	+0.4	244°54.1'	N 5°10.3'	Polaris	+2.0	315°18.3'	N 89°20.9'
Rigel Kent	-0.0	139°44.1'	S 60°55.6'	Adhara	+1.5	255°08.4'	S 28°59.9'	Achernar	+0.5	335°22.1'	S 57°07.4'
Arcturus	-0.1	145°50.5'	N 19°04.5'	Sirius	-1.4	258°29.0'	S 16°44.6'				
Hadar	+0.6	148°40.0'	S 60°28.7'	Canopus	-0.6	263°54.0'	S 52°42.2'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	319°40.7'	178°41.2'	N 15°15.8'	144°56.5'	N 3°18.8'		348°42.4'	S 13°07.3'		7°28.8'	S 18°37.5'		159°57.6'	N 9°39.7'				
1	334°43.2'	193°41.3'	N 15°15.0'	159°56.3'	N 3°17.5'		3°45.2'	S 13°07.4'		22°31.4'	S 18°37.6'		174°58.6'	N 9°39.1'				
2	349°45.7'	208°41.4'	N 15°14.3'	174°56.1'	N 3°16.3'		18°48.0'	S 13°07.6'		37°34.1'	S 18°37.6'		189°59.6'	N 9°38.5'				
3	4°48.1'	223°41.5'	N 15°13.5'	189°55.8'	N 3°15.0'		33°50.7'	S 13°07.7'		52°36.7'	S 18°37.7'		205°00.5'	N 9°37.9'				
4	19°50.6'	238°41.6'	N 15°12.8'	204°55.6'	N 3°13.7'		48°53.5'	S 13°07.8'		67°39.4'	S 18°37.7'		220°01.5'	N 9°37.3'				
5	34°53.0'	253°41.7'	N 15°12.0'	219°55.4'	N 3°12.4'		63°56.3'	S 13°07.9'		82°42.0'	S 18°37.8'		235°02.5'	N 9°36.7'				
6	49°55.5'	268°41.8'	N 15°11.3'	234°55.2'	N 3°11.2'		78°59.0'	S 13°08.0'		97°44.7'	S 18°37.8'		250°03.5'	N 9°36.1'				
7	64°58.0'	283°41.9'	N 15°10.6'	249°55.0'	N 3°09.9'		94°01.8'	S 13°08.1'		112°47.3'	S 18°37.9'		265°04.5'	N 9°35.5'				
8	80°00.4'	298°42.0'	N 15°09.8'	264°54.7'	N 3°08.6'		109°04.6'	S 13°08.3'		127°50.0'	S 18°37.9'		280°05.5'	N 9°34.9'				
9	95°02.9'	313°42.1'	N 15°09.1'	279°54.5'	N 3°07.3'		124°07.3'	S 13°08.4'		142°52.6'	S 18°38.0'		295°06.4'	N 9°34.3'				
10	110°05.4'	328°42.2'	N 15°08.3'	294°54.3'	N 3°06.1'		139°10.1'	S 13°08.5'		157°55.3'	S 18°38.0'		310°07.4'	N 9°33.7'				
11	125°07.8'	343°42.3'	N 15°07.6'	309°54.1'	N 3°04.8'		154°12.9'	S 13°08.6'		172°57.9'	S 18°38.1'		325°08.4'	N 9°33.1'				
12	140°10.3'	358°42.4'	N 15°06.8'	324°53.9'	N 3°03.5'		169°15.6'	S 13°08.7'		188°00.6'	S 18°38.1'		340°09.4'	N 9°32.5'				
13	155°12.8'	13°42.5'	N 15°06.1'	339°53.6'	N 3°02.2'		184°18.4'	S 13°08.8'		203°03.2'	S 18°38.2'		355°10.4'	N 9°31.9'				
14	170°15.2'	28°42.6'	N 15°05.3'	354°53.4'	N 3°01.0'		199°21.2'	S 13°09.0'		218°05.9'	S 18°38.2'		10°11.4'	N 9°31.2'				
15	185°17.7'	43°42.7'	N 15°04.6'	9°53.2'	N 2°59.7'		214°24.0'	S 13°09.1'		233°08.5'	S 18°38.3'		25°12.4'	N 9°30.6'				
16	200°20.2'	58°42.8'	N 15°03.8'	24°53.0'	N 2°58.4'		229°26.7'	S 13°09.2'		248°11.2'	S 18°38.3'		40°13.3'	N 9°30.0'				
17	215°22.6'	73°42.9'	N 15°03.1'	39°52.8'	N 2°57.1'		244°29.5'	S 13°09.3'		263°13.8'	S 18°38.4'		55°14.3'	N 9°29.4'				
18	230°25.1'	88°43.0'	N 15°02.3'	54°52.5'	N 2°55.9'		259°32.3'	S 13°09.4'		278°16.5'	S 18°38.4'		70°15.3'	N 9°28.8'				
19	245°27.5'	103°43.1'	N 15°01.6'	69°52.3'	N 2°54.6'		274°35.0'	S 13°09.5'		293°19.1'	S 18°38.5'		85°16.3'	N 9°28.2'				
20	260°30.0'	118°43.2'	N 15°00.8'	84°52.1'	N 2°53.3'		289°37.8'	S 13°09.7'		308°21.8'	S 18°38.5'		100°17.3'	N 9°27.6'				
21	275°32.5'	133°43.3'	N 15°00.1'	99°51.9'	N 2°52.0'		304°40.6'	S 13°09.8'		323°24.4'	S 18°38.6'		115°18.3'	N 9°27.0'				
22	290°34.9'	148°43.4'	N 14°59.3'	114°51.7'	N 2°50.7'		319°43.3'	S 13°09.9'		338°27.1'	S 18°38.6'		130°19.2'	N 9°26.4'				
23	305°37.4'	163°43.5'	N 14°58.6'	129°51.4'	N 2°49.5'		334°46.1'	S 13°10.0'		353°29.7'	S 18°38.7'		145°20.2'	N 9°25.8'				
		SD 15.8' <i>d</i> -0.7'		<i>v</i> -0.2' <i>d</i> -1.3'			<i>v</i> 2.8' <i>d</i> -0.1'			<i>v</i> 2.6' <i>d</i> -0.1'			<i>v</i> 1.0' <i>d</i> -0.6'					
Mer. pass.		12 h 5 m 12 s		14 h 20 m			0 h 45 m			23 h 26 m			13 h 19 m					

h	Moon					Lunar distance							
	GHA	dec	<i>v</i>	<i>d</i>	HP	-Altair	-Acrux	-Arcturus	-Spica	-Venus	+Mars	+Regulus	+Sun
0	148°15.5'	N 9°05.3'	12.2'	-13.9'	57.7'		73°16.8'	42°31.2'	36°14.9'		11°33.5'	18°55.8'	
1	162°46.7'	N 8°51.4'	12.2'	-13.9'	57.7'		72°59.2'	42°06.3'	35°41.5'		12°03.8'	19°28.7'	
2	177°18.0'	N 8°37.4'	12.2'	-14.0'	57.8'		72°41.7'	41°41.6'	35°08.1'		12°34.4'	20°01.7'	
3	191°49.2'	N 8°23.4'	12.3'	-14.0'	57.8'		72°24.2'	41°17.1'	34°34.7'		13°05.1'	20°34.7'	
4	206°20.4'	N 8°09.4'	12.3'	-14.1'	57.8'		72°06.8'	40°52.7'	34°01.3'		13°35.9'	21°07.8'	
5	220°51.7'	N 7°55.3'	12.3'	-14.1'	57.8'		71°49.4'	40°28.5'	33°27.8'		14°06.9'	21°41.0'	
6	235°23.0'	N 7°41.1'	12.3'	-14.2'	57.8'		71°32.1'	40°04.5'	32°54.4'		14°38.0'	22°14.2'	
7	249°54.3'	N 7°26.9'	12.3'	-14.2'	57.9'		71°14.9'	39°40.6'	32°20.9'		15°09.2'	22°47.4'	
8	264°25.6'	N 7°12.7'	12.3'	-14.3'	57.9'		70°57.8'	39°17.0'	31°47.5'		15°40.5'	23°20.7'	
9	278°56.9'	N 6°58.4'	12.3'	-14.3'	57.9'	119°55.1'	70°40.8'	38°53.5'	31°14.0'		16°11.8'	23°54.1'	
10	293°28.3'	N 6°44.1'	12.4'	-14.4'	57.9'	119°28.8'	70°23.8'	38°30.3'	30°40.6'		16°43.3'	24°27.5'	
11	307°59.7'	N 6°29.8'	12.4'	-14.4'	57.9'	119°02.3'	70°06.9'	38°07.3'	30°07.2'		17°14.9'	25°01.0'	
12	322°31.0'	N 6°15.4'	12.4'	-14.4'	57.9'	118°35.8'	69°50.1'	37°44.5'	29°33.7'		17°46.5'	25°34.5'	
13	337°02.4'	N 6°00.9'	12.4'	-14.5'	58.0'	118°09.1'	69°33.3'	37°21.9'	29°00.3'		18°18.2'	26°08.0'	
14	351°33.8'	N 5°46.4'	12.4'	-14.5'	58.0'	117°42.4'	69°16.7'	36°59.6'	28°26.8'		18°49.9'	26°41.6'	
15	6°05.2'	N 5°31.9'	12.4'	-14.5'	58.0'	117°15.6'	69°00.2'	36°37.6'	27°53.4'		19°21.7'	27°15.2'	
16	20°36.6'	N 5°17.4'	12.4'	-14.6'	58.0'	116°48.7'	68°43.7'	36°15.7'	27°20.0'		19°53.6'	27°48.9'	
17	35°08.1'	N 5°02.8'	12.4'	-14.6'	58.0'	116°21.8'	68°27.3'	35°54.2'	26°46.6'		20°25.5'	28°22.6'	
18	49°39.5'	N 4°48.2'	12.4'	-14.6'	58.1'	115°54.7'	68°11.1'	35°32.9'	26°13.2'		20°57.5'	28°56.3'	
19	64°10.9'	N 4°33.5'	12.4'	-14.7'	58.1'	115°27.6'	67°54.9'	35°11.9'	25°39.8'		21°29.5'	29°30.1'	40°15.7'
20	78°42.4'	N 4°18.9'	12.4'	-14.7'	58.1'	115°00.4'	67°38.8'	34°51.2'	25°06.5'		22°01.6'	30°03.9'	40°47.3'
21	93°13.8'	N 4°04.2'	12.4'	-14.7'	58.1'	114°33.2'	67°22.8'	34°30.8'	24°33.1'		22°33.7'	30°37.7'	41°18.8'
22	107°45.3'	N 3°49.4'	12.5'	-14.8'	58.1'	114°05.9'	67°06.9'	34°10.7'	23°59.8'	7°09.7'	23°05.8'	31°11.6'	41°50.5'
23	122°16.7'	N 3°34.7'	12.5'	-14.8'	58.1'	113°38.5'	66°51.2'	33°51.0'	23°26.5'	7°36.3'	23°38.0'	31°45.5'	42°22.1'
Mer. pass.		14 h 35 m SD 15.7'		phase 7%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.3'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.3'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.6'	S 63°13.2'	Capella	+0.1	280°26.2'	N 46°01.0'
Altair	+0.8	62°02.3'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°21.1'	N 27°58.5'	Aldebaran	+0.9	290°42.9'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.8'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°17.9'	N 89°20.9'
Rigil Kent	-0.0	139°44.2'	S 60°55.6'	Adhara	+1.5	255°08.4'	S 28°59.9'	Achernar	+0.5	335°22.1'	S 57°07.4'
Arcturus	-0.1	145°50.5'	N 19°04.5'	Sirius	-1.4	258°29.0'	S 16°44.6'				
Hadar	+0.6	148°40.1'	S 60°28.7'	Canopus	-0.6	263°54.0'	S 52°42.2'				

Thursday 12 August 2021 UT1

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	320°39.9'	178°43.6'	N 14°57.8'	144°51.2'	N 2°48.2'		349°48.9'	S 13°10.1'		8°32.3'	S 18°38.7'		160°21.2'	N 9°25.2'				
1	335°42.3'	193°43.7'	N 14°57.1'	159°51.0'	N 2°46.9'		4°51.7'	S 13°10.2'		23°35.0'	S 18°38.8'		175°22.2'	N 9°24.6'				
2	350°44.8'	208°43.8'	N 14°56.3'	174°50.8'	N 2°45.6'		19°54.4'	S 13°10.4'		38°37.6'	S 18°38.8'		190°23.2'	N 9°24.0'				
3	5°47.3'	223°43.9'	N 14°55.6'	189°50.6'	N 2°44.4'		34°57.2'	S 13°10.5'		53°40.3'	S 18°38.9'		205°24.2'	N 9°23.4'				
4	20°49.7'	238°44.0'	N 14°54.8'	204°50.4'	N 2°43.1'		49°60.0'	S 13°10.6'		68°42.9'	S 18°38.9'		220°25.1'	N 9°22.8'				
5	35°52.2'	253°44.1'	N 14°54.1'	219°50.1'	N 2°41.8'		65°02.7'	S 13°10.7'		83°45.6'	S 18°39.0'		235°26.1'	N 9°22.2'				
6	50°54.6'	268°44.2'	N 14°53.3'	234°49.9'	N 2°40.5'		80°05.5'	S 13°10.8'		98°48.2'	S 18°39.0'		250°27.1'	N 9°21.6'				
7	65°57.1'	283°44.3'	N 14°52.6'	249°49.7'	N 2°39.2'		95°08.3'	S 13°10.9'		113°50.9'	S 18°39.1'		265°28.1'	N 9°21.0'				
8	80°59.6'	298°44.5'	N 14°51.8'	264°49.5'	N 2°38.0'		110°11.1'	S 13°11.1'		128°53.5'	S 18°39.1'		280°29.1'	N 9°20.4'				
9	96°02.0'	313°44.6'	N 14°51.1'	279°49.3'	N 2°36.7'		125°13.8'	S 13°11.2'		143°56.2'	S 18°39.2'		295°30.1'	N 9°19.8'				
10	111°04.5'	328°44.7'	N 14°50.3'	294°49.1'	N 2°35.4'		140°16.6'	S 13°11.3'		158°58.8'	S 18°39.3'		310°31.1'	N 9°19.1'				
11	126°07.0'	343°44.8'	N 14°49.5'	309°48.8'	N 2°34.1'		155°19.4'	S 13°11.4'		174°01.5'	S 18°39.3'		325°32.0'	N 9°18.5'				
12	141°09.4'	358°44.9'	N 14°48.8'	324°48.6'	N 2°32.9'		170°22.1'	S 13°11.5'		189°04.1'	S 18°39.4'		340°33.0'	N 9°17.9'				
13	156°11.9'	13°45.0'	N 14°48.0'	339°48.4'	N 2°31.6'		185°24.9'	S 13°11.6'		204°06.8'	S 18°39.4'		355°34.0'	N 9°17.3'				
14	171°14.4'	28°45.1'	N 14°47.3'	354°48.2'	N 2°30.3'		200°27.7'	S 13°11.8'		219°09.4'	S 18°39.5'		10°35.0'	N 9°16.7'				
15	186°16.8'	43°45.2'	N 14°46.5'	9°48.0'	N 2°29.0'		215°30.5'	S 13°11.9'		234°12.1'	S 18°39.5'		25°36.0'	N 9°16.1'				
16	201°19.3'	58°45.3'	N 14°45.8'	24°47.8'	N 2°27.7'		230°33.2'	S 13°12.0'		249°14.7'	S 18°39.6'		40°37.0'	N 9°15.5'				
17	216°21.8'	73°45.4'	N 14°45.0'	39°47.6'	N 2°26.5'		245°36.0'	S 13°12.1'		264°17.4'	S 18°39.6'		55°38.0'	N 9°14.9'				
18	231°24.2'	88°45.5'	N 14°44.2'	54°47.3'	N 2°25.2'		260°38.8'	S 13°12.2'		279°20.0'	S 18°39.7'		70°38.9'	N 9°14.3'				
19	246°26.7'	103°45.6'	N 14°43.5'	69°47.1'	N 2°23.9'		275°41.5'	S 13°12.4'		294°22.7'	S 18°39.7'		85°39.9'	N 9°13.7'				
20	261°29.1'	118°45.8'	N 14°42.7'	84°46.9'	N 2°22.6'		290°44.3'	S 13°12.5'		309°25.3'	S 18°39.8'		100°40.9'	N 9°13.1'				
21	276°31.6'	133°45.9'	N 14°42.0'	99°46.7'	N 2°21.3'		305°47.1'	S 13°12.6'		324°27.9'	S 18°39.8'		115°41.9'	N 9°12.5'				
22	291°34.1'	148°46.0'	N 14°41.2'	114°46.5'	N 2°20.1'		320°49.9'	S 13°12.7'		339°30.6'	S 18°39.9'		130°42.9'	N 9°11.9'				
23	306°36.5'	163°46.1'	N 14°40.4'	129°46.3'	N 2°18.8'		335°52.6'	S 13°12.8'		354°33.2'	S 18°39.9'		145°43.9'	N 9°11.3'				
		SD 15.8' <i>d</i> -0.8'		<i>v</i> -0.2' <i>d</i> -1.3'			<i>v</i> 2.8' <i>d</i> -0.1'			<i>v</i> 2.6' <i>d</i> -0.1'			<i>v</i> 1.0' <i>d</i> -0.6'					
Mer. pass.		12 h 5 m 1 s		14 h 21 m			0 h 41 m			23 h 22 m			13 h 18 m					

h	Moon				Lunar distance								
	GHA	dec	<i>v</i>	<i>d</i>	HP	-Hadar	-Acrux	-Arcturus	-Spica	+Venus	+Mars	+Regulus	+Sun
0	136°48.2'	N 3°19.9'	12.5'	-14.8'	58.2'	67°18.1'	66°35.5'	33°31.6'	22°53.3'	8°03.4'	24°10.3'	32°19.4'	42°53.8'
1	151°19.6'	N 3°05.1'	12.5'	-14.8'	58.2'	66°56.2'	66°20.0'	33°12.5'	22°20.0'	8°31.1'	24°42.5'	32°53.3'	43°25.4'
2	165°51.1'	N 2°50.2'	12.4'	-14.9'	58.2'	66°34.3'	66°04.5'	32°53.7'	21°46.8'	8°59.1'	25°14.8'	33°27.3'	43°57.2'
3	180°22.5'	N 2°35.4'	12.4'	-14.9'	58.2'	66°12.5'	65°49.2'	32°35.4'	21°13.7'	9°27.5'	25°47.2'	34°01.3'	44°28.9'
4	194°54.0'	N 2°20.5'	12.4'	-14.9'	58.2'	65°50.8'	65°34.0'	32°17.4'	20°40.6'	9°56.2'	26°19.6'	34°35.4'	45°00.6'
5	209°25.4'	N 2°05.6'	12.4'	-14.9'	58.2'	65°29.2'		31°59.8'	20°07.5'	10°25.2'	26°52.0'	35°09.4'	45°32.4'
6	223°56.8'	N 1°50.7'	12.4'	-14.9'	58.3'	65°07.7'		31°42.6'	19°34.5'	10°54.5'	27°24.4'	35°43.5'	46°04.2'
7	238°28.3'	N 1°35.8'	12.4'	-14.9'	58.3'	64°46.2'		31°25.9'	19°01.6'	11°23.9'	27°56.9'	36°17.6'	46°36.0'
8	252°59.7'	N 1°20.9'	12.4'	-15.0'	58.3'	64°24.9'		31°09.5'	18°28.8'	11°53.5'	28°29.4'	36°51.8'	47°07.8'
9	267°31.1'	N 1°05.9'	12.4'	-15.0'	58.3'	64°03.6'		30°53.6'	17°56.0'	12°23.3'	29°01.9'	37°25.9'	47°39.7'
10	282°02.5'	N 0°50.9'	12.4'	-15.0'	58.3'	63°42.5'			17°23.3'	12°53.3'	29°34.4'	38°00.1'	48°11.5'
11	296°33.9'	N 0°36.0'	12.4'	-15.0'	58.3'	63°21.4'			16°50.7'	13°23.3'	30°07.0'	38°34.3'	48°43.4'
12	311°05.3'	N 0°21.0'	12.4'	-15.0'	58.3'	63°00.4'			16°18.2'	13°53.5'	30°39.6'	39°08.5'	49°15.3'
13	325°36.7'	N 0°06.0'	12.4'	-15.0'	58.4'	62°39.5'			15°45.9'	14°23.8'	31°12.2'	39°42.8'	49°47.2'
14	340°08.0'	S 0°09.0'	12.3'	-15.0'	58.4'	62°18.8'			15°13.7'	14°54.2'	31°44.9'	40°17.1'	50°19.2'
15	354°39.4'	S 0°24.0'	12.3'	-15.0'	58.4'	61°58.1'			14°41.6'	15°24.7'	32°17.6'	40°51.4'	50°51.1'
16	9°10.7'	S 0°39.1'	12.3'	-15.0'	58.4'	61°37.6'			14°09.7'	15°55.3'	32°50.3'	41°25.1'	51°23.1'
17	23°42.0'	S 0°54.1'	12.3'	-15.0'	58.4'	61°17.1'			13°38.1'	16°25.9'	33°23.0'	42°00.5'	51°55.1'
18	38°13.3'	S 1°09.1'	12.3'	-15.0'	58.4'	60°56.8'			13°06.6'	16°56.7'	33°55.8'	42°43.9'	52°27.1'
19	52°44.6'	S 1°24.1'	12.3'	-15.0'	58.5'	60°36.6'			12°35.4'	17°27.5'	34°28.5'	43°29.2'	52°59.1'
20	67°15.8'	S 1°39.2'	12.2'	-15.0'	58.5'	60°16.5'			12°04.5'	17°58.3'	35°01.3'	44°14.2'	53°31.2'
21	81°47.0'	S 1°54.2'	12.2'	-15.0'	58.5'	59°56.6'			11°33.9'	18°29.2'	35°34.1'	45°00.3'	54°03.3'
22	96°18.3'	S 2°09.2'	12.2'	-15.0'	58.5'	59°36.7'			11°03.7'	19°00.2'	36°07.0'	45°51.5'	54°35.3'
23	110°49.4'	S 2°24.2'	12.2'	-15.0'	58.5'	59°17.0'			10°34.0'	19°31.2'	36°39.8'	46°43.7'	55°07.4'
Mer. pass.		15 h 22 m SD 15.9'	phase 13%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.3'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.3'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.6'	S 63°13.2'	Capella	+0.1	280°26.2'	N 46°01.0'
Altair	+0.8	62°02.3'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°21.1'	N 27°58.5'	Aldebaran	+0.9	290°42.9'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.8'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°17.4'	N 89°20.9'
Rigil Kent	-0.0	139°44.2'	S 60°55.6'	Adhara	+1.5	255°08.4'	S 28°59.9'	Achernar	+0.5	335°22.1'	S 57°07.4'
Arcturus	-0.1	145°50.6'	N 19°04.5'	Sirius	-1.4	258°29.0'	S 16°44.6'				
Hadar	+0.6	148°40.1'	S 60°28.7'	Canopus	-0.6	263°54.0'	S 52°42.2'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	321°39.0'	178°46.2'	N 14°39.7'	144°46.1'	N 2°17.5'	350°55.4'	S 13°12.9'	9°35.9'	S 18°40.0'	160°44.9'	N 9°10.7'			
1	336°41.5'	193°46.3'	N 14°38.9'	159°45.8'	N 2°16.2'	5°58.2'	S 13°13.1'	24°38.5'	S 18°40.0'	175°45.8'	N 9°10.0'			
2	351°43.9'	208°46.4'	N 14°38.2'	174°45.6'	N 2°14.9'	21°00.9'	S 13°13.2'	39°41.2'	S 18°40.1'	190°46.8'	N 9°09.4'			
3	6°46.4'	223°46.5'	N 14°37.4'	189°45.4'	N 2°13.7'	36°03.7'	S 13°13.3'	54°43.8'	S 18°40.1'	205°47.8'	N 9°08.8'			
4	21°48.9'	238°46.6'	N 14°36.6'	204°45.2'	N 2°12.4'	51°06.5'	S 13°13.4'	69°46.5'	S 18°40.2'	220°48.8'	N 9°08.2'			
5	36°51.3'	253°46.8'	N 14°35.9'	219°45.0'	N 2°11.1'	66°09.3'	S 13°13.5'	84°49.1'	S 18°40.2'	235°49.8'	N 9°07.6'			
6	51°53.8'	268°46.9'	N 14°35.1'	234°44.8'	N 2°09.8'	81°12.0'	S 13°13.6'	99°51.8'	S 18°40.3'	250°50.8'	N 9°07.0'			
7	66°56.2'	283°47.0'	N 14°34.3'	249°44.6'	N 2°08.5'	96°14.8'	S 13°13.8'	114°54.4'	S 18°40.3'	265°51.8'	N 9°06.4'			
8	81°58.7'	298°47.1'	N 14°33.6'	264°44.4'	N 2°07.3'	111°17.6'	S 13°13.9'	129°57.1'	S 18°40.4'	280°52.7'	N 9°05.8'			
9	97°01.2'	313°47.2'	N 14°32.8'	279°44.2'	N 2°06.0'	126°20.4'	S 13°14.0'	144°59.7'	S 18°40.4'	295°53.7'	N 9°05.2'			
10	112°03.6'	328°47.3'	N 14°32.0'	294°43.9'	N 2°04.7'	141°23.1'	S 13°14.1'	160°02.4'	S 18°40.5'	310°54.7'	N 9°04.6'			
11	127°06.1'	343°47.4'	N 14°31.3'	309°43.7'	N 2°03.4'	156°25.9'	S 13°14.2'	175°05.0'	S 18°40.5'	325°55.7'	N 9°04.0'			
12	142°08.6'	358°47.5'	N 14°30.5'	324°43.5'	N 2°02.1'	171°28.7'	S 13°14.3'	190°07.6'	S 18°40.6'	340°56.7'	N 9°03.4'			
13	157°11.0'	13°47.7'	N 14°29.7'	339°43.3'	N 2°00.8'	186°31.4'	S 13°14.5'	205°10.3'	S 18°40.6'	355°57.7'	N 9°02.7'			
14	172°13.5'	28°47.8'	N 14°29.0'	354°43.1'	N 1°59.6'	201°34.2'	S 13°14.6'	220°12.9'	S 18°40.7'	10°58.7'	N 9°02.1'			
15	187°16.0'	43°47.9'	N 14°28.2'	9°42.9'	N 1°58.3'	216°37.0'	S 13°14.7'	235°15.6'	S 18°40.7'	25°59.6'	N 9°01.5'			
16	202°18.4'	58°48.0'	N 14°27.4'	24°42.7'	N 1°57.0'	231°39.8'	S 13°14.8'	250°18.2'	S 18°40.8'	41°00.6'	N 9°00.9'			
17	217°20.9'	73°48.1'	N 14°26.7'	39°42.5'	N 1°55.7'	246°42.5'	S 13°14.9'	265°20.9'	S 18°40.8'	56°01.6'	N 9°00.3'			
18	232°23.4'	88°48.2'	N 14°25.9'	54°42.3'	N 1°54.4'	261°45.3'	S 13°15.1'	280°23.5'	S 18°40.9'	71°02.6'	N 8°59.7'			
19	247°25.8'	103°48.3'	N 14°25.1'	69°42.1'	N 1°53.2'	276°48.1'	S 13°15.2'	295°26.2'	S 18°40.9'	86°03.6'	N 8°59.1'			
20	262°28.3'	118°48.5'	N 14°24.4'	84°41.8'	N 1°51.9'	291°50.9'	S 13°15.3'	310°28.8'	S 18°41.0'	101°04.6'	N 8°58.5'			
21	277°30.7'	133°48.6'	N 14°23.6'	99°41.6'	N 1°50.6'	306°53.6'	S 13°15.4'	325°31.5'	S 18°41.0'	116°05.6'	N 8°57.9'			
22	292°33.2'	148°48.7'	N 14°22.8'	114°41.4'	N 1°49.3'	321°56.4'	S 13°15.5'	340°34.1'	S 18°41.1'	131°06.6'	N 8°57.3'			
23	307°35.7'	163°48.8'	N 14°22.1'	129°41.2'	N 1°48.0'	336°59.2'	S 13°15.6'	355°36.8'	S 18°41.1'	146°07.5'	N 8°56.7'			
		SD 15.8' d -0.8'		v -0.2' d -1.3'		v 2.8' d -0.1'		v 2.6' d -0.1'		v 1.0' d -0.6'				
Mer. pass.		12 h 4 m 51 s		14 h 21 m		0 h 36 m		23 h 18 m		13 h 16 m				

