

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	130°40.4'	S 17°18.6'	176°38.5'	S 17°18.6'	137°45.0'	S 4°00.7'	205°49.9'	S 22°41.7'	193°41.3'	S 21°06.4'	232°12.4'	S 23°00.2'
1	145°42.8'	S 17°17.9'	191°38.4'	S 17°17.9'	152°44.8'	S 3°59.4'	220°51.8'	S 22°41.6'	208°43.5'	S 21°06.3'	247°13.0'	S 23°00.3'
2	160°45.3'	S 17°17.2'	206°38.3'	S 17°17.2'	167°44.6'	S 3°58.1'	235°53.6'	S 22°41.6'	223°45.6'	S 21°06.3'	262°13.6'	S 23°00.5'
3	175°47.8'	S 17°16.5'	221°38.2'	S 17°16.5'	182°44.4'	S 3°56.8'	250°55.5'	S 22°41.5'	238°47.8'	S 21°06.2'	277°14.3'	S 23°00.7'
4	190°50.2'	S 17°15.8'	236°38.1'	S 17°15.8'	197°44.1'	S 3°55.5'	265°57.4'	S 22°41.5'	253°49.9'	S 21°06.2'	292°14.9'	S 23°00.8'
5	205°52.7'	S 17°15.1'	251°38.0'	S 17°15.1'	212°43.9'	S 3°54.2'	280°59.3'	S 22°41.4'	268°52.1'	S 21°06.1'	307°15.5'	S 23°01.0'
6	220°55.2'	S 17°14.4'	266°37.9'	S 17°14.4'	227°43.7'	S 3°52.9'	296°01.1'	S 22°41.4'	283°54.3'	S 21°06.1'	322°16.1'	S 23°01.2'
7	235°57.6'	S 17°13.7'	281°37.9'	S 17°13.7'	242°43.5'	S 3°51.6'	311°03.0'	S 22°41.3'	298°56.4'	S 21°06.0'	337°16.7'	S 23°01.3'
8	251°00.1'	S 17°13.0'	296°37.8'	S 17°13.0'	257°43.3'	S 3°50.3'	326°04.9'	S 22°41.2'	313°58.6'	S 21°06.0'	352°17.4'	S 23°01.5'
9	266°02.5'	S 17°12.3'	311°37.7'	S 17°12.3'	272°43.0'	S 3°49.0'	341°06.8'	S 22°41.2'	329°00.7'	S 21°06.0'	7°18.0'	S 23°01.7'
10	281°05.0'	S 17°11.6'	326°37.6'	S 17°11.6'	287°42.8'	S 3°47.7'	356°08.7'	S 22°41.1'	344°02.9'	S 21°05.9'	22°18.6'	S 23°01.8'
11	296°07.5'	S 17°10.9'	341°37.5'	S 17°10.9'	302°42.6'	S 3°46.4'	11°10.5'	S 22°41.1'	359°05.1'	S 21°05.9'	37°19.2'	S 23°02.0'
12	311°09.9'	S 17°10.2'	356°37.4'	S 17°10.2'	317°42.4'	S 3°45.1'	26°12.4'	S 22°41.0'	14°07.2'	S 21°05.8'	52°19.8'	S 23°02.2'
13	326°12.4'	S 17°09.5'	11°37.3'	S 17°09.5'	332°42.2'	S 3°43.8'	41°14.3'	S 22°41.0'	29°09.4'	S 21°05.8'	67°20.4'	S 23°02.3'
14	341°14.9'	S 17°08.8'	26°37.2'	S 17°08.8'	347°42.0'	S 3°42.5'	56°16.2'	S 22°40.9'	44°11.5'	S 21°05.7'	82°21.1'	S 23°02.5'
15	356°17.3'	S 17°08.0'	41°37.2'	S 17°08.0'	2°41.7'	S 3°41.2'	71°18.1'	S 22°40.9'	59°13.7'	S 21°05.7'	97°21.7'	S 23°02.7'
16	11°19.8'	S 17°07.3'	56°37.1'	S 17°07.3'	17°41.5'	S 3°39.9'	86°19.9'	S 22°40.8'	74°15.9'	S 21°05.6'	112°22.3'	S 23°02.8'
17	26°22.3'	S 17°06.6'	71°37.0'	S 17°06.6'	32°41.3'	S 3°38.6'	101°21.8'	S 22°40.8'	89°18.0'	S 21°05.6'	127°22.9'	S 23°03.0'
18	41°24.7'	S 17°05.9'	86°36.9'	S 17°05.9'	47°41.1'	S 3°37.3'	116°23.7'	S 22°40.7'	104°20.2'	S 21°05.5'	142°23.5'	S 23°03.1'
19	56°27.2'	S 17°05.2'	101°36.8'	S 17°05.2'	62°40.9'	S 3°36.1'	131°25.6'	S 22°40.7'	119°22.3'	S 21°05.5'	157°24.1'	S 23°03.3'
20	71°29.7'	S 17°04.5'	116°36.7'	S 17°04.5'	77°40.7'	S 3°34.8'	146°27.4'	S 22°40.6'	134°24.5'	S 21°05.4'	172°24.8'	S 23°03.5'
21	86°32.1'	S 17°03.8'	131°36.7'	S 17°03.8'	92°40.5'	S 3°33.5'	161°29.3'	S 22°40.6'	149°26.7'	S 21°05.4'	187°25.4'	S 23°03.6'
22	101°34.6'	S 17°03.1'	146°36.6'	S 17°03.1'	107°40.2'	S 3°32.2'	176°31.2'	S 22°40.5'	164°28.8'	S 21°05.3'	202°26.0'	S 23°03.8'
23	116°37.0'	S 17°02.3'	161°36.5'	S 17°02.3'	122°40.0'	S 3°30.9'	191°33.1'	S 22°40.5'	179°31.0'	S 21°05.3'	217°26.6'	S 23°03.9'
		SD 16.2' d 0.7'		v -0.2' d 1.3'		v 1.9' d 0.1'		v 2.2' d 0.0'		v 0.6' d -0.2'		
Mer. pass.		12 h 13 m 31 s		14 h 49 m		10 h 15 m		11 h 4 m		8 h 31 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Regulus	-Betelgeuse	-Capella	-Rigel	-Aldebaran	+Venus	+Fomalhaut	+Sun
0	101°16.4'	N 6°52.2'	15.7'	11.3'	54.4'		59°09.5'	58°08.1'	51°34.4'	40°08.1'	38°00.1'	56°17.7'	78°14.3'
1	115°51.0'	N 7°03.5'	15.6'	11.3'	54.4'	119°46.2'	58°41.1'	57°42.0'	51°11.1'	39°38.4'	38°26.8'	56°45.6'	78°41.6'
2	130°25.7'	N 7°14.8'	15.6'	11.3'	54.4'	119°16.5'	58°12.7'	57°15.9'	50°47.9'	39°08.7'	38°53.5'	57°13.6'	79°08.8'
3	145°00.3'	N 7°26.0'	15.6'	11.2'	54.4'	118°46.7'	57°44.3'	56°49.9'	50°24.7'	38°38.9'	39°20.2'	57°41.7'	79°36.1'
4	159°34.8'	N 7°37.3'	15.5'	11.2'	54.4'	118°16.9'	57°16.0'	56°23.9'	50°01.6'	38°09.2'	39°46.9'	58°09.7'	80°03.4'
5	174°09.3'	N 7°48.5'	15.5'	11.2'	54.5'	117°47.1'	56°47.6'	55°57.9'	49°38.6'	37°39.4'	40°13.6'	58°37.8'	80°30.7'
6	188°43.8'	N 7°59.6'	15.4'	11.2'	54.5'	117°17.3'	56°19.2'	55°31.9'	49°15.7'	37°09.6'	40°40.4'	59°06.0'	80°58.0'
7	203°18.3'	N 8°10.8'	15.4'	11.1'	54.5'	116°47.5'	55°50.8'	55°06.0'	48°52.8'	36°39.8'	41°07.2'	59°34.1'	81°25.4'
8	217°52.7'	N 8°21.9'	15.4'	11.1'	54.5'	116°17.6'	55°22.4'	54°40.1'	48°30.1'	36°10.0'	41°34.0'	60°02.4'	81°52.7'
9	232°27.0'	N 8°33.0'	15.3'	11.1'	54.5'	115°47.8'	54°54.1'	54°14.2'	48°07.4'	35°40.2'	42°00.8'	60°30.6'	82°20.1'
10	247°01.3'	N 8°44.1'	15.3'	11.0'	54.5'	115°17.9'	54°25.7'	53°48.4'	47°44.8'	35°10.4'	42°27.7'	60°58.9'	82°47.5'
11	261°35.6'	N 8°55.1'	15.2'	11.0'	54.6'	114°48.0'	53°57.3'	53°22.6'	47°22.3'	34°40.5'	42°54.5'	61°27.2'	83°14.9'
12	276°09.8'	N 9°06.2'	15.2'	11.0'	54.6'	114°18.1'	53°28.9'	52°56.8'	46°59.8'	34°10.7'	43°21.4'	61°55.5'	83°42.3'
13	290°44.0'	N 9°17.1'	15.1'	11.0'	54.6'	113°48.1'	53°00.6'	52°31.0'	46°37.5'	33°40.8'	43°48.3'	62°23.9'	84°09.8'
14	305°18.1'	N 9°28.1'	15.1'	10.9'	54.6'	113°18.2'	52°32.2'	52°05.3'	46°15.3'	33°10.9'	44°15.3'	62°52.3'	84°37.2'
15	319°52.1'	N 9°39.0'	15.0'	10.9'	54.6'	112°48.2'	52°03.8'	51°39.7'	45°53.1'	32°41.0'	44°42.2'	63°20.7'	85°04.7'
16	334°26.2'	N 9°49.9'	15.0'	10.9'	54.6'	112°18.2'	51°35.5'	51°14.1'	45°31.1'	32°11.0'	45°09.2'	63°49.2'	85°32.2'
17	349°00.1'	N 10°00.8'	14.9'	10.8'	54.7'	111°48.1'	51°07.1'	50°48.5'	45°09.2'	31°41.1'	45°36.2'	64°17.7'	85°59.7'
18	3°34.1'	N 10°11.6'	14.9'	10.8'	54.7'	111°18.1'	50°38.7'	50°22.9'	44°47.4'	31°11.1'	46°03.2'	64°46.2'	86°27.3'
19	18°07.9'	N 10°22.4'	14.8'	10.8'	54.7'	110°48.0'	50°10.4'	49°57.4'	44°25.7'	30°41.1'	46°30.2'	65°14.8'	86°54.9'
20	32°41.7'	N 10°33.2'	14.8'	10.7'	54.7'	110°17.9'	49°42.1'	49°32.0'	44°04.1'	30°11.2'	46°57.3'	65°43.4'	87°22.5'
21	47°15.5'	N 10°43.9'	14.7'	10.7'	54.7'	109°47.8'	49°13.7'	49°06.6'	43°42.6'	29°41.1'	47°24.4'	66°12.0'	87°50.1'
22	61°49.2'	N 10°54.6'	14.6'	10.7'	54.8'	109°17.7'	48°45.4'	48°41.2'	43°21.3'	29°11.1'	47°51.5'	66°40.7'	88°17.7'
23	76°22.8'	N 11°05.3'	14.6'	10.6'	54.8'	108°47.5'	48°17.1'	48°15.9'	43°00.1'	28°41.1'	48°18.6'	67°09.4'	88°45.4'
Mer. pass.		17 h 45 m SD 14.8'		phase 40%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.3'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.9'	N 45°21.1'	Acrux	+0.8	173°03.9'	S 63°12.3'	Capella	+0.1	280°27.4'	N 46°01.1'
Altair	+0.8	62°04.1'	N 8°55.2'	Regulus	+1.4	207°38.4'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.2'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.8'	S 26°28.4'	Procyon	+0.4	244°54.6'	N 5°10.3'	Polaris	+2.0	315°44.4'	N 89°21.1'
Rigel Kent	-0.0	139°45.6'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.5'	S 57°08.5'
Arcturus	-0.1	145°51.5'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.8'				
Hadar	+0.6	148°41.4'	S 60°27.8'	Canopus	-0.6	263°53.7'	S 52°42.6'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	131°39.5'		176°36.4'	S 17°01.6'	137°39.8'	S 3°29.6'	206°35.0'	S 22°40.4'	194°33.1'	S 21°05.2'	232°27.2'	S 23°04.1'
1	146°42.0'		191°36.3'	S 17°00.9'	152°39.6'	S 3°28.3'	221°36.8'	S 22°40.4'	209°35.3'	S 21°05.2'	247°27.8'	S 23°04.3'
2	161°44.4'		206°36.2'	S 17°00.2'	167°39.4'	S 3°27.0'	236°38.7'	S 22°40.3'	224°37.5'	S 21°05.1'	262°28.5'	S 23°04.4'
3	176°46.9'		221°36.2'	S 16°59.5'	182°39.2'	S 3°25.7'	251°40.6'	S 22°40.3'	239°39.6'	S 21°05.1'	277°29.1'	S 23°04.6'
4	191°49.4'		236°36.1'	S 16°58.8'	197°39.0'	S 3°24.4'	266°42.5'	S 22°40.2'	254°41.8'	S 21°05.0'	292°29.7'	S 23°04.7'
5	206°51.8'		251°36.0'	S 16°58.1'	212°38.8'	S 3°23.1'	281°44.4'	S 22°40.2'	269°43.9'	S 21°05.0'	307°30.3'	S 23°04.9'
6	221°54.3'		266°35.9'	S 16°57.3'	227°38.5'	S 3°21.8'	296°46.2'	S 22°40.1'	284°46.1'	S 21°04.9'	322°30.9'	S 23°05.1'
7	236°56.8'		281°35.8'	S 16°56.6'	242°38.3'	S 3°20.5'	311°48.1'	S 22°40.1'	299°48.3'	S 21°04.9'	337°31.5'	S 23°05.2'
8	251°59.2'		296°35.8'	S 16°55.9'	257°38.1'	S 3°19.2'	326°50.0'	S 22°40.0'	314°50.4'	S 21°04.8'	352°32.2'	S 23°05.4'
9	267°01.7'		311°35.7'	S 16°55.2'	272°37.9'	S 3°17.9'	341°51.9'	S 22°39.9'	329°52.6'	S 21°04.8'	7°32.8'	S 23°05.5'
10	282°04.1'		326°35.6'	S 16°54.5'	287°37.7'	S 3°16.6'	356°53.8'	S 22°39.9'	344°54.8'	S 21°04.7'	22°33.4'	S 23°05.7'
11	297°06.6'		341°35.5'	S 16°53.7'	302°37.5'	S 3°15.3'	11°55.7'	S 22°39.8'	359°56.9'	S 21°04.7'	37°34.0'	S 23°05.8'
12	312°09.1'		356°35.4'	S 16°53.0'	317°37.3'	S 3°14.0'	26°57.5'	S 22°39.8'	14°59.1'	S 21°04.6'	52°34.6'	S 23°06.0'
13	327°11.5'		11°35.4'	S 16°52.3'	332°37.1'	S 3°12.7'	41°59.4'	S 22°39.7'	30°01.2'	S 21°04.6'	67°35.2'	S 23°06.1'
14	342°14.0'		26°35.3'	S 16°51.6'	347°36.9'	S 3°11.4'	57°01.3'	S 22°39.7'	45°03.4'	S 21°04.5'	82°35.8'	S 23°06.3'
15	357°16.5'		41°35.2'	S 16°50.9'	2°36.7'	S 3°10.1'	72°03.2'	S 22°39.6'	60°05.6'	S 21°04.5'	97°36.5'	S 23°06.5'
16	12°18.9'		56°35.1'	S 16°50.1'	17°36.4'	S 3°08.8'	87°05.1'	S 22°39.6'	75°07.7'	S 21°04.4'	112°37.1'	S 23°06.6'
17	27°21.4'		71°35.1'	S 16°49.4'	32°36.2'	S 3°07.5'	102°06.9'	S 22°39.5'	90°09.9'	S 21°04.4'	127°37.7'	S 23°06.8'
18	42°23.9'		86°35.0'	S 16°48.7'	47°36.0'	S 3°06.2'	117°08.8'	S 22°39.5'	105°12.0'	S 21°04.3'	142°38.3'	S 23°06.9'
19	57°26.3'		101°34.9'	S 16°48.0'	62°35.8'	S 3°04.9'	132°10.7'	S 22°39.4'	120°14.2'	S 21°04.3'	157°38.9'	S 23°07.1'
20	72°28.8'		116°34.8'	S 16°47.2'	77°35.6'	S 3°03.6'	147°12.6'	S 22°39.4'	135°16.4'	S 21°04.2'	172°39.5'	S 23°07.2'
21	87°31.3'		131°34.8'	S 16°46.5'	92°35.4'	S 3°02.3'	162°14.5'	S 22°39.3'	150°18.5'	S 21°04.2'	187°40.1'	S 23°07.4'
22	102°33.7'		146°34.7'	S 16°45.8'	107°35.2'	S 3°01.0'	177°16.4'	S 22°39.3'	165°20.7'	S 21°04.1'	202°40.8'	S 23°07.5'
23	117°36.2'		161°34.6'	S 16°45.1'	122°35.0'	S 2°59.6'	192°18.2'	S 22°39.2'	180°22.8'	S 21°04.1'	217°41.4'	S 23°07.7'
			SD 16.2'	d 0.7'	v -0.2'	d 1.3'	v 1.9'	d 0.1'	v 2.2'	d 0.0'	v 0.6'	d -0.2'
Mer. pass.			12 h 13 m 39 s		14 h 50 m		10 h 12 m		11 h 0 m		8 h 30 m	

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Capella	-Betelgeuse	-Rigel	-Aldebaran	+Venus	+Fomalhaut	+Achernar	+Sun
0	90°56.4'	N 11°15.9'	14.5'	10.6'	54.8'	47°50.7'	47°48.7'	42°39.0'	28°11.0'	48°45.8'	67°38.1'	69°41.3'	89°13.0'
1	105°30.0'	N 11°26.5'	14.5'	10.5'	54.8'	47°25.5'	47°20.4'	42°18.0'	27°40.9'	49°13.0'	68°06.9'	69°56.4'	89°40.7'
2	120°03.4'	N 11°37.0'	14.4'	10.5'	54.8'	47°00.3'	46°52.1'	41°57.2'	27°10.8'	49°40.2'	68°35.7'	70°11.5'	90°08.5'
3	134°36.8'	N 11°47.5'	14.4'	10.5'	54.9'	46°35.2'	46°23.8'	41°36.5'	26°40.7'	50°07.4'	69°04.5'	70°26.8'	90°36.2'
4	149°10.2'	N 11°58.0'	14.3'	10.4'	54.9'	46°10.2'	45°55.6'	41°16.0'	26°10.6'	50°34.7'	69°33.4'	70°42.1'	91°04.0'
5	163°43.5'	N 12°08.4'	14.2'	10.4'	54.9'	45°45.2'	45°27.3'	40°55.6'	25°40.4'	51°02.0'	70°02.3'	70°57.5'	91°31.8'
6	178°16.7'	N 12°18.8'	14.2'	10.3'	54.9'	45°20.3'	44°59.0'	40°35.4'	25°10.2'	51°29.3'	70°31.2'	71°12.9'	91°59.6'
7	192°49.9'	N 12°29.1'	14.1'	10.3'	55.0'	44°55.5'	44°30.8'	40°15.3'	24°40.1'	51°56.7'	71°00.2'	71°28.5'	92°27.5'
8	207°23.0'	N 12°39.4'	14.0'	10.2'	55.0'	44°30.8'	44°02.5'	39°55.4'	24°09.9'	52°24.0'	71°29.2'	71°44.1'	92°55.4'
9	221°56.0'	N 12°49.6'	14.0'	10.2'	55.0'	44°06.1'	43°34.3'	39°35.7'	23°39.6'	52°51.4'	71°58.2'	71°59.8'	93°23.3'
10	236°29.0'	N 12°59.8'	13.9'	10.2'	55.0'	43°41.4'	43°06.1'	39°16.1'	23°09.4'	53°18.9'	72°27.3'	72°15.6'	93°51.2'
11	251°01.9'	N 13°10.0'	13.8'	10.1'	55.1'	43°16.9'	42°37.9'	38°56.7'	22°39.2'	53°46.3'	72°56.4'	72°31.5'	94°19.2'
12	265°34.7'	N 13°20.1'	13.8'	10.1'	55.1'	42°52.5'	42°09.8'	38°37.5'	22°08.9'	54°13.8'	73°25.5'	72°47.4'	94°47.2'
13	280°07.5'	N 13°30.1'	13.7'	10.0'	55.1'	42°28.1'	41°41.6'	38°18.5'	21°38.6'	54°41.3'	73°54.7'	73°03.5'	95°15.2'
14	294°40.2'	N 13°40.2'	13.6'	10.0'	55.1'	42°03.8'	41°13.5'	37°59.7'	21°08.3'	55°08.9'	74°23.9'	73°19.6'	95°43.2'
15	309°12.8'	N 13°50.1'	13.6'	9.9'	55.2'	41°39.6'	40°45.4'	37°41.1'	20°38.0'	55°36.4'	74°53.2'	73°35.7'	96°11.3'
16	323°45.3'	N 14°00.0'	13.5'	9.9'	55.2'	41°15.5'	40°17.3'	37°22.7'	20°07.7'	56°04.1'	75°22.4'	73°52.0'	96°39.4'
17	338°17.8'	N 14°09.9'	13.4'	9.8'	55.2'	40°51.5'	39°49.3'	37°04.5'	19°37.4'	56°31.7'	75°51.7'	74°08.3'	97°07.5'
18	352°50.2'	N 14°19.7'	13.3'	9.7'	55.2'	40°27.6'	39°21.2'	36°46.5'	19°07.0'	56°59.4'	76°21.1'	74°24.7'	97°35.7'
19	7°22.6'	N 14°29.4'	13.3'	9.7'	55.3'	40°03.8'	38°53.3'	36°28.7'	18°36.7'	57°27.0'	76°50.5'	74°41.1'	98°03.9'
20	21°54.8'	N 14°39.1'	13.2'	9.6'	55.3'	39°40.1'	38°25.3'	36°11.2'	18°06.3'	57°54.8'	77°19.9'	74°57.7'	98°32.1'
21	36°27.0'	N 14°48.8'	13.1'	9.6'	55.3'	39°16.5'	37°57.4'	35°54.0'	17°35.9'	58°22.5'	77°49.3'	75°14.3'	99°00.3'
22	50°59.1'	N 14°58.3'	13.0'	9.5'	55.3'	38°53.1'	37°29.5'	35°36.9'	17°05.6'	58°50.3'	78°18.8'	75°30.9'	99°28.6'
23	65°31.2'	N 15°07.9'	13.0'	9.5'	55.4'	38°29.7'	37°01.6'	35°20.2'	16°35.2'	59°18.2'	78°48.3'	75°47.7'	99°56.9'
Mer. pass.			18 h 30 m SD 14.9'		phase 49%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.3'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.9'	N 45°21.1'	Acrux	+0.8	173°03.9'	S 63°12.3'	Capella	+0.1	280°27.4'	N 46°01.1'
Altair	+0.8	62°04.1'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.2'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.8'	S 26°28.4'	Procyon	+0.4	244°54.6'	N 5°10.3'	Polaris	+2.0	315°44.9'	N 89°21.1'
Rigel Kent	-0.0	139°45.5'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.5'	S 57°08.5'
Arcturus	-0.1	145°51.5'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.8'				
Hadar	+0.6	148°41.3'	S 60°27.8'	Canopus	-0.6	263°53.7'	S 52°42.6'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	132°38.6'	S 16°44.3'	176°34.5'	S 16°44.3'	137°34.8'	S 2°58.3'	207°20.1'	S 22°39.2'	195°25.0'	S 21°04.0'	232°42.0'	S 23°07.8'
1	147°41.1'	S 16°43.6'	191°34.5'	S 16°43.6'	152°34.6'	S 2°57.0'	222°22.0'	S 22°39.1'	210°27.2'	S 21°04.0'	247°42.6'	S 23°08.0'
2	162°43.6'	S 16°42.9'	206°34.4'	S 16°42.9'	167°34.4'	S 2°55.7'	237°23.9'	S 22°39.1'	225°29.3'	S 21°03.9'	262°43.2'	S 23°08.1'
3	177°46.0'	S 16°42.2'	221°34.3'	S 16°42.2'	182°34.2'	S 2°54.4'	252°25.8'	S 22°39.0'	240°31.5'	S 21°03.9'	277°43.8'	S 23°08.3'
4	192°48.5'	S 16°41.4'	236°34.2'	S 16°41.4'	197°34.0'	S 2°53.1'	267°27.6'	S 22°38.9'	255°33.7'	S 21°03.8'	292°44.4'	S 23°08.4'
5	207°51.0'	S 16°40.7'	251°34.2'	S 16°40.7'	212°33.8'	S 2°51.8'	282°29.5'	S 22°38.9'	270°35.8'	S 21°03.8'	307°45.0'	S 23°08.6'
6	222°53.4'	S 16°40.0'	266°34.1'	S 16°40.0'	227°33.6'	S 2°50.5'	297°31.4'	S 22°38.8'	285°38.0'	S 21°03.7'	322°45.7'	S 23°08.7'
7	237°55.9'	S 16°39.2'	281°34.0'	S 16°39.2'	242°33.4'	S 2°49.2'	312°33.3'	S 22°38.8'	300°40.1'	S 21°03.7'	337°46.3'	S 23°08.9'
8	252°58.4'	S 16°38.5'	296°33.9'	S 16°38.5'	257°33.2'	S 2°47.9'	327°35.2'	S 22°38.7'	315°42.3'	S 21°03.6'	352°46.9'	S 23°09.0'
9	268°00.8'	S 16°37.8'	311°33.9'	S 16°37.8'	272°33.0'	S 2°46.6'	342°37.1'	S 22°38.7'	330°44.5'	S 21°03.6'	7°47.5'	S 23°09.2'
10	283°03.3'	S 16°37.0'	326°33.8'	S 16°37.0'	287°32.8'	S 2°45.3'	357°38.9'	S 22°38.6'	345°46.6'	S 21°03.5'	22°48.1'	S 23°09.3'
11	298°05.8'	S 16°36.3'	341°33.7'	S 16°36.3'	302°32.6'	S 2°44.0'	12°40.8'	S 22°38.6'	0°48.8'	S 21°03.5'	37°48.7'	S 23°09.5'
12	313°08.2'	S 16°35.6'	356°33.7'	S 16°35.6'	317°32.4'	S 2°42.7'	27°42.7'	S 22°38.5'	15°51.0'	S 21°03.4'	52°49.3'	S 23°09.6'
13	328°10.7'	S 16°34.9'	11°33.6'	S 16°34.9'	332°32.2'	S 2°41.4'	42°44.6'	S 22°38.5'	30°53.1'	S 21°03.4'	67°50.0'	S 23°09.8'
14	343°13.1'	S 16°34.1'	26°33.5'	S 16°34.1'	347°32.0'	S 2°40.1'	57°46.5'	S 22°38.4'	45°55.3'	S 21°03.3'	82°50.6'	S 23°09.9'
15	358°15.6'	S 16°33.4'	41°33.5'	S 16°33.4'	2°31.8'	S 2°38.8'	72°48.4'	S 22°38.4'	60°57.4'	S 21°03.3'	97°51.2'	S 23°10.1'
16	13°18.1'	S 16°32.7'	56°33.4'	S 16°32.7'	17°31.6'	S 2°37.5'	87°50.2'	S 22°38.3'	75°59.6'	S 21°03.2'	112°51.8'	S 23°10.2'
17	28°20.5'	S 16°31.9'	71°33.3'	S 16°31.9'	32°31.4'	S 2°36.2'	102°52.1'	S 22°38.3'	91°01.8'	S 21°03.2'	127°52.4'	S 23°10.4'
18	43°23.0'	S 16°31.2'	86°33.3'	S 16°31.2'	47°31.2'	S 2°34.9'	117°54.0'	S 22°38.2'	106°03.9'	S 21°03.1'	142°53.0'	S 23°10.5'
19	58°25.5'	S 16°30.4'	101°33.2'	S 16°30.4'	62°31.0'	S 2°33.6'	132°55.9'	S 22°38.2'	121°06.1'	S 21°03.1'	157°53.6'	S 23°10.6'
20	73°27.9'	S 16°29.7'	116°33.1'	S 16°29.7'	77°30.8'	S 2°32.3'	147°57.8'	S 22°38.1'	136°08.3'	S 21°03.0'	172°54.2'	S 23°10.8'
21	88°30.4'	S 16°29.0'	131°33.1'	S 16°29.0'	92°30.6'	S 2°31.0'	162°59.7'	S 22°38.0'	151°10.4'	S 21°03.0'	187°54.8'	S 23°10.9'
22	103°32.9'	S 16°28.2'	146°33.0'	S 16°28.2'	107°30.4'	S 2°29.7'	178°01.6'	S 22°38.0'	166°12.6'	S 21°03.0'	202°55.5'	S 23°11.1'
23	118°35.3'	S 16°27.5'	161°32.9'	S 16°27.5'	122°30.2'	S 2°28.4'	193°03.4'	S 22°37.9'	181°14.7'	S 21°02.9'	217°56.1'	S 23°11.2'
		SD 16.2' d 0.7'		v -0.2' d 1.3'		v 1.9' d 0.1'		v 2.2' d 0.0'		v 0.6' d -0.1'		
Mer. pass.		12 h 13 m 46 s		14 h 50 m		10 h 9 m		10 h 57 m		8 h 29 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Capella	-Betelgeuse	-Rigel	-Aldebaran	+Venus	+Achernar	+Fomalhaut	+Sun
0	80°03.1'	N 15°17.3'	12.9'	9.4'	55.4'	38°06.5'	36°33.8'	35°03.6'	16°04.8'	59°46.0'	76°04.5'	79°17.9'	100°25.3'
1	94°35.0'	N 15°26.8'	12.8'	9.3'	55.4'	37°43.4'	36°06.0'	34°47.4'	15°34.5'	60°13.9'	76°21.3'	79°47.5'	100°53.7'
2	109°06.8'	N 15°36.1'	12.7'	9.3'	55.5'	37°20.5'	35°38.3'	34°31.4'	15°04.1'	60°41.8'	76°38.3'	80°17.1'	101°22.1'
3	123°38.5'	N 15°45.4'	12.6'	9.2'	55.5'	36°57.7'	35°10.6'	34°15.7'	14°33.7'	61°09.8'	76°55.3'	80°46.8'	101°50.5'
4	138°10.2'	N 15°54.6'	12.6'	9.2'	55.5'	36°35.0'	34°43.0'	34°00.4'	14°03.4'	61°37.8'	77°12.3'	81°16.5'	102°19.0'
5	152°41.7'	N 16°03.8'	12.5'	9.1'	55.5'	36°12.5'	34°15.4'		13°33.1'	62°05.8'	77°29.5'	81°46.2'	102°47.5'
6	167°13.2'	N 16°12.9'	12.4'	9.0'	55.6'	35°50.2'	33°47.9'		13°02.8'	62°33.9'	77°46.6'	82°16.0'	103°16.1'
7	181°44.6'	N 16°21.9'	12.3'	9.0'	55.6'	35°28.0'	33°20.5'		12°32.6'	63°02.0'	78°03.9'	82°45.8'	103°44.6'
8	196°15.9'	N 16°30.9'	12.2'	8.9'	55.6'	35°06.0'	32°53.1'		12°02.3'	63°30.1'	78°21.2'	83°15.6'	104°13.2'
9	210°47.2'	N 16°39.8'	12.1'	8.8'	55.7'	34°44.2'	32°25.8'		11°32.2'	63°58.3'	78°38.6'	83°45.5'	104°41.9'
10	225°18.3'	N 16°48.6'	12.1'	8.8'	55.7'	34°22.6'	31°58.5'		11°02.1'	64°26.5'	78°56.0'	84°15.4'	105°10.6'
11	239°49.4'	N 16°57.4'	12.0'	8.7'	55.7'	34°01.2'	31°31.4'		10°32.1'	64°54.7'	79°13.5'	84°45.3'	105°39.3'
12	254°20.4'	N 17°06.1'	11.9'	8.6'	55.8'	33°39.9'	31°04.3'		10°02.1'	65°23.0'	79°31.0'	85°15.3'	106°08.0'
13	268°51.3'	N 17°14.7'	11.8'	8.5'	55.8'	33°18.9'	30°37.3'		9°32.3'	65°51.3'	79°48.6'	85°45.4'	106°36.8'
14	283°22.1'	N 17°23.2'	11.7'	8.5'	55.8'	32°58.1'	30°10.4'		9°02.6'	66°19.6'	80°06.3'	86°15.4'	107°05.7'
15	297°52.8'	N 17°31.7'	11.6'	8.4'	55.9'	32°37.5'	29°43.7'		8°33.1'	66°48.0'	80°24.0'	86°45.5'	107°34.5'
16	312°23.4'	N 17°40.1'	11.5'	8.3'	55.9'	32°17.2'	29°17.0'		8°03.8'	67°16.5'	80°41.8'	87°15.7'	108°03.4'
17	326°54.0'	N 17°48.4'	11.5'	8.2'	55.9'	31°57.1'	28°50.4'		7°34.8'	67°44.9'	80°59.6'	87°45.8'	108°32.4'
18	341°24.4'	N 17°56.7'	11.4'	8.2'	56.0'	31°37.2'	28°24.0'		7°06.1'	68°13.4'	81°17.5'	88°16.0'	109°01.3'
19	355°54.8'	N 18°04.8'	11.3'	8.1'	56.0'	31°17.7'	27°57.7'		6°37.7'	68°42.0'	81°35.4'	88°46.3'	109°30.3'
20	10°25.1'	N 18°12.9'	11.2'	8.0'	56.0'	30°58.4'	27°31.5'		6°09.9'	69°10.6'	81°53.4'	89°16.6'	109°59.4'
21	24°55.3'	N 18°21.0'	11.1'	7.9'	56.0'	30°39.3'	27°05.5'		5°42.7'	69°39.2'	82°11.4'	89°46.9'	110°28.5'
22	39°25.4'	N 18°28.9'	11.0'	7.8'	56.1'	30°20.6'	26°39.7'			70°07.8'	82°29.5'	90°17.3'	110°57.6'
23	53°55.4'	N 18°36.7'	10.9'	7.8'	56.1'	30°02.2'	26°14.0'			70°36.5'	82°47.6'	90°47.7'	111°26.8'
Mer. pass.		19 h 17 m SD 15.1'		phase 59%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.3'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.9'	N 45°21.1'	Acrux	+0.8	173°03.9'	S 63°12.3'	Capella	+0.1	280°27.4'	N 46°01.1'
Altair	+0.8	62°04.1'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.2'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.8'	S 26°28.4'	Procyon	+0.4	244°54.6'	N 5°10.3'	Polaris	+2.0	315°45.3'	N 89°21.1'
Rigel Kent	-0.0	139°45.5'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.5'	S 57°08.5'
Arcturus	-0.1	145°51.5'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.8'				
Hadar	+0.6	148°41.3'	S 60°27.8'	Canopus	-0.6	263°53.7'	S 52°42.7'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	133°37.8'	S 16°26.8'	176°32.9'	S 16°26.8'	137°30.0'	S 2°27.1'	208°05.3'	S 22°37.9'	196°16.9'	S 21°02.9'	232°56.7'	S 23°11.4'
1	148°40.2'	S 16°26.0'	191°32.8'	S 16°26.0'	152°29.8'	S 2°25.8'	223°07.2'	S 22°37.8'	211°19.1'	S 21°02.8'	247°57.3'	S 23°11.5'
2	163°42.7'	S 16°25.3'	206°32.7'	S 16°25.3'	167°29.6'	S 2°24.5'	238°09.1'	S 22°37.8'	226°21.2'	S 21°02.8'	262°57.9'	S 23°11.6'
3	178°45.2'	S 16°24.5'	221°32.7'	S 16°24.5'	182°29.4'	S 2°23.2'	253°11.0'	S 22°37.7'	241°23.4'	S 21°02.7'	277°58.5'	S 23°11.8'
4	193°47.6'	S 16°23.8'	236°32.6'	S 16°23.8'	197°29.2'	S 2°21.8'	268°12.9'	S 22°37.7'	256°25.6'	S 21°02.7'	292°59.1'	S 23°11.9'
5	208°50.1'	S 16°23.1'	251°32.5'	S 16°23.1'	212°29.0'	S 2°20.5'	283°14.8'	S 22°37.6'	271°27.7'	S 21°02.6'	307°59.7'	S 23°12.1'
6	223°52.6'	S 16°22.3'	266°32.5'	S 16°22.3'	227°28.8'	S 2°19.2'	298°16.6'	S 22°37.6'	286°29.9'	S 21°02.6'	323°00.3'	S 23°12.2'
7	238°55.0'	S 16°21.6'	281°32.4'	S 16°21.6'	242°28.6'	S 2°17.9'	313°18.5'	S 22°37.5'	301°32.0'	S 21°02.5'	338°01.0'	S 23°12.4'
8	253°57.5'	S 16°20.8'	296°32.4'	S 16°20.8'	257°28.4'	S 2°16.6'	328°20.4'	S 22°37.5'	316°34.2'	S 21°02.5'	353°01.6'	S 23°12.5'
9	268°60.0'	S 16°20.1'	311°32.3'	S 16°20.1'	272°28.2'	S 2°15.3'	343°22.3'	S 22°37.4'	331°36.4'	S 21°02.4'	8°02.2'	S 23°12.6'
10	284°02.4'	S 16°19.3'	326°32.2'	S 16°19.3'	287°28.0'	S 2°14.0'	358°24.2'	S 22°37.4'	346°38.5'	S 21°02.4'	23°02.8'	S 23°12.8'
11	299°04.9'	S 16°18.6'	341°32.2'	S 16°18.6'	302°27.8'	S 2°12.7'	13°26.1'	S 22°37.3'	1°40.7'	S 21°02.3'	38°03.4'	S 23°12.9'
12	314°07.4'	S 16°17.9'	356°32.1'	S 16°17.9'	317°27.6'	S 2°11.4'	28°28.0'	S 22°37.2'	16°42.9'	S 21°02.3'	53°04.0'	S 23°13.1'
13	329°09.8'	S 16°17.1'	11°32.0'	S 16°17.1'	332°27.4'	S 2°10.1'	43°29.8'	S 22°37.2'	31°45.0'	S 21°02.2'	68°04.6'	S 23°13.2'
14	344°12.3'	S 16°16.4'	26°32.0'	S 16°16.4'	347°27.2'	S 2°08.8'	58°31.7'	S 22°37.1'	46°47.2'	S 21°02.2'	83°05.2'	S 23°13.3'
15	359°14.7'	S 16°15.6'	41°31.9'	S 16°15.6'	2°27.0'	S 2°07.5'	73°33.6'	S 22°37.1'	61°49.4'	S 21°02.1'	98°05.8'	S 23°13.5'
16	14°17.2'	S 16°14.9'	56°31.9'	S 16°14.9'	17°26.8'	S 2°06.2'	88°35.5'	S 22°37.0'	76°51.5'	S 21°02.1'	113°06.4'	S 23°13.6'
17	29°19.7'	S 16°14.1'	71°31.8'	S 16°14.1'	32°26.6'	S 2°04.9'	103°37.4'	S 22°37.0'	91°53.7'	S 21°02.0'	128°07.1'	S 23°13.7'
18	44°22.1'	S 16°13.4'	86°31.7'	S 16°13.4'	47°26.5'	S 2°03.6'	118°39.3'	S 22°36.9'	106°55.8'	S 21°02.0'	143°07.7'	S 23°13.9'
19	59°24.6'	S 16°12.6'	101°31.7'	S 16°12.6'	62°26.3'	S 2°02.3'	133°41.2'	S 22°36.9'	121°58.0'	S 21°01.9'	158°08.3'	S 23°14.0'
20	74°27.1'	S 16°11.9'	116°31.6'	S 16°11.9'	77°26.1'	S 2°01.0'	148°43.0'	S 22°36.8'	137°00.2'	S 21°01.9'	173°08.9'	S 23°14.2'
21	89°29.5'	S 16°11.1'	131°31.6'	S 16°11.1'	92°25.9'	S 1°59.6'	163°44.9'	S 22°36.8'	152°02.3'	S 21°01.8'	188°09.5'	S 23°14.3'
22	104°32.0'	S 16°10.4'	146°31.5'	S 16°10.4'	107°25.7'	S 1°58.3'	178°46.8'	S 22°36.7'	167°04.5'	S 21°01.8'	203°10.1'	S 23°14.4'
23	119°34.5'	S 16°09.6'	161°31.5'	S 16°09.6'	122°25.5'	S 1°57.0'	193°48.7'	S 22°36.7'	182°06.7'	S 21°01.7'	218°10.7'	S 23°14.6'
		SD 16.2' d 0.7'		v -0.2' d 1.3'		v 1.9' d 0.1'		v 2.2' d 0.0'		v 0.6' d -0.1'		
Mer. pass.		12 h 13 m 52 s		14 h 50 m		10 h 6 m		10 h 53 m		8 h 28 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Pollux	-Capella	-Betelgeuse	-Aldebaran	+Venus	+Achernar	+Fomalhaut	+Sun
0	68°25.3'	N 18°44.5'	10.8'	7.7'	56.1'	47°46.0'	29°44.1'	25°48.4'		71°05.3'	83°05.8'	91°18.1'	111°56.0'
1	82°55.1'	N 18°52.2'	10.7'	7.6'	56.2'	47°14.4'	29°26.3'	25°23.1'		71°34.1'	83°24.0'	91°48.6'	112°25.2'
2	97°24.9'	N 18°59.8'	10.6'	7.5'	56.2'	46°42.8'	29°08.9'	24°58.0'		72°02.9'	83°42.2'	92°19.1'	112°54.5'
3	111°54.5'	N 19°07.3'	10.6'	7.4'	56.3'	46°11.1'	28°51.8'	24°33.1'		72°31.7'	84°00.5'	92°49.6'	113°23.8'
4	126°24.1'	N 19°14.7'	10.5'	7.3'	56.3'	45°39.4'	28°35.1'	24°08.4'		73°00.6'	84°18.9'	93°20.2'	113°53.2'
5	140°53.5'	N 19°22.0'	10.4'	7.2'	56.3'	45°07.7'	28°18.7'	23°43.9'		73°29.6'	84°37.3'	93°50.8'	114°22.6'
6	155°22.9'	N 19°29.3'	10.3'	7.2'	56.4'	44°35.9'	28°02.8'	23°19.7'		73°58.6'	84°55.7'	94°21.5'	114°52.1'
7	169°52.2'	N 19°36.4'	10.2'	7.1'	56.4'	44°04.1'	27°47.2'	22°55.8'		74°27.6'	85°14.2'	94°52.2'	115°21.5'
8	184°21.4'	N 19°43.5'	10.1'	7.0'	56.4'	43°32.3'		22°32.1'		74°56.7'	85°32.7'	95°22.9'	115°51.1'
9	198°50.5'	N 19°50.5'	10.0'	6.9'	56.5'	43°00.4'		22°08.8'		75°25.8'	85°51.3'	95°53.7'	116°20.6'
10	213°19.5'	N 19°57.3'	9.9'	6.8'	56.5'	42°28.5'		21°45.8'		75°54.9'	86°09.9'	96°24.5'	116°50.3'
11	227°48.4'	N 20°04.1'	9.8'	6.7'	56.5'	41°56.6'		21°23.1'		76°24.1'	86°28.5'	96°55.4'	117°19.9'
12	242°17.2'	N 20°10.8'	9.7'	6.6'	56.6'	41°24.6'		21°00.8'		76°53.4'	86°47.2'	97°26.3'	117°49.6'
13	256°45.9'	N 20°17.4'	9.6'	6.5'	56.6'	40°52.6'		20°38.9'		77°22.7'	87°05.9'	97°57.2'	118°19.3'
14	271°14.6'	N 20°23.8'	9.5'	6.4'	56.6'	40°20.5'		20°17.5'		77°52.0'	87°24.7'	98°28.2'	118°49.1'
15	285°43.1'	N 20°30.2'	9.4'	6.3'	56.7'	39°48.4'		19°56.4'		78°21.4'	87°43.5'	98°59.2'	119°18.9'
16	300°11.5'	N 20°36.5'	9.4'	6.2'	56.7'	39°16.3'		19°35.8'	6°07.0'	78°50.8'	88°02.3'	99°30.2'	119°48.8'
17	314°39.9'	N 20°42.7'	9.3'	6.1'	56.7'	38°44.1'		19°15.8'	6°35.6'	79°20.2'	88°21.1'	100°01.3'	
18	329°08.2'	N 20°48.7'	9.2'	6.0'	56.8'	38°11.9'		18°56.2'	7°04.7'	79°49.7'	88°40.0'	100°32.4'	
19	343°36.3'	N 20°54.7'	9.1'	5.9'	56.8'	37°39.7'		18°37.2'	7°34.4'	80°19.3'	88°58.9'	101°03.6'	
20	358°04.4'	N 21°00.6'	9.0'	5.8'	56.9'	37°07.4'		18°18.8'	8°04.5'	80°48.9'	89°17.8'	101°34.8'	
21	12°32.4'	N 21°06.3'	8.9'	5.6'	56.9'	36°35.1'		18°01.0'	8°34.9'	81°18.5'	89°36.8'	102°06.0'	
22	27°00.3'	N 21°12.0'	8.8'	5.5'	56.9'	36°02.8'		17°43.9'	9°05.6'	81°48.2'	89°55.8'	102°37.3'	
23	41°28.1'	N 21°17.5'	8.7'	5.4'	57.0'	35°30.4'		17°27.5'	9°36.6'	82°17.9'	90°14.8'	103°08.6'	
Mer. pass.		20 h 8 m SD 15.3'		phase 69%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.3'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.9'	N 45°21.0'	Acrux	+0.8	173°03.9'	S 63°12.3'	Capella	+0.1	280°27.4'	N 46°01.1'
Altair	+0.8	62°04.1'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.2'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.8'	S 26°28.4'	Procyon	+0.4	244°54.6'	N 5°10.3'	Polaris	+2.0	315°45.7'	N 89°21.1'
Rigil Kent	-0.0	139°45.5'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.5'	S 57°08.5'
Arcturus	-0.1	145°51.5'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.8'				
Hadar	+0.6	148°41.3'	S 60°27.8'	Canopus	-0.6	263°53.7'	S 52°42.7'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	134°36.9'	176°31.4'	S 16°08.9'	137°25.3'	S 1°55.7'	208°50.6'	S 22°36.6'	197°08.8'	S 21°01.7'	233°11.3'	S 23°14.7'	
1	149°39.4'	191°31.3'	S 16°08.1'	152°25.1'	S 1°54.4'	223°52.5'	S 22°36.5'	212°11.0'	S 21°01.6'	248°11.9'	S 23°14.8'	
2	164°41.9'	206°31.3'	S 16°07.4'	167°24.9'	S 1°53.1'	238°54.4'	S 22°36.5'	227°13.2'	S 21°01.6'	263°12.5'	S 23°15.0'	
3	179°44.3'	221°31.2'	S 16°06.6'	182°24.7'	S 1°51.8'	253°56.3'	S 22°36.4'	242°15.3'	S 21°01.5'	278°13.1'	S 23°15.1'	
4	194°46.8'	236°31.2'	S 16°05.9'	197°24.5'	S 1°50.5'	268°58.1'	S 22°36.4'	257°17.5'	S 21°01.5'	293°13.8'	S 23°15.2'	
5	209°49.2'	251°31.1'	S 16°05.1'	212°24.4'	S 1°49.2'	284°00.0'	S 22°36.3'	272°19.6'	S 21°01.4'	308°14.4'	S 23°15.4'	
6	224°51.7'	266°31.1'	S 16°04.4'	227°24.2'	S 1°47.9'	299°01.9'	S 22°36.3'	287°21.8'	S 21°01.4'	323°15.0'	S 23°15.5'	
7	239°54.2'	281°31.0'	S 16°03.6'	242°24.0'	S 1°46.6'	314°03.8'	S 22°36.2'	302°24.0'	S 21°01.3'	338°15.6'	S 23°15.6'	
8	254°56.6'	296°31.0'	S 16°02.9'	257°23.8'	S 1°45.3'	329°05.7'	S 22°36.2'	317°26.1'	S 21°01.3'	353°16.2'	S 23°15.8'	
9	269°59.1'	311°30.9'	S 16°02.1'	272°23.6'	S 1°44.0'	344°07.6'	S 22°36.1'	332°28.3'	S 21°01.2'	8°16.8'	S 23°15.9'	
10	285°01.6'	326°30.9'	S 16°01.4'	287°23.4'	S 1°42.7'	359°09.5'	S 22°36.1'	347°30.5'	S 21°01.2'	23°17.4'	S 23°16.0'	
11	300°04.0'	341°30.8'	S 16°00.6'	302°23.2'	S 1°41.3'	14°11.4'	S 22°36.0'	2°32.6'	S 21°01.1'	38°18.0'	S 23°16.2'	
12	315°06.5'	356°30.7'	S 15°59.8'	317°23.0'	S 1°40.0'	29°13.2'	S 22°35.9'	17°34.8'	S 21°01.1'	53°18.6'	S 23°16.3'	
13	330°09.0'	11°30.7'	S 15°59.1'	332°22.9'	S 1°38.7'	44°15.1'	S 22°35.9'	32°37.0'	S 21°01.0'	68°19.2'	S 23°16.4'	
14	345°11.4'	26°30.6'	S 15°58.3'	347°22.7'	S 1°37.4'	59°17.0'	S 22°35.8'	47°39.1'	S 21°01.0'	83°19.8'	S 23°16.5'	
15	0°13.9'	41°30.6'	S 15°57.6'	2°22.5'	S 1°36.1'	74°18.9'	S 22°35.8'	62°41.3'	S 21°00.9'	98°20.4'	S 23°16.7'	
16	15°16.4'	56°30.5'	S 15°56.8'	17°22.3'	S 1°34.8'	89°20.8'	S 22°35.7'	77°43.5'	S 21°00.9'	113°21.1'	S 23°16.8'	
17	30°18.8'	71°30.5'	S 15°56.1'	32°22.1'	S 1°33.5'	104°22.7'	S 22°35.7'	92°45.6'	S 21°00.8'	128°21.7'	S 23°16.9'	
18	45°21.3'	86°30.4'	S 15°55.3'	47°21.9'	S 1°32.2'	119°24.6'	S 22°35.6'	107°47.8'	S 21°00.8'	143°22.3'	S 23°17.1'	
19	60°23.7'	101°30.4'	S 15°54.5'	62°21.7'	S 1°30.9'	134°26.5'	S 22°35.6'	122°50.0'	S 21°00.7'	158°22.9'	S 23°17.2'	
20	75°26.2'	116°30.3'	S 15°53.8'	77°21.6'	S 1°29.6'	149°28.4'	S 22°35.5'	137°52.1'	S 21°00.7'	173°23.5'	S 23°17.3'	
21	90°28.7'	131°30.3'	S 15°53.0'	92°21.4'	S 1°28.3'	164°30.3'	S 22°35.5'	152°54.3'	S 21°00.6'	188°24.1'	S 23°17.4'	
22	105°31.1'	146°30.2'	S 15°52.3'	107°21.2'	S 1°27.0'	179°32.1'	S 22°35.4'	167°56.4'	S 21°00.6'	203°24.7'	S 23°17.6'	
23	120°33.6'	161°30.2'	S 15°51.5'	122°21.0'	S 1°25.7'	194°34.0'	S 22°35.4'	182°58.6'	S 21°00.5'	218°25.3'	S 23°17.7'	
		SD 16.2'	d 0.8'	v -0.2'	d 1.3'	v 1.9'	d 0.1'	v 2.2'	d 0.0'	v 0.6'	d -0.1'	
Mer. pass.		12 h 13 m 57 s		14 h 51 m		10 h 3 m		10 h 50 m		8 h 27 m		

