

Friday 01 May 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	219°22.8'	180°43.2'	N 15°09.2'	141°39.3'	N 27°46.6'	280°21.6'	S 20°53.6'	275°13.8'	S 19°50.5'	254°49.8'	S 15°49.6'			
1	234°25.3'	195°43.3'	N 15°09.9'	156°40.6'	N 27°46.7'	295°24.0'	S 20°53.6'	290°16.2'	S 19°50.5'	269°50.6'	S 15°49.1'			
2	249°27.8'	210°43.3'	N 15°10.7'	171°41.9'	N 27°46.8'	310°26.3'	S 20°53.6'	305°18.6'	S 19°50.5'	284°51.3'	S 15°48.6'			
3	264°30.2'	225°43.4'	N 15°11.4'	186°43.2'	N 27°46.8'	325°28.7'	S 20°53.6'	320°21.1'	S 19°50.5'	299°52.1'	S 15°48.1'			
4	279°32.7'	240°43.5'	N 15°12.2'	201°44.5'	N 27°46.9'	340°31.0'	S 20°53.6'	335°23.5'	S 19°50.5'	314°52.8'	S 15°47.6'			
5	294°35.2'	255°43.6'	N 15°12.9'	216°45.8'	N 27°46.9'	355°33.4'	S 20°53.6'	350°25.9'	S 19°50.5'	329°53.6'	S 15°47.1'			
6	309°37.6'	270°43.6'	N 15°13.7'	231°47.1'	N 27°47.0'	10°35.7'	S 20°53.6'	5°28.3'	S 19°50.5'	344°54.3'	S 15°46.6'			
7	324°40.1'	285°43.7'	N 15°14.4'	246°48.4'	N 27°47.1'	25°38.1'	S 20°53.5'	20°30.7'	S 19°50.5'	359°55.1'	S 15°46.0'			
8	339°42.5'	300°43.8'	N 15°15.2'	261°49.7'	N 27°47.1'	40°40.5'	S 20°53.5'	35°33.2'	S 19°50.5'	14°55.8'	S 15°45.5'			
9	354°45.0'	315°43.8'	N 15°15.9'	276°51.0'	N 27°47.2'	55°42.8'	S 20°53.5'	50°35.6'	S 19°50.5'	29°56.6'	S 15°45.0'			
10	9°47.5'	330°43.9'	N 15°16.7'	291°52.3'	N 27°47.2'	70°45.2'	S 20°53.5'	65°38.0'	S 19°50.5'	44°57.3'	S 15°44.5'			
11	24°49.9'	345°44.0'	N 15°17.4'	306°53.7'	N 27°47.3'	85°47.5'	S 20°53.5'	80°40.4'	S 19°50.5'	59°58.1'	S 15°44.0'			
12	39°52.4'	0°44.1'	N 15°18.2'	321°55.0'	N 27°47.4'	100°49.9'	S 20°53.5'	95°42.9'	S 19°50.5'	74°58.8'	S 15°43.5'			
13	54°54.9'	15°44.1'	N 15°18.9'	336°56.3'	N 27°47.4'	115°52.2'	S 20°53.5'	110°45.3'	S 19°50.5'	89°59.6'	S 15°43.0'			
14	69°57.3'	30°44.2'	N 15°19.7'	351°57.6'	N 27°47.5'	130°54.6'	S 20°53.4'	125°47.7'	S 19°50.5'	105°00.3'	S 15°42.5'			
15	84°59.8'	45°44.3'	N 15°20.4'	6°59.0'	N 27°47.5'	145°56.9'	S 20°53.4'	140°50.1'	S 19°50.5'	120°01.1'	S 15°42.0'			
16	100°02.3'	60°44.3'	N 15°21.2'	22°00.3'	N 27°47.6'	160°59.3'	S 20°53.4'	155°52.5'	S 19°50.5'	135°01.8'	S 15°41.5'			
17	115°04.7'	75°44.4'	N 15°21.9'	37°01.6'	N 27°47.6'	176°01.7'	S 20°53.4'	170°55.0'	S 19°50.5'	150°02.6'	S 15°41.0'			
18	130°07.2'	90°44.5'	N 15°22.7'	52°03.0'	N 27°47.7'	191°04.0'	S 20°53.4'	185°57.4'	S 19°50.5'	165°03.3'	S 15°40.5'			
19	145°09.6'	105°44.6'	N 15°23.4'	67°04.3'	N 27°47.7'	206°06.4'	S 20°53.4'	200°59.8'	S 19°50.4'	180°04.1'	S 15°40.0'			
20	160°12.1'	120°44.6'	N 15°24.2'	82°05.7'	N 27°47.8'	221°08.7'	S 20°53.4'	216°02.2'	S 19°50.4'	195°04.8'	S 15°39.5'			
21	175°14.6'	135°44.7'	N 15°24.9'	97°07.0'	N 27°47.8'	236°11.1'	S 20°53.3'	231°04.7'	S 19°50.4'	210°05.6'	S 15°39.0'			
22	190°17.0'	150°44.8'	N 15°25.7'	112°08.4'	N 27°47.9'	251°13.4'	S 20°53.3'	246°07.1'	S 19°50.4'	225°06.3'	S 15°38.5'			
23	205°19.5'	165°44.8'	N 15°26.4'	127°09.7'	N 27°47.9'	266°15.8'	S 20°53.3'	261°09.5'	S 19°50.4'	240°07.1'	S 15°37.9'			
		SD 15.9'	d 0.7'		v 1.3' d 0.1'		v 2.4' d 0.0'		v 2.4' d 0.0'		v 0.8' d 0.5'			
Mer. pass.		11 h 57 m 4 s		14 h 32 m		5 h 18 m		5 h 38 m		7 h 0 m				

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Acrux	-Arcturus	-Spica	-Regulus	+Pollux	+Procyon	+Betelgeuse	+Sun
0	83°00.3'	N 20°17.3'	8.0'	-7.7'	58.2'	92°21.1'	72°28.7'	71°26.7'	17°29.9'	19°33.3'	25°37.5'	47°31.3'	91°46.2'
1	97°27.3'	N 20°09.5'	8.0'	-7.9'	58.2'	92°02.3'	71°58.4'	70°52.8'	16°56.6'	20°06.5'	26°01.3'	48°03.1'	92°17.9'
2	111°54.3'	N 20°01.7'	8.0'	-8.0'	58.2'	91°43.4'	71°28.1'	70°18.8'	16°23.4'	20°39.8'	26°25.5'	48°34.9'	92°49.6'
3	126°21.4'	N 19°53.7'	8.0'	-8.1'	58.3'	91°24.6'	70°57.7'	69°44.9'	15°50.3'	21°13.2'	26°50.1'	49°06.9'	93°21.3'
4	140°48.4'	N 19°45.6'	8.1'	-8.2'	58.3'	91°05.7'	70°27.3'	69°10.8'	15°17.1'	21°46.6'	27°15.0'	49°38.9'	93°53.1'
5	155°15.5'	N 19°37.3'	8.1'	-8.4'	58.3'	90°46.8'	69°57.0'	68°36.8'	14°44.1'	22°20.2'	27°40.2'	50°10.9'	94°25.0'
6	169°42.6'	N 19°28.9'	8.1'	-8.5'	58.4'	90°27.8'	69°26.6'	68°02.7'	14°11.1'	22°53.8'	28°05.8'	50°43.1'	94°56.8'
7	184°09.7'	N 19°20.5'	8.1'	-8.6'	58.4'	90°08.9'	68°56.2'	67°28.6'	13°38.1'	23°27.4'	28°31.7'	51°15.3'	95°28.7'
8	198°36.8'	N 19°11.8'	8.2'	-8.7'	58.4'	89°49.9'	68°25.8'	66°54.4'	13°05.2'	24°01.2'	28°57.9'	51°47.6'	96°00.7'
9	213°04.0'	N 19°03.1'	8.2'	-8.9'	58.5'	89°30.9'	67°55.4'	66°20.2'	12°32.5'	24°35.0'	29°24.4'	52°19.9'	96°32.7'
10	227°31.2'	N 18°54.2'	8.2'	-9.0'	58.5'	89°11.9'	67°25.0'	65°46.0'	11°59.9'	25°08.9'	29°51.1'	52°52.3'	97°04.7'
11	241°58.4'	N 18°45.3'	8.2'	-9.1'	58.5'	88°52.8'	66°54.6'	65°11.7'	11°27.4'	25°42.8'	30°18.1'	53°24.8'	97°36.8'
12	256°25.6'	N 18°36.2'	8.3'	-9.2'	58.6'	88°33.8'	66°24.2'	64°37.4'	10°55.1'	26°16.8'	30°45.4'	53°57.4'	98°08.9'
13	270°52.8'	N 18°26.9'	8.3'	-9.3'	58.6'	88°14.7'	65°53.9'	64°03.0'	10°23.0'	26°50.9'	31°13.0'	54°30.0'	98°41.0'
14	285°20.1'	N 18°17.6'	8.3'	-9.5'	58.6'	87°55.6'	65°23.5'	63°28.7'	9°51.1'	27°25.0'	31°40.7'	55°02.7'	99°13.2'
15	299°47.4'	N 18°08.2'	8.3'	-9.6'	58.7'	87°36.5'	64°53.1'	62°54.2'	9°19.5'	27°59.2'	32°08.7'	55°35.4'	99°45.4'
16	314°14.7'	N 17°58.6'	8.3'	-9.7'	58.7'	87°17.4'	64°22.7'	62°19.8'	8°48.3'	28°33.4'	32°37.0'	56°08.2'	100°17.6'
17	328°42.1'	N 17°48.9'	8.4'	-9.8'	58.7'	86°58.3'	63°52.3'	61°45.3'	8°17.6'	29°07.7'	33°05.4'	56°41.1'	100°49.9'
18	343°09.5'	N 17°39.1'	8.4'	-9.9'	58.8'	86°39.1'	63°21.9'	61°10.8'	7°47.3'	29°42.1'	33°34.1'	57°14.0'	101°22.3'
19	357°36.9'	N 17°29.2'	8.4'	-10.0'	58.8'	86°20.0'	62°51.6'	60°36.3'	7°17.7'	30°16.5'	34°02.9'	57°47.0'	101°54.6'
20	12°04.3'	N 17°19.1'	8.5'	-10.1'	58.8'	86°00.9'	62°21.2'	60°01.7'		30°50.9'	34°32.0'	58°20.1'	102°27.0'
21	26°31.7'	N 17°09.0'	8.5'	-10.3'	58.9'	85°41.7'	61°50.9'	59°27.0'		31°25.5'	35°01.2'	58°53.2'	102°59.5'
22	40°59.2'	N 16°58.7'	8.5'	-10.4'	58.9'	85°22.6'	61°20.6'	58°52.4'		32°00.0'	35°30.6'	59°26.3'	103°32.0'
23	55°26.7'	N 16°48.4'	8.5'	-10.5'	58.9'	85°03.4'	60°50.3'	58°17.7'		32°34.7'	36°00.2'	59°59.6'	104°04.5'
Mer. pass.		19 h 10 m SD 15.9'		phase 52%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.9'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.3'	N 45°20.8'	Acrux	+0.8	173°03.6'	S 63°12.8'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.6'	N 8°55.2'	Regulus	+1.4	207°38.4'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.5'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°54.9'	N 5°10.3'	Polaris	+2.0	316°12.1'	N 89°20.9'
Rigil Kent	-0.0	139°44.7'	S 60°55.0'	Adhara	+1.5	255°09.0'	S 29°00.3'	Achernar	+0.5	335°23.7'	S 57°08.1'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.9'				
Hadar	+0.6	148°40.6'	S 60°28.2'	Canopus	-0.6	263°54.4'	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	220°22.0'	180°44.9'	N 15°27.1'	142°11.1'	N 27°48.0'	281°18.2'	S 20°53.3'	276°11.9'	S 19°50.4'	255°07.9'	S 15°37.4'			
1	235°24.4'	195°45.0'	N 15°27.9'	157°12.4'	N 27°48.0'	296°20.5'	S 20°53.3'	291°14.4'	S 19°50.4'	270°08.6'	S 15°36.9'			
2	250°26.9'	210°45.0'	N 15°28.6'	172°13.8'	N 27°48.0'	311°22.9'	S 20°53.3'	306°16.8'	S 19°50.4'	285°09.4'	S 15°36.4'			
3	265°29.4'	225°45.1'	N 15°29.4'	187°15.2'	N 27°48.1'	326°25.2'	S 20°53.3'	321°19.2'	S 19°50.4'	300°10.1'	S 15°35.9'			
4	280°31.8'	240°45.2'	N 15°30.1'	202°16.6'	N 27°48.1'	341°27.6'	S 20°53.3'	336°21.6'	S 19°50.4'	315°10.9'	S 15°35.4'			
5	295°34.3'	255°45.2'	N 15°30.9'	217°17.9'	N 27°48.2'	356°30.0'	S 20°53.2'	351°24.1'	S 19°50.4'	330°11.6'	S 15°34.9'			
6	310°36.8'	270°45.3'	N 15°31.6'	232°19.3'	N 27°48.2'	11°32.3'	S 20°53.2'	6°26.5'	S 19°50.4'	345°12.4'	S 15°34.4'			
7	325°39.2'	285°45.4'	N 15°32.3'	247°20.7'	N 27°48.2'	26°34.7'	S 20°53.2'	21°28.9'	S 19°50.4'	0°13.1'	S 15°33.9'			
8	340°41.7'	300°45.4'	N 15°33.1'	262°22.1'	N 27°48.3'	41°37.1'	S 20°53.2'	36°31.3'	S 19°50.4'	15°13.9'	S 15°33.4'			
9	355°44.1'	315°45.5'	N 15°33.8'	277°23.5'	N 27°48.3'	56°39.4'	S 20°53.2'	51°33.8'	S 19°50.4'	30°14.6'	S 15°32.9'			
10	10°46.6'	330°45.6'	N 15°34.6'	292°24.9'	N 27°48.3'	71°41.8'	S 20°53.2'	66°36.2'	S 19°50.4'	45°15.4'	S 15°32.3'			
11	25°49.1'	345°45.6'	N 15°35.3'	307°26.3'	N 27°48.4'	86°44.1'	S 20°53.2'	81°38.6'	S 19°50.4'	60°16.2'	S 15°31.8'			
12	40°51.5'	0°45.7'	N 15°36.0'	322°27.7'	N 27°48.4'	101°46.5'	S 20°53.2'	96°41.0'	S 19°50.4'	75°16.9'	S 15°31.3'			
13	55°54.0'	15°45.8'	N 15°36.8'	337°29.1'	N 27°48.5'	116°48.9'	S 20°53.1'	111°43.5'	S 19°50.4'	90°17.7'	S 15°30.8'			
14	70°56.5'	30°45.8'	N 15°37.5'	352°30.5'	N 27°48.5'	131°51.2'	S 20°53.1'	126°45.9'	S 19°50.4'	105°18.4'	S 15°30.3'			
15	85°58.9'	45°45.9'	N 15°38.2'	7°31.9'	N 27°48.5'	146°53.6'	S 20°53.1'	141°48.3'	S 19°50.4'	120°19.2'	S 15°29.8'			
16	101°01.4'	60°46.0'	N 15°39.0'	22°33.3'	N 27°48.5'	161°56.0'	S 20°53.1'	156°50.8'	S 19°50.4'	135°19.9'	S 15°29.3'			
17	116°03.9'	75°46.0'	N 15°39.7'	37°34.7'	N 27°48.6'	176°58.3'	S 20°53.1'	171°53.2'	S 19°50.4'	150°20.7'	S 15°28.8'			
18	131°06.3'	90°46.1'	N 15°40.4'	52°36.1'	N 27°48.6'	192°00.7'	S 20°53.1'	186°55.6'	S 19°50.3'	165°21.4'	S 15°28.3'			
19	146°08.8'	105°46.2'	N 15°41.2'	67°37.6'	N 27°48.6'	207°03.1'	S 20°53.1'	201°58.0'	S 19°50.3'	180°22.2'	S 15°27.8'			
20	161°11.3'	120°46.2'	N 15°41.9'	82°39.0'	N 27°48.7'	222°05.4'	S 20°53.1'	217°00.5'	S 19°50.3'	195°23.0'	S 15°27.2'			
21	176°13.7'	135°46.3'	N 15°42.6'	97°40.4'	N 27°48.7'	237°07.8'	S 20°53.1'	232°02.9'	S 19°50.3'	210°23.7'	S 15°26.7'			
22	191°16.2'	150°46.4'	N 15°43.4'	112°41.9'	N 27°48.7'	252°10.2'	S 20°53.0'	247°05.3'	S 19°50.3'	225°24.5'	S 15°26.2'			
23	206°18.6'	165°46.4'	N 15°44.1'	127°43.3'	N 27°48.7'	267°12.5'	S 20°53.0'	262°07.8'	S 19°50.3'	240°25.2'	S 15°25.7'			
		SD 15.9'	d 0.7'	v 1.4'	d 0.0'	v 2.4'	d 0.0'	v 2.4'	d 0.0'	v 0.8'	d 0.5'			
Mer. pass.		11 h 56 m 58 s		14 h 30 m		5 h 14 m		5 h 34 m		6 h 59 m				

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Acrux	-Arcturus	-Spica	-Regulus	+Pollux	+Procyon	+Sirius	+Sun
0	69°54.2'	N 16°37.9'	8.6'	-10.6'	58.9'	84°44.3'	60°20.0'	57°43.0'		33°09.3'	36°30.0'	58°40.2'	104°37.0'
1	84°21.8'	N 16°27.3'	8.6'	-10.7'	59.0'	84°25.1'	59°49.7'	57°08.2'		33°44.0'	36°59.9'	59°02.9'	105°09.6'
2	98°49.4'	N 16°16.6'	8.6'	-10.8'	59.0'	84°06.0'	59°19.4'	56°33.4'		34°18.8'	37°30.0'	59°25.8'	105°42.3'
3	113°17.0'	N 16°05.8'	8.6'	-10.9'	59.0'	83°46.8'	58°49.2'	55°58.6'		34°53.6'	38°00.3'	59°48.9'	106°15.0'
4	127°44.6'	N 15°54.9'	8.7'	-11.0'	59.1'	83°27.7'	58°19.0'	55°23.7'		35°28.5'	38°30.7'	60°12.0'	106°47.7'
5	142°12.2'	N 15°43.9'	8.7'	-11.1'	59.1'	83°08.6'	57°48.8'	54°48.8'		36°03.4'	39°01.2'	60°35.4'	107°20.4'
6	156°39.9'	N 15°32.8'	8.7'	-11.2'	59.1'	82°49.5'	57°18.7'	54°13.9'		36°38.4'	39°31.9'	60°58.8'	107°53.2'
7	171°07.6'	N 15°21.6'	8.7'	-11.3'	59.2'	82°30.4'	56°48.6'	53°39.0'		37°13.4'	40°02.8'	61°22.5'	108°26.0'
8	185°35.4'	N 15°10.2'	8.8'	-11.4'	59.2'	82°11.3'	56°18.5'	53°04.0'		37°48.5'	40°33.7'	61°46.2'	108°58.9'
9	200°03.1'	N 14°58.8'	8.8'	-11.5'	59.2'	81°52.2'	55°48.4'	52°29.0'		38°23.6'	41°04.8'	62°10.1'	109°31.8'
10	214°30.9'	N 14°47.3'	8.8'	-11.6'	59.3'	81°33.2'	55°18.4'	51°53.9'		38°58.7'	41°36.1'	62°34.1'	110°04.8'
11	228°58.7'	N 14°35.7'	8.8'	-11.7'	59.3'	81°14.1'	54°48.4'	51°18.8'		39°33.9'	42°07.4'	62°58.2'	110°37.7'
12	243°26.5'	N 14°24.0'	8.8'	-11.8'	59.3'	80°55.1'	54°18.5'	50°43.7'		40°09.1'	42°38.9'	63°22.5'	111°10.8'
13	257°54.4'	N 14°12.1'	8.9'	-11.9'	59.3'	80°36.1'	53°48.6'	50°08.6'		40°44.4'	43°10.5'	63°46.9'	111°43.8'
14	272°22.2'	N 14°00.2'	8.9'	-12.0'	59.4'	80°17.1'	53°18.8'	49°33.4'		41°19.8'	43°42.2'	64°11.4'	112°16.9'
15	286°50.1'	N 13°48.2'	8.9'	-12.1'	59.4'	79°58.2'	52°49.0'	48°58.2'		41°55.1'	44°14.0'	64°36.0'	112°50.0'
16	301°18.1'	N 13°36.1'	8.9'	-12.2'	59.4'	79°39.3'	52°19.2'	48°22.9'		42°30.5'	44°46.0'	65°00.7'	113°23.2'
17	315°46.0'	N 13°23.9'	9.0'	-12.3'	59.5'	79°20.4'	51°49.5'	47°47.7'	7°53.7'	43°06.0'	45°18.0'	65°25.6'	113°56.4'
18	330°14.0'	N 13°11.7'	9.0'	-12.4'	59.5'	79°01.5'	51°19.9'	47°12.4'	8°24.9'	43°41.5'	45°50.2'	65°50.6'	114°29.7'
19	344°41.9'	N 12°59.3'	9.0'	-12.5'	59.5'	78°42.7'	50°50.4'	46°37.1'	8°56.6'	44°17.1'	46°22.4'	66°15.6'	115°02.9'
20	359°10.0'	N 12°46.8'	9.0'	-12.5'	59.6'	78°23.9'	50°20.9'	46°01.7'	9°28.9'	44°52.6'	46°54.8'	66°40.8'	115°36.3'
21	13°38.0'	N 12°34.3'	9.1'	-12.6'	59.6'	78°05.1'	49°51.5'	45°26.3'	10°01.7'	45°28.3'	47°27.2'	67°06.1'	116°09.6'
22	28°06.0'	N 12°21.6'	9.1'	-12.7'	59.6'	77°46.4'	49°22.1'	44°50.9'	10°34.7'	46°03.9'	47°59.7'	67°31.5'	116°43.0'
23	42°34.1'	N 12°08.9'	9.1'	-12.8'	59.6'	77°27.7'	48°52.8'	44°15.5'	11°08.2'	46°39.6'	48°32.4'	67°57.0'	117°16.4'
Mer. pass.		20 h 3 m SD 16.1'	phase 63%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.9'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.3'	N 45°20.8'	Acrux	+0.8	173°03.6'	S 63°12.8'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.2'	Regulus	+1.4	207°38.4'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.5'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°54.9'	N 5°10.3'	Polaris	+2.0	316°12.2'	N 89°20.9'
Rigil Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.0'	S 29°00.3'	Achernar	+0.5	335°23.7'	S 57°08.1'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.9'				
Hadar	+0.6	148°40.6'	S 60°28.2'	Canopus	-0.6	263°54.4'	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	221°21.1'	180°46.5'	N 15°44.8'	142°44.7'	N 27°48.8'	282°14.9'	S 20°53.0'	277°10.2'	S 19°50.3'	255°26.0'	S 15°25.2'			
1	236°23.6'	195°46.6'	N 15°45.6'	157°46.2'	N 27°48.8'	297°17.3'	S 20°53.0'	292°12.6'	S 19°50.3'	270°26.8'	S 15°24.7'			
2	251°26.0'	210°46.6'	N 15°46.3'	172°47.6'	N 27°48.8'	312°19.6'	S 20°53.0'	307°15.0'	S 19°50.3'	285°27.5'	S 15°24.2'			
3	266°28.5'	225°46.7'	N 15°47.0'	187°49.1'	N 27°48.8'	327°22.0'	S 20°53.0'	322°17.5'	S 19°50.3'	300°28.3'	S 15°23.7'			
4	281°31.0'	240°46.7'	N 15°47.8'	202°50.6'	N 27°48.8'	342°24.4'	S 20°53.0'	337°19.9'	S 19°50.3'	315°29.0'	S 15°23.1'			
5	296°33.4'	255°46.8'	N 15°48.5'	217°52.0'	N 27°48.9'	357°26.7'	S 20°53.0'	352°22.3'	S 19°50.3'	330°29.8'	S 15°22.6'			
6	311°35.9'	270°46.9'	N 15°49.2'	232°53.5'	N 27°48.9'	12°29.1'	S 20°53.0'	7°24.8'	S 19°50.3'	345°30.5'	S 15°22.1'			
7	326°38.4'	285°46.9'	N 15°50.0'	247°54.9'	N 27°48.9'	27°31.5'	S 20°52.9'	22°27.2'	S 19°50.3'	0°31.3'	S 15°21.6'			
8	341°40.8'	300°47.0'	N 15°50.7'	262°56.4'	N 27°48.9'	42°33.8'	S 20°52.9'	37°29.6'	S 19°50.3'	15°32.1'	S 15°21.1'			
9	356°43.3'	315°47.1'	N 15°51.4'	277°57.9'	N 27°48.9'	57°36.2'	S 20°52.9'	52°32.0'	S 19°50.3'	30°32.8'	S 15°20.6'			
10	11°45.7'	330°47.1'	N 15°52.1'	292°59.4'	N 27°48.9'	72°38.6'	S 20°52.9'	67°34.5'	S 19°50.3'	45°33.6'	S 15°20.1'			
11	26°48.2'	345°47.2'	N 15°52.9'	308°00.8'	N 27°48.9'	87°41.0'	S 20°52.9'	82°36.9'	S 19°50.3'	60°34.3'	S 15°19.5'			
12	41°50.7'	0°47.2'	N 15°53.6'	323°02.3'	N 27°49.0'	102°43.3'	S 20°52.9'	97°39.3'	S 19°50.3'	75°35.1'	S 15°19.0'			
13	56°53.1'	15°47.3'	N 15°54.3'	338°03.8'	N 27°49.0'	117°45.7'	S 20°52.9'	112°41.8'	S 19°50.3'	90°35.9'	S 15°18.5'			
14	71°55.6'	30°47.4'	N 15°55.1'	353°05.3'	N 27°49.0'	132°48.1'	S 20°52.9'	127°44.2'	S 19°50.3'	105°36.6'	S 15°18.0'			
15	86°58.1'	45°47.4'	N 15°55.8'	8°06.8'	N 27°49.0'	147°50.5'	S 20°52.9'	142°46.6'	S 19°50.3'	120°37.4'	S 15°17.5'			
16	102°00.5'	60°47.5'	N 15°56.5'	23°08.3'	N 27°49.0'	162°52.8'	S 20°52.8'	157°49.1'	S 19°50.3'	135°38.1'	S 15°17.0'			
17	117°03.0'	75°47.5'	N 15°57.2'	38°09.8'	N 27°49.0'	177°55.2'	S 20°52.8'	172°51.5'	S 19°50.3'	150°38.9'	S 15°16.5'			
18	132°05.5'	90°47.6'	N 15°58.0'	53°11.3'	N 27°49.0'	192°57.6'	S 20°52.8'	187°53.9'	S 19°50.3'	165°39.7'	S 15°15.9'			
19	147°07.9'	105°47.7'	N 15°58.7'	68°12.8'	N 27°49.0'	207°59.9'	S 20°52.8'	202°56.4'	S 19°50.3'	180°40.4'	S 15°15.4'			
20	162°10.4'	120°47.7'	N 15°59.4'	83°14.3'	N 27°49.0'	223°02.3'	S 20°52.8'	217°58.8'	S 19°50.3'	195°41.2'	S 15°14.9'			
21	177°12.9'	135°47.8'	N 16°00.1'	98°15.9'	N 27°49.0'	238°04.7'	S 20°52.8'	233°01.2'	S 19°50.3'	210°41.9'	S 15°14.4'			
22	192°15.3'	150°47.8'	N 16°00.8'	113°17.4'	N 27°49.0'	253°07.1'	S 20°52.8'	248°03.7'	S 19°50.3'	225°42.7'	S 15°13.9'			
23	207°17.8'	165°47.9'	N 16°01.6'	128°18.9'	N 27°49.0'	268°09.4'	S 20°52.8'	263°06.1'	S 19°50.3'	240°43.5'	S 15°13.4'			
		SD 15.9'	d 0.7'	v 1.5'	d 0.0'	v 2.4'	d 0.0'	v 2.4'	d 0.0'	v 0.8'	d 0.5'			
Mer. pass.		11 h 56 m 51 s		14 h 28 m		5 h 10 m		5 h 30 m		6 h 58 m				