h	Moon					Lunar distance								
	GHA	dec	v	d	HP	-Jupiter	-Rigil Kent	-Hadar	-Antares	-Spica	+Venus	+Mars	+Sun	
0	125°20.6'	S 2°39.2'	12.1'	-15.0'	58.5'			61°03.0'	58°57.5'	54°38.1'	10°04.7'	20°02.3'	37°12.7'	55°39.5'
1	139°51.7'	S 2°54.2'	12.1'	-15.0'	58.5'			60°41.3'	58°38.0'	54°03.6'	9°36.1'	20°33.4'	37°45.6'	56°11.7'
2	154°22.9'	S 3°09.2'	12.1'	-15.0'	58.6'			60°19.8'	58°18.7'	53°29.0'	9°08.1'	21°04.5'	38°18.5'	56°43.8'
3	168°53.9'	S 3°24.2'	12.1'	-15.0'	58.6'			59°58.4'	57°59.6'	52°54.4'		21°35.7'	38°51.5'	57°16.0'
4	183°25.0'	S 3°39.2'	12.0'	-15.0'	58.6'			59°37.2'	57°40.6'	52°19.8'		22°07.0'	39°24.4'	57°48.2'
5	197°56.0'	S 3°54.1'	12.0'	-14.9'	58.6'			59°16.0'	57°21.7'	51°45.2'		22°38.2'	39°57.4'	58°20.3'
6	212°27.0'	S 4°09.1'	12.0'	-14.9'	58.6'			58°55.0'	57°03.0'	51°10.6'		23°09.5'	40°30.4'	58°52.6'
7	226°58.0'	S 4°24.0'	11.9'	-14.9'	58.6'			58°34.1'	56°44.4'	50°36.0'		23°40.9'	41°03.4'	59°24.8'
8	241°28.9'	S 4°38.9'	11.9'	-14.9'	58.6'			58°13.3'	56°26.1'	50°01.4'		24°12.3'	41°36.4'	59°57.0'
9	255°59.8'	S 4°53.8'	11.9'	-14.9'	58.6'			57°52.7'	56°07.8'	49°26.7'		24°43.7'	42°09.4'	60°29.3'
10	270°30.7'	S 5°08.7'	11.8'	-14.9'	58.7'			57°32.2'	55°49.8'	48°52.1'		25°15.1'	42°42.5'	61°01.5'
11	285°01.5'	S 5°23.6'	11.8'	-14.8'	58.7'			57°11.8'	55°31.9'	48°17.4'		25°46.6'	43°15.6'	61°33.8'
12	299°32.3'	S 5°38.4'	11.7'	-14.8'	58.7'			56°51.6'	55°14.1'	47°42.8'		26°18.1'	43°48.7'	62°06.1'
13	314°03.0'	S 5°53.2'	11.7'	-14.8'	58.7'			56°31.5'	54°56.6'	47°08.1'		26°49.6'	44°21.8'	62°38.4'
14	328°33.7'	S 6°08.0'	11.7'	-14.8'	58.7'			56°11.6'	54°39.2'	46°33.4'		27°21.1'	44°54.9'	63°10.8'
15	343°04.4'	S 6°22.8'	11.6'	-14.7'	58.7'			55°51.8'	54°22.0'	45°58.7'		27°52.7'	45°28.1'	63°43.1'
16	357°35.0'	S 6°37.5'	11.6'	-14.7'	58.7'			55°32.2'	54°05.0'	45°24.0'		28°24.3'	46°01.2'	64°15.4'
17	12°05.6'	S 6°52.2'	11.5'	-14.7'	58.7'			55°12.7'	53°48.2'	44°49.3'		28°55.9'	46°34.4'	64°47.8'
18	26°36.1'	S 7°06.9'	11.5'	-14.7'	58.8'			54°53.4'	53°31.6'	44°14.5'		29°27.6'	47°07.6'	65°20.2'
19	41°06.6'	S 7°21.6'	11.4'	-14.6'	58.8'			54°34.3'	53°15.2'	43°39.8'		29°59.2'	47°40.8'	65°52.6'
20	55°37.0'	S 7°36.2'	11.4'	-14.6'	58.8'			54°15.3'	52°59.0'	43°05.1'		30°30.9'	48°14.0'	66°25.0'
21	70°07.4'	S 7°50.8'	11.3'	-14.5'	58.8'	119°48.5'		53°56.5'	52°42.9'	42°30.3'		31°02.6'	48°47.2'	66°57.4'
22	84°37.8'	S 8°05.3'	11.3'	-14.5'	58.8'	119°13.3'		53°37.9'	52°27.1'	41°55.6'		31°34.4'	49°20.5'	67°29.8'
23	99°08.1'	S 8°19.8'	11.2'	-14.5'	58.8'	118°38.1'		53°19.5'	52°11.5'	41°20.8'		32°06.1'	49°53.7'	68°02.3'
Mer. pass.		16 h 10 m SD 16.0'		phase 22%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.3'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.3'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.6'	S 63°13.2'	Capella	+0.1	280°26.2'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°21.1'	N 27°58.5'	Aldebaran	+0.9	290°42.9'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.8'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°17.0'	N 89°20.9'
Rigil Kent	-0.0	139°44.2'	S 60°55.6'	Adhara	+1.5	255°08.3'	S 28°59.9'	Achernar	+0.5	335°22.1'	S 57°07.4'
Arcturus	-0.1	145°50.6'	N 19°04.5'	Sirius	-1.4	258°29.0'	S 16°44.6'				
Hadar	+0.6	148°40.1'	S 60°28.7'	Canopus	-0.6	263°54.0'	S 52°42.2'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	322°38.1'	178°48.9'	N 14°21.3'	144°41.0'	N 1°46.7'	352°02.0'	S 13°15.8'	10°39.4'	S 18°41.2'	161°08.5'	N 8°56.0'	
1	337°40.6'	193°49.0'	N 14°20.5'	159°40.8'	N 1°45.5'	7°04.7'	S 13°15.9'	25°42.1'	S 18°41.2'	176°09.5'	N 8°55.4'	
2	352°43.1'	208°49.2'	N 14°19.7'	174°40.6'	N 1°44.2'	22°07.5'	S 13°16.0'	40°44.7'	S 18°41.3'	191°10.5'	N 8°54.8'	
3	7°45.5'	223°49.3'	N 14°19.0'	189°40.4'	N 1°42.9'	37°10.3'	S 13°16.1'	55°47.3'	S 18°41.3'	206°11.5'	N 8°54.2'	
4	22°48.0'	238°49.4'	N 14°18.2'	204°40.2'	N 1°41.6'	52°13.1'	S 13°16.2'	70°50.0'	S 18°41.4'	221°12.5'	N 8°53.6'	
5	37°50.5'	253°49.5'	N 14°17.4'	219°40.0'	N 1°40.3'	67°15.8'	S 13°16.3'	85°52.6'	S 18°41.4'	236°13.5'	N 8°53.0'	
6	52°52.9'	268°49.6'	N 14°16.7'	234°39.8'	N 1°39.0'	82°18.6'	S 13°16.5'	100°55.3'	S 18°41.5'	251°14.4'	N 8°52.4'	
7	67°55.4'	283°49.8'	N 14°15.9'	249°39.6'	N 1°37.8'	97°21.4'	S 13°16.6'	115°57.9'	S 18°41.5'	266°15.4'	N 8°51.8'	
8	82°57.9'	298°49.9'	N 14°15.1'	264°39.3'	N 1°36.5'	112°24.2'	S 13°16.7'	131°00.6'	S 18°41.6'	281°16.4'	N 8°51.2'	
9	98°00.3'	313°50.0'	N 14°14.3'	279°39.1'	N 1°35.2'	127°26.9'	S 13°16.8'	146°03.2'	S 18°41.6'	296°17.4'	N 8°50.5'	
10	113°02.8'	328°50.1'	N 14°13.6'	294°38.9'	N 1°33.9'	142°29.7'	S 13°16.9'	161°05.9'	S 18°41.7'	311°18.4'	N 8°49.9'	
11	128°05.2'	343°50.2'	N 14°12.8'	309°38.7'	N 1°32.6'	157°32.5'	S 13°17.0'	176°08.5'	S 18°41.7'	326°19.4'	N 8°49.3'	
12	143°07.7'	358°50.3'	N 14°12.0'	324°38.5'	N 1°31.3'	172°35.3'	S 13°17.2'	191°11.2'	S 18°41.8'	341°20.4'	N 8°48.7'	
13	158°10.2'	13°50.5'	N 14°11.2'	339°38.3'	N 1°30.0'	187°38.0'	S 13°17.3'	206°13.8'	S 18°41.8'	356°21.4'	N 8°48.1'	
14	173°12.6'	28°50.6'	N 14°10.5'	354°38.1'	N 1°28.8'	202°40.8'	S 13°17.4'	221°16.4'	S 18°41.9'	11°22.3'	N 8°47.5'	
15	188°15.1'	43°50.7'	N 14°09.7'	9°37.9'	N 1°27.5'	217°43.6'	S 13°17.5'	236°19.1'	S 18°41.9'	26°23.3'	N 8°46.9'	
16	203°17.6'	58°50.8'	N 14°08.9'	24°37.7'	N 1°26.2'	232°46.4'	S 13°17.6'	251°21.7'	S 18°42.0'	41°24.3'	N 8°46.3'	
17	218°20.0'	73°50.9'	N 14°08.1'	39°37.5'	N 1°24.9'	247°49.1'	S 13°17.8'	266°24.4'	S 18°42.0'	56°25.3'	N 8°45.7'	
18	233°22.5'	88°51.1'	N 14°07.3'	54°37.3'	N 1°23.6'	262°51.9'	S 13°17.9'	281°27.0'	S 18°42.1'	71°26.3'	N 8°45.0'	
19	248°25.0'	103°51.2'	N 14°06.6'	69°37.1'	N 1°22.3'	277°54.7'	S 13°18.0'	296°29.7'	S 18°42.1'	86°27.3'	N 8°44.4'	
20	263°27.4'	118°51.3'	N 14°05.8'	84°36.9'	N 1°21.1'	292°57.5'	S 13°18.1'	311°32.3'	S 18°42.2'	101°28.3'	N 8°43.8'	
21	278°29.9'	133°51.4'	N 14°05.0'	99°36.7'	N 1°19.8'	308°00.2'	S 13°18.2'	326°35.0'	S 18°42.2'	116°29.3'	N 8°43.2'	
22	293°32.3'	148°51.6'	N 14°04.2'	114°36.5'	N 1°18.5'	323°03.0'	S 13°18.3'	341°37.6'	S 18°42.3'	131°30.2'	N 8°42.6'	
23	308°34.8'	163°51.7'	N 14°03.5'	129°36.3'	N 1°17.2'	338°05.8'	S 13°18.5'	356°40.3'	S 18°42.3'	146°31.2'	N 8°42.0'	
		SD 15.8' d -0.8'		v -0.2' d -1.3'		v 2.8' d -0.1'		v 2.6' d -0.1'		v 1.0' d -0.6'		
Mer. pass.		12 h 4 m 40 s		14 h 21 m		0 h 32 m		23 h 13 m		13 h 15 m		

h	Moon				HP	Lunar distance							
	GHA	dec	v	d		-Altair	-Rigil Kent	-Hadar	-Antares	+Spica	+Arcturus	+Venus	+Sun
0	113°38.3'	S 8°34.3'	11.2'	-14.4'	58.8'	90°18.8'	53°01.3'	51°56.2'	40°46.0'			32°37.9'	68°34.8'
1	128°08.5'	S 8°48.8'	11.1'	-14.4'	58.8'	89°49.5'	52°43.2'		40°11.3'			33°09.7'	69°07.2'
2	142°38.7'	S 9°03.2'	11.1'	-14.4'	58.9'	89°20.3'	52°25.4'		39°36.5'			33°41.5'	69°39.7'
3	157°08.7'	S 9°17.5'	11.0'	-14.3'	58.9'	88°51.0'	52°07.7'		39°01.7'			34°13.3'	70°12.2'
4	171°38.8'	S 9°31.8'	11.0'	-14.3'	58.9'	88°21.8'	51°50.3'		38°26.9'	9°34.7'		34°45.1'	70°44.7'
5	186°08.7'	S 9°46.1'	10.9'	-14.2'	58.9'	87°52.5'	51°33.0'		37°52.1'	10°03.6'		35°17.0'	71°17.2'
6	200°38.7'	S 10°00.3'	10.9'	-14.2'	58.9'	87°23.2'	51°16.0'		37°17.3'	10°33.2'		35°48.9'	71°49.8'
7	215°08.5'	S 10°14.5'	10.8'	-14.1'	58.9'	86°53.9'	50°59.2'		36°42.5'	11°03.3'		36°20.8'	72°22.3'
8	229°38.3'	S 10°28.6'	10.7'	-14.1'	58.9'	86°24.6'	50°42.6'		36°07.7'	11°33.8'		36°52.7'	72°54.9'
9	244°08.1'	S 10°42.6'	10.7'	-14.0'	58.9'	85°55.4'	50°26.2'		35°32.9'	12°04.8'		37°24.6'	73°27.4'
10	258°37.8'	S 10°56.7'	10.6'	-14.0'	58.9'	85°26.1'	50°10.0'		34°58.1'	12°36.2'		37°56.6'	74°00.0'
11	273°07.4'	S 11°10.6'	10.6'	-13.9'	58.9'	84°56.8'	49°54.1'		34°23.3'	13°07.8'	30°15.7'	38°28.5'	74°32.6'
12	287°36.9'	S 11°24.5'	10.5'	-13.8'	59.0'	84°27.5'	49°38.4'		33°48.4'	13°39.8'	30°30.8'	39°00.5'	75°05.2'
13	302°06.4'	S 11°38.4'	10.4'	-13.8'	59.0'	83°58.2'	49°23.0'		33°13.6'	14°12.0'	30°46.3'	39°32.5'	75°37.8'
14	316°35.9'	S 11°52.2'	10.4'	-13.7'	59.0'	83°28.9'			32°38.8'	14°44.4'	31°02.3'	40°04.5'	76°10.5'
15	331°05.2'	S 12°05.9'	10.3'	-13.7'	59.0'	82°59.6'			32°04.0'	15°17.1'	31°18.8'	40°36.5'	76°43.1'
16	345°34.5'	S 12°19.6'	10.2'	-13.6'	59.0'	82°30.4'			31°29.2'	15°49.9'	31°35.8'	41°08.6'	77°15.7'
17	0°03.8'	S 12°33.2'	10.2'	-13.5'	59.0'	82°01.1'			30°54.4'	16°22.9'	31°53.2'	41°40.6'	77°48.4'
18	14°32.9'	S 12°46.7'	10.1'	-13.5'	59.0'	81°31.8'			30°19.6'	16°56.1'	32°11.0'	42°12.7'	78°21.1'
19	29°02.0'	S 13°00.2'	10.0'	-13.4'	59.0'	81°02.6'			29°44.8'	17°29.4'	32°29.3'	42°44.7'	78°53.7'
20	43°31.0'	S 13°13.6'	10.0'	-13.3'	59.0'	80°33.3'			29°10.0'	18°02.8'	32°48.0'	43°16.8'	79°26.4'
21	57°60.0'	S 13°26.9'	9.9'	-13.3'	59.0'	80°04.1'			28°35.2'	18°36.3'	33°07.1'	43°48.9'	79°59.1'
22	72°28.9'	S 13°40.2'	9.8'	-13.2'	59.1'	79°34.9'			28°00.4'	19°10.0'	33°26.6'	44°21.0'	80°31.8'
23	86°57.7'	S 13°53.4'	9.7'	-13.1'	59.1'	79°05.7'			27°25.6'	19°43.7'	33°46.4'	44°53.2'	81°04.5'
Mer. pass.		17 h 0 m SD 16.0'		phase 32%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.3'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.3'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.6'	S 63°13.2'	Capella	+0.1	280°26.2'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°21.1'	N 27°58.5'	Aldebaran	+0.9	290°42.9'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.8'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°16.4'	N 89°20.9'
Rigil Kent	-0.0	139°44.2'	S 60°55.6'	Adhara	+1.5	255°08.3'	S 28°59.9'	Achernar	+0.5	335°22.1'	S 57°07.4'
Arcturus	-0.1	145°50.6'	N 19°04.5'	Sirius	-1.4	258°28.9'	S 16°44.6'				
Hadar	+0.6	148°40.1'	S 60°28.7'	Canopus	-0.6	263°54.0'	S 52°42.2'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	323°37.3'	178°51.8'	N 14°02.7'	144°36.1'	N 1°15.9'	353°08.6'	S 13°18.6'	11°42.9'	S 18°42.4'	161°32.2'	N 8°41.4'			
1	338°39.7'	193°51.9'	N 14°01.9'	159°35.9'	N 1°14.6'	8°11.3'	S 13°18.7'	26°45.5'	S 18°42.4'	176°33.2'	N 8°40.8'			
2	353°42.2'	208°52.0'	N 14°01.1'	174°35.7'	N 1°13.3'	23°14.1'	S 13°18.8'	41°48.2'	S 18°42.5'	191°34.2'	N 8°40.1'			
3	8°44.7'	223°52.2'	N 14°00.3'	189°35.4'	N 1°12.1'	38°16.9'	S 13°18.9'	56°50.8'	S 18°42.5'	206°35.2'	N 8°39.5'			
4	23°47.1'	238°52.3'	N 13°59.5'	204°35.2'	N 1°10.8'	53°19.7'	S 13°19.0'	71°53.5'	S 18°42.6'	221°36.2'	N 8°38.9'			
5	38°49.6'	253°52.4'	N 13°58.8'	219°35.0'	N 1°09.5'	68°22.4'	S 13°19.2'	86°56.1'	S 18°42.6'	236°37.2'	N 8°38.3'			
6	53°52.1'	268°52.5'	N 13°58.0'	234°34.8'	N 1°08.2'	83°25.2'	S 13°19.3'	101°58.8'	S 18°42.7'	251°38.2'	N 8°37.7'			
7	68°54.5'	283°52.7'	N 13°57.2'	249°34.6'	N 1°06.9'	98°28.0'	S 13°19.4'	117°01.4'	S 18°42.7'	266°39.1'	N 8°37.1'			
8	83°57.0'	298°52.8'	N 13°56.4'	264°34.4'	N 1°05.6'	113°30.8'	S 13°19.5'	132°04.1'	S 18°42.8'	281°40.1'	N 8°36.5'			
9	98°59.5'	313°52.9'	N 13°55.6'	279°34.2'	N 1°04.3'	128°33.5'	S 13°19.6'	147°06.7'	S 18°42.8'	296°41.1'	N 8°35.9'			
10	114°01.9'	328°53.0'	N 13°54.9'	294°34.0'	N 1°03.1'	143°36.3'	S 13°19.8'	162°09.3'	S 18°42.9'	311°42.1'	N 8°35.2'			
11	129°04.4'	343°53.2'	N 13°54.1'	309°33.8'	N 1°01.8'	158°39.1'	S 13°19.9'	177°12.0'	S 18°42.9'	326°43.1'	N 8°34.6'			
12	144°06.8'	358°53.3'	N 13°53.3'	324°33.6'	N 1°00.5'	173°41.9'	S 13°20.0'	192°14.6'	S 18°43.0'	341°44.1'	N 8°34.0'			
13	159°09.3'	13°53.4'	N 13°52.5'	339°33.4'	N 0°59.2'	188°44.6'	S 13°20.1'	207°17.3'	S 18°43.0'	356°45.1'	N 8°33.4'			
14	174°11.8'	28°53.5'	N 13°51.7'	354°33.2'	N 0°57.9'	203°47.4'	S 13°20.2'	222°19.9'	S 18°43.1'	11°46.1'	N 8°32.8'			
15	189°14.2'	43°53.7'	N 13°50.9'	9°33.0'	N 0°56.6'	218°50.2'	S 13°20.3'	237°22.6'	S 18°43.1'	26°47.0'	N 8°32.2'			
16	204°16.7'	58°53.8'	N 13°50.1'	24°32.8'	N 0°55.3'	233°53.0'	S 13°20.5'	252°25.2'	S 18°43.2'	41°48.0'	N 8°31.6'			
17	219°19.2'	73°53.9'	N 13°49.4'	39°32.6'	N 0°54.1'	248°55.7'	S 13°20.6'	267°27.9'	S 18°43.2'	56°49.0'	N 8°30.9'			
18	234°21.6'	88°54.0'	N 13°48.6'	54°32.4'	N 0°52.8'	263°58.5'	S 13°20.7'	282°30.5'	S 18°43.3'	71°50.0'	N 8°30.3'			
19	249°24.1'	103°54.2'	N 13°47.8'	69°32.2'	N 0°51.5'	279°01.3'	S 13°20.8'	297°33.1'	S 18°43.3'	86°51.0'	N 8°29.7'			
20	264°26.6'	118°54.3'	N 13°47.0'	84°32.0'	N 0°50.2'	294°04.1'	S 13°20.9'	312°35.8'	S 18°43.4'	101°52.0'	N 8°29.1'			
21	279°29.0'	133°54.4'	N 13°46.2'	99°31.8'	N 0°48.9'	309°06.9'	S 13°21.0'	327°38.4'	S 18°43.4'	116°53.0'	N 8°28.5'			
22	294°31.5'	148°54.6'	N 13°45.4'	114°31.6'	N 0°47.6'	324°09.6'	S 13°21.2'	342°41.1'	S 18°43.5'	131°54.0'	N 8°27.9'			
23	309°34.0'	163°54.7'	N 13°44.6'	129°31.4'	N 0°46.3'	339°12.4'	S 13°21.3'	357°43.7'	S 18°43.5'	146°55.0'	N 8°27.3'			
		SD 15.8' d -0.8'		v -0.2' d -1.3'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.0' d -0.6'				
Mer. pass.		12 h 4 m 28 s		14 h 22 m		0 h 27 m		23 h 9 m		13 h 13 m				

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Jupiter	-Saturn	-Altair	-Antares	+Spica	+Arcturus	+Venus	+Sun
0	101°26.4'	S 14°06.5'	9.7'	-13.1'	59.1'	103°53.9'	85°15.8'	78°36.5'	26°50.8'	20°17.5'	34°06.7'	45°25.3'	81°37.3'
1	115°55.1'	S 14°19.6'	9.6'	-13.0'	59.1'	103°18.4'	84°40.4'	78°07.3'	26°16.1'	20°51.4'	34°27.3'	45°57.5'	82°10.0'
2	130°23.7'	S 14°32.6'	9.5'	-12.9'	59.1'	102°42.8'	84°05.0'	77°38.1'	25°41.3'	21°25.4'	34°48.2'	46°29.6'	82°42.8'
3	144°52.2'	S 14°45.5'	9.4'	-12.8'	59.1'	102°07.3'	83°29.6'	77°09.0'	25°06.6'	21°59.5'	35°09.5'	47°01.8'	83°15.5'
4	159°20.6'	S 14°58.3'	9.4'	-12.7'	59.1'	101°31.8'	82°54.2'	76°39.9'	24°31.9'	22°33.6'	35°31.2'	47°34.0'	83°48.3'
5	173°49.0'	S 15°11.0'	9.3'	-12.7'	59.1'	100°56.2'	82°18.8'	76°10.7'	23°57.2'	23°07.9'	35°53.1'	48°06.2'	84°21.1'
6	188°17.3'	S 15°23.7'	9.2'	-12.6'	59.1'	100°20.7'	81°43.4'	75°41.7'	23°22.5'	23°42.1'	36°15.3'	48°38.4'	84°53.8'
7	202°45.5'	S 15°36.2'	9.1'	-12.5'	59.1'	99°45.1'	81°08.0'	75°12.6'	22°47.8'	24°16.4'	36°37.9'	49°10.6'	85°26.6'
8	217°13.6'	S 15°48.7'	9.1'	-12.4'	59.1'	99°09.5'	80°32.5'	74°43.6'	22°13.2'	24°50.8'	37°00.7'	49°42.9'	85°59.4'
9	231°41.7'	S 16°01.1'	9.0'	-12.3'	59.1'	98°33.9'	79°57.1'	74°14.5'	21°38.6'	25°25.2'	37°23.9'	50°15.1'	86°32.2'
10	246°09.6'	S 16°13.4'	8.9'	-12.2'	59.1'	97°58.3'	79°21.6'	73°45.6'	21°04.0'	25°59.7'	37°47.3'	50°47.3'	87°05.1'
11	260°37.5'	S 16°25.6'	8.8'	-12.1'	59.2'	97°22.7'	78°46.2'	73°16.6'	20°29.5'	26°34.2'	38°11.0'	51°19.6'	87°37.9'
12	275°05.3'	S 16°37.8'	8.7'	-12.0'	59.2'	96°47.1'	78°10.7'	72°47.7'	19°54.9'	27°08.7'	38°34.9'	51°51.9'	88°10.7'
13	289°33.1'	S 16°49.8'	8.6'	-11.9'	59.2'	96°11.5'	77°35.2'	72°18.8'	19°20.5'	27°43.3'	38°59.1'	52°24.2'	88°43.6'
14	304°00.7'	S 17°01.7'	8.6'	-11.8'	59.2'	95°35.9'	76°59.8'	71°49.9'	18°46.1'	28°18.0'	39°23.5'	52°56.5'	89°16.4'
15	318°28.3'	S 17°13.6'	8.5'	-11.7'	59.2'	95°00.2'	76°24.3'	71°21.1'	18°11.7'	28°52.6'	39°48.1'	53°28.8'	89°49.3'
16	332°55.8'	S 17°25.3'	8.4'	-11.6'	59.2'	94°24.6'	75°48.8'	70°52.3'	17°37.4'	29°27.3'	40°13.0'	54°01.1'	90°22.1'
17	347°23.2'	S 17°37.0'	8.3'	-11.5'	59.2'	93°48.9'	75°13.3'	70°23.5'	17°03.1'	30°02.1'	40°38.1'	54°33.4'	90°55.0'
18	1°50.5'	S 17°48.5'	8.2'	-11.4'	59.2'	93°13.3'	74°37.7'	69°54.8'	16°29.0'	30°36.8'	41°03.5'	55°05.7'	91°27.9'
19	16°17.7'	S 17°59.9'	8.2'	-11.3'	59.2'	92°37.6'	74°02.2'	69°26.1'	15°54.9'	31°11.6'	41°29.0'	55°38.1'	92°00.8'
20	30°44.9'	S 18°11.3'	8.1'	-11.2'	59.2'	92°01.9'	73°26.7'	68°57.4'	15°20.9'	31°46.4'	41°54.7'	56°10.4'	92°33.7'
21	45°12.0'	S 18°22.5'	8.0'	-11.1'	59.2'	91°26.3'	72°51.2'	68°28.8'	14°47.0'	32°21.3'	42°20.7'	56°42.8'	93°06.6'
22	59°38.9'	S 18°33.6'	7.9'	-11.0'	59.2'	90°50.6'	72°15.6'	68°00.3'	14°13.2'	32°56.2'	42°46.8'	57°15.2'	93°39.5'
23	74°05.8'	S 18°44.7'	7.8'	-10.9'	59.2'	90°14.9'	71°40.1'	67°31.8'	13°39.5'	33°31.1'	43°13.1'	57°47.5'	94°12.4'
Mer. pass.		17 h 52 m SD 16.1'		phase 43%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.3'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.3'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.6'	S 63°13.2'	Capella	+0.1	280°26.2'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.7'	N 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°21.0'	N 27°58.5'	Aldebaran	+0.9	290°42.9'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.8'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°15.9'	N 89°20.9'
Rigil Kent	-0.0	139°44.2'	S 60°55.6'	Adhara	+1.5	255°08.3'	S 28°59.9'	Achernar	+0.5	335°22.1'	S 57°07.4'
Arcturus	-0.1	145°50.6'	N 19°04.5'	Sirius	-1.4	258°28.9'	S 16°44.6'				
Hadar	+0.6	148°40.1'	S 60°28.7'	Canopus	-0.6	263°54.0'	S 52°42.2'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec	GHA	dec		
0	324°36.4'	178°54.8'	N 13°43.8'	144°31.2'	N 0°45.0'	354°15.2'	S 13°21.4'	12°46.4'	S 18°43.6'	161°55.9'	N 8°26.6'							
1	339°38.9'	193°54.9'	N 13°43.0'	159°31.0'	N 0°43.8'	9°18.0'	S 13°21.5'	27°49.0'	S 18°43.6'	176°56.9'	N 8°26.0'							
2	354°41.3'	208°55.1'	N 13°42.3'	174°30.8'	N 0°42.5'	24°20.7'	S 13°21.6'	42°51.6'	S 18°43.7'	191°57.9'	N 8°25.4'							
3	9°43.8'	223°55.2'	N 13°41.5'	189°30.6'	N 0°41.2'	39°23.5'	S 13°21.8'	57°54.3'	S 18°43.7'	206°58.9'	N 8°24.8'							
4	24°46.3'	238°55.3'	N 13°40.7'	204°30.4'	N 0°39.9'	54°26.3'	S 13°21.9'	72°56.9'	S 18°43.8'	221°59.9'	N 8°24.2'							
5	39°48.7'	253°55.5'	N 13°39.9'	219°30.2'	N 0°38.6'	69°29.1'	S 13°22.0'	87°59.6'	S 18°43.8'	237°00.9'	N 8°23.6'							
6	54°51.2'	268°55.6'	N 13°39.1'	234°30.0'	N 0°37.3'	84°31.8'	S 13°22.1'	103°02.2'	S 18°43.9'	252°01.9'	N 8°23.0'							
7	69°53.7'	283°55.7'	N 13°38.3'	249°29.8'	N 0°36.0'	99°34.6'	S 13°22.2'	118°04.9'	S 18°43.9'	267°02.9'	N 8°22.3'							
8	84°56.1'	298°55.8'	N 13°37.5'	264°29.6'	N 0°34.8'	114°37.4'	S 13°22.3'	133°07.5'	S 18°44.0'	282°03.9'	N 8°21.7'							
9	99°58.6'	313°56.0'	N 13°36.7'	279°29.4'	N 0°33.5'	129°40.2'	S 13°22.5'	148°10.2'	S 18°44.0'	297°04.8'	N 8°21.1'							
10	115°01.1'	328°56.1'	N 13°35.9'	294°29.2'	N 0°32.2'	144°43.0'	S 13°22.6'	163°12.8'	S 18°44.1'	312°05.8'	N 8°20.5'							
11	130°03.5'	343°56.2'	N 13°35.1'	309°29.0'	N 0°30.9'	159°45.7'	S 13°22.7'	178°15.4'	S 18°44.1'	327°06.8'	N 8°19.9'							
12	145°06.0'	358°56.4'	N 13°34.3'	324°28.8'	N 0°29.6'	174°48.5'	S 13°22.8'	193°18.1'	S 18°44.2'	342°07.8'	N 8°19.3'							
13	160°08.4'	13°56.5'	N 13°33.5'	339°28.6'	N 0°28.3'	189°51.3'	S 13°22.9'	208°20.7'	S 18°44.2'	357°08.8'	N 8°18.6'							
14	175°10.9'	28°56.6'	N 13°32.7'	354°28.4'	N 0°27.0'	204°54.1'	S 13°23.0'	223°23.4'	S 18°44.3'	12°09.8'	N 8°18.0'							
15	190°13.4'	43°56.8'	N 13°32.0'	9°28.2'	N 0°25.7'	219°56.8'	S 13°23.2'	238°26.0'	S 18°44.3'	27°10.8'	N 8°17.4'							
16	205°15.8'	58°56.9'	N 13°31.2'	24°28.0'	N 0°24.5'	234°59.6'	S 13°23.3'	253°28.7'	S 18°44.4'	42°11.8'	N 8°16.8'							
17	220°18.3'	73°57.0'	N 13°30.4'	39°27.8'	N 0°23.2'	250°02.4'	S 13°23.4'	268°31.3'	S 18°44.4'	57°12.8'	N 8°16.2'							
18	235°20.8'	88°57.2'	N 13°29.6'	54°27.6'	N 0°21.9'	265°05.2'	S 13°23.5'	283°33.9'	S 18°44.5'	72°13.8'	N 8°15.6'							
19	250°23.2'	103°57.3'	N 13°28.8'	69°27.4'	N 0°20.6'	280°07.9'	S 13°23.6'	298°36.6'	S 18°44.5'	87°14.7'	N 8°14.9'							
20	265°25.7'	118°57.4'	N 13°28.0'	84°27.2'	N 0°19.3'	295°10.7'	S 13°23.8'	313°39.2'	S 18°44.6'	102°15.7'	N 8°14.3'							
21	280°28.2'	133°57.6'	N 13°27.2'	99°27.0'	N 0°18.0'	310°13.5'	S 13°23.9'	328°41.9'	S 18°44.6'	117°16.7'	N 8°13.7'							
22	295°30.6'	148°57.7'	N 13°26.4'	114°26.8'	N 0°16.7'	325°16.3'	S 13°24.0'	343°44.5'	S 18°44.7'	132°17.7'	N 8°13.1'							
23	310°33.1'	163°57.8'	N 13°25.6'	129°26.6'	N 0°15.4'	340°19.1'	S 13°24.1'	358°47.2'	S 18°44.7'	147°18.7'	N 8°12.5'							
		SD 15.8' <i>d</i> -0.8'		<i>v</i> -0.2' <i>d</i> -1.3'		<i>v</i> 2.8' <i>d</i> -0.1'		<i>v</i> 2.6' <i>d</i> -0.0'		<i>v</i> 1.0' <i>d</i> -0.6'								
Mer. pass.		12 h 4 m 16 s		14 h 22 m		0 h 23 m		23 h 5 m		13 h 11 m								