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Arcturus	-Regulus	-Procyon	-Pollux	+Aldebaran	+Rigel	+Venus	+Achernar
0	55°55.8'	N 21°22.9'	8.6'	5.3'	57.0'		70°39.8'	38°48.4'	34°58.0'	10°07.9'		82°47.7'	90°33.9'
1	70°23.4'	N 21°28.2'	8.5'	5.2'	57.0'		70°07.0'	38°19.6'	34°25.6'	10°39.3'		83°17.5'	90°52.9'
2	84°50.9'	N 21°33.4'	8.4'	5.1'	57.1'	119°35.1'	69°34.2'	37°50.9'	33°53.1'	11°10.9'		83°47.4'	91°12.0'
3	99°18.4'	N 21°38.5'	8.3'	5.0'	57.1'	119°06.6'	69°01.3'	37°22.3'	33°20.6'	11°42.7'		84°17.3'	91°31.2'
4	113°45.7'	N 21°43.5'	8.3'	4.8'	57.2'	118°37.9'	68°28.4'	36°53.7'	32°48.0'	12°14.6'		84°47.3'	91°50.3'
5	128°13.0'	N 21°48.3'	8.2'	4.7'	57.2'	118°09.1'	67°55.4'	36°25.2'	32°15.5'	12°46.6'		85°17.3'	92°09.4'
6	142°40.1'	N 21°53.0'	8.1'	4.6'	57.2'	117°40.3'	67°22.4'	35°56.8'	31°42.9'	13°18.8'		85°47.3'	92°28.6'
7	157°07.2'	N 21°57.7'	8.0'	4.5'	57.3'	117°11.4'	66°49.3'	35°28.4'	31°10.2'	13°51.1'		86°17.4'	92°47.8'
8	171°34.2'	N 22°02.1'	7.9'	4.4'	57.3'	116°42.4'	66°16.2'	35°00.1'	30°37.6'	14°23.5'		86°47.6'	93°07.0'
9	186°01.1'	N 22°06.5'	7.8'	4.2'	57.3'	116°13.4'	65°43.0'	34°31.9'	30°04.9'	14°56.0'		87°17.8'	93°26.3'
10	200°27.9'	N 22°10.8'	7.7'	4.1'	57.4'	115°44.2'	65°09.8'	34°03.8'	29°32.2'	15°28.6'		87°48.0'	93°45.5'
11	214°54.7'	N 22°14.9'	7.6'	4.0'	57.4'	115°15.0'	64°36.6'	33°35.8'	28°59.4'	16°01.3'		88°18.3'	94°04.7'
12	229°21.3'	N 22°18.9'	7.6'	3.9'	57.5'	114°45.7'	64°03.3'	33°07.9'	28°26.7'	16°34.1'		88°48.6'	94°24.0'
13	243°47.9'	N 22°22.8'	7.5'	3.7'	57.5'	114°16.3'	63°29.9'	32°40.1'	27°53.9'	17°07.0'		89°19.0'	94°43.3'
14	258°14.4'	N 22°26.5'	7.4'	3.6'	57.5'	113°46.9'	62°56.5'	32°12.5'	27°21.1'	17°39.9'		89°49.4'	95°02.6'
15	272°40.8'	N 22°30.1'	7.3'	3.5'	57.6'	113°17.3'	62°23.1'	31°44.9'	26°48.2'	18°12.9'		90°19.9'	95°21.9'
16	287°07.1'	N 22°33.6'	7.2'	3.4'	57.6'	112°47.7'	61°49.6'	31°17.5'	26°15.4'	18°46.0'		90°50.4'	95°41.2'
17	301°33.3'	N 22°37.0'	7.2'	3.2'	57.7'	112°18.1'	61°16.1'	30°50.3'	25°42.5'	19°19.2'		91°21.0'	96°00.5'
18	315°59.5'	N 22°40.2'	7.1'	3.1'	57.7'	111°48.3'	60°42.5'	30°23.2'	25°09.6'	19°52.5'		91°51.6'	96°19.8'
19	330°25.5'	N 22°43.3'	7.0'	3.0'	57.7'	111°18.5'	60°08.9'	29°56.2'	24°36.7'	20°25.8'		92°22.3'	96°39.1'
20	344°51.5'	N 22°46.2'	6.9'	2.8'	57.8'	110°48.6'	59°35.2'	29°29.5'	24°03.8'	20°59.2'	33°00.4'	92°53.0'	96°58.4'
21	359°17.4'	N 22°49.1'	6.8'	2.7'	57.8'	110°18.7'	59°01.5'	29°02.9'	23°30.9'	21°32.6'	33°15.7'	93°23.7'	97°17.7'
22	13°43.3'	N 22°51.8'	6.8'	2.6'	57.8'	109°48.7'	58°27.7'	28°36.5'	22°57.9'	22°06.1'	33°31.4'	93°54.6'	97°37.0'
23	28°09.1'	N 22°54.3'	6.7'	2.4'	57.9'	109°18.6'	57°53.9'	28°10.3'	22°25.0'	22°39.7'	33°47.5'	94°25.4'	97°56.3'
Mer. pass.		21 h 3 m SD 15.5'	phase 78%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.3'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.9'	N 45°21.0'	Acrux	+0.8	173°03.8'	S 63°12.3'	Capella	+0.1	280°27.4'	N 46°01.1'
Altair	+0.8	62°04.1'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.2'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.8'	S 26°28.4'	Procyon	+0.4	244°54.6'	N 5°10.3'	Polaris	+2.0	315°46.2'	N 89°21.1'
Rigel Kent	-0.0	139°45.5'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.5'	S 57°08.5'
Arcturus	-0.1	145°51.5'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.8'				
Hadar	+0.6	148°41.3'	S 60°27.8'	Canopus	-0.6	263°53.7'	S 52°42.7'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	135°36.1'		176°30.1'	S 15°50.7'	137°20.8'	S 1°24.3'	209°35.9'	S 22°35.3'	198°00.8'	S 21°00.5'	233°25.9'	S 23°17.8'
1	150°38.5'		191°30.1'	S 15°50.0'	152°20.6'	S 1°23.0'	224°37.8'	S 22°35.2'	213°02.9'	S 21°00.4'	248°26.5'	S 23°17.9'
2	165°41.0'		206°30.1'	S 15°49.2'	167°20.5'	S 1°21.7'	239°39.7'	S 22°35.2'	228°05.1'	S 21°00.4'	263°27.1'	S 23°18.1'
3	180°43.5'		221°30.0'	S 15°48.5'	182°20.3'	S 1°20.4'	254°41.6'	S 22°35.1'	243°07.3'	S 21°00.3'	278°27.7'	S 23°18.2'
4	195°45.9'		236°30.0'	S 15°47.7'	197°20.1'	S 1°19.1'	269°43.5'	S 22°35.1'	258°09.4'	S 21°00.3'	293°28.3'	S 23°18.3'
5	210°48.4'		251°29.9'	S 15°46.9'	212°19.9'	S 1°17.8'	284°45.4'	S 22°35.0'	273°11.6'	S 21°00.2'	308°28.9'	S 23°18.4'
6	225°50.9'		266°29.9'	S 15°46.2'	227°19.7'	S 1°16.5'	299°47.3'	S 22°35.0'	288°13.8'	S 21°00.2'	323°29.5'	S 23°18.6'
7	240°53.3'		281°29.8'	S 15°45.4'	242°19.5'	S 1°15.2'	314°49.2'	S 22°34.9'	303°15.9'	S 21°00.1'	338°30.2'	S 23°18.7'
8	255°55.8'		296°29.8'	S 15°44.6'	257°19.4'	S 1°13.9'	329°51.0'	S 22°34.9'	318°18.1'	S 21°00.1'	353°30.8'	S 23°18.8'
9	270°58.2'		311°29.7'	S 15°43.9'	272°19.2'	S 1°12.6'	344°52.9'	S 22°34.8'	333°20.3'	S 21°00.0'	8°31.4'	S 23°18.9'
10	286°00.7'		326°29.7'	S 15°43.1'	287°19.0'	S 1°11.3'	359°54.8'	S 22°34.8'	348°22.4'	S 20°60.0'	23°32.0'	S 23°19.1'
11	301°03.2'		341°29.6'	S 15°42.3'	302°18.8'	S 1°10.0'	14°56.7'	S 22°34.7'	3°24.6'	S 20°59.9'	38°32.6'	S 23°19.2'
12	316°05.6'		356°29.6'	S 15°41.6'	317°18.6'	S 1°08.6'	29°58.6'	S 22°34.6'	18°26.8'	S 20°59.9'	53°33.2'	S 23°19.3'
13	331°08.1'		11°29.6'	S 15°40.8'	332°18.5'	S 1°07.3'	45°00.5'	S 22°34.6'	33°28.9'	S 20°59.8'	68°33.8'	S 23°19.4'
14	346°10.6'		26°29.5'	S 15°40.0'	347°18.3'	S 1°06.0'	60°02.4'	S 22°34.5'	48°31.1'	S 20°59.8'	83°34.4'	S 23°19.6'
15	1°13.0'		41°29.5'	S 15°39.3'	2°18.1'	S 1°04.7'	75°04.3'	S 22°34.5'	63°33.3'	S 20°59.8'	98°35.0'	S 23°19.7'
16	16°15.5'		56°29.4'	S 15°38.5'	17°17.9'	S 1°03.4'	90°06.2'	S 22°34.4'	78°35.4'	S 20°59.7'	113°35.6'	S 23°19.8'
17	31°18.0'		71°29.4'	S 15°37.7'	32°17.7'	S 1°02.1'	105°08.1'	S 22°34.4'	93°37.6'	S 20°59.7'	128°36.2'	S 23°19.9'
18	46°20.4'		86°29.3'	S 15°37.0'	47°17.6'	S 1°00.8'	120°10.0'	S 22°34.3'	108°39.8'	S 20°59.6'	143°36.8'	S 23°20.0'
19	61°22.9'		101°29.3'	S 15°36.2'	62°17.4'	S 0°59.5'	135°11.9'	S 22°34.3'	123°41.9'	S 20°59.6'	158°37.4'	S 23°20.2'
20	76°25.3'		116°29.3'	S 15°35.4'	77°17.2'	S 0°58.2'	150°13.7'	S 22°34.2'	138°44.1'	S 20°59.5'	173°38.0'	S 23°20.3'
21	91°27.8'		131°29.2'	S 15°34.6'	92°17.0'	S 0°56.9'	165°15.6'	S 22°34.1'	153°46.3'	S 20°59.5'	188°38.6'	S 23°20.4'
22	106°30.3'		146°29.2'	S 15°33.9'	107°16.9'	S 0°55.6'	180°17.5'	S 22°34.1'	168°48.4'	S 20°59.4'	203°39.2'	S 23°20.5'
23	121°32.7'		161°29.1'	S 15°33.1'	122°16.7'	S 0°54.2'	195°19.4'	S 22°34.0'	183°50.6'	S 20°59.4'	218°39.8'	S 23°20.6'
			SD 16.2'	d 0.8'	v -0.2'	d 1.3'	v 1.9'	d 0.1'	v 2.2'	d 0.0'	v 0.6'	d -0.1'
Mer. pass.			12 h 14 m 2 s		14 h 51 m		10 h 0 m		10 h 46 m		8 h 26 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Arcturus	-Regulus	-Procyon	-Pollux	+Betelgeuse	+Aldebaran	+Capella	+Rigel
0	42°34.7'	N 22°56.7'	6.6'	2.3'	57.9'	108°48.4'	57°20.0'	27°44.3'	21°52.1'		23°13.3'		34°04.1'
1	57°00.4'	N 22°59.0'	6.5'	2.1'	58.0'	108°18.2'	56°46.1'	27°18.6'	21°19.2'		23°47.0'		34°21.0'
2	71°25.9'	N 23°01.1'	6.5'	2.0'	58.0'	107°47.9'	56°12.2'	26°53.1'	20°46.2'		24°20.8'		34°38.4'
3	85°51.4'	N 23°03.1'	6.4'	1.9'	58.0'	107°17.6'	55°38.2'	26°27.9'	20°13.3'		24°54.6'		34°56.1'
4	100°16.8'	N 23°05.0'	6.3'	1.7'	58.1'	106°47.1'	55°04.1'	26°02.9'	19°40.4'		25°28.5'		35°14.2'
5	114°42.1'	N 23°06.7'	6.3'	1.6'	58.1'	106°16.7'	54°30.0'	25°38.3'	19°07.6'		26°02.4'		35°32.7'
6	129°07.4'	N 23°08.3'	6.2'	1.4'	58.2'	105°46.1'	53°55.9'	25°13.9'	18°34.8'		26°36.4'		35°51.5'
7	143°32.6'	N 23°09.7'	6.1'	1.3'	58.2'	105°15.5'	53°21.7'	24°49.9'	18°02.0'		27°10.5'	27°00.7'	36°10.7'
8	157°57.7'	N 23°11.0'	6.1'	1.1'	58.2'	104°44.8'	52°47.5'	24°26.2'	17°29.2'	17°56.7'	27°44.6'	27°15.8'	36°30.3'
9	172°22.8'	N 23°12.1'	6.0'	1.0'	58.3'	104°14.1'	52°13.2'	24°02.9'	16°56.5'	18°15.2'	28°18.8'	27°31.5'	36°50.1'
10	186°47.8'	N 23°13.1'	6.0'	0.8'	58.3'	103°43.3'	51°38.9'	23°40.0'	16°23.9'	18°34.5'	28°53.0'	27°47.7'	37°10.3'
11	201°12.8'	N 23°14.0'	5.9'	0.7'	58.3'	103°12.5'	51°04.5'	23°17.5'	15°51.4'	18°54.6'	29°27.3'	28°04.4'	37°30.9'
12	215°37.7'	N 23°14.7'	5.8'	0.5'	58.4'	102°41.6'	50°30.1'	22°55.5'	15°18.9'	19°15.3'	30°01.6'	28°21.7'	37°51.7'
13	230°02.5'	N 23°15.2'	5.8'	0.4'	58.4'	102°10.6'	49°55.7'	22°33.9'	14°46.6'	19°36.6'	30°36.0'	28°39.4'	38°12.9'
14	244°27.3'	N 23°15.6'	5.7'	0.2'	58.5'	101°39.6'	49°21.2'	22°12.8'	14°14.4'	19°58.6'	31°10.4'	28°57.7'	38°34.3'
15	258°52.0'	N 23°15.9'	5.7'	0.1'	58.5'	101°08.5'	48°46.6'	21°52.2'	13°42.3'	20°21.2'	31°44.9'	29°16.4'	38°56.1'
16	273°16.7'	N 23°16.0'	5.6'	-0.1'	58.5'	100°37.4'	48°12.0'	21°32.2'	13°10.4'	20°44.3'	32°19.4'	29°35.6'	39°18.1'
17	287°41.3'	N 23°15.9'	5.6'	-0.2'	58.6'	100°06.2'	47°37.4'	21°12.7'	12°38.7'	21°08.0'	32°54.0'	29°55.2'	39°40.4'
18	302°05.9'	N 23°15.7'	5.5'	-0.4'	58.6'	99°34.9'	47°02.7'	20°53.9'	12°07.3'	21°32.2'	33°28.7'	30°15.3'	40°03.1'
19	316°30.4'	N 23°15.3'	5.5'	-0.5'	58.6'	99°03.6'	46°28.0'	20°35.7'	11°36.1'	21°56.9'	34°03.4'	30°35.8'	40°25.9'
20	330°54.9'	N 23°14.8'	5.4'	-0.7'	58.7'	98°32.3'	45°53.2'	20°18.1'	11°05.2'	22°22.0'	34°38.1'	30°56.7'	40°49.1'
21	345°19.3'	N 23°14.2'	5.4'	-0.8'	58.7'	98°00.9'	45°18.4'	20°01.3'	10°34.7'	22°47.6'	35°12.9'	31°18.0'	41°12.5'
22	359°43.7'	N 23°13.4'	5.3'	-1.0'	58.8'	97°29.4'	44°43.5'	19°45.2'	10°04.7'	23°13.6'	35°47.8'	31°39.7'	41°36.1'
23	14°08.1'	N 23°12.4'	5.3'	-1.1'	58.8'	96°57.9'	44°08.6'		9°35.2'	23°40.0'	36°22.7'	32°01.8'	42°00.0'
Mer. pass.			22 h 1 m SD 15.8'		phase 86%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.3'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.9'	N 45°21.0'	Acrux	+0.8	173°03.8'	S 63°12.3'	Capella	+0.1	280°27.4'	N 46°01.1'
Altair	+0.8	62°04.1'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.2'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.8'	S 26°28.4'	Procyon	+0.4	244°54.6'	N 5°10.3'	Polaris	+2.0	315°46.6'	N 89°21.1'
Rigil Kent	-0.0	139°45.5'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.5'	S 57°08.5'
Arcturus	-0.1	145°51.5'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.8'				
Hadar	+0.6	148°41.3'	S 60°27.8'	Canopus	-0.6	263°53.7'	S 52°42.7'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	136°35.2'		176°29.1'	S 15°32.3'	137°16.5'	S 0°52.9'	210°21.3'	S 22°34.0'	198°52.8'	S 20°59.3'	233°40.4'	S 23°20.7'
1	151°37.7'		191°29.1'	S 15°31.5'	152°16.3'	S 0°51.6'	225°23.2'	S 22°33.9'	213°54.9'	S 20°59.3'	248°41.0'	S 23°20.9'
2	166°40.1'		206°29.0'	S 15°30.8'	167°16.2'	S 0°50.3'	240°25.1'	S 22°33.9'	228°57.1'	S 20°59.2'	263°41.6'	S 23°21.0'
3	181°42.6'		221°29.0'	S 15°30.0'	182°16.0'	S 0°49.0'	255°27.0'	S 22°33.8'	243°59.3'	S 20°59.2'	278°42.3'	S 23°21.1'
4	196°45.1'		236°28.9'	S 15°29.2'	197°15.8'	S 0°47.7'	270°28.9'	S 22°33.8'	259°01.4'	S 20°59.1'	293°42.9'	S 23°21.2'
5	211°47.5'		251°28.9'	S 15°28.5'	212°15.6'	S 0°46.4'	285°30.8'	S 22°33.7'	274°03.6'	S 20°59.1'	308°43.5'	S 23°21.3'
6	226°50.0'		266°28.9'	S 15°27.7'	227°15.5'	S 0°45.1'	300°32.7'	S 22°33.7'	289°05.8'	S 20°59.0'	323°44.1'	S 23°21.4'
7	241°52.5'		281°28.8'	S 15°26.9'	242°15.3'	S 0°43.8'	315°34.6'	S 22°33.6'	304°07.9'	S 20°59.0'	338°44.7'	S 23°21.6'
8	256°54.9'		296°28.8'	S 15°26.1'	257°15.1'	S 0°42.5'	330°36.5'	S 22°33.5'	319°10.1'	S 20°58.9'	353°45.3'	S 23°21.7'
9	271°57.4'		311°28.8'	S 15°25.3'	272°14.9'	S 0°41.1'	345°38.4'	S 22°33.5'	334°12.3'	S 20°58.9'	8°45.9'	S 23°21.8'
10	286°59.8'		326°28.7'	S 15°24.6'	287°14.8'	S 0°39.8'	0°40.2'	S 22°33.4'	349°14.4'	S 20°58.8'	23°46.5'	S 23°21.9'
11	302°02.3'		341°28.7'	S 15°23.8'	302°14.6'	S 0°38.5'	15°42.1'	S 22°33.4'	4°16.6'	S 20°58.8'	38°47.1'	S 23°22.0'
12	317°04.8'		356°28.6'	S 15°23.0'	317°14.4'	S 0°37.2'	30°44.0'	S 22°33.3'	19°18.8'	S 20°58.7'	53°47.7'	S 23°22.1'
13	332°07.2'		11°28.6'	S 15°22.2'	332°14.2'	S 0°35.9'	45°45.9'	S 22°33.3'	34°20.9'	S 20°58.7'	68°48.3'	S 23°22.2'
14	347°09.7'		26°28.6'	S 15°21.5'	347°14.1'	S 0°34.6'	60°47.8'	S 22°33.2'	49°23.1'	S 20°58.6'	83°48.9'	S 23°22.4'
15	2°12.2'		41°28.5'	S 15°20.7'	2°13.9'	S 0°33.3'	75°49.7'	S 22°33.2'	64°25.3'	S 20°58.6'	98°49.5'	S 23°22.5'
16	17°14.6'		56°28.5'	S 15°19.9'	17°13.7'	S 0°32.0'	90°51.6'	S 22°33.1'	79°27.4'	S 20°58.5'	113°50.1'	S 23°22.6'
17	32°17.1'		71°28.5'	S 15°19.1'	32°13.5'	S 0°30.7'	105°53.5'	S 22°33.0'	94°29.6'	S 20°58.5'	128°50.7'	S 23°22.7'
18	47°19.6'		86°28.4'	S 15°18.3'	47°13.4'	S 0°29.4'	120°55.4'	S 22°33.0'	109°31.8'	S 20°58.4'	143°51.3'	S 23°22.8'
19	62°22.0'		101°28.4'	S 15°17.6'	62°13.2'	S 0°28.0'	135°57.3'	S 22°32.9'	124°33.9'	S 20°58.4'	158°51.9'	S 23°22.9'
20	77°24.5'		116°28.4'	S 15°16.8'	77°13.0'	S 0°26.7'	150°59.2'	S 22°32.9'	139°36.1'	S 20°58.3'	173°52.5'	S 23°23.0'
21	92°27.0'		131°28.3'	S 15°16.0'	92°12.9'	S 0°25.4'	166°01.1'	S 22°32.8'	154°38.3'	S 20°58.3'	188°53.1'	S 23°23.1'
22	107°29.4'		146°28.3'	S 15°15.2'	107°12.7'	S 0°24.1'	181°03.0'	S 22°32.8'	169°40.4'	S 20°58.2'	203°53.7'	S 23°23.3'
23	122°31.9'		161°28.3'	S 15°14.4'	122°12.5'	S 0°22.8'	196°04.9'	S 22°32.7'	184°42.6'	S 20°58.2'	218°54.3'	S 23°23.4'
			SD 16.2' d 0.8'		v -0.2' d 1.3'		v 1.9' d 0.1'		v 2.2' d 0.0'		v 0.6' d -0.1'	
Mer. pass.			12 h 14 m 6 s		14 h 51 m		9 h 57 m		10 h 43 m		8 h 25 m	