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Hadar	-Acrux	-Arcturus	-Spica	+Regulus	+Pollux	+Procyon	+Sun
0	57°02.2'	N 11°56.1'	9.1'	-12.9'	59.7'	81°26.3'	77°09.1'	48°23.7'	43°40.1'	11°41.8'	47°15.4'	49°05.1'	117°49.9'
1	71°30.3'	N 11°43.2'	9.1'	-13.0'	59.7'	81°02.1'	76°50.5'	47°54.6'	43°04.6'	12°15.8'	47°51.2'	49°37.9'	118°23.4'
2	85°58.4'	N 11°30.3'	9.1'	-13.0'	59.7'	80°37.9'	76°31.9'	47°25.6'	42°29.1'	12°49.9'	48°27.0'	50°10.8'	118°56.9'
3	100°26.6'	N 11°17.2'	9.2'	-13.1'	59.8'	80°13.7'	76°13.4'	46°56.6'	41°53.6'	13°24.3'	49°02.9'	50°43.8'	119°30.5'
4	114°54.8'	N 11°04.1'	9.2'	-13.2'	59.8'	79°49.5'	75°55.0'	46°27.8'	41°18.0'	13°58.8'	49°38.8'	51°16.9'	
5	129°22.9'	N 10°50.9'	9.2'	-13.3'	59.8'	79°25.3'	75°36.6'	45°59.1'	40°42.4'	14°33.5'	50°14.8'	51°50.0'	
6	143°51.1'	N 10°37.6'	9.2'	-13.4'	59.8'	79°01.2'	75°18.2'	45°30.5'	40°06.9'	15°08.3'	50°50.7'	52°23.2'	
7	158°19.4'	N 10°24.3'	9.2'	-13.4'	59.9'	78°37.0'	74°59.9'	45°02.0'	39°31.2'	15°43.3'	51°26.8'	52°56.5'	
8	172°47.6'	N 10°10.8'	9.3'	-13.5'	59.9'	78°12.9'	74°41.7'	44°33.6'	38°55.6'	16°18.4'	52°02.8'	53°29.9'	
9	187°15.9'	N 9°57.3'	9.3'	-13.6'	59.9'	77°48.8'	74°23.5'	44°05.4'	38°20.0'	16°53.6'	52°38.9'	54°03.4'	
10	201°44.1'	N 9°43.8'	9.3'	-13.6'	59.9'	77°24.7'	74°05.4'	43°37.3'	37°44.3'	17°28.9'	53°15.1'	54°36.9'	
11	216°12.4'	N 9°30.1'	9.3'	-13.7'	60.0'	77°00.7'	73°47.4'	43°09.3'	37°08.6'	18°04.3'	53°51.2'	55°10.5'	
12	230°40.7'	N 9°16.4'	9.3'	-13.8'	60.0'	76°36.7'	73°29.4'	42°41.5'	36°33.0'	18°39.8'	54°27.5'	55°44.2'	
13	245°09.0'	N 9°02.6'	9.3'	-13.8'	60.0'	76°12.7'	73°11.5'	42°13.8'	35°57.3'	19°15.4'	55°03.7'	56°17.9'	
14	259°37.3'	N 8°48.8'	9.3'	-13.9'	60.0'	75°48.7'	72°53.7'	41°46.3'	35°21.5'	19°51.1'	55°40.0'	56°51.7'	
15	274°05.7'	N 8°34.9'	9.3'	-14.0'	60.1'	75°24.8'	72°35.9'	41°18.9'	34°45.8'	20°26.8'	56°16.3'	57°25.6'	
16	288°34.0'	N 8°20.9'	9.4'	-14.0'	60.1'	75°00.9'	72°18.2'	40°51.7'	34°10.1'	21°02.7'	56°52.7'	57°59.6'	
17	303°02.3'	N 8°06.9'	9.4'	-14.1'	60.1'	74°37.1'	72°00.6'	40°24.7'	33°34.4'	21°38.5'	57°29.1'	58°33.6'	
18	317°30.7'	N 7°52.8'	9.4'	-14.1'	60.1'	74°13.2'	71°43.1'	39°57.9'	32°58.6'	22°14.5'	58°05.5'	59°07.6'	
19	331°59.1'	N 7°38.6'	9.4'	-14.2'	60.2'	73°49.5'	71°25.7'	39°31.2'	32°22.9'	22°50.5'	58°41.9'	59°41.7'	
20	346°27.5'	N 7°24.4'	9.4'	-14.3'	60.2'	73°25.8'	71°08.3'	39°04.8'	31°47.1'	23°26.6'	59°18.4'	60°15.9'	
21	0°55.9'	N 7°10.2'	9.4'	-14.3'	60.2'	73°02.1'	70°51.1'	38°38.6'	31°11.4'	24°02.7'	59°55.0'	60°50.2'	
22	15°24.3'	N 6°55.9'	9.4'	-14.4'	60.2'	72°38.5'	70°33.9'	38°12.6'	30°35.6'	24°38.9'	60°31.5'	61°24.5'	
23	29°52.7'	N 6°41.5'	9.4'	-14.4'	60.3'	72°14.9'	70°16.8'	37°46.8'	29°59.9'	25°15.2'	61°08.1'	61°58.8'	
Mer. pass.		20 h 56 m SD 16.3'		phase 73%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.9'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.3'	N 45°20.8'	Acrux	+0.8	173°03.6'	S 63°12.8'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.2'	Regulus	+1.4	207°38.4'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.5'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°54.9'	N 5°10.3'	Polaris	+2.0	316°12.2'	N 89°20.9'
Rigil Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.0'	S 29°00.2'	Achernar	+0.5	335°23.7'	S 57°08.1'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.9'				
Hadar	+0.6	148°40.6'	S 60°28.2'	Canopus	-0.6	263°54.4'	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	222°20.2'	180°47.9'	N 16°02.3'	143°20.4'	N 27°49.0'	283°11.8'	S 20°52.8'	278°08.5'	S 19°50.2'	255°44.2'	S 15°12.9'			
1	237°22.7'	195°48.0'	N 16°03.0'	158°22.0'	N 27°49.0'	298°14.2'	S 20°52.8'	293°11.0'	S 19°50.2'	270°45.0'	S 15°12.3'			
2	252°25.2'	210°48.1'	N 16°03.7'	173°23.5'	N 27°49.0'	313°16.6'	S 20°52.7'	308°13.4'	S 19°50.2'	285°45.8'	S 15°11.8'			
3	267°27.6'	225°48.1'	N 16°04.4'	188°25.0'	N 27°49.0'	328°18.9'	S 20°52.7'	323°15.8'	S 19°50.2'	300°46.5'	S 15°11.3'			
4	282°30.1'	240°48.2'	N 16°05.2'	203°26.6'	N 27°49.0'	343°21.3'	S 20°52.7'	338°18.3'	S 19°50.2'	315°47.3'	S 15°10.8'			
5	297°32.6'	255°48.2'	N 16°05.9'	218°28.1'	N 27°49.0'	358°23.7'	S 20°52.7'	353°20.7'	S 19°50.2'	330°48.0'	S 15°10.3'			
6	312°35.0'	270°48.3'	N 16°06.6'	233°29.7'	N 27°49.0'	13°26.1'	S 20°52.7'	8°23.1'	S 19°50.2'	345°48.8'	S 15°09.8'			
7	327°37.5'	285°48.3'	N 16°07.3'	248°31.2'	N 27°49.0'	28°28.5'	S 20°52.7'	23°25.6'	S 19°50.2'	0°49.6'	S 15°09.2'			
8	342°40.0'	300°48.4'	N 16°08.0'	263°32.8'	N 27°49.0'	43°30.8'	S 20°52.7'	38°28.0'	S 19°50.2'	15°50.3'	S 15°08.7'			
9	357°42.4'	315°48.5'	N 16°08.8'	278°34.3'	N 27°49.0'	58°33.2'	S 20°52.7'	53°30.4'	S 19°50.2'	30°51.1'	S 15°08.2'			
10	12°44.9'	330°48.5'	N 16°09.5'	293°35.9'	N 27°49.0'	73°35.6'	S 20°52.7'	68°32.9'	S 19°50.2'	45°51.9'	S 15°07.7'			
11	27°47.3'	345°48.6'	N 16°10.2'	308°37.5'	N 27°49.0'	88°38.0'	S 20°52.7'	83°35.3'	S 19°50.2'	60°52.6'	S 15°07.2'			
12	42°49.8'	0°48.6'	N 16°10.9'	323°39.0'	N 27°49.0'	103°40.4'	S 20°52.6'	98°37.7'	S 19°50.2'	75°53.4'	S 15°06.6'			
13	57°52.3'	15°48.7'	N 16°11.6'	338°40.6'	N 27°48.9'	118°42.7'	S 20°52.6'	113°40.2'	S 19°50.2'	90°54.2'	S 15°06.1'			
14	72°54.7'	30°48.7'	N 16°12.3'	353°42.2'	N 27°48.9'	133°45.1'	S 20°52.6'	128°42.6'	S 19°50.2'	105°54.9'	S 15°05.6'			
15	87°57.2'	45°48.8'	N 16°13.1'	8°43.8'	N 27°48.9'	148°47.5'	S 20°52.6'	143°45.0'	S 19°50.2'	120°55.7'	S 15°05.1'			
16	102°59.7'	60°48.8'	N 16°13.8'	23°45.4'	N 27°48.9'	163°49.9'	S 20°52.6'	158°47.5'	S 19°50.2'	135°56.5'	S 15°04.6'			
17	118°02.1'	75°48.9'	N 16°14.5'	38°47.0'	N 27°48.9'	178°52.3'	S 20°52.6'	173°49.9'	S 19°50.2'	150°57.2'	S 15°04.1'			
18	133°04.6'	90°48.9'	N 16°15.2'	53°48.6'	N 27°48.9'	193°54.6'	S 20°52.6'	188°52.4'	S 19°50.2'	165°58.0'	S 15°03.5'			
19	148°07.1'	105°49.0'	N 16°15.9'	68°50.1'	N 27°48.9'	208°57.0'	S 20°52.6'	203°54.8'	S 19°50.2'	180°58.7'	S 15°03.0'			
20	163°09.5'	120°49.1'	N 16°16.6'	83°51.8'	N 27°48.8'	223°59.4'	S 20°52.6'	218°57.2'	S 19°50.2'	195°59.5'	S 15°02.5'			
21	178°12.0'	135°49.1'	N 16°17.3'	98°53.4'	N 27°48.8'	239°01.8'	S 20°52.6'	233°59.7'	S 19°50.2'	211°00.3'	S 15°02.0'			
22	193°14.5'	150°49.2'	N 16°18.0'	113°55.0'	N 27°48.8'	254°04.2'	S 20°52.6'	249°02.1'	S 19°50.2'	226°01.0'	S 15°01.5'			
23	208°16.9'	165°49.2'	N 16°18.8'	128°56.6'	N 27°48.8'	269°06.6'	S 20°52.5'	264°04.5'	S 19°50.2'	241°01.8'	S 15°00.9'			
		SD 15.9' d 0.7'		v 1.6' d -0.0'		v 2.4' d 0.0'		v 2.4' d 0.0'		v 0.8' d 0.5'				
Mer. pass.		11 h 56 m 46 s		14 h 25 m		5 h 6 m		5 h 27 m		6 h 57 m				