h	Moon					Lunar distance							
	GHA	dec	<i>v</i>	<i>d</i>	HP	-Jupiter	-Saturn	-Altair	-Antares	+Spica	+Arcturus	+Venus	+Sun
0	88°32.7'	S 18°55.6'	7.7'	-10.8'	59.2'	89°39.2'	71°04.5'	67°03.3'	13°06.0'	34°06.0'	43°39.6'	58°19.9'	94°45.3'
1	102°59.4'	S 19°06.4'	7.6'	-10.7'	59.2'	89°03.4'	70°29.0'	66°34.9'	12°32.7'	34°40.9'	44°06.2'	58°52.3'	95°18.3'
2	117°26.0'	S 19°17.0'	7.6'	-10.6'	59.2'	88°27.7'	69°53.4'	66°06.5'	11°59.5'	35°15.9'	44°33.1'	59°24.7'	95°51.2'
3	131°52.6'	S 19°27.6'	7.5'	-10.5'	59.3'	87°52.0'	69°17.8'	65°38.2'	11°26.6'	35°50.9'	45°00.0'	59°57.1'	96°24.2'
4	146°19.1'	S 19°38.1'	7.4'	-10.3'	59.3'	87°16.3'	68°42.2'	65°10.0'	10°53.9'	36°25.9'	45°27.2'	60°29.5'	96°57.1'
5	160°45.5'	S 19°48.4'	7.3'	-10.2'	59.3'	86°40.5'	68°06.7'	64°41.8'	10°21.6'	37°00.9'	45°54.5'	61°02.0'	97°30.1'
6	175°11.8'	S 19°58.6'	7.2'	-10.1'	59.3'	86°04.8'	67°31.1'	64°13.6'	9°49.6'	37°36.0'	46°21.9'	61°34.4'	98°03.0'
7	189°38.0'	S 20°08.7'	7.1'	-10.0'	59.3'	85°29.0'	66°55.5'	63°45.6'	9°18.0'	38°11.0'	46°49.5'	62°06.8'	98°36.0'
8	204°04.2'	S 20°18.7'	7.1'	-9.8'	59.3'	84°53.3'	66°19.9'	63°17.6'	8°46.8'	38°46.1'	47°17.3'	62°39.3'	99°09.0'
9	218°30.2'	S 20°28.5'	7.0'	-9.7'	59.3'	84°17.5'	65°44.3'	62°49.6'	8°16.3'	39°21.2'	47°45.1'	63°11.7'	99°41.9'
10	232°56.2'	S 20°38.2'	6.9'	-9.6'	59.3'	83°41.8'	65°08.7'	62°21.7'		39°56.3'	48°13.1'	63°44.2'	100°14.9'
11	247°22.1'	S 20°47.8'	6.8'	-9.5'	59.3'	83°06.0'	64°33.1'	61°53.9'		40°31.4'	48°41.2'	64°16.6'	100°47.9'
12	261°47.9'	S 20°57.3'	6.7'	-9.3'	59.3'	82°30.2'	63°57.4'	61°26.2'		41°06.6'	49°09.5'	64°49.1'	101°20.9'
13	276°13.6'	S 21°06.6'	6.6'	-9.2'	59.3'	81°54.4'	63°21.8'	60°58.5'		41°41.7'	49°37.9'	65°21.6'	101°53.9'
14	290°39.3'	S 21°15.9'	6.6'	-9.1'	59.3'	81°18.6'	62°46.2'	60°30.9'		42°16.9'	50°06.4'	65°54.1'	102°26.9'
15	305°04.9'	S 21°24.9'	6.5'	-8.9'	59.3'	80°42.8'	62°10.6'	60°03.4'		42°52.1'	50°35.0'	66°26.6'	102°59.9'
16	319°30.3'	S 21°33.9'	6.4'	-8.8'	59.3'	80°07.0'	61°34.9'	59°36.0'		43°27.3'	51°03.7'	66°59.1'	103°32.9'
17	333°55.7'	S 21°42.7'	6.3'	-8.7'	59.3'	79°31.2'	60°59.3'	59°08.7'		44°02.5'	51°32.5'	67°31.6'	104°05.9'
18	348°21.1'	S 21°51.3'	6.2'	-8.5'	59.3'	78°55.4'	60°23.6'	58°41.4'		44°37.7'	52°01.4'	68°04.1'	104°38.9'
19	2°46.3'	S 21°59.9'	6.2'	-8.4'	59.3'	78°19.6'	59°48.0'	58°14.2'		45°13.0'	52°30.4'	68°36.6'	105°12.0'
20	17°11.5'	S 22°08.3'	6.1'	-8.3'	59.3'	77°43.8'	59°12.4'	57°47.2'		45°48.2'	52°59.5'	69°09.1'	105°45.0'
21	31°36.6'	S 22°16.5'	6.0'	-8.1'	59.3'	77°08.0'	58°36.7'	57°20.2'		46°23.4'	53°28.7'	69°41.6'	106°18.0'
22	46°01.6'	S 22°24.6'	5.9'	-8.0'	59.3'	76°32.2'	58°01.0'	56°53.3'		46°58.7'	53°58.0'	70°14.1'	106°51.1'
23	60°26.5'	S 22°32.6'	5.9'	-7.8'	59.3'	75°56.4'	57°25.4'	56°26.5'		47°34.0'	54°27.4'	70°46.7'	107°24.1'
Mer. pass.		18 h 48 m SD 16.2'		phase 54%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.3'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.3'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.6'	S 63°13.2'	Capella	+0.1	280°26.2'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°21.0'	N 27°58.5'	Aldebaran	+0.9	290°42.9'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.8'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°15.3'	N 89°20.9'
Rigil Kent	-0.0	139°44.2'	S 60°55.6'	Adhara	+1.5	255°08.3'	S 28°59.9'	Achernar	+0.5	335°22.1'	S 57°07.4'
Arcturus	-0.1	145°50.6'	N 19°04.5'	Sirius	-1.4	258°28.9'	S 16°44.6'				
Hadar	+0.6	148°40.1'	S 60°28.7'	Canopus	-0.6	263°54.0'	S 52°42.2'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	325°35.6'	178°58.0'	N 13°24.8'	144°26.4'	N 0°14.1'	355°21.8'	S 13°24.2'	13°49.8'	S 18°44.8'	162°19.7'	N 8°11.9'	
1	340°38.0'	193°58.1'	N 13°24.0'	159°26.2'	N 0°12.9'	10°24.6'	S 13°24.3'	28°52.4'	S 18°44.8'	177°20.7'	N 8°11.2'	
2	355°40.5'	208°58.2'	N 13°23.2'	174°26.0'	N 0°11.6'	25°27.4'	S 13°24.5'	43°55.1'	S 18°44.9'	192°21.7'	N 8°10.6'	
3	10°42.9'	223°58.4'	N 13°22.4'	189°25.8'	N 0°10.3'	40°30.2'	S 13°24.6'	58°57.7'	S 18°44.9'	207°22.7'	N 8°10.0'	
4	25°45.4'	238°58.5'	N 13°21.6'	204°25.6'	N 0°09.0'	55°32.9'	S 13°24.7'	74°00.4'	S 18°45.0'	222°23.7'	N 8°09.4'	
5	40°47.9'	253°58.6'	N 13°20.8'	219°25.5'	N 0°07.7'	70°35.7'	S 13°24.8'	89°03.0'	S 18°45.0'	237°24.6'	N 8°08.8'	
6	55°50.3'	268°58.8'	N 13°20.0'	234°25.3'	N 0°06.4'	85°38.5'	S 13°24.9'	104°05.6'	S 18°45.1'	252°25.6'	N 8°08.2'	
7	70°52.8'	283°58.9'	N 13°19.2'	249°25.1'	N 0°05.1'	100°41.3'	S 13°25.0'	119°08.3'	S 18°45.1'	267°26.6'	N 8°07.5'	
8	85°55.3'	298°59.0'	N 13°18.4'	264°24.9'	N 0°03.8'	115°44.1'	S 13°25.2'	134°10.9'	S 18°45.2'	282°27.6'	N 8°06.9'	
9	100°57.7'	313°59.2'	N 13°17.6'	279°24.7'	N 0°02.6'	130°46.8'	S 13°25.3'	149°13.6'	S 18°45.2'	297°28.6'	N 8°06.3'	
10	116°00.2'	328°59.3'	N 13°16.8'	294°24.5'	N 0°01.3'	145°49.6'	S 13°25.4'	164°16.2'	S 18°45.3'	312°29.6'	N 8°05.7'	
11	131°02.7'	343°59.4'	N 13°16.0'	309°24.3'	S 0°00.0'	160°52.4'	S 13°25.5'	179°18.9'	S 18°45.3'	327°30.6'	N 8°05.1'	
12	146°05.1'	358°59.6'	N 13°15.2'	324°24.1'	S 0°01.3'	175°55.2'	S 13°25.6'	194°21.5'	S 18°45.3'	342°31.6'	N 8°04.4'	
13	161°07.6'	13°59.7'	N 13°14.4'	339°23.9'	S 0°02.6'	190°58.0'	S 13°25.7'	209°24.1'	S 18°45.4'	357°32.6'	N 8°03.8'	
14	176°10.1'	28°59.9'	N 13°13.6'	354°23.7'	S 0°03.9'	206°00.7'	S 13°25.9'	224°26.8'	S 18°45.4'	12°33.6'	N 8°03.2'	
15	191°12.5'	43°60.0'	N 13°12.8'	9°23.5'	S 0°05.2'	221°03.5'	S 13°26.0'	239°29.4'	S 18°45.5'	27°34.5'	N 8°02.6'	
16	206°15.0'	59°00.1'	N 13°12.0'	24°23.3'	S 0°06.5'	236°06.3'	S 13°26.1'	254°32.1'	S 18°45.5'	42°35.5'	N 8°02.0'	
17	221°17.4'	74°00.3'	N 13°11.2'	39°23.1'	S 0°07.8'	251°09.1'	S 13°26.2'	269°34.7'	S 18°45.6'	57°36.5'	N 8°01.4'	
18	236°19.9'	89°00.4'	N 13°10.4'	54°22.9'	S 0°09.0'	266°11.8'	S 13°26.3'	284°37.3'	S 18°45.6'	72°37.5'	N 8°00.7'	
19	251°22.4'	104°00.5'	N 13°09.5'	69°22.7'	S 0°10.3'	281°14.6'	S 13°26.5'	299°40.0'	S 18°45.7'	87°38.5'	N 8°00.1'	
20	266°24.8'	119°00.7'	N 13°08.7'	84°22.5'	S 0°11.6'	296°17.4'	S 13°26.6'	314°42.6'	S 18°45.7'	102°39.5'	N 7°59.5'	
21	281°27.3'	134°00.8'	N 13°07.9'	99°22.3'	S 0°12.9'	311°20.2'	S 13°26.7'	329°45.3'	S 18°45.8'	117°40.5'	N 7°58.9'	
22	296°29.8'	149°01.0'	N 13°07.1'	114°22.1'	S 0°14.2'	326°23.0'	S 13°26.8'	344°47.9'	S 18°45.8'	132°41.5'	N 7°58.3'	
23	311°32.2'	164°01.1'	N 13°06.3'	129°21.9'	S 0°15.5'	341°25.7'	S 13°26.9'	359°50.6'	S 18°45.9'	147°42.5'	N 7°57.6'	
		SD 15.8' d -0.8'		v -0.2' d -1.3'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.0' d -0.6'		
Mer. pass.		12 h 4 m 3 s		14 h 22 m		0 h 19 m		23 h 1 m		13 h 10 m		