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Spica	-Arcturus	-Regulus	-Pollux	+Betelgeuse	+Capella	+Aldebaran	+Rigel
0	28°32.4'	N 23°11.3'	5.3'	-1.3'	58.8'	97°35.8'	96°26.4'	43°33.7'	9°06.2'	24°06.8'	32°24.3'	36°57.6'	42°24.2'
1	42°56.7'	N 23°10.0'	5.2'	-1.4'	58.9'	97°00.9'	95°54.8'	42°58.7'		24°33.9'	32°47.1'	37°32.6'	42°48.6'
2	57°20.9'	N 23°08.5'	5.2'	-1.6'	58.9'	96°26.0'	95°23.1'	42°23.7'		25°01.4'	33°10.3'	38°07.7'	43°13.2'
3	71°45.1'	N 23°06.9'	5.2'	-1.7'	58.9'	95°51.0'	94°51.4'	41°48.6'		25°29.2'	33°33.8'	38°42.8'	43°38.0'
4	86°09.3'	N 23°05.2'	5.1'	-1.9'	59.0'	95°16.0'	94°19.7'	41°13.5'		25°57.4'	33°57.6'	39°17.9'	44°03.1'
5	100°33.4'	N 23°03.3'	5.1'	-2.1'	59.0'	94°41.0'	93°47.9'	40°38.4'		26°25.8'	34°21.8'	39°53.1'	44°28.4'
6	114°57.5'	N 23°01.2'	5.1'	-2.2'	59.0'	94°05.9'	93°16.1'	40°03.2'		26°54.5'	34°46.3'	40°28.4'	44°53.8'
7	129°21.6'	N 22°59.0'	5.1'	-2.4'	59.1'	93°30.7'	92°44.2'	39°27.9'		27°23.5'	35°11.0'	41°03.7'	45°19.5'
8	143°45.6'	N 22°56.6'	5.0'	-2.5'	59.1'	92°55.5'	92°12.3'	38°52.7'		27°52.8'	35°36.1'	41°39.0'	45°45.4'
9	158°09.7'	N 22°54.1'	5.0'	-2.7'	59.2'	92°20.3'	91°40.3'	38°17.4'		28°22.3'	36°01.5'	42°14.4'	46°11.5'
10	172°33.7'	N 22°51.4'	5.0'	-2.9'	59.2'	91°45.1'	91°08.3'	37°42.0'		28°52.1'	36°27.1'	42°49.8'	46°37.8'
11	186°57.6'	N 22°48.6'	5.0'	-3.0'	59.2'	91°09.7'	90°36.3'	37°06.6'		29°22.1'	36°53.0'	43°25.3'	47°04.3'
12	201°21.6'	N 22°45.5'	4.9'	-3.2'	59.3'	90°34.4'	90°04.2'	36°31.2'		29°52.3'	37°19.1'	44°00.8'	47°30.9'
13	215°45.6'	N 22°42.4'	4.9'	-3.3'	59.3'	89°59.0'	89°32.1'	35°55.7'		30°22.8'	37°45.6'	44°36.3'	47°57.8'
14	230°09.5'	N 22°39.1'	4.9'	-3.5'	59.3'	89°23.5'	88°59.9'	35°20.2'		30°53.4'	38°12.2'	45°12.0'	48°24.8'
15	244°33.4'	N 22°35.6'	4.9'	-3.6'	59.4'	88°48.1'	88°27.7'	34°44.7'		31°24.2'	38°39.1'	45°47.6'	48°52.0'
16	258°57.3'	N 22°31.9'	4.9'	-3.8'	59.4'	88°12.5'	87°55.5'	34°09.1'		31°55.3'	39°06.2'	46°23.3'	49°19.3'
17	273°21.2'	N 22°28.1'	4.9'	-4.0'	59.4'	87°37.0'	87°23.2'	33°33.5'		32°26.5'	39°33.6'	46°59.0'	49°46.8'
18	287°45.1'	N 22°24.2'	4.9'	-4.1'	59.5'	87°01.4'	86°50.9'	32°57.9'		32°57.9'	40°01.1'	47°34.8'	50°14.5'
19	302°09.0'	N 22°20.1'	4.9'	-4.3'	59.5'	86°25.7'	86°18.6'	32°22.2'		33°29.4'	40°28.9'	48°10.6'	50°42.3'
20	316°32.9'	N 22°15.8'	4.9'	-4.4'	59.5'	85°50.0'	85°46.2'	31°46.5'		34°01.1'	40°56.9'	48°46.5'	51°10.3'
21	330°56.7'	N 22°11.4'	4.9'	-4.6'	59.5'	85°14.3'	85°13.8'	31°10.8'		34°33.0'	41°25.1'	49°22.4'	51°38.5'
22	345°20.6'	N 22°06.8'	4.9'	-4.7'	59.6'	84°38.6'	84°41.4'	30°35.0'		35°05.0'	41°53.5'	49°58.4'	52°06.8'
23	359°44.5'	N 22°02.0'	4.9'	-4.9'	59.6'	84°02.8'	84°08.9'	29°59.2'		35°37.2'	42°22.1'	50°34.3'	52°35.2'
Mer. pass.			23 h 1 m SD 16.0'		phase 93%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.3'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.9'	N 45°21.0'	Acrux	+0.8	173°03.8'	S 63°12.3'	Capella	+0.1	280°27.4'	N 46°01.1'
Altair	+0.8	62°04.1'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.2'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.8'	S 26°28.4'	Procyon	+0.4	244°54.6'	N 5°10.3'	Polaris	+2.0	315°47.0'	N 89°21.1'
Rigil Kent	-0.0	139°45.5'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.5'	S 57°08.5'
Arcturus	-0.1	145°51.5'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.9'				
Hadar	+0.6	148°41.3'	S 60°27.8'	Canopus	-0.6	263°53.7'	S 52°42.7'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	137°34.3'	176°28.3'	S 15°13.6'	137°12.3'	S 0°21.5'	211°06.8'	S 22°32.7'	199°44.8'	S 20°58.1'	233°54.9'	S 23°23.5'			
1	152°36.8'	191°28.2'	S 15°12.9'	152°12.2'	S 0°20.2'	226°08.7'	S 22°32.6'	214°46.9'	S 20°58.1'	248°55.5'	S 23°23.6'			
2	167°39.3'	206°28.2'	S 15°12.1'	167°12.0'	S 0°18.9'	241°10.6'	S 22°32.5'	229°49.1'	S 20°58.0'	263°56.1'	S 23°23.7'			
3	182°41.7'	221°28.2'	S 15°11.3'	182°11.8'	S 0°17.6'	256°12.5'	S 22°32.5'	244°51.3'	S 20°58.0'	278°56.7'	S 23°23.8'			
4	197°44.2'	236°28.1'	S 15°10.5'	197°11.7'	S 0°16.3'	271°14.4'	S 22°32.4'	259°53.4'	S 20°57.9'	293°57.3'	S 23°23.9'			
5	212°46.7'	251°28.1'	S 15°09.7'	212°11.5'	S 0°14.9'	286°16.2'	S 22°32.4'	274°55.6'	S 20°57.9'	308°57.9'	S 23°24.0'			
6	227°49.1'	266°28.1'	S 15°08.9'	227°11.3'	S 0°13.6'	301°18.1'	S 22°32.3'	289°57.8'	S 20°57.8'	323°58.5'	S 23°24.1'			
7	242°51.6'	281°28.0'	S 15°08.1'	242°11.2'	S 0°12.3'	316°20.0'	S 22°32.3'	304°59.9'	S 20°57.8'	338°59.1'	S 23°24.2'			
8	257°54.1'	296°28.0'	S 15°07.4'	257°11.0'	S 0°11.0'	331°21.9'	S 22°32.2'	320°02.1'	S 20°57.7'	353°59.7'	S 23°24.3'			
9	272°56.5'	311°28.0'	S 15°06.6'	272°10.8'	S 0°09.7'	346°23.8'	S 22°32.2'	335°04.3'	S 20°57.7'	9°00.3'	S 23°24.4'			
10	287°59.0'	326°28.0'	S 15°05.8'	287°10.7'	S 0°08.4'	1°25.7'	S 22°32.1'	350°06.5'	S 20°57.6'	24°00.9'	S 23°24.5'			
11	303°01.5'	341°27.9'	S 15°05.0'	302°10.5'	S 0°07.1'	16°27.6'	S 22°32.0'	5°08.6'	S 20°57.6'	39°01.5'	S 23°24.7'			
12	318°03.9'	356°27.9'	S 15°04.2'	317°10.3'	S 0°05.8'	31°29.5'	S 22°32.0'	20°10.8'	S 20°57.5'	54°02.1'	S 23°24.8'			
13	333°06.4'	11°27.9'	S 15°03.4'	332°10.2'	S 0°04.5'	46°31.4'	S 22°31.9'	35°13.0'	S 20°57.5'	69°02.7'	S 23°24.9'			
14	348°08.8'	26°27.9'	S 15°02.6'	347°10.0'	S 0°03.2'	61°33.3'	S 22°31.9'	50°15.1'	S 20°57.4'	84°03.3'	S 23°25.0'			
15	3°11.3'	41°27.8'	S 15°01.8'	2°09.8'	S 0°01.8'	76°35.2'	S 22°31.8'	65°17.3'	S 20°57.4'	99°03.9'	S 23°25.1'			
16	18°13.8'	56°27.8'	S 15°01.0'	17°09.7'	S 0°00.5'	91°37.1'	S 22°31.8'	80°19.5'	S 20°57.3'	114°04.5'	S 23°25.2'			
17	33°16.2'	71°27.8'	S 15°00.3'	32°09.5'	N 0°00.8'	106°39.0'	S 22°31.7'	95°21.6'	S 20°57.3'	129°05.1'	S 23°25.3'			
18	48°18.7'	86°27.7'	S 14°59.5'	47°09.3'	N 0°02.1'	121°40.9'	S 22°31.7'	110°23.8'	S 20°57.2'	144°05.7'	S 23°25.4'			
19	63°21.2'	101°27.7'	S 14°58.7'	62°09.2'	N 0°03.4'	136°42.8'	S 22°31.6'	125°26.0'	S 20°57.2'	159°06.3'	S 23°25.5'			
20	78°23.6'	116°27.7'	S 14°57.9'	77°09.0'	N 0°04.7'	151°44.7'	S 22°31.5'	140°28.1'	S 20°57.1'	174°06.9'	S 23°25.6'			
21	93°26.1'	131°27.7'	S 14°57.1'	92°08.8'	N 0°06.0'	166°46.6'	S 22°31.5'	155°30.3'	S 20°57.1'	189°07.6'	S 23°25.7'			
22	108°28.6'	146°27.7'	S 14°56.3'	107°08.7'	N 0°07.3'	181°48.5'	S 22°31.4'	170°32.5'	S 20°57.0'	204°08.2'	S 23°25.8'			
23	123°31.0'	161°27.6'	S 14°55.5'	122°08.5'	N 0°08.6'	196°50.4'	S 22°31.4'	185°34.6'	S 20°57.0'	219°08.8'	S 23°25.9'			
		SD 16.2' d 0.8'		v -0.2' d 1.3'		v 1.9' d 0.1'		v 2.2' d 0.0'		v 0.6' d -0.1'				
Mer. pass.		12 h 14 m 9 s		14 h 51 m		9 h 54 m		10 h 39 m		8 h 24 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Acrux	-Arcturus	-Spica	-Regulus	+Pollux	+Procyon	+Betelgeuse	+Capella
0	14°08.4'	N 21°57.2'	4.9'	-5.1'	59.6'	98°27.8'	83°36.5'	83°26.9'	29°23.4'			36°09.5'	42°50.8'
1	28°32.2'	N 21°52.1'	4.9'	-5.2'	59.7'	98°08.6'	83°04.0'	82°51.0'	28°47.6'			36°42.0'	43°19.8'
2	42°56.1'	N 21°46.9'	4.9'	-5.4'	59.7'	97°49.4'	82°31.4'	82°15.1'	28°11.7'	9°35.6'		37°14.6'	43°48.9'
3	57°20.0'	N 21°41.5'	4.9'	-5.5'	59.7'	97°30.1'	81°58.9'	81°39.2'	27°35.8'	10°06.2'		37°47.3'	44°18.2'
4	71°43.9'	N 21°36.0'	4.9'	-5.7'	59.8'	97°10.7'	81°26.3'	81°03.2'	26°59.9'	10°37.3'		38°20.1'	44°47.6'
5	86°07.8'	N 21°30.3'	4.9'	-5.8'	59.8'	96°51.3'	80°53.7'	80°27.2'	26°23.9'	11°09.1'		38°53.1'	45°17.2'
6	100°31.7'	N 21°24.5'	4.9'	-6.0'	59.8'	96°31.9'	80°21.1'	79°51.1'	25°48.0'	11°41.2'		39°26.1'	45°47.0'
7	114°55.7'	N 21°18.5'	5.0'	-6.1'	59.8'	96°12.4'	79°48.4'	79°15.0'	25°12.0'	12°13.8'	20°23.0'	39°59.3'	46°16.9'
8	129°19.6'	N 21°12.4'	5.0'	-6.3'	59.9'	95°52.8'	79°15.8'	78°38.9'	24°36.0'	12°46.8'	20°41.5'	40°32.6'	46°47.0'
9	143°43.6'	N 21°06.1'	5.0'	-6.4'	59.9'	95°33.2'	78°43.1'	78°02.7'	23°60.0'	13°20.1'	21°00.8'	41°06.0'	47°17.2'
10	158°07.6'	N 20°59.7'	5.0'	-6.6'	59.9'	95°13.6'	78°10.4'	77°26.5'	23°23.9'	13°53.7'	21°20.8'	41°39.5'	47°47.5'
11	172°31.6'	N 20°53.1'	5.0'	-6.7'	60.0'	94°53.9'	77°37.7'	76°50.3'	22°47.9'	14°27.6'	21°41.6'	42°13.1'	48°18.0'
12	186°55.6'	N 20°46.4'	5.1'	-6.9'	60.0'	94°34.2'	77°05.0'	76°14.0'	22°11.9'	15°01.6'	22°03.0'	42°46.8'	48°48.6'
13	201°19.7'	N 20°39.5'	5.1'	-7.0'	60.0'	94°14.4'	76°32.2'	75°37.7'	21°35.8'	15°35.9'	22°25.0'	43°20.6'	49°19.4'
14	215°43.8'	N 20°32.5'	5.1'	-7.2'	60.0'	93°54.6'	75°59.5'	75°01.4'	20°59.7'	16°10.4'	22°47.6'	43°54.5'	49°50.2'
15	230°07.9'	N 20°25.3'	5.1'	-7.3'	60.1'	93°34.7'	75°26.7'	74°25.1'	20°23.7'	16°45.1'	23°10.9'	44°28.4'	50°21.2'
16	244°32.0'	N 20°18.0'	5.2'	-7.5'	60.1'	93°14.9'	74°54.0'	73°48.7'	19°47.6'	17°19.9'	23°34.7'	45°02.5'	50°52.3'
17	258°56.1'	N 20°10.5'	5.2'	-7.6'	60.1'	92°55.0'	74°21.2'	73°12.3'	19°11.6'	17°54.9'	23°59.0'	45°36.6'	51°23.6'
18	273°20.3'	N 20°02.9'	5.2'	-7.8'	60.1'	92°35.0'	73°48.5'	72°35.8'	18°35.5'	18°30.0'	24°23.8'	46°10.8'	51°54.9'
19	287°44.6'	N 19°55.1'	5.3'	-7.9'	60.2'	92°15.0'	73°15.7'	71°59.4'	17°59.5'	19°05.3'	24°49.1'	46°45.1'	52°26.4'
20	302°08.8'	N 19°47.2'	5.3'	-8.0'	60.2'	91°55.0'	72°42.9'	71°22.9'	17°23.5'	19°40.6'	25°14.9'	47°19.5'	52°57.9'
21	316°33.1'	N 19°39.2'	5.3'	-8.2'	60.2'	91°35.0'	72°10.1'	70°46.3'	16°47.5'	20°16.1'	25°41.1'	47°53.9'	53°29.6'
22	330°57.4'	N 19°31.0'	5.4'	-8.3'	60.2'	91°15.0'	71°37.4'	70°09.8'	16°11.6'	20°51.7'	26°07.8'	48°28.4'	54°01.3'
23	345°21.8'	N 19°22.7'	5.4'	-8.5'	60.3'	90°54.9'	71°04.6'	69°33.2'	15°35.7'	21°27.4'	26°34.8'	49°03.0'	54°33.2'
Mer. pass.		0 h 1 m SD 16.3'			phase 98%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.3'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.9'	N 45°21.0'	Acrux	+0.8	173°03.8'	S 63°12.3'	Capella	+0.1	280°27.4'	N 46°01.1'
Altair	+0.8	62°04.1'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.2'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.8'	S 26°28.4'	Procyon	+0.4	244°54.6'	N 5°10.3'	Polaris	+2.0	315°47.5'	N 89°21.2'
Rigil Kent	-0.0	139°45.4'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.5'	S 57°08.5'
Arcturus	-0.1	145°51.5'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.9'				
Hadar	+0.6	148°41.2'	S 60°27.8'	Canopus	-0.6	263°53.7'	S 52°42.7'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	138°33.5'	176°27.6'	S 14°54.7'	137°08.3'	N 0°09.9'	211°52.3'	S 22°31.3'	200°36.8'	S 20°56.9'	234°09.4'	S 23°26.0'	
1	153°35.9'	191°27.6'	S 14°53.9'	152°08.2'	N 0°11.3'	226°54.2'	S 22°31.3'	215°39.0'	S 20°56.9'	249°10.0'	S 23°26.1'	
2	168°38.4'	206°27.6'	S 14°53.1'	167°08.0'	N 0°12.6'	241°56.1'	S 22°31.2'	230°41.2'	S 20°56.8'	264°10.6'	S 23°26.2'	
3	183°40.9'	221°27.5'	S 14°52.3'	182°07.8'	N 0°13.9'	256°58.0'	S 22°31.1'	245°43.3'	S 20°56.8'	279°11.2'	S 23°26.3'	
4	198°43.3'	236°27.5'	S 14°51.5'	197°07.7'	N 0°15.2'	271°59.9'	S 22°31.1'	260°45.5'	S 20°56.8'	294°11.8'	S 23°26.4'	
5	213°45.8'	251°27.5'	S 14°50.7'	212°07.5'	N 0°16.5'	287°01.8'	S 22°31.0'	275°47.7'	S 20°56.7'	309°12.4'	S 23°26.5'	
6	228°48.3'	266°27.5'	S 14°49.9'	227°07.4'	N 0°17.8'	302°03.7'	S 22°31.0'	290°49.8'	S 20°56.7'	324°13.0'	S 23°26.6'	
7	243°50.7'	281°27.5'	S 14°49.1'	242°07.2'	N 0°19.1'	317°05.6'	S 22°30.9'	305°52.0'	S 20°56.6'	339°13.6'	S 23°26.7'	
8	258°53.2'	296°27.4'	S 14°48.3'	257°07.0'	N 0°20.4'	332°07.5'	S 22°30.9'	320°54.2'	S 20°56.6'	354°14.2'	S 23°26.8'	
9	273°55.7'	311°27.4'	S 14°47.5'	272°06.9'	N 0°21.7'	347°09.4'	S 22°30.8'	335°56.3'	S 20°56.5'	9°14.8'	S 23°26.9'	
10	288°58.1'	326°27.4'	S 14°46.7'	287°06.7'	N 0°23.0'	2°11.3'	S 22°30.8'	350°58.5'	S 20°56.5'	24°15.3'	S 23°27.0'	
11	304°00.6'	341°27.4'	S 14°45.9'	302°06.5'	N 0°24.4'	17°13.2'	S 22°30.7'	6°00.7'	S 20°56.4'	39°15.9'	S 23°27.1'	
12	319°03.1'	356°27.4'	S 14°45.1'	317°06.4'	N 0°25.7'	32°15.1'	S 22°30.6'	21°02.9'	S 20°56.4'	54°16.5'	S 23°27.2'	
13	334°05.5'	11°27.3'	S 14°44.3'	332°06.2'	N 0°27.0'	47°17.0'	S 22°30.6'	36°05.0'	S 20°56.3'	69°17.1'	S 23°27.3'	
14	349°08.0'	26°27.3'	S 14°43.5'	347°06.1'	N 0°28.3'	62°18.9'	S 22°30.5'	51°07.2'	S 20°56.3'	84°17.7'	S 23°27.4'	
15	4°10.4'	41°27.3'	S 14°42.7'	2°05.9'	N 0°29.6'	77°20.8'	S 22°30.5'	66°09.4'	S 20°56.2'	99°18.3'	S 23°27.5'	
16	19°12.9'	56°27.3'	S 14°41.9'	17°05.7'	N 0°30.9'	92°22.7'	S 22°30.4'	81°11.5'	S 20°56.2'	114°18.9'	S 23°27.6'	
17	34°15.4'	71°27.3'	S 14°41.1'	32°05.6'	N 0°32.2'	107°24.6'	S 22°30.4'	96°13.7'	S 20°56.1'	129°19.5'	S 23°27.7'	
18	49°17.8'	86°27.3'	S 14°40.3'	47°05.4'	N 0°33.5'	122°26.5'	S 22°30.3'	111°15.9'	S 20°56.1'	144°20.1'	S 23°27.8'	
19	64°20.3'	101°27.2'	S 14°39.5'	62°05.3'	N 0°34.8'	137°28.4'	S 22°30.2'	126°18.0'	S 20°56.0'	159°20.7'	S 23°27.8'	
20	79°22.8'	116°27.2'	S 14°38.7'	77°05.1'	N 0°36.1'	152°30.3'	S 22°30.2'	141°20.2'	S 20°56.0'	174°21.3'	S 23°27.9'	
21	94°25.2'	131°27.2'	S 14°37.9'	92°04.9'	N 0°37.5'	167°32.2'	S 22°30.1'	156°22.4'	S 20°55.9'	189°21.9'	S 23°28.0'	
22	109°27.7'	146°27.2'	S 14°37.1'	107°04.8'	N 0°38.8'	182°34.1'	S 22°30.1'	171°24.6'	S 20°55.9'	204°22.5'	S 23°28.1'	
23	124°30.2'	161°27.2'	S 14°36.3'	122°04.6'	N 0°40.1'	197°36.0'	S 22°30.0'	186°26.7'	S 20°55.8'	219°23.1'	S 23°28.2'	
		SD 16.2' d 0.8'		v -0.2' d 1.3'		v 1.9' d 0.1'		v 2.2' d 0.0'		v 0.6' d -0.1'		
Mer. pass.		12 h 14 m 11 s		14 h 52 m		9 h 51 m		10 h 36 m		8 h 23 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Acrux	-Arcturus	-Spica	-Regulus	+Pollux	+Procyon	+Betelgeuse	+Sirius
0	359°46.2'	N 19°14.2'	5.4'	-8.6'	60.3'	90°34.8'	70°31.8'	68°56.6'	14°59.9'	22°03.1'	27°02.2'	49°37.6'	51°21.4'
1	14°10.6'	N 19°05.6'	5.5'	-8.7'	60.3'	90°14.7'	69°59.1'	68°20.0'	14°24.1'	22°39.0'	27°30.0'	50°12.3'	51°42.5'
2	28°35.1'	N 18°56.9'	5.5'	-8.9'	60.3'	89°54.6'	69°26.3'	67°43.4'	13°48.4'	23°14.9'	27°58.1'	50°47.1'	52°03.8'
3	42°59.6'	N 18°48.0'	5.6'	-9.0'	60.3'	89°34.4'	68°53.6'	67°06.7'	13°12.8'	23°50.9'	28°26.5'	51°21.9'	52°25.4'
4	57°24.1'	N 18°39.0'	5.6'	-9.1'	60.4'	89°14.3'	68°20.8'	66°30.0'	12°37.2'	24°27.0'	28°55.3'	51°56.8'	52°47.1'
5	71°48.7'	N 18°29.9'	5.6'	-9.3'	60.4'	88°54.1'	67°48.1'	65°53.3'	12°01.9'	25°03.1'	29°24.4'	52°31.8'	53°09.0'
6	86°13.4'	N 18°20.6'	5.7'	-9.4'	60.4'	88°34.0'	67°15.4'	65°16.6'	11°26.6'	25°39.3'	29°53.7'	53°06.8'	53°31.2'
7	100°38.1'	N 18°11.2'	5.7'	-9.5'	60.4'	88°13.8'	66°42.7'	64°39.8'	10°51.6'	26°15.6'	30°23.4'	53°41.8'	53°53.6'
8	115°02.8'	N 18°01.7'	5.8'	-9.7'	60.4'	87°53.6'	66°10.1'	64°03.1'	10°16.7'	26°51.9'	30°53.2'	54°16.9'	54°16.1'
9	129°27.6'	N 17°52.0'	5.8'	-9.8'	60.4'	87°33.4'	65°37.4'	63°26.3'	9°42.1'	27°28.2'	31°23.4'	54°52.1'	54°38.9'
10	143°52.4'	N 17°42.3'	5.9'	-9.9'	60.5'	87°13.3'	65°04.8'	62°49.5'	9°07.8'	28°04.7'	31°53.8'	55°27.3'	55°01.8'
11	158°17.3'	N 17°32.3'	5.9'	-10.0'	60.5'	86°53.1'	64°32.2'	62°12.6'	8°33.9'	28°41.1'	32°24.4'	56°02.6'	55°25.0'
12	172°42.2'	N 17°22.3'	6.0'	-10.2'	60.5'	86°32.9'	63°59.6'	61°35.8'	8°00.5'	29°17.7'	32°55.2'	56°37.9'	55°48.3'
13	187°07.2'	N 17°12.2'	6.0'	-10.3'	60.5'	86°12.8'	63°27.1'	60°59.0'	7°27.6'	29°54.2'	33°26.2'	57°13.2'	56°11.8'
14	201°32.2'	N 17°01.9'	6.1'	-10.4'	60.5'	85°52.6'	62°54.6'	60°22.1'		30°30.8'	33°57.4'	57°48.6'	56°35.4'
15	215°57.2'	N 16°51.5'	6.1'	-10.5'	60.5'	85°32.5'	62°22.1'	59°45.2'		31°07.5'	34°28.9'	58°24.0'	56°59.3'
16	230°22.4'	N 16°41.0'	6.2'	-10.6'	60.6'	85°12.3'	61°49.7'	59°08.3'		31°44.2'	35°00.5'	58°59.5'	57°23.3'
17	244°47.5'	N 16°30.4'	6.2'	-10.7'	60.6'	84°52.2'	61°17.3'	58°31.4'		32°20.9'	35°32.2'	59°35.0'	57°47.4'
18	259°12.8'	N 16°19.6'	6.3'	-10.9'	60.6'	84°32.1'	60°44.9'	57°54.5'		32°57.6'	36°04.2'	60°10.6'	58°11.7'
19	273°38.0'	N 16°08.8'	6.3'	-11.0'	60.6'	84°12.0'	60°12.6'	57°17.6'		33°34.4'	36°36.3'	60°46.2'	58°36.2'
20	288°03.4'	N 15°57.8'	6.4'	-11.1'	60.6'	83°52.0'	59°40.3'	56°40.6'		34°11.3'	37°08.5'	61°21.8'	59°00.8'
21	302°28.8'	N 15°46.7'	6.4'	-11.2'	60.6'	83°31.9'	59°08.1'	56°03.7'		34°48.1'	37°40.9'	61°57.4'	59°25.6'
22	316°54.2'	N 15°35.5'	6.5'	-11.3'	60.6'	83°11.9'	58°35.9'	55°26.7'		35°25.0'	38°13.5'	62°33.1'	59°50.5'
23	331°19.7'	N 15°24.2'	6.6'	-11.4'	60.6'	82°51.9'	58°03.8'	54°49.8'		36°01.9'	38°46.2'	63°08.8'	60°15.5'
Mer. pass.		0 h 1 m SD 16.4'		phase 100%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.3'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°21.0'	Acrux	+0.8	173°03.8'	S 63°12.3'	Capella	+0.1	280°27.4'	N 46°01.1'
Altair	+0.8	62°04.1'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.2'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.8'	S 26°28.4'	Procyon	+0.4	244°54.6'	N 5°10.3'	Polaris	+2.0	315°48.0'	N 89°21.2'
Rigil Kent	-0.0	139°45.4'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.5'	S 57°08.5'
Arcturus	-0.1	145°51.5'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.9'				
Hadar	+0.6	148°41.2'	S 60°27.8'	Canopus	-0.6	263°53.7'	S 52°42.7'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	139°32.6'	176°27.2' S	14°35.5'	137°04.5' N	0°41.4'	212°37.9' S	22°30.0'	201°28.9' S	20°55.8'	234°23.7' S	23°28.3'	
1	154°35.1'	191°27.1' S	14°34.7'	152°04.3' N	0°42.7'	227°39.8' S	22°29.9'	216°31.1' S	20°55.7'	249°24.3' S	23°28.4'	
2	169°37.6'	206°27.1' S	14°33.9'	167°04.1' N	0°44.0'	242°41.7' S	22°29.9'	231°33.2' S	20°55.7'	264°24.9' S	23°28.5'	
3	184°40.0'	221°27.1' S	14°33.1'	182°04.0' N	0°45.3'	257°43.6' S	22°29.8'	246°35.4' S	20°55.6'	279°25.5' S	23°28.6'	
4	199°42.5'	236°27.1' S	14°32.3'	197°03.8' N	0°46.6'	272°45.5' S	22°29.7'	261°37.6' S	20°55.6'	294°26.1' S	23°28.7'	
5	214°44.9'	251°27.1' S	14°31.5'	212°03.7' N	0°47.9'	287°47.4' S	22°29.7'	276°39.8' S	20°55.5'	309°26.7' S	23°28.8'	
6	229°47.4'	266°27.1' S	14°30.7'	227°03.5' N	0°49.2'	302°49.3' S	22°29.6'	291°41.9' S	20°55.5'	324°27.3' S	23°28.9'	
7	244°49.9'	281°27.1' S	14°29.9'	242°03.4' N	0°50.6'	317°51.2' S	22°29.6'	306°44.1' S	20°55.4'	339°27.9' S	23°29.0'	
8	259°52.3'	296°27.1' S	14°29.1'	257°03.2' N	0°51.9'	332°53.1' S	22°29.5'	321°46.3' S	20°55.4'	354°28.5' S	23°29.0'	
9	274°54.8'	311°27.0' S	14°28.3'	272°03.0' N	0°53.2'	347°55.0' S	22°29.5'	336°48.4' S	20°55.3'	9°29.1' S	23°29.1'	
10	289°57.3'	326°27.0' S	14°27.4'	287°02.9' N	0°54.5'	2°56.9' S	22°29.4'	351°50.6' S	20°55.3'	24°29.7' S	23°29.2'	
11	304°59.7'	341°27.0' S	14°26.6'	302°02.7' N	0°55.8'	17°58.8' S	22°29.3'	6°52.8' S	20°55.2'	39°30.3' S	23°29.3'	
12	320°02.2'	356°27.0' S	14°25.8'	317°02.6' N	0°57.1'	33°00.7' S	22°29.3'	21°54.9' S	20°55.2'	54°30.9' S	23°29.4'	
13	335°04.7'	11°27.0' S	14°25.0'	332°02.4' N	0°58.4'	48°02.6' S	22°29.2'	36°57.1' S	20°55.1'	69°31.5' S	23°29.5'	
14	350°07.1'	26°27.0' S	14°24.2'	347°02.3' N	0°59.7'	63°04.5' S	22°29.2'	51°59.3' S	20°55.1'	84°32.1' S	23°29.6'	
15	5°09.6'	41°27.0' S	14°23.4'	2°02.1' N	1°01.0'	78°06.4' S	22°29.1'	67°01.5' S	20°55.0'	99°32.7' S	23°29.7'	
16	20°12.0'	56°27.0' S	14°22.6'	17°02.0' N	1°02.3'	93°08.3' S	22°29.1'	82°03.6' S	20°55.0'	114°33.3' S	23°29.7'	
17	35°14.5'	71°27.0' S	14°21.8'	32°01.8' N	1°03.6'	108°10.2' S	22°29.0'	97°05.8' S	20°54.9'	129°33.9' S	23°29.8'	
18	50°17.0'	86°26.9' S	14°21.0'	47°01.6' N	1°05.0'	123°12.1' S	22°28.9'	112°08.0' S	20°54.9'	144°34.5' S	23°29.9'	
19	65°19.4'	101°26.9' S	14°20.1'	62°01.5' N	1°06.3'	138°14.0' S	22°28.9'	127°10.2' S	20°54.8'	159°35.1' S	23°30.0'	
20	80°21.9'	116°26.9' S	14°19.3'	77°01.3' N	1°07.6'	153°15.9' S	22°28.8'	142°12.3' S	20°54.8'	174°35.7' S	23°30.1'	
21	95°24.4'	131°26.9' S	14°18.5'	92°01.2' N	1°08.9'	168°17.8' S	22°28.8'	157°14.5' S	20°54.7'	189°36.3' S	23°30.2'	
22	110°26.8'	146°26.9' S	14°17.7'	107°01.0' N	1°10.2'	183°19.7' S	22°28.7'	172°16.7' S	20°54.7'	204°36.9' S	23°30.3'	
23	125°29.3'	161°26.9' S	14°16.9'	122°00.9' N	1°11.5'	198°21.6' S	22°28.7'	187°18.8' S	20°54.6'	219°37.5' S	23°30.3'	
		SD 16.2' d 0.8'		v -0.2' d 1.3'		v 1.9' d 0.1'		v 2.2' d 0.0'		v 0.6' d -0.1'		
Mer. pass.		12 h 14 m 12 s		14 h 52 m		9 h 48 m		10 h 33 m		8 h 22 m		

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Hadar	-Acrux	-Arcturus	-Spica	+Regulus	+Pollux	+Procyon	+Sirius
0	345°45.3' N	15°12.8'	6.6'	-11.5'	60.7'	88°26.8'	82°32.0'	57°31.7'	54°12.8'		36°38.8'	39°19.0'	60°40.7'
1	0°10.9' N	15°01.3'	6.7'	-11.6'	60.7'	88°01.6'	82°12.0'	56°59.7'	53°35.9'		37°15.8'	39°51.9'	61°06.0'
2	14°36.5' N	14°49.7'	6.7'	-11.7'	60.7'	87°36.4'	81°52.2'	56°27.8'	52°58.9'		37°52.8'	40°24.9'	61°31.5'
3	29°02.2' N	14°38.0'	6.8'	-11.8'	60.7'	87°11.1'	81°32.3'	55°55.9'	52°21.9'		38°29.8'	40°58.1'	61°57.1'
4	43°28.0' N	14°26.2'	6.8'	-11.9'	60.7'	86°45.9'	81°12.5'	55°24.1'	51°44.9'		39°06.8'	41°31.4'	62°22.7'
5	57°53.8' N	14°14.3'	6.9'	-12.0'	60.7'	86°20.7'	80°52.7'	54°52.4'	51°07.9'		39°43.8'	42°04.7'	62°48.6'
6	72°19.7' N	14°02.3'	6.9'	-12.1'	60.7'	85°55.5'	80°33.0'	54°20.7'	50°31.0'		40°20.9'	42°38.2'	63°14.5'
7	86°45.7' N	13°50.2'	7.0'	-12.2'	60.7'	85°30.3'	80°13.3'	53°49.1'	49°54.0'		40°58.0'	43°11.7'	63°40.5'
8	101°11.7' N	13°38.0'	7.1'	-12.3'	60.7'	85°05.1'	79°53.6'	53°17.6'	49°17.0'		41°35.1'	43°45.4'	64°06.7'
9	115°37.7' N	13°25.7'	7.1'	-12.4'	60.7'	84°40.0'	79°34.1'	52°46.2'	48°40.0'		42°12.2'	44°19.1'	64°32.9'
10	130°03.9' N	13°13.4'	7.2'	-12.5'	60.7'	84°14.8'	79°14.5'	52°14.8'	48°03.1'	7°28.3'	42°49.3'	44°53.0'	64°59.3'
11	144°30.0' N	13°00.9'	7.2'	-12.5'	60.7'	83°49.7'	78°55.0'	51°43.6'	47°26.1'	8°01.5'	43°26.4'	45°26.9'	65°25.7'
12	158°56.3' N	12°48.4'	7.3'	-12.6'	60.7'	83°24.6'	78°35.6'	51°12.5'	46°49.1'	8°35.2'	44°03.6'	46°00.8'	65°52.2'
13	173°22.5' N	12°35.8'	7.3'	-12.7'	60.7'	82°59.5'	78°16.2'	50°41.4'	46°12.2'	9°09.4'	44°40.8'	46°34.9'	66°18.9'
14	187°48.9' N	12°23.0'	7.4'	-12.8'	60.8'	82°34.4'	77°56.9'	50°10.5'	45°35.2'	9°44.0'	45°17.9'	47°09.0'	66°45.6'
15	202°15.3' N	12°10.3'	7.5'	-12.9'	60.8'	82°09.4'	77°37.7'	49°39.6'	44°58.3'	10°19.0'	45°55.1'	47°43.2'	67°12.4'
16	216°41.7' N	11°57.4'	7.5'	-12.9'	60.8'	81°44.4'	77°18.5'	49°08.9'	44°21.4'	10°54.2'	46°32.3'	48°17.5'	67°39.3'
17	231°08.2' N	11°44.5'	7.6'	-13.0'	60.8'	81°19.4'	76°59.3'	48°38.3'	43°44.5'	11°29.7'	47°09.5'	48°51.8'	68°06.3'
18	245°34.8' N	11°31.4'	7.6'	-13.1'	60.8'	80°54.5'	76°40.3'	48°07.8'	43°07.6'	12°05.3'	47°46.7'	49°26.1'	68°33.4'
19	260°01.4' N	11°18.3'	7.7'	-13.2'	60.8'	80°29.6'	76°21.3'	47°37.4'	42°30.7'	12°41.2'	48°23.9'	50°00.6'	69°00.5'
20	274°28.1' N	11°05.2'	7.7'	-13.2'	60.8'	80°04.8'	76°02.4'	47°07.2'	41°53.8'	13°17.2'	49°01.1'	50°35.0'	69°27.7'
21	288°54.8' N	10°51.9'	7.8'	-13.3'	60.8'	79°39.9'	75°43.6'	46°37.1'	41°17.0'	13°53.3'	49°38.3'	51°09.6'	69°55.0'
22	303°21.6' N	10°38.6'	7.8'	-13.4'	60.8'	79°15.2'	75°24.8'	46°07.2'	40°40.1'	14°29.5'	50°15.5'	51°44.1'	70°22.4'
23	317°48.5' N	10°25.3'	7.9'	-13.4'	60.8'	78°50.4'	75°06.2'	45°37.3'	40°03.3'	15°05.8'	50°52.8'	52°18.8'	70°49.8'
Mer. pass.		0 h 59 m SD 16.5'		phase 99%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.3'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°21.0'	Acrux	+0.8	173°03.8'	S 63°12.3'	Capella	+0.1	280°27.4'	N 46°01.1'
Altair	+0.8	62°04.1'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.2'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.8'	S 26°28.4'	Procyon	+0.4	244°54.6'	N 5°10.3'	Polaris	+2.0	315°48.5'	N 89°21.2'
Rigil Kent	-0.0	139°45.4'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.5'	S 57°08.5'
Arcturus	-0.1	145°51.5'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.9'				
Hadar	+0.6	148°41.2'	S 60°27.8'	Canopus	-0.6	263°53.7'	S 52°42.7'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	140°31.8'	176°26.9'	S 14°16.1'	137°00.7'	N 1°12.8'		213°23.5'	S 22°28.6'		202°21.0'	S 20°54.6'		234°38.1'	S 23°30.4'				
1	155°34.2'	191°26.9'	S 14°15.3'	152°00.6'	N 1°14.1'		228°25.4'	S 22°28.5'		217°23.2'	S 20°54.5'		249°38.7'	S 23°30.5'				
2	170°36.7'	206°26.9'	S 14°14.4'	167°00.4'	N 1°15.4'		243°27.3'	S 22°28.5'		232°25.4'	S 20°54.5'		264°39.3'	S 23°30.6'				
3	185°39.2'	221°26.9'	S 14°13.6'	182°00.3'	N 1°16.7'		258°29.3'	S 22°28.4'		247°27.5'	S 20°54.4'		279°39.9'	S 23°30.7'				
4	200°41.6'	236°26.9'	S 14°12.8'	197°00.1'	N 1°18.0'		273°31.2'	S 22°28.4'		262°29.7'	S 20°54.4'		294°40.5'	S 23°30.8'				
5	215°44.1'	251°26.9'	S 14°12.0'	211°60.0'	N 1°19.4'		288°33.1'	S 22°28.3'		277°31.9'	S 20°54.3'		309°41.0'	S 23°30.8'				
6	230°46.5'	266°26.9'	S 14°11.2'	226°59.8'	N 1°20.7'		303°35.0'	S 22°28.3'		292°34.0'	S 20°54.3'		324°41.6'	S 23°30.9'				
7	245°49.0'	281°26.9'	S 14°10.4'	241°59.7'	N 1°22.0'		318°36.9'	S 22°28.2'		307°36.2'	S 20°54.2'		339°42.2'	S 23°31.0'				
8	260°51.5'	296°26.9'	S 14°09.5'	256°59.5'	N 1°23.3'		333°38.8'	S 22°28.1'		322°38.4'	S 20°54.2'		354°42.8'	S 23°31.1'				
9	275°53.9'	311°26.9'	S 14°08.7'	271°59.4'	N 1°24.6'		348°40.7'	S 22°28.1'		337°40.6'	S 20°54.1'		9°43.4'	S 23°31.2'				
10	290°56.4'	326°26.9'	S 14°07.9'	286°59.2'	N 1°25.9'		3°42.6'	S 22°28.0'		352°42.7'	S 20°54.1'		24°44.0'	S 23°31.2'				
11	305°58.9'	341°26.8'	S 14°07.1'	301°59.0'	N 1°27.2'		18°44.5'	S 22°28.0'		7°44.9'	S 20°54.1'		39°44.6'	S 23°31.3'				
12	321°01.3'	356°26.8'	S 14°06.3'	316°58.9'	N 1°28.5'		33°46.4'	S 22°27.9'		22°47.1'	S 20°54.0'		54°45.2'	S 23°31.4'				
13	336°03.8'	11°26.8'	S 14°05.5'	331°58.7'	N 1°29.8'		48°48.3'	S 22°27.9'		37°49.3'	S 20°54.0'		69°45.8'	S 23°31.5'				
14	351°06.3'	26°26.8'	S 14°04.6'	346°58.6'	N 1°31.1'		63°50.2'	S 22°27.8'		52°51.4'	S 20°53.9'		84°46.4'	S 23°31.6'				
15	6°08.7'	41°26.8'	S 14°03.8'	1°58.4'	N 1°32.4'		78°52.1'	S 22°27.7'		67°53.6'	S 20°53.9'		99°47.0'	S 23°31.6'				
16	21°11.2'	56°26.8'	S 14°03.0'	16°58.3'	N 1°33.7'		93°54.0'	S 22°27.7'		82°55.8'	S 20°53.8'		114°47.6'	S 23°31.7'				
17	36°13.7'	71°26.8'	S 14°02.2'	31°58.1'	N 1°35.1'		108°55.9'	S 22°27.6'		97°57.9'	S 20°53.8'		129°48.2'	S 23°31.8'				
18	51°16.1'	86°26.8'	S 14°01.3'	46°58.0'	N 1°36.4'		123°57.8'	S 22°27.6'		113°00.1'	S 20°53.7'		144°48.8'	S 23°31.9'				
19	66°18.6'	101°26.8'	S 14°00.5'	61°57.8'	N 1°37.7'		138°59.7'	S 22°27.5'		128°02.3'	S 20°53.7'		159°49.4'	S 23°32.0'				
20	81°21.0'	116°26.8'	S 13°59.7'	76°57.7'	N 1°39.0'		154°01.6'	S 22°27.5'		143°04.5'	S 20°53.6'		174°50.0'	S 23°32.0'				
21	96°23.5'	131°26.8'	S 13°58.9'	91°57.6'	N 1°40.3'		169°03.5'	S 22°27.4'		158°06.6'	S 20°53.6'		189°50.6'	S 23°32.1'				
22	111°26.0'	146°26.8'	S 13°58.1'	106°57.4'	N 1°41.6'		184°05.5'	S 22°27.3'		173°08.8'	S 20°53.5'		204°51.2'	S 23°32.2'				
23	126°28.4'	161°26.8'	S 13°57.2'	121°57.3'	N 1°42.9'		199°07.4'	S 22°27.3'		188°11.0'	S 20°53.5'		219°51.8'	S 23°32.3'				
		SD 16.2'	d 0.8'		v -0.2'	d 1.3'		v 1.9'	d 0.1'		v 2.2'	d 0.0'		v 0.6'	d -0.1'			
Mer. pass.		12 h 14 m 13 s		14 h 52 m			9 h 45 m			10 h 29 m			8 h 21 m					