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Hadar	-Acrux	-Arcturus	-Spica	+Regulus	+Pollux	+Procyon	+Adhara
0	44°21.1'	N 6°27.1'	9.4'	-14.5'	60.3'	71°51.4'	69°59.9'	37°21.3'	29°24.2'	25°51.5'	61°44.7'	62°33.2'	78°36.1'
1	58°49.5'	N 6°12.6'	9.4'	-14.5'	60.3'	71°27.9'	69°43.0'	36°56.0'	28°48.4'	26°27.8'	62°21.4'	63°07.7'	78°57.5'
2	73°17.9'	N 5°58.1'	9.4'	-14.6'	60.3'	71°04.5'	69°26.2'	36°31.0'	28°12.7'	27°04.2'	62°58.1'	63°42.2'	79°19.0'
3	87°46.3'	N 5°43.5'	9.4'	-14.6'	60.3'	70°41.2'	69°09.5'	36°06.2'	27°37.1'	27°40.6'	63°34.8'	64°16.8'	79°40.5'
4	102°14.7'	N 5°28.9'	9.4'	-14.7'	60.4'	70°17.9'	68°53.0'	35°41.7'	27°01.4'	28°17.1'	64°11.5'	64°51.4'	80°02.1'
5	116°43.2'	N 5°14.3'	9.4'	-14.7'	60.4'	69°54.7'	68°36.5'	35°17.6'	26°25.8'	28°53.7'	64°48.3'	65°26.0'	80°23.8'
6	131°11.6'	N 4°59.6'	9.4'	-14.7'	60.4'	69°31.6'	68°20.2'	34°53.7'	25°50.1'	29°30.2'	65°25.1'	66°00.7'	80°45.5'
7	145°40.0'	N 4°44.9'	9.4'	-14.8'	60.4'	69°08.5'	68°03.9'	34°30.1'	25°14.6'	30°06.8'	66°01.9'	66°35.5'	81°07.3'
8	160°08.5'	N 4°30.1'	9.4'	-14.8'	60.5'	68°45.5'	67°47.8'	34°06.9'	24°39.0'	30°43.5'	66°38.8'	67°10.3'	81°29.2'
9	174°36.9'	N 4°15.3'	9.4'	-14.8'	60.5'	68°22.6'	67°31.8'	33°44.0'	24°03.5'	31°20.2'	67°15.7'	67°45.1'	81°51.1'
10	189°05.3'	N 4°00.4'	9.4'	-14.9'	60.5'	67°59.8'	67°16.0'	33°21.5'	23°28.1'	31°56.9'	67°52.6'	68°20.0'	82°13.0'
11	203°33.7'	N 3°45.6'	9.4'	-14.9'	60.5'	67°37.1'	67°00.2'	32°59.4'	22°52.7'	32°33.7'	68°29.5'	68°54.9'	82°35.0'
12	218°02.1'	N 3°30.6'	9.4'	-14.9'	60.5'	67°14.4'	66°44.6'	32°37.6'	22°17.4'	33°10.5'	69°06.5'	69°29.9'	82°57.1'
13	232°30.6'	N 3°15.7'	9.4'	-15.0'	60.5'	66°51.8'	66°29.1'	32°16.2'	21°42.1'	33°47.3'	69°43.5'	70°04.9'	83°19.1'
14	246°59.0'	N 3°00.7'	9.4'	-15.0'	60.6'	66°29.4'	66°13.8'	31°55.3'	21°06.9'	34°24.2'	70°20.5'	70°40.0'	83°41.3'
15	261°27.4'	N 2°45.7'	9.4'	-15.0'	60.6'	66°07.0'	65°58.6'	31°34.8'	20°31.8'	35°01.1'	70°57.5'	71°15.1'	84°03.5'
16	275°55.8'	N 2°30.7'	9.4'	-15.0'	60.6'	65°44.7'		31°14.7'	19°56.9'	35°38.0'	71°34.6'	71°50.2'	84°25.7'
17	290°24.2'	N 2°15.7'	9.4'	-15.1'	60.6'	65°22.6'		30°55.1'	19°22.0'	36°15.0'	72°11.7'	72°25.3'	84°47.9'
18	304°52.5'	N 2°00.6'	9.4'	-15.1'	60.6'	65°00.5'		30°36.0'	18°47.2'	36°52.0'	72°48.8'	73°00.5'	85°10.2'
19	319°20.9'	N 1°45.5'	9.4'	-15.1'	60.6'	64°38.6'		30°17.3'	18°12.6'	37°29.0'	73°25.9'	73°35.7'	85°32.6'
20	333°49.3'	N 1°30.4'	9.4'	-15.1'	60.7'	64°16.7'		29°59.2'	17°38.1'	38°06.0'	74°03.1'	74°11.0'	85°54.9'
21	348°17.6'	N 1°15.3'	9.3'	-15.1'	60.7'	63°55.0'		29°41.6'	17°03.8'	38°43.1'	74°40.3'	74°46.3'	86°17.3'
22	2°46.0'	N 1°00.1'	9.3'	-15.2'	60.7'	63°33.4'		29°24.6'	16°29.7'	39°20.2'	75°17.4'	75°21.6'	86°39.7'
23	17°14.3'	N 0°45.0'	9.3'	-15.2'	60.7'	63°11.9'		29°08.1'	15°55.8'	39°57.3'	75°54.7'	75°57.0'	87°02.2'
Mer. pass.		21 h 49 m SD 16.4'		phase 83%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.9'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.3'	N 45°20.9'	Acrux	+0.8	173°03.6'	S 63°12.8'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.2'	Regulus	+1.4	207°38.4'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.5'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°54.9'	N 5°10.3'	Polaris	+2.0	316°12.2'	N 89°20.9'
Rigil Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.0'	S 29°00.2'	Achernar	+0.5	335°23.7'	S 57°08.1'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.9'				
Hadar	+0.6	148°40.6'	S 60°28.2'	Canopus	-0.6	263°54.4'	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	223°19.4'	180°49.3'	N 16°19.5'	143°58.2'	N 27°48.8'	284°08.9'	S 20°52.5'	279°07.0'	S 19°50.2'	256°02.6'	S 15°00.4'			
1	238°21.8'	195°49.3'	N 16°20.2'	158°59.8'	N 27°48.7'	299°11.3'	S 20°52.5'	294°09.4'	S 19°50.2'	271°03.3'	S 14°59.9'			
2	253°24.3'	210°49.4'	N 16°20.9'	174°01.4'	N 27°48.7'	314°13.7'	S 20°52.5'	309°11.8'	S 19°50.2'	286°04.1'	S 14°59.4'			
3	268°26.8'	225°49.4'	N 16°21.6'	189°03.1'	N 27°48.7'	329°16.1'	S 20°52.5'	324°14.3'	S 19°50.2'	301°04.9'	S 14°58.9'			
4	283°29.2'	240°49.5'	N 16°22.3'	204°04.7'	N 27°48.7'	344°18.5'	S 20°52.5'	339°16.7'	S 19°50.2'	316°05.6'	S 14°58.3'			
5	298°31.7'	255°49.5'	N 16°23.0'	219°06.3'	N 27°48.6'	359°20.9'	S 20°52.5'	354°19.2'	S 19°50.2'	331°06.4'	S 14°57.8'			
6	313°34.2'	270°49.6'	N 16°23.7'	234°08.0'	N 27°48.6'	14°23.2'	S 20°52.5'	9°21.6'	S 19°50.2'	346°07.2'	S 14°57.3'			
7	328°36.6'	285°49.6'	N 16°24.4'	249°09.6'	N 27°48.6'	29°25.6'	S 20°52.5'	24°24.0'	S 19°50.2'	1°07.9'	S 14°56.8'			
8	343°39.1'	300°49.7'	N 16°25.1'	264°11.3'	N 27°48.5'	44°28.0'	S 20°52.5'	39°26.5'	S 19°50.2'	16°08.7'	S 14°56.3'			
9	358°41.6'	315°49.7'	N 16°25.8'	279°12.9'	N 27°48.5'	59°30.4'	S 20°52.5'	54°28.9'	S 19°50.2'	31°09.5'	S 14°55.7'			
10	13°44.0'	330°49.8'	N 16°26.5'	294°14.6'	N 27°48.5'	74°32.8'	S 20°52.5'	69°31.4'	S 19°50.2'	46°10.2'	S 14°55.2'			
11	28°46.5'	345°49.8'	N 16°27.2'	309°16.2'	N 27°48.5'	89°35.2'	S 20°52.5'	84°33.8'	S 19°50.2'	61°11.0'	S 14°54.7'			
12	43°49.0'	0°49.9'	N 16°27.9'	324°17.9'	N 27°48.4'	104°37.6'	S 20°52.4'	99°36.2'	S 19°50.2'	76°11.8'	S 14°54.2'			
13	58°51.4'	15°49.9'	N 16°28.6'	339°19.5'	N 27°48.4'	119°40.0'	S 20°52.4'	114°38.7'	S 19°50.2'	91°12.6'	S 14°53.6'			
14	73°53.9'	30°50.0'	N 16°29.4'	354°21.2'	N 27°48.4'	134°42.3'	S 20°52.4'	129°41.1'	S 19°50.2'	106°13.3'	S 14°53.1'			
15	88°56.3'	45°50.0'	N 16°30.1'	9°22.9'	N 27°48.3'	149°44.7'	S 20°52.4'	144°43.6'	S 19°50.2'	121°14.1'	S 14°52.6'			
16	103°58.8'	60°50.1'	N 16°30.8'	24°24.6'	N 27°48.3'	164°47.1'	S 20°52.4'	159°46.0'	S 19°50.2'	136°14.9'	S 14°52.1'			
17	119°01.3'	75°50.1'	N 16°31.5'	39°26.2'	N 27°48.2'	179°49.5'	S 20°52.4'	174°48.4'	S 19°50.2'	151°15.6'	S 14°51.6'			
18	134°03.7'	90°50.2'	N 16°32.2'	54°27.9'	N 27°48.2'	194°51.9'	S 20°52.4'	189°50.9'	S 19°50.2'	166°16.4'	S 14°51.0'			
19	149°06.2'	105°50.2'	N 16°32.9'	69°29.6'	N 27°48.2'	209°54.3'	S 20°52.4'	204°53.3'	S 19°50.2'	181°17.2'	S 14°50.5'			
20	164°08.7'	120°50.3'	N 16°33.6'	84°31.3'	N 27°48.1'	224°56.7'	S 20°52.4'	219°55.8'	S 19°50.2'	196°17.9'	S 14°50.0'			
21	179°11.1'	135°50.3'	N 16°34.3'	99°33.0'	N 27°48.1'	239°59.1'	S 20°52.4'	234°58.2'	S 19°50.2'	211°18.7'	S 14°49.5'			
22	194°13.6'	150°50.4'	N 16°35.0'	114°34.7'	N 27°48.0'	255°01.5'	S 20°52.4'	250°00.6'	S 19°50.2'	226°19.5'	S 14°48.9'			
23	209°16.1'	165°50.4'	N 16°35.7'	129°36.4'	N 27°48.0'	270°03.9'	S 20°52.4'	265°03.1'	S 19°50.2'	241°20.2'	S 14°48.4'			
		SD 15.9'	d 0.7'	v 1.7'	d -0.0'	v 2.4'	d 0.0'	v 2.4'	d 0.0'	v 2.4'	d 0.5'			
Mer. pass.		11 h 56 m 41 s		14 h 23 m		5 h 3 m		5 h 23 m		6 h 55 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Hadar	-Antares	-Arcturus	-Spica	+Regulus	+Pollux	+Procyon	+Adhara
0	31°42.6'	N 0°29.8'	9.3'	-15.2'	60.7'	62°50.6'	60°15.9'	28°52.2'	15°22.2'	40°34.5'	76°31.9'	76°32.3'	87°24.7'
1	46°10.9'	N 0°14.6'	9.3'	-15.2'	60.7'	62°29.3'	59°38.8'		14°48.8'	41°11.7'	77°09.2'	77°07.7'	87°47.2'
2	60°39.2'	S 0°00.6'	9.3'	-15.2'	60.7'	62°08.2'	59°01.7'		14°15.8'	41°48.9'	77°46.4'	77°43.2'	88°09.7'
3	75°07.4'	S 0°15.8'	9.3'	-15.2'	60.8'	61°47.3'	58°24.6'		13°43.1'	42°26.1'	78°23.7'	78°18.6'	88°32.2'
4	89°35.7'	S 0°31.0'	9.2'	-15.2'	60.8'	61°26.5'	57°47.5'		13°10.7'	43°03.3'	79°01.0'	78°54.1'	88°54.8'
5	104°03.9'	S 0°46.2'	9.2'	-15.2'	60.8'	61°05.8'	57°10.3'		12°38.9'	43°40.6'	79°38.4'	79°29.6'	89°17.3'
6	118°32.2'	S 1°01.4'	9.2'	-15.2'	60.8'	60°45.3'	56°33.2'		12°07.5'	44°17.9'	80°15.7'	80°05.1'	89°39.9'
7	133°00.3'	S 1°16.6'	9.2'	-15.2'	60.8'	60°24.9'	55°56.0'		11°36.7'	44°55.2'	80°53.1'	80°40.7'	90°02.5'
8	147°28.5'	S 1°31.8'	9.2'	-15.2'	60.8'	60°04.7'	55°18.9'		11°06.6'	45°32.5'	81°30.4'	81°16.3'	90°25.1'
9	161°56.7'	S 1°47.0'	9.1'	-15.2'	60.8'	59°44.7'	54°41.7'			46°09.8'	82°07.8'	81°51.8'	90°47.7'
10	176°24.8'	S 2°02.2'	9.1'	-15.2'	60.8'	59°24.8'	54°04.5'			46°47.2'	82°45.2'	82°27.5'	91°10.3'
11	190°52.9'	S 2°17.4'	9.1'	-15.2'	60.8'	59°05.1'	53°27.3'			47°24.5'	83°22.6'	83°03.1'	91°32.9'
12	205°21.0'	S 2°32.6'	9.1'	-15.2'	60.8'	58°45.5'	52°50.1'			48°01.9'	84°00.1'	83°38.7'	91°55.5'
13	219°49.1'	S 2°47.7'	9.0'	-15.2'	60.8'	58°26.2'	52°12.9'			48°39.3'	84°37.5'	84°14.4'	92°18.1'
14	234°17.1'	S 3°02.9'	9.0'	-15.1'	60.9'	58°07.0'	51°35.7'			49°16.7'	85°15.0'	84°50.0'	92°40.7'
15	248°45.1'	S 3°18.0'	9.0'	-15.1'	60.9'	57°48.0'	50°58.5'			49°54.1'	85°52.4'	85°25.7'	93°03.3'
16	263°13.1'	S 3°33.2'	9.0'	-15.1'	60.9'	57°29.1'	50°21.3'			50°31.6'	86°29.9'	86°01.4'	93°25.9'
17	277°41.1'	S 3°48.3'	8.9'	-15.1'	60.9'	57°10.5'	49°44.1'			51°09.0'	87°07.4'	86°37.1'	93°48.5'
18	292°09.0'	S 4°03.4'	8.9'	-15.1'	60.9'	56°52.1'	49°06.9'			51°46.5'	87°44.8'	87°12.8'	94°11.0'
19	306°36.9'	S 4°18.4'	8.9'	-15.0'	60.9'	56°33.9'	48°29.7'			52°24.0'	88°22.3'	87°48.6'	94°33.6'
20	321°04.8'	S 4°33.5'	8.8'	-15.0'	60.9'	56°15.8'	47°52.5'			53°01.4'	88°59.8'	88°24.3'	94°56.1'
21	335°32.7'	S 4°48.5'	8.8'	-15.0'	60.9'	55°58.0'	47°15.2'			53°38.9'	89°37.3'	89°00.0'	95°18.6'
22	350°00.5'	S 5°03.5'	8.8'	-15.0'	60.9'	55°40.4'	46°38.0'			54°16.4'	90°14.9'	89°35.8'	95°41.1'
23	4°28.3'	S 5°18.5'	8.8'	-14.9'	60.9'	55°23.0'	46°00.8'			54°53.9'	90°52.4'	90°11.5'	96°03.6'
Mer. pass.		22 h 41 m SD 16.6'		phase 91%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.9'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.2'	N 45°20.9'	Acrux	+0.8	173°03.6'	S 63°12.8'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.2'	Regulus	+1.4	207°38.4'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.5'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°54.9'	N 5°10.3'	Polaris	+2.0	316°12.2'	N 89°20.9'
Rigil Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.0'	S 29°00.2'	Achernar	+0.5	335°23.7'	S 57°08.1'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.9'				
Hadar	+0.6	148°40.6'	S 60°28.2'	Canopus	-0.6	263°54.4'	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	224°18.5'	180°50.5'	N 16°36.4'	144°38.1'	N 27°47.9'		285°06.2'	S 20°52.4'		280°05.5'	S 19°50.2'		256°21.0'	S 14°47.9'				
1	239°21.0'	195°50.5'	N 16°37.1'	159°39.8'	N 27°47.9'		300°08.6'	S 20°52.3'		295°08.0'	S 19°50.2'		271°21.8'	S 14°47.4'				
2	254°23.4'	210°50.5'	N 16°37.8'	174°41.5'	N 27°47.9'		315°11.0'	S 20°52.3'		310°10.4'	S 19°50.2'		286°22.6'	S 14°46.8'				
3	269°25.9'	225°50.6'	N 16°38.5'	189°43.3'	N 27°47.8'		330°13.4'	S 20°52.3'		325°12.8'	S 19°50.2'		301°23.3'	S 14°46.3'				
4	284°28.4'	240°50.6'	N 16°39.2'	204°45.0'	N 27°47.8'		345°15.8'	S 20°52.3'		340°15.3'	S 19°50.2'		316°24.1'	S 14°45.8'				
5	299°30.8'	255°50.7'	N 16°39.8'	219°46.7'	N 27°47.7'		0°18.2'	S 20°52.3'		355°17.7'	S 19°50.2'		331°24.9'	S 14°45.3'				
6	314°33.3'	270°50.7'	N 16°40.5'	234°48.4'	N 27°47.7'		15°20.6'	S 20°52.3'		10°20.2'	S 19°50.2'		346°25.6'	S 14°44.7'				
7	329°35.8'	285°50.8'	N 16°41.2'	249°50.2'	N 27°47.6'		30°23.0'	S 20°52.3'		25°22.6'	S 19°50.2'		1°26.4'	S 14°44.2'				
8	344°38.2'	300°50.8'	N 16°41.9'	264°51.9'	N 27°47.6'		45°25.4'	S 20°52.3'		40°25.1'	S 19°50.2'		16°27.2'	S 14°43.7'				
9	359°40.7'	315°50.9'	N 16°42.6'	279°53.6'	N 27°47.5'		60°27.8'	S 20°52.3'		55°27.5'	S 19°50.2'		31°28.0'	S 14°43.2'				
10	14°43.2'	330°50.9'	N 16°43.3'	294°55.4'	N 27°47.5'		75°30.2'	S 20°52.3'		70°29.9'	S 19°50.2'		46°28.7'	S 14°42.6'				
11	29°45.6'	345°50.9'	N 16°44.0'	309°57.1'	N 27°47.4'		90°32.6'	S 20°52.3'		85°32.4'	S 19°50.2'		61°29.5'	S 14°42.1'				
12	44°48.1'	0°51.0'	N 16°44.7'	324°58.9'	N 27°47.3'		105°35.0'	S 20°52.3'		100°34.8'	S 19°50.2'		76°30.3'	S 14°41.6'				
13	59°50.6'	15°51.0'	N 16°45.4'	340°00.7'	N 27°47.3'		120°37.4'	S 20°52.3'		115°37.3'	S 19°50.2'		91°31.0'	S 14°41.1'				
14	74°53.0'	30°51.1'	N 16°46.1'	355°02.4'	N 27°47.2'		135°39.8'	S 20°52.3'		130°39.7'	S 19°50.2'		106°31.8'	S 14°40.5'				
15	89°55.5'	45°51.1'	N 16°46.8'	10°04.2'	N 27°47.2'		150°42.2'	S 20°52.3'		145°42.2'	S 19°50.2'		121°32.6'	S 14°40.0'				
16	104°57.9'	60°51.2'	N 16°47.5'	25°06.0'	N 27°47.1'		165°44.6'	S 20°52.3'		160°44.6'	S 19°50.1'		136°33.4'	S 14°39.5'				
17	120°00.4'	75°51.2'	N 16°48.2'	40°07.7'	N 27°47.0'		180°47.0'	S 20°52.2'		175°47.1'	S 19°50.1'		151°34.1'	S 14°39.0'				
18	135°02.9'	90°51.2'	N 16°48.9'	55°09.5'	N 27°47.0'		195°49.4'	S 20°52.2'		190°49.5'	S 19°50.1'		166°34.9'	S 14°38.4'				
19	150°05.3'	105°51.3'	N 16°49.5'	70°11.3'	N 27°46.9'		210°51.8'	S 20°52.2'		205°51.9'	S 19°50.1'		181°35.7'	S 14°37.9'				
20	165°07.8'	120°51.3'	N 16°50.2'	85°13.1'	N 27°46.9'		225°54.2'	S 20°52.2'		220°54.4'	S 19°50.1'		196°36.5'	S 14°37.4'				
21	180°10.3'	135°51.4'	N 16°50.9'	100°14.9'	N 27°46.8'		240°56.6'	S 20°52.2'		235°56.8'	S 19°50.1'		211°37.2'	S 14°36.9'				
22	195°12.7'	150°51.4'	N 16°51.6'	115°16.7'	N 27°46.7'		255°59.0'	S 20°52.2'		250°59.3'	S 19°50.1'		226°38.0'	S 14°36.3'				
23	210°15.2'	165°51.5'	N 16°52.3'	130°18.4'	N 27°46.7'		271°01.4'	S 20°52.2'		266°01.7'	S 19°50.1'		241°38.8'	S 14°35.8'				
		SD 15.8' d 0.7'		v 1.8' d -0.1'			v 2.4' d 0.0'			v 2.4' d 0.0'			v 0.8' d 0.5'					
Mer. pass.		11 h 56 m 36 s		14 h 20 m			4 h 59 m			5 h 19 m			6 h 54 m					

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Vega	-Rigel Kent	-Hadar	-Antares	+Spica	+Arcturus	+Regulus	+Procyon
0	18°56.0'	S 5°33.4'	8.7'	-14.9'	60.9'	81°13.0'	56°29.0'	55°05.9'	45°23.6'			55°31.4'	90°47.3'
1	33°23.8'	S 5°48.3'	8.7'	-14.9'	60.9'	80°56.6'	56°09.2'	54°49.0'	44°46.4'			56°08.9'	91°23.0'
2	47°51.4'	S 6°03.2'	8.7'	-14.8'	60.9'	80°40.2'	55°49.5'	54°32.3'	44°09.3'			56°46.5'	91°58.8'
3	62°19.1'	S 6°18.0'	8.6'	-14.8'	60.9'	80°23.8'	55°30.1'	54°15.8'	43°32.1'			57°24.0'	92°34.5'
4	76°46.7'	S 6°32.8'	8.6'	-14.8'	60.9'	80°07.6'	55°10.9'	53°59.6'	42°54.9'			58°01.5'	93°10.3'
5	91°14.3'	S 6°47.6'	8.6'	-14.7'	60.9'	79°51.3'	54°51.9'	53°43.6'	42°17.8'			58°39.0'	93°46.1'
6	105°41.9'	S 7°02.3'	8.5'	-14.7'	60.9'	79°35.2'	54°33.1'	53°27.8'	41°40.6'			59°16.6'	94°21.8'
7	120°09.4'	S 7°17.0'	8.5'	-14.6'	60.9'	79°19.1'	54°14.5'	53°12.4'	41°03.5'			59°54.1'	94°57.6'
8	134°36.9'	S 7°31.6'	8.4'	-14.6'	60.9'	79°03.0'	53°56.2'		40°26.4'			60°31.6'	95°33.3'
9	149°04.3'	S 7°46.2'	8.4'	-14.5'	60.9'	78°47.0'	53°38.0'		39°49.3'			61°09.2'	96°09.1'
10	163°31.7'	S 8°00.7'	8.4'	-14.5'	60.9'	78°31.1'	53°20.2'		39°12.2'			61°46.7'	96°44.8'
11	177°59.1'	S 8°15.2'	8.3'	-14.4'	60.9'	78°15.3'	53°02.5'		38°35.1'			62°24.2'	97°20.5'
12	192°26.4'	S 8°29.7'	8.3'	-14.4'	60.9'	77°59.5'	52°45.1'		37°58.1'			63°01.8'	97°56.2'
13	206°53.7'	S 8°44.0'	8.2'	-14.3'	60.9'	77°43.9'	52°28.0'		37°21.0'	11°29.4'		63°39.3'	98°31.9'
14	221°20.9'	S 8°58.4'	8.2'	-14.3'	60.9'	77°28.2'	52°11.1'		36°44.0'	12°00.1'		64°16.8'	99°07.6'
15	235°48.1'	S 9°12.6'	8.2'	-14.2'	60.9'	77°12.7'	51°54.5'		36°07.0'	12°31.5'		64°54.3'	99°43.3'
16	250°15.3'	S 9°26.8'	8.1'	-14.1'	60.9'	76°57.3'	51°38.1'		35°30.1'	13°03.4'	28°31.8'	65°31.8'	100°19.0'
17	264°42.4'	S 9°41.0'	8.1'	-14.1'	60.8'	76°41.9'	51°22.0'		34°53.2'	13°35.7'	28°47.0'	66°09.3'	100°54.6'
18	279°09.5'	S 9°55.1'	8.0'	-14.0'	60.8'	76°26.6'	51°06.2'		34°16.3'	14°08.5'	29°02.8'	66°46.8'	101°30.3'
19	293°36.5'	S 10°09.1'	8.0'	-14.0'	60.8'	76°11.4'	50°50.6'		33°39.4'	14°41.7'	29°19.2'	67°24.3'	102°05.9'
20	308°03.5'	S 10°23.0'	8.0'	-13.9'	60.8'	75°56.3'			33°02.6'	15°15.1'	29°36.1'	68°01.8'	102°41.5'
21	322°30.5'	S 10°36.9'	7.9'	-13.8'	60.8'				32°25.8'	15°48.9'	29°53.7'	68°39.3'	103°17.1'
22	336°57.4'	S 10°50.7'	7.9'	-13.7'	60.8'				31°49.0'	16°23.0'	30°11.8'	69°16.7'	103°52.7'
23	351°24.2'	S 11°04.5'	7.8'	-13.7'	60.8'				31°12.3'	16°57.2'	30°30.4'	69°54.2'	104°28.2'
Mer. pass.		23 h 36 m SD 16.6'		phase 97%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.9'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.2'	N 45°20.9'	Acrux	+0.8	173°03.6'	S 63°12.8'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.2'	Regulus	+1.4	207°38.4'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.5'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°54.9'	N 5°10.3'	Polaris	+2.0	316°12.2'	N 89°20.9'
Rigel Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.0'	S 29°00.2'	Achernar	+0.5	335°23.7'	S 57°08.1'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.9'				
Hadar	+0.6	148°40.6'	S 60°28.2'	Canopus	-0.6	263°54.4'	S 52°42.7'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	225°17.7'	180°51.5' N	16°53.0'	145°20.3' N	27°46.6'	286°03.8' S	20°52.2'	281°04.2' S	19°50.1'	256°39.6' S	14°35.3'	
1	240°20.1'	195°51.5' N	16°53.7'	160°22.1' N	27°46.5'	301°06.2' S	20°52.2'	296°06.6' S	19°50.1'	271°40.3' S	14°34.7'	
2	255°22.6'	210°51.6' N	16°54.4'	175°23.9' N	27°46.5'	316°08.6' S	20°52.2'	311°09.1' S	19°50.1'	286°41.1' S	14°34.2'	
3	270°25.0'	225°51.6' N	16°55.0'	190°25.7' N	27°46.4'	331°11.0' S	20°52.2'	326°11.5' S	19°50.1'	301°41.9' S	14°33.7'	
4	285°27.5'	240°51.7' N	16°55.7'	205°27.5' N	27°46.3'	346°13.4' S	20°52.2'	341°14.0' S	19°50.1'	316°42.7' S	14°33.2'	
5	300°30.0'	255°51.7' N	16°56.4'	220°29.3' N	27°46.2'	1°15.8' S	20°52.2'	356°16.4' S	19°50.1'	331°43.4' S	14°32.6'	
6	315°32.4'	270°51.7' N	16°57.1'	235°31.1' N	27°46.2'	16°18.2' S	20°52.2'	11°18.8' S	19°50.1'	346°44.2' S	14°32.1'	
7	330°34.9'	285°51.8' N	16°57.8'	250°33.0' N	27°46.1'	31°20.6' S	20°52.2'	26°21.3' S	19°50.1'	1°45.0' S	14°31.6'	
8	345°37.4'	300°51.8' N	16°58.5'	265°34.8' N	27°46.0'	46°23.0' S	20°52.2'	41°23.7' S	19°50.1'	16°45.8' S	14°31.0'	
9	0°39.8'	315°51.9' N	16°59.1'	280°36.6' N	27°45.9'	61°25.4' S	20°52.2'	56°26.2' S	19°50.1'	31°46.5' S	14°30.5'	
10	15°42.3'	330°51.9' N	16°59.8'	295°38.5' N	27°45.9'	76°27.8' S	20°52.2'	71°28.6' S	19°50.1'	46°47.3' S	14°30.0'	
11	30°44.8'	345°51.9' N	17°00.5'	310°40.3' N	27°45.8'	91°30.2' S	20°52.2'	86°31.1' S	19°50.2'	61°48.1' S	14°29.5'	
12	45°47.2'	0°52.0' N	17°01.2'	325°42.2' N	27°45.7'	106°32.6' S	20°52.1'	101°33.5' S	19°50.2'	76°48.9' S	14°28.9'	
13	60°49.7'	15°52.0' N	17°01.9'	340°44.0' N	27°45.6'	121°35.0' S	20°52.1'	116°36.0' S	19°50.2'	91°49.6' S	14°28.4'	
14	75°52.2'	30°52.0' N	17°02.6'	355°45.9' N	27°45.5'	136°37.4' S	20°52.1'	131°38.4' S	19°50.2'	106°50.4' S	14°27.9'	
15	90°54.6'	45°52.1' N	17°03.2'	10°47.7' N	27°45.5'	151°39.8' S	20°52.1'	146°40.9' S	19°50.2'	121°51.2' S	14°27.3'	
16	105°57.1'	60°52.1' N	17°03.9'	25°49.6' N	27°45.4'	166°42.2' S	20°52.1'	161°43.3' S	19°50.2'	136°52.0' S	14°26.8'	
17	120°59.5'	75°52.1' N	17°04.6'	40°51.5' N	27°45.3'	181°44.6' S	20°52.1'	176°45.8' S	19°50.2'	151°52.8' S	14°26.3'	
18	136°02.0'	90°52.2' N	17°05.3'	55°53.4' N	27°45.2'	196°47.0' S	20°52.1'	191°48.2' S	19°50.2'	166°53.5' S	14°25.8'	
19	151°04.5'	105°52.2' N	17°05.9'	70°55.2' N	27°45.1'	211°49.4' S	20°52.1'	206°50.7' S	19°50.2'	181°54.3' S	14°25.2'	
20	166°06.9'	120°52.3' N	17°06.6'	85°57.1' N	27°45.0'	226°51.8' S	20°52.1'	221°53.1' S	19°50.2'	196°55.1' S	14°24.7'	
21	181°09.4'	135°52.3' N	17°07.3'	100°59.0' N	27°45.0'	241°54.2' S	20°52.1'	236°55.6' S	19°50.2'	211°55.9' S	14°24.2'	
22	196°11.9'	150°52.3' N	17°08.0'	116°00.9' N	27°44.9'	256°56.6' S	20°52.1'	251°58.0' S	19°50.2'	226°56.6' S	14°23.6'	
23	211°14.3'	165°52.4' N	17°08.6'	131°02.8' N	27°44.8'	271°59.0' S	20°52.1'	267°00.5' S	19°50.2'	241°57.4' S	14°23.1'	
		SD 15.8' d 0.7'		v 1.9' d -0.1'		v 2.4' d 0.0'		v 2.4' d -0.0'		v 0.8' d 0.5'		
Mer. pass.		11 h 56 m 33 s		14 h 17 m		4 h 55 m		5 h 15 m		6 h 53 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Saturn	-Altair	-Jupiter	-Antares	+Spica	+Arcturus	+Regulus	+Procyon
0	5°51.1' S	11°18.1' S	7.8'	-13.6'	60.8'	81°21.0'	80°37.9'	76°34.2'	30°35.6'	17°31.7'	30°49.5'	70°31.6'	105°03.7'
1	20°17.8' S	11°31.7' S	7.7'	-13.5'	60.8'	80°43.5'	80°06.2'	75°56.8'	29°59.0'	18°06.3'	31°09.1'	71°09.0'	105°39.2'
2	34°44.6' S	11°45.2' S	7.7'	-13.4'	60.8'	80°06.1'	79°34.6'	75°19.3'	29°22.4'	18°41.2'	31°29.2'	71°46.4'	106°14.7'
3	49°11.2' S	11°58.7' S	7.6'	-13.4'	60.7'	79°28.6'	79°03.0'	74°41.9'	28°45.9'	19°16.1'	31°49.8'	72°23.9'	106°50.1'
4	63°37.9' S	12°12.0' S	7.6'	-13.3'	60.7'	78°51.2'	78°31.4'	74°04.5'	28°09.4'	19°51.3'	32°10.8'	73°01.2'	107°25.6'
5	78°04.5' S	12°25.3' S	7.6'	-13.2'	60.7'	78°13.8'	77°59.9'	73°27.1'	27°33.0'	20°26.5'	32°32.3'	73°38.6'	108°00.9'
6	92°31.0' S	12°38.5' S	7.5'	-13.1'	60.7'	77°36.4'	77°28.4'	72°49.8'	26°56.6'	21°01.8'	32°54.2'	74°16.0'	108°36.3'
7	106°57.5' S	12°51.6' S	7.5'	-13.0'	60.7'	76°59.0'	76°57.0'	72°12.4'	26°20.3'	21°37.3'	33°16.4'	74°53.3'	109°11.6'
8	121°24.0' S	13°04.6' S	7.4'	-12.9'	60.7'	76°21.6'	76°25.6'	71°35.1'	25°44.1'	22°12.8'	33°39.1'	75°30.6'	109°46.9'
9	135°50.4' S	13°17.5' S	7.4'	-12.8'	60.7'	75°44.3'	75°54.2'	70°57.8'	25°07.9'	22°48.4'	34°02.1'	76°07.9'	110°22.2'
10	150°16.8' S	13°30.3' S	7.3'	-12.7'	60.7'	75°06.9'	75°22.9'	70°20.5'	24°31.8'	23°24.0'	34°25.5'	76°45.2'	110°57.4'
11	164°43.1' S	13°43.1' S	7.3'	-12.6'	60.6'	74°29.6'	74°51.6'	69°43.2'	23°55.8'	23°59.8'	34°49.3'	77°22.5'	111°32.6'
12	179°09.4' S	13°55.7' S	7.2'	-12.6'	60.6'	73°52.3'	74°20.4'	69°05.9'	23°19.9'	24°35.6'	35°13.3'	77°59.8'	112°07.8'
13	193°35.6' S	14°08.3' S	7.2'	-12.5'	60.6'	73°15.1'	73°49.2'	68°28.7'	22°44.0'	25°11.4'	35°37.7'	78°37.0'	112°42.9'
14	208°01.8' S	14°20.7' S	7.1'	-12.4'	60.6'	72°37.8'	73°18.1'	67°51.5'	22°08.3'	25°47.3'	36°02.4'	79°14.2'	113°18.0'
15	222°27.9' S	14°33.1' S	7.1'	-12.3'	60.6'	72°00.6'	72°47.1'	67°14.3'	21°32.7'	26°23.2'	36°27.4'	79°51.4'	113°53.0'
16	236°54.0' S	14°45.4' S	7.0'	-12.2'	60.5'	71°23.4'	72°16.1'	66°37.1'	20°57.2'	26°59.2'	36°52.7'	80°28.5'	114°28.0'
17	251°20.1' S	14°57.5' S	7.0'	-12.0'	60.5'	70°46.2'	71°45.1'	65°60.0'	20°21.8'	27°35.2'	37°18.2'	81°05.7'	115°03.0'
18	265°46.1' S	15°09.6' S	7.0'	-11.9'	60.5'	70°09.1'	71°14.3'	65°22.8'	19°46.5'	28°11.2'	37°44.0'	81°42.8'	115°37.9'
19	280°12.0' S	15°21.5' S	6.9'	-11.8'	60.5'	69°31.9'	70°43.4'	64°45.7'	19°11.4'	28°47.3'	38°10.1'	82°19.9'	116°12.7'
20	294°38.0' S	15°33.3' S	6.9'	-11.7'	60.5'	68°54.8'	70°12.7'	64°08.7'	18°36.4'	29°23.3'	38°36.4'	82°57.0'	116°47.5'
21	309°03.8' S	15°45.1' S	6.8'	-11.6'	60.5'	68°17.8'	69°42.0'	63°31.6'	18°01.6'	29°59.4'	39°02.9'	83°34.0'	117°22.3'
22	323°29.7' S	15°56.7' S	6.8'	-11.5'	60.4'	67°40.7'	69°11.4'	62°54.6'	17°27.0'	30°35.5'	39°29.7'	84°11.0'	117°57.0'
23	337°55.4' S	16°08.2' S	6.7'	-11.4'	60.4'	67°03.7'	68°40.9'	62°17.6'	16°52.5'	31°11.6'	39°56.6'	84°48.0'	118°31.7'
Mer. pass.		0 h 32 m SD 16.6'		phase 100%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.9' S	29°30.9'	Spica	+1.0	158°26.0' S	11°16.0'	Betelgeuse	+0.5	270°56.4' N	7°24.5'
Deneb	+1.2	49°28.2' N	45°20.9'	Acrux	+0.8	173°03.6' S	63°12.8'	Capella	+0.1	280°27.9' N	46°01.0'
Altair	+0.8	62°03.5' N	8°55.2'	Regulus	+1.4	207°38.4' N	11°52.1'	Rigel	+0.2	281°07.8' S	8°10.9'
Vega	+0.0	80°35.5' N	38°48.0'	Pollux	+1.2	243°22.1' N	27°58.6'	Aldebaran	+0.9	290°44.3' N	16°32.8'
Antares	+1.1	112°20.1' S	26°28.5'	Procyon	+0.4	244°54.9' N	5°10.3'	Polaris	+2.0	316°12.1' N	89°20.8'
Rigil Kent	-0.0	139°44.7' S	60°55.1'	Adhara	+1.5	255°09.0' S	29°00.2'	Achernar	+0.5	335°23.7' S	57°08.1'
Arcturus	-0.1	145°51.1' N	19°04.7'	Sirius	-1.4	258°29.8' S	16°44.9'				
Hadar	+0.6	148°40.6' S	60°28.2'	Canopus	-0.6	263°54.4' S	52°42.7'				