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Fomalhaut	-Jupiter	-Saturn	-Altair	+Antares	+Spica	+Arcturus	+Sun
0	74°51.4'	S 22°40.4'	5.8'	-7.7'	59.3'	82°17.4'	75°20.5'	56°49.7'	55°59.8'		48°09.3'	54°56.9'	107°57.1'
1	89°16.2'	S 22°48.1'	5.7'	-7.5'	59.3'	81°43.2'	74°44.7'	56°14.1'	55°33.3'		48°44.6'	55°26.5'	108°30.2'
2	103°40.9'	S 22°55.6'	5.6'	-7.4'	59.3'	81°09.0'	74°08.9'	55°38.4'	55°06.8'		49°19.9'	55°56.1'	109°03.2'
3	118°05.5'	S 23°03.0'	5.6'	-7.2'	59.3'	80°34.9'	73°33.0'	55°02.7'	54°40.5'		49°55.2'	56°25.8'	109°36.2'
4	132°30.1'	S 23°10.2'	5.5'	-7.1'	59.3'	80°00.7'	72°57.2'	54°27.1'	54°14.2'		50°30.5'	56°55.6'	110°09.3'
5	146°54.6'	S 23°17.3'	5.4'	-6.9'	59.3'	79°26.5'	72°21.3'	53°51.4'	53°48.1'		51°05.8'	57°25.5'	110°42.3'
6	161°19.0'	S 23°24.2'	5.4'	-6.8'	59.3'	78°52.4'	71°45.5'	53°15.8'	53°22.1'		51°41.1'	57°55.4'	111°15.4'
7	175°43.4'	S 23°31.0'	5.3'	-6.6'	59.3'	78°18.2'	71°09.7'	52°40.1'	52°56.3'		52°16.5'	58°25.4'	111°48.4'
8	190°07.7'	S 23°37.6'	5.2'	-6.5'	59.3'	77°44.1'	70°33.8'	52°04.4'	52°30.5'		52°51.8'	58°55.5'	112°21.5'
9	204°31.9'	S 23°44.1'	5.2'	-6.3'	59.3'	77°10.0'	69°58.0'	51°28.8'	52°05.0'	8°22.9'	53°27.2'	59°25.7'	112°54.5'
10	218°56.1'	S 23°50.4'	5.1'	-6.1'	59.3'	76°35.8'	69°22.1'	50°53.1'	51°39.5'	8°53.7'	54°02.5'	59°55.9'	113°27.6'
11	233°20.2'	S 23°56.6'	5.0'	-6.0'	59.3'	76°01.7'	68°46.3'	50°17.4'	51°14.2'	9°25.0'	54°37.9'	60°26.1'	114°00.6'
12	247°44.2'	S 24°02.5'	5.0'	-5.8'	59.3'	75°27.6'	68°10.4'	49°41.7'	50°49.0'	9°56.8'	55°13.3'	60°56.5'	114°33.7'
13	262°08.2'	S 24°08.4'	4.9'	-5.7'	59.3'	74°53.4'	67°34.6'	49°06.1'	50°24.0'	10°29.0'	55°48.6'	61°26.8'	115°06.7'
14	276°32.1'	S 24°14.0'	4.9'	-5.5'	59.3'	74°19.3'	66°58.7'	48°30.4'	49°59.1'	11°01.6'	56°24.0'	61°57.3'	115°39.8'
15	290°55.9'	S 24°19.5'	4.8'	-5.3'	59.3'	73°45.2'	66°22.9'	47°54.8'	49°34.4'	11°34.4'	56°59.4'	62°27.8'	116°12.9'
16	305°19.8'	S 24°24.9'	4.7'	-5.2'	59.3'	73°11.1'	65°47.0'	47°19.1'	49°09.9'	12°07.6'	57°34.8'	62°58.3'	116°45.9'
17	319°43.5'	S 24°30.1'	4.7'	-5.0'	59.3'	72°37.0'	65°11.2'	46°43.4'	48°45.5'	12°40.9'	58°10.2'	63°28.9'	117°19.0'
18	334°07.2'	S 24°35.1'	4.6'	-4.8'	59.3'	72°03.0'	64°35.3'	46°07.8'	48°21.3'	13°14.4'	58°45.6'	63°59.5'	117°52.0'
19	348°30.8'	S 24°39.9'	4.6'	-4.7'	59.3'	71°28.9'	63°59.5'	45°32.1'	47°57.3'	13°48.1'	59°20.9'	64°30.2'	118°25.1'
20	2°54.4'	S 24°44.6'	4.5'	-4.5'	59.3'	70°54.8'	63°23.6'	44°56.5'	47°33.4'	14°22.0'	59°56.3'	65°01.0'	118°58.1'
21	17°18.0'	S 24°49.1'	4.5'	-4.3'	59.3'	70°20.8'	62°47.8'	44°20.8'	47°09.8'	14°56.0'	60°31.7'	65°31.7'	119°31.1'
22	31°41.5'	S 24°53.5'	4.5'	-4.2'	59.3'	69°46.8'	62°11.9'	43°45.2'	46°46.3'	15°30.1'	61°07.1'	66°02.6'	
23	46°05.0'	S 24°57.7'	4.4'	-4.0'	59.3'	69°12.7'	61°36.1'	43°09.5'	46°23.1'	16°04.3'	61°42.5'	66°33.4'	
Mer. pass.		19 h 48 m SD 16.2'		phase 65%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.3'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.3'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.6'	S 63°13.2'	Capella	+0.1	280°26.2'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°21.0'	N 27°58.5'	Aldebaran	+0.9	290°42.9'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.8'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°14.7'	N 89°20.9'
Rigil Kent	-0.0	139°44.2'	S 60°55.6'	Adhara	+1.5	255°08.3'	S 28°59.9'	Achernar	+0.5	335°22.1'	S 57°07.4'
Arcturus	-0.1	145°50.6'	N 19°04.5'	Sirius	-1.4	258°28.9'	S 16°44.6'				
Hadar	+0.6	148°40.1'	S 60°28.7'	Canopus	-0.6	263°54.0'	S 52°42.2'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	326°34.7'	179°01.2'	N 13°05.5'	144°21.7'	S 0°16.8'	356°28.5'	S 13°27.0'	14°53.2'	S 18°45.9'	162°43.5'	N 7°57.0'
1	341°37.2'	194°01.4'	N 13°04.7'	159°21.5'	S 0°18.1'	11°31.3'	S 13°27.2'	29°55.8'	S 18°46.0'	177°44.5'	N 7°56.4'
2	356°39.6'	209°01.5'	N 13°03.9'	174°21.4'	S 0°19.4'	26°34.1'	S 13°27.3'	44°58.5'	S 18°46.0'	192°45.4'	N 7°55.8'
3	11°42.1'	224°01.7'	N 13°03.1'	189°21.2'	S 0°20.6'	41°36.8'	S 13°27.4'	60°01.1'	S 18°46.1'	207°46.4'	N 7°55.2'
4	26°44.6'	239°01.8'	N 13°02.3'	204°21.0'	S 0°21.9'	56°39.6'	S 13°27.5'	75°03.8'	S 18°46.1'	222°47.4'	N 7°54.5'
5	41°47.0'	254°01.9'	N 13°01.5'	219°20.8'	S 0°23.2'	71°42.4'	S 13°27.6'	90°06.4'	S 18°46.2'	237°48.4'	N 7°53.9'
6	56°49.5'	269°02.1'	N 13°00.7'	234°20.6'	S 0°24.5'	86°45.2'	S 13°27.7'	105°09.0'	S 18°46.2'	252°49.4'	N 7°53.3'
7	71°51.9'	284°02.2'	N 12°59.9'	249°20.4'	S 0°25.8'	101°48.0'	S 13°27.9'	120°11.7'	S 18°46.3'	267°50.4'	N 7°52.7'
8	86°54.4'	299°02.4'	N 12°59.0'	264°20.2'	S 0°27.1'	116°50.7'	S 13°28.0'	135°14.3'	S 18°46.3'	282°51.4'	N 7°52.1'
9	101°56.9'	314°02.5'	N 12°58.2'	279°20.0'	S 0°28.4'	131°53.5'	S 13°28.1'	150°17.0'	S 18°46.4'	297°52.4'	N 7°51.4'
10	116°59.3'	329°02.6'	N 12°57.4'	294°19.8'	S 0°29.7'	146°56.3'	S 13°28.2'	165°19.6'	S 18°46.4'	312°53.4'	N 7°50.8'
11	132°01.8'	344°02.8'	N 12°56.6'	309°19.6'	S 0°31.0'	161°59.1'	S 13°28.3'	180°22.2'	S 18°46.5'	327°54.4'	N 7°50.2'
12	147°04.3'	359°02.9'	N 12°55.8'	324°19.4'	S 0°32.3'	177°01.9'	S 13°28.4'	195°24.9'	S 18°46.5'	342°55.4'	N 7°49.6'
13	162°06.7'	14°03.1'	N 12°55.0'	339°19.2'	S 0°33.5'	192°04.6'	S 13°28.6'	210°27.5'	S 18°46.6'	357°56.3'	N 7°49.0'
14	177°09.2'	29°03.2'	N 12°54.2'	354°19.0'	S 0°34.8'	207°07.4'	S 13°28.7'	225°30.2'	S 18°46.6'	12°57.3'	N 7°48.3'
15	192°11.7'	44°03.3'	N 12°53.4'	9°18.8'	S 0°36.1'	222°10.2'	S 13°28.8'	240°32.8'	S 18°46.7'	27°58.3'	N 7°47.7'
16	207°14.1'	59°03.5'	N 12°52.6'	24°18.7'	S 0°37.4'	237°13.0'	S 13°28.9'	255°35.4'	S 18°46.7'	42°59.3'	N 7°47.1'
17	222°16.6'	74°03.6'	N 12°51.7'	39°18.5'	S 0°38.7'	252°15.7'	S 13°29.0'	270°38.1'	S 18°46.8'	58°00.3'	N 7°46.5'
18	237°19.1'	89°03.8'	N 12°50.9'	54°18.3'	S 0°40.0'	267°18.5'	S 13°29.1'	285°40.7'	S 18°46.8'	73°01.3'	N 7°45.9'
19	252°21.5'	104°03.9'	N 12°50.1'	69°18.1'	S 0°41.3'	282°21.3'	S 13°29.3'	300°43.4'	S 18°46.8'	88°02.3'	N 7°45.2'
20	267°24.0'	119°04.1'	N 12°49.3'	84°17.9'	S 0°42.6'	297°24.1'	S 13°29.4'	315°46.0'	S 18°46.9'	103°03.3'	N 7°44.6'
21	282°26.4'	134°04.2'	N 12°48.5'	99°17.7'	S 0°43.9'	312°26.9'	S 13°29.5'	330°48.6'	S 18°46.9'	118°04.3'	N 7°44.0'
22	297°28.9'	149°04.4'	N 12°47.7'	114°17.5'	S 0°45.1'	327°29.6'	S 13°29.6'	345°51.3'	S 18°47.0'	133°05.3'	N 7°43.4'
23	312°31.4'	164°04.5'	N 12°46.9'	129°17.3'	S 0°46.4'	342°32.4'	S 13°29.7'	0°53.9'	S 18°47.0'	148°06.3'	N 7°42.8'
		SD 15.8' d -0.8'		v -0.2' d -1.3'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.0' d -0.6'	
Mer. pass.		12 h 3 m 49 s		14 h 23 m		0 h 14 m		22 h 56 m		13 h 8 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Fomalhaut	-Jupiter	-Altair	-Saturn	+Antares	+Rigel Kent	+Hadar	+Spica
0	60°28.4'	S 25°01.7'	4.4'	-3.8'	59.3'	68°38.7'	61°00.2'	46°00.0'	42°33.9'	16°38.6'		51°16.2'	62°18.0'
1	74°51.7'	S 25°05.5'	4.3'	-3.7'	59.3'	68°04.7'	60°24.4'	45°37.2'	41°58.3'	17°13.0'		51°31.2'	62°53.4'
2	89°15.1'	S 25°09.2'	4.3'	-3.5'	59.3'	67°30.8'	59°48.5'	45°14.5'	41°22.6'	17°47.5'		51°46.4'	63°28.8'
3	103°38.4'	S 25°12.7'	4.3'	-3.3'	59.3'	66°56.8'	59°12.7'	44°52.1'	40°47.0'	18°22.0'		52°02.0'	64°04.2'
4	118°01.7'	S 25°16.0'	4.2'	-3.1'	59.3'	66°22.8'	58°36.9'	44°29.9'	40°11.4'	18°56.6'		52°17.7'	64°39.6'
5	132°24.9'	S 25°19.1'	4.2'	-3.0'	59.3'	65°48.9'	58°01.0'	44°08.0'	39°35.8'	19°31.3'		52°33.6'	65°15.0'
6	146°48.1'	S 25°22.1'	4.2'	-2.8'	59.3'	65°15.0'	57°25.2'	43°46.2'	39°00.2'	20°06.0'	48°50.7'	52°49.8'	65°50.4'
7	161°11.3'	S 25°24.9'	4.1'	-2.6'	59.3'	64°41.1'	56°49.4'	43°24.8'	38°24.6'	20°40.7'	49°05.8'	53°06.2'	66°25.8'
8	175°34.4'	S 25°27.5'	4.1'	-2.5'	59.3'	64°07.2'	56°13.6'	43°03.5'	37°49.0'	21°15.5'	49°21.2'	53°22.9'	67°01.2'
9	189°57.5'	S 25°30.0'	4.1'	-2.3'	59.3'	63°33.4'	55°37.8'	42°42.6'	37°13.4'	21°50.4'	49°36.8'	53°39.7'	67°36.6'
10	204°20.6'	S 25°32.2'	4.1'	-2.1'	59.3'	62°59.5'	55°02.0'	42°21.9'	36°37.9'	22°25.2'	49°52.7'	53°56.7'	68°12.0'
11	218°43.7'	S 25°34.3'	4.1'	-1.9'	59.3'	62°25.7'	54°26.2'	42°01.5'	36°02.3'	23°00.1'	50°08.8'	54°14.0'	68°47.4'
12	233°06.8'	S 25°36.3'	4.0'	-1.7'	59.3'	61°51.9'	53°50.4'	41°41.3'	35°26.8'	23°35.1'	50°25.2'	54°31.4'	69°22.8'
13	247°29.8'	S 25°38.0'	4.0'	-1.6'	59.3'	61°18.2'	53°14.6'	41°21.4'	34°51.2'	24°10.0'	50°41.8'	54°49.1'	69°58.2'
14	261°52.9'	S 25°39.6'	4.0'	-1.4'	59.3'	60°44.4'	52°38.8'	41°01.9'	34°15.7'	24°45.0'	50°58.6'	55°06.9'	70°33.6'
15	276°15.9'	S 25°41.0'	4.0'	-1.2'	59.2'	60°10.7'	52°03.0'	40°42.6'	33°40.2'	25°20.0'	51°15.6'	55°25.0'	71°09.0'
16	290°38.9'	S 25°42.2'	4.0'	-1.0'	59.2'	59°37.0'	51°27.2'	40°23.6'	33°04.6'	25°55.0'	51°32.9'	55°43.2'	71°44.4'
17	305°01.9'	S 25°43.2'	4.0'	-0.9'	59.2'	59°03.3'	50°51.5'	40°05.0'	32°29.2'	26°30.1'	51°50.4'	56°01.6'	72°19.8'
18	319°24.9'	S 25°44.1'	4.0'	-0.7'	59.2'	58°29.7'	50°15.7'	39°46.6'	31°53.7'	27°05.1'	52°08.2'	56°20.1'	72°55.2'
19	333°47.9'	S 25°44.8'	4.0'	-0.5'	59.2'	57°56.1'	49°39.9'	39°28.6'	31°18.2'	27°40.2'	52°26.1'	56°38.9'	73°30.5'
20	348°10.9'	S 25°45.3'	4.0'	-0.3'	59.2'	57°22.5'	49°04.2'	39°10.9'	30°42.7'	28°15.3'	52°44.2'	56°57.8'	74°05.9'
21	2°33.9'	S 25°45.6'	4.0'	-0.1'	59.2'	56°49.0'	48°28.5'	38°53.6'	30°07.3'	28°50.4'	53°02.6'	57°16.9'	74°41.3'
22	16°56.9'	S 25°45.8'	4.0'	0.0'	59.2'	56°15.5'	47°52.7'	38°36.6'	29°31.9'	29°25.5'	53°21.1'	57°36.2'	75°16.6'
23	31°19.9'	S 25°45.7'	4.0'	0.2'	59.2'	55°42.0'	47°17.0'	38°20.0'	28°56.5'	30°00.6'	53°39.8'	57°55.6'	75°52.0'
Mer. pass.		20 h 49 m SD 16.2'	phase 76%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.2'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.3'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.6'	S 63°13.2'	Capella	+0.1	280°26.2'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.7'	N 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°21.0'	N 27°58.5'	Aldebaran	+0.9	290°42.9'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.8'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°14.1'	N 89°20.9'
Rigel Kent	-0.0	139°44.2'	S 60°55.6'	Adhara	+1.5	255°08.3'	S 28°59.9'	Achernar	+0.5	335°22.0'	S 57°07.4'
Arcturus	-0.1	145°50.6'	N 19°04.5'	Sirius	-1.4	258°28.9'	S 16°44.6'				
Hadar	+0.6	148°40.1'	S 60°28.7'	Canopus	-0.6	263°54.0'	S 52°42.2'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	327°33.8'	179°04.6'	N 12°46.0'	144°17.1'	S 0°47.7'	357°35.2'	S 13°29.9'	15°56.6'	S 18°47.1'	163°07.3'	N 7°42.1'
1	342°36.3'	194°04.8'	N 12°45.2'	159°16.9'	S 0°49.0'	12°38.0'	S 13°30.0'	30°59.2'	S 18°47.1'	178°08.2'	N 7°41.5'
2	357°38.8'	209°04.9'	N 12°44.4'	174°16.7'	S 0°50.3'	27°40.8'	S 13°30.1'	46°01.8'	S 18°47.2'	193°09.2'	N 7°40.9'
3	12°41.2'	224°05.1'	N 12°43.6'	189°16.5'	S 0°51.6'	42°43.5'	S 13°30.2'	61°04.5'	S 18°47.2'	208°10.2'	N 7°40.3'
4	27°43.7'	239°05.2'	N 12°42.8'	204°16.4'	S 0°52.9'	57°46.3'	S 13°30.3'	76°07.1'	S 18°47.3'	223°11.2'	N 7°39.6'
5	42°46.2'	254°05.4'	N 12°42.0'	219°16.2'	S 0°54.2'	72°49.1'	S 13°30.4'	91°09.8'	S 18°47.3'	238°12.2'	N 7°39.0'
6	57°48.6'	269°05.5'	N 12°41.1'	234°16.0'	S 0°55.5'	87°51.9'	S 13°30.6'	106°12.4'	S 18°47.4'	253°13.2'	N 7°38.4'
7	72°51.1'	284°05.7'	N 12°40.3'	249°15.8'	S 0°56.7'	102°54.7'	S 13°30.7'	121°15.0'	S 18°47.4'	268°14.2'	N 7°37.8'
8	87°53.6'	299°05.8'	N 12°39.5'	264°15.6'	S 0°58.0'	117°57.4'	S 13°30.8'	136°17.7'	S 18°47.5'	283°15.2'	N 7°37.2'
9	102°56.0'	314°06.0'	N 12°38.7'	279°15.4'	S 0°59.3'	133°00.2'	S 13°30.9'	151°20.3'	S 18°47.5'	298°16.2'	N 7°36.5'
10	117°58.5'	329°06.1'	N 12°37.9'	294°15.2'	S 1°00.6'	148°03.0'	S 13°31.0'	166°22.9'	S 18°47.6'	313°17.2'	N 7°35.9'
11	133°00.9'	344°06.2'	N 12°37.1'	309°15.0'	S 1°01.9'	163°05.8'	S 13°31.1'	181°25.6'	S 18°47.6'	328°18.2'	N 7°35.3'
12	148°03.4'	359°06.4'	N 12°36.2'	324°14.8'	S 1°03.2'	178°08.6'	S 13°31.3'	196°28.2'	S 18°47.7'	343°19.2'	N 7°34.7'
13	163°05.9'	14°06.5'	N 12°35.4'	339°14.6'	S 1°04.5'	193°11.3'	S 13°31.4'	211°30.9'	S 18°47.7'	358°20.1'	N 7°34.0'
14	178°08.3'	29°06.7'	N 12°34.6'	354°14.4'	S 1°05.8'	208°14.1'	S 13°31.5'	226°33.5'	S 18°47.8'	13°21.1'	N 7°33.4'
15	193°10.8'	44°06.8'	N 12°33.8'	9°14.3'	S 1°07.1'	223°16.9'	S 13°31.6'	241°36.1'	S 18°47.8'	28°22.1'	N 7°32.8'
16	208°13.3'	59°07.0'	N 12°33.0'	24°14.1'	S 1°08.4'	238°19.7'	S 13°31.7'	256°38.8'	S 18°47.9'	43°23.1'	N 7°32.2'
17	223°15.7'	74°07.1'	N 12°32.1'	39°13.9'	S 1°09.6'	253°22.4'	S 13°31.8'	271°41.4'	S 18°47.9'	58°24.1'	N 7°31.6'
18	238°18.2'	89°07.3'	N 12°31.3'	54°13.7'	S 1°10.9'	268°25.2'	S 13°32.0'	286°44.1'	S 18°47.9'	73°25.1'	N 7°30.9'
19	253°20.7'	104°07.4'	N 12°30.5'	69°13.5'	S 1°12.2'	283°28.0'	S 13°32.1'	301°46.7'	S 18°48.0'	88°26.1'	N 7°30.3'
20	268°23.1'	119°07.6'	N 12°29.7'	84°13.3'	S 1°13.5'	298°30.8'	S 13°32.2'	316°49.3'	S 18°48.0'	103°27.1'	N 7°29.7'
21	283°25.6'	134°07.7'	N 12°28.8'	99°13.1'	S 1°14.8'	313°33.6'	S 13°32.3'	331°52.0'	S 18°48.1'	118°28.1'	N 7°29.1'
22	298°28.0'	149°07.9'	N 12°28.0'	114°12.9'	S 1°16.1'	328°36.3'	S 13°32.4'	346°54.6'	S 18°48.1'	133°29.1'	N 7°28.4'
23	313°30.5'	164°08.0'	N 12°27.2'	129°12.7'	S 1°17.4'	343°39.1'	S 13°32.5'	1°57.2'	S 18°48.2'	148°30.1'	N 7°27.8'
		SD 15.8' d -0.8'		v -0.2' d -1.3'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.0' d -0.6'	
Mer. pass.		12 h 3 m 35 s		14 h 23 m		0 h 10 m		22 h 52 m		13 h 7 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Fomalhaut	-Jupiter	-Altair	-Saturn	+Antares	+Rigel Kent	+Hadar	+Acrux
0	45°42.9'	S 25°45.5'	4.0'	0.4'	59.2'	55°08.5'	46°41.3'	38°03.8'	28°21.1'	30°35.7'	53°58.8'	58°15.2'	69°18.8'
1	60°06.0'	S 25°45.1'	4.0'	0.6'	59.2'	54°35.1'	46°05.6'	37°47.9'	27°45.7'	31°10.9'	54°17.9'	58°34.9'	69°36.2'
2	74°29.0'	S 25°44.6'	4.1'	0.7'	59.2'	54°01.7'	45°29.9'	37°32.4'	27°10.4'	31°46.0'	54°37.2'	58°54.8'	69°53.6'
3	88°52.1'	S 25°43.8'	4.1'	0.9'	59.2'	53°28.4'	44°54.3'		26°35.1'	32°21.2'	54°56.6'	59°14.8'	70°11.2'
4	103°15.1'	S 25°42.9'	4.1'	1.1'	59.1'	52°55.1'	44°18.6'		25°59.7'	32°56.3'	55°16.3'	59°34.9'	70°28.8'
5	117°38.2'	S 25°41.8'	4.1'	1.3'	59.1'	52°21.9'	43°42.9'		25°24.5'	33°31.4'	55°36.1'	59°55.3'	70°46.6'
6	132°01.4'	S 25°40.6'	4.1'	1.4'	59.1'	51°48.7'	43°07.3'		24°49.2'	34°06.6'	55°56.1'	60°15.7'	71°04.4'
7	146°24.5'	S 25°39.1'	4.2'	1.6'	59.1'	51°15.5'	42°31.7'		24°14.0'	34°41.8'	56°16.2'	60°36.3'	71°22.3'
8	160°47.7'	S 25°37.5'	4.2'	1.8'	59.1'	50°42.4'	41°56.0'		23°38.8'	35°16.9'	56°36.6'	60°57.0'	71°40.4'
9	175°10.9'	S 25°35.7'	4.2'	2.0'	59.1'	50°09.3'	41°20.4'		23°03.6'	35°52.1'	56°57.0'	61°17.8'	71°58.5'
10	189°34.1'	S 25°33.8'	4.3'	2.1'	59.1'	49°36.3'	40°44.8'		22°28.5'	36°27.2'	57°17.6'	61°38.8'	72°16.6'
11	203°57.4'	S 25°31.6'	4.3'	2.3'	59.1'	49°03.3'	40°09.3'		21°53.4'	37°02.4'	57°38.4'	61°59.9'	72°34.9'
12	218°20.7'	S 25°29.3'	4.3'	2.5'	59.1'	48°30.4'	39°33.7'		21°18.3'	37°37.5'	57°59.3'	62°21.1'	72°53.2'
13	232°44.0'	S 25°26.8'	4.4'	2.7'	59.1'	47°57.5'	38°58.1'		20°43.3'	38°12.7'	58°20.4'	62°42.4'	73°11.7'
14	247°07.4'	S 25°24.2'	4.4'	2.8'	59.1'	47°24.7'	38°22.6'		20°08.3'	38°47.8'	58°41.6'	63°03.9'	73°30.1'
15	261°30.8'	S 25°21.3'	4.5'	3.0'	59.0'	46°51.9'	37°47.1'		19°33.3'	39°22.9'	59°02.9'	63°25.4'	73°48.7'
16	275°54.3'	S 25°18.3'	4.5'	3.2'	59.0'	46°19.2'	37°11.6'		18°58.4'	39°58.1'	59°24.4'	63°47.1'	74°07.3'
17	290°17.8'	S 25°15.2'	4.6'	3.3'	59.0'	45°46.6'	36°36.1'		18°23.6'	40°33.2'	59°46.0'	64°08.8'	74°26.0'
18	304°41.3'	S 25°11.8'	4.6'	3.5'	59.0'	45°14.0'	36°00.6'		17°48.8'	41°08.3'	60°07.7'	64°30.7'	74°44.8'
19	319°04.9'	S 25°08.3'	4.7'	3.7'	59.0'	44°41.5'	35°25.2'		17°14.1'	41°43.4'	60°29.5'	64°52.7'	75°03.7'
20	333°28.6'	S 25°04.6'	4.7'	3.8'	59.0'	44°09.1'	34°49.8'		16°39.4'	42°18.5'	60°51.5'	65°14.7'	75°22.6'
21	347°52.3'	S 25°00.8'	4.8'	4.0'	59.0'	43°36.7'	34°14.4'		16°04.8'	42°53.6'	61°13.6'	65°36.9'	75°41.5'
22	2°16.0'	S 24°56.8'	4.8'	4.2'	59.0'	43°04.4'	33°39.0'		15°30.3'	43°28.7'	61°35.8'	65°59.1'	76°00.5'
23	16°39.9'	S 24°52.6'	4.9'	4.3'	58.9'	42°32.2'	33°03.6'		14°55.9'	44°03.8'	61°58.1'	66°21.5'	76°19.6'
Mer. pass.		21 h 51 m SD 16.1'		phase 85%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.2'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.3'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.6'	S 63°13.2'	Capella	+0.1	280°26.2'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.4'	Pollux	+1.2	243°21.0'	N 27°58.5'	Aldebaran	+0.9	290°42.9'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.8'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°13.6'	N 89°20.9'
Rigel Kent	-0.0	139°44.2'	S 60°55.6'	Adhara	+1.5	255°08.3'	S 28°59.9'	Achernar	+0.5	335°22.0'	S 57°07.4'
Arcturus	-0.1	145°50.6'	N 19°04.5'	Sirius	-1.4	258°28.9'	S 16°44.6'				
Hadar	+0.6	148°40.1'	S 60°28.7'	Canopus	-0.6	263°54.0'	S 52°42.2'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	328°33.0'	179°08.2'	N 12°26.4'	144°12.6'	S 1°18.7'	358°41.9'	S 13°32.7'	16°59.9'	S 18°48.2'	163°31.1'	N 7°27.2'			
1	343°35.4'	194°08.3'	N 12°25.6'	159°12.4'	S 1°20.0'	13°44.7'	S 13°32.8'	32°02.5'	S 18°48.3'	178°32.1'	N 7°26.6'			
2	358°37.9'	209°08.5'	N 12°24.7'	174°12.2'	S 1°21.2'	28°47.5'	S 13°32.9'	47°05.2'	S 18°48.3'	193°33.0'	N 7°25.9'			
3	13°40.4'	224°08.6'	N 12°23.9'	189°12.0'	S 1°22.5'	43°50.2'	S 13°33.0'	62°07.8'	S 18°48.4'	208°34.0'	N 7°25.3'			
4	28°42.8'	239°08.8'	N 12°23.1'	204°11.8'	S 1°23.8'	58°53.0'	S 13°33.1'	77°10.4'	S 18°48.4'	223°35.0'	N 7°24.7'			
5	43°45.3'	254°08.9'	N 12°22.3'	219°11.6'	S 1°25.1'	73°55.8'	S 13°33.2'	92°13.1'	S 18°48.5'	238°36.0'	N 7°24.1'			
6	58°47.8'	269°09.1'	N 12°21.4'	234°11.4'	S 1°26.4'	88°58.6'	S 13°33.4'	107°15.7'	S 18°48.5'	253°37.0'	N 7°23.4'			
7	73°50.2'	284°09.2'	N 12°20.6'	249°11.2'	S 1°27.7'	104°01.4'	S 13°33.5'	122°18.3'	S 18°48.6'	268°38.0'	N 7°22.8'			
8	88°52.7'	299°09.4'	N 12°19.8'	264°11.0'	S 1°29.0'	119°04.1'	S 13°33.6'	137°21.0'	S 18°48.6'	283°39.0'	N 7°22.2'			
9	103°55.2'	314°09.5'	N 12°18.9'	279°10.9'	S 1°30.3'	134°06.9'	S 13°33.7'	152°23.6'	S 18°48.7'	298°40.0'	N 7°21.6'			
10	118°57.6'	329°09.7'	N 12°18.1'	294°10.7'	S 1°31.6'	149°09.7'	S 13°33.8'	167°26.3'	S 18°48.7'	313°41.0'	N 7°21.0'			
11	134°00.1'	344°09.8'	N 12°17.3'	309°10.5'	S 1°32.8'	164°12.5'	S 13°33.9'	182°28.9'	S 18°48.8'	328°42.0'	N 7°20.3'			
12	149°02.5'	359°10.0'	N 12°16.5'	324°10.3'	S 1°34.1'	179°15.3'	S 13°34.1'	197°31.5'	S 18°48.8'	343°43.0'	N 7°19.7'			
13	164°05.0'	14°10.1'	N 12°15.6'	339°10.1'	S 1°35.4'	194°18.0'	S 13°34.2'	212°34.2'	S 18°48.8'	358°44.0'	N 7°19.1'			
14	179°07.5'	29°10.3'	N 12°14.8'	354°09.9'	S 1°36.7'	209°20.8'	S 13°34.3'	227°36.8'	S 18°48.9'	13°45.0'	N 7°18.5'			
15	194°09.9'	44°10.4'	N 12°14.0'	9°09.7'	S 1°38.0'	224°23.6'	S 13°34.4'	242°39.4'	S 18°48.9'	28°46.0'	N 7°17.8'			
16	209°12.4'	59°10.6'	N 12°13.2'	24°09.5'	S 1°39.3'	239°26.4'	S 13°34.5'	257°42.1'	S 18°49.0'	43°46.9'	N 7°17.2'			
17	224°14.9'	74°10.8'	N 12°12.3'	39°09.3'	S 1°40.6'	254°29.2'	S 13°34.6'	272°44.7'	S 18°49.0'	58°47.9'	N 7°16.6'			
18	239°17.3'	89°10.9'	N 12°11.5'	54°09.2'	S 1°41.9'	269°31.9'	S 13°34.8'	287°47.4'	S 18°49.1'	73°48.9'	N 7°16.0'			
19	254°19.8'	104°11.1'	N 12°10.7'	69°09.0'	S 1°43.2'	284°34.7'	S 13°34.9'	302°50.0'	S 18°49.1'	88°49.9'	N 7°15.3'			
20	269°22.3'	119°11.2'	N 12°09.8'	84°08.8'	S 1°44.4'	299°37.5'	S 13°35.0'	317°52.6'	S 18°49.2'	103°50.9'	N 7°14.7'			
21	284°24.7'	134°11.4'	N 12°09.0'	99°08.6'	S 1°45.7'	314°40.3'	S 13°35.1'	332°55.3'	S 18°49.2'	118°51.9'	N 7°14.1'			
22	299°27.2'	149°11.5'	N 12°08.2'	114°08.4'	S 1°47.0'	329°43.0'	S 13°35.2'	347°57.9'	S 18°49.3'	133°52.9'	N 7°13.5'			
23	314°29.7'	164°11.7'	N 12°07.3'	129°08.2'	S 1°48.3'	344°45.8'	S 13°35.3'	3°00.5'	S 18°49.3'	148°53.9'	N 7°12.8'			
		SD 15.8' d -0.8'		v -0.2' d -1.3'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.0' d -0.6'				
Mer. pass.		12 h 3 m 21 s		14 h 23 m		0 h 5 m		22 h 48 m		13 h 5 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Achernar	-Fomalhaut	-Jupiter	-Saturn	+Antares	+Rigel Kent	+Hadar	+Acrux
0	31°03.8'	S 24°48.3'	4.9'	4.5'	58.9'	67°51.6'	42°00.1'	32°28.2'	14°21.5'	44°38.9'	62°20.5'	66°43.9'	76°38.7'
1	45°27.7'	S 24°43.8'	5.0'	4.7'	58.9'	67°34.8'	41°28.0'	31°52.9'	13°47.3'	45°14.0'	62°43.0'	67°06.4'	76°57.9'
2	59°51.7'	S 24°39.1'	5.1'	4.8'	58.9'	67°18.1'	40°56.1'	31°17.6'	13°13.2'	45°49.0'	63°05.6'	67°29.0'	77°17.2'
3	74°15.8'	S 24°34.3'	5.1'	5.0'	58.9'	67°01.5'	40°24.2'	30°42.3'	12°39.2'	46°24.1'	63°28.3'	67°51.6'	77°36.5'
4	88°39.9'	S 24°29.3'	5.2'	5.1'	58.9'	66°45.0'	39°52.4'	30°07.1'	12°05.4'	46°59.1'	63°51.1'	68°14.4'	77°55.8'
5	103°04.1'	S 24°24.1'	5.3'	5.3'	58.9'	66°28.7'	39°20.7'	29°31.9'	11°31.7'	47°34.1'	64°14.0'	68°37.2'	78°15.2'
6	117°28.4'	S 24°18.8'	5.3'	5.5'	58.8'	66°12.5'	38°49.1'	28°56.6'	10°58.2'	48°09.1'	64°37.0'	69°00.1'	78°34.6'
7	131°52.7'	S 24°13.4'	5.4'	5.6'	58.8'	65°56.4'	38°17.6'	28°21.5'	10°25.0'	48°44.1'	65°00.1'	69°23.0'	78°54.1'
8	146°17.1'	S 24°07.8'	5.5'	5.8'	58.8'	65°40.4'	37°46.2'	27°46.3'	9°52.0'	49°19.1'	65°23.3'	69°46.1'	79°13.6'
9	160°41.6'	S 24°02.0'	5.6'	5.9'	58.8'	65°24.6'	37°14.9'	27°11.2'	9°19.3'	49°54.1'	65°46.5'	70°09.2'	79°33.1'
10	175°06.2'	S 23°56.1'	5.6'	6.1'	58.8'	65°09.0'	36°43.8'	26°36.1'	8°47.0'	50°29.1'	66°09.8'	70°32.3'	79°52.7'
11	189°30.8'	S 23°50.0'	5.7'	6.2'	58.8'	64°53.5'	36°12.7'	26°10.1'	8°15.0'	51°04.0'	66°33.2'	70°55.5'	80°12.3'
12	203°55.5'	S 23°43.8'	5.8'	6.4'	58.8'	64°38.1'	35°41.8'	25°26.0'	7°43.6'	51°38.9'	66°56.7'	71°18.8'	80°32.0'
13	218°20.3'	S 23°37.4'	5.9'	6.5'	58.7'	64°22.9'	35°11.0'	24°51.1'	7°12.8'	52°13.9'	67°20.3'	71°42.1'	80°51.7'
14	232°45.2'	S 23°30.9'	6.0'	6.7'	58.7'		34°40.3'	24°16.1'		52°48.8'	67°43.9'	72°05.5'	81°11.4'
15	247°10.2'	S 23°24.2'	6.0'	6.8'	58.7'		34°09.8'	23°41.2'		53°23.7'	68°07.6'	72°29.0'	81°31.1'
16	261°35.2'	S 23°17.4'	6.1'	7.0'	58.7'		33°39.4'	23°06.3'		53°58.5'	68°31.3'	72°52.5'	81°50.9'
17	276°00.3'	S 23°10.4'	6.2'	7.1'	58.7'		33°09.2'	22°31.5'		54°33.4'	68°55.2'	73°16.0'	82°10.7'
18	290°25.6'	S 23°03.3'	6.3'	7.2'	58.7'		32°39.1'	21°56.7'		55°08.2'	69°19.0'	73°39.6'	82°30.5'
19	304°50.9'	S 22°56.1'	6.4'	7.4'	58.6'		32°09.2'	21°22.0'		55°43.1'	69°43.0'	74°03.2'	82°50.3'
20	319°16.2'	S 22°48.7'	6.5'	7.5'	58.6'		31°39.5'	20°47.3'		56°17.9'	70°07.0'	74°26.9'	83°10.2'
21	333°41.7'	S 22°41.1'	6.6'	7.7'	58.6'		31°09.9'	20°12.6'		56°52.7'	70°31.0'	74°50.6'	83°30.1'
22	348°07.3'	S 22°33.5'	6.7'	7.8'	58.6'		30°40.6'	19°38.0'		57°27.4'	70°55.1'	75°14.3'	83°50.0'
23	2°32.9'	S 22°25.7'	6.7'	7.9'	58.6'		30°11.4'	19°03.5'		58°02.2'	71°19.3'	75°38.1'	84°09.9'
Mer. pass.		22 h 49 m SD 16.1'		phase 92%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.2'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.3'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.6'	S 63°13.2'	Capella	+0.1	280°26.1'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.5'	Pollux	+1.2	243°21.0'	N 27°58.5'	Aldebaran	+0.9	290°42.9'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.8'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°13.1'	N 89°20.9'
Rigel Kent	-0.0	139°44.2'	S 60°55.6'	Adhara	+1.5	255°08.3'	S 28°59.9'	Achernar	+0.5	335°22.0'	S 57°07.4'
Arcturus	-0.1	145°50.6'	N 19°04.5'	Sirius	-1.4	258°28.9'	S 16°44.6'				
Hadar	+0.6	148°40.1'	S 60°28.7'	Canopus	-0.6	263°54.0'	S 52°42.2'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	329°32.1'	179°11.8'	N 12°06.5'	144°08.0'	S 1°49.6'	359°48.6'	S 13°35.5'	18°03.2'	S 18°49.4'	163°54.9'	N 7°12.2'	
1	344°34.6'	194°12.0'	N 12°05.7'	159°07.8'	S 1°50.9'	14°51.4'	S 13°35.6'	33°05.8'	S 18°49.4'	178°55.9'	N 7°11.6'	
2	359°37.0'	209°12.1'	N 12°04.8'	174°07.7'	S 1°52.2'	29°54.2'	S 13°35.7'	48°08.4'	S 18°49.5'	193°56.9'	N 7°10.9'	
3	14°39.5'	224°12.3'	N 12°04.0'	189°07.5'	S 1°53.5'	44°56.9'	S 13°35.8'	63°11.1'	S 18°49.5'	208°57.9'	N 7°10.3'	
4	29°42.0'	239°12.5'	N 12°03.2'	204°07.3'	S 1°54.8'	59°59.7'	S 13°35.9'	78°13.7'	S 18°49.6'	223°58.9'	N 7°09.7'	
5	44°44.4'	254°12.6'	N 12°02.3'	219°07.1'	S 1°56.0'	75°02.5'	S 13°36.0'	93°16.4'	S 18°49.6'	238°59.9'	N 7°09.1'	
6	59°46.9'	269°12.8'	N 12°01.5'	234°06.9'	S 1°57.3'	90°05.3'	S 13°36.2'	108°19.0'	S 18°49.6'	254°00.9'	N 7°08.4'	
7	74°49.4'	284°12.9'	N 12°00.7'	249°06.7'	S 1°58.6'	105°08.1'	S 13°36.3'	123°21.6'	S 18°49.7'	269°01.8'	N 7°07.8'	
8	89°51.8'	299°13.1'	N 11°59.8'	264°06.5'	S 1°59.9'	120°10.8'	S 13°36.4'	138°24.3'	S 18°49.7'	284°02.8'	N 7°07.2'	
9	104°54.3'	314°13.2'	N 11°59.0'	279°06.4'	S 2°01.2'	135°13.6'	S 13°36.5'	153°26.9'	S 18°49.8'	299°03.8'	N 7°06.6'	
10	119°56.8'	329°13.4'	N 11°58.2'	294°06.2'	S 2°02.5'	150°16.4'	S 13°36.6'	168°29.5'	S 18°49.8'	314°04.8'	N 7°05.9'	
11	134°59.2'	344°13.5'	N 11°57.3'	309°06.0'	S 2°03.8'	165°19.2'	S 13°36.7'	183°32.2'	S 18°49.9'	329°05.8'	N 7°05.3'	
12	150°01.7'	359°13.7'	N 11°56.5'	324°05.8'	S 2°05.1'	180°22.0'	S 13°36.9'	198°34.8'	S 18°49.9'	344°06.8'	N 7°04.7'	
13	165°04.2'	14°13.9'	N 11°55.7'	339°05.6'	S 2°06.3'	195°24.7'	S 13°37.0'	213°37.4'	S 18°50.0'	359°07.8'	N 7°04.1'	
14	180°06.6'	29°14.0'	N 11°54.8'	354°05.4'	S 2°07.6'	210°27.5'	S 13°37.1'	228°40.1'	S 18°50.0'	14°08.8'	N 7°03.4'	
15	195°09.1'	44°14.2'	N 11°54.0'	9°05.2'	S 2°08.9'	225°30.3'	S 13°37.2'	243°42.7'	S 18°50.1'	29°09.8'	N 7°02.8'	
16	210°11.5'	59°14.3'	N 11°53.2'	24°05.0'	S 2°10.2'	240°33.1'	S 13°37.3'	258°45.3'	S 18°50.1'	44°10.8'	N 7°02.2'	
17	225°14.0'	74°14.5'	N 11°52.3'	39°04.9'	S 2°11.5'	255°35.9'	S 13°37.4'	273°48.0'	S 18°50.2'	59°11.8'	N 7°01.6'	
18	240°16.5'	89°14.6'	N 11°51.5'	54°04.7'	S 2°12.8'	270°38.6'	S 13°37.6'	288°50.6'	S 18°50.2'	74°12.8'	N 7°00.9'	
19	255°18.9'	104°14.8'	N 11°50.6'	69°04.5'	S 2°14.1'	285°41.4'	S 13°37.7'	303°53.3'	S 18°50.3'	89°13.8'	N 7°00.3'	
20	270°21.4'	119°15.0'	N 11°49.8'	84°04.3'	S 2°15.4'	300°44.2'	S 13°37.8'	318°55.9'	S 18°50.3'	104°14.8'	N 6°59.7'	
21	285°23.9'	134°15.1'	N 11°49.0'	99°04.1'	S 2°16.7'	315°47.0'	S 13°37.9'	333°58.5'	S 18°50.3'	119°15.8'	N 6°59.0'	
22	300°26.3'	149°15.3'	N 11°48.1'	114°03.9'	S 2°17.9'	330°49.8'	S 13°38.0'	349°01.2'	S 18°50.4'	134°16.7'	N 6°58.4'	
23	315°28.8'	164°15.4'	N 11°47.3'	129°03.7'	S 2°19.2'	345°52.5'	S 13°38.1'	4°03.8'	S 18°50.4'	149°17.7'	N 6°57.8'	
		SD 15.8' d -0.8'		v -0.2' d -1.3'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.0' d -0.6'		
Mer. pass.		12 h 3 m 6 s		14 h 24 m		0 h 1 m		22 h 44 m		13 h 4 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Aldebaran	-Rigel	-Fomalhaut	-Jupiter	+Saturn	+Altair	+Antares	+Rigel Kent
0	16°58.7'	S 22°17.7'	6.8'	8.1'	58.5'		119°15.1'	29°42.4'	18°29.1'			58°36.9'	71°43.5'
1	31°24.5'	S 22°09.7'	6.9'	8.2'	58.5'	119°53.1'	118°47.3'	29°13.6'	17°54.7'			59°11.6'	72°07.7'
2	45°50.4'	S 22°01.5'	7.0'	8.3'	58.5'	119°18.5'	118°19.5'	28°45.1'	17°20.3'			59°46.3'	72°32.0'
3	60°16.5'	S 21°53.1'	7.1'	8.5'	58.5'	118°43.9'	117°51.6'	28°16.8'	16°46.1'			60°21.0'	72°56.4'
4	74°42.6'	S 21°44.7'	7.2'	8.6'	58.5'	118°09.4'	117°23.6'	27°48.7'	16°11.9'			60°55.7'	73°20.8'
5	89°08.8'	S 21°36.1'	7.3'	8.7'	58.4'	117°34.8'	116°55.7'	27°20.9'	15°37.8'			61°30.3'	73°45.2'
6	103°35.1'	S 21°27.4'	7.4'	8.8'	58.4'	117°00.3'	116°27.6'	26°53.4'	15°03.8'			62°04.9'	74°09.6'
7	118°01.5'	S 21°18.6'	7.5'	9.0'	58.4'	116°25.8'	115°59.5'	26°26.1'	14°30.0'			62°39.5'	74°34.1'
8	132°28.0'	S 21°09.6'	7.6'	9.1'	58.4'	115°51.3'	115°31.4'	25°59.1'	13°56.2'			63°14.1'	74°58.6'
9	146°54.6'	S 21°00.5'	7.7'	9.2'	58.4'	115°16.8'	115°03.3'	25°32.5'	13°22.6'			63°48.7'	75°23.2'
10	161°21.3'	S 20°51.3'	7.8'	9.3'	58.3'	114°42.4'	114°35.1'	25°06.1'	12°49.1'	7°00.7'		64°23.2'	75°47.8'
11	175°48.1'	S 20°42.0'	7.9'	9.4'	58.3'	114°08.0'	114°06.8'	24°40.1'	12°15.7'	7°30.8'		64°57.7'	76°12.4'
12	190°15.0'	S 20°32.6'	8.0'	9.5'	58.3'	113°33.6'	113°38.6'	24°14.5'	11°42.6'	8°01.6'		65°32.2'	76°37.0'
13	204°42.0'	S 20°23.0'	8.1'	9.7'	58.3'	112°59.2'	113°10.3'	23°49.2'	11°09.6'	8°32.9'		66°06.7'	77°01.6'
14	219°09.0'	S 20°13.4'	8.2'	9.8'	58.3'	112°24.8'	112°42.0'	23°24.3'	10°36.9'	9°04.5'		66°41.1'	77°26.3'
15	233°36.2'	S 20°03.6'	8.3'	9.9'	58.2'	111°50.5'	112°13.6'	22°59.8'	10°04.4'	9°36.5'		67°15.5'	77°51.0'
16	248°03.5'	S 19°53.7'	8.4'	10.0'	58.2'	111°16.2'	111°45.2'	22°35.7'	9°32.2'	10°08.8'		67°49.9'	78°15.7'
17	262°30.9'	S 19°43.8'	8.5'	10.1'	58.2'	110°41.9'	111°16.8'	22°12.1'	9°00.4'	10°41.2'	37°37.4'	68°24.3'	78°40.5'
18	276°58.4'	S 19°33.7'	8.6'	10.2'	58.2'	110°07.6'	110°48.4'	21°49.0'	8°29.0'	11°13.9'	37°52.6'	68°58.6'	79°05.2'
19	291°25.9'	S 19°23.5'	8.7'	10.3'	58.2'	109°33.4'	110°20.0'	21°26.4'	7°58.1'	11°46.7'	38°08.0'	69°33.0'	79°30.0'
20	305°53.6'	S 19°13.2'	8.8'	10.4'	58.1'	108°59.2'	109°51.5'	21°04.3'	7°27.7'	12°19.7'	38°23.9'	70°07.3'	79°54.8'
21	320°21.4'	S 19°02.8'	8.9'	10.5'	58.1'	108°25.0'	109°23.0'	20°42.8'		12°52.8'	38°40.0'	70°41.5'	80°19.6'
22	334°49.3'	S 18°52.3'	9.0'	10.6'	58.1'	107°50.8'	108°54.5'	20°21.8'		13°26.0'	38°56.5'	71°15.8'	80°44.4'
23	349°17.3'	S 18°41.7'	9.1'	10.7'	58.1'	107°16.7'	108°26.0'	20°01.4'		13°59.2'	39°13.3'	71°50.0'	81°09.2'
Mer. pass.		23 h 44 m SD 16.0'		phase 97%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.2'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.2'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.6'	S 63°13.2'	Capella	+0.1	280°26.1'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.6'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.5'	Pollux	+1.2	243°21.0'	N 27°58.5'	Aldebaran	+0.9	290°42.9'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.8'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°12.6'	N 89°20.9'
Rigel Kent	-0.0	139°44.2'	S 60°55.6'	Adhara	+1.5	255°08.3'	S 28°59.9'	Achernar	+0.5	335°22.0'	S 57°07.4'
Arcturus	-0.1	145°50.6'	N 19°04.5'	Sirius	-1.4	258°28.9'	S 16°44.6'				
Hadar	+0.6	148°40.1'	S 60°28.7'	Canopus	-0.6	263°53.9'	S 52°42.2'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	330°31.3'	179°15.6' N 11°46.5'	144°03.6' S 2°20.5'	0°55.3' S 13°38.2'	19°06.4' S 18°50.5'	164°18.7' N 6°57.2'						
1	345°33.7'	194°15.8' N 11°45.6'	159°03.4' S 2°21.8'	15°58.1' S 13°38.4'	34°09.1' S 18°50.5'	179°19.7' N 6°56.5'						
2	0°36.2'	209°15.9' N 11°44.8'	174°03.2' S 2°23.1'	31°00.9' S 13°38.5'	49°11.7' S 18°50.6'	194°20.7' N 6°55.9'						
3	15°38.6'	224°16.1' N 11°43.9'	189°03.0' S 2°24.4'	46°03.6' S 13°38.6'	64°14.3' S 18°50.6'	209°21.7' N 6°55.3'						
4	30°41.1'	239°16.2' N 11°43.1'	204°02.8' S 2°25.7'	61°06.4' S 13°38.7'	79°17.0' S 18°50.7'	224°22.7' N 6°54.7'						
5	45°43.6'	254°16.4' N 11°42.3'	219°02.6' S 2°27.0'	76°09.2' S 13°38.8'	94°19.6' S 18°50.7'	239°23.7' N 6°54.0'						
6	60°46.0'	269°16.6' N 11°41.4'	234°02.4' S 2°28.2'	91°12.0' S 13°38.9'	109°22.2' S 18°50.8'	254°24.7' N 6°53.4'						
7	75°48.5'	284°16.7' N 11°40.6'	249°02.3' S 2°29.5'	106°14.8' S 13°39.1'	124°24.9' S 18°50.8'	269°25.7' N 6°52.8'						
8	90°51.0'	299°16.9' N 11°39.7'	264°02.1' S 2°30.8'	121°17.5' S 13°39.2'	139°27.5' S 18°50.9'	284°26.7' N 6°52.1'						
9	105°53.4'	314°17.0' N 11°38.9'	279°01.9' S 2°32.1'	136°20.3' S 13°39.3'	154°30.1' S 18°50.9'	299°27.7' N 6°51.5'						
10	120°55.9'	329°17.2' N 11°38.0'	294°01.7' S 2°33.4'	151°23.1' S 13°39.4'	169°32.8' S 18°50.9'	314°28.7' N 6°50.9'						
11	135°58.4'	344°17.4' N 11°37.2'	309°01.5' S 2°34.7'	166°25.9' S 13°39.5'	184°35.4' S 18°51.0'	329°29.7' N 6°50.3'						
12	151°00.8'	359°17.5' N 11°36.4'	324°01.3' S 2°36.0'	181°28.7' S 13°39.6'	199°38.0' S 18°51.0'	344°30.7' N 6°49.6'						
13	166°03.3'	14°17.7' N 11°35.5'	339°01.1' S 2°37.2'	196°31.4' S 13°39.8'	214°40.7' S 18°51.1'	359°31.7' N 6°49.0'						
14	181°05.8'	29°17.9' N 11°34.7'	354°01.0' S 2°38.5'	211°34.2' S 13°39.9'	229°43.3' S 18°51.1'	14°32.7' N 6°48.4'						
15	196°08.2'	44°18.0' N 11°33.8'	9°00.8' S 2°39.8'	226°37.0' S 13°40.0'	244°45.9' S 18°51.2'	29°33.6' N 6°47.7'						
16	211°10.7'	59°18.2' N 11°33.0'	24°00.6' S 2°41.1'	241°39.8' S 13°40.1'	259°48.6' S 18°51.2'	44°34.6' N 6°47.1'						
17	226°13.1'	74°18.3' N 11°32.1'	39°00.4' S 2°42.4'	256°42.6' S 13°40.2'	274°51.2' S 18°51.3'	59°35.6' N 6°46.5'						
18	241°15.6'	89°18.5' N 11°31.3'	54°00.2' S 2°43.7'	271°45.3' S 13°40.3'	289°53.8' S 18°51.3'	74°36.6' N 6°45.9'						
19	256°18.1'	104°18.7' N 11°30.4'	69°00.0' S 2°45.0'	286°48.1' S 13°40.4'	304°56.5' S 18°51.4'	89°37.6' N 6°45.2'						
20	271°20.5'	119°18.8' N 11°29.6'	83°59.8' S 2°46.3'	301°50.9' S 13°40.6'	319°59.1' S 18°51.4'	104°38.6' N 6°44.6'						
21	286°23.0'	134°19.0' N 11°28.8'	98°59.7' S 2°47.5'	316°53.7' S 13°40.7'	335°01.7' S 18°51.5'	119°39.6' N 6°44.0'						
22	301°25.5'	149°19.2' N 11°27.9'	113°59.5' S 2°48.8'	331°56.4' S 13°40.8'	350°04.4' S 18°51.5'	134°40.6' N 6°43.3'						
23	316°27.9'	164°19.3' N 11°27.1'	128°59.3' S 2°50.1'	346°59.2' S 13°40.9'	5°07.0' S 18°51.5'	149°41.6' N 6°42.7'						
		SD 15.8' d -0.8'	v -0.2' d -1.3'	v 2.8' d -0.1'	v 2.6' d -0.0'	v 1.0' d -0.6'						
Mer. pass.		12 h 2 m 51 s	14 h 24 m	23 h 52 m	22 h 40 m	13 h 2 m						