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Hadar	-Acrux	-Arcturus	-Spica	+Regulus	+Pollux	+Procyon	+Sirius
0	332°15.4'	N 10°11.8'	8.0'	-13.5'	60.8'	78°25.8'	74°47.6'	45°07.7'	39°26.5'	15°42.2'	51°30.0'	52°53.4'	71°17.3'
1	346°42.3'	N 9°58.4'	8.0'	-13.6'	60.8'	78°01.1'	74°29.1'	44°38.2'	38°49.7'	16°18.7'	52°07.2'	53°28.1'	71°44.8'
2	1°09.3'	N 9°44.8'	8.1'	-13.6'	60.8'	77°36.5'	74°10.7'	44°08.9'	38°13.0'	16°55.3'	52°44.4'	54°02.9'	72°12.4'
3	15°36.4'	N 9°31.2'	8.1'	-13.7'	60.8'	77°12.0'	73°52.4'	43°39.7'	37°36.2'	17°31.9'	53°21.6'	54°37.6'	72°40.1'
4	30°03.5'	N 9°17.5'	8.2'	-13.7'	60.7'	76°47.6'	73°34.1'	43°10.7'	36°59.5'	18°08.5'	53°58.9'	55°12.5'	73°07.8'
5	44°30.7'	N 9°03.8'	8.2'	-13.8'	60.7'	76°23.1'	73°16.0'	42°41.9'	36°22.9'	18°45.3'	54°36.1'	55°47.3'	73°35.5'
6	58°57.9'	N 8°50.0'	8.3'	-13.8'	60.7'	75°58.8'	72°58.0'	42°13.2'	35°46.2'	19°22.0'	55°13.3'	56°22.2'	74°03.3'
7	73°25.2'	N 8°36.2'	8.3'	-13.9'	60.7'	75°34.5'	72°40.0'	41°44.8'	35°09.6'	19°58.8'	55°50.5'	56°57.1'	74°31.2'
8	87°52.5'	N 8°22.3'	8.4'	-13.9'	60.7'	75°10.3'	72°22.2'	41°16.6'	34°33.1'	20°35.6'	56°27.7'	57°32.0'	74°59.1'
9	102°19.9'	N 8°08.3'	8.4'	-14.0'	60.7'	74°46.1'	72°04.5'	40°48.6'	33°56.5'	21°12.4'	57°04.9'	58°07.0'	75°27.0'
10	116°47.3'	N 7°54.4'	8.5'	-14.0'	60.7'	74°22.1'	71°46.9'	40°20.8'	33°20.0'	21°49.3'	57°42.1'	58°41.9'	75°55.0'
11	131°14.7'	N 7°40.3'	8.5'	-14.1'	60.7'	73°58.1'	71°29.3'	39°53.2'	32°43.6'	22°26.1'	58°19.3'	59°16.9'	76°23.0'
12	145°42.3'	N 7°26.3'	8.6'	-14.1'	60.7'	73°34.1'	71°11.9'	39°25.8'	32°07.1'	23°03.0'	58°56.4'	59°51.9'	76°51.1'
13	160°09.8'	N 7°12.2'	8.6'	-14.1'	60.7'	73°10.3'	70°54.7'	38°58.7'	31°30.8'	23°39.9'	59°33.6'	60°27.0'	77°19.2'
14	174°37.4'	N 6°58.0'	8.7'	-14.2'	60.7'	72°46.5'	70°37.5'	38°31.9'	30°54.4'	24°16.8'	60°10.8'	61°02.0'	77°47.3'
15	189°05.1'	N 6°43.8'	8.7'	-14.2'	60.7'	72°22.8'	70°20.4'	38°05.3'	30°18.2'	24°53.8'	60°47.9'	61°37.1'	78°15.4'
16	203°32.8'	N 6°29.6'	8.8'	-14.3'	60.7'	71°59.2'	70°03.5'	37°38.9'	29°41.9'	25°30.7'	61°25.0'	62°12.2'	78°43.6'
17	218°00.6'	N 6°15.3'	8.8'	-14.3'	60.7'	71°35.7'	69°46.7'	37°12.9'	29°05.8'	26°07.6'	62°02.2'	62°47.3'	79°11.8'
18	232°28.4'	N 6°01.1'	8.8'	-14.3'	60.7'	71°12.3'	69°30.0'	36°47.1'	28°29.7'	26°44.6'	62°39.3'	63°22.4'	79°40.0'
19	246°56.2'	N 5°46.7'	8.9'	-14.4'	60.6'	70°49.0'	69°13.4'	36°21.6'	27°53.6'	27°21.5'	63°16.4'	63°57.5'	80°08.2'
20	261°24.1'	N 5°32.4'	8.9'	-14.4'	60.6'	70°25.7'	68°57.0'	35°56.5'	27°17.7'	27°58.4'	63°53.5'	64°32.6'	80°36.5'
21	275°52.0'	N 5°18.0'	9.0'	-14.4'	60.6'	70°02.6'	68°40.7'	35°31.6'	26°41.7'	28°35.4'	64°30.5'	65°07.7'	81°04.7'
22	290°20.0'	N 5°03.6'	9.0'	-14.4'	60.6'	69°39.5'	68°24.6'	35°07.1'	26°05.9'	29°12.3'	65°07.6'	65°42.8'	81°33.0'
23	304°48.0'	N 4°49.2'	9.1'	-14.5'	60.6'	69°16.6'	68°08.5'	34°42.9'	25°30.2'	29°49.2'	65°44.6'	66°18.0'	82°01.3'
Mer. pass.		1 h 55 m SD 16.6'	phase 96%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.3'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°21.0'	Acrux	+0.8	173°03.8'	S 63°12.3'	Capella	+0.1	280°27.4'	N 46°01.1'
Altair	+0.8	62°04.1'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.2'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.7'	S 26°28.4'	Procyon	+0.4	244°54.6'	N 5°10.3'	Polaris	+2.0	315°49.1'	N 89°21.2'
Rigil Kent	-0.0	139°45.4'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.5'	S 57°08.5'
Arcturus	-0.1	145°51.4'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.9'				
Hadar	+0.6	148°41.2'	S 60°27.8'	Canopus	-0.6	263°53.7'	S 52°42.7'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	141°30.9'	176°26.8'	S 13°56.4'	136°57.1'	N 1°44.2'		214°09.3'	S 22°27.2'		203°13.2'	S 20°53.4'		234°52.4'	S 23°32.3'				
1	156°33.4'	191°26.8'	S 13°55.6'	151°57.0'	N 1°45.5'		229°11.2'	S 22°27.2'		218°15.3'	S 20°53.4'		249°53.0'	S 23°32.4'				
2	171°35.8'	206°26.8'	S 13°54.8'	166°56.8'	N 1°46.8'		244°13.1'	S 22°27.1'		233°17.5'	S 20°53.3'		264°53.5'	S 23°32.5'				
3	186°38.3'	221°26.8'	S 13°53.9'	181°56.7'	N 1°48.1'		259°15.0'	S 22°27.1'		248°19.7'	S 20°53.3'		279°54.1'	S 23°32.6'				
4	201°40.8'	236°26.8'	S 13°53.1'	196°56.5'	N 1°49.4'		274°16.9'	S 22°27.0'		263°21.9'	S 20°53.2'		294°54.7'	S 23°32.6'				
5	216°43.2'	251°26.8'	S 13°52.3'	211°56.4'	N 1°50.7'		289°18.8'	S 22°26.9'		278°24.0'	S 20°53.2'		309°55.3'	S 23°32.7'				
6	231°45.7'	266°26.9'	S 13°51.5'	226°56.2'	N 1°52.0'		304°20.7'	S 22°26.9'		293°26.2'	S 20°53.1'		324°55.9'	S 23°32.8'				
7	246°48.1'	281°26.9'	S 13°50.6'	241°56.1'	N 1°53.4'		319°22.6'	S 22°26.8'		308°28.4'	S 20°53.1'		339°56.5'	S 23°32.9'				
8	261°50.6'	296°26.9'	S 13°49.8'	256°55.9'	N 1°54.7'		334°24.5'	S 22°26.8'		323°30.5'	S 20°53.0'		354°57.1'	S 23°32.9'				
9	276°53.1'	311°26.9'	S 13°49.0'	271°55.8'	N 1°56.0'		349°26.4'	S 22°26.7'		338°32.7'	S 20°53.0'		9°57.7'	S 23°33.0'				
10	291°55.5'	326°26.9'	S 13°48.1'	286°55.6'	N 1°57.3'		4°28.3'	S 22°26.7'		353°34.9'	S 20°52.9'		24°58.3'	S 23°33.1'				
11	306°58.0'	341°26.9'	S 13°47.3'	301°55.5'	N 1°58.6'		19°30.2'	S 22°26.6'		8°37.1'	S 20°52.9'		39°58.9'	S 23°33.1'				
12	322°00.5'	356°26.9'	S 13°46.5'	316°55.3'	N 1°59.9'		34°32.2'	S 22°26.5'		23°39.2'	S 20°52.8'		54°59.5'	S 23°33.2'				
13	337°02.9'	11°26.9'	S 13°45.7'	331°55.2'	N 2°01.2'		49°34.1'	S 22°26.5'		38°41.4'	S 20°52.8'		70°00.1'	S 23°33.3'				
14	352°05.4'	26°26.9'	S 13°44.8'	346°55.1'	N 2°02.5'		64°36.0'	S 22°26.4'		53°43.6'	S 20°52.7'		85°00.7'	S 23°33.4'				
15	7°07.9'	41°26.9'	S 13°44.0'	1°54.9'	N 2°03.8'		79°37.9'	S 22°26.4'		68°45.8'	S 20°52.7'		100°01.3'	S 23°33.4'				
16	22°10.3'	56°26.9'	S 13°43.2'	16°54.8'	N 2°05.1'		94°39.8'	S 22°26.3'		83°47.9'	S 20°52.6'		115°01.9'	S 23°33.5'				
17	37°12.8'	71°26.9'	S 13°42.3'	31°54.6'	N 2°06.4'		109°41.7'	S 22°26.2'		98°50.1'	S 20°52.6'		130°02.5'	S 23°33.6'				
18	52°15.3'	86°26.9'	S 13°41.5'	46°54.5'	N 2°07.7'		124°43.6'	S 22°26.2'		113°52.3'	S 20°52.5'		145°03.0'	S 23°33.6'				
19	67°17.7'	101°26.9'	S 13°40.7'	61°54.3'	N 2°09.0'		139°45.5'	S 22°26.1'		128°54.5'	S 20°52.5'		160°03.6'	S 23°33.7'				
20	82°20.2'	116°26.9'	S 13°39.8'	76°54.2'	N 2°10.3'		154°47.4'	S 22°26.1'		143°56.6'	S 20°52.4'		175°04.2'	S 23°33.8'				
21	97°22.6'	131°26.9'	S 13°39.0'	91°54.0'	N 2°11.6'		169°49.3'	S 22°26.0'		158°58.8'	S 20°52.4'		190°04.8'	S 23°33.8'				
22	112°25.1'	146°26.9'	S 13°38.2'	106°53.9'	N 2°13.0'		184°51.2'	S 22°26.0'		174°01.0'	S 20°52.3'		205°05.4'	S 23°33.9'				
23	127°27.6'	161°27.0'	S 13°37.3'	121°53.8'	N 2°14.3'		199°53.2'	S 22°25.9'		189°03.2'	S 20°52.3'		220°06.0'	S 23°34.0'				
		SD 16.2'	d 0.8'		v -0.1'	d 1.3'		v 1.9'	d 0.1'		v 2.2'	d 0.0'		v 0.6'	d -0.1'			
Mer. pass.		12 h 14 m 13 s		14 h 52 m			9 h 42 m			10 h 26 m			8 h 20 m					

h	Moon					Lunar distance												
	GHA	dec	v	d	HP	-Hadar	-Acrux	-Arcturus	-Spica	+Regulus	+Pollux	+Procyon	+Adhara					
0	319°16.1'	N 4°34.7'	9.1'	-14.5'	60.6'	68°53.8'	67°52.7'	34°19.1'	24°54.5'	30°26.1'	66°21.7'	66°53.1'	81°16.8'					
1	333°44.2'	N 4°20.3'	9.1'	-14.5'	60.6'	68°31.1'	67°36.9'	33°55.6'	24°18.9'	31°03.1'	66°58.7'	67°28.3'	81°39.1'					
2	348°12.3'	N 4°05.8'	9.2'	-14.5'	60.6'	68°08.4'	67°21.3'	33°32.6'	23°43.4'	31°40.0'	67°35.7'	68°03.4'	82°01.5'					
3	2°40.5'	N 3°51.3'	9.2'	-14.5'	60.5'	67°45.9'	67°05.9'	33°09.8'	23°08.0'	32°16.8'	68°12.7'	68°38.5'	82°23.8'					
4	17°08.7'	N 3°36.7'	9.2'	-14.5'	60.5'	67°23.6'	66°50.6'	32°47.5'	22°32.8'	32°53.7'	68°49.6'	69°13.7'	82°46.2'					
5	31°36.9'	N 3°22.2'	9.3'	-14.5'	60.5'	67°01.3'		32°25.7'	21°57.6'	33°30.6'	69°26.6'	69°48.8'	83°08.6'					
6	46°05.2'	N 3°07.7'	9.3'	-14.6'	60.5'	66°39.2'		32°04.2'	21°22.6'	34°07.5'	70°03.5'	70°23.9'	83°31.1'					
7	60°33.5'	N 2°53.1'	9.4'	-14.6'	60.5'	66°17.1'		31°43.2'	20°47.7'	34°44.3'	70°40.4'	70°59.0'	83°53.5'					
8	75°01.9'	N 2°38.5'	9.4'	-14.6'	60.5'	65°55.3'		31°22.6'	20°12.9'	35°21.1'	71°17.3'	71°34.1'	84°16.0'					
9	89°30.3'	N 2°24.0'	9.4'	-14.6'	60.5'	65°33.5'		31°02.5'	19°38.3'	35°57.9'	71°54.1'	72°09.3'	84°38.4'					
10	103°58.7'	N 2°09.4'	9.5'	-14.6'	60.4'	65°11.9'		30°42.9'	19°03.9'	36°34.7'	72°31.0'	72°44.4'	85°00.9'					
11	118°27.1'	N 1°54.8'	9.5'	-14.6'	60.4'	64°50.4'		30°23.8'	18°29.6'	37°11.5'	73°07.8'	73°19.4'	85°23.4'					
12	132°55.6'	N 1°40.2'	9.5'	-14.6'	60.4'	64°29.0'		30°05.2'	17°55.6'	37°48.3'	73°44.6'	73°54.5'	85°45.9'					
13	147°24.1'	N 1°25.6'	9.5'	-14.6'	60.4'	64°07.8'		29°47.2'	17°21.7'	38°25.0'	74°21.3'	74°29.6'	86°08.4'					
14	161°52.7'	N 1°11.0'	9.6'	-14.6'	60.4'	63°46.7'		29°29.6'	16°48.1'	39°01.8'	74°58.1'	75°04.6'	86°30.9'					
15	176°21.3'	N 0°56.4'	9.6'	-14.6'	60.4'	63°25.8'		29°12.7'	16°14.7'	39°38.5'	75°34.8'	75°39.7'	86°53.4'					
16	190°49.9'	N 0°41.9'	9.6'	-14.6'	60.3'	63°05.0'		28°56.3'	15°41.7'	40°15.2'	76°11.5'	76°14.7'	87°15.9'					
17	205°18.5'	N 0°27.3'	9.7'	-14.6'	60.3'	62°44.4'		28°40.5'	15°08.9'	40°51.8'	76°48.2'	76°49.7'	87°38.4'					
18	219°47.1'	N 0°12.7'	9.7'	-14.6'	60.3'	62°23.9'			14°36.4'	41°28.5'	77°24.8'	77°24.7'	88°00.9'					
19	234°15.8'	S 0°01.8'	9.7'	-14.5'	60.3'	62°03.6'			14°04.4'	42°05.1'	78°01.5'	77°59.7'	88°23.4'					
20	248°44.5'	S 0°16.4'	9.7'	-14.5'	60.3'	61°43.4'			13°32.7'	42°41.7'	78°38.1'	78°34.7'	88°45.8'					
21	263°13.3'	S 0°30.9'	9.8'	-14.5'	60.2'	61°23.4'			13°01.5'	43°18.3'	79°14.6'	79°09.6'	89°08.3'					
22	277°42.0'	S 0°45.4'	9.8'	-14.5'	60.2'	61°03.6'			12°30.9'	43°54.8'	79°51.2'	79°44.5'	89°30.7'					
23	292°10.8'	S 0°59.9'	9.8'	-14.5'	60.2'	60°43.9'			12°00.8'	44°31.3'	80°27.7'	80°19.4'	89°53.2'					
Mer. pass.		2 h 49 m SD 16.5'	phase 90%															

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.3'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°21.0'	Acrux	+0.8	173°03.8'	S 63°12.4'	Capella	+0.1	280°27.4'	N 46°01.1'
Altair	+0.8	62°04.1'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.2'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.7'	S 26°28.4'	Procyon	+0.4	244°54.6'	N 5°10.3'	Polaris	+2.0	315°49.6'	N 89°21.2'
Rigil Kent	-0.0	139°45.4'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.5'	S 57°08.5'
Arcturus	-0.1	145°51.4'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.9'				
Hadar	+0.6	148°41.2'	S 60°27.8'	Canopus	-0.6	263°53.7'	S 52°42.7'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	142°30.0'	176°27.0'	S 13°36.5'	136°53.6'	N 2°15.6'		214°55.1'	S 22°25.8'		204°05.3'	S 20°52.2'		235°06.6'	S 23°34.0'				
1	157°32.5'	191°27.0'	S 13°35.7'	151°53.5'	N 2°16.9'		229°57.0'	S 22°25.8'		219°07.5'	S 20°52.2'		250°07.2'	S 23°34.1'				
2	172°35.0'	206°27.0'	S 13°34.8'	166°53.3'	N 2°18.2'		244°58.9'	S 22°25.7'		234°09.7'	S 20°52.1'		265°07.8'	S 23°34.2'				
3	187°37.4'	221°27.0'	S 13°34.0'	181°53.2'	N 2°19.5'		260°00.8'	S 22°25.7'		249°11.9'	S 20°52.1'		280°08.4'	S 23°34.2'				
4	202°39.9'	236°27.0'	S 13°33.2'	196°53.0'	N 2°20.8'		275°02.7'	S 22°25.6'		264°14.0'	S 20°52.0'		295°09.0'	S 23°34.3'				
5	217°42.4'	251°27.0'	S 13°32.3'	211°52.9'	N 2°22.1'		290°04.6'	S 22°25.6'		279°16.2'	S 20°52.0'		310°09.6'	S 23°34.4'				
6	232°44.8'	266°27.0'	S 13°31.5'	226°52.8'	N 2°23.4'		305°06.5'	S 22°25.5'		294°18.4'	S 20°51.9'		325°10.2'	S 23°34.4'				
7	247°47.3'	281°27.0'	S 13°30.7'	241°52.6'	N 2°24.7'		320°08.4'	S 22°25.4'		309°20.6'	S 20°51.9'		340°10.8'	S 23°34.5'				
8	262°49.7'	296°27.0'	S 13°29.8'	256°52.5'	N 2°26.0'		335°10.3'	S 22°25.4'		324°22.7'	S 20°51.8'		355°11.3'	S 23°34.6'				
9	277°52.2'	311°27.1'	S 13°29.0'	271°52.3'	N 2°27.3'		350°12.3'	S 22°25.3'		339°24.9'	S 20°51.8'		10°11.9'	S 23°34.6'				
10	292°54.7'	326°27.1'	S 13°28.1'	286°52.2'	N 2°28.6'		5°14.2'	S 22°25.3'		354°27.1'	S 20°51.7'		25°12.5'	S 23°34.7'				
11	307°57.1'	341°27.1'	S 13°27.3'	301°52.0'	N 2°29.9'		20°16.1'	S 22°25.2'		9°29.3'	S 20°51.7'		40°13.1'	S 23°34.7'				
12	322°59.6'	356°27.1'	S 13°26.5'	316°51.9'	N 2°31.2'		35°18.0'	S 22°25.1'		24°31.4'	S 20°51.7'		55°13.7'	S 23°34.8'				
13	338°02.1'	11°27.1'	S 13°25.6'	331°51.8'	N 2°32.5'		50°19.9'	S 22°25.1'		39°33.6'	S 20°51.6'		70°14.3'	S 23°34.9'				
14	353°04.5'	26°27.1'	S 13°24.8'	346°51.6'	N 2°33.8'		65°21.8'	S 22°25.0'		54°35.8'	S 20°51.6'		85°14.9'	S 23°34.9'				
15	8°07.0'	41°27.1'	S 13°24.0'	1°51.5'	N 2°35.1'		80°23.7'	S 22°25.0'		69°38.0'	S 20°51.5'		100°15.5'	S 23°35.0'				
16	23°09.5'	56°27.1'	S 13°23.1'	16°51.3'	N 2°36.4'		95°25.6'	S 22°24.9'		84°40.2'	S 20°51.5'		115°16.1'	S 23°35.1'				
17	38°11.9'	71°27.2'	S 13°22.3'	31°51.2'	N 2°37.7'		110°27.5'	S 22°24.9'		99°42.3'	S 20°51.4'		130°16.7'	S 23°35.1'				
18	53°14.4'	86°27.2'	S 13°21.4'	46°51.1'	N 2°39.1'		125°29.5'	S 22°24.8'		114°44.5'	S 20°51.4'		145°17.3'	S 23°35.2'				
19	68°16.9'	101°27.2'	S 13°20.6'	61°50.9'	N 2°40.4'		140°31.4'	S 22°24.7'		129°46.7'	S 20°51.3'		160°17.9'	S 23°35.2'				
20	83°19.3'	116°27.2'	S 13°19.8'	76°50.8'	N 2°41.7'		155°33.3'	S 22°24.7'		144°48.9'	S 20°51.3'		175°18.4'	S 23°35.3'				
21	98°21.8'	131°27.2'	S 13°18.9'	91°50.6'	N 2°43.0'		170°35.2'	S 22°24.6'		159°51.0'	S 20°51.2'		190°19.0'	S 23°35.4'				
22	113°24.2'	146°27.2'	S 13°18.1'	106°50.5'	N 2°44.3'		185°37.1'	S 22°24.6'		174°53.2'	S 20°51.2'		205°19.6'	S 23°35.4'				
23	128°26.7'	161°27.3'	S 13°17.2'	121°50.4'	N 2°45.6'		200°39.0'	S 22°24.5'		189°55.4'	S 20°51.1'		220°20.2'	S 23°35.5'				
		SD 16.2'	d 0.8'		v -0.1'	d 1.3'		v 1.9'	d 0.1'		v 2.2'	d 0.0'		v 0.6'	d -0.1'			
Mer. pass.		12 h 14 m 12 s		14 h 53 m			9 h 39 m			10 h 22 m			8 h 19 m					

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Hadar	-Antares	-Spica	+Regulus	+Procyon	+Pollux	+Adhara
0	306°39.6'	S 1°14.4'	9.8'	-14.5'	60.2'		60°24.5'	55°44.5'	11°31.3'	45°07.8'	80°54.3'	81°04.2'	90°15.6'
1	321°08.4'	S 1°28.9'	9.8'	-14.4'	60.2'		60°05.1'	55°08.3'		45°44.3'	81°29.2'	81°40.7'	90°38.0'
2	335°37.2'	S 1°43.3'	9.9'	-14.4'	60.1'		59°46.0'	54°32.1'		46°20.8'	82°04.0'	82°17.1'	91°00.4'
3	350°06.1'	S 1°57.8'	9.9'	-14.4'	60.1'		59°27.0'	53°56.0'		46°57.2'	82°38.8'	82°53.5'	91°22.7'
4	4°34.9'	S 2°12.2'	9.9'	-14.4'	60.1'		59°08.3'	53°19.8'		47°33.6'	83°13.6'	83°29.9'	91°45.0'
5	19°03.8'	S 2°26.5'	9.9'	-14.4'	60.1'		58°49.7'	52°43.7'		48°10.0'	83°48.4'	84°06.2'	92°07.3'
6	33°32.7'	S 2°40.9'	9.9'	-14.3'	60.0'		58°31.3'	52°07.7'		48°46.3'	84°23.1'	84°42.6'	92°29.6'
7	48°01.6'	S 2°55.2'	9.9'	-14.3'	60.0'		58°13.1'	51°31.7'		49°22.6'	84°57.9'	85°18.8'	92°51.9'
8	62°30.6'	S 3°09.5'	9.9'	-14.3'	60.0'		57°55.1'	50°55.7'		49°58.9'	85°32.6'	85°55.1'	93°14.1'
9	76°59.5'	S 3°23.8'	10.0'	-14.2'	60.0'		57°37.3'	50°19.8'		50°35.2'	86°07.2'	86°31.3'	93°36.3'
10	91°28.5'	S 3°38.0'	10.0'	-14.2'	59.9'		57°19.7'	49°43.9'		51°11.4'	86°41.9'	87°07.5'	93°58.4'
11	105°57.4'	S 3°52.3'	10.0'	-14.2'	59.9'		57°02.2'	49°08.0'		51°47.6'	87°16.5'	87°43.7'	94°20.5'
12	120°26.4'	S 4°06.4'	10.0'	-14.1'	59.9'		56°45.0'	48°32.2'		52°23.8'	87°51.0'	88°19.8'	94°42.6'
13	134°55.4'	S 4°20.6'	10.0'	-14.1'	59.9'		56°28.1'	47°56.4'		52°59.9'	88°25.6'	88°55.9'	95°04.6'
14	149°24.4'	S 4°34.7'	10.0'	-14.1'	59.8'		56°11.3'	47°20.7'		53°36.0'	89°00.1'	89°32.0'	95°26.6'
15	163°53.4'	S 4°48.7'	10.0'	-14.0'	59.8'		55°54.7'	46°45.0'		54°12.1'	89°34.6'	90°08.0'	95°48.6'
16	178°22.4'	S 5°02.7'	10.0'	-14.0'	59.8'	119°28.5'	55°38.4'	46°09.3'		54°48.1'	90°09.1'	90°44.0'	96°10.5'
17	192°51.5'	S 5°16.7'	10.0'	-13.9'	59.8'	118°55.0'	55°22.3'	45°33.7'		55°24.1'	90°43.5'	91°20.0'	96°32.3'
18	207°20.5'	S 5°30.7'	10.0'	-13.9'	59.7'	118°21.5'	55°06.4'	44°58.1'		56°00.1'	91°17.9'	91°56.0'	96°54.1'
19	221°49.5'	S 5°44.6'	10.0'	-13.8'	59.7'	117°48.1'	54°50.7'	44°22.6'		56°36.1'	91°52.3'	92°31.9'	97°15.9'
20	236°18.5'	S 5°58.4'	10.0'	-13.8'	59.7'	117°14.7'	54°35.3'	43°47.1'		57°12.0'	92°26.6'	93°07.7'	97°37.6'
21	250°47.6'	S 6°12.2'	10.0'	-13.8'	59.7'	116°41.3'		43°11.7'		57°47.9'	93°00.9'	93°43.6'	97°59.3'
22	265°16.6'	S 6°26.0'	10.0'	-13.7'	59.6'	116°07.9'		42°36.3'		58°23.7'	93°35.2'	94°19.4'	98°20.9'
23	279°45.7'	S 6°39.7'	10.0'	-13.7'	59.6'	115°34.6'		42°01.0'		58°59.6'	94°09.4'	94°55.1'	98°42.4'
Mer. pass.		3 h 41 m SD 16.4'		phase 81%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.3'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°21.0'	Acrux	+0.8	173°03.8'	S 63°12.4'	Capella	+0.1	280°27.4'	N 46°01.1'
Altair	+0.8	62°04.1'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.2'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.7'	S 26°28.4'	Procyon	+0.4	244°54.6'	N 5°10.3'	Polaris	+2.0	315°50.2'	N 89°21.2'
Rigil Kent	-0.0	139°45.4'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.5'	S 57°08.5'
Arcturus	-0.1	145°51.4'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.9'				
Hadar	+0.6	148°41.2'	S 60°27.8'	Canopus	-0.6	263°53.7'	S 52°42.7'				

Friday 14 February 2020 UT1

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	143°29.2'		176°27.3'	S 13°16.4'	136°50.2'	N 2°46.9'	215°40.9'	S 22°24.4'	204°57.6'	S 20°51.1'	235°20.8'	S 23°35.5'
1	158°31.6'		191°27.3'	S 13°15.5'	151°50.1'	N 2°48.2'	230°42.8'	S 22°24.4'	219°59.7'	S 20°51.0'	250°21.4'	S 23°35.6'
2	173°34.1'		206°27.3'	S 13°14.7'	166°49.9'	N 2°49.5'	245°44.8'	S 22°24.3'	235°01.9'	S 20°51.0'	265°22.0'	S 23°35.6'
3	188°36.6'		221°27.3'	S 13°13.9'	181°49.8'	N 2°50.8'	260°46.7'	S 22°24.3'	250°04.1'	S 20°50.9'	280°22.6'	S 23°35.7'
4	203°39.0'		236°27.3'	S 13°13.0'	196°49.7'	N 2°52.1'	275°48.6'	S 22°24.2'	265°06.3'	S 20°50.9'	295°23.2'	S 23°35.8'
5	218°41.5'		251°27.4'	S 13°12.2'	211°49.5'	N 2°53.4'	290°50.5'	S 22°24.2'	280°08.5'	S 20°50.8'	310°23.8'	S 23°35.8'
6	233°44.0'		266°27.4'	S 13°11.3'	226°49.4'	N 2°54.7'	305°52.4'	S 22°24.1'	295°10.6'	S 20°50.8'	325°24.4'	S 23°35.9'
7	248°46.4'		281°27.4'	S 13°10.5'	241°49.3'	N 2°56.0'	320°54.3'	S 22°24.0'	310°12.8'	S 20°50.7'	340°25.0'	S 23°35.9'
8	263°48.9'		296°27.4'	S 13°09.6'	256°49.1'	N 2°57.3'	335°56.2'	S 22°24.0'	325°15.0'	S 20°50.7'	355°25.5'	S 23°36.0'
9	278°51.4'		311°27.4'	S 13°08.8'	271°49.0'	N 2°58.6'	350°58.2'	S 22°23.9'	340°17.2'	S 20°50.6'	10°26.1'	S 23°36.0'
10	293°53.8'		326°27.5'	S 13°07.9'	286°48.8'	N 2°59.9'	6°00.1'	S 22°23.9'	355°19.3'	S 20°50.6'	25°26.7'	S 23°36.1'
11	308°56.3'		341°27.5'	S 13°07.1'	301°48.7'	N 3°01.2'	21°02.0'	S 22°23.8'	10°21.5'	S 20°50.5'	40°27.3'	S 23°36.1'
12	323°58.7'		356°27.5'	S 13°06.2'	316°48.6'	N 3°02.5'	36°03.9'	S 22°23.7'	25°23.7'	S 20°50.5'	55°27.9'	S 23°36.2'
13	339°01.2'		11°27.5'	S 13°05.4'	331°48.4'	N 3°03.8'	51°05.8'	S 22°23.7'	40°25.9'	S 20°50.4'	70°28.5'	S 23°36.3'
14	354°03.7'		26°27.5'	S 13°04.5'	346°48.3'	N 3°05.1'	66°07.7'	S 22°23.6'	55°28.0'	S 20°50.4'	85°29.1'	S 23°36.3'
15	9°06.1'		41°27.6'	S 13°03.7'	1°48.2'	N 3°06.4'	81°09.6'	S 22°23.6'	70°30.2'	S 20°50.3'	100°29.7'	S 23°36.4'
16	24°08.6'		56°27.6'	S 13°02.8'	16°48.0'	N 3°07.7'	96°11.6'	S 22°23.5'	85°32.4'	S 20°50.3'	115°30.3'	S 23°36.4'
17	39°11.1'		71°27.6'	S 13°02.0'	31°47.9'	N 3°09.0'	111°13.5'	S 22°23.5'	100°34.6'	S 20°50.2'	130°30.9'	S 23°36.5'
18	54°13.5'		86°27.6'	S 13°01.1'	46°47.7'	N 3°10.3'	126°15.4'	S 22°23.4'	115°36.8'	S 20°50.2'	145°31.4'	S 23°36.5'
19	69°16.0'		101°27.6'	S 13°00.3'	61°47.6'	N 3°11.6'	141°17.3'	S 22°23.3'	130°38.9'	S 20°50.1'	160°32.0'	S 23°36.6'
20	84°18.5'		116°27.7'	S 12°59.4'	76°47.5'	N 3°12.9'	156°19.2'	S 22°23.3'	145°41.1'	S 20°50.1'	175°32.6'	S 23°36.6'
21	99°20.9'		131°27.7'	S 12°58.6'	91°47.3'	N 3°14.2'	171°21.1'	S 22°23.2'	160°43.3'	S 20°50.0'	190°33.2'	S 23°36.7'
22	114°23.4'		146°27.7'	S 12°57.7'	106°47.2'	N 3°15.5'	186°23.0'	S 22°23.2'	175°45.5'	S 20°50.0'	205°33.8'	S 23°36.7'
23	129°25.8'		161°27.7'	S 12°56.9'	121°47.1'	N 3°16.8'	201°25.0'	S 22°23.1'	190°47.6'	S 20°49.9'	220°34.4'	S 23°36.8'
			SD 16.2'	d 0.8'	v -0.1'	d 1.3'	v 1.9'	d 0.1'	v 2.2'	d 0.0'	v 0.6'	d -0.1'
Mer. pass.			12 h 14 m 10 s		14 h 53 m		9 h 36 m		10 h 19 m		8 h 18 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Mars	-Rigil Kent	-Antares	+Spica	+Arcturus	+Regulus	+Procyon
0	294°14.7'	S 6°53.3'	10.0'	-13.6'	59.6'	115°01.4'	58°48.2'	54°38.9'	41°25.7'			59°35.3'	94°43.6'
1	308°43.8'	S 7°06.9'	10.0'	-13.6'	59.6'	114°28.1'	58°14.1'	54°21.7'	40°50.4'			60°11.1'	95°17.7'
2	323°12.8'	S 7°20.5'	10.0'	-13.5'	59.5'	113°54.9'	57°40.0'	54°04.8'	40°15.2'			60°46.8'	95°51.8'
3	337°41.8'	S 7°34.0'	10.0'	-13.4'	59.5'	113°21.7'	57°05.9'	53°48.0'	39°40.1'			61°22.5'	96°25.9'
4	352°10.9'	S 7°47.4'	10.0'	-13.4'	59.5'	112°48.6'	56°31.9'	53°31.5'	39°05.0'			61°58.2'	96°60.0'
5	6°39.9'	S 8°00.8'	10.0'	-13.3'	59.5'	112°15.5'	55°57.9'	53°15.2'	38°29.9'	10°48.9'		62°33.8'	97°34.0'
6	21°09.0'	S 8°14.1'	10.0'	-13.3'	59.4'	111°42.4'	55°24.0'	52°59.1'	37°54.9'	11°16.5'		63°09.4'	98°08.0'
7	35°38.0'	S 8°27.4'	10.0'	-13.2'	59.4'	111°09.4'	54°50.0'	52°43.3'	37°20.0'	11°44.8'		63°44.9'	98°41.9'
8	50°07.0'	S 8°40.6'	10.0'	-13.1'	59.4'	110°36.4'	54°16.2'	52°27.7'	36°45.1'	12°13.6'		64°20.4'	99°15.8'
9	64°36.0'	S 8°53.7'	10.0'	-13.1'	59.3'	110°03.4'	53°42.3'	52°12.4'	36°10.3'	12°43.1'		64°55.9'	99°49.6'
10	79°05.0'	S 9°06.8'	10.0'	-13.0'	59.3'	109°30.5'	53°08.5'		35°35.5'	13°12.9'		65°31.4'	100°23.4'
11	93°34.1'	S 9°19.8'	10.0'	-13.0'	59.3'	108°57.6'	52°34.7'		35°00.8'	13°43.2'		66°06.8'	100°57.2'
12	108°03.1'	S 9°32.8'	10.0'	-12.9'	59.3'	108°24.8'	52°01.0'		34°26.1'	14°13.9'	28°40.6'	66°42.2'	101°31.0'
13	122°32.0'	S 9°45.7'	10.0'	-12.8'	59.2'	107°51.9'	51°27.3'		33°51.5'	14°44.9'	28°55.8'	67°17.5'	102°04.6'
14	137°01.0'	S 9°58.5'	10.0'	-12.8'	59.2'	107°19.2'	50°53.6'		33°17.0'	15°16.1'	29°11.5'	67°52.8'	102°38.3'
15	151°30.0'	S 10°11.2'	10.0'	-12.7'	59.2'	106°46.4'	50°20.0'		32°42.5'	15°47.7'	29°27.7'	68°28.1'	103°11.9'
16	165°59.0'	S 10°23.9'	10.0'	-12.6'	59.1'	106°13.7'	49°46.4'		32°08.1'	16°19.4'	29°44.4'	69°03.3'	103°45.5'
17	180°27.9'	S 10°36.5'	9.9'	-12.5'	59.1'	105°41.0'	49°12.8'		31°33.7'	16°51.3'	30°01.6'	69°38.5'	104°19.0'
18	194°56.8'	S 10°49.1'	9.9'	-12.5'	59.1'	105°08.4'	48°39.3'		30°59.4'	17°23.4'	30°19.2'	70°13.7'	104°52.5'
19	209°25.8'	S 11°01.5'	9.9'	-12.4'	59.1'	104°35.8'	48°05.8'		30°25.2'	17°55.7'	30°37.3'	70°48.8'	105°25.9'
20	223°54.7'	S 11°13.9'	9.9'	-12.3'	59.0'	104°03.2'	47°32.3'		29°51.1'	18°28.1'	30°55.7'	71°23.9'	105°59.3'
21	238°23.6'	S 11°26.2'	9.9'	-12.2'	59.0'	103°30.7'	46°58.9'		29°17.0'	19°00.6'	31°14.6'	71°59.0'	106°32.6'
22	252°52.5'	S 11°38.5'	9.9'	-12.2'	59.0'	102°58.2'	46°25.5'		28°43.0'	19°33.3'	31°33.9'	72°34.0'	107°05.9'
23	267°21.4'	S 11°50.6'	9.9'	-12.1'	58.9'	102°25.7'	45°52.2'		28°09.0'	20°06.0'	31°53.6'	73°09.0'	107°39.2'
Mer. pass.			4 h 32 m SD 16.3'	phase 71%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.2'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°21.0'	Acrux	+0.8	173°03.8'	S 63°12.4'	Capella	+0.1	280°27.4'	N 46°01.1'
Altair	+0.8	62°04.1'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.2'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.7'	S 26°28.4'	Procyon	+0.4	244°54.7'	N 5°10.3'	Polaris	+2.0	315°50.7'	N 89°21.2'
Rigil Kent	-0.0	139°45.4'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.5'
Arcturus	-0.1	145°51.4'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.9'				
Hadar	+0.6	148°41.2'	S 60°27.8'	Canopus	-0.6	263°53.7'	S 52°42.7'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	144°28.3'	176°27.8'	S 12°56.0'	136°46.9'	N 3°18.1'		216°26.9'	S 22°23.0'		205°49.8'	S 20°49.9'		235°35.0'	S 23°36.8'				
1	159°30.8'	191°27.8'	S 12°55.2'	151°46.8'	N 3°19.4'		231°28.8'	S 22°23.0'		220°52.0'	S 20°49.8'		250°35.6'	S 23°36.9'				
2	174°33.2'	206°27.8'	S 12°54.3'	166°46.7'	N 3°20.7'		246°30.7'	S 22°22.9'		235°54.2'	S 20°49.8'		265°36.2'	S 23°36.9'				
3	189°35.7'	221°27.8'	S 12°53.5'	181°46.5'	N 3°22.0'		261°32.6'	S 22°22.9'		250°56.4'	S 20°49.7'		280°36.8'	S 23°37.0'				
4	204°38.2'	236°27.9'	S 12°52.6'	196°46.4'	N 3°23.3'		276°34.5'	S 22°22.8'		265°58.5'	S 20°49.7'		295°37.3'	S 23°37.0'				
5	219°40.6'	251°27.9'	S 12°51.8'	211°46.3'	N 3°24.6'		291°36.5'	S 22°22.7'		281°00.7'	S 20°49.6'		310°37.9'	S 23°37.1'				
6	234°43.1'	266°27.9'	S 12°50.9'	226°46.1'	N 3°25.9'		306°38.4'	S 22°22.7'		296°02.9'	S 20°49.6'		325°38.5'	S 23°37.1'				
7	249°45.6'	281°27.9'	S 12°50.1'	241°46.0'	N 3°27.2'		321°40.3'	S 22°22.6'		311°05.1'	S 20°49.6'		340°39.1'	S 23°37.2'				
8	264°48.0'	296°28.0'	S 12°49.2'	256°45.9'	N 3°28.5'		336°42.2'	S 22°22.6'		326°07.3'	S 20°49.5'		355°39.7'	S 23°37.2'				
9	279°50.5'	311°28.0'	S 12°48.4'	271°45.7'	N 3°29.8'		351°44.1'	S 22°22.5'		341°09.4'	S 20°49.5'		10°40.3'	S 23°37.2'				
10	294°53.0'	326°28.0'	S 12°47.5'	286°45.6'	N 3°31.1'		6°46.0'	S 22°22.5'		356°11.6'	S 20°49.4'		25°40.9'	S 23°37.3'				
11	309°55.4'	341°28.0'	S 12°46.6'	301°45.5'	N 3°32.4'		21°48.0'	S 22°22.4'		11°13.8'	S 20°49.4'		40°41.5'	S 23°37.3'				
12	324°57.9'	356°28.1'	S 12°45.8'	316°45.3'	N 3°33.7'		36°49.9'	S 22°22.3'		26°16.0'	S 20°49.3'		55°42.1'	S 23°37.4'				
13	340°00.3'	11°28.1'	S 12°44.9'	331°45.2'	N 3°35.0'		51°51.8'	S 22°22.3'		41°18.2'	S 20°49.3'		70°42.6'	S 23°37.4'				
14	355°02.8'	26°28.1'	S 12°44.1'	346°45.1'	N 3°36.3'		66°53.7'	S 22°22.2'		56°20.3'	S 20°49.2'		85°43.2'	S 23°37.5'				
15	10°05.3'	41°28.2'	S 12°43.2'	1°44.9'	N 3°37.6'		81°55.6'	S 22°22.2'		71°22.5'	S 20°49.2'		100°43.8'	S 23°37.5'				
16	25°07.7'	56°28.2'	S 12°42.4'	16°44.8'	N 3°38.9'		96°57.6'	S 22°22.1'		86°24.7'	S 20°49.1'		115°44.4'	S 23°37.6'				
17	40°10.2'	71°28.2'	S 12°41.5'	31°44.7'	N 3°40.2'		111°59.5'	S 22°22.0'		101°26.9'	S 20°49.1'		130°45.0'	S 23°37.6'				
18	55°12.7'	86°28.2'	S 12°40.6'	46°44.5'	N 3°41.5'		127°01.4'	S 22°22.0'		116°29.0'	S 20°49.0'		145°45.6'	S 23°37.6'				
19	70°15.1'	101°28.3'	S 12°39.8'	61°44.4'	N 3°42.8'		142°03.3'	S 22°21.9'		131°31.2'	S 20°49.0'		160°46.2'	S 23°37.7'				
20	85°17.6'	116°28.3'	S 12°38.9'	76°44.3'	N 3°44.1'		157°05.2'	S 22°21.9'		146°33.4'	S 20°48.9'		175°46.8'	S 23°37.7'				
21	100°20.1'	131°28.3'	S 12°38.1'	91°44.1'	N 3°45.4'		172°07.1'	S 22°21.8'		161°35.6'	S 20°48.9'		190°47.4'	S 23°37.8'				
22	115°22.5'	146°28.4'	S 12°37.2'	106°44.0'	N 3°46.7'		187°09.1'	S 22°21.7'		176°37.8'	S 20°48.8'		205°47.9'	S 23°37.8'				
23	130°25.0'	161°28.4'	S 12°36.3'	121°43.9'	N 3°48.0'		202°11.0'	S 22°21.7'		191°39.9'	S 20°48.8'		220°48.5'	S 23°37.9'				
		SD 16.2'	d 0.9'		v -0.1'	d 1.3'		v 1.9'	d 0.1'		v 2.2'	d 0.0'		v 0.6'	d -0.0'			
Mer. pass.		12 h 14 m 8 s		14 h 53 m			9 h 33 m			10 h 15 m			8 h 17 m					