Friday 08 May 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	226°16.8'	180°52.4'	N 17°09.3'	146°04.7'	N 27°44.7'	287°01.5'	S 20°52.1'	282°02.9'	S 19°50.2'	256°58.2'	S 14°22.6'			
1	241°19.3'	195°52.4'	N 17°10.0'	161°06.6'	N 27°44.6'	302°03.9'	S 20°52.1'	297°05.4'	S 19°50.2'	271°59.0'	S 14°22.0'			
2	256°21.7'	210°52.5'	N 17°10.7'	176°08.5'	N 27°44.5'	317°06.3'	S 20°52.1'	312°07.8'	S 19°50.2'	286°59.8'	S 14°21.5'			
3	271°24.2'	225°52.5'	N 17°11.3'	191°10.4'	N 27°44.4'	332°08.7'	S 20°52.1'	327°10.3'	S 19°50.2'	302°00.5'	S 14°21.0'			
4	286°26.7'	240°52.5'	N 17°12.0'	206°12.3'	N 27°44.3'	347°11.1'	S 20°52.1'	342°12.7'	S 19°50.2'	317°01.3'	S 14°20.4'			
5	301°29.1'	255°52.6'	N 17°12.7'	221°14.2'	N 27°44.2'	2°13.5'	S 20°52.1'	357°15.2'	S 19°50.2'	332°02.1'	S 14°19.9'			
6	316°31.6'	270°52.6'	N 17°13.4'	236°16.2'	N 27°44.1'	17°15.9'	S 20°52.1'	12°17.6'	S 19°50.2'	347°02.9'	S 14°19.4'			
7	331°34.0'	285°52.6'	N 17°14.0'	251°18.1'	N 27°44.0'	32°18.3'	S 20°52.1'	27°20.1'	S 19°50.2'	2°03.7'	S 14°18.8'			
8	346°36.5'	300°52.7'	N 17°14.7'	266°20.0'	N 27°43.9'	47°20.7'	S 20°52.1'	42°22.5'	S 19°50.2'	17°04.4'	S 14°18.3'			
9	1°39.0'	315°52.7'	N 17°15.4'	281°21.9'	N 27°43.8'	62°23.1'	S 20°52.1'	57°25.0'	S 19°50.2'	32°05.2'	S 14°17.8'			
10	16°41.4'	330°52.7'	N 17°16.0'	296°23.9'	N 27°43.7'	77°25.6'	S 20°52.1'	72°27.4'	S 19°50.2'	47°06.0'	S 14°17.2'			
11	31°43.9'	345°52.8'	N 17°16.7'	311°25.8'	N 27°43.6'	92°28.0'	S 20°52.1'	87°29.9'	S 19°50.2'	62°06.8'	S 14°16.7'			
12	46°46.4'	0°52.8'	N 17°17.4'	326°27.8'	N 27°43.5'	107°30.4'	S 20°52.1'	102°32.3'	S 19°50.2'	77°07.6'	S 14°16.2'			
13	61°48.8'	15°52.8'	N 17°18.1'	341°29.7'	N 27°43.4'	122°32.8'	S 20°52.0'	117°34.8'	S 19°50.2'	92°08.3'	S 14°15.7'			
14	76°51.3'	30°52.9'	N 17°18.7'	356°31.7'	N 27°43.3'	137°35.2'	S 20°52.0'	132°37.2'	S 19°50.2'	107°09.1'	S 14°15.1'			
15	91°53.8'	45°52.9'	N 17°19.4'	11°33.6'	N 27°43.2'	152°37.6'	S 20°52.0'	147°39.7'	S 19°50.2'	122°09.9'	S 14°14.6'			
16	106°56.2'	60°52.9'	N 17°20.1'	26°35.6'	N 27°43.1'	167°40.0'	S 20°52.0'	162°42.1'	S 19°50.2'	137°10.7'	S 14°14.1'			
17	121°58.7'	75°53.0'	N 17°20.7'	41°37.6'	N 27°43.0'	182°42.4'	S 20°52.0'	177°44.6'	S 19°50.2'	152°11.5'	S 14°13.5'			
18	137°01.2'	90°53.0'	N 17°21.4'	56°39.5'	N 27°42.9'	197°44.9'	S 20°52.0'	192°47.0'	S 19°50.2'	167°12.2'	S 14°13.0'			
19	152°03.6'	105°53.0'	N 17°22.1'	71°41.5'	N 27°42.8'	212°47.3'	S 20°52.0'	207°49.5'	S 19°50.2'	182°13.0'	S 14°12.4'			
20	167°06.1'	120°53.0'	N 17°22.7'	86°43.5'	N 27°42.7'	227°49.7'	S 20°52.0'	222°51.9'	S 19°50.2'	197°13.8'	S 14°11.9'			
21	182°08.5'	135°53.1'	N 17°23.4'	101°45.5'	N 27°42.6'	242°52.1'	S 20°52.0'	237°54.4'	S 19°50.2'	212°14.6'	S 14°11.4'			
22	197°11.0'	150°53.1'	N 17°24.1'	116°47.5'	N 27°42.4'	257°54.5'	S 20°52.0'	252°56.9'	S 19°50.2'	227°15.4'	S 14°10.8'			
23	212°13.5'	165°53.1'	N 17°24.7'	131°49.5'	N 27°42.3'	272°56.9'	S 20°52.0'	267°59.3'	S 19°50.2'	242°16.2'	S 14°10.3'			
		SD 15.8' d 0.7'		v 1.9' d -0.1'		v 2.4' d 0.0'		v 2.5' d -0.0'		v 0.8' d 0.5'				
Mer. pass.		11 h 56 m 29 s		14 h 14 m		4 h 51 m		5 h 11 m		6 h 52 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Altair	-Saturn	-Jupiter	-Antares	+Spica	+Arcturus	+Regulus	+Adhara
0	352°21.2'	S 16°19.6'	6.7'	-11.3'	60.4'	68°10.4'	66°26.7'	61°40.6'	16°18.3'	31°47.7'	40°23.8'	85°25.0'	113°07.7'
1	6°46.9'	S 16°30.9'	6.7'	-11.2'	60.4'	67°40.0'	65°49.7'	61°03.7'	15°44.3'	32°23.8'	40°51.1'	86°01.9'	113°26.0'
2	21°12.5'	S 16°42.0'	6.6'	-11.0'	60.3'	67°09.7'	65°12.8'	60°26.8'	15°10.6'	32°59.9'	41°18.7'	86°38.8'	113°44.2'
3	35°38.1'	S 16°53.1'	6.6'	-10.9'	60.3'	66°39.4'	64°35.9'	59°49.9'	14°37.2'	33°36.0'	41°46.4'	87°15.7'	114°02.2'
4	50°03.7'	S 17°04.0'	6.5'	-10.8'	60.3'	66°09.3'	63°59.0'	59°13.0'	14°04.0'	34°12.2'	42°14.3'	87°52.6'	114°20.1'
5	64°29.2'	S 17°14.8'	6.5'	-10.7'	60.3'	65°39.2'	63°22.1'	58°36.2'	13°31.2'	34°48.3'	42°42.4'	88°29.4'	114°37.8'
6	78°54.7'	S 17°25.5'	6.4'	-10.6'	60.2'	65°09.2'	62°45.3'	57°59.4'	12°58.8'	35°24.4'	43°10.6'	89°06.2'	114°55.3'
7	93°20.1'	S 17°36.1'	6.4'	-10.4'	60.2'	64°39.3'	62°08.5'	57°22.7'	12°26.9'	36°00.5'	43°38.9'	89°43.0'	115°12.8'
8	107°45.6'	S 17°46.5'	6.4'	-10.3'	60.2'	64°09.5'	61°31.8'	56°45.9'	11°55.4'	36°36.6'	44°07.4'	90°19.7'	115°30.0'
9	122°10.9'	S 17°56.8'	6.3'	-10.2'	60.2'	63°39.8'	60°55.0'	56°09.2'	11°24.5'	37°12.6'	44°36.1'	90°56.4'	115°47.1'
10	136°36.2'	S 18°07.0'	6.3'	-10.1'	60.1'	63°10.2'	60°18.3'	55°32.6'	10°54.2'	37°48.7'	45°04.9'	91°33.0'	116°04.0'
11	151°01.5'	S 18°17.1'	6.3'	-9.9'	60.1'	62°40.6'	59°41.7'	54°55.9'		38°24.7'	45°33.8'	92°09.7'	116°20.8'
12	165°26.8'	S 18°27.0'	6.2'	-9.8'	60.1'	62°11.2'	59°05.1'	54°19.3'		39°00.8'	46°02.8'	92°46.3'	116°37.4'
13	179°52.0'	S 18°36.8'	6.2'	-9.7'	60.1'	61°41.9'	58°28.5'	53°42.8'		39°36.8'	46°31.9'	93°22.8'	116°53.8'
14	194°17.2'	S 18°46.5'	6.1'	-9.5'	60.0'	61°12.7'	57°51.9'	53°06.3'		40°12.8'	47°01.2'	93°59.4'	117°10.0'
15	208°42.3'	S 18°56.0'	6.1'	-9.4'	60.0'	60°43.6'	57°15.4'	52°29.8'		40°48.8'	47°30.5'	94°35.8'	117°26.1'
16	223°07.4'	S 19°05.4'	6.1'	-9.3'	60.0'	60°14.6'	56°38.9'	51°53.3'		41°24.7'	47°59.9'	95°12.3'	117°42.0'
17	237°32.5'	S 19°14.7'	6.0'	-9.1'	59.9'	59°45.7'	56°02.5'	51°16.9'		42°00.7'	48°29.5'	95°48.7'	117°57.7'
18	251°57.6'	S 19°23.8'	6.0'	-9.0'	59.9'	59°16.9'	55°26.1'	50°40.5'		42°36.6'	48°59.1'	96°25.1'	118°13.2'
19	266°22.6'	S 19°32.8'	6.0'	-8.9'	59.9'	58°48.2'	54°49.7'	50°04.2'		43°12.5'	49°28.8'	97°01.5'	118°28.5'
20	280°47.6'	S 19°41.7'	6.0'	-8.7'	59.9'	58°19.7'	54°13.4'	49°27.9'		43°48.3'	49°58.6'	97°37.8'	
21	295°12.5'	S 19°50.4'	5.9'	-8.6'	59.8'	57°51.2'	53°37.1'	48°51.6'		44°24.2'	50°28.4'	98°14.0'	
22	309°37.4'	S 19°59.0'	5.9'	-8.4'	59.8'	57°23.0'	53°00.8'	48°15.4'		44°60.0'	50°58.3'	98°50.3'	
23	324°02.3'	S 20°07.5'	5.9'	-8.3'	59.8'	56°54.8'	52°24.6'	47°39.2'		45°35.8'	51°28.3'	99°26.5'	
Mer. pass.		0 h 32 m SD 16.5'		phase 99%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.9'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.2'	N 45°20.9'	Acrux	+0.8	173°03.6'	S 63°12.8'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.2'	Regulus	+1.4	207°38.4'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.5'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°54.9'	N 5°10.3'	Polaris	+2.0	316°11.9'	N 89°20.8'
Rigil Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.0'	S 29°00.2'	Achernar	+0.5	335°23.7'	S 57°08.1'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.9'				
Hadar	+0.6	148°40.6'	S 60°28.2'	Canopus	-0.6	263°54.4'	S 52°42.7'				



h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	227°15.9'	180°53.2'	N 17°25.4'	146°51.5'	N 27°42.2'	287°59.3'	S 20°52.0'	283°01.8'	S 19°50.2'	257°16.9'	S 14°09.8'
1	242°18.4'	195°53.2'	N 17°26.0'	161°53.5'	N 27°42.1'	303°01.8'	S 20°52.0'	298°04.2'	S 19°50.2'	272°17.7'	S 14°09.2'
2	257°20.9'	210°53.2'	N 17°26.7'	176°55.5'	N 27°42.0'	318°04.2'	S 20°52.0'	313°06.7'	S 19°50.2'	287°18.5'	S 14°08.7'
3	272°23.3'	225°53.2'	N 17°27.4'	191°57.5'	N 27°41.9'	333°06.6'	S 20°52.0'	328°09.1'	S 19°50.2'	302°19.3'	S 14°08.2'
4	287°25.8'	240°53.3'	N 17°28.0'	206°59.5'	N 27°41.7'	348°09.0'	S 20°52.0'	343°11.6'	S 19°50.2'	317°20.1'	S 14°07.6'
5	302°28.3'	255°53.3'	N 17°28.7'	222°01.5'	N 27°41.6'	3°11.4'	S 20°52.0'	358°14.0'	S 19°50.2'	332°20.9'	S 14°07.1'
6	317°30.7'	270°53.3'	N 17°29.3'	237°03.5'	N 27°41.5'	18°13.9'	S 20°52.0'	13°16.5'	S 19°50.2'	347°21.6'	S 14°06.6'
7	332°33.2'	285°53.4'	N 17°30.0'	252°05.6'	N 27°41.4'	33°16.3'	S 20°52.0'	28°18.9'	S 19°50.2'	2°22.4'	S 14°06.0'
8	347°35.6'	300°53.4'	N 17°30.7'	267°07.6'	N 27°41.3'	48°18.7'	S 20°52.0'	43°21.4'	S 19°50.2'	17°23.2'	S 14°05.5'
9	2°38.1'	315°53.4'	N 17°31.3'	282°09.6'	N 27°41.1'	63°21.1'	S 20°52.0'	58°23.9'	S 19°50.2'	32°24.0'	S 14°05.0'
10	17°40.6'	330°53.4'	N 17°32.0'	297°11.7'	N 27°41.0'	78°23.5'	S 20°52.0'	73°26.3'	S 19°50.2'	47°24.8'	S 14°04.4'
11	32°43.0'	345°53.5'	N 17°32.6'	312°13.7'	N 27°40.9'	93°25.9'	S 20°52.0'	88°28.8'	S 19°50.2'	62°25.6'	S 14°03.9'
12	47°45.5'	0°53.5'	N 17°33.3'	327°15.8'	N 27°40.8'	108°28.4'	S 20°52.0'	103°31.2'	S 19°50.2'	77°26.3'	S 14°03.4'
13	62°48.0'	15°53.5'	N 17°34.0'	342°17.8'	N 27°40.6'	123°30.8'	S 20°52.0'	118°33.7'	S 19°50.2'	92°27.1'	S 14°02.8'
14	77°50.4'	30°53.5'	N 17°34.6'	357°19.9'	N 27°40.5'	138°33.2'	S 20°52.0'	133°36.1'	S 19°50.2'	107°27.9'	S 14°02.3'
15	92°52.9'	45°53.6'	N 17°35.3'	12°21.9'	N 27°40.4'	153°35.6'	S 20°52.0'	148°38.6'	S 19°50.2'	122°28.7'	S 14°01.7'
16	107°55.4'	60°53.6'	N 17°35.9'	27°24.0'	N 27°40.2'	168°38.1'	S 20°52.0'	163°41.1'	S 19°50.2'	137°29.5'	S 14°01.2'
17	122°57.8'	75°53.6'	N 17°36.6'	42°26.1'	N 27°40.1'	183°40.5'	S 20°52.0'	178°43.5'	S 19°50.2'	152°30.3'	S 14°00.7'
18	138°00.3'	90°53.6'	N 17°37.2'	57°28.1'	N 27°40.0'	198°42.9'	S 20°52.0'	193°46.0'	S 19°50.2'	167°31.1'	S 14°00.1'
19	153°02.8'	105°53.7'	N 17°37.9'	72°30.2'	N 27°39.8'	213°45.3'	S 20°52.0'	208°48.4'	S 19°50.2'	182°31.8'	S 13°59.6'
20	168°05.2'	120°53.7'	N 17°38.5'	87°32.3'	N 27°39.7'	228°47.7'	S 20°52.0'	223°50.9'	S 19°50.2'	197°32.6'	S 13°59.1'
21	183°07.7'	135°53.7'	N 17°39.2'	102°34.4'	N 27°39.6'	243°50.2'	S 20°52.0'	238°53.3'	S 19°50.2'	212°33.4'	S 13°58.5'
22	198°10.1'	150°53.7'	N 17°39.8'	117°36.5'	N 27°39.4'	258°52.6'	S 20°52.0'	253°55.8'	S 19°50.2'	227°34.2'	S 13°58.0'
23	213°12.6'	165°53.8'	N 17°40.5'	132°38.6'	N 27°39.3'	273°55.0'	S 20°52.0'	268°58.3'	S 19°50.2'	242°35.0'	S 13°57.4'
		SD 15.8'	d 0.7'	v 2.0'	d -0.1'	v 2.4'	d 0.0'	v 2.5'	d -0.0'	v 0.8'	d 0.5'
Mer. pass.		11 h 56 m 26 s		14 h 11 m		4 h 47 m		5 h 7 m		6 h 51 m	