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Rigel	-Aldebaran	-Fomalhaut	-Jupiter	+Saturn	+Altair	+Antares	+Rigel Kent
0	3°45.3'	S 18°31.0'	9.2'	10.8'	58.0'	107°57.5'	106°42.6'	19°41.7'		14°32.5'	39°30.4'	72°24.2'	81°34.0'
1	18°13.5'	S 18°20.2'	9.3'	10.9'	58.0'	107°29.0'	106°08.5'	19°22.6'		15°05.9'	39°47.7'	72°58.4'	81°58.8'
2	32°41.8'	S 18°09.3'	9.4'	11.0'	58.0'	107°00.4'	105°34.4'	19°04.2'		15°39.3'	40°05.4'	73°32.5'	82°23.6'
3	47°10.1'	S 17°58.3'	9.5'	11.1'	58.0'	106°31.9'	105°00.4'	18°46.6'		16°12.8'	40°23.4'	74°06.6'	82°48.5'
4	61°38.6'	S 17°47.2'	9.6'	11.2'	57.9'	106°03.3'	104°26.4'	18°29.7'		16°46.3'	40°41.6'	74°40.7'	83°13.3'
5	76°07.2'	S 17°36.1'	9.7'	11.2'	57.9'	105°34.8'	103°52.4'			17°19.9'	41°00.1'	75°14.8'	83°38.1'
6	90°35.8'	S 17°24.8'	9.8'	11.3'	57.9'	105°06.2'	103°18.4'			17°53.4'	41°18.8'	75°48.8'	84°02.9'
7	105°04.6'	S 17°13.5'	9.9'	11.4'	57.9'	104°37.6'	102°44.5'			18°27.0'	41°37.8'	76°22.8'	84°27.8'
8	119°33.5'	S 17°02.1'	10.0'	11.5'	57.9'	104°09.0'	102°10.6'			19°00.6'	41°57.1'	76°56.8'	84°52.6'
9	134°02.4'	S 16°50.6'	10.1'	11.6'	57.8'	103°40.5'	101°36.7'			19°34.2'	42°16.5'	77°30.8'	85°17.4'
10	148°31.5'	S 16°39.0'	10.1'	11.7'	57.8'	103°11.9'	101°02.8'			20°07.8'	42°36.3'	78°04.7'	85°42.2'
11	163°00.6'	S 16°27.3'	10.2'	11.7'	57.8'	102°43.3'	100°29.0'			20°41.4'	42°56.2'	78°38.6'	86°07.0'
12	177°29.9'	S 16°15.6'	10.3'	11.8'	57.8'	102°14.7'	99°55.2'			21°15.0'	43°16.4'	79°12.5'	86°31.8'
13	191°59.2'	S 16°03.8'	10.4'	11.9'	57.7'	101°46.2'	99°21.5'			21°48.6'	43°36.7'	79°46.3'	86°56.5'
14	206°28.6'	S 15°51.9'	10.5'	12.0'	57.7'	101°17.6'	98°47.7'			22°22.1'	43°57.3'	80°20.1'	87°21.3'
15	220°58.2'	S 15°39.9'	10.6'	12.0'	57.7'	100°49.1'	98°14.0'			22°55.7'	44°18.1'	80°53.9'	87°46.0'
16	235°27.8'	S 15°27.9'	10.7'	12.1'	57.7'	100°20.5'	97°40.3'			23°29.3'	44°39.0'	81°27.6'	88°10.8'
17	249°57.5'	S 15°15.8'	10.8'	12.2'	57.6'	99°52.0'	97°06.7'			24°02.9'	45°00.2'	82°01.4'	88°35.5'
18	264°27.3'	S 15°03.6'	10.9'	12.2'	57.6'	99°23.4'	96°33.1'		7°12.4'	24°36.4'	45°21.5'	82°35.1'	89°00.2'
19	278°57.2'	S 14°51.4'	11.0'	12.3'	57.6'	98°54.9'	95°59.5'		7°41.8'	25°10.0'	45°43.0'	83°08.7'	89°24.8'
20	293°27.2'	S 14°39.1'	11.1'	12.4'	57.6'	98°26.4'	95°25.9'		8°11.8'	25°43.5'	46°04.7'	83°42.4'	89°49.5'
21	307°57.3'	S 14°26.7'	11.2'	12.4'	57.5'	97°57.9'	94°52.4'		8°42.3'	26°17.0'	46°26.6'	84°16.0'	90°14.1'
22	322°27.4'	S 14°14.3'	11.3'	12.5'	57.5'	97°29.4'	94°18.9'		9°13.2'	26°50.5'	46°48.6'	84°49.5'	90°38.7'
23	336°57.7'	S 14°01.8'	11.3'	12.6'	57.5'	97°00.9'	93°45.4'		9°44.3'	27°24.0'	47°10.7'	85°23.1'	91°03.3'
Mer. pass.													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.2'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.2'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.6'	S 63°13.2'	Capella	+0.1	280°26.1'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.6'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.6'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.5'	Pollux	+1.2	243°21.0'	N 27°58.5'	Aldebaran	+0.9	290°42.8'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.8'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°12.1'	N 89°20.9'
Rigel Kent	-0.0	139°44.3'	S 60°55.6'	Adhara	+1.5	255°08.3'	S 28°59.9'	Achernar	+0.5	335°22.0'	S 57°07.4'
Arcturus	-0.1	145°50.6'	N 19°04.5'	Sirius	-1.4	258°28.9'	S 16°44.6'				
Hadar	+0.6	148°40.1'	S 60°28.7'	Canopus	-0.6	263°53.9'	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	331°30.4'	179°19.5'	N 11°26.2'	143°59.1'	S 2°51.4'		2°02.0'	S 13°41.0'		20°09.6'	S 18°51.6'		164°42.6'	N 6°42.1'				
1	346°32.9'	194°19.7'	N 11°25.4'	158°58.9'	S 2°52.7'		17°04.8'	S 13°41.1'		35°12.3'	S 18°51.6'		179°43.6'	N 6°41.4'				
2	1°35.3'	209°19.8'	N 11°24.5'	173°58.7'	S 2°54.0'		32°07.6'	S 13°41.3'		50°14.9'	S 18°51.7'		194°44.6'	N 6°40.8'				
3	16°37.8'	224°20.0'	N 11°23.7'	188°58.6'	S 2°55.3'		47°10.3'	S 13°41.4'		65°17.5'	S 18°51.7'		209°45.6'	N 6°40.2'				
4	31°40.3'	239°20.1'	N 11°22.8'	203°58.4'	S 2°56.5'		62°13.1'	S 13°41.5'		80°20.2'	S 18°51.8'		224°46.6'	N 6°39.6'				
5	46°42.7'	254°20.3'	N 11°22.0'	218°58.2'	S 2°57.8'		77°15.9'	S 13°41.6'		95°22.8'	S 18°51.8'		239°47.6'	N 6°38.9'				
6	61°45.2'	269°20.5'	N 11°21.1'	233°58.0'	S 2°59.1'		92°18.7'	S 13°41.7'		110°25.4'	S 18°51.9'		254°48.6'	N 6°38.3'				
7	76°47.6'	284°20.6'	N 11°20.3'	248°57.8'	S 3°00.4'		107°21.5'	S 13°41.8'		125°28.1'	S 18°51.9'		269°49.6'	N 6°37.7'				
8	91°50.1'	299°20.8'	N 11°19.4'	263°57.6'	S 3°01.7'		122°24.2'	S 13°41.9'		140°30.7'	S 18°52.0'		284°50.5'	N 6°37.0'				
9	106°52.6'	314°21.0'	N 11°18.6'	278°57.4'	S 3°03.0'		137°27.0'	S 13°42.1'		155°33.3'	S 18°52.0'		299°51.5'	N 6°36.4'				
10	121°55.0'	329°21.1'	N 11°17.7'	293°57.3'	S 3°04.3'		152°29.8'	S 13°42.2'		170°36.0'	S 18°52.0'		314°52.5'	N 6°35.8'				
11	136°57.5'	344°21.3'	N 11°16.9'	308°57.1'	S 3°05.5'		167°32.6'	S 13°42.3'		185°38.6'	S 18°52.1'		329°53.5'	N 6°35.1'				
12	151°60.0'	359°21.5'	N 11°16.0'	323°56.9'	S 3°06.8'		182°35.3'	S 13°42.4'		200°41.2'	S 18°52.1'		344°54.5'	N 6°34.5'				
13	167°02.4'	14°21.6'	N 11°15.2'	338°56.7'	S 3°08.1'		197°38.1'	S 13°42.5'		215°43.8'	S 18°52.2'		359°55.5'	N 6°33.9'				
14	182°04.9'	29°21.8'	N 11°14.3'	353°56.5'	S 3°09.4'		212°40.9'	S 13°42.6'		230°46.5'	S 18°52.2'		14°56.5'	N 6°33.3'				
15	197°07.4'	44°22.0'	N 11°13.5'	8°56.3'	S 3°10.7'		227°43.7'	S 13°42.8'		245°49.1'	S 18°52.3'		29°57.5'	N 6°32.6'				
16	212°09.8'	59°22.1'	N 11°12.6'	23°56.2'	S 3°12.0'		242°46.5'	S 13°42.9'		260°51.7'	S 18°52.3'		44°58.5'	N 6°32.0'				
17	227°12.3'	74°22.3'	N 11°11.8'	38°56.0'	S 3°13.2'		257°49.2'	S 13°43.0'		275°54.4'	S 18°52.4'		59°59.5'	N 6°31.4'				
18	242°14.7'	89°22.5'	N 11°10.9'	53°55.8'	S 3°14.5'		272°52.0'	S 13°43.1'		290°57.0'	S 18°52.4'		75°00.5'	N 6°30.7'				
19	257°17.2'	104°22.6'	N 11°10.1'	68°55.6'	S 3°15.8'		287°54.8'	S 13°43.2'		305°59.6'	S 18°52.5'		90°01.5'	N 6°30.1'				
20	272°19.7'	119°22.8'	N 11°09.2'	83°55.4'	S 3°17.1'		302°57.6'	S 13°43.3'		321°02.3'	S 18°52.5'		105°02.5'	N 6°29.5'				
21	287°22.1'	134°23.0'	N 11°08.4'	98°55.2'	S 3°18.4'		318°00.4'	S 13°43.4'		336°04.9'	S 18°52.5'		120°03.5'	N 6°28.8'				
22	302°24.6'	149°23.1'	N 11°07.5'	113°55.0'	S 3°19.7'		333°03.1'	S 13°43.6'		351°07.5'	S 18°52.6'		135°04.5'	N 6°28.2'				
23	317°27.1'	164°23.3'	N 11°06.6'	128°54.9'	S 3°21.0'		348°05.9'	S 13°43.7'		6°10.2'	S 18°52.6'		150°05.5'	N 6°27.6'				
		SD 15.8' d -0.9'		v -0.2' d -1.3'			v 2.8' d -0.1'			v 2.6' d -0.0'			v 1.0' d -0.6'					
Mer. pass.		12 h 2 m 35 s		14 h 24 m			23 h 47 m			22 h 35 m			13 h 0 m					

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Betelgeuse	-Capella	-Rigel	-Aldebaran	+Jupiter	+Fomalhaut	+Saturn	+Altair
0	351°28.1'	S 13°49.2'	11.4'	12.6'	57.4'	110°10.8'	106°28.1'	96°32.5'	93°12.0'	10°15.8'			
1	5°58.5'	S 13°36.6'	11.5'	12.7'	57.4'	109°39.0'	105°57.1'	96°04.0'	92°38.6'	10°47.4'			
2	20°29.0'	S 13°24.0'	11.6'	12.7'	57.4'	109°07.3'	105°26.0'	95°35.6'	92°05.2'	11°19.3'			
3	34°59.6'	S 13°11.2'	11.7'	12.8'	57.4'	108°35.6'	104°55.0'	95°07.2'	91°31.9'	11°51.3'			
4	49°30.3'	S 12°58.5'	11.8'	12.8'	57.3'	108°03.9'	104°24.0'	94°38.8'	90°58.6'	12°23.4'			
5	64°01.1'	S 12°45.6'	11.9'	12.9'	57.3'	107°32.3'	103°53.1'	94°10.4'	90°25.3'	12°55.6'			
6	78°32.0'	S 12°32.8'	11.9'	12.9'	57.3'	107°00.6'	103°22.1'	93°42.1'	89°52.0'	13°28.0'			
7	93°02.9'	S 12°19.8'	12.0'	13.0'	57.3'	106°29.0'	102°51.2'	93°13.8'	89°18.8'	14°00.4'			
8	107°33.9'	S 12°06.9'	12.1'	13.0'	57.2'	105°57.4'	102°20.2'	92°45.5'	88°45.6'	14°32.8'			
9	122°05.0'	S 11°53.8'	12.2'	13.1'	57.2'	105°25.8'	101°49.3'	92°17.2'	88°12.5'	15°05.4'			
10	136°36.2'	S 11°40.8'	12.3'	13.1'	57.2'	104°54.2'	101°18.5'	91°48.9'	87°39.4'	15°37.9'			
11	151°07.5'	S 11°27.7'	12.3'	13.2'	57.2'	104°22.7'	100°47.6'	91°20.7'	87°06.3'	16°10.6'		18°04.5'	
12	165°38.9'	S 11°14.5'	12.4'	13.2'	57.1'	103°51.2'	100°16.8'	90°52.5'	86°33.2'	16°43.2'		18°19.7'	
13	180°10.3'	S 11°01.3'	12.5'	13.2'	57.1'	103°19.7'	99°46.0'	90°24.3'	86°00.2'	17°15.9'		18°35.6'	
14	194°41.8'	S 10°48.1'	12.6'	13.3'	57.1'	102°48.2'	99°15.2'	89°56.2'	85°27.2'	17°48.5'		18°52.2'	
15	209°13.4'	S 10°34.8'	12.7'	13.3'	57.0'	102°16.8'	98°44.4'	89°28.0'	84°54.3'	18°21.2'		19°09.5'	
16	223°45.0'	S 10°21.5'	12.7'	13.3'	57.0'	101°45.4'	98°13.7'	88°59.9'	84°21.3'	18°54.0'		19°27.5'	
17	238°16.8'	S 10°08.1'	12.8'	13.4'	57.0'	101°14.0'	97°42.9'	88°31.9'	83°48.5'	19°26.7'		19°46.0'	
18	252°48.6'	S 9°54.8'	12.9'	13.4'	57.0'	100°42.6'	97°12.2'	88°03.8'	83°15.6'	19°59.4'		20°05.1'	
19	267°20.4'	S 9°41.4'	12.9'	13.4'	56.9'	100°11.3'	96°41.6'	87°35.8'	82°42.8'	20°32.1'		20°24.8'	
20	281°52.4'	S 9°27.9'	13.0'	13.5'	56.9'	99°39.9'	96°10.9'	87°07.9'	82°10.0'	21°04.8'		20°45.0'	
21	296°24.4'	S 9°14.4'	13.1'	13.5'	56.9'	99°08.7'	95°40.3'	86°39.9'	81°37.2'	21°37.5'		21°05.6'	
22	310°56.5'	S 9°00.9'	13.2'	13.5'	56.9'	98°37.4'	95°09.7'	86°12.0'	81°04.5'	22°10.2'		21°26.8'	
23	325°28.7'	S 8°47.4'	13.2'	13.6'	56.8'	98°06.2'	94°39.1'	85°44.2'	80°31.8'	22°42.9'		21°48.4'	
Mer. pass.		0 h 35 m SD 15.7' phase 100%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.2'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.2'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.5'	Acrux	+0.8	173°03.7'	S 63°13.2'	Capella	+0.1	280°26.1'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.7'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.6'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.5'	Pollux	+1.2	243°21.0'	N 27°58.5'	Aldebaran	+0.9	290°42.8'	N 16°33.1'
Antares	+1.1	112°19.1'	S 26°28.8'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°11.7'	N 89°20.9'
Rigel Kent	-0.0	139°44.3'	S 60°55.6'	Adhara	+1.5	255°08.3'	S 28°59.9'	Achernar	+0.5	335°22.0'	S 57°07.4'
Arcturus	-0.1	145°50.6'	N 19°04.5'	Sirius	-1.4	258°28.9'	S 16°44.6'				
Hadar	+0.6	148°40.2'	S 60°28.7'	Canopus	-0.6	263°53.9'	S 52°42.1'				

Tuesday 24 August 2021 UT1

h	Aries GHA	Sun GHA dec	Venus GHA dec	Jupiter GHA dec	Saturn GHA dec	Mars GHA dec
0	332°29.5'	179°23.5' N 11°05.8'	143°54.7' S 3°22.2'	3°08.7' S 13°43.8'	21°12.8' S 18°52.7'	165°06.5' N 6°26.9'
1	347°32.0'	194°23.7' N 11°04.9'	158°54.5' S 3°23.5'	18°11.5' S 13°43.9'	36°15.4' S 18°52.7'	180°07.5' N 6°26.3'
2	2°34.5'	209°23.8' N 11°04.1'	173°54.3' S 3°24.8'	33°14.2' S 13°44.0'	51°18.1' S 18°52.8'	195°08.5' N 6°25.7'
3	17°36.9'	224°24.0' N 11°03.2'	188°54.1' S 3°26.1'	48°17.0' S 13°44.1'	66°20.7' S 18°52.8'	210°09.4' N 6°25.0'
4	32°39.4'	239°24.2' N 11°02.4'	203°53.9' S 3°27.4'	63°19.8' S 13°44.2'	81°23.3' S 18°52.9'	225°10.4' N 6°24.4'
5	47°41.9'	254°24.3' N 11°01.5'	218°53.8' S 3°28.7'	78°22.6' S 13°44.4'	96°25.9' S 18°52.9'	240°11.4' N 6°23.8'
6	62°44.3'	269°24.5' N 11°00.7'	233°53.6' S 3°29.9'	93°25.4' S 13°44.5'	111°28.6' S 18°52.9'	255°12.4' N 6°23.2'
7	77°46.8'	284°24.7' N 10°59.8'	248°53.4' S 3°31.2'	108°28.1' S 13°44.6'	126°31.2' S 18°53.0'	270°13.4' N 6°22.5'
8	92°49.2'	299°24.8' N 10°58.9'	263°53.2' S 3°32.5'	123°30.9' S 13°44.7'	141°33.8' S 18°53.0'	285°14.4' N 6°21.9'
9	107°51.7'	314°25.0' N 10°58.1'	278°53.0' S 3°33.8'	138°33.7' S 13°44.8'	156°36.5' S 18°53.1'	300°15.4' N 6°21.3'
10	122°54.2'	329°25.2' N 10°57.2'	293°52.8' S 3°35.1'	153°36.5' S 13°44.9'	171°39.1' S 18°53.1'	315°16.4' N 6°20.6'
11	137°56.6'	344°25.3' N 10°56.4'	308°52.7' S 3°36.4'	168°39.2' S 13°45.0'	186°41.7' S 18°53.2'	330°17.4' N 6°20.0'
12	152°59.1'	359°25.5' N 10°55.5'	323°52.5' S 3°37.6'	183°42.0' S 13°45.2'	201°44.4' S 18°53.2'	345°18.4' N 6°19.4'
13	168°01.6'	14°25.7' N 10°54.7'	338°52.3' S 3°38.9'	198°44.8' S 13°45.3'	216°47.0' S 18°53.3'	0°19.4' N 6°18.7'
14	183°04.0'	29°25.9' N 10°53.8'	353°52.1' S 3°40.2'	213°47.6' S 13°45.4'	231°49.6' S 18°53.3'	15°20.4' N 6°18.1'
15	198°06.5'	44°26.0' N 10°52.9'	8°51.9' S 3°41.5'	228°50.4' S 13°45.5'	246°52.2' S 18°53.4'	30°21.4' N 6°17.5'
16	213°09.0'	59°26.2' N 10°52.1'	23°51.7' S 3°42.8'	243°53.1' S 13°45.6'	261°54.9' S 18°53.4'	45°22.4' N 6°16.8'
17	228°11.4'	74°26.4' N 10°51.2'	38°51.5' S 3°44.1'	258°55.9' S 13°45.7'	276°57.5' S 18°53.4'	60°23.4' N 6°16.2'
18	243°13.9'	89°26.5' N 10°50.4'	53°51.4' S 3°45.3'	273°58.7' S 13°45.8'	292°00.1' S 18°53.5'	75°24.4' N 6°15.6'
19	258°16.3'	104°26.7' N 10°49.5'	68°51.2' S 3°46.6'	289°01.5' S 13°46.0'	307°02.8' S 18°53.5'	90°25.4' N 6°14.9'
20	273°18.8'	119°26.9' N 10°48.6'	83°51.0' S 3°47.9'	304°04.2' S 13°46.1'	322°05.4' S 18°53.6'	105°26.4' N 6°14.3'
21	288°21.3'	134°27.1' N 10°47.8'	98°50.8' S 3°49.2'	319°07.0' S 13°46.2'	337°08.0' S 18°53.6'	120°27.4' N 6°13.7'
22	303°23.7'	149°27.2' N 10°46.9'	113°50.6' S 3°50.5'	334°09.8' S 13°46.3'	352°10.6' S 18°53.7'	135°28.4' N 6°13.0'
23	318°26.2'	164°27.4' N 10°46.1'	128°50.4' S 3°51.7'	349°12.6' S 13°46.4'	7°13.3' S 18°53.7'	150°29.3' N 6°12.4'
		SD 15.8' d -0.9'	v -0.2' d -1.3'	v 2.8' d -0.1'	v 2.6' d -0.0'	v 1.0' d -0.6'
Mer. pass.		12 h 2 m 19 s	14 h 25 m	23 h 43 m	22 h 31 m	12 h 59 m