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Jupiter	-Mars	-Antares	+Spica	+Arcturus	+Regulus	+Adhara
0	281°50.2'	S 12°02.7'	9.8'	-12.0'	58.9'	101°53.3'	62°52.0'	45°18.9'	27°35.2'	20°38.9'	32°13.7'	73°43.9'	107°18.3'
1	296°19.1'	S 12°14.7'	9.8'	-11.9'	58.9'	101°20.9'	62°17.5'	44°45.6'	27°01.4'	21°11.8'	32°34.1'	74°18.8'	107°37.8'
2	310°47.9'	S 12°26.7'	9.8'	-11.8'	58.8'	100°48.5'	61°43.1'	44°12.4'	26°27.7'	21°44.7'	32°54.8'	74°53.7'	107°57.3'
3	325°16.7'	S 12°38.5'	9.8'	-11.8'	58.8'	100°16.2'	61°08.6'	43°39.2'	25°54.1'	22°17.8'	33°15.9'	75°28.6'	108°16.6'
4	339°45.5'	S 12°50.3'	9.8'	-11.7'	58.8'	99°43.9'	60°34.3'	43°06.0'	25°20.6'	22°50.9'	33°37.3'	76°03.4'	108°35.8'
5	354°14.3'	S 13°01.9'	9.8'	-11.6'	58.8'	99°11.7'	59°59.9'	42°32.9'	24°47.2'	23°24.0'	33°59.0'	76°38.1'	108°55.0'
6	8°43.0'	S 13°13.5'	9.7'	-11.5'	58.7'	98°39.5'	59°25.7'	41°59.8'	24°13.9'	23°57.2'	34°21.0'	77°12.9'	109°14.0'
7	23°11.8'	S 13°25.0'	9.7'	-11.4'	58.7'	98°07.3'	58°51.4'	41°26.8'	23°40.7'	24°30.4'	34°43.2'	77°47.6'	109°32.9'
8	37°40.5'	S 13°36.4'	9.7'	-11.3'	58.7'	97°35.2'	58°17.2'	40°53.8'	23°07.6'	25°03.7'	35°05.8'	78°22.2'	109°51.8'
9	52°09.2'	S 13°47.8'	9.7'	-11.2'	58.6'	97°03.1'	57°43.0'	40°20.8'	22°34.6'	25°36.9'	35°28.6'	78°56.9'	110°10.5'
10	66°37.9'	S 13°59.0'	9.7'	-11.2'	58.6'	96°31.0'	57°08.8'	39°47.8'	22°01.7'	26°10.2'	35°51.7'	79°31.5'	110°29.1'
11	81°06.6'	S 14°10.2'	9.6'	-11.1'	58.6'	95°59.0'	56°34.7'	39°14.9'	21°29.0'	26°43.5'	36°15.0'	80°06.0'	110°47.5'
12	95°35.2'	S 14°21.2'	9.6'	-11.0'	58.5'	95°27.0'	56°00.6'	38°42.1'	20°56.3'	27°16.9'	36°38.5'	80°40.5'	111°05.9'
13	110°03.8'	S 14°32.2'	9.6'	-10.9'	58.5'	94°55.0'	55°26.6'	38°09.2'	20°23.8'	27°50.2'	37°02.3'	81°15.0'	111°24.2'
14	124°32.4'	S 14°43.1'	9.6'	-10.8'	58.5'	94°23.1'	54°52.6'	37°36.4'	19°51.5'	28°23.6'	37°26.3'	81°49.5'	111°42.3'
15	139°01.0'	S 14°53.9'	9.6'	-10.7'	58.5'	93°51.2'	54°18.6'	37°03.7'	19°19.3'	28°56.9'	37°50.4'	82°23.9'	112°00.3'
16	153°29.6'	S 15°04.6'	9.5'	-10.6'	58.4'	93°19.4'	53°44.7'	36°30.9'	18°47.3'	29°30.3'	38°14.8'	82°58.3'	112°18.2'
17	167°58.1'	S 15°15.1'	9.5'	-10.5'	58.4'	92°47.6'	53°10.8'	35°58.3'	18°15.4'	30°03.7'	38°39.4'	83°32.6'	112°36.0'
18	182°26.7'	S 15°25.6'	9.5'	-10.4'	58.4'	92°15.8'	52°36.9'	35°25.6'	17°43.8'	30°37.0'	39°04.2'	84°06.9'	112°53.7'
19	196°55.2'	S 15°36.0'	9.5'	-10.3'	58.3'	91°44.1'	52°03.1'	34°53.0'	17°12.3'	31°10.4'	39°29.1'	84°41.2'	113°11.2'
20	211°23.6'	S 15°46.4'	9.5'	-10.2'	58.3'	91°12.4'	51°29.3'	34°20.4'	16°41.0'	31°43.8'	39°54.2'	85°15.4'	113°28.6'
21	225°52.1'	S 15°56.6'	9.4'	-10.1'	58.3'	90°40.7'	50°55.6'	33°47.9'	16°10.0'	32°17.1'	40°19.5'	85°49.6'	113°45.9'
22	240°20.5'	S 16°06.7'	9.4'	-10.0'	58.2'	90°09.1'	50°21.8'	33°15.4'	15°39.3'	32°50.5'	40°44.9'	86°23.8'	114°03.0'
23	254°48.9'	S 16°16.7'	9.4'	-9.9'	58.2'	89°37.5'	49°48.2'	32°42.9'	15°08.8'	33°23.8'	41°10.5'	86°57.9'	114°20.0'
Mer. pass.		5 h 24 m SD 16.1'	phase 60%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.2'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°21.0'	Acrux	+0.8	173°03.7'	S 63°12.4'	Capella	+0.1	280°27.5'	N 46°01.1'
Altair	+0.8	62°04.1'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.2'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.7'	S 26°28.4'	Procyon	+0.4	244°54.7'	N 5°10.3'	Polaris	+2.0	315°51.1'	N 89°21.1'
Rigil Kent	-0.0	139°45.4'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.5'
Arcturus	-0.1	145°51.4'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.9'				
Hadar	+0.6	148°41.2'	S 60°27.8'	Canopus	-0.6	263°53.8'	S 52°42.7'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars					
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec				
0	145°27.5'	176°28.4'	S	12°35.5'	136°43.7'	N	3°49.3'	217°12.9'	S	22°21.6'	206°42.1'	S	20°48.7'	235°49.1'	S	23°37.9'
1	160°29.5'	191°28.5'	S	12°34.6'	151°43.6'	N	3°50.6'	232°14.8'	S	22°21.6'	221°44.3'	S	20°48.7'	250°49.7'	S	23°37.9'
2	175°32.4'	206°28.5'	S	12°33.8'	166°43.5'	N	3°51.9'	247°16.7'	S	22°21.5'	236°46.5'	S	20°48.6'	265°50.3'	S	23°38.0'
3	190°34.8'	221°28.5'	S	12°32.9'	181°43.3'	N	3°53.2'	262°18.7'	S	22°21.4'	251°48.7'	S	20°48.6'	280°50.9'	S	23°38.0'
4	205°37.3'	236°28.6'	S	12°32.0'	196°43.2'	N	3°54.5'	277°20.6'	S	22°21.4'	266°50.8'	S	20°48.5'	295°51.5'	S	23°38.1'
5	220°39.8'	251°28.6'	S	12°31.2'	211°43.1'	N	3°55.8'	292°22.5'	S	22°21.3'	281°53.0'	S	20°48.5'	310°52.1'	S	23°38.1'
6	235°42.2'	266°28.6'	S	12°30.3'	226°43.0'	N	3°57.1'	307°24.4'	S	22°21.3'	296°55.2'	S	20°48.4'	325°52.6'	S	23°38.1'
7	250°44.7'	281°28.7'	S	12°29.4'	241°42.8'	N	3°58.4'	322°26.3'	S	22°21.2'	311°57.4'	S	20°48.4'	340°53.2'	S	23°38.2'
8	265°47.2'	296°28.7'	S	12°28.6'	256°42.7'	N	3°59.7'	337°28.3'	S	22°21.2'	326°59.6'	S	20°48.3'	355°53.8'	S	23°38.2'
9	280°49.6'	311°28.7'	S	12°27.7'	271°42.6'	N	4°01.0'	352°30.2'	S	22°21.1'	342°01.8'	S	20°48.3'	10°54.4'	S	23°38.2'
10	295°52.1'	326°28.8'	S	12°26.9'	286°42.4'	N	4°02.3'	7°32.1'	S	22°21.0'	357°03.9'	S	20°48.2'	25°55.0'	S	23°38.3'
11	310°54.6'	341°28.8'	S	12°26.0'	301°42.3'	N	4°03.6'	22°34.0'	S	22°21.0'	12°06.1'	S	20°48.2'	40°55.6'	S	23°38.3'
12	325°57.0'	356°28.8'	S	12°25.1'	316°42.2'	N	4°04.9'	37°35.9'	S	22°20.9'	27°08.3'	S	20°48.1'	55°56.2'	S	23°38.4'
13	340°59.5'	11°28.9'	S	12°24.3'	331°42.0'	N	4°06.2'	52°37.9'	S	22°20.9'	42°10.5'	S	20°48.1'	70°56.8'	S	23°38.4'
14	356°01.9'	26°28.9'	S	12°23.4'	346°41.9'	N	4°07.5'	67°39.8'	S	22°20.8'	57°12.7'	S	20°48.0'	85°57.4'	S	23°38.4'
15	11°04.4'	41°28.9'	S	12°22.5'	1°41.8'	N	4°08.8'	82°41.7'	S	22°20.7'	72°14.8'	S	20°48.0'	100°57.9'	S	23°38.5'
16	26°06.9'	56°29.0'	S	12°21.7'	16°41.7'	N	4°10.1'	97°43.6'	S	22°20.7'	87°17.0'	S	20°47.9'	115°58.5'	S	23°38.5'
17	41°09.3'	71°29.0'	S	12°20.8'	31°41.5'	N	4°11.3'	112°45.5'	S	22°20.6'	102°19.2'	S	20°47.9'	130°59.1'	S	23°38.5'
18	56°11.8'	86°29.0'	S	12°19.9'	46°41.4'	N	4°12.6'	127°47.5'	S	22°20.6'	117°21.4'	S	20°47.8'	145°59.7'	S	23°38.6'
19	71°14.3'	101°29.1'	S	12°19.1'	61°41.3'	N	4°13.9'	142°49.4'	S	22°20.5'	132°23.6'	S	20°47.8'	161°00.3'	S	23°38.6'
20	86°16.7'	116°29.1'	S	12°18.2'	76°41.1'	N	4°15.2'	157°51.3'	S	22°20.4'	147°25.7'	S	20°47.8'	176°00.9'	S	23°38.6'
21	101°19.2'	131°29.2'	S	12°17.3'	91°41.0'	N	4°16.5'	172°53.2'	S	22°20.4'	162°27.9'	S	20°47.7'	191°01.5'	S	23°38.7'
22	116°21.7'	146°29.2'	S	12°16.5'	106°40.9'	N	4°17.8'	187°55.2'	S	22°20.3'	177°30.1'	S	20°47.7'	206°02.1'	S	23°38.7'
23	131°24.1'	161°29.2'	S	12°15.6'	121°40.8'	N	4°19.1'	202°57.1'	S	22°20.3'	192°32.3'	S	20°47.6'	221°02.6'	S	23°38.7'
		SD 16.2'	d 0.9'		v -0.1'	d 1.3'		v 1.9'	d 0.1'		v 2.2'	d 0.0'		v 0.6'	d -0.0'	
Mer. pass.		12 h 14 m 5 s			14 h 53 m			9 h 30 m			10 h 12 m			8 h 16 m		

h	Moon					Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Jupiter	-Mars	-Antares	+Spica	+Arcturus	+Regulus	+Adhara	
0	269°17.3'	S	16°26.6'	9.4'	-9.8'	58.2'	89°05.9'	49°14.5'	32°10.5'	14°38.6'	33°57.1'	41°36.2'	87°32.0'	114°36.9'
1	283°45.7'	S	16°36.4'	9.3'	-9.7'	58.2'	88°34.4'	48°40.9'	31°38.1'	14°08.7'	34°30.5'	42°02.0'	88°06.0'	114°53.6'
2	298°14.0'	S	16°46.1'	9.3'	-9.6'	58.1'	88°02.9'	48°07.3'	31°05.7'	13°39.2'	35°03.8'	42°28.0'	88°40.1'	115°10.2'
3	312°42.4'	S	16°55.7'	9.3'	-9.5'	58.1'	87°31.4'	47°33.8'	30°33.4'	13°10.0'	35°37.1'	42°54.1'	89°14.1'	115°26.7'
4	327°10.7'	S	17°05.2'	9.3'	-9.4'	58.1'	87°00.0'	47°00.3'	30°01.1'	12°41.4'	36°10.4'	43°20.4'	89°48.0'	115°43.0'
5	341°38.9'	S	17°14.6'	9.3'	-9.3'	58.0'	86°28.6'	46°26.8'	29°28.8'	12°13.1'	36°43.6'	43°46.7'	90°21.9'	115°59.2'
6	356°07.2'	S	17°23.8'	9.2'	-9.2'	58.0'	85°57.3'	45°53.4'	28°56.6'	11°45.4'	37°16.9'	44°13.2'	90°55.8'	116°15.3'
7	10°35.4'	S	17°33.0'	9.2'	-9.1'	58.0'	85°26.0'	45°19.9'	28°24.4'	11°18.3'	37°50.1'	44°39.7'	91°29.7'	116°31.2'
8	25°03.6'	S	17°42.1'	9.2'	-9.0'	57.9'	84°54.7'	44°46.6'	27°52.2'	10°51.9'	38°23.3'	45°06.4'	92°03.5'	116°46.9'
9	39°31.8'	S	17°51.0'	9.2'	-8.9'	57.9'	84°23.4'	44°13.2'	27°20.1'		38°56.5'	45°33.2'	92°37.3'	117°02.5'
10	53°60.0'	S	17°59.9'	9.1'	-8.7'	57.9'	83°52.2'	43°39.9'	26°48.0'		39°29.7'	46°00.0'	93°11.0'	117°18.0'
11	68°28.1'	S	18°08.6'	9.1'	-8.6'	57.9'	83°21.0'	43°06.7'	26°16.0'		40°02.9'	46°27.0'	93°44.7'	117°33.3'
12	82°56.2'	S	18°17.3'	9.1'	-8.5'	57.8'	82°49.9'	42°33.4'	25°44.0'		40°36.0'	46°54.0'	94°18.4'	
13	97°24.3'	S	18°25.8'	9.1'	-8.4'	57.8'	82°18.8'	42°00.2'	25°12.0'		41°09.2'	47°21.1'	94°52.0'	
14	111°52.4'	S	18°34.2'	9.1'	-8.3'	57.8'	81°47.7'	41°27.1'	24°40.0'		41°42.3'	47°48.3'	95°25.6'	
15	126°20.5'	S	18°42.5'	9.0'	-8.2'	57.7'	81°16.7'	40°54.0'	24°08.1'		42°15.4'	48°15.6'	95°59.2'	
16	140°48.5'	S	18°50.7'	9.0'	-8.1'	57.7'	80°45.7'	40°20.9'	23°36.2'		42°48.4'	48°43.0'	96°32.8'	
17	155°16.5'	S	18°58.8'	9.0'	-8.0'	57.7'	80°14.7'	39°47.8'	23°04.4'		43°21.5'	49°10.4'	97°06.3'	
18	169°44.5'	S	19°06.7'	9.0'	-7.8'	57.6'	79°43.7'	39°14.8'	22°32.6'		43°54.5'	49°37.9'	97°39.8'	
19	184°12.5'	S	19°14.5'	8.9'	-7.7'	57.6'	79°12.8'	38°41.8'	22°00.8'		44°27.5'	50°05.4'	98°13.2'	
20	198°40.4'	S	19°22.3'	8.9'	-7.6'	57.6'	78°42.0'	38°08.8'	21°29.1'		45°00.5'	50°33.0'	98°46.6'	
21	213°08.3'	S	19°29.9'	8.9'	-7.5'	57.6'	78°11.1'	37°35.9'	20°57.4'		45°33.4'	51°00.7'	99°20.0'	
22	227°36.3'	S	19°37.4'	8.9'	-7.4'	57.5'	77°40.3'	37°03.0'	20°25.7'		46°06.4'	51°28.4'	99°53.3'	
23	242°04.1'	S	19°44.7'	8.9'	-7.3'	57.5'	77°09.5'	36°30.1'	19°54.0'		46°39.3'	51°56.2'	100°26.6'	
Mer. pass.		6 h 16 m SD 15.9'	phase 49%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.2'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°21.0'	Acrux	+0.8	173°03.7'	S 63°12.4'	Capella	+0.1	280°27.5'	N 46°01.1'
Altair	+0.8	62°04.1'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.1'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.7'	S 26°28.4'	Procyon	+0.4	244°54.7'	N 5°10.3'	Polaris	+2.0	315°51.5'	N 89°21.1'
Rigil Kent	-0.0	139°45.3'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.5'
Arcturus	-0.1	145°51.4'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.9'				
Hadar	+0.6	148°41.2'	S 60°27.8'	Canopus	-0.6	263°53.8'	S 52°42.7'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	146°26.6'		176°29.3'	S 12°14.7'	136°40.6'	N 4°20.4'	217°59.0'	S 22°20.2'	207°34.5'	S 20°47.6'	236°03.2'	S 23°38.8'
1	161°29.1'		191°29.3'	S 12°13.9'	151°40.5'	N 4°21.7'	233°00.9'	S 22°20.1'	222°36.7'	S 20°47.5'	251°03.8'	S 23°38.8'
2	176°31.5'		206°29.3'	S 12°13.0'	166°40.4'	N 4°23.0'	248°02.8'	S 22°20.1'	237°38.8'	S 20°47.5'	266°04.4'	S 23°38.8'
3	191°34.0'		221°29.4'	S 12°12.1'	181°40.2'	N 4°24.3'	263°04.8'	S 22°20.0'	252°41.0'	S 20°47.4'	281°05.0'	S 23°38.9'
4	206°36.4'		236°29.4'	S 12°11.2'	196°40.1'	N 4°25.6'	278°06.7'	S 22°20.0'	267°43.2'	S 20°47.4'	296°05.6'	S 23°38.9'
5	221°38.9'		251°29.5'	S 12°10.4'	211°40.0'	N 4°26.9'	293°08.6'	S 22°19.9'	282°45.4'	S 20°47.3'	311°06.2'	S 23°38.9'
6	236°41.4'		266°29.5'	S 12°09.5'	226°39.9'	N 4°28.2'	308°10.5'	S 22°19.8'	297°47.6'	S 20°47.3'	326°06.7'	S 23°39.0'
7	251°43.8'		281°29.5'	S 12°08.6'	241°39.7'	N 4°29.5'	323°12.5'	S 22°19.8'	312°49.7'	S 20°47.2'	341°07.3'	S 23°39.0'
8	266°46.3'		296°29.6'	S 12°07.8'	256°39.6'	N 4°30.8'	338°14.4'	S 22°19.7'	327°51.9'	S 20°47.2'	356°07.9'	S 23°39.0'
9	281°48.8'		311°29.6'	S 12°06.9'	271°39.5'	N 4°32.0'	353°16.3'	S 22°19.7'	342°54.1'	S 20°47.1'	11°08.5'	S 23°39.0'
10	296°51.2'		326°29.7'	S 12°06.0'	286°39.4'	N 4°33.3'	8°18.2'	S 22°19.6'	357°56.3'	S 20°47.1'	26°09.1'	S 23°39.1'
11	311°53.7'		341°29.7'	S 12°05.1'	301°39.2'	N 4°34.6'	23°20.2'	S 22°19.5'	12°58.5'	S 20°47.0'	41°09.7'	S 23°39.1'
12	326°56.2'		356°29.8'	S 12°04.3'	316°39.1'	N 4°35.9'	38°22.1'	S 22°19.5'	28°00.7'	S 20°47.0'	56°10.3'	S 23°39.1'
13	341°58.6'		11°29.8'	S 12°03.4'	331°39.0'	N 4°37.2'	53°24.0'	S 22°19.4'	43°02.8'	S 20°46.9'	71°10.9'	S 23°39.2'
14	357°01.1'		26°29.8'	S 12°02.5'	346°38.9'	N 4°38.5'	68°25.9'	S 22°19.4'	58°05.0'	S 20°46.9'	86°11.4'	S 23°39.2'
15	12°03.6'		41°29.9'	S 12°01.6'	1°38.7'	N 4°39.8'	83°27.9'	S 22°19.3'	73°07.2'	S 20°46.8'	101°12.0'	S 23°39.2'
16	27°06.0'		56°29.9'	S 12°00.8'	16°38.6'	N 4°41.1'	98°29.8'	S 22°19.2'	88°09.4'	S 20°46.8'	116°12.6'	S 23°39.2'
17	42°08.5'		71°30.0'	S 11°59.9'	31°38.5'	N 4°42.4'	113°31.7'	S 22°19.2'	103°11.6'	S 20°46.7'	131°13.2'	S 23°39.3'
18	57°10.9'		86°30.0'	S 11°59.0'	46°38.4'	N 4°43.7'	128°33.6'	S 22°19.1'	118°13.8'	S 20°46.7'	146°13.8'	S 23°39.3'
19	72°13.4'		101°30.1'	S 11°58.1'	61°38.2'	N 4°45.0'	143°35.6'	S 22°19.1'	133°15.9'	S 20°46.6'	161°14.4'	S 23°39.3'
20	87°15.9'		116°30.1'	S 11°57.3'	76°38.1'	N 4°46.3'	158°37.5'	S 22°19.0'	148°18.1'	S 20°46.6'	176°15.0'	S 23°39.3'
21	102°18.3'		131°30.1'	S 11°56.4'	91°38.0'	N 4°47.5'	173°39.4'	S 22°18.9'	163°20.3'	S 20°46.5'	191°15.5'	S 23°39.4'
22	117°20.8'		146°30.2'	S 11°55.5'	106°37.9'	N 4°48.8'	188°41.3'	S 22°18.9'	178°22.5'	S 20°46.5'	206°16.1'	S 23°39.4'
23	132°23.3'		161°30.2'	S 11°54.6'	121°37.7'	N 4°50.1'	203°43.3'	S 22°18.8'	193°24.7'	S 20°46.4'	221°16.7'	S 23°39.4'
			SD 16.2'	d 0.9'	v -0.1'	d 1.3'	v 1.9'	d 0.1'	v 2.2'	d 0.0'	v 0.6'	d -0.0'
Mer. pass.			12 h 14 m 1 s		14 h 53 m		9 h 27 m		10 h 8 m		8 h 15 m	

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Saturn	-Jupiter	-Mars	+Antares	+Spica	+Arcturus	+Regulus
0	256°32.0'	S 19°52.0'	8.8'	-7.1'	57.5'	76°38.8'	45°44.3'	35°57.3'	19°22.4'		47°12.2'	52°24.0'	100°59.9'
1	270°59.9'	S 19°59.1'	8.8'	-7.0'	57.4'	76°08.1'	45°11.3'	35°24.5'	18°50.9'		47°45.0'	52°51.9'	101°33.2'
2	285°27.7'	S 20°06.2'	8.8'	-6.9'	57.4'	75°37.4'	44°38.3'	34°51.7'	18°19.3'		48°17.9'	53°19.8'	102°06.4'
3	299°55.5'	S 20°13.1'	8.8'	-6.8'	57.4'	75°06.8'	44°05.3'	34°19.0'	17°47.8'		48°50.7'	53°47.8'	102°39.6'
4	314°23.3'	S 20°19.8'	8.8'	-6.7'	57.4'	74°36.2'	43°32.4'	33°46.3'	17°16.3'		49°23.5'	54°15.8'	103°12.7'
5	328°51.1'	S 20°26.5'	8.8'	-6.5'	57.3'	74°05.6'	42°59.5'	33°13.6'	16°44.9'		49°56.2'	54°43.8'	103°45.8'
6	343°18.8'	S 20°33.0'	8.7'	-6.4'	57.3'	73°35.0'	42°26.7'	32°40.9'	16°13.5'		50°29.0'	55°11.9'	104°18.9'
7	357°46.6'	S 20°39.5'	8.7'	-6.3'	57.3'	73°04.5'	41°53.8'	32°08.3'	15°42.1'		51°01.7'	55°40.0'	104°52.0'
8	12°14.3'	S 20°45.8'	8.7'	-6.2'	57.2'	72°34.0'	41°21.0'	31°35.8'	15°10.8'		51°34.4'	56°08.2'	105°25.0'
9	26°42.0'	S 20°51.9'	8.7'	-6.1'	57.2'	72°03.6'	40°48.3'	31°03.2'	14°39.5'		52°07.0'	56°36.4'	105°58.0'
10	41°09.7'	S 20°58.0'	8.7'	-5.9'	57.2'	71°33.1'	40°15.5'	30°30.7'	14°08.2'		52°39.7'	57°04.6'	106°31.0'
11	55°37.4'	S 21°03.9'	8.7'	-5.8'	57.2'	71°02.8'	39°42.8'	29°58.2'	13°36.9'		53°12.3'	57°32.8'	107°03.9'
12	70°05.1'	S 21°09.7'	8.7'	-5.7'	57.1'	70°32.4'	39°10.2'	29°25.7'	13°05.7'		53°44.9'	58°01.1'	107°36.8'
13	84°32.7'	S 21°15.4'	8.6'	-5.6'	57.1'	70°02.1'	38°37.5'	28°53.3'	12°34.6'	10°20.7'	54°17.5'	58°29.4'	108°09.7'
14	99°00.4'	S 21°21.0'	8.6'	-5.4'	57.1'	69°31.8'	38°04.9'	28°20.9'	12°03.4'	10°45.6'	54°50.0'	58°57.7'	108°42.5'
15	113°28.0'	S 21°26.4'	8.6'	-5.3'	57.1'	69°01.5'	37°32.3'	27°48.6'	11°32.3'	11°11.1'	55°22.5'	59°26.1'	109°15.3'
16	127°55.6'	S 21°31.7'	8.6'	-5.2'	57.0'	68°31.3'	36°59.8'	27°16.2'	11°01.3'	11°37.1'	55°55.0'	59°54.5'	109°48.1'
17	142°23.2'	S 21°36.9'	8.6'	-5.1'	57.0'	68°01.0'	36°27.3'	26°43.9'	10°30.2'	12°03.7'	56°27.5'	60°22.8'	110°20.8'
18	156°50.8'	S 21°41.9'	8.6'	-4.9'	57.0'	67°30.9'	35°54.8'	26°11.7'	9°59.2'	12°30.8'	56°60.0'	60°51.3'	110°53.6'
19	171°18.4'	S 21°46.9'	8.6'	-4.8'	56.9'	67°00.7'	35°22.3'	25°39.4'	9°28.3'	12°58.3'	57°32.4'	61°19.7'	111°26.2'
20	185°46.0'	S 21°51.7'	8.6'	-4.7'	56.9'	66°30.6'	34°49.9'	25°07.2'	8°57.4'	13°26.1'	58°04.8'	61°48.1'	111°58.9'
21	200°13.6'	S 21°56.3'	8.6'	-4.5'	56.9'	66°00.5'	34°17.5'	24°35.0'	8°26.5'	13°54.3'	58°37.1'	62°16.6'	112°31.5'
22	214°41.1'	S 22°00.9'	8.6'	-4.4'	56.9'	65°30.5'	33°45.2'	24°02.9'	7°55.7'	14°22.7'	59°09.5'	62°45.1'	113°04.1'
23	229°08.7'	S 22°05.3'	8.6'	-4.3'	56.8'	65°00.4'	33°12.8'	23°30.7'	7°24.9'	14°51.4'	59°41.8'	63°13.5'	113°36.7'
Mer. pass.			7 h 9 m SD 15.7'		phase 38%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.2'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°21.0'	Acrux	+0.8	173°03.7'	S 63°12.4'	Capella	+0.1	280°27.5'	N 46°01.1'
Altair	+0.8	62°04.0'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.1'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.7'	S 26°28.4'	Procyon	+0.4	244°54.7'	N 5°10.3'	Polaris	+2.0	315°52.0'	N 89°21.1'
Rigil Kent	-0.0	139°45.3'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.5'
Arcturus	-0.1	145°51.4'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.9'				
Hadar	+0.6	148°41.1'	S 60°27.8'	Canopus	-0.6	263°53.8'	S 52°42.7'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	147°25.7'		176°30.3'	S 11°53.8'	136°37.6'	N 4°51.4'	218°45.2'	S 22°18.8'	208°26.9'	S 20°46.4'	236°17.3'	S 23°39.4'
1	162°28.2'		191°30.3'	S 11°52.9'	151°37.5'	N 4°52.7'	233°47.1'	S 22°18.7'	223°29.0'	S 20°46.3'	251°17.9'	S 23°39.5'
2	177°30.2'		206°30.4'	S 11°52.0'	166°37.4'	N 4°54.0'	248°49.0'	S 22°18.7'	238°31.2'	S 20°46.3'	266°18.5'	S 23°39.5'
3	192°33.1'		221°30.4'	S 11°51.1'	181°37.2'	N 4°55.3'	263°51.0'	S 22°18.6'	253°33.4'	S 20°46.2'	281°19.1'	S 23°39.5'
4	207°35.6'		236°30.5'	S 11°50.3'	196°37.1'	N 4°56.6'	278°52.9'	S 22°18.5'	268°35.6'	S 20°46.2'	296°19.6'	S 23°39.5'
5	222°38.1'		251°30.5'	S 11°49.4'	211°37.0'	N 4°57.9'	293°54.8'	S 22°18.5'	283°37.8'	S 20°46.2'	311°20.2'	S 23°39.5'
6	237°40.5'		266°30.6'	S 11°48.5'	226°36.9'	N 4°59.2'	308°56.7'	S 22°18.4'	298°40.0'	S 20°46.1'	326°20.8'	S 23°39.6'
7	252°43.0'		281°30.6'	S 11°47.6'	241°36.7'	N 5°00.4'	323°58.7'	S 22°18.4'	313°42.1'	S 20°46.1'	341°21.4'	S 23°39.6'
8	267°45.4'		296°30.7'	S 11°46.7'	256°36.6'	N 5°01.7'	339°00.6'	S 22°18.3'	328°44.3'	S 20°46.0'	356°22.0'	S 23°39.6'
9	282°47.9'		311°30.7'	S 11°45.9'	271°36.5'	N 5°03.0'	354°02.5'	S 22°18.2'	343°46.5'	S 20°46.0'	11°22.6'	S 23°39.6'
10	297°50.4'		326°30.8'	S 11°45.0'	286°36.4'	N 5°04.3'	9°04.4'	S 22°18.2'	358°48.7'	S 20°45.9'	26°23.2'	S 23°39.7'
11	312°52.8'		341°30.8'	S 11°44.1'	301°36.2'	N 5°05.6'	24°06.4'	S 22°18.1'	13°50.9'	S 20°45.9'	41°23.7'	S 23°39.7'
12	327°55.3'		356°30.9'	S 11°43.2'	316°36.1'	N 5°06.9'	39°08.3'	S 22°18.1'	28°53.1'	S 20°45.8'	56°24.3'	S 23°39.7'
13	342°57.8'		11°30.9'	S 11°42.3'	331°36.0'	N 5°08.2'	54°10.2'	S 22°18.0'	43°55.2'	S 20°45.8'	71°24.9'	S 23°39.7'
14	358°00.2'		26°31.0'	S 11°41.5'	346°35.9'	N 5°09.5'	69°12.2'	S 22°17.9'	58°57.4'	S 20°45.7'	86°25.5'	S 23°39.7'
15	13°02.7'		41°31.0'	S 11°40.6'	1°35.7'	N 5°10.7'	84°14.1'	S 22°17.9'	73°59.6'	S 20°45.7'	101°26.1'	S 23°39.7'
16	28°05.2'		56°31.1'	S 11°39.7'	16°35.6'	N 5°12.0'	99°16.0'	S 22°17.8'	89°01.8'	S 20°45.6'	116°26.7'	S 23°39.8'
17	43°07.6'		71°31.1'	S 11°38.8'	31°35.5'	N 5°13.3'	114°17.9'	S 22°17.8'	104°04.0'	S 20°45.6'	131°27.3'	S 23°39.8'
18	58°10.1'		86°31.2'	S 11°37.9'	46°35.4'	N 5°14.6'	129°19.9'	S 22°17.7'	119°06.2'	S 20°45.5'	146°27.8'	S 23°39.8'
19	73°12.5'		101°31.2'	S 11°37.0'	61°35.3'	N 5°15.9'	144°21.8'	S 22°17.6'	134°08.4'	S 20°45.5'	161°28.4'	S 23°39.8'
20	88°15.0'		116°31.3'	S 11°36.2'	76°35.1'	N 5°17.2'	159°23.7'	S 22°17.6'	149°10.5'	S 20°45.4'	176°29.0'	S 23°39.8'
21	103°17.5'		131°31.3'	S 11°35.3'	91°35.0'	N 5°18.5'	174°25.7'	S 22°17.5'	164°12.7'	S 20°45.4'	191°29.6'	S 23°39.8'
22	118°19.9'		146°31.4'	S 11°34.4'	106°34.9'	N 5°19.7'	189°27.6'	S 22°17.5'	179°14.9'	S 20°45.3'	206°30.2'	S 23°39.9'
23	133°22.4'		161°31.4'	S 11°33.5'	121°34.8'	N 5°21.0'	204°29.5'	S 22°17.4'	194°17.1'	S 20°45.3'	221°30.8'	S 23°39.9'
			SD 16.2'	d 0.9'	v -0.1'	d 1.3'	v 1.9'	d 0.1'	v 2.2'	d 0.0'	v 0.6'	d -0.0'
Mer. pass.			12 h 13 m 57 s		14 h 54 m		9 h 24 m		10 h 5 m		8 h 15 m	

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Saturn	-Jupiter	-Mars	+Antares	+Rigel Kent	+Hadar	+Spica
0	243°36.3'	S 22°09.6'	8.6'	-4.2'	56.8'	64°30.4'	32°40.5'	22°58.6'	6°54.1'	15°20.4'			60°14.1'
1	258°03.8'	S 22°13.8'	8.5'	-4.0'	56.8'	64°00.5'	32°08.2'	22°26.6'	6°23.5'	15°49.5'			60°46.4'
2	272°31.4'	S 22°17.8'	8.5'	-3.9'	56.8'	63°30.5'	31°36.0'	21°54.5'	5°52.9'	16°18.9'			61°18.6'
3	286°58.9'	S 22°21.7'	8.5'	-3.8'	56.7'	63°00.6'	31°03.8'	21°22.5'	5°22.3'	16°48.4'			61°50.9'
4	301°26.4'	S 22°25.5'	8.5'	-3.7'	56.7'	62°30.7'	30°31.6'	20°50.6'	4°51.8'	17°18.0'			62°23.1'
5	315°54.0'	S 22°29.2'	8.5'	-3.5'	56.7'	62°00.9'	29°59.4'	20°18.6'	4°21.5'	17°47.8'			62°55.3'
6	330°21.5'	S 22°32.7'	8.5'	-3.4'	56.7'	61°31.0'	29°27.3'	19°46.7'	3°51.3'	18°17.7'			63°27.4'
7	344°49.1'	S 22°36.1'	8.5'	-3.3'	56.6'	61°01.2'	28°55.2'	19°14.8'	3°21.2'	18°47.8'			63°59.5'
8	359°16.6'	S 22°39.3'	8.5'	-3.1'	56.6'	60°31.5'	28°23.1'	18°42.9'	2°51.5'	19°17.9'			64°31.6'
9	13°44.1'	S 22°42.5'	8.5'	-3.0'	56.6'	60°01.7'	27°51.1'	18°11.1'	2°22.1'	19°48.1'			65°03.7'
10	28°11.7'	S 22°45.5'	8.5'	-2.9'	56.5'	59°32.0'	27°19.1'	17°39.3'		20°18.4'			65°35.8'
11	42°39.2'	S 22°48.4'	8.6'	-2.8'	56.5'	59°02.3'	26°47.1'	17°07.5'		20°48.8'			66°07.8'
12	57°06.8'	S 22°51.1'	8.6'	-2.6'	56.5'	58°32.6'	26°15.1'	16°35.8'		21°19.2'			66°39.8'
13	71°34.4'	S 22°53.7'	8.6'	-2.5'	56.5'	58°03.0'	25°43.2'	16°04.1'		21°49.7'			67°11.8'
14	86°01.9'	S 22°56.2'	8.6'	-2.4'	56.4'	57°33.4'	25°11.3'	15°32.4'		22°20.2'			67°43.8'
15	100°29.5'	S 22°58.6'	8.6'	-2.2'	56.4'	57°03.8'	24°39.5'	15°00.7'		22°50.8'			68°15.7'
16	114°57.1'	S 23°00.8'	8.6'	-2.1'	56.4'	56°34.3'	24°07.6'	14°29.1'		23°21.5'			68°47.6'
17	129°24.7'	S 23°02.9'	8.6'	-2.0'	56.4'	56°04.7'	23°35.8'	13°57.5'		23°52.2'			69°19.5'
18	143°52.3'	S 23°04.9'	8.6'	-1.8'	56.4'	55°35.2'	23°04.0'	13°25.9'	2°27.0'	24°22.9'		56°49.9'	69°51.4'
19	158°19.9'	S 23°06.8'	8.6'	-1.7'	56.3'	55°05.8'	22°32.3'	12°54.4'	2°56.2'	24°53.6'		57°05.1'	70°23.2'
20	172°47.5'	S 23°08.5'	8.6'	-1.6'	56.3'	54°36.3'	22°00.6'	12°22.9'	3°25.7'	25°24.4'		57°20.5'	70°55.1'
21	187°15.1'	S 23°10.1'	8.6'	-1.5'	56.3'	54°06.9'	21°28.9'	11°51.4'	3°55.4'	25°55.2'		57°36.1'	71°26.9'
22	201°42.8'	S 23°11.5'	8.7'	-1.3'	56.3'	53°37.5'	20°57.2'	11°20.0'	4°25.2'	26°26.1'		57°51.8'	71°58.6'
23	216°10.4'	S 23°12.9'	8.7'	-1.2'	56.2'	53°08.2'	20°25.6'	10°48.6'	4°55.1'	26°56.9'	53°58.7'	58°07.6'	72°30.4'
Mer. pass.			8 h 3 m SD 15.5'		phase 28%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.2'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°21.0'	Acrux	+0.8	173°03.7'	S 63°12.4'	Capella	+0.1	280°27.5'	N 46°01.1'
Altair	+0.8	62°04.0'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.1'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.7'	S 26°28.4'	Procyon	+0.4	244°54.7'	N 5°10.2'	Polaris	+2.0	315°52.4'	N 89°21.1'
Rigel Kent	-0.0	139°45.3'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.5'
Arcturus	-0.1	145°51.4'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.9'				
Hadar	+0.6	148°41.1'	S 60°27.8'	Canopus	-0.6	263°53.8'	S 52°42.7'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	148°24.9'	176°31.5'	S 11°32.6'	136°34.6'	N 5°22.3'	219°31.4'	S 22°17.3'	209°19.3'	S 20°45.2'	236°31.4'	S 23°39.9'	
1	163°27.3'	191°31.5'	S 11°31.7'	151°34.5'	N 5°23.6'	234°33.4'	S 22°17.3'	224°21.5'	S 20°45.2'	251°31.9'	S 23°39.9'	
2	178°29.8'	206°31.6'	S 11°30.8'	166°34.4'	N 5°24.9'	249°35.3'	S 22°17.2'	239°23.7'	S 20°45.1'	266°32.5'	S 23°39.9'	
3	193°32.3'	221°31.6'	S 11°30.0'	181°34.3'	N 5°26.2'	264°37.2'	S 22°17.2'	254°25.8'	S 20°45.1'	281°33.1'	S 23°39.9'	
4	208°34.7'	236°31.7'	S 11°29.1'	196°34.2'	N 5°27.5'	279°39.2'	S 22°17.1'	269°28.0'	S 20°45.0'	296°33.7'	S 23°39.9'	
5	223°37.2'	251°31.7'	S 11°28.2'	211°34.0'	N 5°28.7'	294°41.1'	S 22°17.0'	284°30.2'	S 20°45.0'	311°34.3'	S 23°40.0'	
6	238°39.7'	266°31.8'	S 11°27.3'	226°33.9'	N 5°30.0'	309°43.0'	S 22°17.0'	299°32.4'	S 20°44.9'	326°34.9'	S 23°40.0'	
7	253°42.1'	281°31.8'	S 11°26.4'	241°33.8'	N 5°31.3'	324°44.9'	S 22°16.9'	314°34.6'	S 20°44.9'	341°35.4'	S 23°40.0'	
8	268°44.6'	296°31.9'	S 11°25.5'	256°33.7'	N 5°32.6'	339°46.9'	S 22°16.8'	329°36.8'	S 20°44.8'	356°36.0'	S 23°40.0'	
9	283°47.0'	311°32.0'	S 11°24.6'	271°33.6'	N 5°33.9'	354°48.8'	S 22°16.8'	344°39.0'	S 20°44.8'	11°36.6'	S 23°40.0'	
10	298°49.5'	326°32.0'	S 11°23.8'	286°33.4'	N 5°35.2'	9°50.7'	S 22°16.7'	359°41.1'	S 20°44.8'	26°37.2'	S 23°40.0'	
11	313°52.0'	341°32.1'	S 11°22.9'	301°33.3'	N 5°36.4'	24°52.7'	S 22°16.7'	14°43.3'	S 20°44.7'	41°37.8'	S 23°40.0'	
12	328°54.4'	356°32.1'	S 11°22.0'	316°33.2'	N 5°37.7'	39°54.6'	S 22°16.6'	29°45.5'	S 20°44.7'	56°38.4'	S 23°40.0'	
13	343°56.9'	11°32.2'	S 11°21.1'	331°33.1'	N 5°39.0'	54°56.5'	S 22°16.5'	44°47.7'	S 20°44.6'	71°39.0'	S 23°40.1'	
14	358°59.4'	26°32.2'	S 11°20.2'	346°33.0'	N 5°40.3'	69°58.5'	S 22°16.5'	59°49.9'	S 20°44.6'	86°39.5'	S 23°40.1'	
15	14°01.8'	41°32.3'	S 11°19.3'	1°32.8'	N 5°41.6'	85°00.4'	S 22°16.4'	74°52.1'	S 20°44.5'	101°40.1'	S 23°40.1'	
16	29°04.3'	56°32.3'	S 11°18.4'	16°32.7'	N 5°42.9'	100°02.3'	S 22°16.4'	89°54.3'	S 20°44.5'	116°40.7'	S 23°40.1'	
17	44°06.8'	71°32.4'	S 11°17.5'	31°32.6'	N 5°44.1'	115°04.3'	S 22°16.3'	104°56.4'	S 20°44.4'	131°41.3'	S 23°40.1'	
18	59°09.2'	86°32.5'	S 11°16.6'	46°32.5'	N 5°45.4'	130°06.2'	S 22°16.2'	119°58.6'	S 20°44.4'	146°41.9'	S 23°40.1'	
19	74°11.7'	101°32.5'	S 11°15.7'	61°32.4'	N 5°46.7'	145°08.1'	S 22°16.2'	135°00.8'	S 20°44.3'	161°42.5'	S 23°40.1'	
20	89°14.2'	116°32.6'	S 11°14.9'	76°32.2'	N 5°48.0'	160°10.1'	S 22°16.1'	150°03.0'	S 20°44.3'	176°43.0'	S 23°40.1'	
21	104°16.6'	131°32.6'	S 11°14.0'	91°32.1'	N 5°49.3'	175°12.0'	S 22°16.1'	165°05.2'	S 20°44.2'	191°43.6'	S 23°40.1'	
22	119°19.1'	146°32.7'	S 11°13.1'	106°32.0'	N 5°50.5'	190°13.9'	S 22°16.0'	180°07.4'	S 20°44.2'	206°44.2'	S 23°40.1'	
23	134°21.5'	161°32.8'	S 11°12.2'	121°31.9'	N 5°51.8'	205°15.8'	S 22°15.9'	195°09.6'	S 20°44.1'	221°44.8'	S 23°40.1'	
		SD 16.2' d 0.9'		v -0.1' d 1.3'		v 1.9' d 0.1'		v 2.2' d 0.0'		v 0.6' d -0.0'		
Mer. pass.		12 h 13 m 52 s		14 h 54 m		9 h 21 m		10 h 1 m		8 h 14 m		