h	Moon					Lunar distance								
	GHA	dec		v	d	HP	-Achernar	-Altair	-Saturn	-Jupiter	-Antares	+Spica	+Arcturus	+Regulus
0	338°27.2'	S 20°15.8'	5.8'	-8.2'	59.7'		94°14.7'	56°26.7'	51°48.4'	47°03.0'		46°11.5'	51°58.4'	100°02.6'
1	352°52.1'	S 20°23.9'	5.8'	-8.0'	59.7'		93°53.7'	55°58.8'	51°12.3'	46°26.9'		46°47.2'	52°28.5'	100°38.7'
2	7°16.9'	S 20°31.9'	5.8'	-7.9'	59.7'		93°32.7'	55°31.1'	50°36.2'	45°50.8'		47°22.9'	52°58.7'	101°14.8'
3	21°41.7'	S 20°39.8'	5.8'	-7.7'	59.6'		93°11.7'	55°03.4'	50°00.2'	45°14.8'		47°58.6'	53°28.9'	101°50.8'
4	36°06.5'	S 20°47.5'	5.8'	-7.6'	59.6'		92°50.8'	54°35.9'	49°24.2'	44°38.8'		48°34.2'	53°59.2'	102°26.8'
5	50°31.2'	S 20°55.1'	5.7'	-7.4'	59.6'		92°29.8'	54°08.6'	48°48.2'	44°02.9'		49°09.8'	54°29.5'	103°02.8'
6	64°56.0'	S 21°02.6'	5.7'	-7.3'	59.5'		92°08.9'	53°41.4'	48°12.3'	43°27.0'		49°45.4'	54°59.9'	103°38.7'
7	79°20.7'	S 21°09.8'	5.7'	-7.1'	59.5'		91°47.9'	53°14.3'	47°36.4'	42°51.1'		50°20.9'	55°30.3'	104°14.5'
8	93°45.4'	S 21°17.0'	5.7'	-7.0'	59.5'		91°27.0'	52°47.4'	47°00.5'	42°15.3'		50°56.4'	56°00.7'	104°50.4'
9	108°10.1'	S 21°24.0'	5.7'	-6.8'	59.4'		91°06.1'	52°20.7'	46°24.7'	41°39.5'		51°31.9'	56°31.2'	105°26.1'
10	122°34.7'	S 21°30.8'	5.7'	-6.7'	59.4'		90°45.2'	51°54.1'	45°49.0'	41°03.8'		52°07.3'	57°01.7'	106°01.9'
11	136°59.4'	S 21°37.5'	5.6'	-6.5'	59.4'		90°24.4'	51°27.7'	45°13.3'	40°28.1'		52°42.7'	57°32.3'	106°37.6'
12	151°24.1'	S 21°44.1'	5.6'	-6.4'	59.3'		90°03.5'	51°01.5'	44°37.6'	39°52.5'		53°18.1'	58°02.8'	107°13.2'
13	165°48.7'	S 21°50.5'	5.6'	-6.2'	59.3'		89°42.7'	50°35.4'	44°02.0'	39°16.9'		53°53.4'	58°33.4'	107°48.8'
14	180°13.3'	S 21°56.7'	5.6'	-6.1'	59.3'		89°21.9'	50°09.5'	43°26.4'	38°41.3'	10°08.4'	54°28.7'	59°04.1'	108°24.4'
15	194°37.9'	S 22°02.8'	5.6'	-5.9'	59.2'		89°01.2'	49°43.8'	42°50.9'	38°05.8'	10°36.7'	55°03.9'	59°34.7'	108°59.9'
16	209°02.6'	S 22°08.7'	5.6'	-5.8'	59.2'		88°40.4'	49°18.3'	42°15.4'	37°30.4'	11°05.6'	55°39.1'	60°05.3'	109°35.4'
17	223°27.2'	S 22°14.5'	5.6'	-5.6'	59.2'		88°19.7'	48°52.9'	41°40.0'	36°55.0'	11°35.1'	56°14.3'	60°36.0'	110°10.8'
18	237°51.8'	S 22°20.1'	5.6'	-5.5'	59.1'		87°59.1'	48°27.8'	41°04.6'	36°19.6'	12°05.1'	56°49.4'	61°06.7'	110°46.2'
19	252°16.4'	S 22°25.6'	5.6'	-5.3'	59.1'		87°38.5'	48°02.8'	40°29.3'	35°44.3'	12°35.6'	57°24.5'	61°37.4'	111°21.5'
20	266°41.0'	S 22°30.9'	5.6'	-5.2'	59.1'		87°17.9'	47°38.0'	39°54.0'	35°09.0'	13°06.3'	57°59.5'	62°08.1'	111°56.8'
21	281°05.6'	S 22°36.1'	5.6'	-5.0'	59.0'		86°57.3'	47°13.5'	39°18.7'	34°33.8'	13°37.5'	58°34.5'	62°38.8'	112°32.0'
22	295°30.2'	S 22°41.1'	5.6'	-4.9'	59.0'		86°36.8'	46°49.1'	38°43.5'	33°58.6'	14°08.9'	59°09.5'	63°09.5'	113°07.2'
23	309°54.8'	S 22°46.0'	5.6'	-4.7'	59.0'		86°16.3'	46°25.0'	38°08.4'	33°23.5'	14°40.5'	59°44.4'	63°40.2'	113°42.4'
Mer. pass.		1 h 30 m SD 16.3'	phase 97%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.9'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.2'	N 45°20.9'	Acrux	+0.8	173°03.6'	S 63°12.8'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.2'	Regulus	+1.4	207°38.4'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.5'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°54.9'	N 5°10.3'	Polaris	+2.0	316°11.8'	N 89°20.8'
Rigil Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.0'	S 29°00.2'	Achernar	+0.5	335°23.7'	S 57°08.1'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.9'				
Hadar	+0.6	148°40.6'	S 60°28.2'	Canopus	-0.6	263°54.4'	S 52°42.7'				