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Betelgeuse	-Capella	-Rigel	-Aldebaran	+Fomalhaut	+Jupiter	+Saturn	+Altair
0	340°00.9'	S 8°33.8'	13.3'	13.6'	56.8'	97°34.9'	94°08.6'	85°16.3'	79°59.2'	22°10.4'	23°15.6'	41°13.1'	57°02.9'
1	354°33.2'	S 8°20.2'	13.4'	13.6'	56.8'	97°03.8'	93°38.1'	84°48.5'	79°26.6'	22°32.8'	23°48.3'	41°45.9'	57°27.7'
2	9°05.5'	S 8°06.6'	13.4'	13.6'	56.7'	96°32.6'	93°07.6'	84°20.8'	78°54.0'	22°55.5'	24°20.9'	42°18.7'	57°52.6'
3	23°38.0'	S 7°53.0'	13.5'	13.7'	56.7'	96°01.5'	92°37.2'	83°53.0'	78°21.4'	23°18.7'	24°53.6'	42°51.4'	58°17.5'
4	38°10.5'	S 7°39.3'	13.6'	13.7'	56.7'	95°30.4'	92°06.7'	83°25.3'	77°48.9'	23°42.1'	25°26.2'	43°24.1'	58°42.4'
5	52°43.0'	S 7°25.7'	13.6'	13.7'	56.7'	94°59.3'	91°36.3'	82°57.7'	77°16.4'	24°05.9'	25°58.8'	43°56.8'	59°07.5'
6	67°15.6'	S 7°12.0'	13.7'	13.7'	56.6'	94°28.3'	91°06.0'	82°30.1'	76°44.0'	24°30.0'	26°31.4'	44°29.5'	59°32.5'
7	81°48.3'	S 6°58.3'	13.7'	13.7'	56.6'	93°57.3'	90°35.6'	82°02.5'	76°11.5'	24°54.3'	27°04.0'	45°02.1'	59°57.7'
8	96°21.0'	S 6°44.5'	13.8'	13.7'	56.6'	93°26.3'	90°05.3'	81°35.0'	75°39.2'	25°18.9'	27°36.5'	45°34.7'	60°22.8'
9	110°53.8'	S 6°30.8'	13.8'	13.8'	56.5'	92°55.4'	89°35.1'	81°07.5'	75°06.8'	25°43.8'	28°09.0'	46°07.2'	60°48.0'
10	125°26.7'	S 6°17.0'	13.9'	13.8'	56.5'	92°24.4'	89°04.8'	80°40.1'	74°34.5'	26°08.9'	28°41.5'	46°39.8'	61°13.3'
11	139°59.6'	S 6°03.2'	14.0'	13.8'	56.5'	91°53.6'	88°34.6'	80°12.7'	74°02.2'	26°34.2'	29°14.0'	47°12.3'	61°38.6'
12	154°32.5'	S 5°49.4'	14.0'	13.8'	56.5'	91°22.7'	88°04.4'	79°45.3'	73°30.0'	26°59.7'	29°46.5'	47°44.7'	62°03.9'
13	169°05.6'	S 5°35.6'	14.1'	13.8'	56.4'	90°51.9'	87°34.3'	79°18.0'	72°57.8'	27°25.4'	30°18.9'	48°17.2'	62°29.3'
14	183°38.6'	S 5°21.8'	14.1'	13.8'	56.4'	90°21.1'	87°04.2'	78°50.7'	72°25.6'	27°51.3'	30°51.3'	48°49.6'	62°54.7'
15	198°11.7'	S 5°08.0'	14.2'	13.8'	56.4'	89°50.3'	86°34.1'	78°23.5'	71°53.5'	28°17.4'	31°23.7'	49°21.9'	63°20.1'
16	212°44.9'	S 4°54.2'	14.2'	13.8'	56.4'	89°19.6'	86°04.1'	77°56.3'	71°21.3'	28°43.7'	31°56.1'	49°54.3'	63°45.6'
17	227°18.1'	S 4°40.3'	14.3'	13.8'	56.3'	88°48.9'	85°34.1'	77°29.2'	70°49.3'	29°10.1'	32°28.4'	50°26.6'	64°11.1'
18	241°51.4'	S 4°26.5'	14.3'	13.8'	56.3'	88°18.2'	85°04.1'	77°02.1'	70°17.2'	29°36.7'	33°00.7'	50°58.9'	64°36.6'
19	256°24.7'	S 4°12.6'	14.4'	13.9'	56.3'	87°47.6'	84°34.1'	76°35.1'	69°45.2'	30°03.4'	33°33.0'	51°31.1'	65°02.2'
20	270°58.1'	S 3°58.8'	14.4'	13.9'	56.2'	87°17.0'	84°04.2'	76°08.1'	69°13.3'	30°30.2'	34°05.2'	52°03.3'	65°27.7'
21	285°31.5'	S 3°44.9'	14.5'	13.9'	56.2'	86°46.5'	83°34.3'	75°41.2'	68°41.3'	30°57.2'	34°37.5'	52°35.5'	65°53.3'
22	300°05.0'	S 3°31.1'	14.5'	13.9'	56.2'	86°15.9'	83°04.5'	75°14.3'	68°09.4'	31°24.2'	35°09.7'	53°07.6'	66°18.9'
23	314°38.5'	S 3°17.2'	14.6'	13.9'	56.2'	85°45.4'	82°34.7'	74°47.5'	67°37.6'	31°51.4'	35°41.8'	53°39.8'	66°44.6'
Mer. pass.		1 h 23 m SD 15.5'	phase 97%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.2'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.2'	N 7°24.7'
Deneb	+1.2	49°27.2' N	45°21.6'	Acrux	+0.8	173°03.7'	S 63°13.2'	Capella	+0.1	280°26.1' N	46°01.0'
Altair	+0.8	62°02.4' N	8°55.7'	Regulus	+1.4	207°37.7' N	11°51.9'	Rigel	+0.2	281°06.6'	S 8°10.5'
Vega	+0.0	80°34.8' N	38°48.5'	Pollux	+1.2	243°21.0' N	27°58.5'	Aldebaran	+0.9	290°42.8' N	16°33.1'
Antares	+1.1	112°19.2' S	26°28.8'	Procyon	+0.4	244°54.0' N	5°10.3'	Polaris	+2.0	315°11.3' N	89°20.9'
Rigil Kent	-0.0	139°44.3' S	60°55.6'	Adhara	+1.5	255°08.3' S	28°59.9'	Achernar	+0.5	335°22.0' S	57°07.4'
Arcturus	-0.1	145°50.6' N	19°04.5'	Sirius	-1.4	258°28.9' S	16°44.6'				
Hadar	+0.6	148°40.2' S	60°28.7'	Canopus	-0.6	263°53.9' S	52°42.1'				

Wednesday 25 August 2021 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	333°28.7'	179°27.6'	N 10°45.2'	143°50.3'	S 3°53.0'	4°15.4'	S 13°46.5'	22°15.9'	S 18°53.8'	165°30.3'	N 6°11.8'
1	348°31.1'	194°27.8'	N 10°44.3'	158°50.1'	S 3°54.3'	19°18.1'	S 13°46.6'	37°18.5'	S 18°53.8'	180°31.3'	N 6°11.1'
2	3°33.6'	209°27.9'	N 10°43.5'	173°49.9'	S 3°55.6'	34°20.9'	S 13°46.8'	52°21.2'	S 18°53.8'	195°32.3'	N 6°10.5'
3	18°36.1'	224°28.1'	N 10°42.6'	188°49.7'	S 3°56.9'	49°23.7'	S 13°46.9'	67°23.8'	S 18°53.9'	210°33.3'	N 6°09.9'
4	33°38.5'	239°28.3'	N 10°41.7'	203°49.5'	S 3°58.2'	64°26.5'	S 13°47.0'	82°26.4'	S 18°53.9'	225°34.3'	N 6°09.2'
5	48°41.0'	254°28.4'	N 10°40.9'	218°49.3'	S 3°59.4'	79°29.2'	S 13°47.1'	97°29.0'	S 18°54.0'	240°35.3'	N 6°08.6'
6	63°43.5'	269°28.6'	N 10°40.0'	233°49.2'	S 4°00.7'	94°32.0'	S 13°47.2'	112°31.7'	S 18°54.0'	255°36.3'	N 6°08.0'
7	78°45.9'	284°28.8'	N 10°39.2'	248°49.0'	S 4°02.0'	109°34.8'	S 13°47.3'	127°34.3'	S 18°54.1'	270°37.3'	N 6°07.3'
8	93°48.4'	299°29.0'	N 10°38.3'	263°48.8'	S 4°03.3'	124°37.6'	S 13°47.4'	142°36.9'	S 18°54.1'	285°38.3'	N 6°06.7'
9	108°50.8'	314°29.1'	N 10°37.4'	278°48.6'	S 4°04.6'	139°40.4'	S 13°47.6'	157°39.6'	S 18°54.2'	300°39.3'	N 6°06.1'
10	123°53.3'	329°29.3'	N 10°36.6'	293°48.4'	S 4°05.8'	154°43.1'	S 13°47.7'	172°42.2'	S 18°54.2'	315°40.3'	N 6°05.4'
11	138°55.8'	344°29.5'	N 10°35.7'	308°48.2'	S 4°07.1'	169°45.9'	S 13°47.8'	187°44.8'	S 18°54.2'	330°41.3'	N 6°04.8'
12	153°58.2'	359°29.7'	N 10°34.8'	323°48.0'	S 4°08.4'	184°48.7'	S 13°47.9'	202°47.4'	S 18°54.3'	345°42.3'	N 6°04.2'
13	169°00.7'	14°29.8'	N 10°34.0'	338°47.9'	S 4°09.7'	199°51.5'	S 13°48.0'	217°50.1'	S 18°54.3'	0°43.3'	N 6°03.5'
14	184°03.2'	29°30.0'	N 10°33.1'	353°47.7'	S 4°11.0'	214°54.2'	S 13°48.1'	232°52.7'	S 18°54.4'	15°44.3'	N 6°02.9'
15	199°05.6'	44°30.2'	N 10°32.2'	8°47.5'	S 4°12.2'	229°57.0'	S 13°48.2'	247°55.3'	S 18°54.4'	30°45.3'	N 6°02.3'
16	214°08.1'	59°30.4'	N 10°31.4'	23°47.3'	S 4°13.5'	244°59.8'	S 13°48.4'	262°58.0'	S 18°54.5'	45°46.3'	N 6°01.6'
17	229°10.6'	74°30.5'	N 10°30.5'	38°47.1'	S 4°14.8'	260°02.6'	S 13°48.5'	278°00.6'	S 18°54.5'	60°47.3'	N 6°01.0'
18	244°13.0'	89°30.7'	N 10°29.6'	53°46.9'	S 4°16.1'	275°05.3'	S 13°48.6'	293°03.2'	S 18°54.5'	75°48.3'	N 6°00.4'
19	259°15.5'	104°30.9'	N 10°28.8'	68°46.8'	S 4°17.4'	290°08.1'	S 13°48.7'	308°05.8'	S 18°54.6'	90°49.3'	N 5°59.7'
20	274°17.9'	119°31.1'	N 10°27.9'	83°46.6'	S 4°18.6'	305°10.9'	S 13°48.8'	323°08.5'	S 18°54.6'	105°50.3'	N 5°59.1'
21	289°20.4'	134°31.2'	N 10°27.0'	98°46.4'	S 4°19.9'	320°13.7'	S 13°48.9'	338°11.1'	S 18°54.7'	120°51.2'	N 5°58.5'
22	304°22.9'	149°31.4'	N 10°26.2'	113°46.2'	S 4°21.2'	335°16.5'	S 13°49.0'	353°13.7'	S 18°54.7'	135°52.2'	N 5°57.8'
23	319°25.3'	164°31.6'	N 10°25.3'	128°46.0'	S 4°22.5'	350°19.2'	S 13°49.1'	8°16.3'	S 18°54.8'	150°53.2'	N 5°57.2'
		SD 15.8' d -0.9'		v -0.2' d -1.3'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.0' d -0.6'	
Mer. pass.		12 h 2 m 2 s		14 h 25 m		23 h 39 m		22 h 27 m		12 h 57 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Betelgeuse	-Capella	-Rigel	-Aldebaran	+Fomalhaut	+Jupiter	+Saturn	+Altair
0	329°12.1'	S 3°03.4'	14.6'	13.9'	56.1'	85°15.0'	82°04.9'	74°20.7'	67°05.7'	32°18.7'	36°14.0'	54°11.8'	67°10.2'
1	343°45.7'	S 2°49.5'	14.6'	13.9'	56.1'	84°44.5'	81°35.2'	73°54.0'	66°33.9'	32°46.1'	36°46.1'	54°43.9'	67°35.9'
2	358°19.3'	S 2°35.7'	14.7'	13.9'	56.1'	84°14.1'	81°05.5'	73°27.3'	66°02.2'	33°13.6'	37°18.2'	55°15.9'	68°01.6'
3	12°53.0'	S 2°21.8'	14.7'	13.8'	56.1'	83°43.8'	80°35.9'	73°00.7'	65°30.4'	33°41.2'	37°50.3'	55°47.9'	68°27.3'
4	27°26.7'	S 2°07.9'	14.8'	13.8'	56.0'	83°13.4'	80°06.2'	72°34.1'	64°58.7'	34°08.9'	38°22.3'	56°19.9'	68°53.1'
5	42°00.4'	S 1°54.1'	14.8'	13.8'	56.0'	82°43.1'	79°36.6'	72°07.6'	64°27.1'	34°36.6'	38°54.3'	56°51.8'	69°18.8'
6	56°34.2'	S 1°40.3'	14.8'	13.8'	56.0'	82°12.9'	79°07.1'	71°41.1'	63°55.4'	35°04.4'	39°26.3'	57°23.7'	69°44.6'
7	71°08.0'	S 1°26.4'	14.9'	13.8'	56.0'	81°42.7'	78°37.6'	71°14.8'	63°23.8'	35°32.3'	39°58.2'	57°55.6'	70°10.3'
8	85°41.9'	S 1°12.6'	14.9'	13.8'	55.9'	81°12.5'	78°08.1'	70°48.4'	62°52.3'	36°00.2'	40°30.1'	58°27.4'	70°36.1'
9	100°15.8'	S 0°58.8'	14.9'	13.8'	55.9'	80°42.3'	77°38.7'	70°22.1'	62°20.8'	36°28.2'	41°02.0'	58°59.2'	71°01.9'
10	114°49.7'	S 0°45.0'	15.0'	13.8'	55.9'	80°12.2'	77°09.3'	69°55.9'	61°49.3'	36°56.3'	41°33.9'	59°31.0'	71°27.7'
11	129°23.7'	S 0°31.2'	15.0'	13.8'	55.9'	79°42.1'	76°39.9'	69°29.8'	61°17.8'	37°24.4'	42°05.7'	60°02.7'	71°53.5'
12	143°57.7'	S 0°17.4'	15.0'	13.8'	55.8'	79°12.1'	76°10.6'	69°03.7'	60°46.4'	37°52.6'	42°37.5'	60°34.4'	72°19.3'
13	158°31.7'	S 0°03.6'	15.0'	13.8'	55.8'	78°42.1'	75°41.3'	68°37.6'	60°15.0'	38°20.8'	43°09.3'	61°06.1'	72°45.1'
14	173°05.7'	N 0°10.1'	15.1'	13.7'	55.8'	78°12.1'	75°12.1'	68°11.7'	59°43.6'	38°49.1'	43°41.1'	61°37.8'	73°10.9'
15	187°39.8'	N 0°23.9'	15.1'	13.7'	55.7'	77°42.1'	74°42.9'	67°45.8'	59°12.3'	39°17.4'	44°12.8'	62°09.4'	73°36.7'
16	202°13.9'	N 0°37.6'	15.1'	13.7'	55.7'	77°12.2'	74°13.8'	67°19.9'	58°41.0'	39°45.8'	44°44.5'	62°41.0'	74°02.5'
17	216°48.1'	N 0°51.3'	15.2'	13.7'	55.7'	76°42.4'	73°44.6'	66°54.1'	58°09.8'	40°14.2'	45°16.2'	63°12.5'	74°28.3'
18	231°22.2'	N 1°05.0'	15.2'	13.7'	55.7'	76°12.5'	73°15.6'	66°28.4'	57°38.5'	40°42.6'	45°47.8'	63°44.0'	74°54.1'
19	245°56.4'	N 1°18.7'	15.2'	13.7'	55.6'	75°42.7'	72°46.5'	66°02.8'	57°07.4'	41°11.0'	46°19.4'	64°15.5'	75°20.0'
20	260°30.6'	N 1°32.3'	15.2'	13.6'	55.6'	75°13.0'	72°17.5'	65°37.2'	56°36.2'	41°39.5'	46°51.0'	64°47.0'	75°45.8'
21	275°04.8'	N 1°46.0'	15.2'	13.6'	55.6'	74°43.3'	71°48.6'	65°11.7'	56°05.1'	42°08.0'	47°22.5'	65°18.4'	76°11.6'
22	289°39.1'	N 1°59.6'	15.3'	13.6'	55.6'	74°13.6'	71°19.7'	64°46.3'	55°34.0'	42°36.6'	47°54.0'	65°49.8'	76°37.4'
23	304°13.3'	N 2°13.2'	15.3'	13.6'	55.5'	73°43.9'	70°50.8'	64°20.9'	55°02.9'	43°05.2'	48°25.5'	66°21.2'	77°03.2'
Mer. pass.		2 h 7 m SD 15.3'		phase 93%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.2'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.2'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.6'	Acrux	+0.8	173°03.7'	S 63°13.2'	Capella	+0.1	280°26.1'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.7'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.6'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.5'	Pollux	+1.2	243°21.0'	N 27°58.5'	Aldebaran	+0.9	290°42.8'	N 16°33.1'
Antares	+1.1	112°19.2'	S 26°28.8'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°10.8'	N 89°21.0'
Rigil Kent	-0.0	139°44.3'	S 60°55.6'	Adhara	+1.5	255°08.3'	S 28°59.9'	Achernar	+0.5	335°22.0'	S 57°07.4'
Arcturus	-0.1	145°50.6'	N 19°04.5'	Sirius	-1.4	258°28.9'	S 16°44.6'				
Hadar	+0.6	148°40.2'	S 60°28.7'	Canopus	-0.6	263°53.9'	S 52°42.1'				

h	Aries GHA	Sun		Venus		Jupiter		Saturn		Mars	
		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	334°27.8'	179°31.8' N	10°24.4'	143°45.8' S	4°23.8'	5°22.0' S	13°49.3'	23°19.0' S	18°54.8'	165°54.2' N	5°56.5'
1	349°30.3'	194°32.0' N	10°23.6'	158°45.7' S	4°25.0'	20°24.8' S	13°49.4'	38°21.6' S	18°54.9'	180°55.2' N	5°55.9'
2	4°32.7'	209°32.1' N	10°22.7'	173°45.5' S	4°26.3'	35°27.6' S	13°49.5'	53°24.2' S	18°54.9'	195°56.2' N	5°55.3'
3	19°35.2'	224°32.3' N	10°21.8'	188°45.3' S	4°27.6'	50°30.3' S	13°49.6'	68°26.8' S	18°54.9'	210°57.2' N	5°54.6'
4	34°37.7'	239°32.5' N	10°21.0'	203°45.1' S	4°28.9'	65°33.1' S	13°49.7'	83°29.5' S	18°55.0'	225°58.2' N	5°54.0'
5	49°40.1'	254°32.7' N	10°20.1'	218°44.9' S	4°30.1'	80°35.9' S	13°49.8'	98°32.1' S	18°55.0'	240°59.2' N	5°53.4'
6	64°42.6'	269°32.8' N	10°19.2'	233°44.7' S	4°31.4'	95°38.7' S	13°49.9'	113°34.7' S	18°55.1'	256°00.2' N	5°52.7'
7	79°45.1'	284°33.0' N	10°18.3'	248°44.5' S	4°32.7'	110°41.4' S	13°50.0'	128°37.4' S	18°55.1'	271°01.2' N	5°52.1'
8	94°47.5'	299°33.2' N	10°17.5'	263°44.4' S	4°34.0'	125°44.2' S	13°50.2'	143°40.0' S	18°55.2'	286°02.2' N	5°51.5'
9	109°50.0'	314°33.4' N	10°16.6'	278°44.2' S	4°35.3'	140°47.0' S	13°50.3'	158°42.6' S	18°55.2'	301°03.2' N	5°50.8'
10	124°52.4'	329°33.6' N	10°15.7'	293°44.0' S	4°36.5'	155°49.8' S	13°50.4'	173°45.2' S	18°55.2'	316°04.2' N	5°50.2'
11	139°54.9'	344°33.7' N	10°14.9'	308°43.8' S	4°37.8'	170°52.5' S	13°50.5'	188°47.9' S	18°55.3'	331°05.2' N	5°49.6'
12	154°57.4'	359°33.9' N	10°14.0'	323°43.6' S	4°39.1'	185°55.3' S	13°50.6'	203°50.5' S	18°55.3'	346°06.2' N	5°48.9'
13	169°59.8'	14°34.1' N	10°13.1'	338°43.4' S	4°40.4'	200°58.1' S	13°50.7'	218°53.1' S	18°55.4'	1°07.2' N	5°48.3'
14	185°02.3'	29°34.3' N	10°12.2'	353°43.3' S	4°41.6'	216°00.9' S	13°50.8'	233°55.7' S	18°55.4'	16°08.2' N	5°47.6'
15	200°04.8'	44°34.5' N	10°11.4'	8°43.1' S	4°42.9'	231°03.6' S	13°51.0'	248°58.4' S	18°55.5'	31°09.2' N	5°47.0'
16	215°07.2'	59°34.6' N	10°10.5'	23°42.9' S	4°44.2'	246°06.4' S	13°51.1'	264°01.0' S	18°55.5'	46°10.2' N	5°46.4'
17	230°09.7'	74°34.8' N	10°09.6'	38°42.7' S	4°45.5'	261°09.2' S	13°51.2'	279°03.6' S	18°55.6'	61°11.2' N	5°45.7'
18	245°12.2'	89°35.0' N	10°08.7'	53°42.5' S	4°46.7'	276°12.0' S	13°51.3'	294°06.2' S	18°55.6'	76°12.2' N	5°45.1'
19	260°14.6'	104°35.2' N	10°07.9'	68°42.3' S	4°48.0'	291°14.7' S	13°51.4'	309°08.9' S	18°55.6'	91°13.2' N	5°44.5'
20	275°17.1'	119°35.3' N	10°07.0'	83°42.1' S	4°49.3'	306°17.5' S	13°51.5'	324°11.5' S	18°55.7'	106°14.1' N	5°43.8'
21	290°19.6'	134°35.5' N	10°06.1'	98°42.0' S	4°50.6'	321°20.3' S	13°51.6'	339°14.1' S	18°55.7'	121°15.1' N	5°43.2'
22	305°22.0'	149°35.7' N	10°05.3'	113°41.8' S	4°51.9'	336°23.1' S	13°51.7'	354°16.7' S	18°55.8'	136°16.1' N	5°42.6'
23	320°24.5'	164°35.9' N	10°04.4'	128°41.6' S	4°53.1'	351°25.8' S	13°51.9'	9°19.4' S	18°55.8'	151°17.1' N	5°41.9'
		SD 15.8' d -0.9'		v -0.2' d -1.3'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.0' d -0.6'	
Mer. pass.		12 h 1 m 45 s		14 h 25 m		23 h 34 m		22 h 23 m		12 h 56 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Betelgeuse	-Capella	-Rigel	-Aldebaran	+Fomalhaut	+Jupiter	+Saturn	+Altair
0	318°47.6'	N 2°26.8'	15.3'	13.6'	55.5'	73°14.3'	70°22.0'	63°55.6'	54°31.9'	43°33.7'	48°57.0'	66°52.6'	77°29.0'
1	333°21.9'	N 2°40.3'	15.3'	13.5'	55.5'	72°44.7'	69°53.2'	63°30.4'	54°00.9'	44°02.4'	49°28.4'	67°23.9'	77°54.8'
2	347°56.2'	N 2°53.9'	15.3'	13.5'	55.5'	72°15.2'	69°24.5'	63°05.2'	53°29.9'	44°31.0'	49°59.9'	67°55.2'	78°20.6'
3	2°30.5'	N 3°07.4'	15.3'	13.5'	55.5'	71°45.7'	68°55.8'	62°40.2'	52°59.0'	44°59.6'	50°31.2'	68°26.4'	78°46.4'
4	17°04.9'	N 3°20.9'	15.4'	13.5'	55.4'	71°16.2'	68°27.1'	62°15.2'	52°28.1'	45°28.3'	51°02.6'	68°57.7'	79°12.2'
5	31°39.2'	N 3°34.3'	15.4'	13.4'	55.4'	70°46.8'	67°58.5'	61°50.2'	51°57.3'	45°57.0'	51°33.9'	69°28.9'	79°37.9'
6	46°13.6'	N 3°47.8'	15.4'	13.4'	55.4'	70°17.4'	67°29.9'	61°25.4'	51°26.4'	46°25.7'	52°05.2'	70°00.0'	80°03.7'
7	60°48.0'	N 4°01.2'	15.4'	13.4'	55.4'	69°48.1'	67°01.4'	61°00.6'	50°55.6'	46°54.4'	52°36.5'	70°31.2'	80°29.5'
8	75°22.4'	N 4°14.5'	15.4'	13.3'	55.3'	69°18.8'	66°32.9'	60°35.9'	50°24.9'	47°23.1'	53°07.7'	71°02.3'	80°55.2'
9	89°56.8'	N 4°27.9'	15.4'	13.3'	55.3'	68°49.5'	66°04.5'	60°11.3'	49°54.1'	47°51.8'	53°39.0'	71°33.4'	81°21.0'
10	104°31.2'	N 4°41.2'	15.4'	13.3'	55.3'	68°20.3'	65°36.1'	59°46.8'	49°23.4'	48°20.6'	54°10.2'	72°04.5'	81°46.7'
11	119°05.6'	N 4°54.5'	15.4'	13.3'	55.3'	67°51.1'	65°07.8'	59°22.4'	48°52.8'	48°49.3'	54°41.3'	72°35.5'	82°12.4'
12	133°40.1'	N 5°07.7'	15.4'	13.2'	55.2'	67°21.9'	64°39.5'	58°58.0'	48°22.1'	49°18.1'	55°12.5'	73°06.5'	82°38.1'
13	148°14.5'	N 5°21.0'	15.4'	13.2'	55.2'	66°52.8'	64°11.2'	58°33.8'	47°51.5'	49°46.8'	55°43.6'	73°37.5'	83°03.8'
14	162°48.9'	N 5°34.2'	15.4'	13.2'	55.2'	66°23.7'	63°43.0'	58°09.6'	47°21.0'	50°15.6'	56°14.7'	74°08.4'	83°29.5'
15	177°23.4'	N 5°47.3'	15.4'	13.1'	55.2'	65°54.7'	63°14.9'	57°45.5'	46°50.4'	50°44.4'	56°45.7'	74°39.4'	83°55.1'
16	191°57.8'	N 6°00.4'	15.4'	13.1'	55.2'	65°25.7'	62°46.8'	57°21.5'	46°19.9'	51°13.2'	57°16.8'	75°10.3'	84°20.8'
17	206°32.2'	N 6°13.5'	15.4'	13.1'	55.1'	64°56.7'	62°18.7'	56°57.6'	45°49.4'	51°41.9'	57°47.8'	75°41.1'	84°46.4'
18	221°06.7'	N 6°26.6'	15.4'	13.0'	55.1'	64°27.8'	61°50.7'	56°33.7'	45°19.0'	52°10.7'	58°18.8'	76°12.0'	85°12.1'
19	235°41.1'	N 6°39.6'	15.4'	13.0'	55.1'	63°58.9'	61°22.7'	56°10.0'	44°48.6'	52°39.5'	58°49.7'	76°42.8'	85°37.7'
20	250°15.6'	N 6°52.6'	15.4'	12.9'	55.1'	63°30.1'	60°54.8'	55°46.4'	44°18.2'	53°08.3'	59°20.6'	77°13.6'	86°03.3'
21	264°50.0'	N 7°05.5'	15.4'	12.9'	55.1'	63°01.3'	60°27.0'	55°22.8'	43°47.8'	53°37.1'	59°51.6'	77°44.4'	86°28.9'
22	279°24.5'	N 7°18.4'	15.4'	12.9'	55.0'	62°32.5'	59°59.2'	54°59.4'	43°17.5'	54°05.9'	60°22.4'	78°15.1'	86°54.4'
23	293°58.9'	N 7°31.3'	15.4'	12.8'	55.0'	62°03.8'	59°31.4'	54°36.0'	42°47.2'	54°34.6'	60°53.3'	78°45.8'	87°20.0'
Mer. pass.		2 h 50 m SD 15.1'	phase 87%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.2'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.2'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.6'	Acrux	+0.8	173°03.7'	S 63°13.2'	Capella	+0.1	280°26.1'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.7'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.6'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.5'	Pollux	+1.2	243°21.0'	N 27°58.5'	Aldebaran	+0.9	290°42.8'	N 16°33.1'
Antares	+1.1	112°19.2'	S 26°28.8'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°10.4'	N 89°21.0'
Rigel Kent	-0.0	139°44.3'	S 60°55.6'	Adhara	+1.5	255°08.3'	S 28°59.9'	Achernar	+0.5	335°22.0'	S 57°07.4'
Arcturus	-0.1	145°50.6'	N 19°04.5'	Sirius	-1.4	258°28.9'	S 16°44.6'				
Hadar	+0.6	148°40.2'	S 60°28.7'	Canopus	-0.6	263°53.9'	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	335°26.9'	179°36.1'	N 10°03.5'	143°41.4'	S 4°54.4'	6°28.6'	S 13°52.0'	24°22.0'	S 18°55.9'	166°18.1'	N 5°41.3'			
1	350°29.4'	194°36.3'	N 10°02.6'	158°41.2'	S 4°55.7'	21°31.4'	S 13°52.1'	39°24.6'	S 18°55.9'	181°19.1'	N 5°40.6'			
2	5°31.9'	209°36.4'	N 10°01.7'	173°41.0'	S 4°57.0'	36°34.2'	S 13°52.2'	54°27.2'	S 18°55.9'	196°20.1'	N 5°40.0'			
3	20°34.3'	224°36.6'	N 10°00.9'	188°40.9'	S 4°58.2'	51°37.0'	S 13°52.3'	69°29.9'	S 18°56.0'	211°21.1'	N 5°39.4'			
4	35°36.8'	239°36.8'	N 9°60.0'	203°40.7'	S 4°59.5'	66°39.7'	S 13°52.4'	84°32.5'	S 18°56.0'	226°22.1'	N 5°38.7'			
5	50°39.3'	254°37.0'	N 9°59.1'	218°40.5'	S 5°00.8'	81°42.5'	S 13°52.5'	99°35.1'	S 18°56.1'	241°23.1'	N 5°38.1'			
6	65°41.7'	269°37.2'	N 9°58.2'	233°40.3'	S 5°02.1'	96°45.3'	S 13°52.6'	114°37.7'	S 18°56.1'	256°24.1'	N 5°37.5'			
7	80°44.2'	284°37.3'	N 9°57.4'	248°40.1'	S 5°03.3'	111°48.0'	S 13°52.8'	129°40.4'	S 18°56.2'	271°25.1'	N 5°36.8'			
8	95°46.7'	299°37.5'	N 9°56.5'	263°39.9'	S 5°04.6'	126°50.8'	S 13°52.9'	144°43.0'	S 18°56.2'	286°26.1'	N 5°36.2'			
9	110°49.1'	314°37.7'	N 9°55.6'	278°39.7'	S 5°05.9'	141°53.6'	S 13°53.0'	159°45.6'	S 18°56.2'	301°27.1'	N 5°35.5'			
10	125°51.6'	329°37.9'	N 9°54.7'	293°39.6'	S 5°07.2'	156°56.4'	S 13°53.1'	174°48.2'	S 18°56.3'	316°28.1'	N 5°34.9'			
11	140°54.0'	344°38.1'	N 9°53.9'	308°39.4'	S 5°08.4'	171°59.1'	S 13°53.2'	189°50.8'	S 18°56.3'	331°29.1'	N 5°34.3'			
12	155°56.5'	359°38.3'	N 9°53.0'	323°39.2'	S 5°09.7'	187°01.9'	S 13°53.3'	204°53.5'	S 18°56.4'	346°30.1'	N 5°33.6'			
13	170°59.0'	14°38.4'	N 9°52.1'	338°39.0'	S 5°11.0'	202°04.7'	S 13°53.4'	219°56.1'	S 18°56.4'	1°31.1'	N 5°33.0'			
14	186°01.4'	29°38.6'	N 9°51.2'	353°38.8'	S 5°12.2'	217°07.5'	S 13°53.5'	234°58.7'	S 18°56.5'	16°32.1'	N 5°32.4'			
15	201°03.9'	44°38.8'	N 9°50.3'	8°38.6'	S 5°13.5'	232°10.2'	S 13°53.6'	250°01.3'	S 18°56.5'	31°33.1'	N 5°31.7'			
16	216°06.4'	59°39.0'	N 9°49.5'	23°38.4'	S 5°14.8'	247°13.0'	S 13°53.8'	265°04.0'	S 18°56.5'	46°34.1'	N 5°31.1'			
17	231°08.8'	74°39.2'	N 9°48.6'	38°38.3'	S 5°16.1'	262°15.8'	S 13°53.9'	280°06.6'	S 18°56.6'	61°35.1'	N 5°30.4'			
18	246°11.3'	89°39.4'	N 9°47.7'	53°38.1'	S 5°17.3'	277°18.6'	S 13°54.0'	295°09.2'	S 18°56.6'	76°36.1'	N 5°29.8'			
19	261°13.8'	104°39.5'	N 9°46.8'	68°37.9'	S 5°18.6'	292°21.3'	S 13°54.1'	310°11.8'	S 18°56.7'	91°37.1'	N 5°29.2'			
20	276°16.2'	119°39.7'	N 9°45.9'	83°37.7'	S 5°19.9'	307°24.1'	S 13°54.2'	325°14.5'	S 18°56.7'	106°38.0'	N 5°28.5'			
21	291°18.7'	134°39.9'	N 9°45.1'	98°37.5'	S 5°21.2'	322°26.9'	S 13°54.3'	340°17.1'	S 18°56.8'	121°39.0'	N 5°27.9'			
22	306°21.2'	149°40.1'	N 9°44.2'	113°37.3'	S 5°22.4'	337°29.7'	S 13°54.4'	355°19.7'	S 18°56.8'	136°40.0'	N 5°27.3'			
23	321°23.6'	164°40.3'	N 9°43.3'	128°37.1'	S 5°23.7'	352°32.4'	S 13°54.5'	10°22.3'	S 18°56.8'	151°41.0'	N 5°26.6'			
	SD 15.8' d -0.9'		v -0.2' d -1.3'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.0' d -0.6'					
Mer. pass.	12 h 1 m 28 s			14 h 25 m		23 h 30 m		22 h 19 m		12 h 54 m				