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Altair	-Saturn	-Jupiter	+Mars	+Antares	+Rigel Kent	+Hadar
0	230°38.1'	S 23°14.1'	8.7'	-1.1'	56.2'	52°38.8'	37°43.0'	19°54.0'	10°17.2'	5°25.1'	27°27.8'	54°13.8'	58°23.5'
1	245°05.8'	S 23°15.1'	8.7'	-0.9'	56.2'	52°09.5'	37°26.3'	19°22.4'	9°45.9'	5°55.1'	27°58.6'	54°29.0'	58°39.5'
2	259°33.5'	S 23°16.1'	8.7'	-0.8'	56.2'	51°40.2'	37°09.9'	18°50.8'	9°14.6'	6°25.1'	28°29.5'	54°44.4'	58°55.7'
3	274°01.2'	S 23°16.9'	8.7'	-0.7'	56.1'	51°10.9'	36°53.9'	18°19.3'	8°43.3'	6°55.1'	29°00.5'	55°00.0'	59°12.0'
4	288°29.0'	S 23°17.6'	8.8'	-0.6'	56.1'	50°41.7'	36°38.1'	17°47.9'	8°12.1'	7°25.1'	29°31.4'	55°15.7'	59°28.5'
5	302°56.8'	S 23°18.1'	8.8'	-0.4'	56.1'	50°12.5'	36°22.6'	17°16.4'	7°41.0'	7°55.1'	30°02.3'	55°31.5'	59°45.0'
6	317°24.6'	S 23°18.6'	8.8'	-0.3'	56.1'	49°43.3'		16°45.0'	7°09.9'	8°25.1'	30°33.2'	55°47.5'	60°01.6'
7	331°52.4'	S 23°18.9'	8.8'	-0.2'	56.0'	49°14.1'		16°13.6'	6°38.8'	8°55.1'	31°04.2'	56°03.6'	60°18.4'
8	346°20.2'	S 23°19.1'	8.9'	-0.1'	56.0'	48°45.0'		15°42.3'	6°07.9'	9°25.1'	31°35.1'	56°19.9'	60°35.3'
9	0°48.1'	S 23°19.1'	8.9'	0.1'	56.0'	48°15.9'		15°11.0'	5°37.0'	9°55.0'	32°06.0'	56°36.3'	60°52.2'
10	15°15.9'	S 23°19.0'	8.9'	0.2'	56.0'	47°46.8'		14°39.7'	5°06.2'	10°25.0'	32°37.0'	56°52.8'	61°09.3'
11	29°43.9'	S 23°18.8'	8.9'	0.3'	56.0'	47°17.7'		14°08.5'	4°35.5'	10°54.9'	33°07.9'	57°09.4'	61°26.5'
12	44°11.8'	S 23°18.5'	9.0'	0.5'	55.9'	46°48.7'		13°37.3'	4°05.0'	11°24.8'	33°38.9'	57°26.2'	61°43.8'
13	58°39.8'	S 23°18.0'	9.0'	0.6'	55.9'	46°19.7'		13°06.1'	3°34.8'	11°54.7'	34°09.8'	57°43.1'	62°01.2'
14	73°07.8'	S 23°17.5'	9.0'	0.7'	55.9'	45°50.7'		12°35.0'	3°04.9'	12°24.6'	34°40.8'	58°00.1'	62°18.6'
15	87°35.8'	S 23°16.8'	9.1'	0.8'	55.9'	45°21.8'		12°03.9'		12°54.5'	35°11.7'	58°17.3'	62°36.2'
16	102°03.8'	S 23°15.9'	9.1'	1.0'	55.8'	44°52.8'		11°32.9'		13°24.4'	35°42.6'	58°34.5'	62°53.9'
17	116°31.9'	S 23°15.0'	9.1'	1.1'	55.8'	44°23.9'		11°02.0'		13°54.2'	36°13.6'	58°51.9'	63°11.6'
18	131°00.0'	S 23°13.9'	9.2'	1.2'	55.8'	43°55.0'		10°31.1'		14°24.0'	36°44.5'	59°09.3'	63°29.5'
19	145°28.2'	S 23°12.7'	9.2'	1.3'	55.8'	43°26.1'		10°00.2'		14°53.8'	37°15.4'	59°26.9'	63°47.4'
20	159°56.4'	S 23°11.4'	9.2'	1.4'	55.8'	42°57.3'		9°29.5'		15°23.6'	37°46.3'	59°44.6'	64°05.4'
21	174°24.6'	S 23°09.9'	9.3'	1.6'	55.7'	42°28.5'		8°58.8'		15°53.3'	38°17.2'	60°02.4'	64°23.5'
22	188°52.9'	S 23°08.3'	9.3'	1.7'	55.7'	41°59.7'		8°28.2'		16°23.1'	38°48.1'	60°20.3'	64°41.7'
23	203°21.2'	S 23°06.6'	9.3'	1.8'	55.7'	41°30.9'		7°57.7'		16°52.8'	39°19.0'	60°38.2'	64°59.9'
Mer. pass.		8 h 57 m SD 15.3'		phase 20%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.2'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°21.0'	Acrux	+0.8	173°03.7'	S 63°12.4'	Capella	+0.1	280°27.5'	N 46°01.1'
Altair	+0.8	62°04.0'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.1'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.7'	S 26°28.4'	Procyon	+0.4	244°54.7'	N 5°10.2'	Polaris	+2.0	315°52.8'	N 89°21.1'
Rigel Kent	-0.0	139°45.3'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.5'
Arcturus	-0.1	145°51.4'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.9'				
Hadar	+0.6	148°41.1'	S 60°27.9'	Canopus	-0.6	263°53.8'	S 52°42.7'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars			
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec		
0	149°24.0'	176°32.8'	S 11°11.3'	136°31.8'	N 5°53.1'		220°17.8'	S 22°15.9'		210°11.8'	S 20°44.1'		236°45.4'	S 23°40.1'					
1	164°26.5'	191°32.9'	S 11°10.4'	151°31.6'	N 5°54.4'		235°19.7'	S 22°15.8'		225°13.9'	S 20°44.0'		251°46.0'	S 23°40.1'					
2	179°28.9'	206°32.9'	S 11°09.5'	166°31.5'	N 5°55.7'		250°21.6'	S 22°15.8'		240°16.1'	S 20°44.0'		266°46.6'	S 23°40.2'					
3	194°31.4'	221°33.0'	S 11°08.6'	181°31.4'	N 5°56.9'		265°23.6'	S 22°15.7'		255°18.3'	S 20°43.9'		281°47.1'	S 23°40.2'					
4	209°33.9'	236°33.1'	S 11°07.7'	196°31.3'	N 5°58.2'		280°25.5'	S 22°15.6'		270°20.5'	S 20°43.9'		296°47.7'	S 23°40.2'					
5	224°36.3'	251°33.1'	S 11°06.8'	211°31.2'	N 5°59.5'		295°27.4'	S 22°15.6'		285°22.7'	S 20°43.8'		311°48.3'	S 23°40.2'					
6	239°38.8'	266°33.2'	S 11°05.9'	226°31.1'	N 6°00.8'		310°29.4'	S 22°15.5'		300°24.9'	S 20°43.8'		326°48.9'	S 23°40.2'					
7	254°41.3'	281°33.2'	S 11°05.0'	241°30.9'	N 6°02.1'		325°31.3'	S 22°15.5'		315°27.1'	S 20°43.7'		341°49.5'	S 23°40.2'					
8	269°43.7'	296°33.3'	S 11°04.1'	256°30.8'	N 6°03.3'		340°33.2'	S 22°15.4'		330°29.3'	S 20°43.7'		356°50.1'	S 23°40.2'					
9	284°46.2'	311°33.4'	S 11°03.2'	271°30.7'	N 6°04.6'		355°35.2'	S 22°15.3'		345°31.4'	S 20°43.6'		11°50.6'	S 23°40.2'					
10	299°48.7'	326°33.4'	S 11°02.4'	286°30.6'	N 6°05.9'		10°37.1'	S 22°15.3'		0°33.6'	S 20°43.6'		26°51.2'	S 23°40.2'					
11	314°51.1'	341°33.5'	S 11°01.5'	301°30.5'	N 6°07.2'		25°39.0'	S 22°15.2'		15°35.8'	S 20°43.5'		41°51.8'	S 23°40.2'					
12	329°53.6'	356°33.6'	S 11°00.6'	316°30.3'	N 6°08.5'		40°41.0'	S 22°15.2'		30°38.0'	S 20°43.5'		56°52.4'	S 23°40.2'					
13	344°56.0'	11°33.6'	S 10°59.7'	331°30.2'	N 6°09.7'		55°42.9'	S 22°15.1'		45°40.2'	S 20°43.5'		71°53.0'	S 23°40.2'					
14	359°58.5'	26°33.7'	S 10°58.8'	346°30.1'	N 6°11.0'		70°44.9'	S 22°15.0'		60°42.4'	S 20°43.4'		86°53.6'	S 23°40.2'					
15	15°01.0'	41°33.7'	S 10°57.9'	1°30.0'	N 6°12.3'		85°46.8'	S 22°15.0'		75°44.6'	S 20°43.4'		101°54.1'	S 23°40.2'					
16	30°03.4'	56°33.8'	S 10°57.0'	16°29.9'	N 6°13.6'		100°48.7'	S 22°14.9'		90°46.8'	S 20°43.3'		116°54.7'	S 23°40.2'					
17	45°05.9'	71°33.9'	S 10°56.1'	31°29.8'	N 6°14.8'		115°50.7'	S 22°14.9'		105°48.9'	S 20°43.3'		131°55.3'	S 23°40.2'					
18	60°08.4'	86°33.9'	S 10°55.2'	46°29.6'	N 6°16.1'		130°52.6'	S 22°14.8'		120°51.1'	S 20°43.2'		146°55.9'	S 23°40.2'					
19	75°10.8'	101°34.0'	S 10°54.3'	61°29.5'	N 6°17.4'		145°54.5'	S 22°14.7'		135°53.3'	S 20°43.2'		161°56.5'	S 23°40.2'					
20	90°13.3'	116°34.1'	S 10°53.4'	76°29.4'	N 6°18.7'		160°56.5'	S 22°14.7'		150°55.5'	S 20°43.1'		176°57.1'	S 23°40.2'					
21	105°15.8'	131°34.1'	S 10°52.5'	91°29.3'	N 6°19.9'		175°58.4'	S 22°14.6'		165°57.7'	S 20°43.1'		191°57.6'	S 23°40.2'					
22	120°18.2'	146°34.2'	S 10°51.6'	106°29.2'	N 6°21.2'		191°00.3'	S 22°14.6'		180°59.9'	S 20°43.0'		206°58.2'	S 23°40.2'					
23	135°20.7'	161°34.3'	S 10°50.7'	121°29.1'	N 6°22.5'		206°02.3'	S 22°14.5'		196°02.1'	S 20°43.0'		221°58.8'	S 23°40.2'					
		SD 16.2'	d 0.9'		v -0.1'	d 1.3'		v 1.9'	d 0.1'		v 2.2'	d 0.0'		v 0.6'	d -0.0'				
Mer. pass.		12 h 13 m 46 s		14 h 54 m			9 h 18 m			9 h 58 m			8 h 13 m						

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Saturn	+Jupiter	+Mars	+Antares	+Rigel Kent	+Hadar	+AcruX
0	217°49.5'	S 23°04.8'	9.4'	1.9'	55.7'	41°02.2'	7°27.3'		17°22.5'	39°49.9'	60°56.3'	65°18.3'	75°48.6'
1	232°17.9'	S 23°02.9'	9.4'	2.1'	55.7'	40°33.5'	6°57.1'	2°54.3'	17°52.2'	40°20.8'	61°14.5'	65°36.7'	76°04.4'
2	246°46.3'	S 23°00.8'	9.4'	2.2'	55.6'	40°04.8'	6°27.0'	3°23.8'	18°21.9'	40°51.7'	61°32.8'	65°55.1'	76°20.3'
3	261°14.7'	S 22°58.7'	9.5'	2.3'	55.6'		5°57.1'	3°53.7'	18°51.5'	41°22.5'	61°51.1'	66°13.7'	76°36.2'
4	275°43.2'	S 22°56.4'	9.5'	2.4'	55.6'		5°27.5'	4°23.8'	19°21.1'	41°53.4'	62°09.6'	66°32.3'	76°52.1'
5	290°11.7'	S 22°53.9'	9.6'	2.5'	55.6'		4°58.2'	4°54.0'	19°50.7'	42°24.2'	62°28.1'	66°51.0'	77°08.1'
6	304°40.3'	S 22°51.4'	9.6'	2.7'	55.6'		4°29.3'	5°24.3'	20°20.3'	42°55.1'	62°46.7'	67°09.8'	77°24.1'
7	319°08.9'	S 22°48.8'	9.7'	2.8'	55.5'		4°01.0'	5°54.7'	20°49.9'	43°25.9'	63°05.4'	67°28.6'	77°40.1'
8	333°37.6'	S 22°46.0'	9.7'	2.9'	55.5'			6°25.2'	21°19.4'	43°56.7'	63°24.2'	67°47.5'	77°56.2'
9	348°06.3'	S 22°43.1'	9.8'	3.0'	55.5'			6°55.6'	21°49.0'	44°27.5'	63°43.1'	68°06.4'	78°12.4'
10	2°35.0'	S 22°40.1'	9.8'	3.1'	55.5'			7°26.1'	22°18.5'	44°58.3'	64°02.0'	68°25.4'	78°28.5'
11	17°03.8'	S 22°37.0'	9.8'	3.2'	55.5'			7°56.6'	22°48.0'	45°29.1'	64°21.1'	68°44.5'	78°44.7'
12	31°32.7'	S 22°33.7'	9.9'	3.3'	55.4'			8°27.2'	23°17.5'	45°59.8'	64°40.1'	69°03.6'	79°00.9'
13	46°01.6'	S 22°30.4'	9.9'	3.5'	55.4'			8°57.7'	23°46.9'	46°30.6'	64°59.3'	69°22.8'	79°17.2'
14	60°30.5'	S 22°26.9'	10.0'	3.6'	55.4'			9°28.2'	24°16.4'	47°01.3'	65°18.5'	69°42.0'	79°33.5'
15	74°59.5'	S 22°23.3'	10.0'	3.7'	55.4'			9°58.7'	24°45.8'	47°32.1'	65°37.8'	70°01.3'	79°49.8'
16	89°28.5'	S 22°19.7'	10.1'	3.8'	55.4'			10°29.2'	25°15.2'	48°02.8'	65°57.2'	70°20.6'	80°06.1'
17	103°57.6'	S 22°15.9'	10.1'	3.9'	55.3'			10°59.7'	25°44.6'	48°33.5'	66°16.7'	70°40.0'	80°22.5'
18	118°26.8'	S 22°11.9'	10.2'	4.0'	55.3'			11°30.2'	26°13.9'	49°04.2'	66°36.2'	70°59.5'	80°38.9'
19	132°56.0'	S 22°07.9'	10.2'	4.1'	55.3'			12°00.7'	26°43.3'	49°34.9'	66°55.7'	71°19.0'	80°55.3'
20	147°25.2'	S 22°03.8'	10.3'	4.2'	55.3'			12°31.2'	27°12.6'	50°05.6'	67°15.3'	71°38.5'	81°11.7'
21	161°54.5'	S 21°59.5'	10.3'	4.4'	55.3'			3°59.1'	13°01.7'	27°41.9'	50°36.2'	67°35.0'	71°58.1'
22	176°23.8'	S 21°55.2'	10.4'	4.5'	55.2'			4°27.1'	13°32.1'	28°11.2'	51°06.9'	67°54.8'	72°17.7'
23	190°53.2'	S 21°50.7'	10.5'	4.6'	55.2'			4°55.6'	14°02.6'	28°40.5'	51°37.5'	68°14.6'	72°37.3'
Mer. pass.		9 h 49 m SD 15.2'	phase 12%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.2'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°21.0'	AcruX	+0.8	173°03.7'	S 63°12.4'	Capella	+0.1	280°27.5'	N 46°01.1'
Altair	+0.8	62°04.0'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.0'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.1'	N 38°48.0'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.7'	S 26°28.4'	Procyon	+0.4	244°54.7'	N 5°10.2'	Polaris	+2.0	315°53.2'	N 89°21.1'
Rigel Kent	-0.0	139°45.3'	S 60°54.7'	Adhara	+1.5	255°08.6'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.5'
Arcturus	-0.1	145°51.4'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.9'				
Hadar	+0.6	148°41.1'	S 60°27.9'	Canopus	-0.6	263°53.8'	S 52°42.7'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	150°23.1'	176°34.3'	S 10°49.8'	136°28.9'	N 6°23.8'	221°04.2'	S 22°14.4'	211°04.3'	S 20°42.9'	236°59.4'	S 23°40.2'			
1	165°25.6'	191°34.4'	S 10°48.9'	151°28.8'	N 6°25.0'	236°06.1'	S 22°14.4'	226°06.5'	S 20°42.9'	251°00.0'	S 23°40.2'			
2	180°28.1'	206°34.5'	S 10°48.0'	166°28.7'	N 6°26.3'	251°08.1'	S 22°14.3'	241°08.6'	S 20°42.8'	267°00.6'	S 23°40.2'			
3	195°30.5'	221°34.5'	S 10°47.1'	181°28.6'	N 6°27.6'	266°10.0'	S 22°14.3'	256°10.8'	S 20°42.8'	282°01.1'	S 23°40.2'			
4	210°33.0'	236°34.6'	S 10°46.2'	196°28.5'	N 6°28.9'	281°12.0'	S 22°14.2'	271°13.0'	S 20°42.7'	297°01.7'	S 23°40.2'			
5	225°35.5'	251°34.7'	S 10°45.3'	211°28.4'	N 6°30.1'	296°13.9'	S 22°14.1'	286°15.2'	S 20°42.7'	312°02.3'	S 23°40.2'			
6	240°37.9'	266°34.7'	S 10°44.4'	226°28.2'	N 6°31.4'	311°15.8'	S 22°14.1'	301°17.4'	S 20°42.6'	327°02.9'	S 23°40.2'			
7	255°40.4'	281°34.8'	S 10°43.5'	241°28.1'	N 6°32.7'	326°17.8'	S 22°14.0'	316°19.6'	S 20°42.6'	342°03.5'	S 23°40.2'			
8	270°42.9'	296°34.9'	S 10°42.6'	256°28.0'	N 6°34.0'	341°19.7'	S 22°13.9'	331°21.8'	S 20°42.5'	357°04.1'	S 23°40.1'			
9	285°45.3'	311°34.9'	S 10°41.7'	271°27.9'	N 6°35.2'	356°21.6'	S 22°13.9'	346°24.0'	S 20°42.5'	12°04.6'	S 23°40.1'			
10	300°47.8'	326°35.0'	S 10°40.8'	286°27.8'	N 6°36.5'	11°23.6'	S 22°13.8'	1°26.2'	S 20°42.4'	27°05.2'	S 23°40.1'			
11	315°50.3'	341°35.1'	S 10°39.9'	301°27.7'	N 6°37.8'	26°25.5'	S 22°13.8'	16°28.4'	S 20°42.4'	42°05.8'	S 23°40.1'			
12	330°52.7'	356°35.2'	S 10°39.0'	316°27.6'	N 6°39.0'	41°27.5'	S 22°13.7'	31°30.5'	S 20°42.4'	57°06.4'	S 23°40.1'			
13	345°55.2'	11°35.2'	S 10°38.1'	331°27.4'	N 6°40.3'	56°29.4'	S 22°13.6'	46°32.7'	S 20°42.3'	72°07.0'	S 23°40.1'			
14	0°57.6'	26°35.3'	S 10°37.2'	346°27.3'	N 6°41.6'	71°31.3'	S 22°13.6'	61°34.9'	S 20°42.3'	87°07.6'	S 23°40.1'			
15	16°00.1'	41°35.4'	S 10°36.3'	1°27.2'	N 6°42.9'	86°33.3'	S 22°13.5'	76°37.1'	S 20°42.2'	102°08.1'	S 23°40.1'			
16	31°02.6'	56°35.4'	S 10°35.4'	16°27.1'	N 6°44.1'	101°35.2'	S 22°13.5'	91°39.3'	S 20°42.2'	117°08.7'	S 23°40.1'			
17	46°05.0'	71°35.5'	S 10°34.4'	31°27.0'	N 6°45.4'	116°37.1'	S 22°13.4'	106°41.5'	S 20°42.1'	132°09.3'	S 23°40.1'			
18	61°07.5'	86°35.6'	S 10°33.5'	46°26.9'	N 6°46.7'	131°39.1'	S 22°13.3'	121°43.7'	S 20°42.1'	147°09.9'	S 23°40.1'			
19	76°10.0'	101°35.6'	S 10°32.6'	61°26.8'	N 6°47.9'	146°41.0'	S 22°13.3'	136°45.9'	S 20°42.0'	162°10.5'	S 23°40.1'			
20	91°12.4'	116°35.7'	S 10°31.7'	76°26.6'	N 6°49.2'	161°43.0'	S 22°13.2'	151°48.1'	S 20°42.0'	177°11.1'	S 23°40.1'			
21	106°14.9'	131°35.8'	S 10°30.8'	91°26.5'	N 6°50.5'	176°44.9'	S 22°13.2'	166°50.3'	S 20°41.9'	192°11.6'	S 23°40.0'			
22	121°17.4'	146°35.9'	S 10°29.9'	106°26.4'	N 6°51.8'	191°46.8'	S 22°13.1'	181°52.5'	S 20°41.9'	207°12.2'	S 23°40.0'			
23	136°19.8'	161°35.9'	S 10°29.0'	121°26.3'	N 6°53.0'	206°48.8'	S 22°13.0'	196°54.6'	S 20°41.8'	222°12.8'	S 23°40.0'			
		SD 16.2'	d 0.9'	v -0.1'	d 1.3'		v 1.9'	d 0.1'		v 2.2'	d 0.0'		v 0.6'	d 0.0'
Mer. pass.		12 h 13 m 40 s		14 h 54 m		9 h 15 m		9 h 54 m		8 h 12 m				

h	Moon				Lunar distance									
	GHA	dec	v	d	HP	+Saturn	+Jupiter	+Mars	+Antares	+Rigel Kent	+Hadar	+Acrux	+Arcturus	
0	205°22.7'	S 21°46.2'	10.5'	4.7'	55.2'	5°24.6'	14°33.0'	29°09.7'	52°08.1'	68°34.4'	72°57.1'	82°17.7'	97°43.6'	
1	219°52.2'	S 21°41.5'	10.6'	4.8'	55.2'	5°53.8'	15°03.4'	29°39.0'	52°38.7'	68°54.3'	73°16.8'	82°34.2'	98°11.4'	
2	234°21.8'	S 21°36.7'	10.6'	4.9'	55.2'	6°23.2'	15°33.8'	30°08.2'	53°09.3'	69°14.3'	73°36.6'	82°50.8'	98°39.2'	
3	248°51.4'	S 21°31.8'	10.7'	5.0'	55.2'	6°52.8'	16°04.2'	30°37.4'	53°39.9'	69°34.3'	73°56.4'	83°07.4'	99°06.9'	
4	263°21.1'	S 21°26.8'	10.7'	5.1'	55.1'	7°22.5'	16°34.6'	31°06.6'	54°10.5'	69°54.3'	74°16.3'	83°23.9'	99°34.7'	
5	277°50.8'	S 21°21.7'	10.8'	5.2'	55.1'	7°52.4'	17°04.9'	31°35.8'	54°41.1'	70°14.4'	74°36.1'	83°40.5'	100°02.4'	
6	292°20.6'	S 21°16.5'	10.8'	5.3'	55.1'	8°22.3'	17°35.3'	32°04.9'	55°11.6'	70°34.6'	74°56.1'	83°57.1'	100°30.1'	
7	306°50.4'	S 21°11.2'	10.9'	5.4'	55.1'	8°52.2'	18°05.6'	32°34.1'	55°42.1'	70°54.8'	75°16.0'	84°13.8'	100°57.7'	
8	321°20.3'	S 21°05.8'	11.0'	5.5'	55.1'	9°22.3'	18°35.9'	33°03.2'	56°12.7'	71°15.0'	75°36.0'	84°30.4'	101°25.4'	
9	335°50.3'	S 21°00.3'	11.0'	5.6'	55.1'	9°52.3'	19°06.2'	33°32.3'	56°43.2'	71°35.3'	75°56.0'	84°47.0'	101°53.0'	
10	350°20.3'	S 20°54.7'	11.1'	5.7'	55.0'	10°22.4'	19°36.5'	34°01.4'	57°13.7'	71°55.6'	76°16.1'	85°03.7'	102°20.5'	
11	4°50.4'	S 20°49.0'	11.1'	5.8'	55.0'	10°52.6'	20°06.8'	34°30.4'	57°44.2'	72°16.0'	76°36.2'	85°20.4'	102°48.1'	
12	19°20.5'	S 20°43.2'	11.2'	5.9'	55.0'	11°22.7'	20°37.1'	34°59.5'	58°14.6'	72°36.4'	76°56.3'	85°37.0'	103°15.6'	
13	33°50.7'	S 20°37.3'	11.3'	6.0'	55.0'	11°52.8'	21°07.3'	35°28.5'	58°45.1'	72°56.8'	77°16.4'	85°53.7'	103°43.1'	
14	48°21.0'	S 20°31.3'	11.3'	6.1'	55.0'	12°23.0'	21°37.5'	35°57.5'	59°15.5'	73°17.3'	77°36.5'	86°10.4'	104°10.6'	
15	62°51.3'	S 20°25.2'	11.4'	6.2'	55.0'	12°53.2'	22°07.7'	36°26.6'	59°46.0'	73°37.8'	77°56.7'	86°27.1'	104°38.0'	
16	77°21.6'	S 20°19.1'	11.4'	6.3'	54.9'	13°23.4'	22°37.9'	36°55.5'	60°16.4'	73°58.3'	78°16.9'	86°43.7'	105°05.4'	
17	91°52.1'	S 20°12.8'	11.5'	6.4'	54.9'	13°53.6'	23°08.1'	37°24.5'	60°46.8'	74°18.9'	78°37.1'	87°00.4'	105°32.8'	
18	106°22.6'	S 20°06.4'	11.6'	6.5'	54.9'	14°23.7'	23°38.3'	37°53.5'	61°17.2'	74°39.5'	78°57.4'	87°17.1'	106°00.2'	
19	120°53.1'	S 19°59.9'	11.6'	6.6'	54.9'	14°53.9'	24°08.4'	38°22.4'	61°47.6'	75°00.2'	79°17.7'	87°33.8'	106°27.5'	
20	135°23.7'	S 19°53.4'	11.7'	6.6'	54.9'	15°24.1'	24°38.6'	38°51.3'	62°17.9'	75°20.8'	79°37.9'	87°50.5'	106°54.8'	
21	149°54.4'	S 19°46.7'	11.7'	6.7'	54.9'	15°54.3'	25°08.7'	39°20.3'	62°48.3'	75°41.5'	79°58.2'	88°07.2'	107°22.0'	
22	164°25.1'	S 19°40.0'	11.8'	6.8'	54.8'	16°24.5'	25°38.8'	39°49.1'	63°18.6'	76°02.3'	80°18.6'	88°23.9'	107°49.3'	
23	178°55.9'	S 19°33.2'	11.9'	6.9'	54.8'	16°54.7'	26°08.9'	40°18.0'	63°49.0'	76°23.0'	80°38.9'	88°40.6'	108°16.5'	
Mer. pass.		10 h 40 m SD 15.1'		phase 7%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.2'	Spica	+1.0	158°26.2'	S 11°15.9'	Betelgeuse	+0.5	270°56.1'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°21.0'	Acrux	+0.8	173°03.7'	S 63°12.4'	Capella	+0.1	280°27.5'	N 46°01.1'
Altair	+0.8	62°04.0'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.0'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.1'	N 38°47.9'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.7'	S 26°28.4'	Procyon	+0.4	244°54.7'	N 5°10.2'	Polaris	+2.0	315°53.7'	N 89°21.1'
Rigel Kent	-0.0	139°45.3'	S 60°54.7'	Adhara	+1.5	255°08.7'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.5'
Arcturus	-0.1	145°51.4'	N 19°04.6'	Sirius	-1.4	258°29.4'	S 16°44.9'				
Hadar	+0.6	148°41.1'	S 60°27.9'	Canopus	-0.6	263°53.8'	S 52°42.7'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	151°22.3'	176°36.0'	S 10°28.1'	136°26.2'	N 6°54.3'	221°50.7'	S 22°13.0'	211°56.8'	S 20°41.8'	237°13.4'	S 23°40.0'			
1	166°24.8'	191°36.1'	S 10°27.2'	151°26.1'	N 6°55.6'	236°52.7'	S 22°12.9'	226°59.0'	S 20°41.7'	252°14.0'	S 23°40.0'			
2	181°27.2'	206°36.2'	S 10°26.3'	166°26.0'	N 6°56.8'	251°54.6'	S 22°12.9'	242°01.2'	S 20°41.7'	267°14.6'	S 23°40.0'			
3	196°29.7'	221°36.2'	S 10°25.4'	181°25.8'	N 6°58.1'	266°56.5'	S 22°12.8'	257°03.4'	S 20°41.6'	282°15.1'	S 23°40.0'			
4	211°32.1'	236°36.3'	S 10°24.5'	196°25.7'	N 6°59.4'	281°58.5'	S 22°12.7'	272°05.6'	S 20°41.6'	297°15.7'	S 23°40.0'			
5	226°34.6'	251°36.4'	S 10°23.6'	211°25.6'	N 7°00.6'	297°00.4'	S 22°12.7'	287°07.8'	S 20°41.5'	312°16.3'	S 23°40.0'			
6	241°37.1'	266°36.5'	S 10°22.7'	226°25.5'	N 7°01.9'	312°02.4'	S 22°12.6'	302°10.0'	S 20°41.5'	327°16.9'	S 23°39.9'			
7	256°39.5'	281°36.5'	S 10°21.8'	241°25.4'	N 7°03.2'	327°04.3'	S 22°12.5'	317°12.2'	S 20°41.4'	342°17.5'	S 23°39.9'			
8	271°42.0'	296°36.6'	S 10°20.8'	256°25.3'	N 7°04.4'	342°06.2'	S 22°12.5'	332°14.4'	S 20°41.4'	357°18.1'	S 23°39.9'			
9	286°44.5'	311°36.7'	S 10°19.9'	271°25.2'	N 7°05.7'	357°08.2'	S 22°12.4'	347°16.6'	S 20°41.4'	12°18.6'	S 23°39.9'			
10	301°46.9'	326°36.8'	S 10°19.0'	286°25.0'	N 7°07.0'	12°10.1'	S 22°12.4'	2°18.8'	S 20°41.3'	27°19.2'	S 23°39.9'			
11	316°49.4'	341°36.8'	S 10°18.1'	301°24.9'	N 7°08.2'	27°12.1'	S 22°12.3'	17°20.9'	S 20°41.3'	42°19.8'	S 23°39.9'			
12	331°51.9'	356°36.9'	S 10°17.2'	316°24.8'	N 7°09.5'	42°14.0'	S 22°12.2'	32°23.1'	S 20°41.2'	57°20.4'	S 23°39.8'			
13	346°54.3'	11°37.0'	S 10°16.3'	331°24.7'	N 7°10.8'	57°16.0'	S 22°12.2'	47°25.3'	S 20°41.2'	72°21.0'	S 23°39.8'			
14	1°56.8'	26°37.1'	S 10°15.4'	346°24.6'	N 7°12.0'	72°17.9'	S 22°12.1'	62°27.5'	S 20°41.1'	87°21.5'	S 23°39.8'			
15	16°59.2'	41°37.1'	S 10°14.5'	1°24.5'	N 7°13.3'	87°19.8'	S 22°12.1'	77°29.7'	S 20°41.1'	102°22.1'	S 23°39.8'			
16	32°01.7'	56°37.2'	S 10°13.6'	16°24.4'	N 7°14.6'	102°21.8'	S 22°12.0'	92°31.9'	S 20°41.0'	117°22.7'	S 23°39.8'			
17	47°04.2'	71°37.3'	S 10°12.7'	31°24.3'	N 7°15.8'	117°23.7'	S 22°11.9'	107°34.1'	S 20°41.0'	132°23.3'	S 23°39.8'			
18	62°06.6'	86°37.4'	S 10°11.7'	46°24.1'	N 7°17.1'	132°25.7'	S 22°11.9'	122°36.3'	S 20°40.9'	147°23.9'	S 23°39.7'			
19	77°09.1'	101°37.4'	S 10°10.8'	61°24.0'	N 7°18.4'	147°27.6'	S 22°11.8'	137°38.5'	S 20°40.9'	162°24.5'	S 23°39.7'			
20	92°11.6'	116°37.5'	S 10°09.9'	76°23.9'	N 7°19.6'	162°29.6'	S 22°11.8'	152°40.7'	S 20°40.8'	177°25.0'	S 23°39.7'			
21	107°14.0'	131°37.6'	S 10°09.0'	91°23.8'	N 7°20.9'	177°31.5'	S 22°11.7'	167°42.9'	S 20°40.8'	192°25.6'	S 23°39.7'			
22	122°16.5'	146°37.7'	S 10°08.1'	106°23.7'	N 7°22.1'	192°33.4'	S 22°11.6'	182°45.1'	S 20°40.7'	207°26.2'	S 23°39.7'			
23	137°19.0'	161°37.8'	S 10°07.2'	121°23.6'	N 7°23.4'	207°35.4'	S 22°11.6'	197°47.3'	S 20°40.7'	222°26.8'	S 23°39.7'			
		SD 16.2'	d 0.9'	v -0.1'	d 1.3'	v 1.9'	d 0.1'	v 2.2'	d 0.0'	v 0.6'	d 0.0'			
Mer. pass.		12 h 13 m 33 s		14 h 54 m		9 h 11 m		9 h 51 m		8 h 11 m				

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	+Saturn	+Jupiter	+Altair	+Mars	+Antares	+Rigel Kent	+Hadar	+AcruX
0	193°26.8'	S 19°26.2'	11.9'	7.0'	54.8'	17°24.8'	26°39.0'		40°46.9'	64°19.3'	76°43.8'	80°59.2'	88°57.3'
1	207°57.7'	S 19°19.2'	12.0'	7.1'	54.8'	17°55.0'	27°09.0'		41°15.7'	64°49.6'	77°04.6'	81°19.6'	89°13.9'
2	222°28.7'	S 19°12.1'	12.0'	7.2'	54.8'	18°25.1'	27°39.1'		41°44.6'	65°19.9'	77°25.4'	81°40.0'	89°30.6'
3	236°59.7'	S 19°05.0'	12.1'	7.3'	54.8'	18°55.3'	28°09.1'		42°13.4'	65°50.1'	77°46.3'	82°00.4'	89°47.3'
4	251°30.8'	S 18°57.7'	12.2'	7.3'	54.7'	19°25.4'	28°39.2'		42°42.2'	66°20.4'	78°07.1'	82°20.8'	90°03.9'
5	266°02.0'	S 18°50.4'	12.2'	7.4'	54.7'	19°55.6'	29°09.2'		43°11.0'	66°50.7'	78°28.0'	82°41.2'	90°20.6'
6	280°33.2'	S 18°42.9'	12.3'	7.5'	54.7'	20°25.7'	29°39.2'		43°39.8'	67°20.9'	78°48.9'	83°01.6'	90°37.2'
7	295°04.5'	S 18°35.4'	12.3'	7.6'	54.7'	20°55.8'	30°09.1'		44°08.5'	67°51.1'	79°09.8'	83°22.0'	90°53.9'
8	309°35.9'	S 18°27.8'	12.4'	7.7'	54.7'	21°25.9'	30°39.1'		44°37.3'	68°21.3'	79°30.8'	83°42.5'	91°10.5'
9	324°07.3'	S 18°20.1'	12.5'	7.8'	54.7'	21°56.0'	31°09.0'		45°06.0'	68°51.5'	79°51.7'	84°02.9'	91°27.1'
10	338°38.7'	S 18°12.4'	12.5'	7.8'	54.7'	22°26.1'	31°39.0'	36°48.4'	45°34.7'	69°21.7'	80°12.7'	84°23.4'	91°43.7'
11	353°10.3'	S 18°04.5'	12.6'	7.9'	54.6'	22°56.1'	32°08.9'	37°03.6'	46°03.4'	69°51.9'	80°33.7'	84°43.8'	92°00.3'
12	7°41.8'	S 17°56.6'	12.7'	8.0'	54.6'	23°26.2'	32°38.8'	37°19.1'	46°32.1'	70°22.1'	80°54.7'	85°04.3'	92°16.8'
13	22°13.5'	S 17°48.6'	12.7'	8.1'	54.6'	23°56.2'	33°08.7'	37°34.8'	47°00.8'	70°52.2'	81°15.7'	85°24.7'	92°33.4'
14	36°45.2'	S 17°40.5'	12.8'	8.1'	54.6'	24°26.3'	33°38.6'	37°50.8'	47°29.4'	71°22.4'	81°36.8'	85°45.2'	92°49.9'
15	51°17.0'	S 17°32.4'	12.8'	8.2'	54.6'	24°56.3'	34°08.5'	38°07.0'	47°58.1'	71°52.5'	81°57.8'	86°05.7'	93°06.5'
16	65°48.8'	S 17°24.2'	12.9'	8.3'	54.6'	25°26.3'	34°38.3'	38°23.5'	48°26.7'	72°22.6'	82°18.9'	86°26.1'	93°23.0'
17	80°20.7'	S 17°15.9'	13.0'	8.4'	54.6'	25°56.3'	35°08.2'	38°40.2'	48°55.3'	72°52.7'	82°39.9'	86°46.6'	93°39.5'
18	94°52.7'	S 17°07.5'	13.0'	8.4'	54.6'	26°26.3'	35°38.0'	38°57.1'	49°23.9'	73°22.8'	83°01.0'	87°07.1'	93°55.9'
19	109°24.7'	S 16°59.1'	13.1'	8.5'	54.5'	26°56.3'	36°07.8'	39°14.3'	49°52.5'	73°52.9'	83°22.1'	87°27.5'	94°12.4'
20	123°56.8'	S 16°50.5'	13.1'	8.6'	54.5'								
21	138°28.9'	S 16°42.0'	13.2'	8.7'	54.5'								
22	153°01.1'	S 16°33.3'	13.3'	8.7'	54.5'								
23	167°33.3'	S 16°24.6'	13.3'	8.8'	54.5'								
Mer. pass.		11 h 28 m SD 14.9'		phase 3%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.1'	Spica	+1.0	158°26.2'	S 11°15.9'	Betelgeuse	+0.5	270°56.2'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°21.0'	AcruX	+0.8	173°03.7'	S 63°12.4'	Capella	+0.1	280°27.5'	N 46°01.1'
Altair	+0.8	62°04.0'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.0'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.1'	N 38°47.9'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.6'	S 26°28.4'	Procyon	+0.4	244°54.7'	N 5°10.2'	Polaris	+2.0	315°54.2'	N 89°21.1'
Rigel Kent	-0.0	139°45.3'	S 60°54.7'	Adhara	+1.5	255°08.7'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.5'
Arcturus	-0.1	145°51.4'	N 19°04.6'	Sirius	-1.4	258°29.5'	S 16°44.9'				
Hadar	+0.6	148°41.1'	S 60°27.9'	Canopus	-0.6	263°53.8'	S 52°42.7'				