Sunday 10 May 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	228°15.1'	180°53.8'	N 17°41.1'	147°40.7'	N 27°39.2'	288°57.4'	S 20°52.0'	284°00.7'	S 19°50.2'	257°35.8'	S 13°56.9'			
1	243°17.5'	195°53.8'	N 17°41.8'	162°42.8'	N 27°39.0'	303°59.9'	S 20°52.0'	299°03.2'	S 19°50.2'	272°36.6'	S 13°56.4'			
2	258°20.0'	210°53.8'	N 17°42.4'	177°44.9'	N 27°38.9'	319°02.3'	S 20°52.0'	314°05.6'	S 19°50.3'	287°37.4'	S 13°55.8'			
3	273°22.5'	225°53.8'	N 17°43.1'	192°47.0'	N 27°38.7'	334°04.7'	S 20°52.0'	329°08.1'	S 19°50.3'	302°38.1'	S 13°55.3'			
4	288°24.9'	240°53.9'	N 17°43.7'	207°49.1'	N 27°38.6'	349°07.1'	S 20°52.0'	344°10.5'	S 19°50.3'	317°38.9'	S 13°54.8'			
5	303°27.4'	255°53.9'	N 17°44.4'	222°51.2'	N 27°38.5'	4°09.6'	S 20°52.0'	359°13.0'	S 19°50.3'	332°39.7'	S 13°54.2'			
6	318°29.9'	270°53.9'	N 17°45.0'	237°53.3'	N 27°38.3'	19°12.0'	S 20°52.0'	14°15.5'	S 19°50.3'	347°40.5'	S 13°53.7'			
7	333°32.3'	285°53.9'	N 17°45.7'	252°55.5'	N 27°38.2'	34°14.4'	S 20°52.0'	29°17.9'	S 19°50.3'	2°41.3'	S 13°53.1'			
8	348°34.8'	300°53.9'	N 17°46.3'	267°57.6'	N 27°38.0'	49°16.8'	S 20°52.0'	44°20.4'	S 19°50.3'	17°42.1'	S 13°52.6'			
9	3°37.3'	315°54.0'	N 17°47.0'	282°59.7'	N 27°37.9'	64°19.3'	S 20°52.0'	59°22.8'	S 19°50.3'	32°42.9'	S 13°52.1'			
10	18°39.7'	330°54.0'	N 17°47.6'	298°01.9'	N 27°37.7'	79°21.7'	S 20°52.0'	74°25.3'	S 19°50.3'	47°43.7'	S 13°51.5'			
11	33°42.2'	345°54.0'	N 17°48.3'	313°04.0'	N 27°37.6'	94°24.1'	S 20°52.0'	89°27.8'	S 19°50.3'	62°44.5'	S 13°51.0'			
12	48°44.6'	0°54.0'	N 17°48.9'	328°06.2'	N 27°37.4'	109°26.6'	S 20°52.0'	104°30.2'	S 19°50.3'	77°45.2'	S 13°50.4'			
13	63°47.1'	15°54.0'	N 17°49.6'	343°08.3'	N 27°37.3'	124°29.0'	S 20°52.0'	119°32.7'	S 19°50.3'	92°46.0'	S 13°49.9'			
14	78°49.6'	30°54.1'	N 17°50.2'	358°10.5'	N 27°37.1'	139°31.4'	S 20°52.0'	134°35.1'	S 19°50.3'	107°46.8'	S 13°49.4'			
15	93°52.0'	45°54.1'	N 17°50.8'	13°12.7'	N 27°37.0'	154°33.8'	S 20°52.0'	149°37.6'	S 19°50.3'	122°47.6'	S 13°48.8'			
16	108°54.5'	60°54.1'	N 17°51.5'	28°14.8'	N 27°36.8'	169°36.3'	S 20°52.0'	164°40.1'	S 19°50.3'	137°48.4'	S 13°48.3'			
17	123°57.0'	75°54.1'	N 17°52.1'	43°17.0'	N 27°36.7'	184°38.7'	S 20°52.0'	179°42.5'	S 19°50.3'	152°49.2'	S 13°47.7'			
18	138°59.4'	90°54.1'	N 17°52.8'	58°19.2'	N 27°36.5'	199°41.1'	S 20°52.0'	194°45.0'	S 19°50.3'	167°50.0'	S 13°47.2'			
19	154°01.9'	105°54.2'	N 17°53.4'	73°21.4'	N 27°36.3'	214°43.6'	S 20°52.0'	209°47.5'	S 19°50.3'	182°50.8'	S 13°46.7'			
20	169°04.4'	120°54.2'	N 17°54.1'	88°23.5'	N 27°36.2'	229°46.0'	S 20°52.0'	224°49.9'	S 19°50.3'	197°51.6'	S 13°46.1'			
21	184°06.8'	135°54.2'	N 17°54.7'	103°25.7'	N 27°36.0'	244°48.4'	S 20°52.0'	239°52.4'	S 19°50.3'	212°52.3'	S 13°45.6'			
22	199°09.3'	150°54.2'	N 17°55.3'	118°27.9'	N 27°35.9'	259°50.9'	S 20°52.0'	254°54.8'	S 19°50.3'	227°53.1'	S 13°45.0'			
23	214°11.8'	165°54.2'	N 17°56.0'	133°30.1'	N 27°35.7'	274°53.3'	S 20°52.0'	269°57.3'	S 19°50.3'	242°53.9'	S 13°44.5'			
		SD 15.8' d 0.6'		v 2.2' d -0.2'		v 2.4' d 0.0'		v 2.5' d -0.0'		v 0.8' d 0.5'				
Mer. pass.		11 h 56 m 24 s		14 h 7 m		4 h 43 m		5 h 3 m		6 h 49 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Mars	-Altair	-Saturn	-Jupiter	+Antares	+Rigel Kent	+Hadar	+Spica
0	324°19.4'	S 22°50.7'	5.6'	-4.6'	58.9'	63°27.1'	46°01.0'	37°33.3'	32°48.4'	15°12.4'			60°19.3'
1	338°44.0'	S 22°55.2'	5.6'	-4.4'	58.9'	62°53.7'	45°37.3'	36°58.2'	32°13.4'	15°44.5'			60°54.1'
2	353°08.7'	S 22°59.6'	5.6'	-4.2'	58.8'	62°20.3'	45°13.8'	36°23.2'	31°38.4'	16°16.7'			61°28.9'
3	7°33.3'	S 23°03.9'	5.7'	-4.1'	58.8'	61°47.0'	44°50.6'	35°48.3'	31°03.5'	16°49.0'			62°03.7'
4	21°58.0'	S 23°08.0'	5.7'	-3.9'	58.8'	61°13.7'	44°27.6'	35°13.4'	30°28.6'	17°21.5'			62°38.4'
5	36°22.6'	S 23°11.9'	5.7'	-3.8'	58.7'	60°40.5'	44°04.8'	34°38.5'	29°53.8'	17°54.1'			63°13.1'
6	50°47.3'	S 23°15.7'	5.7'	-3.6'	58.7'	60°07.4'	43°42.2'	34°03.7'	29°19.0'	18°26.8'			63°47.7'
7	65°12.0'	S 23°19.3'	5.7'	-3.5'	58.7'	59°34.2'	43°19.9'	33°29.0'	28°44.3'	18°59.6'			64°22.3'
8	79°36.7'	S 23°22.8'	5.7'	-3.3'	58.6'	59°01.2'	42°57.9'	32°54.3'	28°09.6'	19°32.5'	54°01.7'		64°56.8'
9	94°01.5'	S 23°26.1'	5.8'	-3.2'	58.6'	58°28.2'	42°36.1'	32°19.6'	27°34.9'	20°05.4'	54°16.7'		65°31.3'
10	108°26.2'	S 23°29.2'	5.8'	-3.0'	58.5'	57°55.2'	42°14.6'	31°45.0'	27°00.4'	20°38.4'	54°31.9'		66°05.7'
11	122°51.0'	S 23°32.2'	5.8'	-2.8'	58.5'	57°22.3'	41°53.4'	31°10.5'	26°25.9'	21°11.4'	54°47.3'		66°40.1'
12	137°15.8'	S 23°35.1'	5.8'	-2.7'	58.5'	56°49.4'	41°32.4'	30°36.0'	25°51.4'	21°44.4'	55°02.8'		67°14.5'
13	151°40.6'	S 23°37.8'	5.9'	-2.5'	58.4'	56°16.6'	41°11.7'	30°01.5'	25°17.0'	22°17.5'	55°18.5'		67°48.8'
14	166°05.5'	S 23°40.3'	5.9'	-2.4'	58.4'	55°43.8'	40°51.3'	29°27.1'	24°42.6'	22°50.6'	55°34.4'		68°23.0'
15	180°30.4'	S 23°42.7'	5.9'	-2.2'	58.3'	55°11.0'	40°31.2'	28°52.8'	24°08.3'	23°23.7'	51°47.2'		68°57.3'
16	194°55.3'	S 23°44.9'	5.9'	-2.1'	58.3'	54°38.4'	40°11.3'	28°18.5'	23°34.0'	23°56.9'	52°02.3'		69°31.4'
17	209°20.2'	S 23°47.0'	6.0'	-1.9'	58.3'	54°05.7'	39°51.8'	27°44.3'	23°59.8'	24°30.0'	52°17.6'		70°05.6'
18	223°45.2'	S 23°48.9'	6.0'	-1.8'	58.2'	53°33.1'	39°32.6'	27°10.1'	22°25.7'	25°03.2'	52°33.1'		70°39.6'
19	238°10.2'	S 23°50.7'	6.1'	-1.6'	58.2'	53°00.6'	39°13.7'	26°36.0'	21°51.6'	25°36.3'	52°48.8'		71°13.7'
20	252°35.3'	S 23°52.3'	6.1'	-1.5'	58.2'	52°28.1'	38°55.2'	26°01.9'	21°17.6'	26°09.5'	53°04.7'		71°47.7'
21	267°00.4'	S 23°53.7'	6.1'	-1.3'	58.1'	51°55.7'	38°36.9'	25°27.9'	20°43.6'	26°42.6'	53°20.7'		72°21.6'
22	281°25.5'	S 23°55.0'	6.2'	-1.2'	58.1'	51°23.3'	38°19.0'	24°53.9'	20°09.7'	27°15.8'	53°36.9'		72°55.5'
23	295°50.7'	S 23°56.2'	6.2'	-1.0'	58.0'	50°51.0'	38°01.4'	24°20.0'	19°35.8'	27°48.9'	53°53.3'		73°29.4'
Mer. pass.		2 h 29 m SD 16.1'		phase 91%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.9'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.2'	N 45°20.9'	Acrux	+0.8	173°03.6'	S 63°12.8'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.2'	Regulus	+1.4	207°38.4'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.5'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°54.9'	N 5°10.3'	Polaris	+2.0	316°11.6'	N 89°20.8'
Rigel Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.0'	S 29°00.2'	Achernar	+0.5	335°23.7'	S 57°08.1'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.9'				
Hadar	+0.6	148°40.6'	S 60°28.2'	Canopus	-0.6	263°54.4'	S 52°42.7'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	229°14.2'	180°54.2'	N 17°56.6'	148°32.3'	N 27°35.5'	289°55.7'	S 20°52.0'	284°59.8'	S 19°50.3'	257°54.7'	S 13°44.0'
1	244°16.7'	195°54.3'	N 17°57.3'	163°34.5'	N 27°35.4'	304°58.2'	S 20°52.0'	300°02.2'	S 19°50.3'	272°55.5'	S 13°43.4'
2	259°19.1'	210°54.3'	N 17°57.9'	178°36.7'	N 27°35.2'	320°00.6'	S 20°52.0'	315°04.7'	S 19°50.3'	287°56.3'	S 13°42.9'
3	274°21.6'	225°54.3'	N 17°58.5'	193°39.0'	N 27°35.0'	335°03.0'	S 20°52.0'	330°07.2'	S 19°50.3'	302°57.1'	S 13°42.3'
4	289°24.1'	240°54.3'	N 17°59.2'	208°41.2'	N 27°34.9'	350°05.5'	S 20°52.0'	345°09.6'	S 19°50.3'	317°57.9'	S 13°41.8'
5	304°26.5'	255°54.3'	N 17°59.8'	223°43.4'	N 27°34.7'	5°07.9'	S 20°52.0'	0°12.1'	S 19°50.3'	332°58.7'	S 13°41.2'
6	319°29.0'	270°54.3'	N 18°00.4'	238°45.6'	N 27°34.5'	20°10.3'	S 20°52.0'	15°14.5'	S 19°50.3'	347°59.5'	S 13°40.7'
7	334°31.5'	285°54.4'	N 18°01.1'	253°47.9'	N 27°34.4'	35°12.8'	S 20°52.0'	30°17.0'	S 19°50.3'	3°00.3'	S 13°40.2'
8	349°33.9'	300°54.4'	N 18°01.7'	268°50.1'	N 27°34.2'	50°15.2'	S 20°52.0'	45°19.5'	S 19°50.4'	18°01.1'	S 13°39.6'
9	4°36.4'	315°54.4'	N 18°02.3'	283°52.3'	N 27°34.0'	65°17.6'	S 20°52.0'	60°21.9'	S 19°50.4'	33°01.9'	S 13°39.1'
10	19°38.9'	330°54.4'	N 18°03.0'	298°54.6'	N 27°33.8'	80°20.1'	S 20°52.0'	75°24.4'	S 19°50.4'	48°02.6'	S 13°38.5'
11	34°41.3'	345°54.4'	N 18°03.6'	313°56.8'	N 27°33.7'	95°22.5'	S 20°52.0'	90°26.9'	S 19°50.4'	63°03.4'	S 13°38.0'
12	49°43.8'	0°54.4'	N 18°04.2'	328°59.1'	N 27°33.5'	110°24.9'	S 20°52.0'	105°29.3'	S 19°50.4'	78°04.2'	S 13°37.5'
13	64°46.3'	15°54.4'	N 18°04.9'	344°01.4'	N 27°33.3'	125°27.4'	S 20°52.0'	120°31.8'	S 19°50.4'	93°05.0'	S 13°36.9'
14	79°48.7'	30°54.4'	N 18°05.5'	359°03.6'	N 27°33.1'	140°29.8'	S 20°52.0'	135°34.3'	S 19°50.4'	108°05.8'	S 13°36.4'
15	94°51.2'	45°54.5'	N 18°06.1'	14°05.9'	N 27°33.0'	155°32.3'	S 20°52.0'	150°36.7'	S 19°50.4'	123°06.6'	S 13°35.8'
16	109°53.6'	60°54.5'	N 18°06.8'	29°08.2'	N 27°32.8'	170°34.7'	S 20°52.0'	165°39.2'	S 19°50.4'	138°07.4'	S 13°35.3'
17	124°56.1'	75°54.5'	N 18°07.4'	44°10.4'	N 27°32.6'	185°37.1'	S 20°52.0'	180°41.7'	S 19°50.4'	153°08.2'	S 13°34.7'
18	139°58.6'	90°54.5'	N 18°08.0'	59°12.7'	N 27°32.4'	200°39.6'	S 20°52.0'	195°44.1'	S 19°50.4'	168°09.0'	S 13°34.2'
19	155°01.0'	105°54.5'	N 18°08.6'	74°15.0'	N 27°32.2'	215°42.0'	S 20°52.0'	210°46.6'	S 19°50.4'	183°09.8'	S 13°33.6'
20	170°03.5'	120°54.5'	N 18°09.3'	89°17.3'	N 27°32.1'	230°44.5'	S 20°52.0'	225°49.0'	S 19°50.4'	198°10.6'	S 13°33.1'
21	185°06.0'	135°54.5'	N 18°09.9'	104°19.6'	N 27°31.9'	245°46.9'	S 20°52.0'	240°51.5'	S 19°50.4'	213°11.4'	S 13°32.6'
22	200°08.4'	150°54.5'	N 18°10.5'	119°21.9'	N 27°31.7'	260°49.3'	S 20°52.0'	255°54.0'	S 19°50.4'	228°12.2'	S 13°32.0'
23	215°10.9'	165°54.6'	N 18°11.2'	134°24.2'	N 27°31.5'	275°51.8'	S 20°52.0'	270°56.4'	S 19°50.4'	243°13.0'	S 13°31.5'
		SD 15.8' d 0.6'		v 2.3' d -0.2'		v 2.4' d -0.0'		v 2.5' d -0.0'		v 0.8' d 0.5'	
Mer. pass.		11 h 56 m 23 s		14 h 4 m		4 h 40 m		4 h 59 m		6 h 48 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Mars	-Altair	-Saturn	-Jupiter	+Antares	+Rigel Kent	+Hadar	+Acrux
0	310°15.9'	S 23°57.2'	6.3'	-0.9'	58.0'	50°18.7'	37°44.2'	23°46.2'	19°02.0'	28°22.0'	54°09.9'	58°21.8'	69°38.8'
1	324°41.1'	S 23°58.1'	6.3'	-0.7'	58.0'	49°46.4'	37°27.3'	23°12.4'	18°28.3'	28°55.2'	54°26.6'	58°39.2'	69°54.3'
2	339°06.4'	S 23°58.8'	6.3'	-0.6'	57.9'	49°14.2'	37°10.8'	22°38.7'	17°54.6'	29°28.3'	54°43.4'	58°56.9'	70°10.0'
3	353°31.8'	S 23°59.3'	6.4'	-0.4'	57.9'	48°42.1'	36°54.6'	22°05.0'	17°21.0'	30°01.3'	55°00.5'	59°14.6'	70°25.7'
4	7°57.2'	S 23°59.7'	6.4'	-0.3'	57.8'	48°10.0'	36°38.8'	21°31.4'	16°47.5'	30°34.4'	55°17.6'	59°32.5'	70°41.5'
5	22°22.6'	S 23°60.0'	6.5'	-0.1'	57.8'	47°37.9'	36°23.4'	20°57.9'	16°14.0'	31°07.4'	55°35.0'	59°50.4'	70°57.3'
6	36°48.1'	S 24°00.1'	6.5'	0.0'	57.8'	47°05.9'		20°24.4'	15°40.6'	31°40.4'	55°52.4'	60°08.5'	71°13.2'
7	51°13.7'	S 24°00.1'	6.6'	0.2'	57.7'	46°34.0'		19°51.0'	15°07.3'	32°13.4'	56°10.0'	60°26.7'	71°29.2'
8	65°39.3'	S 23°59.9'	6.7'	0.3'	57.7'	46°02.1'		19°17.6'	14°34.0'	32°46.4'	56°27.8'	60°45.0'	71°45.3'
9	80°04.9'	S 23°59.5'	6.7'	0.5'	57.7'	45°30.2'		18°44.3'	14°00.9'	33°19.3'	56°45.6'	61°03.4'	72°01.4'
10	94°30.6'	S 23°59.1'	6.8'	0.6'	57.6'	44°58.4'		18°11.1'	13°27.8'	33°52.3'	57°03.6'	61°21.9'	72°17.5'
11	108°56.4'	S 23°58.4'	6.8'	0.8'	57.6'	44°26.7'		17°38.0'	12°54.7'	34°25.1'	57°21.8'	61°40.6'	72°33.8'
12	123°22.2'	S 23°57.7'	6.9'	0.9'	57.5'	43°55.0'		17°04.9'	12°21.8'	34°58.0'	57°40.0'	61°59.3'	72°50.0'
13	137°48.1'	S 23°56.8'	6.9'	1.1'	57.5'	43°23.3'		16°31.9'	11°49.0'	35°30.8'	57°58.4'	62°18.0'	73°06.4'
14	152°14.1'	S 23°55.7'	7.0'	1.2'	57.5'	42°51.7'		15°58.9'	11°16.3'	36°03.6'	58°16.9'	62°36.9'	73°22.8'
15	166°40.1'	S 23°54.5'	7.1'	1.3'	57.4'	42°20.2'		15°26.1'	10°43.6'	36°36.4'	58°35.5'	62°55.9'	73°39.2'
16	181°06.1'	S 23°53.2'	7.1'	1.5'	57.4'	41°48.6'		14°53.3'	10°11.2'	37°09.1'	58°54.2'	63°14.9'	73°55.7'
17	195°32.3'	S 23°51.7'	7.2'	1.6'	57.3'	41°17.2'		14°20.6'	9°38.8'	37°41.8'	59°13.0'	63°34.1'	74°12.2'
18	209°58.5'	S 23°50.1'	7.3'	1.8'	57.3'	40°45.8'		13°48.0'	9°06.6'	38°14.5'	59°31.9'	63°53.3'	74°28.8'
19	224°24.8'	S 23°48.4'	7.3'	1.9'	57.3'	40°14.4'		13°15.5'	8°34.5'	38°47.2'	59°50.9'	64°12.6'	74°45.4'
20	238°51.1'	S 23°46.5'	7.4'	2.0'	57.2'	39°43.1'		12°43.1'	8°02.7'	39°19.8'	60°10.0'	64°32.0'	75°02.1'
21	253°17.5'	S 23°44.4'	7.5'	2.2'	57.2'	39°11.8'		12°10.8'	7°31.0'	39°52.3'	60°29.2'	64°51.4'	75°18.8'
22	267°44.0'	S 23°42.3'	7.5'	2.3'	57.2'	38°40.6'		11°38.6'	6°59.7'	40°24.9'	60°48.5'	65°10.9'	75°35.5'
23	282°10.5'	S 23°40.0'	7.6'	2.4'	57.1'	38°09.4'		11°06.5'	6°28.6'	40°57.4'	61°07.9'	65°30.5'	75°52.3'
Mer. pass.		3 h 27 m SD 15.8'		phase 84%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.9'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.2'	N 45°20.9'	Acrux	+0.8	173°03.6'	S 63°12.8'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.2'	Regulus	+1.4	207°38.4'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.5'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°54.9'	N 5°10.3'	Polaris	+2.0	316°11.4'	N 89°20.8'
Rigel Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.0'	S 29°00.2'	Achernar	+0.5	335°23.7'	S 57°08.1'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.9'				
Hadar	+0.6	148°40.6'	S 60°28.2'	Canopus	-0.6	263°54.4'	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	230°13.4'	180°54.6'	N 18°11.8'	149°26.5'	N 27°31.3'	290°54.2'	S 20°52.0'	285°58.9'	S 19°50.4'	258°13.8'	S 13°30.9'			
1	245°15.8'	195°54.6'	N 18°12.4'	164°28.8'	N 27°31.1'	305°56.7'	S 20°52.0'	301°01.4'	S 19°50.4'	273°14.6'	S 13°30.4'			
2	260°18.3'	210°54.6'	N 18°13.0'	179°31.1'	N 27°30.9'	320°59.1'	S 20°52.0'	316°03.8'	S 19°50.4'	288°15.4'	S 13°29.8'			
3	275°20.8'	225°54.6'	N 18°13.7'	194°33.4'	N 27°30.7'	336°01.5'	S 20°52.0'	331°06.3'	S 19°50.4'	303°16.2'	S 13°29.3'			
4	290°23.2'	240°54.6'	N 18°14.3'	209°35.8'	N 27°30.5'	351°04.0'	S 20°52.0'	346°08.8'	S 19°50.4'	318°17.0'	S 13°28.8'			
5	305°25.7'	255°54.6'	N 18°14.9'	224°38.1'	N 27°30.4'	6°06.4'	S 20°52.0'	1°11.3'	S 19°50.4'	333°17.7'	S 13°28.2'			
6	320°28.1'	270°54.6'	N 18°15.5'	239°40.4'	N 27°30.2'	21°08.9'	S 20°52.0'	16°13.7'	S 19°50.4'	348°18.5'	S 13°27.7'			
7	335°30.6'	285°54.6'	N 18°16.2'	254°42.8'	N 27°30.0'	36°11.3'	S 20°52.0'	31°16.2'	S 19°50.5'	3°19.3'	S 13°27.1'			
8	350°33.1'	300°54.6'	N 18°16.8'	269°45.1'	N 27°29.8'	51°13.8'	S 20°52.0'	46°18.7'	S 19°50.5'	18°20.1'	S 13°26.6'			
9	5°35.5'	315°54.6'	N 18°17.4'	284°47.5'	N 27°29.6'	66°16.2'	S 20°52.0'	61°21.1'	S 19°50.5'	33°20.9'	S 13°26.0'			
10	20°38.0'	330°54.7'	N 18°18.0'	299°49.8'	N 27°29.4'	81°18.6'	S 20°52.0'	76°23.6'	S 19°50.5'	48°21.7'	S 13°25.5'			
11	35°40.5'	345°54.7'	N 18°18.6'	314°52.2'	N 27°29.2'	96°21.1'	S 20°52.0'	91°26.1'	S 19°50.5'	63°22.5'	S 13°24.9'			
12	50°42.9'	0°54.7'	N 18°19.3'	329°54.5'	N 27°29.0'	111°23.5'	S 20°52.0'	106°28.5'	S 19°50.5'	78°23.3'	S 13°24.4'			
13	65°45.4'	15°54.7'	N 18°19.9'	344°56.9'	N 27°28.8'	126°26.0'	S 20°52.1'	121°31.0'	S 19°50.5'	93°24.1'	S 13°23.8'			
14	80°47.9'	30°54.7'	N 18°20.5'	359°59.3'	N 27°28.6'	141°28.4'	S 20°52.1'	136°33.5'	S 19°50.5'	108°24.9'	S 13°23.3'			
15	95°50.3'	45°54.7'	N 18°21.1'	15°01.7'	N 27°28.4'	156°30.9'	S 20°52.1'	151°35.9'	S 19°50.5'	123°25.7'	S 13°22.8'			
16	110°52.8'	60°54.7'	N 18°21.7'	30°04.0'	N 27°28.2'	171°33.3'	S 20°52.1'	166°38.4'	S 19°50.5'	138°26.5'	S 13°22.2'			
17	125°55.2'	75°54.7'	N 18°22.3'	45°06.4'	N 27°27.9'	186°35.8'	S 20°52.1'	181°40.9'	S 19°50.5'	153°27.3'	S 13°21.7'			
18	140°57.7'	90°54.7'	N 18°23.0'	60°08.8'	N 27°27.7'	201°38.2'	S 20°52.1'	196°43.3'	S 19°50.5'	168°28.1'	S 13°21.1'			
19	156°00.2'	105°54.7'	N 18°23.6'	75°11.2'	N 27°27.5'	216°40.7'	S 20°52.1'	211°45.8'	S 19°50.5'	183°28.9'	S 13°20.6'			
20	171°02.6'	120°54.7'	N 18°24.2'	90°13.6'	N 27°27.3'	231°43.1'	S 20°52.1'	226°48.3'	S 19°50.5'	198°29.7'	S 13°20.0'			
21	186°05.1'	135°54.7'	N 18°24.8'	105°16.0'	N 27°27.1'	246°45.6'	S 20°52.1'	241°50.8'	S 19°50.5'	213°30.5'	S 13°19.5'			
22	201°07.6'	150°54.7'	N 18°25.4'	120°18.4'	N 27°26.9'	261°48.0'	S 20°52.1'	256°53.2'	S 19°50.5'	228°31.3'	S 13°18.9'			
23	216°10.0'	165°54.7'	N 18°26.0'	135°20.8'	N 27°26.7'	276°50.5'	S 20°52.1'	271°55.7'	S 19°50.5'	243°32.1'	S 13°18.4'			
		SD 15.8' d 0.6'		v 2.4' d -0.2'		v 2.4' d -0.0'		v 2.5' d -0.0'		v 0.8' d 0.5'				
Mer. pass.		11 h 56 m 22 s		14 h 0 m		4 h 36 m		4 h 55 m		6 h 47 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Mars	-Saturn	-Jupiter	+Antares	+Rigel Kent	+Hadar	+Acrux
0	296°37.1'	S 23°37.5'	7.7'	2.6'	57.1'		37°38.3'	10°34.6'	5°57.9'	41°29.8'	61°27.3'	65°50.1'	76°09.1'
1	311°03.8'	S 23°35.0'	7.8'	2.7'	57.0'	119°40.4'	37°07.2'	10°02.8'	5°27.7'	42°02.3'	61°46.9'	66°09.8'	76°25.9'
2	325°30.6'	S 23°32.3'	7.8'	2.8'	57.0'	119°10.1'	36°36.2'	9°31.2'	4°58.1'	42°34.7'	62°06.5'	66°29.6'	76°42.8'
3	339°57.4'	S 23°29.4'	7.9'	3.0'	57.0'	118°39.7'	36°05.2'	8°59.8'		43°07.0'	62°26.2'	66°49.4'	76°59.7'
4	354°24.4'	S 23°26.5'	8.0'	3.1'	56.9'	118°09.5'	35°34.2'	8°28.6'		43°39.3'	62°46.0'	67°09.3'	77°16.6'
5	8°51.3'	S 23°23.4'	8.1'	3.2'	56.9'	117°39.3'	35°03.4'	7°57.7'		44°11.6'	63°05.9'	67°29.2'	77°33.6'
6	23°18.4'	S 23°20.2'	8.1'	3.3'	56.9'	117°09.1'	34°32.5'	7°27.0'		44°43.9'	63°25.8'	67°49.2'	77°50.6'
7	37°45.6'	S 23°16.8'	8.2'	3.5'	56.8'	116°38.9'	34°01.7'	6°56.7'		45°16.1'	63°45.8'	68°09.3'	78°07.6'
8	52°12.8'	S 23°13.4'	8.3'	3.6'	56.8'	116°08.8'	33°31.0'	6°26.8'		45°48.3'	64°05.9'	68°29.4'	78°24.7'
9	66°40.1'	S 23°09.8'	8.4'	3.7'	56.7'	115°38.8'	33°00.3'	5°57.4'		46°20.4'	64°26.0'	68°49.5'	78°41.7'
10	81°07.5'	S 23°06.0'	8.5'	3.8'	56.7'	115°08.8'	32°29.6'	5°28.6'		46°52.5'	64°46.2'	69°09.7'	78°58.8'
11	95°34.9'	S 23°02.2'	8.5'	4.0'	56.7'	114°38.8'	31°59.0'			47°24.6'	65°06.5'	69°29.9'	79°15.9'
12	110°02.5'	S 22°58.2'	8.6'	4.1'	56.6'	114°08.9'	31°28.4'			47°56.6'	65°26.8'	69°50.2'	79°33.0'
13	124°30.1'	S 22°54.1'	8.7'	4.2'	56.6'	113°39.0'	30°57.9'			48°28.6'	65°47.2'	70°10.5'	79°50.2'
14	138°57.8'	S 22°49.9'	8.8'	4.3'	56.6'	113°09.2'	30°27.4'			49°00.6'	66°07.6'	70°30.8'	80°07.3'
15	153°25.6'	S 22°45.6'	8.9'	4.5'	56.5'	112°39.4'	29°57.0'			49°32.5'	66°28.1'	70°51.2'	80°24.5'
16	167°53.4'	S 22°41.1'	9.0'	4.6'	56.5'	112°09.6'	29°26.6'			50°04.4'	66°48.6'	71°11.7'	80°41.7'
17	182°21.4'	S 22°36.6'	9.0'	4.7'	56.5'	111°39.9'	28°56.3'			50°36.2'	67°09.2'	71°32.1'	80°58.9'
18	196°49.4'	S 22°31.9'	9.1'	4.8'	56.4'	111°10.3'	28°26.0'		4°46.3'	51°08.1'	67°29.9'	71°52.6'	81°16.1'
19	211°17.5'	S 22°27.1'	9.2'	4.9'	56.4'	110°40.6'	27°55.8'		5°15.0'	51°39.8'	67°50.5'	72°13.1'	81°33.3'
20	225°45.7'	S 22°22.2'	9.3'	5.0'	56.4'	110°11.0'	27°25.6'		5°44.2'	52°11.6'	68°11.3'	72°33.7'	81°50.5'
21	240°14.0'	S 22°17.1'	9.4'	5.1'	56.3'	109°41.5'	26°55.4'		6°13.9'	52°43.3'	68°32.0'	72°54.3'	82°07.8'
22	254°42.4'	S 22°12.0'	9.5'	5.3'	56.3'	109°12.0'	26°25.3'		6°43.8'	53°14.9'	68°52.8'	73°14.9'	82°25.0'
23	269°10.8'	S 22°06.8'	9.5'	5.4'	56.2'	108°42.5'	25°55.3'		7°14.1'	53°46.6'	69°13.7'	73°35.5'	82°42.3'
Mer. pass.		4 h 23 m SD 15.6'	phase 75%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.9'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.2'	N 45°20.9'	Acrux	+0.8	173°03.6'	S 63°12.8'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.2'	Regulus	+1.4	207°38.4'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.5'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°54.9'	N 5°10.3'	Polaris	+2.0	316°11.3'	N 89°20.8'
Rigel Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.0'	S 29°00.2'	Achernar	+0.5	335°23.7'	S 57°08.1'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.9'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	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	231°12.5'	180°54.7' N	18°26.6'	150°23.2' N	27°26.5'	291°52.9' S	20°52.1'	286°58.2' S	19°50.5'	258°32.9' S	13°17.8'			
1	246°15.0'	195°54.7' N	18°27.3'	165°25.7' N	27°26.3'	306°55.4' S	20°52.1'	302°00.6' S	19°50.5'	273°33.7' S	13°17.3'			
2	261°17.4'	210°54.7' N	18°27.9'	180°28.1' N	27°26.0'	321°57.8' S	20°52.1'	317°03.1' S	19°50.6'	288°34.5' S	13°16.7'			
3	276°19.9'	225°54.8' N	18°28.5'	195°30.5' N	27°25.8'	337°00.3' S	20°52.1'	332°05.6' S	19°50.6'	303°35.3' S	13°16.2'			
4	291°22.4'	240°54.8' N	18°29.1'	210°32.9' N	27°25.6'	352°02.7' S	20°52.1'	347°08.1' S	19°50.6'	318°36.1' S	13°15.6'			
5	306°24.8'	255°54.8' N	18°29.7'	225°35.4' N	27°25.4'	7°05.2' S	20°52.1'	2°10.5' S	19°50.6'	333°36.9' S	13°15.1'			
6	321°27.3'	270°54.8' N	18°30.3'	240°37.8' N	27°25.2'	22°07.6' S	20°52.1'	17°13.0' S	19°50.6'	348°37.7' S	13°14.5'			
7	336°29.7'	285°54.8' N	18°30.9'	255°40.3' N	27°24.9'	37°10.1' S	20°52.1'	32°15.5' S	19°50.6'	3°38.5' S	13°14.0'			
8	351°32.2'	300°54.8' N	18°31.5'	270°42.7' N	27°24.7'	52°12.5' S	20°52.1'	47°17.9' S	19°50.6'	18°39.3' S	13°13.4'			
9	6°34.7'	315°54.8' N	18°32.1'	285°45.2' N	27°24.5'	67°15.0' S	20°52.1'	62°20.4' S	19°50.6'	33°40.1' S	13°12.9'			
10	21°37.1'	330°54.8' N	18°32.8'	300°47.6' N	27°24.3'	82°17.4' S	20°52.1'	77°22.9' S	19°50.6'	48°40.9' S	13°12.4'			
11	36°39.6'	345°54.8' N	18°33.4'	315°50.1' N	27°24.1'	97°19.9' S	20°52.1'	92°25.4' S	19°50.6'	63°41.7' S	13°11.8'			
12	51°42.1'	0°54.8' N	18°34.0'	330°52.6' N	27°23.8'	112°22.3' S	20°52.1'	107°27.8' S	19°50.6'	78°42.5' S	13°11.3'			
13	66°44.5'	15°54.8' N	18°34.6'	345°55.0' N	27°23.6'	127°24.8' S	20°52.1'	122°30.3' S	19°50.6'	93°43.3' S	13°10.7'			
14	81°47.0'	30°54.8' N	18°35.2'	0°57.5' N	27°23.4'	142°27.2' S	20°52.2'	137°32.8' S	19°50.6'	108°44.1' S	13°10.2'			
15	96°49.5'	45°54.8' N	18°35.8'	16°00.0' N	27°23.1'	157°29.7' S	20°52.2'	152°35.3' S	19°50.6'	123°44.9' S	13°09.6'			
16	111°51.9'	60°54.8' N	18°36.4'	31°02.5' N	27°22.9'	172°32.1' S	20°52.2'	167°37.7' S	19°50.6'	138°45.7' S	13°09.1'			
17	126°54.4'	75°54.8' N	18°37.0'	46°05.0' N	27°22.7'	187°34.6' S	20°52.2'	182°40.2' S	19°50.6'	153°46.5' S	13°08.5'			
18	141°56.9'	90°54.8' N	18°37.6'	61°07.5' N	27°22.4'	202°37.0' S	20°52.2'	197°42.7' S	19°50.6'	168°47.3' S	13°08.0'			
19	156°59.3'	105°54.8' N	18°38.2'	76°10.0' N	27°22.2'	217°39.5' S	20°52.2'	212°45.1' S	19°50.7'	183°48.2' S	13°07.4'			
20	172°01.8'	120°54.8' N	18°38.8'	91°12.5' N	27°22.0'	232°42.0' S	20°52.2'	227°47.6' S	19°50.7'	198°49.0' S	13°06.9'			
21	187°04.2'	135°54.8' N	18°39.4'	106°15.0' N	27°21.7'	247°44.4' S	20°52.2'	242°50.1' S	19°50.7'	213°49.8' S	13°06.3'			
22	202°06.7'	150°54.8' N	18°40.0'	121°17.5' N	27°21.5'	262°46.9' S	20°52.2'	257°52.6' S	19°50.7'	228°50.6' S	13°05.8'			
23	217°09.2'	165°54.8' N	18°40.6'	136°20.0' N	27°21.3'	277°49.3' S	20°52.2'	272°55.0' S	19°50.7'	243°51.4' S	13°05.2'			
		SD 15.8' d 0.6'		v 2.5' d -0.2'		v 2.5' d -0.0'		v 2.5' d -0.0'		v 0.8' d 0.5'				
Mer. pass.		11 h 56 m 21 s		13 h 56 m		4 h 32 m		4 h 51 m		6 h 45 m				

h	Moon				Lunar distance									
	GHA	dec	v	d	HP	-Sun	-Fomalhaut	-Mars	+Saturn	+Jupiter	+Antares	+Rigel Kent	+Hadar	
0	283°39.4'	S 22°01.4'	9.6'	5.5'	56.2'	108°13.1'	34°07.1'	25°25.3'			7°44.5'	54°18.2'	69°34.6'	73°56.2'
1	298°08.0'	S 21°55.9'	9.7'	5.6'	56.2'	107°43.7'	33°39.7'	24°55.3'			8°15.0'	54°49.7'	69°55.5'	74°16.9'
2	312°36.7'	S 21°50.3'	9.8'	5.7'	56.1'	107°14.3'	33°12.4'	24°25.4'			8°45.7'	55°21.3'	70°16.5'	74°37.6'
3	327°05.5'	S 21°44.7'	9.9'	5.8'	56.1'	106°45.0'	32°45.2'	23°55.5'			9°16.5'	55°52.7'	70°37.4'	74°58.3'
4	341°34.4'	S 21°38.9'	10.0'	5.9'	56.1'	106°15.8'	32°18.2'	23°25.7'	5°30.2'	9°47.3'	56°24.2'	70°58.5'	75°19.0'	
5	356°03.4'	S 21°33.0'	10.1'	6.0'	56.0'	105°46.5'	31°51.4'	22°55.9'	5°58.3'	10°18.2'	56°55.6'	71°19.5'	75°39.8'	
6	10°32.5'	S 21°27.0'	10.1'	6.1'	56.0'	105°17.3'	31°24.8'	22°26.2'	6°27.0'	10°49.1'	57°27.0'	71°40.6'	76°00.6'	
7	25°01.6'	S 21°20.9'	10.2'	6.2'	56.0'	104°48.2'	30°58.3'	21°56.5'	6°56.0'	11°20.0'	57°58.4'	72°01.7'	76°21.4'	
8	39°30.8'	S 21°14.7'	10.3'	6.3'	55.9'	104°19.0'	30°32.0'	21°26.8'	7°25.4'	11°51.0'	58°29.7'	72°22.8'	76°42.2'	
9	54°00.1'	S 21°08.4'	10.4'	6.4'	55.9'	103°50.0'	30°05.9'	20°57.2'	7°55.0'	12°22.0'	59°00.9'	72°44.0'	77°03.0'	
10	68°29.6'	S 21°01.9'	10.5'	6.5'	55.9'	103°20.9'	29°39.9'	20°27.7'	8°24.8'	12°53.0'	59°32.2'	73°05.2'	77°23.9'	
11	82°59.0'	S 20°55.4'	10.6'	6.6'	55.9'	102°51.9'	29°14.2'	19°58.2'	8°54.7'	13°23.9'	60°03.4'	73°26.4'	77°44.7'	
12	97°28.6'	S 20°48.8'	10.7'	6.7'	55.8'	102°22.9'	28°48.7'	19°28.7'	9°24.8'	13°54.9'	60°34.6'	73°47.6'	78°05.6'	
13	111°58.3'	S 20°42.1'	10.8'	6.8'	55.8'	101°54.0'	28°23.4'	18°59.3'	9°55.0'	14°25.9'	61°05.7'	74°08.9'	78°26.4'	
14	126°28.0'	S 20°35.4'	10.8'	6.9'	55.8'	101°25.1'	27°58.2'	18°30.0'	10°25.3'	14°56.9'	61°36.8'	74°30.2'	78°47.3'	
15	140°57.9'	S 20°28.5'	10.9'	7.0'	55.7'	100°56.2'	27°33.4'	18°00.7'	10°55.6'	15°27.9'	62°07.9'	74°51.5'	79°08.2'	
16	155°27.8'	S 20°21.5'	11.0'	7.1'	55.7'	100°27.4'	27°08.7'	17°31.5'	11°26.0'	15°58.8'	62°39.0'	75°12.8'	79°29.1'	
17	169°57.8'	S 20°14.4'	11.1'	7.2'	55.7'	99°58.6'	26°44.3'	17°02.3'	11°56.4'	16°29.7'	63°10.0'	75°34.1'	79°50.0'	
18	184°27.9'	S 20°07.2'	11.2'	7.3'	55.6'	99°29.8'	26°20.2'	16°33.1'	12°26.9'	17°00.7'	63°41.0'	75°55.4'	80°10.9'	
19	198°58.1'	S 19°60.0'	11.3'	7.3'	55.6'	99°01.1'	25°56.3'	16°04.0'	12°57.4'	17°31.6'	64°11.9'	76°16.8'	80°31.8'	
20	213°28.3'	S 19°52.6'	11.3'	7.4'	55.6'	98°32.4'	25°32.6'	15°35.0'	13°27.9'	18°02.5'	64°42.8'	76°38.1'	80°52.7'	
21	227°58.7'	S 19°45.2'	11.4'	7.5'	55.5'	98°03.7'	25°09.3'	15°06.1'	13°58.5'	18°33.3'	65°13.7'	76°59.5'	81°13.6'	
22	242°29.1'	S 19°37.7'	11.5'	7.6'	55.5'	97°35.1'	24°46.2'	14°37.2'	14°29.0'	19°04.2'	65°44.6'	77°20.9'	81°34.6'	
23	256°59.6'	S 19°30.1'	11.6'	7.7'	55.5'	97°06.5'	24°23.5'	14°08.3'	14°59.5'	19°35.0'	66°15.4'	77°42.3'	81°55.5'	
Mer. pass.														