h	Moon					Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Capella	-Rigel	-Aldebaran	+Fomalhaut	+Jupiter	+Achernar	+Saturn	
0	308°33.3'	N 7°44.1'	15.4'	12.8'	55.0'		59°03.7'	54°12.8'	42°16.9'	55°03.4'	61°24.1'		79°16.5'	
1	323°07.8'	N 7°56.9'	15.4'	12.7'	55.0'		58°36.0'	53°49.7'	41°46.7'	55°32.2'	61°55.0'		79°47.2'	
2	337°42.2'	N 8°09.6'	15.4'	12.7'	54.9'		58°08.4'	53°26.6'	41°16.5'	56°01.0'	62°25.7'		80°17.8'	
3	352°16.6'	N 8°22.4'	15.4'	12.7'	54.9'		57°40.9'	53°03.7'	40°46.4'	56°29.8'	62°56.5'		80°48.5'	
4	6°51.0'	N 8°35.0'	15.4'	12.6'	54.9'		57°13.4'	52°40.9'	40°16.2'	56°58.5'	63°27.3'		81°19.1'	
5	21°25.4'	N 8°47.6'	15.4'	12.6'	54.9'		56°45.9'	52°18.2'	39°46.1'	57°27.3'	63°58.0'		81°49.6'	
6	35°59.8'	N 9°00.2'	15.4'	12.5'	54.9'		56°18.5'	51°55.5'	39°16.0'	57°56.1'	64°28.7'		82°20.2'	
7	50°34.1'	N 9°12.7'	15.4'	12.5'	54.9'		55°51.2'	51°33.1'	38°46.0'	58°24.9'	64°59.3'		82°50.7'	
8	65°08.5'	N 9°25.2'	15.3'	12.4'	54.8'		55°23.9'	51°10.7'	38°16.0'	58°53.6'	65°30.0'		83°21.2'	
9	79°42.9'	N 9°37.6'	15.3'	12.4'	54.8'		54°56.7'	50°48.4'	37°46.0'	59°22.4'	66°00.6'		83°51.7'	
10	94°17.2'	N 9°50.0'	15.3'	12.3'	54.8'		54°29.5'	50°26.3'	37°16.1'	59°51.1'	66°31.2'		84°22.2'	
11	108°51.5'	N 10°02.4'	15.3'	12.3'	54.8'		54°02.4'	50°04.3'	36°46.1'	60°19.9'	67°01.8'		84°52.6'	
12	123°25.8'	N 10°14.7'	15.3'	12.2'	54.8'		53°35.4'	49°42.4'	36°16.3'	60°48.6'	67°32.4'		85°23.0'	
13	138°00.1'	N 10°26.9'	15.3'	12.2'	54.7'		53°08.4'	49°20.6'	35°46.4'	61°17.4'	68°02.9'		85°53.4'	
14	152°34.4'	N 10°39.1'	15.3'	12.1'	54.7'	119°39.1'	52°41.5'	48°58.9'	35°16.6'	61°46.1'	68°33.5'		86°23.8'	
15	167°08.6'	N 10°51.2'	15.2'	12.1'	54.7'	119°11.4'	52°14.6'	48°37.4'	34°46.8'	62°14.8'	69°04.0'		86°54.1'	
16	181°42.9'	N 11°03.3'	15.2'	12.0'	54.7'	118°43.7'	51°47.8'	48°16.0'	34°17.0'	62°43.5'	69°34.5'		87°24.5'	
17	196°17.1'	N 11°15.4'	15.2'	12.0'	54.7'	118°16.1'	51°21.0'	47°54.8'	33°47.3'	63°12.3'	70°04.9'		87°54.8'	
18	210°51.3'	N 11°27.4'	15.2'	11.9'	54.7'	117°48.4'	50°54.4'	47°33.7'	33°17.6'	63°41.0'	70°35.4'		88°25.1'	
19	225°25.4'	N 11°39.3'	15.2'	11.9'	54.7'	117°20.8'	50°27.8'	47°12.7'	32°48.0'	64°09.7'	71°05.8'		88°55.4'	
20	239°59.6'	N 11°51.2'	15.1'	11.8'	54.6'	116°53.2'	50°01.2'	46°51.9'	32°18.3'	64°38.4'	71°36.2'	69°38.8'	89°25.6'	
21	254°33.7'	N 12°03.0'	15.1'	11.8'	54.6'	116°25.6'	49°34.7'	46°31.2'	31°48.7'	65°07.1'	72°06.6'	69°53.8'	89°55.8'	
22	269°07.8'	N 12°14.8'	15.1'	11.7'	54.6'	115°58.1'	49°08.3'	46°10.6'	31°19.2'	65°35.8'	72°37.0'	70°08.9'	90°26.1'	
23	283°41.9'	N 12°26.5'	15.1'	11.7'	54.6'	115°30.5'	48°42.0'	45°50.2'	30°49.7'	66°04.4'	73°07.3'	70°24.1'	90°56.3'	
Mer. pass.	3 h 32 m SD 15.0' phase 79%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.2'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.2'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.6'	Acrux	+0.8	173°03.7'	S 63°13.1'	Capella	+0.1	280°26.1'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.7'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.6'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.5'	Pollux	+1.2	243°21.0'	N 27°58.5'	Aldebaran	+0.9	290°42.8'	N 16°33.1'
Antares	+1.1	112°19.2'	S 26°28.8'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°09.9'	N 89°21.0'
Rigel Kent	-0.0	139°44.3'	S 60°55.6'	Adhara	+1.5	255°08.3'	S 28°59.9'	Achernar	+0.5	335°21.9'	S 57°07.4'
Arcturus	-0.1	145°50.6'	N 19°04.5'	Sirius	-1.4	258°28.9'	S 16°44.6'				
Hadar	+0.6	148°40.2'	S 60°28.7'	Canopus	-0.6	263°53.9'	S 52°42.1'				

Saturday 28 August 2021 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	336°28.1'	179°40.5'	N 9°42.4'	143°37.0'	S 5°25.0'	7°35.2'	S 13°54.6'	25°24.9'	S 18°56.9'	166°42.0'	N 5°26.0'
1	351°28.5'	194°40.6'	N 9°41.5'	158°36.8'	S 5°26.2'	22°38.0'	S 13°54.8'	40°27.6'	S 18°56.9'	181°43.0'	N 5°25.3'
2	6°31.0'	209°40.8'	N 9°40.6'	173°36.6'	S 5°27.5'	37°40.8'	S 13°54.9'	55°30.2'	S 18°57.0'	196°44.0'	N 5°24.7'
3	21°33.5'	224°41.0'	N 9°39.8'	188°36.4'	S 5°28.8'	52°43.5'	S 13°55.0'	70°32.8'	S 18°57.0'	211°45.0'	N 5°24.1'
4	36°35.9'	239°41.2'	N 9°38.9'	203°36.2'	S 5°30.1'	67°46.3'	S 13°55.1'	85°35.4'	S 18°57.0'	226°46.0'	N 5°23.4'
5	51°38.4'	254°41.4'	N 9°38.0'	218°36.0'	S 5°31.3'	82°49.1'	S 13°55.2'	100°38.1'	S 18°57.1'	241°47.0'	N 5°22.8'
6	66°40.9'	269°41.6'	N 9°37.1'	233°35.8'	S 5°32.6'	97°51.9'	S 13°55.3'	115°40.7'	S 18°57.1'	256°48.0'	N 5°22.1'
7	81°43.3'	284°41.8'	N 9°36.2'	248°35.7'	S 5°33.9'	112°54.6'	S 13°55.4'	130°43.3'	S 18°57.2'	271°49.0'	N 5°21.5'
8	96°45.8'	299°41.9'	N 9°35.3'	263°35.5'	S 5°35.1'	127°57.4'	S 13°55.5'	145°45.9'	S 18°57.2'	286°50.0'	N 5°20.9'
9	111°48.3'	314°42.1'	N 9°34.5'	278°35.3'	S 5°36.4'	143°00.2'	S 13°55.6'	160°48.5'	S 18°57.3'	301°51.0'	N 5°20.2'
10	126°50.7'	329°42.3'	N 9°33.6'	293°35.1'	S 5°37.7'	158°02.9'	S 13°55.8'	175°51.2'	S 18°57.3'	316°52.0'	N 5°19.6'
11	141°53.2'	344°42.5'	N 9°32.7'	308°34.9'	S 5°39.0'	173°05.7'	S 13°55.9'	190°53.8'	S 18°57.3'	331°53.0'	N 5°19.0'
12	156°55.6'	359°42.7'	N 9°31.8'	323°34.7'	S 5°40.2'	188°08.5'	S 13°56.0'	205°56.4'	S 18°57.4'	346°54.0'	N 5°18.3'
13	171°58.1'	14°42.9'	N 9°30.9'	338°34.5'	S 5°41.5'	203°11.3'	S 13°56.1'	220°59.0'	S 18°57.4'	1°55.0'	N 5°17.7'
14	187°00.6'	29°43.1'	N 9°30.0'	353°34.4'	S 5°42.8'	218°14.0'	S 13°56.2'	236°01.6'	S 18°57.5'	16°56.0'	N 5°17.0'
15	202°03.0'	44°43.2'	N 9°29.1'	8°34.2'	S 5°44.0'	233°16.8'	S 13°56.3'	251°04.3'	S 18°57.5'	31°57.0'	N 5°16.4'
16	217°05.5'	59°43.4'	N 9°28.3'	23°34.0'	S 5°45.3'	248°19.6'	S 13°56.4'	266°06.9'	S 18°57.6'	46°58.0'	N 5°15.8'
17	232°08.0'	74°43.6'	N 9°27.4'	38°33.8'	S 5°46.6'	263°22.4'	S 13°56.5'	281°09.5'	S 18°57.6'	61°59.0'	N 5°15.1'
18	247°10.4'	89°43.8'	N 9°26.5'	53°33.6'	S 5°47.8'	278°25.1'	S 13°56.6'	296°12.1'	S 18°57.6'	76°60.0'	N 5°14.5'
19	262°12.9'	104°44.0'	N 9°25.6'	68°33.4'	S 5°49.1'	293°27.9'	S 13°56.8'	311°14.8'	S 18°57.7'	92°01.0'	N 5°13.8'
20	277°15.4'	119°44.2'	N 9°24.7'	83°33.2'	S 5°50.4'	308°30.7'	S 13°56.9'	326°17.4'	S 18°57.7'	107°02.0'	N 5°13.2'
21	292°17.8'	134°44.4'	N 9°23.8'	98°33.0'	S 5°51.6'	323°33.4'	S 13°57.0'	341°20.0'	S 18°57.8'	122°02.9'	N 5°12.6'
22	307°20.3'	149°44.6'	N 9°22.9'	113°32.9'	S 5°52.9'	338°36.2'	S 13°57.1'	356°22.6'	S 18°57.8'	137°03.9'	N 5°11.9'
23	322°22.8'	164°44.7'	N 9°22.0'	128°32.7'	S 5°54.2'	353°39.0'	S 13°57.2'	11°25.2'	S 18°57.8'	152°04.9'	N 5°11.3'
		SD 15.8' d -0.9'		v -0.2' d -1.3'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.0' d -0.6'	
Mer. pass.		12 h 1 m 10 s		14 h 26 m		23 h 25 m		22 h 14 m		12 h 52 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Capella	-Rigel	-Aldebaran	+Fomalhaut	+Achernar	+Jupiter	+Saturn
0	298°16.0'	N 12°38.2'	15.0'	11.6'	54.6'	115°03.0'	48°15.7'	45°30.0'	30°20.2'	66°33.1'	70°39.3'	73°37.6'	91°26.4'
1	312°50.0'	N 12°49.8'	15.0'	11.5'	54.6'	114°35.5'	47°49.5'	45°09.9'	29°50.7'	67°01.8'	70°54.6'	74°08.0'	91°56.6'
2	327°24.0'	N 13°01.3'	15.0'	11.5'	54.5'	114°08.0'	47°23.4'	44°49.9'	29°21.3'	67°30.4'	71°10.0'	74°38.3'	92°26.7'
3	341°58.0'	N 13°12.8'	14.9'	11.4'	54.5'	113°40.5'	46°57.3'	44°30.2'	28°51.9'	67°59.1'	71°25.4'	75°08.5'	92°56.9'
4	356°31.9'	N 13°24.2'	14.9'	11.4'	54.5'	113°13.0'	46°31.3'	44°10.5'	28°22.6'	68°27.7'	71°40.9'	75°38.8'	93°27.0'
5	11°05.8'	N 13°35.6'	14.9'	11.3'	54.5'	112°45.6'	46°05.4'	43°51.1'	27°53.3'	68°56.4'	71°56.4'	76°09.1'	93°57.1'
6	25°39.7'	N 13°46.9'	14.9'	11.2'	54.5'	112°18.1'	45°39.6'	43°31.8'	27°24.0'	69°25.0'	72°11.9'	76°39.3'	94°27.2'
7	40°13.5'	N 13°58.2'	14.8'	11.2'	54.5'	111°50.7'	45°13.9'	43°12.7'	26°54.8'	69°53.6'	72°27.6'	77°09.5'	94°57.2'
8	54°47.4'	N 14°09.4'	14.8'	11.1'	54.5'	111°23.3'	44°48.2'	42°53.8'	26°25.6'	70°22.3'	72°43.3'	77°39.7'	95°27.3'
9	69°21.2'	N 14°20.5'	14.8'	11.1'	54.5'	110°55.9'	44°22.6'	42°35.0'	25°56.5'	70°50.9'	72°59.0'	78°09.9'	95°57.3'
10	83°54.9'	N 14°31.6'	14.7'	11.0'	54.4'	110°28.5'	43°57.1'	42°16.5'	25°27.4'	71°19.5'	73°14.8'	78°40.1'	96°27.3'
11	98°28.6'	N 14°42.5'	14.7'	10.9'	54.4'	110°01.2'	43°31.7'	41°58.1'	24°58.3'	71°48.1'	73°30.6'	79°10.2'	96°57.3'
12	113°02.3'	N 14°53.5'	14.7'	10.9'	54.4'	109°33.8'	43°06.4'	41°39.9'	24°29.3'	72°16.7'	73°46.5'	79°40.4'	97°27.3'
13	127°36.0'	N 15°04.4'	14.6'	10.8'	54.4'	109°06.5'	42°41.2'	41°21.9'	24°00.3'	72°45.3'	74°02.4'	80°10.5'	97°57.3'
14	142°09.6'	N 15°15.2'	14.6'	10.7'	54.4'	108°39.2'	42°16.0'	41°04.1'	23°31.4'	73°13.9'	74°18.4'	80°40.6'	98°27.2'
15	156°43.2'	N 15°25.9'	14.5'	10.7'	54.4'	108°11.9'	41°51.0'	40°46.5'	23°02.5'	73°42.4'	74°34.4'	81°10.7'	98°57.2'
16	171°16.7'	N 15°36.6'	14.5'	10.6'	54.4'	107°44.6'	41°26.0'	40°29.1'	22°33.7'	74°11.0'	74°50.4'	81°40.8'	99°27.1'
17	185°50.2'	N 15°47.2'	14.5'	10.5'	54.4'	107°17.3'	41°01.2'	40°11.9'	22°05.0'	74°39.6'	75°06.5'	82°10.9'	99°57.0'
18	200°23.7'	N 15°57.7'	14.4'	10.5'	54.4'	106°50.0'	40°36.5'	39°55.0'	21°36.3'	75°08.1'	75°22.7'	82°41.0'	100°26.9'
19	214°57.1'	N 16°08.2'	14.4'	10.4'	54.4'	106°22.7'	40°11.8'	39°38.2'	21°07.6'	75°36.7'	75°38.9'	83°11.0'	100°56.8'
20	229°30.5'	N 16°18.6'	14.3'	10.3'	54.3'	105°55.5'	39°47.3'	39°21.7'	20°39.1'	76°05.2'	75°55.1'	83°41.1'	101°26.7'
21	244°03.9'	N 16°28.9'	14.3'	10.3'	54.3'	105°28.2'	39°22.9'	39°05.4'	20°10.6'	76°33.8'	76°11.3'	84°11.1'	101°56.6'
22	258°37.2'	N 16°39.2'	14.3'	10.2'	54.3'	105°01.0'	38°58.6'	38°49.3'	19°42.1'	77°02.3'	76°27.7'	84°41.1'	102°26.4'
23	273°10.4'	N 16°49.4'	14.2'	10.1'	54.3'	104°33.8'	38°34.4'	38°33.4'	19°13.8'	77°30.8'	76°44.0'	85°11.2'	102°56.3'
Mer. pass.		4 h 14 m SD 14.9'		phase 71%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.2'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.2'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.6'	Acrux	+0.8	173°03.7'	S 63°13.1'	Capella	+0.1	280°26.1'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.7'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.6'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.5'	Pollux	+1.2	243°21.0'	N 27°58.5'	Aldebaran	+0.9	290°42.8'	N 16°33.1'
Antares	+1.1	112°19.2'	S 26°28.8'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°09.4'	N 89°21.0'
Rigel Kent	-0.0	139°44.3'	S 60°55.6'	Adhara	+1.5	255°08.3'	S 28°59.9'	Achernar	+0.5	335°21.9'	S 57°07.4'
Arcturus	-0.1	145°50.6'	N 19°04.5'	Sirius	-1.4	258°28.9'	S 16°44.6'				
Hadar	+0.6	148°40.2'	S 60°28.7'	Canopus	-0.6	263°53.9'	S 52°42.1'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	337°25.2'	179°44.9' N 9°21.2'	143°32.5' S 5°55.5'	8°41.8' S 13°57.3'	26°27.9' S 18°57.9'	167°05.9' N 5°10.6'						
1	352°27.7'	194°45.1' N 9°20.3'	158°32.3' S 5°56.7'	23°44.5' S 13°57.4'	41°30.5' S 18°57.9'	182°06.9' N 5°10.0'						
2	7°30.1'	209°45.3' N 9°19.4'	173°32.1' S 5°58.0'	38°47.3' S 13°57.5'	56°33.1' S 18°58.0'	197°07.9' N 5°09.4'						
3	22°32.6'	224°45.5' N 9°18.5'	188°31.9' S 5°59.3'	53°50.1' S 13°57.6'	71°35.7' S 18°58.0'	212°08.9' N 5°08.7'						
4	37°35.1'	239°45.7' N 9°17.6'	203°31.7' S 6°00.5'	68°52.8' S 13°57.8'	86°38.3' S 18°58.1'	227°09.9' N 5°08.1'						
5	52°37.5'	254°45.9' N 9°16.7'	218°31.5' S 6°01.8'	83°55.6' S 13°57.9'	101°40.9' S 18°58.1'	242°10.9' N 5°07.4'						
6	67°40.0'	269°46.1' N 9°15.8'	233°31.4' S 6°03.1'	98°58.4' S 13°58.0'	116°43.6' S 18°58.1'	257°11.9' N 5°06.8'						
7	82°42.5'	284°46.2' N 9°14.9'	248°31.2' S 6°04.3'	114°01.2' S 13°58.1'	131°46.2' S 18°58.2'	272°12.9' N 5°06.2'						
8	97°44.9'	299°46.4' N 9°14.0'	263°31.0' S 6°05.6'	129°03.9' S 13°58.2'	146°48.8' S 18°58.2'	287°13.9' N 5°05.5'						
9	112°47.4'	314°46.6' N 9°13.2'	278°30.8' S 6°06.9'	144°06.7' S 13°58.3'	161°51.4' S 18°58.3'	302°14.9' N 5°04.9'						
10	127°49.9'	329°46.8' N 9°12.3'	293°30.6' S 6°08.1'	159°09.5' S 13°58.4'	176°54.0' S 18°58.3'	317°15.9' N 5°04.2'						
11	142°52.3'	344°47.0' N 9°11.4'	308°30.4' S 6°09.4'	174°12.2' S 13°58.5'	191°56.7' S 18°58.3'	332°16.9' N 5°03.6'						
12	157°54.8'	359°47.2' N 9°10.5'	323°30.2' S 6°10.7'	189°15.0' S 13°58.6'	206°59.3' S 18°58.4'	347°17.9' N 5°02.9'						
13	172°57.3'	14°47.4' N 9°09.6'	338°30.0' S 6°11.9'	204°17.8' S 13°58.7'	222°01.9' S 18°58.4'	2°18.9' N 5°02.3'						
14	187°59.7'	29°47.6' N 9°08.7'	353°29.9' S 6°13.2'	219°20.6' S 13°58.8'	237°04.5' S 18°58.5'	17°19.9' N 5°01.7'						
15	203°02.2'	44°47.8' N 9°07.8'	8°29.7' S 6°14.4'	234°23.3' S 13°59.0'	252°07.1' S 18°58.5'	32°20.9' N 5°01.0'						
16	218°04.6'	59°48.0' N 9°06.9'	23°29.5' S 6°15.7'	249°26.1' S 13°59.1'	267°09.8' S 18°58.5'	47°21.9' N 5°00.4'						
17	233°07.1'	74°48.1' N 9°06.0'	38°29.3' S 6°17.0'	264°28.9' S 13°59.2'	282°12.4' S 18°58.6'	62°22.9' N 4°59.7'						
18	248°09.6'	89°48.3' N 9°05.1'	53°29.1' S 6°18.2'	279°31.6' S 13°59.3'	297°15.0' S 18°58.6'	77°23.9' N 4°59.1'						
19	263°12.0'	104°48.5' N 9°04.2'	68°28.9' S 6°19.5'	294°34.4' S 13°59.4'	312°17.6' S 18°58.7'	92°24.9' N 4°58.5'						
20	278°14.5'	119°48.7' N 9°03.3'	83°28.7' S 6°20.8'	309°37.2' S 13°59.5'	327°20.2' S 18°58.7'	107°25.9' N 4°57.8'						
21	293°17.0'	134°48.9' N 9°02.4'	98°28.5' S 6°22.0'	324°39.9' S 13°59.6'	342°22.8' S 18°58.8'	122°26.9' N 4°57.2'						
22	308°19.4'	149°49.1' N 9°01.5'	113°28.4' S 6°23.3'	339°42.7' S 13°59.7'	357°25.5' S 18°58.8'	137°27.9' N 4°56.5'						
23	323°21.9'	164°49.3' N 9°00.7'	128°28.2' S 6°24.6'	354°45.5' S 13°59.8'	12°28.1' S 18°58.8'	152°28.8' N 4°55.9'						
		SD 15.8' d -0.9'	v -0.2' d -1.3'	v 2.8' d -0.1'	v 2.6' d -0.0'	v 1.0' d -0.6'						
Mer. pass.		12 h 0 m 52 s	14 h 26 m	23 h 21 m	22 h 10 m	12 h 51 m						