Sunday 23 February 2020 UT1

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	152°21.4'	S 10°06.3'	176°37.8'	S 10°06.3'	136°23.5'	N 7°24.7'	222°37.3'	S 22°11.5'	212°49.4'	S 20°40.6'	237°27.4'	S 23°39.6'
1	167°23.9'	S 10°05.4'	191°37.9'	S 10°05.4'	151°23.4'	N 7°25.9'	237°39.3'	S 22°11.5'	227°51.6'	S 20°40.6'	252°28.0'	S 23°39.6'
2	182°26.4'	S 10°04.4'	206°38.0'	S 10°04.4'	166°23.3'	N 7°27.2'	252°41.2'	S 22°11.4'	242°53.8'	S 20°40.5'	267°28.5'	S 23°39.6'
3	197°28.8'	S 10°03.5'	221°38.1'	S 10°03.5'	181°23.1'	N 7°28.5'	267°43.2'	S 22°11.3'	257°56.0'	S 20°40.5'	282°29.1'	S 23°39.6'
4	212°31.3'	S 10°02.6'	236°38.2'	S 10°02.6'	196°23.0'	N 7°29.7'	282°45.1'	S 22°11.3'	272°58.2'	S 20°40.4'	297°29.7'	S 23°39.6'
5	227°33.7'	S 10°01.7'	251°38.2'	S 10°01.7'	211°22.9'	N 7°31.0'	297°47.0'	S 22°11.2'	288°00.4'	S 20°40.4'	312°30.3'	S 23°39.5'
6	242°36.2'	S 10°00.8'	266°38.3'	S 10°00.8'	226°22.8'	N 7°32.2'	312°49.0'	S 22°11.1'	303°02.6'	S 20°40.4'	327°30.9'	S 23°39.5'
7	257°38.7'	S 9°59.9'	281°38.4'	S 9°59.9'	241°22.7'	N 7°33.5'	327°50.9'	S 22°11.1'	318°04.8'	S 20°40.3'	342°31.5'	S 23°39.5'
8	272°41.1'	S 9°59.0'	296°38.5'	S 9°59.0'	256°22.6'	N 7°34.8'	342°52.9'	S 22°11.0'	333°07.0'	S 20°40.3'	357°32.0'	S 23°39.5'
9	287°43.6'	S 9°58.0'	311°38.6'	S 9°58.0'	271°22.5'	N 7°36.0'	357°54.8'	S 22°11.0'	348°09.2'	S 20°40.2'	12°32.6'	S 23°39.4'
10	302°46.1'	S 9°57.1'	326°38.7'	S 9°57.1'	286°22.4'	N 7°37.3'	12°56.8'	S 22°10.9'	3°11.4'	S 20°40.2'	27°33.2'	S 23°39.4'
11	317°48.5'	S 9°56.2'	341°38.7'	S 9°56.2'	301°22.2'	N 7°38.5'	27°58.7'	S 22°10.8'	18°13.6'	S 20°40.1'	42°33.8'	S 23°39.4'
12	332°51.0'	S 9°55.3'	356°38.8'	S 9°55.3'	316°22.1'	N 7°39.8'	43°00.7'	S 22°10.8'	33°15.8'	S 20°40.1'	57°34.4'	S 23°39.4'
13	347°53.5'	S 9°54.4'	11°38.9'	S 9°54.4'	331°22.0'	N 7°41.1'	58°02.6'	S 22°10.7'	48°18.0'	S 20°40.0'	72°34.9'	S 23°39.3'
14	2°55.9'	S 9°53.5'	26°39.0'	S 9°53.5'	346°21.9'	N 7°42.3'	73°04.6'	S 22°10.7'	63°20.2'	S 20°40.0'	87°35.5'	S 23°39.3'
15	17°58.4'	S 9°52.5'	41°39.1'	S 9°52.5'	1°21.8'	N 7°43.6'	88°06.5'	S 22°10.6'	78°22.4'	S 20°39.9'	102°36.1'	S 23°39.3'
16	33°00.9'	S 9°51.6'	56°39.2'	S 9°51.6'	16°21.7'	N 7°44.8'	103°08.4'	S 22°10.5'	93°24.6'	S 20°39.9'	117°36.7'	S 23°39.3'
17	48°03.3'	S 9°50.7'	71°39.2'	S 9°50.7'	31°21.6'	N 7°46.1'	118°10.4'	S 22°10.5'	108°26.7'	S 20°39.8'	132°37.3'	S 23°39.2'
18	63°05.8'	S 9°49.8'	86°39.3'	S 9°49.8'	46°21.5'	N 7°47.3'	133°12.3'	S 22°10.4'	123°28.9'	S 20°39.8'	147°37.9'	S 23°39.2'
19	78°08.2'	S 9°48.9'	101°39.4'	S 9°48.9'	61°21.4'	N 7°48.6'	148°14.3'	S 22°10.4'	138°31.1'	S 20°39.7'	162°38.4'	S 23°39.2'
20	93°10.7'	S 9°48.0'	116°39.5'	S 9°48.0'	76°21.3'	N 7°49.9'	163°16.2'	S 22°10.3'	153°33.3'	S 20°39.7'	177°39.0'	S 23°39.2'
21	108°13.2'	S 9°47.0'	131°39.6'	S 9°47.0'	91°21.1'	N 7°51.1'	178°18.2'	S 22°10.2'	168°35.5'	S 20°39.6'	192°39.6'	S 23°39.1'
22	123°15.6'	S 9°46.1'	146°39.7'	S 9°46.1'	106°21.0'	N 7°52.4'	193°20.1'	S 22°10.2'	183°37.7'	S 20°39.6'	207°40.2'	S 23°39.1'
23	138°18.1'	S 9°45.2'	161°39.7'	S 9°45.2'	121°20.9'	N 7°53.6'	208°22.1'	S 22°10.1'	198°39.9'	S 20°39.5'	222°40.8'	S 23°39.1'
		SD 16.2' d 0.9'		v -0.1' d 1.3'		v 1.9' d 0.1'		v 2.2' d 0.0'		v 0.6' d 0.0'		
Mer. pass.		12 h 13 m 25 s		14 h 55 m		9 h 8 m		9 h 47 m		8 h 10 m		

h	Moon				
	GHA	dec	v	d	HP
0	182°05.6'	S 16°15.8'	13.4'	8.9'	54.5'
1	196°38.0'	S 16°06.9'	13.4'	8.9'	54.5'
2	211°10.4'	S 15°58.0'	13.5'	9.0'	54.5'
3	225°42.9'	S 15°49.0'	13.5'	9.1'	54.4'
4	240°15.5'	S 15°39.9'	13.6'	9.1'	54.4'
5	254°48.1'	S 15°30.8'	13.7'	9.2'	54.4'
6	269°20.7'	S 15°21.6'	13.7'	9.2'	54.4'
7	283°53.4'	S 15°12.4'	13.8'	9.3'	54.4'
8	298°26.2'	S 15°03.1'	13.8'	9.4'	54.4'
9	312°59.0'	S 14°53.7'	13.9'	9.4'	54.4'
10	327°31.9'	S 14°44.3'	13.9'	9.5'	54.4'
11	342°04.8'	S 14°34.8'	14.0'	9.5'	54.3'
12	356°37.8'	S 14°25.2'	14.0'	9.6'	54.3'
13	11°10.9'	S 14°15.6'	14.1'	9.7'	54.3'
14	25°43.9'	S 14°06.0'	14.1'	9.7'	54.3'
15	40°17.1'	S 13°56.2'	14.2'	9.8'	54.3'
16	54°50.3'	S 13°46.5'	14.3'	9.8'	54.3'
17	69°23.6'	S 13°36.6'	14.3'	9.9'	54.3'
18	83°56.9'	S 13°26.8'	14.4'	9.9'	54.3'
19	98°30.2'	S 13°16.8'	14.4'	10.0'	54.3'
20	113°03.6'	S 13°06.8'	14.5'	10.0'	54.2'
21	127°37.1'	S 12°56.8'	14.5'	10.1'	54.2'
22	142°10.6'	S 12°46.7'	14.6'	10.1'	54.2'
23	156°44.2'	S 12°36.6'	14.6'	10.2'	54.2'
Mer. pass.	12 h 14 m SD 14.9'	phase 1%			

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.1'	Spica	+1.0	158°26.2'	S 11°15.9'	Betelgeuse	+0.5	270°56.2'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°21.0'	Acrux	+0.8	173°03.7'	S 63°12.4'	Capella	+0.1	280°27.5'	N 46°01.1'
Altair	+0.8	62°04.0'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.0'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.1'	N 38°47.9'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.6'	S 26°28.4'	Procyon	+0.4	244°54.7'	N 5°10.2'	Polaris	+2.0	315°54.7'	N 89°21.1'
Rigil Kent	-0.0	139°45.2'	S 60°54.7'	Adhara	+1.5	255°08.7'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.5'
Arcturus	-0.1	145°51.4'	N 19°04.6'	Sirius	-1.4	258°29.5'	S 16°44.9'				
Hadar	+0.6	148°41.1'	S 60°27.9'	Canopus	-0.6	263°53.8'	S 52°42.7'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	153°20.6'	S 9°44.3'	176°39.8'	S 9°38.8'	136°20.8'	N 7°54.9'	223°24.0'	S 22°10.0'	213°42.1'	S 20°39.5'	237°41.3'	S 23°39.0'
1	168°23.0'	S 9°43.4'	191°39.9'	S 9°37.8'	151°20.7'	N 7°56.1'	233°26.0'	S 22°10.0'	228°44.3'	S 20°39.5'	252°41.9'	S 23°39.0'
2	183°25.5'	S 9°42.4'	206°40.0'	S 9°36.9'	166°20.6'	N 7°57.4'	258°27.9'	S 22°09.9'	243°46.5'	S 20°39.4'	267°42.5'	S 23°39.0'
3	198°28.0'	S 9°41.5'	221°40.1'	S 9°36.0'	181°20.5'	N 7°58.7'	268°29.9'	S 22°09.9'	258°48.7'	S 20°39.4'	282°43.1'	S 23°39.0'
4	213°30.4'	S 9°40.6'	236°40.2'	S 9°35.1'	196°20.4'	N 7°59.9'	283°31.8'	S 22°09.8'	273°50.9'	S 20°39.3'	297°43.7'	S 23°38.9'
5	228°32.9'	S 9°39.7'	251°40.3'	S 9°34.2'	211°20.3'	N 8°01.2'	298°33.8'	S 22°09.7'	288°53.1'	S 20°39.3'	312°44.3'	S 23°38.9'
6	243°35.3'	S 9°38.8'	266°40.4'	S 9°33.2'	226°20.2'	N 8°02.4'	313°35.7'	S 22°09.7'	303°55.3'	S 20°39.2'	327°44.8'	S 23°38.9'
7	258°37.8'	S 9°37.8'	281°40.4'	S 9°32.3'	241°20.1'	N 8°03.7'	328°37.7'	S 22°09.6'	318°57.5'	S 20°39.2'	342°45.4'	S 23°38.8'
8	273°40.3'	S 9°36.9'	296°40.5'	S 9°31.4'	256°19.9'	N 8°04.9'	343°39.6'	S 22°09.6'	333°59.7'	S 20°39.1'	357°46.0'	S 23°38.8'
9	288°42.7'	S 9°36.0'	311°40.6'	S 9°30.5'	271°19.8'	N 8°06.2'	358°41.6'	S 22°09.5'	349°01.9'	S 20°39.1'	12°46.6'	S 23°38.8'
10	303°45.2'	S 9°35.1'	326°40.7'	S 9°29.5'	286°19.7'	N 8°07.4'	13°43.5'	S 22°09.4'	4°04.1'	S 20°39.0'	27°47.2'	S 23°38.7'
11	318°47.7'	S 9°34.2'	341°40.8'	S 9°28.6'	301°19.6'	N 8°08.7'	28°45.4'	S 22°09.4'	19°06.3'	S 20°39.0'	42°47.8'	S 23°38.7'
12	333°50.1'	S 9°33.2'	356°40.9'	S 9°28.6'	316°19.5'	N 8°09.9'	43°47.4'	S 22°09.3'	34°08.5'	S 20°38.9'	57°48.3'	S 23°38.7'
13	348°52.6'	S 9°32.3'	11°41.0'	S 9°28.6'	331°19.4'	N 8°11.2'	58°49.3'	S 22°09.2'	49°10.7'	S 20°38.9'	72°48.9'	S 23°38.6'
14	3°55.1'	S 9°31.4'	26°41.1'	S 9°28.6'	346°19.3'	N 8°12.4'	73°51.3'	S 22°09.2'	64°12.9'	S 20°38.8'	87°49.5'	S 23°38.6'
15	18°57.5'	S 9°30.5'	41°41.2'	S 9°28.6'	1°19.2'	N 8°13.7'	88°53.2'	S 22°09.1'	79°15.1'	S 20°38.8'	102°50.1'	S 23°38.6'
16	33°60.0'	S 9°29.5'	56°41.2'	S 9°28.6'	16°19.1'	N 8°14.9'	103°55.2'	S 22°09.1'	94°17.3'	S 20°38.7'	117°50.7'	S 23°38.5'
17	49°02.5'	S 9°28.6'	71°41.3'	S 9°28.6'	31°19.0'	N 8°16.2'	118°57.1'	S 22°09.0'	109°19.4'	S 20°38.7'	132°51.2'	S 23°38.5'
18	64°04.9'	S 9°27.7'	86°41.4'	S 9°27.7'	46°18.9'	N 8°17.4'	133°59.1'	S 22°08.9'	124°21.6'	S 20°38.7'	147°51.8'	S 23°38.5'
19	79°07.4'	S 9°26.8'	101°41.5'	S 9°26.8'	61°18.7'	N 8°18.7'	149°01.0'	S 22°08.9'	139°23.8'	S 20°38.6'	162°52.4'	S 23°38.4'
20	94°09.8'	S 9°25.8'	116°41.6'	S 9°25.8'	76°18.6'	N 8°19.9'	164°03.0'	S 22°08.8'	154°26.0'	S 20°38.6'	177°53.0'	S 23°38.4'
21	109°12.3'	S 9°24.9'	131°41.7'	S 9°24.9'	91°18.5'	N 8°21.2'	179°04.9'	S 22°08.8'	169°28.2'	S 20°38.5'	192°53.6'	S 23°38.4'
22	124°14.8'	S 9°24.0'	146°41.8'	S 9°24.0'	106°18.4'	N 8°22.4'	194°06.9'	S 22°08.7'	184°30.4'	S 20°38.5'	207°54.2'	S 23°38.3'
23	139°17.2'	S 9°23.1'	161°41.9'	S 9°23.1'	121°18.3'	N 8°23.7'	209°08.9'	S 22°08.6'	199°32.6'	S 20°38.4'	222°54.7'	S 23°38.3'
		SD 16.2' d 0.9'		v -0.1' d 1.3'		v 1.9' d 0.1'		v 2.2' d 0.0'		v 0.6' d 0.0'		
Mer. pass.		12 h 13 m 17 s		14 h 55 m		9 h 5 m		9 h 44 m		8 h 9 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sirius	-Adhara	-Betelgeuse	-Capella	-Rigel	-Aldebaran	-Venus	+Fomalhaut
0	171°17.8'	S 12°26.4'	14.7'	10.2'	54.2'								
1	185°51.4'	S 12°16.2'	14.7'	10.3'	54.2'								
2	200°25.1'	S 12°05.9'	14.8'	10.3'	54.2'								
3	214°58.9'	S 11°55.6'	14.8'	10.4'	54.2'								
4	229°32.7'	S 11°45.2'	14.8'	10.4'	54.2'								
5	244°06.5'	S 11°34.8'	14.9'	10.5'	54.2'								
6	258°40.4'	S 11°24.3'	14.9'	10.5'	54.2'								
7	273°14.3'	S 11°13.9'	15.0'	10.5'	54.1'								
8	287°48.3'	S 11°03.3'	15.0'	10.6'	54.1'								
9	302°22.3'	S 10°52.7'	15.1'	10.6'	54.1'								
10	316°56.4'	S 10°42.1'	15.1'	10.7'	54.1'								
11	331°30.5'	S 10°31.4'	15.2'	10.7'	54.1'	109°29.4'	108°01.4'	102°51.6'	99°06.5'	90°03.4'	85°26.5'	35°22.1'	
12	346°04.7'	S 10°20.7'	15.2'	10.7'	54.1'	109°07.6'	107°44.9'	102°22.9'	98°39.3'	89°37.4'	84°56.7'	34°55.5'	
13	0°38.9'	S 10°10.0'	15.2'	10.8'	54.1'	108°45.8'	107°28.3'	101°54.1'	98°12.1'	89°11.4'	84°26.9'	34°29.0'	19°38.1'
14	15°13.1'	S 9°59.2'	15.3'	10.8'	54.1'	108°23.9'	107°11.6'	101°25.4'	97°45.0'	88°45.4'	83°57.2'	34°02.5'	19°53.4'
15	29°47.4'	S 9°48.4'	15.3'	10.8'	54.1'	108°02.0'	106°54.9'	100°56.7'	97°17.8'	88°19.4'	83°27.4'	33°35.9'	20°09.3'
16	44°21.7'	S 9°37.6'	15.4'	10.9'	54.1'	107°40.1'	106°38.2'	100°28.0'	96°50.6'	87°53.4'	82°57.7'	33°09.4'	20°25.6'
17	58°56.0'	S 9°26.7'	15.4'	10.9'	54.1'	107°18.1'	106°21.4'	99°59.3'	96°23.5'	87°27.5'	82°27.9'	32°43.0'	20°42.4'
18	73°30.4'	S 9°15.8'	15.4'	11.0'	54.1'	106°56.1'	106°04.5'	99°30.6'	95°56.3'	87°01.5'	81°58.2'	32°16.5'	20°59.7'
19	88°04.8'	S 9°04.8'	15.5'	11.0'	54.1'	106°34.1'	105°47.6'	99°02.0'	95°29.2'	86°35.6'	81°28.5'	31°50.1'	21°17.4'
20	102°39.3'	S 8°53.8'	15.5'	11.0'	54.0'	106°12.0'	105°30.7'	98°33.3'	95°02.0'	86°09.6'	80°58.8'	31°23.7'	21°35.5'
21	117°13.8'	S 8°42.8'	15.5'	11.0'	54.0'	105°50.0'	105°13.7'	98°04.6'	94°34.9'	85°43.7'	80°29.1'	30°57.3'	21°54.1'
22	131°48.3'	S 8°31.8'	15.6'	11.1'	54.0'	105°27.9'	104°56.7'	97°35.9'	94°07.7'	85°17.8'	79°59.4'	30°30.9'	22°13.0'
23	146°22.9'	S 8°20.7'	15.6'	11.1'	54.0'	105°05.7'	104°39.6'	97°07.3'	93°40.6'	84°51.9'	79°29.7'	30°04.6'	22°32.2'
Mer. pass.		12 h 57 m SD 14.8'		phase 0%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.1'	Spica	+1.0	158°26.2'	S 11°15.9'	Betelgeuse	+0.5	270°56.2'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°21.0'	Acrux	+0.8	173°03.7'	S 63°12.4'	Capella	+0.1	280°27.5'	N 46°01.1'
Altair	+0.8	62°04.0'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.0'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.1'	N 38°47.9'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.8'
Antares	+1.1	112°20.6'	S 26°28.4'	Procyon	+0.4	244°54.7'	N 5°10.2'	Polaris	+2.0	315°55.3'	N 89°21.1'
Rigil Kent	-0.0	139°45.2'	S 60°54.7'	Adhara	+1.5	255°08.7'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.5'
Arcturus	-0.1	145°51.4'	N 19°04.6'	Sirius	-1.4	258°29.5'	S 16°44.9'				
Hadar	+0.6	148°41.0'	S 60°27.9'	Canopus	-0.6	263°53.8'	S 52°42.7'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	154°19.7'	S 9°22.1'	176°42.0'	S 9°22.1'	136°18.2'	N 8°24.9'	224°10.8'	S 22°08.6'	214°34.8'	S 20°38.4'	237°55.3'	S 23°38.3'
1	169°22.2'	S 9°21.2'	191°42.1'	S 9°21.2'	151°18.1'	N 8°26.2'	239°12.8'	S 22°08.5'	229°37.0'	S 20°38.3'	252°55.9'	S 23°38.2'
2	184°24.6'	S 9°20.3'	206°42.2'	S 9°20.3'	166°18.0'	N 8°27.4'	254°14.7'	S 22°08.5'	244°39.2'	S 20°38.3'	267°56.5'	S 23°38.2'
3	199°27.1'	S 9°19.4'	221°42.3'	S 9°19.4'	181°17.9'	N 8°28.7'	269°16.7'	S 22°08.4'	259°41.4'	S 20°38.2'	282°57.1'	S 23°38.1'
4	214°29.6'	S 9°18.4'	236°42.3'	S 9°18.4'	196°17.8'	N 8°29.9'	284°18.6'	S 22°08.3'	274°43.6'	S 20°38.2'	297°57.6'	S 23°38.1'
5	229°32.0'	S 9°17.5'	251°42.4'	S 9°17.5'	211°17.7'	N 8°31.2'	299°20.6'	S 22°08.3'	289°45.8'	S 20°38.1'	312°58.2'	S 23°38.1'
6	244°34.5'	S 9°16.6'	266°42.5'	S 9°16.6'	226°17.6'	N 8°32.4'	314°22.5'	S 22°08.2'	304°48.0'	S 20°38.1'	327°58.8'	S 23°38.0'
7	259°36.9'	S 9°15.7'	281°42.6'	S 9°15.7'	241°17.5'	N 8°33.7'	329°24.5'	S 22°08.1'	319°50.2'	S 20°38.0'	342°59.4'	S 23°38.0'
8	274°39.4'	S 9°14.7'	296°42.7'	S 9°14.7'	256°17.3'	N 8°34.9'	344°26.4'	S 22°08.1'	334°52.4'	S 20°38.0'	357°60.0'	S 23°37.9'
9	289°41.9'	S 9°13.8'	311°42.8'	S 9°13.8'	271°17.2'	N 8°36.2'	359°28.4'	S 22°08.0'	349°54.6'	S 20°37.9'	13°00.6'	S 23°37.9'
10	304°44.3'	S 9°12.9'	326°42.9'	S 9°12.9'	286°17.1'	N 8°37.4'	14°30.3'	S 22°08.0'	4°56.8'	S 20°37.9'	28°01.1'	S 23°37.9'
11	319°46.8'	S 9°11.9'	341°43.0'	S 9°11.9'	301°17.0'	N 8°38.6'	29°32.3'	S 22°07.9'	19°59.0'	S 20°37.9'	43°01.7'	S 23°37.8'
12	334°49.3'	S 9°11.0'	356°43.1'	S 9°11.0'	316°16.9'	N 8°39.9'	44°34.2'	S 22°07.8'	35°01.2'	S 20°37.8'	58°02.3'	S 23°37.8'
13	349°51.7'	S 9°10.1'	11°43.2'	S 9°10.1'	331°16.8'	N 8°41.1'	59°36.2'	S 22°07.8'	50°03.4'	S 20°37.8'	73°02.9'	S 23°37.7'
14	4°54.2'	S 9°09.2'	26°43.3'	S 9°09.2'	346°16.7'	N 8°42.4'	74°38.1'	S 22°07.7'	65°05.6'	S 20°37.7'	88°03.5'	S 23°37.7'
15	19°56.7'	S 9°08.2'	41°43.4'	S 9°08.2'	1°16.6'	N 8°43.6'	89°40.1'	S 22°07.7'	80°07.8'	S 20°37.7'	103°04.0'	S 23°37.6'
16	34°59.1'	S 9°07.3'	56°43.5'	S 9°07.3'	16°16.5'	N 8°44.9'	104°42.0'	S 22°07.6'	95°10.0'	S 20°37.6'	118°04.6'	S 23°37.6'
17	50°01.6'	S 9°06.4'	71°43.6'	S 9°06.4'	31°16.4'	N 8°46.1'	119°44.0'	S 22°07.5'	110°12.2'	S 20°37.6'	133°05.2'	S 23°37.6'
18	65°04.1'	S 9°05.4'	86°43.7'	S 9°05.4'	46°16.3'	N 8°47.3'	134°46.0'	S 22°07.5'	125°14.4'	S 20°37.5'	148°05.8'	S 23°37.5'
19	80°06.5'	S 9°04.5'	101°43.8'	S 9°04.5'	61°16.2'	N 8°48.6'	149°47.9'	S 22°07.4'	140°16.6'	S 20°37.5'	163°06.4'	S 23°37.5'
20	95°09.0'	S 9°03.6'	116°43.9'	S 9°03.6'	76°16.1'	N 8°49.8'	164°49.9'	S 22°07.3'	155°18.8'	S 20°37.4'	178°07.0'	S 23°37.4'
21	110°11.4'	S 9°02.7'	131°44.0'	S 9°02.7'	91°16.0'	N 8°51.1'	179°51.8'	S 22°07.3'	170°21.0'	S 20°37.4'	193°07.5'	S 23°37.4'
22	125°13.9'	S 9°01.7'	146°44.1'	S 9°01.7'	106°15.9'	N 8°52.3'	194°53.8'	S 22°07.2'	185°23.2'	S 20°37.3'	208°08.1'	S 23°37.3'
23	140°16.4'	S 9°00.8'	161°44.2'	S 9°00.8'	121°15.7'	N 8°53.6'	209°55.7'	S 22°07.2'	200°25.4'	S 20°37.3'	223°08.7'	S 23°37.3'
		SD 16.2' d 0.9'		v -0.1' d 1.2'		v 2.0' d 0.1'		v 2.2' d 0.0'		v 0.6' d 0.0'		
Mer. pass.		12 h 13 m 8 s		14 h 55 m		9 h 2 m		9 h 40 m		8 h 8 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Pollux	-Procyon	-Sirius	-Capella	-Rigel	-Aldebaran	-Venus	+Fomalhaut
0	160°57.5'	S 8°09.6'	15.6'	11.1'	54.0'			104°43.6'	93°13.4'	84°26.0'	79°00.0'	29°38.2'	22°51.9'
1	175°32.2'	S 7°58.5'	15.7'	11.2'	54.0'			104°21.4'	92°46.3'	84°00.2'	78°30.4'	29°11.9'	23°11.8'
2	190°06.8'	S 7°47.3'	15.7'	11.2'	54.0'			103°59.2'	92°19.2'	83°34.3'	78°00.7'	28°45.6'	23°32.1'
3	204°41.5'	S 7°36.1'	15.7'	11.2'	54.0'			103°37.0'	91°52.1'	83°08.5'	77°31.1'	28°19.4'	23°52.7'
4	219°16.3'	S 7°24.9'	15.8'	11.2'	54.0'			103°14.7'	91°24.9'	82°42.7'	77°01.4'	27°53.2'	24°13.6'
5	233°51.0'	S 7°13.6'	15.8'	11.3'	54.0'		119°45.9'	102°52.5'	90°57.8'	82°16.8'	76°31.8'	27°27.0'	24°34.7'
6	248°25.8'	S 7°02.4'	15.8'	11.3'	54.0'		119°18.1'	102°30.2'	90°30.7'	81°51.1'	76°02.2'	27°00.8'	24°56.1'
7	263°00.7'	S 6°51.1'	15.9'	11.3'	54.0'	119°39.4'	118°50.3'	102°07.9'	90°03.6'	81°25.3'	75°32.5'	26°34.6'	25°17.8'
8	277°35.5'	S 6°39.7'	15.9'	11.3'	54.0'	119°09.9'	118°22.4'	101°45.6'	89°36.5'	80°59.5'	75°02.9'	26°08.5'	25°39.7'
9	292°10.4'	S 6°28.4'	15.9'	11.4'	54.0'	118°40.4'	117°54.6'	101°23.2'	89°09.5'	80°33.8'	74°33.3'	25°42.4'	26°01.9'
10	306°45.3'	S 6°17.0'	15.9'	11.4'	54.0'	118°10.9'	117°26.7'	101°00.9'	88°42.4'	80°08.0'	74°03.7'	25°16.3'	26°24.2'
11	321°20.2'	S 6°05.7'	16.0'	11.4'	54.0'	117°41.4'	116°58.9'	100°38.5'	88°15.3'	79°42.3'	73°34.1'	24°50.3'	26°46.8'
12	335°55.2'	S 5°54.2'	16.0'	11.4'	54.0'	117°11.9'	116°31.0'	100°16.1'	87°48.2'	79°16.6'	73°04.5'	24°24.3'	27°09.6'
13	350°30.2'	S 5°42.8'	16.0'	11.4'	54.0'	116°42.5'	116°03.1'	99°53.7'	87°21.2'	78°51.0'	72°35.0'	23°58.3'	27°32.6'
14	5°05.2'	S 5°31.4'	16.0'	11.5'	53.9'	116°13.0'	115°35.2'	99°31.3'	86°54.1'	78°25.3'	72°05.4'	23°32.4'	27°55.8'
15	19°40.2'	S 5°19.9'	16.1'	11.5'	53.9'	115°43.5'	115°07.3'	99°08.9'	86°27.1'	77°59.6'	71°35.8'	23°06.5'	28°19.2'
16	34°15.3'	S 5°08.4'	16.1'	11.5'	53.9'	115°14.1'	114°39.4'	98°46.5'	86°00.1'	77°34.0'	71°06.3'	22°40.6'	28°42.7'
17	48°50.4'	S 4°56.9'	16.1'	11.5'	53.9'	114°44.6'	114°11.5'	98°24.0'	85°33.0'	77°08.4'	70°36.7'	22°14.8'	29°06.4'
18	63°25.5'	S 4°45.4'	16.1'	11.5'	53.9'	114°15.1'	113°43.6'	98°01.5'	85°06.0'	76°42.8'	70°07.2'	21°49.0'	29°30.2'
19	78°00.6'	S 4°33.9'	16.1'	11.6'	53.9'	113°45.7'	113°15.7'	97°39.1'	84°39.0'	76°17.3'	69°37.6'	21°23.3'	29°54.2'
20	92°35.7'	S 4°22.3'	16.2'	11.6'	53.9'	113°16.2'	112°47.7'	97°16.6'	84°12.0'	75°51.7'	69°08.1'	20°57.6'	30°18.4'
21	107°10.9'	S 4°10.7'	16.2'	11.6'	53.9'	112°46.8'	112°19.8'	96°54.1'	83°45.0'	75°26.2'	68°38.6'	20°31.9'	30°42.7'
22	121°46.1'	S 3°59.2'	16.2'	11.6'	53.9'	112°17.4'	111°51.8'	96°31.6'	83°18.0'	75°00.7'	68°09.0'	20°06.3'	31°07.1'
23	136°21.3'	S 3°47.6'	16.2'	11.6'	53.9'	111°47.9'	111°23.9'	96°09.1'	82°51.1'	74°35.2'	67°39.5'	19°40.8'	31°31.7'
Mer. pass.		13 h 39 m SD 14.7'		phase 2%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.1'	Spica	+1.0	158°26.2'	S 11°15.9'	Betelgeuse	+0.5	270°56.2'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°20.9'	Acrux	+0.8	173°03.7'	S 63°12.4'	Capella	+0.1	280°27.5'	N 46°01.1'
Altair	+0.8	62°04.0'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.0'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.1'	N 38°47.9'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.1'	N 16°32.8'
Antares	+1.1	112°20.6'	S 26°28.4'	Procyon	+0.4	244°54.7'	N 5°10.2'	Polaris	+2.0	315°55.8'	N 89°21.1'
Rigel Kent	-0.0	139°45.2'	S 60°54.8'	Adhara	+1.5	255°08.7'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.5'
Arcturus	-0.1	145°51.3'	N 19°04.6'	Sirius	-1.4	258°29.5'	S 16°44.9'				
Hadar	+0.6	148°41.0'	S 60°27.9'	Canopus	-0.6	263°53.8'	S 52°42.7'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	155°18.8'	176°44.3'	S 8°59.9'	136°15.6'	N 8°54.8'	224°57.7'	S 22°07.1'	215°27.6'	S 20°37.2'	238°09.3'	S 23°37.2'	
1	170°21.3'	191°44.4'	S 8°58.9'	151°15.5'	N 8°56.0'	239°59.6'	S 22°07.0'	230°29.8'	S 20°37.2'	253°09.9'	S 23°37.2'	
2	185°23.8'	206°44.5'	S 8°58.0'	166°15.4'	N 8°57.3'	255°01.6'	S 22°07.0'	245°32.0'	S 20°37.1'	268°10.4'	S 23°37.2'	
3	200°26.2'	221°44.6'	S 8°57.1'	181°15.3'	N 8°58.5'	270°03.5'	S 22°06.9'	260°34.2'	S 20°37.1'	283°11.0'	S 23°37.1'	
4	215°28.7'	236°44.7'	S 8°56.1'	196°15.2'	N 8°59.8'	285°05.5'	S 22°06.9'	275°36.4'	S 20°37.1'	298°11.6'	S 23°37.1'	
5	230°31.2'	251°44.8'	S 8°55.2'	211°15.1'	N 9°01.0'	300°07.5'	S 22°06.8'	290°38.6'	S 20°37.0'	313°12.2'	S 23°37.0'	
6	245°33.6'	266°44.9'	S 8°54.3'	226°15.0'	N 9°02.2'	315°09.4'	S 22°06.7'	305°40.8'	S 20°37.0'	328°12.8'	S 23°37.0'	
7	260°36.1'	281°45.0'	S 8°53.3'	241°14.9'	N 9°03.5'	330°11.4'	S 22°06.7'	320°43.0'	S 20°36.9'	343°13.4'	S 23°36.9'	
8	275°38.5'	296°45.1'	S 8°52.4'	256°14.8'	N 9°04.7'	345°13.3'	S 22°06.6'	335°45.2'	S 20°36.9'	358°13.9'	S 23°36.9'	
9	290°41.0'	311°45.2'	S 8°51.5'	271°14.7'	N 9°05.9'	0°15.3'	S 22°06.5'	350°47.4'	S 20°36.8'	13°14.5'	S 23°36.8'	
10	305°43.5'	326°45.3'	S 8°50.5'	286°14.6'	N 9°07.2'	15°17.2'	S 22°06.5'	5°49.6'	S 20°36.8'	28°15.1'	S 23°36.8'	
11	320°45.9'	341°45.4'	S 8°49.6'	301°14.5'	N 9°08.4'	30°19.2'	S 22°06.4'	20°51.8'	S 20°36.7'	43°15.7'	S 23°36.7'	
12	335°48.4'	356°45.5'	S 8°48.7'	316°14.4'	N 9°09.7'	45°21.2'	S 22°06.4'	35°54.0'	S 20°36.7'	58°16.3'	S 23°36.7'	
13	350°50.9'	11°45.6'	S 8°47.7'	331°14.3'	N 9°10.9'	60°23.1'	S 22°06.3'	50°56.2'	S 20°36.6'	73°16.8'	S 23°36.6'	
14	5°53.3'	26°45.7'	S 8°46.8'	346°14.2'	N 9°12.1'	75°25.1'	S 22°06.2'	65°58.4'	S 20°36.6'	88°17.4'	S 23°36.6'	
15	20°55.8'	41°45.8'	S 8°45.9'	1°14.1'	N 9°13.4'	90°27.0'	S 22°06.2'	81°00.6'	S 20°36.5'	103°18.0'	S 23°36.5'	
16	35°58.3'	56°45.9'	S 8°44.9'	16°14.0'	N 9°14.6'	105°29.0'	S 22°06.1'	96°02.8'	S 20°36.5'	118°18.6'	S 23°36.5'	
17	51°00.7'	71°46.0'	S 8°44.0'	31°13.9'	N 9°15.8'	120°30.9'	S 22°06.0'	111°05.0'	S 20°36.4'	133°19.2'	S 23°36.4'	
18	66°03.2'	86°46.1'	S 8°43.1'	46°13.7'	N 9°17.1'	135°32.9'	S 22°06.0'	126°07.2'	S 20°36.4'	148°19.8'	S 23°36.4'	
19	81°05.7'	101°46.2'	S 8°42.1'	61°13.6'	N 9°18.3'	150°34.9'	S 22°05.9'	141°09.4'	S 20°36.4'	163°20.3'	S 23°36.3'	
20	96°08.1'	116°46.3'	S 8°41.2'	76°13.5'	N 9°19.5'	165°36.8'	S 22°05.9'	156°11.6'	S 20°36.3'	178°20.9'	S 23°36.2'	
21	111°10.6'	131°46.4'	S 8°40.3'	91°13.4'	N 9°20.8'	180°38.8'	S 22°05.8'	171°13.8'	S 20°36.3'	193°21.5'	S 23°36.2'	
22	126°13.0'	146°46.5'	S 8°39.3'	106°13.3'	N 9°22.0'	195°40.7'	S 22°05.7'	186°16.0'	S 20°36.2'	208°22.1'	S 23°36.1'	
23	141°15.5'	161°46.6'	S 8°38.4'	121°13.2'	N 9°23.2'	210°42.7'	S 22°05.7'	201°18.2'	S 20°36.2'	223°22.7'	S 23°36.1'	
		SD 16.2'	<i>d</i> 0.9'	<i>v</i> -0.1'	<i>d</i> 1.2'	<i>v</i> 2.0'	<i>d</i> 0.1'	<i>v</i> 2.2'	<i>d</i> 0.0'	<i>v</i> 0.6'	<i>d</i> 0.1'	
Mer. pass.		12 h 12 m 58 s		14 h 55 m		8 h 59 m		9 h 37 m		8 h 7 m		