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.9'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.2'	N 45°20.9'	Acrux	+0.8	173°03.6'	S 63°12.8'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.2'	Regulus	+1.4	207°38.4'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.5'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°11.2'	N 89°20.8'
Rigel Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.7'	S 57°08.1'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.9'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.7'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	232°11.6'	180°54.8' N 18°41.2'	151°22.6' N 27°21.0'	292°51.8' S 20°52.2'	287°57.5' S 19°50.7'	258°52.2' S 13°04.7'						
1	247°14.1'	195°54.8' N 18°41.8'	166°25.1' N 27°20.8'	307°54.2' S 20°52.2'	302°60.0' S 19°50.7'	273°53.0' S 13°04.1'						
2	262°16.6'	210°54.8' N 18°42.4'	181°27.6' N 27°20.5'	322°56.7' S 20°52.2'	318°02.5' S 19°50.7'	288°53.8' S 13°03.6'						
3	277°19.0'	225°54.8' N 18°43.0'	196°30.2' N 27°20.3'	337°59.2' S 20°52.2'	333°04.9' S 19°50.7'	303°54.6' S 13°03.0'						
4	292°21.5'	240°54.8' N 18°43.6'	211°32.7' N 27°20.0'	353°01.6' S 20°52.2'	348°07.4' S 19°50.7'	318°55.4' S 13°02.5'						
5	307°24.0'	255°54.8' N 18°44.2'	226°35.3' N 27°19.8'	8°04.1' S 20°52.2'	3°09.9' S 19°50.7'	333°56.2' S 13°01.9'						
6	322°26.4'	270°54.8' N 18°44.8'	241°37.8' N 27°19.6'	23°06.5' S 20°52.2'	18°12.4' S 19°50.7'	348°57.0' S 13°01.4'						
7	337°28.9'	285°54.8' N 18°45.4'	256°40.4' N 27°19.3'	38°09.0' S 20°52.2'	33°14.9' S 19°50.7'	3°57.8' S 13°00.8'						
8	352°31.4'	300°54.7' N 18°46.0'	271°42.9' N 27°19.1'	53°11.5' S 20°52.2'	48°17.3' S 19°50.7'	18°58.6' S 13°00.3'						
9	7°33.8'	315°54.7' N 18°46.6'	286°45.5' N 27°18.8'	68°13.9' S 20°52.3'	63°19.8' S 19°50.7'	33°59.4' S 12°59.7'						
10	22°36.3'	330°54.7' N 18°47.2'	301°48.1' N 27°18.6'	83°16.4' S 20°52.3'	78°22.3' S 19°50.8'	49°00.2' S 12°59.2'						
11	37°38.7'	345°54.7' N 18°47.8'	316°50.6' N 27°18.3'	98°18.8' S 20°52.3'	93°24.8' S 19°50.8'	64°01.0' S 12°58.6'						
12	52°41.2'	0°54.7' N 18°48.4'	331°53.2' N 27°18.0'	113°21.3' S 20°52.3'	108°27.2' S 19°50.8'	79°01.8' S 12°58.1'						
13	67°43.7'	15°54.7' N 18°49.0'	346°55.8' N 27°17.8'	128°23.8' S 20°52.3'	123°29.7' S 19°50.8'	94°02.6' S 12°57.5'						
14	82°46.1'	30°54.7' N 18°49.5'	1°58.4' N 27°17.5'	143°26.2' S 20°52.3'	138°32.2' S 19°50.8'	109°03.5' S 12°56.9'						
15	97°48.6'	45°54.7' N 18°50.1'	17°01.0' N 27°17.3'	158°28.7' S 20°52.3'	153°34.7' S 19°50.8'	124°04.3' S 12°56.4'						
16	112°51.1'	60°54.7' N 18°50.7'	32°03.6' N 27°17.0'	173°31.2' S 20°52.3'	168°37.1' S 19°50.8'	139°05.1' S 12°55.8'						
17	127°53.5'	75°54.7' N 18°51.3'	47°06.2' N 27°16.8'	188°33.6' S 20°52.3'	183°39.6' S 19°50.8'	154°05.9' S 12°55.3'						
18	142°56.0'	90°54.7' N 18°51.9'	62°08.8' N 27°16.5'	203°36.1' S 20°52.3'	198°42.1' S 19°50.8'	169°06.7' S 12°54.7'						
19	157°58.5'	105°54.7' N 18°52.5'	77°11.4' N 27°16.2'	218°38.5' S 20°52.3'	213°44.6' S 19°50.8'	184°07.5' S 12°54.2'						
20	173°00.9'	120°54.7' N 18°53.1'	92°14.0' N 27°16.0'	233°41.0' S 20°52.3'	228°47.1' S 19°50.8'	199°08.3' S 12°53.6'						
21	188°03.4'	135°54.7' N 18°53.7'	107°16.6' N 27°15.7'	248°43.5' S 20°52.3'	243°49.5' S 19°50.8'	214°09.1' S 12°53.1'						
22	203°05.8'	150°54.7' N 18°54.3'	122°19.2' N 27°15.4'	263°45.9' S 20°52.3'	258°52.0' S 19°50.8'	229°09.9' S 12°52.5'						
23	218°08.3'	165°54.7' N 18°54.9'	137°21.9' N 27°15.2'	278°48.4' S 20°52.3'	273°54.5' S 19°50.8'	244°10.7' S 12°52.0'						
		SD 15.8' d 0.6'	v 2.6' d -0.3'	v 2.5' d -0.0'	v 2.5' d -0.0'	v 0.8' d 0.6'						
Mer. pass.		11 h 56 m 21 s	13 h 52 m	4 h 28 m	4 h 47 m	6 h 44 m						

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Fomalhaut	-Mars	+Saturn	+Jupiter	+Altair	+Antares	+Rigel Kent
0	271°30.2'	S 19°22.4'	11.7'	7.8'	55.5'	96°38.0'	24°01.0'	13°39.5'	15°30.1'	20°05.8'		66°46.2'	78°03.7'
1	286°00.9'	S 19°14.6'	11.8'	7.9'	55.4'	96°09.4'	23°38.9'	13°10.8'	16°00.6'	20°36.6'		67°16.9'	78°25.1'
2	300°31.7'	S 19°06.8'	11.9'	7.9'	55.4'	95°40.9'	23°17.1'	12°42.2'	16°31.2'	21°07.3'		67°47.7'	78°46.6'
3	315°02.5'	S 18°58.8'	11.9'	8.0'	55.4'	95°12.5'	22°55.7'	12°13.7'	17°01.7'	21°38.1'		68°18.4'	79°08.0'
4	329°33.5'	S 18°50.8'	12.0'	8.1'	55.4'	94°44.0'	22°34.6'	11°45.2'	17°32.2'	22°08.8'		68°49.0'	79°29.4'
5	344°04.5'	S 18°42.7'	12.1'	8.2'	55.3'	94°15.6'	22°14.0'	11°16.8'	18°02.7'	22°39.5'	37°17.2'	69°19.7'	79°50.9'
6	358°35.6'	S 18°34.5'	12.2'	8.3'	55.3'	93°47.2'	21°53.7'	10°48.5'	18°33.2'	23°10.1'	37°32.3'	69°50.3'	80°12.3'
7	13°06.8'	S 18°26.3'	12.3'	8.3'	55.3'	93°18.9'	21°33.8'	10°20.4'	19°03.7'	23°40.8'	37°47.6'	70°20.9'	80°33.8'
8	27°38.0'	S 18°17.9'	12.3'	8.4'	55.2'	92°50.6'	21°14.4'	9°52.3'	19°34.2'	24°11.4'	38°03.2'	70°51.4'	80°55.2'
9	42°09.4'	S 18°09.5'	12.4'	8.5'	55.2'	92°22.3'	20°55.4'	9°24.4'	20°04.7'	24°42.0'	38°19.1'	71°22.0'	81°16.7'
10	56°40.8'	S 18°01.0'	12.5'	8.6'	55.2'	91°54.0'	20°36.9'	8°56.6'	20°35.1'	25°12.6'	38°35.2'	71°52.5'	81°38.1'
11	71°12.3'	S 17°52.5'	12.6'	8.6'	55.2'	91°25.8'	20°18.9'	8°29.0'	21°05.6'	25°43.1'	38°51.5'	72°22.9'	81°59.6'
12	85°43.9'	S 17°43.8'	12.7'	8.7'	55.1'	90°57.6'	20°01.4'	8°01.5'	21°36.0'	26°13.7'	39°08.1'	72°53.4'	82°21.1'
13	100°15.5'	S 17°35.1'	12.7'	8.8'	55.1'	90°29.4'	19°44.4'	7°34.3'	22°06.4'	26°44.2'	39°24.8'	73°23.8'	82°42.5'
14	114°47.2'	S 17°26.4'	12.8'	8.8'	55.1'	90°01.3'	19°28.0'	7°07.3'	22°36.8'	27°14.6'	39°41.8'	73°54.2'	83°04.0'
15	129°19.1'	S 17°17.5'	12.9'	8.9'	55.1'	89°33.1'	19°12.1'	6°40.6'	23°07.1'	27°45.1'	39°59.0'	74°24.6'	83°25.4'
16	143°50.9'	S 17°08.6'	13.0'	9.0'	55.0'	89°05.1'		6°14.2'	23°37.5'	28°15.5'	40°16.4'	74°54.9'	83°46.9'
17	158°22.9'	S 16°59.6'	13.0'	9.1'	55.0'	88°37.0'		5°48.3'	24°07.8'	28°45.9'	40°34.0'	75°25.2'	84°08.3'
18	172°54.9'	S 16°50.5'	13.1'	9.1'	55.0'	88°08.9'		5°22.9'	24°38.1'	29°16.3'	40°51.8'	75°55.5'	84°29.7'
19	187°27.0'	S 16°41.4'	13.2'	9.2'	55.0'	87°40.9'		4°58.1'	25°08.4'	29°46.7'	41°09.8'	76°25.8'	84°51.2'
20	201°59.2'	S 16°32.2'	13.3'	9.3'	54.9'	87°12.9'			25°38.7'	30°17.0'	41°28.0'	76°56.0'	85°12.6'
21	216°31.5'	S 16°23.0'	13.3'	9.3'	54.9'	86°45.0'			26°08.9'	30°47.4'	41°46.3'	77°26.2'	85°34.0'
22	231°03.8'	S 16°13.7'	13.4'	9.4'	54.9'	86°17.0'			26°39.2'	31°17.7'	42°04.9'	77°56.4'	85°55.5'
23	245°36.2'	S 16°04.3'	13.5'	9.4'	54.9'	85°49.1'			27°09.4'	31°47.9'	42°23.6'	78°26.6'	86°16.9'
Mer. pass.		6 h 6 m SD 15.1'	phase 56%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.8'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.2'	N 45°20.9'	Acrux	+0.8	173°03.6'	S 63°12.8'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.2'	Regulus	+1.4	207°38.4'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.4'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°11.1'	N 89°20.8'
Rigel Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.7'	S 57°08.0'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.9'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.7'				

Friday 15 May 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	233°10.8'	180°54.7'	N 18°55.4'	152°24.5'	N 27°14.9'	293°50.9'	S 20°52.4'	288°57.0'	S 19°50.9'	259°11.5'	S 12°51.4'			
1	248°13.2'	195°54.6'	N 18°56.0'	167°27.2'	N 27°14.6'	308°53.3'	S 20°52.4'	303°59.5'	S 19°50.9'	274°12.3'	S 12°50.9'			
2	263°15.7'	210°54.6'	N 18°56.6'	182°29.8'	N 27°14.4'	323°55.8'	S 20°52.4'	319°01.9'	S 19°50.9'	289°13.1'	S 12°50.3'			
3	278°18.2'	225°54.6'	N 18°57.2'	197°32.4'	N 27°14.1'	338°58.3'	S 20°52.4'	334°04.4'	S 19°50.9'	304°14.0'	S 12°49.8'			
4	293°20.6'	240°54.6'	N 18°57.8'	212°35.1'	N 27°13.8'	354°00.7'	S 20°52.4'	349°06.9'	S 19°50.9'	319°14.8'	S 12°49.2'			
5	308°23.1'	255°54.6'	N 18°58.4'	227°37.8'	N 27°13.6'	9°03.2'	S 20°52.4'	4°09.4'	S 19°50.9'	334°15.6'	S 12°48.7'			
6	323°25.6'	270°54.6'	N 18°59.0'	242°40.4'	N 27°13.3'	24°05.7'	S 20°52.4'	19°11.9'	S 19°50.9'	349°16.4'	S 12°48.1'			
7	338°28.0'	285°54.6'	N 18°59.5'	257°43.1'	N 27°13.0'	39°08.1'	S 20°52.4'	34°14.3'	S 19°50.9'	4°17.2'	S 12°47.6'			
8	353°30.5'	300°54.6'	N 19°00.1'	272°45.7'	N 27°12.7'	54°10.6'	S 20°52.4'	49°16.8'	S 19°50.9'	19°18.0'	S 12°47.0'			
9	8°33.0'	315°54.6'	N 19°00.7'	287°48.4'	N 27°12.5'	69°13.1'	S 20°52.4'	64°19.3'	S 19°50.9'	34°18.8'	S 12°46.4'			
10	23°35.4'	330°54.6'	N 19°01.3'	302°51.1'	N 27°12.2'	84°15.6'	S 20°52.4'	79°21.8'	S 19°50.9'	49°19.6'	S 12°45.9'			
11	38°37.9'	345°54.5'	N 19°01.9'	317°53.8'	N 27°11.9'	99°18.0'	S 20°52.4'	94°24.3'	S 19°50.9'	64°20.4'	S 12°45.3'			
12	53°40.3'	0°54.5'	N 19°02.4'	332°56.5'	N 27°11.6'	114°20.5'	S 20°52.4'	109°26.7'	S 19°50.9'	79°21.3'	S 12°44.8'			
13	68°42.8'	15°54.5'	N 19°03.0'	347°59.2'	N 27°11.3'	129°23.0'	S 20°52.5'	124°29.2'	S 19°50.9'	94°22.1'	S 12°44.2'			
14	83°45.3'	30°54.5'	N 19°03.6'	3°01.9'	N 27°11.1'	144°25.4'	S 20°52.5'	139°31.7'	S 19°51.0'	109°22.9'	S 12°43.7'			
15	98°47.7'	45°54.5'	N 19°04.2'	18°04.6'	N 27°10.8'	159°27.9'	S 20°52.5'	154°34.2'	S 19°51.0'	124°23.7'	S 12°43.1'			
16	113°50.2'	60°54.5'	N 19°04.8'	33°07.3'	N 27°10.5'	174°30.4'	S 20°52.5'	169°36.7'	S 19°51.0'	139°24.5'	S 12°42.6'			
17	128°52.7'	75°54.5'	N 19°05.3'	48°10.0'	N 27°10.2'	189°32.8'	S 20°52.5'	184°39.2'	S 19°51.0'	154°25.3'	S 12°42.0'			
18	143°55.1'	90°54.5'	N 19°05.9'	63°12.7'	N 27°09.9'	204°35.3'	S 20°52.5'	199°41.6'	S 19°51.0'	169°26.1'	S 12°41.5'			
19	158°57.6'	105°54.5'	N 19°06.5'	78°15.4'	N 27°09.6'	219°37.8'	S 20°52.5'	214°44.1'	S 19°51.0'	184°26.9'	S 12°40.9'			
20	174°00.1'	120°54.4'	N 19°07.1'	93°18.2'	N 27°09.3'	234°40.3'	S 20°52.5'	229°46.6'	S 19°51.0'	199°27.7'	S 12°40.3'			
21	189°02.5'	135°54.4'	N 19°07.6'	108°20.9'	N 27°09.0'	249°42.7'	S 20°52.5'	244°49.1'	S 19°51.0'	214°28.6'	S 12°39.8'			
22	204°05.0'	150°54.4'	N 19°08.2'	123°23.6'	N 27°08.8'	264°45.2'	S 20°52.5'	259°51.6'	S 19°51.0'	229°29.4'	S 12°39.2'			
23	219°07.5'	165°54.4'	N 19°08.8'	138°26.4'	N 27°08.5'	279°47.7'	S 20°52.5'	274°54.0'	S 19°51.0'	244°30.2'	S 12°38.7'			
		SD 15.8' d 0.6'		v 2.7' d -0.3'		v 2.5' d -0.0'		v 2.5' d -0.0'		v 0.8' d 0.6'				
Mer. pass.		11 h 56 m 22 s		13 h 48 m		4 h 24 m		4 h 43 m		6 h 43 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Mars	+Saturn	+Jupiter	+Altair	+Antares	+Rigel Kent	+Hadar
0	260°08.7'	S 15°54.9'	13.5'	9.5'	54.9'	85°21.2'		27°39.6'	32°18.2'	42°42.4'	78°56.7'	86°38.3'	90°36.3'
1	274°41.2'	S 15°45.4'	13.6'	9.6'	54.8'	84°53.4'		28°09.7'	32°48.4'	43°01.4'	79°26.9'	86°59.6'	90°57.0'
2	289°13.9'	S 15°35.8'	13.7'	9.6'	54.8'	84°25.5'		28°39.9'	33°18.6'	43°20.6'	79°57.0'	87°21.0'	91°17.6'
3	303°46.5'	S 15°26.2'	13.8'	9.7'	54.8'	83°57.7'		29°10.0'	33°48.8'	43°40.0'	80°27.0'	87°42.4'	91°38.2'
4	318°19.3'	S 15°16.5'	13.8'	9.7'	54.8'	83°29.9'		29°40.2'	34°19.0'	43°59.4'	80°57.1'	88°03.8'	91°58.9'
5	332°52.1'	S 15°06.7'	13.9'	9.8'	54.8'	83°02.1'		30°10.3'	34°49.2'	44°19.1'	81°27.1'	88°25.1'	92°19.4'
6	347°25.0'	S 14°56.9'	14.0'	9.9'	54.7'	82°34.4'		30°40.4'	35°19.3'	44°38.8'	81°57.1'	88°46.4'	92°40.0'
7	1°58.0'	S 14°47.1'	14.0'	9.9'	54.7'	82°06.6'		31°10.4'	35°49.4'	44°58.8'	82°27.1'	89°07.8'	93°00.6'
8	16°31.0'	S 14°37.2'	14.1'	10.0'	54.7'	81°38.9'		31°40.5'	36°19.5'	45°18.8'	82°57.1'	89°29.1'	93°21.1'
9	31°04.1'	S 14°27.2'	14.1'	10.0'	54.7'	81°11.2'		32°10.5'	36°49.6'	45°39.0'	83°27.0'	89°50.4'	93°41.6'
10	45°37.2'	S 14°17.2'	14.2'	10.1'	54.7'	80°43.6'		32°40.5'	37°19.6'	45°59.3'	83°57.0'	90°11.7'	94°02.1'
11	60°10.4'	S 14°07.1'	14.3'	10.1'	54.6'	80°15.9'		33°10.5'	37°49.7'	46°19.7'	84°26.9'	90°32.9'	94°22.5'
12	74°43.7'	S 13°57.0'	14.3'	10.2'	54.6'	79°48.3'		33°40.5'	38°19.7'	46°40.3'	84°56.8'	90°54.2'	94°43.0'
13	89°17.0'	S 13°46.8'	14.4'	10.2'	54.6'	79°20.7'	5°03.4'	34°10.5'	38°49.7'	47°00.9'	85°26.6'	91°15.4'	95°03.4'
14	103°50.4'	S 13°36.6'	14.5'	10.3'	54.6'	78°53.1'	5°28.0'	34°40.5'	39°19.7'	47°21.7'	85°56.5'	91°36.7'	95°23.8'
15	118°23.9'	S 13°26.3'	14.5'	10.3'	54.6'	78°25.5'	5°53.1'	35°10.4'	39°49.6'	47°42.6'	86°26.3'	91°57.9'	95°44.1'
16	132°57.4'	S 13°16.0'	14.6'	10.4'	54.5'	77°58.0'	6°18.7'	35°40.3'	40°19.6'	48°03.6'	86°56.2'	92°19.0'	96°04.4'
17	147°31.0'	S 13°05.7'	14.6'	10.4'	54.5'	77°30.4'	6°44.6'	36°10.2'	40°49.5'	48°24.7'	87°25.9'	92°40.2'	96°24.8'
18	162°04.6'	S 12°55.2'	14.7'	10.5'	54.5'	77°02.9'	7°10.7'	36°40.1'	41°19.4'	48°45.9'	87°55.7'	93°01.4'	96°45.0'
19	176°38.3'	S 12°44.8'	14.7'	10.5'	54.5'	76°35.4'	7°37.2'	37°10.0'	41°49.3'	49°07.2'	88°25.5'	93°22.5'	97°05.3'
20	191°12.0'	S 12°34.3'	14.8'	10.6'	54.5'	76°07.9'	8°03.8'	37°39.8'	42°19.2'	49°28.6'	88°55.2'	93°43.6'	97°25.5'
21	205°45.8'	S 12°23.7'	14.9'	10.6'	54.5'	75°40.4'	8°30.5'	38°09.7'	42°49.1'	49°50.2'	89°25.0'	94°04.7'	97°45.7'
22	220°19.7'	S 12°13.1'	14.9'	10.6'	54.4'	75°13.0'	8°57.4'	38°39.5'	43°19.0'	50°11.8'	89°54.7'	94°25.8'	98°05.8'
23	234°53.6'	S 12°02.5'	15.0'	10.7'	54.4'	74°45.6'	9°24.4'	39°09.3'	43°48.8'	50°33.5'	90°24.4'	94°46.8'	98°26.0'
Mer. pass.		6 h 52 m SD 15.0'		phase 46%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.8'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.2'	N 45°20.9'	Acrux	+0.8	173°03.6'	S 63°12.8'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.4'	N 8°55.2'	Regulus	+1.4	207°38.4'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.4'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°11.0'	N 89°20.8'
Rigel Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.7'	S 57°08.0'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.8'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.7'				