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Rigel	-Capella	-Aldebaran	+Achernar	+Fomalhaut	+Jupiter	+Saturn
0	287°43.7'	N 16°59.5'	14.2'	10.0'	54.3'	104°06.6'	38°17.8'	38°10.3'	18°45.5'	77°00.4'	77°59.4'	85°41.2'	103°26.1'
1	302°16.8'	N 17°09.5'	14.1'	10.0'	54.3'	103°39.4'	38°02.5'	37°46.3'	18°17.3'	77°16.8'	78°27.9'	86°11.1'	103°55.9'
2	316°50.0'	N 17°19.5'	14.1'	9.9'	54.3'	103°12.2'		37°22.5'	17°49.2'	77°33.2'	78°56.4'	86°41.1'	104°25.8'
3	331°23.1'	N 17°29.4'	14.0'	9.8'	54.3'	102°45.0'		36°58.8'	17°21.1'	77°49.7'	79°24.9'	87°11.1'	104°55.6'
4	345°56.1'	N 17°39.2'	14.0'	9.7'	54.3'	102°17.8'		36°35.2'	16°53.2'	78°06.2'	79°53.4'	87°41.1'	105°25.4'
5	0°29.1'	N 17°48.9'	14.0'	9.7'	54.3'	101°50.7'		36°11.8'	16°25.4'	78°22.8'	80°21.9'	88°11.0'	105°55.2'
6	15°02.1'	N 17°58.6'	13.9'	9.6'	54.3'	101°23.5'		35°48.5'	15°57.7'	78°39.4'	80°50.4'	88°41.0'	106°24.9'
7	29°35.0'	N 18°08.2'	13.9'	9.5'	54.3'	100°56.3'		35°25.4'	15°30.2'	78°56.0'	81°18.9'	89°10.9'	106°54.7'
8	44°07.9'	N 18°17.7'	13.8'	9.4'	54.3'	100°29.2'		35°02.4'	15°02.8'	79°12.6'	81°47.4'	89°40.9'	107°24.5'
9	58°40.7'	N 18°27.1'	13.8'	9.4'	54.2'	100°02.1'		34°39.5'	14°35.5'	79°29.3'	82°15.9'	90°10.8'	107°54.2'
10	73°13.4'	N 18°36.5'	13.7'	9.3'	54.2'	99°34.9'		34°16.8'	14°08.4'	79°46.0'	82°44.4'	90°40.7'	108°24.0'
11	87°46.2'	N 18°45.8'	13.7'	9.2'	54.2'	99°07.8'		33°54.3'	13°41.5'	80°02.7'	83°12.9'	91°10.6'	108°53.7'
12	102°18.8'	N 18°55.0'	13.6'	9.1'	54.2'	98°40.7'		33°32.0'	13°14.7'	80°19.5'	83°41.4'	91°40.5'	109°23.5'
13	116°51.5'	N 19°04.1'	13.6'	9.0'	54.2'	98°13.6'		33°09.8'	12°48.2'	80°36.3'	84°09.8'	92°10.4'	109°53.2'
14	131°24.0'	N 19°13.1'	13.5'	9.0'	54.2'	97°46.4'		32°47.8'	12°22.0'	80°53.1'	84°38.3'	92°40.3'	110°22.9'
15	145°56.6'	N 19°22.1'	13.5'	8.9'	54.2'	97°19.3'		32°25.9'	11°56.0'	81°09.9'	85°06.8'	93°10.2'	110°52.7'
16	160°29.1'	N 19°30.9'	13.4'	8.8'	54.2'	96°52.2'		32°04.3'	11°30.2'	81°26.8'	85°35.2'	93°40.1'	111°22.4'
17	175°01.5'	N 19°39.7'	13.4'	8.7'	54.2'	96°25.1'		31°42.9'	11°04.8'	81°43.7'	86°03.7'	94°10.0'	111°52.1'
18	189°33.9'	N 19°48.4'	13.3'	8.6'	54.2'	95°58.0'		31°21.6'	10°39.8'	82°00.6'	86°32.2'	94°39.9'	112°21.8'
19	204°06.2'	N 19°57.0'	13.3'	8.5'	54.2'	95°31.0'		31°00.6'	10°15.2'	82°17.5'	87°00.6'	95°09.7'	112°51.5'
20	218°38.4'	N 20°05.6'	13.2'	8.4'	54.2'	95°03.9'		30°39.8'	9°51.0'	82°34.4'	87°29.1'	95°39.6'	113°21.2'
21	233°10.7'	N 20°14.0'	13.2'	8.4'	54.2'	94°36.8'		30°19.2'	9°27.4'	82°51.4'	87°57.5'	96°09.5'	113°50.9'
22	247°42.8'	N 20°22.4'	13.1'	8.3'	54.2'	94°09.7'		29°58.8'	9°04.3'	83°08.4'	88°26.0'	96°39.4'	114°20.6'
23	262°15.0'	N 20°30.6'	13.1'	8.2'	54.2'	93°42.6'		29°38.7'	8°41.9'	83°25.4'	88°54.5'	97°09.2'	114°50.3'
Mer. pass.		4 h 58 m SD 14.8'	phase 62%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.2'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.2'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.6'	Acrux	+0.8	173°03.7'	S 63°13.1'	Capella	+0.1	280°26.1'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.7'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.6'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.5'	Pollux	+1.2	243°21.0'	N 27°58.5'	Aldebaran	+0.9	290°42.8'	N 16°33.1'
Antares	+1.1	112°19.2'	S 26°28.8'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°08.9'	N 89°21.0'
Rigil Kent	-0.0	139°44.3'	S 60°55.6'	Adhara	+1.5	255°08.3'	S 28°59.9'	Achernar	+0.5	335°21.9'	S 57°07.4'
Arcturus	-0.1	145°50.6'	N 19°04.5'	Sirius	-1.4	258°28.9'	S 16°44.6'				
Hadar	+0.6	148°40.2'	S 60°28.7'	Canopus	-0.6	263°53.9'	S 52°42.1'				

Monday 30 August 2021 UT1

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	338°24.4'	179°49.5' N 8°59.8'	143°28.0'	S 6°25.8'	9°48.3'	S 13°59.9'	27°30.7'	S 18°58.9'	167°29.8'	N 4°55.3'		
1	353°26.8'	194°49.7' N 8°58.9'	158°27.8'	S 6°27.1'	24°51.0'	S 14°00.1'	42°33.3'	S 18°58.9'	182°30.8'	N 4°54.6'		
2	8°29.3'	209°49.9' N 8°58.0'	173°27.6'	S 6°28.3'	39°53.8'	S 14°00.2'	57°35.9'	S 18°59.0'	197°31.8'	N 4°54.0'		
3	23°31.7'	224°50.1' N 8°57.1'	188°27.4'	S 6°29.6'	54°56.6'	S 14°00.3'	72°38.6'	S 18°59.0'	212°32.8'	N 4°53.3'		
4	38°34.2'	239°50.2' N 8°56.2'	203°27.2'	S 6°30.9'	69°59.3'	S 14°00.4'	87°41.2'	S 18°59.0'	227°33.8'	N 4°52.7'		
5	53°36.7'	254°50.4' N 8°55.3'	218°27.0'	S 6°32.1'	85°02.1'	S 14°00.5'	102°43.8'	S 18°59.1'	242°34.8'	N 4°52.0'		
6	68°39.1'	269°50.6' N 8°54.4'	233°26.8'	S 6°33.4'	100°04.9'	S 14°00.6'	117°46.4'	S 18°59.1'	257°35.8'	N 4°51.4'		
7	83°41.6'	284°50.8' N 8°53.5'	248°26.6'	S 6°34.7'	115°07.6'	S 14°00.7'	132°49.0'	S 18°59.2'	272°36.8'	N 4°50.8'		
8	98°44.1'	299°51.0' N 8°52.6'	263°26.5'	S 6°35.9'	130°10.4'	S 14°00.8'	147°51.6'	S 18°59.2'	287°37.8'	N 4°50.1'		
9	113°46.5'	314°51.2' N 8°51.7'	278°26.3'	S 6°37.2'	145°13.2'	S 14°00.9'	162°54.3'	S 18°59.2'	302°38.8'	N 4°49.5'		
10	128°49.0'	329°51.4' N 8°50.8'	293°26.1'	S 6°38.4'	160°16.0'	S 14°01.0'	177°56.9'	S 18°59.3'	317°39.8'	N 4°48.8'		
11	143°51.5'	344°51.6' N 8°49.9'	308°25.9'	S 6°39.7'	175°18.7'	S 14°01.1'	192°59.5'	S 18°59.3'	332°40.8'	N 4°48.2'		
12	158°53.9'	359°51.8' N 8°49.0'	323°25.7'	S 6°41.0'	190°21.5'	S 14°01.3'	208°02.1'	S 18°59.4'	347°41.8'	N 4°47.5'		
13	173°56.4'	14°52.0' N 8°48.1'	338°25.5'	S 6°42.2'	205°24.3'	S 14°01.4'	223°04.7'	S 18°59.4'	2°42.8'	N 4°46.9'		
14	188°58.9'	29°52.2' N 8°47.2'	353°25.3'	S 6°43.5'	220°27.0'	S 14°01.5'	238°07.3'	S 18°59.4'	17°43.8'	N 4°46.3'		
15	204°01.3'	44°52.4' N 8°46.3'	8°25.1'	S 6°44.7'	235°29.8'	S 14°01.6'	253°10.0'	S 18°59.5'	32°44.8'	N 4°45.6'		
16	219°03.8'	59°52.6' N 8°45.4'	23°24.9'	S 6°46.0'	250°32.6'	S 14°01.7'	268°12.6'	S 18°59.5'	47°45.8'	N 4°45.0'		
17	234°06.2'	74°52.8' N 8°44.5'	38°24.7'	S 6°47.3'	265°35.3'	S 14°01.8'	283°15.2'	S 18°59.6'	62°46.8'	N 4°44.3'		
18	249°08.7'	89°52.9' N 8°43.6'	53°24.6'	S 6°48.5'	280°38.1'	S 14°01.9'	298°17.8'	S 18°59.6'	77°47.8'	N 4°43.7'		
19	264°11.2'	104°53.1' N 8°42.7'	68°24.4'	S 6°49.8'	295°40.9'	S 14°02.0'	313°20.4'	S 18°59.6'	92°48.8'	N 4°43.0'		
20	279°13.6'	119°53.3' N 8°41.8'	83°24.2'	S 6°51.0'	310°43.6'	S 14°02.1'	328°23.0'	S 18°59.7'	107°49.8'	N 4°42.4'		
21	294°16.1'	134°53.5' N 8°40.9'	98°24.0'	S 6°52.3'	325°46.4'	S 14°02.2'	343°25.6'	S 18°59.7'	122°50.8'	N 4°41.8'		
22	309°18.6'	149°53.7' N 8°40.0'	113°23.8'	S 6°53.6'	340°49.2'	S 14°02.3'	358°28.3'	S 18°59.8'	137°51.8'	N 4°41.1'		
23	324°21.0'	164°53.9' N 8°39.1'	128°23.6'	S 6°54.8'	355°51.9'	S 14°02.4'	13°30.9'	S 18°59.8'	152°52.8'	N 4°40.5'		
		SD 15.8' <i>d</i> -0.9'	<i>v</i> -0.2' <i>d</i> -1.3'		<i>v</i> 2.8' <i>d</i> -0.1'		<i>v</i> 2.6' <i>d</i> -0.0'		<i>v</i> 1.0' <i>d</i> -0.6'			
Mer. pass.		12 h 0 m 34 s	14 h 26 m		23 h 17 m		22 h 6 m		12 h 49 m			

h	Moon				Lunar distance								
	GHA	dec	<i>v</i>	<i>d</i>	HP	-Sun	-Pollux	-Betelgeuse	-Capella	+Achernar	+Fomalhaut	+Jupiter	+Saturn
0	276°47.0'	N 20°38.8'	13.0'	8.1'	54.2'	93°15.5'	50°16.6'	29°40.1'	29°18.8'	83°42.4'	89°22.9'	97°39.1'	115°20.0'
1	291°19.0'	N 20°46.9'	13.0'	8.0'	54.2'	92°48.4'	49°47.0'	29°17.0'	28°59.2'	83°59.5'	89°51.4'	98°08.9'	115°49.7'
2	305°51.0'	N 20°54.9'	12.9'	7.9'	54.2'	92°21.4'	49°17.5'	28°54.1'	28°39.8'	84°16.6'	90°19.8'	98°38.8'	116°19.4'
3	320°22.9'	N 21°02.8'	12.8'	7.8'	54.2'	91°54.3'	48°47.9'	28°31.3'	28°20.7'	84°33.6'	90°48.3'	99°08.7'	116°49.1'
4	334°54.7'	N 21°10.6'	12.8'	7.7'	54.2'	91°27.2'	48°18.4'	28°08.8'	28°01.9'	84°50.7'	91°16.7'	99°38.5'	117°18.7'
5	349°26.5'	N 21°18.4'	12.7'	7.6'	54.2'	91°00.1'	47°48.9'	27°46.5'	27°43.3'	85°07.9'	91°45.2'	100°08.4'	117°48.4'
6	3°58.3'	N 21°26.0'	12.7'	7.5'	54.2'	90°33.0'	47°19.3'	27°24.4'	27°25.1'	85°25.0'	92°13.6'	100°38.3'	118°18.1'
7	18°30.0'	N 21°33.5'	12.6'	7.4'	54.2'	90°06.0'	46°49.8'	27°02.5'	27°07.2'	85°42.1'	92°42.1'	101°08.1'	118°47.8'
8	33°01.6'	N 21°41.0'	12.6'	7.4'	54.2'	89°38.9'	46°20.2'	26°40.8'	26°49.6'	85°59.3'	93°10.5'	101°38.0'	119°17.5'
9	47°33.2'	N 21°48.3'	12.5'	7.3'	54.2'	89°11.8'	45°50.7'	26°19.3'	26°32.3'	86°16.5'	93°39.0'	102°07.9'	119°47.2'
10	62°04.7'	N 21°55.6'	12.5'	7.2'	54.2'	88°44.7'	45°21.2'	25°58.2'	26°15.3'	86°33.6'	94°07.4'	102°37.7'	
11	76°36.1'	N 22°02.8'	12.4'	7.1'	54.2'	88°17.6'	44°51.6'	25°37.2'	25°58.7'	86°50.8'	94°35.9'	103°07.6'	
12	91°07.6'	N 22°09.8'	12.4'	7.0'	54.2'	87°50.5'	44°22.1'	25°16.6'	25°42.5'	87°08.0'	95°04.3'	103°37.5'	
13	105°38.9'	N 22°16.8'	12.3'	6.9'	54.2'	87°23.4'	43°52.5'	24°56.2'	25°26.6'	87°25.3'	95°32.8'	104°07.3'	
14	120°10.2'	N 22°23.7'	12.2'	6.8'	54.2'	86°56.3'	43°23.0'	24°36.1'	25°11.2'	87°42.5'	96°01.3'	104°37.2'	
15	134°41.5'	N 22°30.4'	12.2'	6.7'	54.2'	86°29.2'	42°53.4'	24°16.3'		87°59.7'	96°29.7'	105°07.1'	
16	149°12.6'	N 22°37.1'	12.1'	6.6'	54.2'	86°02.1'	42°23.9'	23°56.8'		88°17.0'	96°58.2'	105°37.0'	
17	163°43.8'	N 22°43.7'	12.1'	6.5'	54.2'	85°35.0'	41°54.3'	23°37.6'		88°34.2'	97°26.6'	106°06.9'	
18	178°14.9'	N 22°50.1'	12.0'	6.4'	54.2'	85°07.9'	41°24.7'	23°18.8'		88°51.5'	97°55.1'	106°36.8'	
19	192°45.9'	N 22°56.5'	12.0'	6.3'	54.2'	84°40.8'	40°55.2'	23°00.4'		89°08.7'	98°23.6'	107°06.7'	
20	207°16.9'	N 23°02.8'	11.9'	6.2'	54.3'	84°13.6'	40°25.6'	22°42.3'		89°26.0'	98°52.1'	107°36.6'	
21	221°47.8'	N 23°08.9'	11.9'	6.1'	54.3'	83°46.5'	39°56.0'	22°24.6'		89°43.3'	99°20.5'	108°06.5'	
22	236°18.6'	N 23°15.0'	11.8'	6.0'	54.3'	83°19.4'	39°26.5'	22°07.3'		90°00.6'	99°49.0'	108°36.4'	
23	250°49.4'	N 23°20.9'	11.7'	5.9'	54.3'	82°52.2'	38°56.9'	21°50.4'		90°17.8'	100°17.5'	109°06.3'	
Mer. pass.		5 h 44 m SD 14.8'	phase 53%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.2'	S 29°30.4'	Spica	+1.0	158°25.4'	S 11°16.3'	Betelgeuse	+0.5	270°55.2'	N 7°24.7'
Deneb	+1.2	49°27.2'	N 45°21.6'	Acrux	+0.8	173°03.7'	S 63°13.1'	Capella	+0.1	280°26.1'	N 46°01.0'
Altair	+0.8	62°02.4'	N 8°55.7'	Regulus	+1.4	207°37.7'	N 11°51.9'	Rigel	+0.2	281°06.6'	S 8°10.5'
Vega	+0.0	80°34.8'	N 38°48.5'	Pollux	+1.2	243°21.0'	N 27°58.5'	Aldebaran	+0.9	290°42.8'	N 16°33.1'
Antares	+1.1	112°19.2'	S 26°28.7'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°08.3'	N 89°21.0'
Rigil Kent	-0.0	139°44.3'	S 60°55.6'	Adhara	+1.5	255°08.2'	S 28°59.8'	Achernar	+0.5	335°21.9'	S 57°07.4'
Arcturus	-0.1	145°50.6'	N 19°04.5'	Sirius	-1.4	258°28.8'	S 16°44.6'				
Hadar	+0.6	148°40.2'	S 60°28.7'	Canopus	-0.6	263°53.9'	S 52°42.1'				

Tuesday 31 August 2021 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	339°23.5'	179°54.1' N	8°38.2'	143°23.4' S	6°56.1'	10°54.7' S	14°02.6'	28°33.5' S	18°59.8'	167°53.8' N	4°39.8'
1	354°26.0'	194°54.3' N	8°37.3'	158°23.2' S	6°57.3'	25°57.5' S	14°02.7'	43°36.1' S	18°59.9'	182°54.7' N	4°39.2'
2	9°28.4'	209°54.5' N	8°36.4'	173°23.0' S	6°58.6'	41°00.2' S	14°02.8'	58°38.7' S	18°59.9'	197°55.7' N	4°38.5'
3	24°30.9'	224°54.7' N	8°35.5'	188°22.8' S	6°59.9'	56°03.0' S	14°02.9'	73°41.3' S	18°60.0'	212°56.7' N	4°37.9'
4	39°33.4'	239°54.9' N	8°34.6'	203°22.6' S	7°01.1'	71°05.8' S	14°03.0'	88°44.0' S	19°00.0'	227°57.7' N	4°37.3'
5	54°35.8'	254°55.1' N	8°33.7'	218°22.5' S	7°02.4'	86°08.5' S	14°03.1'	103°46.6' S	19°00.0'	242°58.7' N	4°36.6'
6	69°38.3'	269°55.3' N	8°32.8'	233°22.3' S	7°03.6'	101°11.3' S	14°03.2'	118°49.2' S	19°00.1'	257°59.7' N	4°36.0'
7	84°40.7'	284°55.5' N	8°31.9'	248°22.1' S	7°04.9'	116°14.1' S	14°03.3'	133°51.8' S	19°00.1'	273°00.7' N	4°35.3'
8	99°43.2'	299°55.7' N	8°31.0'	263°21.9' S	7°06.1'	131°16.9' S	14°03.4'	148°54.4' S	19°00.2'	288°01.7' N	4°34.7'
9	114°45.7'	314°55.9' N	8°30.1'	278°21.7' S	7°07.4'	146°19.6' S	14°03.5'	163°57.0' S	19°00.2'	303°02.7' N	4°34.0'
10	129°48.1'	329°56.1' N	8°29.2'	293°21.5' S	7°08.6'	161°22.4' S	14°03.6'	178°59.6' S	19°00.2'	318°03.7' N	4°33.4'
11	144°50.6'	344°56.3' N	8°28.3'	308°21.3' S	7°09.9'	176°25.2' S	14°03.7'	194°02.3' S	19°00.3'	333°04.7' N	4°32.8'
12	159°53.1'	359°56.5' N	8°27.4'	323°21.1' S	7°11.2'	191°27.9' S	14°03.8'	209°04.9' S	19°00.3'	348°05.7' N	4°32.1'
13	174°55.5'	14°56.7' N	8°26.5'	338°20.9' S	7°12.4'	206°30.7' S	14°03.9'	224°07.5' S	19°00.4'	3°06.7' N	4°31.5'
14	189°58.0'	29°56.9' N	8°25.6'	353°20.7' S	7°13.7'	221°33.5' S	14°04.1'	239°10.1' S	19°00.4'	18°07.7' N	4°30.8'
15	205°00.5'	44°57.0' N	8°24.7'	8°20.5' S	7°14.9'	236°36.2' S	14°04.2'	254°12.7' S	19°00.4'	33°08.7' N	4°30.2'
16	220°02.9'	59°57.2' N	8°23.8'	23°20.3' S	7°16.2'	251°39.0' S	14°04.3'	269°15.3' S	19°00.5'	48°09.7' N	4°29.5'
17	235°05.4'	74°57.4' N	8°22.9'	38°20.2' S	7°17.4'	266°41.7' S	14°04.4'	284°17.9' S	19°00.5'	63°10.7' N	4°28.9'
18	250°07.9'	89°57.6' N	8°22.0'	53°20.0' S	7°18.7'	281°44.5' S	14°04.5'	299°20.5' S	19°00.6'	78°11.7' N	4°28.2'
19	265°10.3'	104°57.8' N	8°21.1'	68°19.8' S	7°19.9'	296°47.3' S	14°04.6'	314°23.2' S	19°00.6'	93°12.7' N	4°27.6'
20	280°12.8'	119°58.0' N	8°20.2'	83°19.6' S	7°21.2'	311°50.0' S	14°04.7'	329°25.8' S	19°00.6'	108°13.7' N	4°27.0'
21	295°15.2'	134°58.2' N	8°19.2'	98°19.4' S	7°22.4'	326°52.8' S	14°04.8'	344°28.4' S	19°00.7'	123°14.7' N	4°26.3'
22	310°17.7'	149°58.4' N	8°18.3'	113°19.2' S	7°23.7'	341°55.6' S	14°04.9'	359°31.0' S	19°00.7'	138°15.7' N	4°25.7'
23	325°20.2'	164°58.6' N	8°17.4'	128°19.0' S	7°25.0'	356°58.3' S	14°05.0'	14°33.6' S	19°00.8'	153°16.7' N	4°25.0'
		SD 15.8' <i>d</i> -0.9'		<i>v</i> -0.2' <i>d</i> -1.3'		<i>v</i> 2.8' <i>d</i> -0.1'		<i>v</i> 2.6' <i>d</i> -0.0'		<i>v</i> 1.0' <i>d</i> -0.6'	
Mer. pass.		12 h 0 m 15 s		14 h 27 m		23 h 12 m		22 h 2 m		12 h 48 m	

h	Moon				Lunar distance								
	GHA	dec	<i>v</i>	<i>d</i>	HP	-Sun	-Procyon	-Pollux	-Betelgeuse	+Aldebaran	+Achernar	+Fomalhaut	+Jupiter
0	265°20.2' N	23°26.8'	11.7'	5.7'	54.3'	82°25.1'	43°32.1'	38°27.3'		21°34.0'	90°35.1'	100°46.0'	109°36.3'
1	279°50.9' N	23°32.5'	11.6'	5.6'	54.3'	81°57.9'	43°06.3'	37°57.7'		21°18.0'	8°34.7'	90°52.4'	101°14.5'
2	294°21.5' N	23°38.2'	11.6'	5.5'	54.3'	81°30.7'	42°40.5'	37°28.1'		21°02.5'	8°57.0'	91°09.7'	101°43.0'
3	308°52.1' N	23°43.7'	11.5'	5.4'	54.3'	81°03.5'	42°14.8'	36°58.5'			9°19.9'	91°27.0'	102°11.5'
4	323°22.6' N	23°49.1'	11.5'	5.3'	54.3'	80°36.4'	41°49.2'	36°28.9'			9°43.5'	91°44.3'	102°40.0'
5	337°53.1' N	23°54.5'	11.4'	5.2'	54.3'	80°09.2'	41°23.7'	35°59.3'			10°07.6'	92°01.6'	103°08.5'
6	352°23.5' N	23°59.7'	11.4'	5.1'	54.3'	79°42.0'	40°58.2'	35°29.6'			10°32.2'	92°18.9'	103°37.0'
7	6°53.9' N	24°04.8'	11.3'	5.0'	54.3'	79°14.7'	40°32.8'	35°00.0'			10°57.2'	92°36.2'	104°05.5'
8	21°24.2' N	24°09.8'	11.3'	4.9'	54.3'	78°47.5'	40°07.5'	34°30.4'			11°22.6'	92°53.5'	104°34.0'
9	35°54.5' N	24°14.6'	11.2'	4.8'	54.3'	78°20.3'	39°42.2'	34°00.7'			11°48.3'	93°10.8'	105°02.5'
10	50°24.7' N	24°19.4'	11.2'	4.7'	54.4'	77°53.0'	39°17.0'	33°31.1'			12°14.4'	93°28.1'	105°31.1'
11	64°54.8' N	24°24.0'	11.1'	4.5'	54.4'	77°25.8'	38°51.9'	33°01.4'			12°40.7'	93°45.3'	105°59.6'
12	79°25.0' N	24°28.6'	11.1'	4.4'	54.4'	76°58.5'	38°26.9'	32°31.7'			13°07.3'	94°02.6'	106°28.1'
13	93°55.0' N	24°33.0'	11.0'	4.3'	54.4'	76°31.2'	38°02.0'	32°02.1'			13°34.1'	94°19.9'	106°56.7'
14	108°25.0' N	24°37.3'	11.0'	4.2'	54.4'	76°03.9'	37°37.2'	31°32.4'			14°01.1'	94°37.1'	107°25.2'
15	122°55.0' N	24°41.5'	10.9'	4.1'	54.4'	75°36.6'	37°12.4'	31°02.7'			14°28.4'	94°54.4'	107°53.8'
16	137°24.9' N	24°45.6'	10.9'	4.0'	54.4'	75°09.3'	36°47.8'	30°33.0'			14°55.8'	95°11.7'	108°22.3'
17	151°54.7' N	24°49.6'	10.8'	3.9'	54.4'	74°42.0'	36°23.2'	30°03.3'			15°23.3'	95°28.9'	108°50.9'
18	166°24.5' N	24°53.4'	10.8'	3.7'	54.4'	74°14.7'	35°58.8'	29°33.5'			15°51.0'	95°46.1'	109°19.5'
19	180°54.3' N	24°57.2'	10.7'	3.6'	54.5'	73°47.3'	35°34.4'	29°03.8'			16°18.9'	96°03.4'	109°48.0'
20	195°24.0' N	25°00.8'	10.7'	3.5'	54.5'	73°19.9'	35°10.2'	28°34.1'			16°46.8'	96°20.6'	110°16.6'
21	209°53.6' N	25°04.3'	10.6'	3.4'	54.5'	72°52.5'	34°46.1'	28°04.3'			17°14.9'	96°37.8'	110°45.2'
22	224°23.2' N	25°07.7'	10.6'	3.3'	54.5'	72°25.1'	34°22.1'	27°34.6'			17°43.1'	96°55.0'	111°13.8'
23	238°52.8' N	25°10.9'	10.5'	3.1'	54.5'	71°57.7'	33°58.3'	27°04.8'			18°11.4'	97°12.2'	111°42.4'
Mer. pass.			6 h 31 m SD 14.8'	phase 43%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°17.2' S	29°30.4'	Spica	+1.0	158°25.4' S	11°16.3'	Betelgeuse	+0.5	270°55.2' N	7°24.7'
Deneb	+1.2	49°27.2' N	45°21.6'	Acrux	+0.8	173°03.7' S	63°13.1'	Capella	+0.1	280°26.0' N	46°01.0'
Altair	+0.8	62°02.4' N	8°55.7'	Regulus	+1.4	207°37.7' N	11°51.9'	Rigel	+0.2	281°06.6' S	8°10.5'
Vega	+0.0	80°34.9' N	38°48.5'	Pollux	+1.2	243°21.0' N	27°58.4'	Aldebaran	+0.9	290°42.8' N	16°33.1'
Antares	+1.1	112°19.2' S	26°28.7'	Procyon	+0.4	244°53.9' N	5°10.3'	Polaris	+2.0	315°07.8' N	89°21.0'
Rigil Kent	-0.0	139°44.3' S	60°55.5'	Adhara	+1.5	255°08.2' S	28°59.8'	Achernar	+0.5	335°21.9' S	57°07.4'
Arcturus	-0.1	145°50.6' N	19°04.5'	Sirius	-1.4	258°28.8' S	16°44.6'				
Hadar	+0.6	148°40.2' S	60°28.7'	Canopus	-0.6	263°53.9' S	52°42.1'				