h	Moon				Lunar distance								
	GHA	dec	<i>v</i>	<i>d</i>	HP	-Pollux	-Procyon	-Adhara	-Capella	-Rigel	-Aldebaran	-Venus	+Fomalhaut
0	150°56.5'	S 3°36.0'	16.2'	11.6'	53.9'	111°18.5'	110°55.9'	97°22.5'	82°24.1'	74°09.8'	67°10.0'	19°15.3'	31°56.3'
1	165°31.7'	S 3°24.3'	16.2'	11.6'	53.9'	110°49.1'	110°28.0'	97°04.7'	81°57.1'	73°44.4'	66°40.5'	18°49.9'	32°21.1'
2	180°07.0'	S 3°12.7'	16.3'	11.6'	53.9'	110°19.7'	110°00.0'	96°46.9'	81°30.2'	73°18.9'	66°11.0'	18°24.5'	32°46.0'
3	194°42.2'	S 3°01.1'	16.3'	11.7'	53.9'	109°50.2'	109°32.0'	96°29.1'	81°03.3'	72°53.6'	65°41.5'	17°59.2'	33°11.1'
4	209°17.5'	S 2°49.4'	16.3'	11.7'	53.9'	109°20.8'	109°04.0'	96°11.2'	80°36.3'	72°28.2'	65°12.0'	17°34.0'	33°36.2'
5	223°52.8'	S 2°37.8'	16.3'	11.7'	53.9'	108°51.4'	108°36.1'	95°53.3'	80°09.4'	72°02.9'	64°42.5'	17°08.8'	34°01.4'
6	238°28.1'	S 2°26.1'	16.3'	11.7'	53.9'	108°22.0'	108°08.1'	95°35.5'	79°42.5'	71°37.5'	64°13.0'	16°43.8'	34°26.7'
7	253°03.4'	S 2°14.4'	16.3'	11.7'	53.9'	107°52.6'	107°40.1'	95°17.6'	79°15.6'	71°12.3'	63°43.5'	16°18.8'	34°52.2'
8	267°38.7'	S 2°02.7'	16.3'	11.7'	53.9'	107°23.2'	107°12.1'	94°59.7'	78°48.8'	70°47.0'	63°14.0'	15°53.9'	35°17.7'
9	282°14.0'	S 1°51.0'	16.3'	11.7'	53.9'	106°53.8'	106°44.1'	94°41.7'	78°21.9'	70°21.8'	62°44.6'	15°29.1'	35°43.3'
10	296°49.4'	S 1°39.3'	16.3'	11.7'	53.9'	106°24.4'	106°16.0'	94°23.8'	77°55.0'	69°56.6'	62°15.1'	15°04.4'	36°08.9'
11	311°24.7'	S 1°27.6'	16.4'	11.7'	53.9'	105°55.0'	105°48.0'	94°05.9'	77°28.2'	69°31.4'	61°45.6'	14°39.9'	36°34.7'
12	326°00.0'	S 1°15.9'	16.4'	11.7'	53.9'	105°25.6'	105°20.0'	93°47.9'	77°01.3'	69°06.2'	61°16.2'	14°15.4'	37°00.6'
13	340°35.4'	S 1°04.2'	16.4'	11.7'	53.9'	104°56.2'	104°52.0'	93°29.9'	76°34.5'	68°41.1'	60°46.7'	13°51.1'	37°26.5'
14	355°10.8'	S 0°52.5'	16.4'	11.7'	53.9'	104°26.8'	104°24.0'	93°12.0'	76°07.7'	68°16.0'	60°17.2'	13°27.0'	37°52.5'
15	9°46.1'	S 0°40.8'	16.4'	11.7'	53.9'	103°57.4'	103°55.9'	92°54.0'	75°40.9'	67°51.0'	59°47.8'	13°03.0'	38°18.5'
16	24°21.5'	S 0°29.1'	16.4'	11.7'	53.9'	103°28.0'	103°27.9'	92°36.0'	75°14.1'	67°25.9'	59°18.3'	12°39.2'	38°44.7'
17	38°56.9'	S 0°17.3'	16.4'	11.7'	53.9'	102°58.6'	102°59.8'	92°18.0'	74°47.4'	67°00.9'	58°48.9'	12°15.6'	39°10.9'
18	53°32.3'	S 0°05.6'	16.4'	11.7'	53.9'	102°29.2'	102°31.8'	92°00.0'	74°20.6'	66°36.0'	58°19.4'	11°52.2'	39°37.1'
19	68°07.6'	N 0°06.1'	16.4'	11.7'	53.9'	101°59.9'	102°03.7'	91°42.0'	73°53.9'	66°11.0'	57°50.0'	11°29.0'	40°03.4'
20	82°43.0'	N 0°17.8'	16.4'	11.7'	53.9'	101°30.5'	101°35.7'	91°24.0'	73°27.1'	65°46.1'	57°20.5'	11°06.2'	40°29.8'
21	97°18.4'	N 0°29.5'	16.4'	11.7'	53.9'	101°01.1'	101°07.6'	91°06.0'	73°00.4'	65°21.2'	56°51.1'	10°43.5'	40°56.3'
22	111°53.8'	N 0°41.3'	16.4'	11.7'	53.9'	100°31.7'	100°39.6'	90°48.0'	72°33.7'	64°56.4'	56°21.6'	10°21.3'	41°22.8'
23	126°29.1'	N 0°53.0'	16.4'	11.7'	53.9'	100°02.3'	100°11.5'	90°30.0'	72°07.0'	64°31.6'	55°52.2'	9°59.3'	41°49.3'
Mer. pass.		14 h 20 m SD 14.7'		phase 5%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.1'	Spica	+1.0	158°26.2'	S 11°15.9'	Betelgeuse	+0.5	270°56.2'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°20.9'	Acrux	+0.8	173°03.7'	S 63°12.4'	Capella	+0.1	280°27.5'	N 46°01.1'
Altair	+0.8	62°04.0'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.1'	N 38°47.9'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.1'	N 16°32.8'
Antares	+1.1	112°20.6'	S 26°28.4'	Procyon	+0.4	244°54.7'	N 5°10.2'	Polaris	+2.0	315°56.3'	N 89°21.1'
Rigil Kent	-0.0	139°45.2'	S 60°54.8'	Adhara	+1.5	255°08.7'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.5'
Arcturus	-0.1	145°51.3'	N 19°04.6'	Sirius	-1.4	258°29.5'	S 16°44.9'				
Hadar	+0.6	148°41.0'	S 60°27.9'	Canopus	-0.6	263°53.8'	S 52°42.7'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	156°18.0'	176°46.7' S	8°37.4'	136°13.1' N	9°24.5'	225°44.7' S	22°05.6'	216°20.4' S	20°36.1'	238°23.2' S	23°36.0'	
1	171°20.4'	191°46.8' S	8°36.5'	151°13.0' N	9°25.7'	240°46.6' S	22°05.6'	231°22.6' S	20°36.1'	253°23.8' S	23°36.0'	
2	186°22.9'	206°46.9' S	8°35.6'	166°12.9' N	9°26.9'	255°48.6' S	22°05.5'	246°24.8' S	20°36.0'	268°24.4' S	23°35.9'	
3	201°25.4'	221°47.0' S	8°34.6'	181°12.8' N	9°28.2'	270°50.5' S	22°05.4'	261°27.0' S	20°36.0'	283°25.0' S	23°35.9'	
4	216°27.8'	236°47.1' S	8°33.7'	196°12.7' N	9°29.4'	285°52.5' S	22°05.4'	276°29.2' S	20°35.9'	298°25.6' S	23°35.8'	
5	231°30.3'	251°47.2' S	8°32.8'	211°12.6' N	9°30.6'	300°54.5' S	22°05.3'	291°31.4' S	20°35.9'	313°26.2' S	23°35.8'	
6	246°32.8'	266°47.3' S	8°31.8'	226°12.5' N	9°31.8'	315°56.4' S	22°05.2'	306°33.6' S	20°35.8'	328°26.7' S	23°35.7'	
7	261°35.2'	281°47.4' S	8°30.9'	241°12.4' N	9°33.1'	330°58.4' S	22°05.2'	321°35.8' S	20°35.8'	343°27.3' S	23°35.6'	
8	276°37.7'	296°47.5' S	8°29.9'	256°12.3' N	9°34.3'	346°00.3' S	22°05.1'	336°38.0' S	20°35.7'	358°27.9' S	23°35.6'	
9	291°40.2'	311°47.7' S	8°29.0'	271°12.2' N	9°35.5'	1°02.3' S	22°05.1'	351°40.2' S	20°35.7'	13°28.5' S	23°35.5'	
10	306°42.6'	326°47.8' S	8°28.1'	286°12.1' N	9°36.8'	16°04.3' S	22°05.0'	6°42.4' S	20°35.7'	28°29.1' S	23°35.5'	
11	321°45.1'	341°47.9' S	8°27.1'	301°12.0' N	9°38.0'	31°06.2' S	22°04.9'	21°44.6' S	20°35.6'	43°29.6' S	23°35.4'	
12	336°47.5'	356°48.0' S	8°26.2'	316°11.9' N	9°39.2'	46°08.2' S	22°04.9'	36°46.8' S	20°35.6'	58°30.2' S	23°35.3'	
13	351°50.0'	11°48.1' S	8°25.2'	331°11.8' N	9°40.4'	61°10.1' S	22°04.8'	51°49.0' S	20°35.5'	73°30.8' S	23°35.3'	
14	6°52.5'	26°48.2' S	8°24.3'	346°11.7' N	9°41.7'	76°12.1' S	22°04.8'	66°51.3' S	20°35.5'	88°31.4' S	23°35.2'	
15	21°54.9'	41°48.3' S	8°23.4'	1°11.6' N	9°42.9'	91°14.1' S	22°04.7'	81°53.5' S	20°35.4'	103°32.0' S	23°35.2'	
16	36°57.4'	56°48.4' S	8°22.4'	16°11.5' N	9°44.1'	106°16.0' S	22°04.6'	96°55.7' S	20°35.4'	118°32.6' S	23°35.1'	
17	51°59.9'	71°48.5' S	8°21.5'	31°11.4' N	9°45.4'	121°18.0' S	22°04.6'	111°57.9' S	20°35.3'	133°33.1' S	23°35.0'	
18	67°02.3'	86°48.6' S	8°20.5'	46°11.3' N	9°46.6'	136°19.9' S	22°04.5'	127°00.1' S	20°35.3'	148°33.7' S	23°35.0'	
19	82°04.8'	101°48.7' S	8°19.6'	61°11.2' N	9°47.8'	151°21.9' S	22°04.4'	142°02.3' S	20°35.2'	163°34.3' S	23°34.9'	
20	97°07.3'	116°48.8' S	8°18.7'	76°11.0' N	9°49.0'	166°23.9' S	22°04.4'	157°04.5' S	20°35.2'	178°34.9' S	23°34.9'	
21	112°09.7'	131°49.0' S	8°17.7'	91°10.9' N	9°50.3'	181°25.8' S	22°04.3'	172°06.7' S	20°35.1'	193°35.5' S	23°34.8'	
22	127°12.2'	146°49.1' S	8°16.8'	106°10.8' N	9°51.5'	196°27.8' S	22°04.3'	187°08.9' S	20°35.1'	208°36.0' S	23°34.7'	
23	142°14.6'	161°49.2' S	8°15.8'	121°10.7' N	9°52.7'	211°29.8' S	22°04.2'	202°11.1' S	20°35.1'	223°36.6' S	23°34.7'	
		SD 16.1' d 0.9'		v -0.1' d 1.2'		v 2.0' d 0.1'		v 2.2' d 0.0'		v 0.6' d 0.1'		
Mer. pass.		12 h 12 m 48 s		14 h 55 m		8 h 56 m		9 h 33 m		8 h 6 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Procyon	-Pollux	-Capella	-Rigel	-Aldebaran	-Venus	+Sun	+Fomalhaut
0	141°04.5'	N 1°04.7'	16.4'	11.7'	53.9'	99°43.4'	99°32.9'	71°40.4'	64°06.9'	55°22.8'	9°37.8'		42°15.9'
1	155°39.9'	N 1°16.4'	16.4'	11.7'	53.9'	99°15.3'	99°03.5'	71°13.7'	63°42.1'	54°53.3'	9°16.7'		42°42.6'
2	170°15.3'	N 1°28.1'	16.4'	11.7'	53.9'	98°47.3'	98°34.1'	70°47.1'	63°17.4'	54°23.9'	8°56.1'		43°09.3'
3	184°50.6'	N 1°39.8'	16.4'	11.7'	53.9'	98°19.2'	98°04.7'	70°20.4'	62°52.8'	53°54.4'	8°36.0'		43°36.1'
4	199°26.0'	N 1°51.5'	16.3'	11.7'	53.9'	97°51.1'	97°35.4'	69°53.8'	62°28.2'	53°25.0'	8°16.6'		44°02.9'
5	214°01.3'	N 2°03.2'	16.3'	11.7'	53.9'	97°23.0'	97°06.0'	69°27.2'	62°03.6'	52°55.5'	7°57.8'		44°29.7'
6	228°36.7'	N 2°14.9'	16.3'	11.7'	53.9'	96°54.9'	96°36.6'	69°00.7'	61°39.1'	52°26.1'			44°56.6'
7	243°12.0'	N 2°26.5'	16.3'	11.7'	53.9'	96°26.8'	96°07.2'	68°34.1'	61°14.6'	51°56.7'		40°00.3'	45°23.6'
8	257°47.3'	N 2°38.2'	16.3'	11.7'	53.9'	95°58.7'	95°37.8'	68°07.5'	60°50.1'	51°27.2'		40°27.1'	45°50.6'
9	272°22.6'	N 2°49.9'	16.3'	11.6'	54.0'	95°30.6'	95°08.4'	67°41.0'	60°25.7'	50°57.8'		40°53.9'	46°17.6'
10	286°57.9'	N 3°01.5'	16.3'	11.6'	54.0'	95°02.5'	94°39.0'	67°14.5'	60°01.4'	50°28.3'		41°20.7'	46°44.7'
11	301°33.2'	N 3°13.2'	16.3'	11.6'	54.0'	94°34.3'	94°09.6'	66°48.0'	59°37.0'	49°58.9'		41°47.6'	47°11.8'
12	316°08.5'	N 3°24.8'	16.3'	11.6'	54.0'	94°06.2'	93°40.2'	66°21.6'	59°12.8'	49°29.4'		42°14.4'	47°38.9'
13	330°43.7'	N 3°36.4'	16.2'	11.6'	54.0'	93°38.1'	93°10.7'	65°55.1'	58°48.5'	48°60.0'		42°41.2'	48°06.1'
14	345°19.0'	N 3°48.0'	16.2'	11.6'	54.0'	93°10.0'	92°41.3'	65°28.7'	58°24.4'	48°30.5'		43°08.1'	48°33.3'
15	359°54.2'	N 3°59.6'	16.2'	11.6'	54.0'	92°41.8'	92°11.9'	65°02.3'	58°00.2'	48°01.1'		43°34.9'	49°00.6'
16	14°29.4'	N 4°11.2'	16.2'	11.6'	54.0'	92°13.7'	91°42.5'	64°35.9'	57°36.2'	47°31.6'		44°01.8'	49°27.9'
17	29°04.7'	N 4°22.7'	16.2'	11.5'	54.0'	91°45.5'	91°13.1'	64°09.5'	57°12.1'	47°02.2'		44°28.7'	49°55.2'
18	43°39.8'	N 4°34.3'	16.2'	11.5'	54.0'	91°17.4'	90°43.6'	63°43.2'	56°48.2'	46°32.7'		44°55.5'	50°22.6'
19	58°15.0'	N 4°45.8'	16.1'	11.5'	54.0'	90°49.2'	90°14.2'	63°16.8'	56°24.3'	46°03.2'		45°22.4'	50°50.0'
20	72°50.1'	N 4°57.3'	16.1'	11.5'	54.0'	90°21.1'	89°44.8'	62°50.5'	56°00.4'	45°33.8'		45°49.3'	51°17.4'
21	87°25.3'	N 5°08.8'	16.1'	11.5'	54.0'	89°52.9'	89°15.3'	62°24.2'	55°36.6'	45°04.3'		46°16.2'	51°44.9'
22	102°00.4'	N 5°20.3'	16.1'	11.5'	54.0'	89°24.7'	88°45.9'	61°58.0'	55°12.8'	44°34.8'		46°43.1'	52°12.4'
23	116°35.5'	N 5°31.8'	16.1'	11.4'	54.0'	88°56.6'	88°16.4'	61°31.8'	54°49.1'	44°05.4'		47°10.0'	52°39.9'
Mer. pass.		15 h 0 m SD 14.7'		phase 10%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.1'	Spica	+1.0	158°26.2'	S 11°15.9'	Betelgeuse	+0.5	270°56.2'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°20.9'	Acrux	+0.8	173°03.6'	S 63°12.4'	Capella	+0.1	280°27.5'	N 46°01.1'
Altair	+0.8	62°04.0'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.5'	S 8°11.0'
Vega	+0.0	80°36.1'	N 38°47.9'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.1'	N 16°32.8'
Antares	+1.1	112°20.6'	S 26°28.4'	Procyon	+0.4	244°54.7'	N 5°10.2'	Polaris	+2.0	315°56.8'	N 89°21.1'
Rigel Kent	-0.0	139°45.2'	S 60°54.8'	Adhara	+1.5	255°08.7'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.5'
Arcturus	-0.1	145°51.3'	N 19°04.6'	Sirius	-1.4	258°29.5'	S 16°44.9'				
Hadar	+0.6	148°41.0'	S 60°27.9'	Canopus	-0.6	263°53.8'	S 52°42.7'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	157°17.1'	S 8°14.9'	176°49.3'	S 8°14.9'	136°10.6'	N 9°53.9'	226°31.7'	S 22°04.1'	217°13.3'	S 20°35.0'	238°37.2'	S 23°34.6'
1	172°19.6'	S 8°14.0'	191°49.4'	S 8°14.0'	151°10.5'	N 9°55.2'	241°33.7'	S 22°04.1'	232°15.5'	S 20°35.0'	253°37.8'	S 23°34.5'
2	187°22.0'	S 8°13.0'	206°49.5'	S 8°13.0'	166°10.4'	N 9°56.4'	256°35.7'	S 22°04.0'	247°17.7'	S 20°34.9'	268°38.4'	S 23°34.5'
3	202°24.5'	S 8°12.1'	221°49.6'	S 8°12.1'	181°10.3'	N 9°57.6'	271°37.6'	S 22°04.0'	262°19.9'	S 20°34.9'	283°39.0'	S 23°34.4'
4	217°27.0'	S 8°11.1'	236°49.7'	S 8°11.1'	196°10.2'	N 9°58.8'	286°39.6'	S 22°03.9'	277°22.1'	S 20°34.8'	298°39.5'	S 23°34.4'
5	232°29.4'	S 8°10.2'	251°49.8'	S 8°10.2'	211°10.1'	N 10°00.0'	301°41.5'	S 22°03.8'	292°24.3'	S 20°34.8'	313°40.1'	S 23°34.3'
6	247°31.9'	S 8°09.2'	266°49.9'	S 8°09.2'	226°10.0'	N 10°01.3'	316°43.5'	S 22°03.8'	307°26.5'	S 20°34.7'	328°40.7'	S 23°34.2'
7	262°34.4'	S 8°08.3'	281°50.1'	S 8°08.3'	241°09.9'	N 10°02.5'	331°45.5'	S 22°03.7'	322°28.7'	S 20°34.7'	343°41.3'	S 23°34.2'
8	277°36.8'	S 8°07.4'	296°50.2'	S 8°07.4'	256°09.8'	N 10°03.7'	346°47.4'	S 22°03.6'	337°30.9'	S 20°34.6'	358°41.9'	S 23°34.1'
9	292°39.3'	S 8°06.4'	311°50.3'	S 8°06.4'	271°09.7'	N 10°04.9'	1°49.4'	S 22°03.6'	352°33.1'	S 20°34.6'	13°42.4'	S 23°34.0'
10	307°41.8'	S 8°05.5'	326°50.4'	S 8°05.5'	286°09.6'	N 10°06.1'	16°51.4'	S 22°03.5'	7°35.3'	S 20°34.5'	28°43.0'	S 23°34.0'
11	322°44.2'	S 8°04.5'	341°50.5'	S 8°04.5'	301°09.5'	N 10°07.4'	31°53.3'	S 22°03.5'	22°37.5'	S 20°34.5'	43°43.6'	S 23°33.9'
12	337°46.7'	S 8°03.6'	356°50.6'	S 8°03.6'	316°09.4'	N 10°08.6'	46°55.3'	S 22°03.4'	37°39.7'	S 20°34.5'	58°44.2'	S 23°33.8'
13	352°49.1'	S 8°02.6'	11°50.7'	S 8°02.6'	331°09.3'	N 10°09.8'	61°57.3'	S 22°03.3'	52°42.0'	S 20°34.4'	73°44.8'	S 23°33.8'
14	7°51.6'	S 8°01.7'	26°50.8'	S 8°01.7'	346°09.2'	N 10°11.0'	76°59.2'	S 22°03.3'	67°44.2'	S 20°34.4'	88°45.4'	S 23°33.7'
15	22°54.1'	S 8°00.8'	41°51.0'	S 8°00.8'	1°09.1'	N 10°12.2'	92°01.2'	S 22°03.2'	82°46.4'	S 20°34.3'	103°45.9'	S 23°33.6'
16	37°56.5'	S 7°59.8'	56°51.1'	S 7°59.8'	16°09.0'	N 10°13.5'	107°03.2'	S 22°03.1'	97°48.6'	S 20°34.3'	118°46.5'	S 23°33.5'
17	52°59.0'	S 7°58.9'	71°51.2'	S 7°58.9'	31°08.9'	N 10°14.7'	122°05.1'	S 22°03.1'	112°50.8'	S 20°34.2'	133°47.1'	S 23°33.5'
18	68°01.5'	S 7°57.9'	86°51.3'	S 7°57.9'	46°08.8'	N 10°15.9'	137°07.1'	S 22°03.0'	127°53.0'	S 20°34.2'	148°47.7'	S 23°33.4'
19	83°03.9'	S 7°57.0'	101°51.4'	S 7°57.0'	61°08.7'	N 10°17.1'	152°09.1'	S 22°03.0'	142°55.2'	S 20°34.1'	163°48.3'	S 23°33.3'
20	98°06.4'	S 7°56.0'	116°51.5'	S 7°56.0'	76°08.6'	N 10°18.3'	167°11.0'	S 22°02.9'	157°57.4'	S 20°34.1'	178°48.9'	S 23°33.3'
21	113°08.9'	S 7°55.1'	131°51.7'	S 7°55.1'	91°08.5'	N 10°19.5'	182°13.0'	S 22°02.8'	172°59.6'	S 20°34.0'	193°49.4'	S 23°33.2'
22	128°11.3'	S 7°54.1'	146°51.8'	S 7°54.1'	106°08.4'	N 10°20.7'	197°15.0'	S 22°02.8'	188°01.8'	S 20°34.0'	208°50.0'	S 23°33.1'
23	143°13.8'	S 7°53.2'	161°51.9'	S 7°53.2'	121°08.3'	N 10°22.0'	212°16.9'	S 22°02.7'	203°04.0'	S 20°33.9'	223°50.6'	S 23°33.1'
		SD 16.1' d 0.9'		v -0.1' d 1.2'		v 2.0' d 0.1'		v 2.2' d 0.0'		v 0.6' d 0.1'		
Mer. pass.		12 h 12 m 38 s		14 h 55 m		8 h 53 m		9 h 30 m		8 h 5 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Regulus	-Betelgeuse	-Capella	-Rigel	-Aldebaran	+Venus	+Sun	+Fomalhaut
0	131°10.5'	N 5°43.3'	16.0'	11.4'	54.0'			62°30.9'	61°05.5'	54°25.5'	43°35.9'	47°36.9'	53°07.5'
1	145°45.5'	N 5°54.7'	16.0'	11.4'	54.1'			62°02.6'	60°39.4'	54°01.9'	43°06.4'	48°03.8'	53°35.1'
2	160°20.6'	N 6°06.1'	16.0'	11.4'	54.1'			61°34.4'	60°13.2'	53°38.4'	42°36.9'	48°30.7'	54°02.7'
3	174°55.5'	N 6°17.5'	16.0'	11.4'	54.1'			61°06.2'	59°47.1'	53°15.0'	42°07.4'	48°57.7'	54°30.4'
4	189°30.5'	N 6°28.8'	15.9'	11.3'	54.1'			60°38.0'	59°21.0'	52°51.6'	41°37.9'	49°24.6'	54°58.0'
5	204°05.4'	N 6°40.2'	15.9'	11.3'	54.1'			60°09.8'	58°54.9'	52°28.3'	41°08.4'	49°51.6'	55°25.8'
6	218°40.3'	N 6°51.5'	15.9'	11.3'	54.1'			59°41.6'	58°28.8'	52°05.1'	40°38.9'	8°03.5'	50°18.6'
7	233°15.2'	N 7°02.8'	15.8'	11.3'	54.1'			59°13.4'	58°02.8'	51°41.9'	40°09.4'	8°22.6'	50°45.5'
8	247°50.1'	N 7°14.1'	15.8'	11.3'	54.1'	119°47.7'		58°45.2'	57°36.8'	51°18.8'	39°39.9'	8°42.3'	51°12.5'
9	262°24.9'	N 7°25.3'	15.8'	11.2'	54.1'	119°18.2'		58°17.0'	57°10.9'	50°55.8'	39°10.4'	9°02.7'	51°39.5'
10	276°59.7'	N 7°36.6'	15.8'	11.2'	54.1'	118°48.6'		57°48.9'	56°44.9'	50°32.9'	38°40.8'	9°23.5'	52°06.5'
11	291°34.4'	N 7°47.8'	15.7'	11.2'	54.1'	118°19.0'		57°20.7'	56°19.0'	50°10.0'	38°11.3'	9°44.9'	52°33.5'
12	306°09.1'	N 7°59.0'	15.7'	11.1'	54.2'	117°49.4'		56°52.6'	55°53.2'	49°47.2'	37°41.8'	10°06.7'	53°00.5'
13	320°43.8'	N 8°10.1'	15.7'	11.1'	54.2'	117°19.8'		56°24.4'	55°27.3'	49°24.5'	37°12.2'	10°28.9'	53°27.6'
14	335°18.5'	N 8°21.2'	15.6'	11.1'	54.2'	116°50.2'		55°56.3'	55°01.5'	49°01.9'	36°42.7'	10°51.5'	53°54.6'
15	349°53.1'	N 8°32.3'	15.6'	11.1'	54.2'	116°20.6'		55°28.1'	54°35.8'	48°39.4'	36°13.1'	11°14.4'	54°21.7'
16	4°27.7'	N 8°43.4'	15.5'	11.0'	54.2'	115°51.0'		55°00.0'	54°10.0'	48°16.9'	35°43.5'	11°37.6'	54°48.7'
17	19°02.2'	N 8°54.4'	15.5'	11.0'	54.2'	115°21.3'		54°31.9'	53°44.3'	47°54.6'	35°13.9'	12°01.0'	55°15.8'
18	33°36.7'	N 9°05.4'	15.5'	11.0'	54.2'	114°51.7'		54°03.8'	53°18.7'	47°32.3'	34°44.4'	12°24.7'	55°42.9'
19	48°11.2'	N 9°16.4'	15.4'	10.9'	54.2'	114°22.0'		53°35.7'	52°53.1'	47°10.2'	34°14.8'	12°48.6'	56°10.0'
20	62°45.6'	N 9°27.3'	15.4'	10.9'	54.2'	113°52.3'		53°07.6'	52°27.5'	46°48.1'	33°45.2'	13°12.7'	56°37.1'
21	77°20.0'	N 9°38.2'	15.3'	10.9'	54.3'	113°22.7'		52°39.6'	52°02.0'	46°26.1'	33°15.6'	13°36.9'	57°04.2'
22	91°54.3'	N 9°49.1'	15.3'	10.8'	54.3'	112°52.9'		52°11.5'	51°36.5'	46°04.3'	32°46.0'	14°01.4'	57°31.4'
23	106°28.6'	N 9°59.9'	15.3'	10.8'	54.3'	112°23.2'		51°43.5'	51°11.1'	45°42.5'	32°16.3'	14°26.0'	57°58.5'
Mer. pass.		15 h 42 m SD 14.7'		phase 16%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.1'	Spica	+1.0	158°26.2'	S 11°15.9'	Betelgeuse	+0.5	270°56.2'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°20.9'	Acrux	+0.8	173°03.6'	S 63°12.4'	Capella	+0.1	280°27.5'	N 46°01.1'
Altair	+0.8	62°04.0'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.6'	S 8°11.0'
Vega	+0.0	80°36.1'	N 38°47.9'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.1'	N 16°32.8'
Antares	+1.1	112°20.6'	S 26°28.4'	Procyon	+0.4	244°54.7'	N 5°10.2'	Polaris	+2.0	315°57.3'	N 89°21.1'
Rigel Kent	-0.0	139°45.2'	S 60°54.8'	Adhara	+1.5	255°08.7'	S 29°00.2'	Achernar	+0.5	335°23.7'	S 57°08.5'
Arcturus	-0.1	145°51.3'	N 19°04.6'	Sirius	-1.4	258°29.5'	S 16°44.9'				
Hadar	+0.6	148°41.0'	S 60°27.9'	Canopus	-0.6	263°53.8'	S 52°42.7'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	158°16.2'	176°52.0'	S 7°52.2'	136°08.2'	N 10°23.2'	227°18.9'	S 22°02.7'	218°06.2'	S 20°33.9'	238°51.2'	S 23°33.0'	
1	173°18.7'	191°52.1'	S 7°51.3'	151°08.1'	N 10°24.4'	242°20.9'	S 22°02.6'	233°08.4'	S 20°33.9'	253°51.8'	S 23°32.9'	
2	188°21.2'	206°52.2'	S 7°50.3'	166°08.0'	N 10°25.6'	257°22.8'	S 22°02.5'	248°10.6'	S 20°33.8'	268°52.3'	S 23°32.8'	
3	203°23.6'	221°52.3'	S 7°49.4'	181°07.9'	N 10°26.8'	272°24.8'	S 22°02.5'	263°12.8'	S 20°33.8'	283°52.9'	S 23°32.8'	
4	218°26.1'	236°52.5'	S 7°48.4'	196°07.8'	N 10°28.0'	287°26.8'	S 22°02.4'	278°15.0'	S 20°33.7'	298°53.5'	S 23°32.7'	
5	233°28.6'	251°52.6'	S 7°47.5'	211°07.7'	N 10°29.2'	302°28.7'	S 22°02.3'	293°17.3'	S 20°33.7'	313°54.1'	S 23°32.6'	
6	248°31.0'	266°52.7'	S 7°46.6'	226°07.6'	N 10°30.5'	317°30.7'	S 22°02.3'	308°19.5'	S 20°33.6'	328°54.7'	S 23°32.5'	
7	263°33.5'	281°52.8'	S 7°45.6'	241°07.5'	N 10°31.7'	332°32.7'	S 22°02.2'	323°21.7'	S 20°33.6'	343°55.3'	S 23°32.5'	
8	278°36.0'	296°52.9'	S 7°44.7'	256°07.4'	N 10°32.9'	347°34.6'	S 22°02.2'	338°23.9'	S 20°33.5'	358°55.8'	S 23°32.4'	
9	293°38.4'	311°53.1'	S 7°43.7'	271°07.3'	N 10°34.1'	2°36.6'	S 22°02.1'	353°26.1'	S 20°33.5'	13°56.4'	S 23°32.3'	
10	308°40.9'	326°53.2'	S 7°42.8'	286°07.2'	N 10°35.3'	17°38.6'	S 22°02.0'	8°28.3'	S 20°33.4'	28°57.0'	S 23°32.2'	
11	323°43.4'	341°53.3'	S 7°41.8'	301°07.1'	N 10°36.5'	32°40.5'	S 22°02.0'	23°30.5'	S 20°33.4'	43°57.6'	S 23°32.2'	
12	338°45.8'	356°53.4'	S 7°40.9'	316°07.0'	N 10°37.7'	47°42.5'	S 22°01.9'	38°32.7'	S 20°33.3'	58°58.2'	S 23°32.1'	
13	353°48.3'	11°53.5'	S 7°39.9'	331°06.9'	N 10°38.9'	62°44.5'	S 22°01.8'	53°34.9'	S 20°33.3'	73°58.7'	S 23°32.0'	
14	8°50.7'	26°53.6'	S 7°39.0'	346°06.8'	N 10°40.1'	77°46.5'	S 22°01.8'	68°37.1'	S 20°33.3'	88°59.3'	S 23°31.9'	
15	23°53.2'	41°53.8'	S 7°38.0'	1°06.7'	N 10°41.3'	92°48.4'	S 22°01.7'	83°39.3'	S 20°33.2'	103°59.9'	S 23°31.9'	
16	38°55.7'	56°53.9'	S 7°37.1'	16°06.6'	N 10°42.6'	107°50.4'	S 22°01.7'	98°41.5'	S 20°33.2'	119°00.5'	S 23°31.8'	
17	53°58.1'	71°54.0'	S 7°36.1'	31°06.5'	N 10°43.8'	122°52.4'	S 22°01.6'	113°43.7'	S 20°33.1'	134°01.1'	S 23°31.7'	
18	69°00.6'	86°54.1'	S 7°35.2'	46°06.4'	N 10°45.0'	137°54.3'	S 22°01.5'	128°45.9'	S 20°33.1'	149°01.7'	S 23°31.6'	
19	84°03.1'	101°54.2'	S 7°34.2'	61°06.3'	N 10°46.2'	152°56.3'	S 22°01.5'	143°48.2'	S 20°33.0'	164°02.2'	S 23°31.5'	
20	99°05.5'	116°54.4'	S 7°33.3'	76°06.2'	N 10°47.4'	167°58.3'	S 22°01.4'	158°50.4'	S 20°33.0'	179°02.8'	S 23°31.5'	
21	114°08.0'	131°54.5'	S 7°32.3'	91°06.1'	N 10°48.6'	183°00.3'	S 22°01.4'	173°52.6'	S 20°32.9'	194°03.4'	S 23°31.4'	
22	129°10.5'	146°54.6'	S 7°31.4'	106°06.0'	N 10°49.8'	198°02.2'	S 22°01.3'	188°54.8'	S 20°32.9'	209°04.0'	S 23°31.3'	
23	144°12.9'	161°54.7'	S 7°30.4'	121°05.9'	N 10°51.0'	213°04.2'	S 22°01.2'	203°57.0'	S 20°32.8'	224°04.6'	S 23°31.2'	
		SD 16.1'	d 0.9'	v -0.1'	d 1.2'	v 2.0'	d 0.1'	v 2.2'	d 0.0'	v 0.6'	d 0.1'	
Mer. pass.		12 h 12 m 27 s		14 h 56 m		8 h 50 m		9 h 26 m		8 h 4 m		

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Betelgeuse	-Capella	-Rigel	-Aldebaran	+Venus	+Sun	+Fomalhaut	+Achernar
0	121°02.9'	N 10°10.7'	15.2'	10.8'	54.3'	51°15.4'	50°45.7'	45°20.9'	31°46.7'	14°50.8'	58°25.7'	64°17.4'	
1	135°37.1'	N 10°21.5'	15.2'	10.7'	54.3'	50°47.4'	50°20.3'	44°59.4'	31°17.1'	15°15.6'	58°52.9'	64°45.6'	
2	150°11.3'	N 10°32.2'	15.1'	10.7'	54.3'	50°19.4'	49°55.0'	44°37.9'	30°47.4'	15°40.7'	59°20.1'	65°13.9'	
3	164°45.4'	N 10°42.9'	15.1'	10.7'	54.3'	49°51.4'	49°29.8'	44°16.7'	30°17.8'	16°05.8'	59°47.3'	65°42.2'	
4	179°19.5'	N 10°53.6'	15.0'	10.6'	54.4'	49°23.4'	49°04.6'	43°55.5'	29°48.1'	16°31.0'	60°14.5'	66°10.5'	
5	193°53.5'	N 11°04.2'	15.0'	10.6'	54.4'	48°55.4'	48°39.4'	43°34.4'	29°18.5'	16°56.4'	60°41.7'	66°38.8'	
6	208°27.5'	N 11°14.8'	14.9'	10.5'	54.4'	48°27.5'	48°14.4'	43°13.5'	28°48.8'	17°21.8'	61°09.0'	67°07.2'	
7	223°01.4'	N 11°25.3'	14.9'	10.5'	54.4'	47°59.5'	47°49.3'	42°52.7'	28°19.1'	17°47.4'	61°36.2'	67°35.6'	
8	237°35.3'	N 11°35.8'	14.8'	10.5'	54.4'	47°31.6'	47°24.3'	42°32.1'	27°49.4'	18°13.0'	62°03.5'	68°04.0'	
9	252°09.2'	N 11°46.3'	14.8'	10.4'	54.4'	47°03.7'	46°59.4'	42°11.6'	27°19.7'	18°38.7'	62°30.8'	68°32.4'	70°18.7'
10	266°42.9'	N 11°56.7'	14.7'	10.4'	54.5'	46°35.8'	46°34.6'	41°51.2'	26°50.0'	19°04.5'	62°58.1'	69°00.9'	70°33.7'
11	281°16.7'	N 12°07.1'	14.7'	10.3'	54.5'	46°07.9'	46°09.8'	41°31.0'	26°20.3'	19°30.3'	63°25.5'	69°29.4'	70°48.8'
12	295°50.4'	N 12°17.4'	14.6'	10.3'	54.5'	45°40.0'	45°45.1'	41°10.9'	25°50.6'	19°56.2'	63°52.8'	69°57.9'	71°04.0'
13	310°24.0'	N 12°27.7'	14.6'	10.2'	54.5'	45°12.2'	45°20.4'	40°51.0'	25°20.9'	20°22.2'	64°20.2'	70°26.4'	71°19.3'
14	324°57.6'	N 12°37.9'	14.5'	10.2'	54.5'	44°44.4'	44°55.8'	40°31.2'	24°51.1'	20°48.3'	64°47.6'	70°55.0'	71°34.6'
15	339°31.1'	N 12°48.1'	14.5'	10.1'	54.5'	44°16.6'	44°31.3'	40°11.6'	24°21.4'	21°14.4'	65°15.0'	71°23.6'	71°50.0'
16	354°04.5'	N 12°58.3'	14.4'	10.1'	54.6'	43°48.8'	44°06.9'	39°52.2'	23°51.6'	21°40.6'	65°42.4'	71°52.2'	72°05.5'
17	8°37.9'	N 13°08.4'	14.3'	10.1'	54.6'	43°21.1'	43°42.5'	39°32.9'	23°21.9'	22°06.8'	66°09.8'	72°20.8'	72°21.0'
18	23°11.3'	N 13°18.4'	14.3'	10.0'	54.6'	42°53.4'	43°18.3'	39°13.9'	22°52.1'	22°33.1'	66°37.3'	72°49.5'	72°36.6'
19	37°44.6'	N 13°28.4'	14.2'	10.0'	54.6'	42°25.7'	42°54.1'	38°55.0'	22°22.4'	22°59.5'	67°04.8'	73°18.2'	72°52.3'
20	52°17.8'	N 13°38.4'	14.2'	9.9'	54.6'	41°58.0'	42°30.0'	38°36.3'	21°52.6'	23°25.9'	67°32.3'	73°46.9'	73°08.1'
21	66°51.0'	N 13°48.3'	14.1'	9.9'	54.6'	41°30.3'	42°05.9'	38°17.7'	21°22.8'	23°52.3'	67°59.8'	74°15.6'	73°23.9'
22	81°24.1'	N 13°58.2'	14.0'	9.8'	54.7'	41°02.7'	41°42.0'	37°59.4'	20°53.0'	24°18.8'	68°27.3'	74°44.4'	73°39.8'
23	95°57.1'	N 14°08.0'	14.0'	9.7'	54.7'	40°35.1'	41°18.2'	37°41.3'	20°23.3'	24°45.4'	68°54.9'	75°13.2'	73°55.7'
Mer. pass.		16 h 24 m SD 14.8'		phase 24%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°19.2'	S 29°31.1'	Spica	+1.0	158°26.2'	S 11°15.9'	Betelgeuse	+0.5	270°56.2'	N 7°24.5'
Deneb	+1.2	49°28.8'	N 45°20.9'	Acrux	+0.8	173°03.6'	S 63°12.4'	Capella	+0.1	280°27.5'	N 46°01.1'
Altair	+0.8	62°04.0'	N 8°55.2'	Regulus	+1.4	207°38.3'	N 11°52.1'	Rigel	+0.2	281°07.6'	S 8°11.0'
Vega	+0.0	80°36.1'	N 38°47.9'	Pollux	+1.2	243°21.8'	N 27°58.6'	Aldebaran	+0.9	290°44.1'	N 16°32.8'
Antares	+1.1	112°20.6'	S 26°28.4'	Procyon	+0.4	244°54.7'	N 5°10.2'	Polaris	+2.0	315°57.7'	N 89°21.1'
Rigil Kent	-0.0	139°45.2'	S 60°54.8'	Adhara	+1.5	255°08.7'	S 29°00.3'	Achernar	+0.5	335°23.7'	S 57°08.5'
Arcturus	-0.1	145°51.3'	N 19°04.6'	Sirius	-1.4	258°29.5'	S 16°44.9'				
Hadar	+0.6	148°41.0'	S 60°27.9'	Canopus	-0.6	263°53.9'	S 52°42.7'				