Saturday 16 May 2020 UT1

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	234°09.9'		180°54.4'	N 19°09.4'	153°29.1'	N 27°08.2'	294°50.2'	S 20°52.5'	289°56.5'	S 19°51.0'	259°31.0'	S 12°38.1'
1	249°12.4'		195°54.4'	N 19°09.9'	168°31.9'	N 27°07.9'	309°52.6'	S 20°52.6'	304°59.0'	S 19°51.0'	274°31.8'	S 12°37.6'
2	264°14.8'		210°54.4'	N 19°10.5'	183°34.6'	N 27°07.6'	324°55.1'	S 20°52.6'	320°01.5'	S 19°51.1'	289°32.6'	S 12°37.0'
3	279°17.3'		225°54.3'	N 19°11.1'	198°37.4'	N 27°07.3'	339°57.6'	S 20°52.6'	335°04.0'	S 19°51.1'	304°33.4'	S 12°36.5'
4	294°19.8'		240°54.3'	N 19°11.7'	213°40.1'	N 27°07.0'	355°00.1'	S 20°52.6'	350°06.5'	S 19°51.1'	319°34.3'	S 12°35.9'
5	309°22.2'		255°54.3'	N 19°12.2'	228°42.9'	N 27°06.7'	10°02.5'	S 20°52.6'	5°09.0'	S 19°51.1'	334°35.1'	S 12°35.4'
6	324°24.7'		270°54.3'	N 19°12.8'	243°45.7'	N 27°06.4'	25°05.0'	S 20°52.6'	20°11.4'	S 19°51.1'	349°35.9'	S 12°34.8'
7	339°27.2'		285°54.3'	N 19°13.4'	258°48.4'	N 27°06.1'	40°07.5'	S 20°52.6'	35°13.9'	S 19°51.1'	4°36.7'	S 12°34.2'
8	354°29.6'		300°54.3'	N 19°13.9'	273°51.2'	N 27°05.8'	55°10.0'	S 20°52.6'	50°16.4'	S 19°51.1'	19°37.5'	S 12°33.7'
9	9°32.1'		315°54.3'	N 19°14.5'	288°54.0'	N 27°05.5'	70°12.4'	S 20°52.6'	65°18.9'	S 19°51.1'	34°38.3'	S 12°33.1'
10	24°34.6'		330°54.2'	N 19°15.1'	303°56.8'	N 27°05.2'	85°14.9'	S 20°52.6'	80°21.4'	S 19°51.1'	49°39.1'	S 12°32.6'
11	39°37.0'		345°54.2'	N 19°15.6'	318°59.6'	N 27°04.8'	100°17.4'	S 20°52.6'	95°23.9'	S 19°51.1'	64°40.0'	S 12°32.0'
12	54°39.5'		0°54.2'	N 19°16.2'	334°02.4'	N 27°04.5'	115°19.9'	S 20°52.6'	110°26.3'	S 19°51.1'	79°40.8'	S 12°31.5'
13	69°41.9'		15°54.2'	N 19°16.8'	349°05.2'	N 27°04.2'	130°22.4'	S 20°52.7'	125°28.8'	S 19°51.1'	94°41.6'	S 12°30.9'
14	84°44.4'		30°54.2'	N 19°17.3'	4°08.0'	N 27°03.9'	145°24.8'	S 20°52.7'	140°31.3'	S 19°51.2'	109°42.4'	S 12°30.3'
15	99°46.9'		45°54.2'	N 19°17.9'	19°10.8'	N 27°03.6'	160°27.3'	S 20°52.7'	155°33.8'	S 19°51.2'	124°43.2'	S 12°29.8'
16	114°49.3'		60°54.1'	N 19°18.5'	34°13.6'	N 27°03.3'	175°29.8'	S 20°52.7'	170°36.3'	S 19°51.2'	139°44.0'	S 12°29.2'
17	129°51.8'		75°54.1'	N 19°19.0'	49°16.5'	N 27°03.0'	190°32.3'	S 20°52.7'	185°38.8'	S 19°51.2'	154°44.9'	S 12°28.7'
18	144°54.3'		90°54.1'	N 19°19.6'	64°19.3'	N 27°02.7'	205°34.8'	S 20°52.7'	200°41.3'	S 19°51.2'	169°45.7'	S 12°28.1'
19	159°56.7'		105°54.1'	N 19°20.2'	79°22.1'	N 27°02.3'	220°37.2'	S 20°52.7'	215°43.8'	S 19°51.2'	184°46.5'	S 12°27.6'
20	174°59.2'		120°54.1'	N 19°20.7'	94°25.0'	N 27°02.0'	235°39.7'	S 20°52.7'	230°46.2'	S 19°51.2'	199°47.3'	S 12°27.0'
21	190°01.7'		135°54.0'	N 19°21.3'	109°27.8'	N 27°01.7'	250°42.2'	S 20°52.7'	245°48.7'	S 19°51.2'	214°48.1'	S 12°26.4'
22	205°04.1'		150°54.0'	N 19°21.8'	124°30.6'	N 27°01.4'	265°44.7'	S 20°52.7'	260°51.2'	S 19°51.2'	229°48.9'	S 12°25.9'
23	220°06.6'		165°54.0'	N 19°22.4'	139°33.5'	N 27°01.1'	280°47.2'	S 20°52.8'	275°53.7'	S 19°51.2'	244°49.8'	S 12°25.3'
			SD 15.8'	d 0.6'	v 2.8'	d -0.3'	v 2.5'	d -0.0'	v 2.5'	d -0.0'	v 0.8'	d 0.6'
Mer. pass.			11 h 56 m 24 s		13 h 44 m		4 h 20 m		4 h 39 m		6 h 42 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	+Mars	+Fomalhaut	+Saturn	+Jupiter	+Altair	+Antares	+Rigel Kent
0	249°27.6'	S 11°51.8'	15.0'	10.7'	54.4'	74°18.1'	9°51.5'		39°39.1'	44°18.6'	50°55.2'	90°54.1'	95°07.8'
1	264°01.6'	S 11°41.1'	15.1'	10.8'	54.4'	73°50.7'	10°18.7'		40°08.9'	44°48.4'	51°17.1'	91°23.7'	95°28.9'
2	278°35.6'	S 11°30.3'	15.1'	10.8'	54.4'	73°23.3'	10°45.9'		40°38.7'	45°18.2'	51°39.1'	91°53.4'	95°49.8'
3	293°09.7'	S 11°19.5'	15.2'	10.8'	54.4'	72°56.0'	11°13.2'		41°08.5'	45°48.0'	52°01.1'	92°23.0'	96°10.8'
4	307°43.9'	S 11°08.6'	15.2'	10.9'	54.4'	72°28.6'	11°40.5'		41°38.2'	46°17.8'	52°23.2'	92°52.7'	96°31.7'
5	322°18.1'	S 10°57.7'	15.3'	10.9'	54.3'	72°01.2'	12°07.9'		42°08.0'	46°47.6'	52°45.4'	93°22.3'	96°52.6'
6	336°52.4'	S 10°46.8'	15.3'	11.0'	54.3'	71°33.9'	12°35.4'		42°37.7'	47°17.3'	53°07.7'	93°51.9'	97°13.5'
7	351°26.7'	S 10°35.8'	15.4'	11.0'	54.3'	71°06.6'	13°02.8'	19°10.2'	43°07.4'	47°47.0'	53°30.0'	94°21.4'	97°34.4'
8	6°01.0'	S 10°24.8'	15.4'	11.0'	54.3'	70°39.3'	13°30.3'	19°25.5'	43°37.1'	48°16.8'	53°52.5'	94°51.0'	97°55.2'
9	20°35.4'	S 10°13.8'	15.4'	11.1'	54.3'	70°12.0'	13°57.8'	19°41.4'	44°06.8'	48°46.5'	54°15.0'	95°20.6'	98°16.0'
10	35°09.9'	S 10°02.7'	15.5'	11.1'	54.3'	69°44.7'	14°25.4'	19°57.8'	44°36.5'	49°16.2'	54°37.5'	95°50.1'	98°36.8'
11	49°44.3'	S 9°51.6'	15.5'	11.1'	54.3'	69°17.4'	14°52.9'	20°14.7'	45°06.2'	49°45.9'	55°00.1'	96°19.7'	98°57.6'
12	64°18.9'	S 9°40.5'	15.6'	11.2'	54.3'	68°50.2'	15°20.5'	20°32.0'	45°35.8'	50°15.5'	55°22.8'	96°49.2'	99°18.3'
13	78°53.4'	S 9°29.3'	15.6'	11.2'	54.2'	68°22.9'	15°48.1'	20°49.8'	46°05.5'	50°45.2'	55°45.6'	97°18.7'	99°39.0'
14	93°28.0'	S 9°18.1'	15.6'	11.2'	54.2'	67°55.7'	16°15.7'	21°08.0'	46°35.1'	51°14.9'	56°08.4'	97°48.2'	99°59.6'
15	108°02.7'	S 9°06.8'	15.7'	11.3'	54.2'	67°28.4'	16°43.3'	21°26.6'	47°04.8'	51°44.5'	56°31.3'	98°17.7'	100°20.3'
16	122°37.4'	S 8°55.6'	15.7'	11.3'	54.2'	67°01.2'	17°10.9'	21°45.5'	47°34.4'	52°14.2'	56°54.3'	98°47.2'	100°40.9'
17	137°12.1'	S 8°44.3'	15.8'	11.3'	54.2'	66°34.0'	17°38.5'	22°04.9'	48°04.0'	52°43.8'	57°17.3'	99°16.6'	101°01.4'
18	151°46.8'	S 8°32.9'	15.8'	11.4'	54.2'	66°06.8'	18°06.1'	22°24.6'	48°33.6'	53°13.4'	57°40.3'	99°46.1'	101°22.0'
19	166°21.6'	S 8°21.6'	15.8'	11.4'	54.2'	65°39.6'	18°33.8'	22°44.6'	49°03.2'	53°43.0'	58°03.5'	100°15.5'	101°42.5'
20	180°56.5'	S 8°10.2'	15.9'	11.4'	54.2'	65°12.4'	19°01.4'	23°04.9'	49°32.8'	54°12.6'	58°26.6'	100°45.0'	102°03.0'
21	195°31.3'	S 7°58.8'	15.9'	11.4'	54.2'	64°45.2'	19°29.0'	23°25.6'	50°02.4'	54°42.2'	58°49.9'	101°14.4'	102°23.4'
22	210°06.2'	S 7°47.3'	15.9'	11.5'	54.2'	64°18.1'	19°56.7'	23°46.6'	50°32.0'	55°11.8'	59°13.2'	101°43.8'	102°43.8'
23	224°41.2'	S 7°35.8'	16.0'	11.5'	54.1'	63°50.9'	20°24.3'	24°07.8'	51°01.5'	55°41.4'	59°36.5'	102°13.2'	103°04.2'
Mer. pass.			7 h 35 m	SD 14.8'	phase 36%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.8'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.1'	N 45°20.9'	Acrux	+0.8	173°03.6'	S 63°12.8'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.4'	N 8°55.2'	Regulus	+1.4	207°38.4'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.4'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°10.9'	N 89°20.8'
Rigel Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.7'	S 57°08.0'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.8'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.7'				



Sunday 17 May 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	235°09.1'	180°54.0'	N 19°23.0'	154°36.3'	N 27°00.7'	295°49.6'	S 20°52.8'	290°56.2'	S 19°51.2'	259°50.6'	S 12°24.8'			
1	250°11.5'	195°54.0'	N 19°23.5'	169°39.2'	N 27°00.4'	310°52.1'	S 20°52.8'	305°58.7'	S 19°51.3'	274°51.4'	S 12°24.2'			
2	265°14.0'	210°53.9'	N 19°24.1'	184°42.1'	N 27°00.1'	325°54.6'	S 20°52.8'	321°01.2'	S 19°51.3'	289°52.2'	S 12°23.7'			
3	280°16.4'	225°53.9'	N 19°24.6'	199°44.9'	N 26°59.8'	340°57.1'	S 20°52.8'	336°03.7'	S 19°51.3'	304°53.0'	S 12°23.1'			
4	295°18.9'	240°53.9'	N 19°25.2'	214°47.8'	N 26°59.4'	355°59.6'	S 20°52.8'	351°06.1'	S 19°51.3'	319°53.8'	S 12°22.5'			
5	310°21.4'	255°53.9'	N 19°25.8'	229°50.7'	N 26°59.1'	11°02.1'	S 20°52.8'	6°08.6'	S 19°51.3'	334°54.7'	S 12°22.0'			
6	325°23.8'	270°53.9'	N 19°26.3'	244°53.6'	N 26°58.8'	26°04.5'	S 20°52.8'	21°11.1'	S 19°51.3'	349°55.5'	S 12°21.4'			
7	340°26.3'	285°53.8'	N 19°26.9'	259°56.5'	N 26°58.4'	41°07.0'	S 20°52.8'	36°13.6'	S 19°51.3'	4°56.3'	S 12°20.9'			
8	355°28.8'	300°53.8'	N 19°27.4'	274°59.4'	N 26°58.1'	56°09.5'	S 20°52.9'	51°16.1'	S 19°51.3'	19°57.1'	S 12°20.3'			
9	10°31.2'	315°53.8'	N 19°28.0'	290°02.2'	N 26°57.8'	71°12.0'	S 20°52.9'	66°18.6'	S 19°51.3'	34°57.9'	S 12°19.7'			
10	25°33.7'	330°53.8'	N 19°28.5'	305°05.1'	N 26°57.4'	86°14.5'	S 20°52.9'	81°21.1'	S 19°51.3'	49°58.8'	S 12°19.2'			
11	40°36.2'	345°53.7'	N 19°29.1'	320°08.1'	N 26°57.1'	101°17.0'	S 20°52.9'	96°23.6'	S 19°51.3'	64°59.6'	S 12°18.6'			
12	55°38.6'	0°53.7'	N 19°29.6'	335°11.0'	N 26°56.8'	116°19.5'	S 20°52.9'	111°26.1'	S 19°51.4'	80°00.4'	S 12°18.1'			
13	70°41.1'	15°53.7'	N 19°30.2'	350°13.9'	N 26°56.4'	131°21.9'	S 20°52.9'	126°28.5'	S 19°51.4'	95°01.2'	S 12°17.5'			
14	85°43.5'	30°53.7'	N 19°30.7'	5°16.8'	N 26°56.1'	146°24.4'	S 20°52.9'	141°31.0'	S 19°51.4'	110°02.0'	S 12°17.0'			
15	100°46.0'	45°53.7'	N 19°31.3'	20°19.7'	N 26°55.8'	161°26.9'	S 20°52.9'	156°33.5'	S 19°51.4'	125°02.9'	S 12°16.4'			
16	115°48.5'	60°53.6'	N 19°31.9'	35°22.6'	N 26°55.4'	176°29.4'	S 20°52.9'	171°36.0'	S 19°51.4'	140°03.7'	S 12°15.8'			
17	130°50.9'	75°53.6'	N 19°32.4'	50°25.6'	N 26°55.1'	191°31.9'	S 20°53.0'	186°38.5'	S 19°51.4'	155°04.5'	S 12°15.3'			
18	145°53.4'	90°53.6'	N 19°33.0'	65°28.5'	N 26°54.7'	206°34.4'	S 20°53.0'	201°41.0'	S 19°51.4'	170°05.3'	S 12°14.7'			
19	160°55.9'	105°53.6'	N 19°33.5'	80°31.5'	N 26°54.4'	221°36.9'	S 20°53.0'	216°43.5'	S 19°51.4'	185°06.2'	S 12°14.2'			
20	175°58.3'	120°53.5'	N 19°34.0'	95°34.4'	N 26°54.0'	236°39.4'	S 20°53.0'	231°46.0'	S 19°51.4'	200°07.0'	S 12°13.6'			
21	191°00.8'	135°53.5'	N 19°34.6'	110°37.4'	N 26°53.7'	251°41.9'	S 20°53.0'	246°48.5'	S 19°51.4'	215°07.8'	S 12°13.0'			
22	206°03.3'	150°53.5'	N 19°35.1'	125°40.3'	N 26°53.3'	266°44.3'	S 20°53.0'	261°51.0'	S 19°51.5'	230°08.6'	S 12°12.5'			
23	221°05.7'	165°53.5'	N 19°35.7'	140°43.3'	N 26°53.0'	281°46.8'	S 20°53.0'	276°53.5'	S 19°51.5'	245°09.4'	S 12°11.9'			
		SD 15.8' d 0.6'		v 2.9' d -0.3'		v 2.5' d -0.0'		v 2.5' d -0.0'		v 0.8' d 0.6'				
Mer. pass.		11 h 56 m 26 s		13 h 39 m		4 h 16 m		4 h 36 m		6 h 40 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	+Mars	+Fomalhaut	+Saturn	+Jupiter	+Altair	+Antares	+Rigel Kent
0	239°16.1'	S 7°24.3'	16.0'	11.5'	54.1'	63°23.8'	20°52.0'	24°29.3'	51°31.1'	56°11.0'	59°59.9'	102°42.7'	103°24.5'
1	253°51.1'	S 7°12.8'	16.0'	11.6'	54.1'	62°56.6'	21°19.7'	24°51.0'	52°00.7'	56°40.6'	60°23.3'	103°12.1'	103°44.8'
2	268°26.1'	S 7°01.3'	16.0'	11.6'	54.1'	62°29.5'	21°47.3'	25°13.0'	52°30.2'	57°10.1'	60°46.8'	103°41.4'	104°05.1'
3	283°01.2'	S 6°49.7'	16.1'	11.6'	54.1'	62°02.3'	22°15.0'	25°35.3'	52°59.8'	57°39.7'	61°10.3'	104°10.8'	104°25.3'
4	297°36.3'	S 6°38.1'	16.1'	11.6'	54.1'	61°35.2'	22°42.7'	25°57.7'	53°29.3'	58°09.3'	61°33.9'	104°40.2'	104°45.4'
5	312°11.4'	S 6°26.5'	16.1'	11.6'	54.1'	61°08.1'	23°10.3'	26°20.4'	53°58.8'	58°38.8'	61°57.5'	105°09.6'	105°05.6'
6	326°46.5'	S 6°14.8'	16.2'	11.7'	54.1'	60°41.0'	23°38.0'	26°43.2'	54°28.4'	59°08.4'	62°21.2'	105°38.9'	105°25.7'
7	341°21.6'	S 6°03.2'	16.2'	11.7'	54.1'	60°13.9'	24°05.7'	27°06.3'	54°57.9'	59°37.9'	62°44.9'	106°08.3'	105°45.7'
8	355°56.8'	S 5°51.5'	16.2'	11.7'	54.1'	59°46.8'	24°33.3'	27°29.6'	55°27.4'	60°07.4'	63°08.7'	106°37.7'	106°05.8'
9	10°32.0'	S 5°39.8'	16.2'	11.7'	54.1'	59°19.7'	25°01.0'	27°53.0'	55°57.0'	60°37.0'	63°32.4'	107°07.0'	106°25.7'
10	25°07.2'	S 5°28.0'	16.2'	11.7'	54.1'	58°52.6'	25°28.7'	28°16.6'	56°26.5'	61°06.5'	63°56.3'	107°36.4'	106°45.7'
11	39°42.5'	S 5°16.3'	16.3'	11.8'	54.1'	58°25.5'	25°56.4'	28°40.4'	56°56.0'	61°36.0'	64°20.2'	108°05.7'	107°05.6'
12	54°17.8'	S 5°04.5'	16.3'	11.8'	54.1'	57°58.4'	26°24.0'	29°04.3'	57°25.5'	62°05.6'	64°44.1'	108°35.0'	107°25.4'
13	68°53.0'	S 4°52.7'	16.3'	11.8'	54.0'	57°31.3'	26°51.7'	29°28.4'	57°55.0'	62°35.1'	65°08.0'	109°04.4'	107°45.2'
14	83°28.3'	S 4°40.9'	16.3'	11.8'	54.0'	57°04.2'	27°19.4'	29°52.6'	58°24.5'	63°04.6'	65°32.0'	109°33.7'	108°04.9'
15	98°03.7'	S 4°29.1'	16.3'	11.8'	54.0'	56°37.2'	27°47.1'	30°17.0'	58°54.0'	63°34.1'	65°56.0'	110°03.0'	108°24.6'
16	112°39.0'	S 4°17.3'	16.4'	11.8'	54.0'	56°10.1'	28°14.8'	30°41.5'	59°23.5'	64°03.6'	66°20.1'	110°32.3'	108°44.3'
17	127°14.4'	S 4°05.5'	16.4'	11.9'	54.0'	55°43.0'	28°42.5'	31°06.1'	59°53.0'	64°33.2'	66°44.2'	111°01.6'	109°03.9'
18	141°49.7'	S 3°53.6'	16.4'	11.9'	54.0'	55°15.9'	29°10.2'	31°30.9'	60°22.5'	65°02.7'	67°08.3'	111°30.9'	109°23.5'
19	156°25.1'	S 3°41.7'	16.4'	11.9'	54.0'	54°48.9'	29°37.9'	31°55.8'	60°52.0'	65°32.2'	67°32.5'	112°00.3'	109°43.0'
20	171°00.5'	S 3°29.8'	16.4'	11.9'	54.0'	54°21.8'	30°05.6'	32°20.8'	61°21.5'	66°01.7'	67°56.7'	112°29.6'	110°02.4'
21	185°35.9'	S 3°17.9'	16.4'	11.9'	54.0'	53°54.7'	30°33.3'	32°45.9'	61°51.0'	66°31.2'	68°20.9'	112°58.9'	110°21.8'
22	200°11.3'	S 3°06.0'	16.4'	11.9'	54.0'	53°27.7'	31°01.0'	33°11.1'	62°20.5'	67°00.7'	68°45.2'	113°28.2'	110°41.2'
23	214°46.8'	S 2°54.1'	16.4'	11.9'	54.0'	53°00.6'	31°28.7'	33°36.4'	62°50.0'	67°30.2'	69°09.5'	113°57.5'	111°00.4'
Mer. pass.		8 h 17 m SD 14.8'		phase 28%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.8'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.1'	N 45°20.9'	Acrux	+0.8	173°03.6'	S 63°12.9'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.4'	N 8°55.2'	Regulus	+1.4	207°38.4'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.4'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°10.8'	N 89°20.8'
Rigel Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.7'	S 57°08.0'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.8'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.6'				

Monday 18 May 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec		GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	236°08.2'	180°53.4'	N 19°36.2'	155°46.2'	N 26°52.6'		296°49.3'	S 20°53.0'	291°55.9'	S 19°51.5'	260°10.3'	S 12°11.4'		
1	251°10.7'	195°53.4'	N 19°36.8'	170°49.2'	N 26°52.3'		311°51.8'	S 20°53.0'	306°58.4'	S 19°51.5'	275°11.1'	S 12°10.8'		
2	266°13.1'	210°53.4'	N 19°37.3'	185°52.2'	N 26°51.9'		326°54.3'	S 20°53.1'	322°00.9'	S 19°51.5'	290°11.9'	S 12°10.2'		
3	281°15.6'	225°53.4'	N 19°37.9'	200°55.2'	N 26°51.6'		341°56.8'	S 20°53.1'	337°03.4'	S 19°51.5'	305°12.7'	S 12°09.7'		
4	296°18.0'	240°53.3'	N 19°38.4'	215°58.1'	N 26°51.2'		356°59.3'	S 20°53.1'	352°05.9'	S 19°51.5'	320°13.6'	S 12°09.1'		
5	311°20.5'	255°53.3'	N 19°39.0'	231°01.1'	N 26°50.9'		12°01.8'	S 20°53.1'	7°08.4'	S 19°51.5'	335°14.4'	S 12°08.6'		
6	326°23.0'	270°53.3'	N 19°39.5'	246°04.1'	N 26°50.5'		27°04.3'	S 20°53.1'	22°10.9'	S 19°51.5'	350°15.2'	S 12°08.0'		
7	341°25.4'	285°53.2'	N 19°40.0'	261°07.1'	N 26°50.1'		42°06.8'	S 20°53.1'	37°13.4'	S 19°51.5'	5°16.0'	S 12°07.4'		
8	356°27.9'	300°53.2'	N 19°40.6'	276°10.1'	N 26°49.8'		57°09.3'	S 20°53.1'	52°15.9'	S 19°51.6'	20°16.8'	S 12°06.9'		
9	11°30.4'	315°53.2'	N 19°41.1'	291°13.1'	N 26°49.4'		72°11.8'	S 20°53.1'	67°18.4'	S 19°51.6'	35°17.7'	S 12°06.3'		
10	26°32.8'	330°53.2'	N 19°41.7'	306°16.1'	N 26°49.1'		87°14.3'	S 20°53.2'	82°20.9'	S 19°51.6'	50°18.5'	S 12°05.7'		
11	41°35.3'	345°53.1'	N 19°42.2'	321°19.1'	N 26°48.7'		102°16.7'	S 20°53.2'	97°23.4'	S 19°51.6'	65°19.3'	S 12°05.2'		
12	56°37.8'	0°53.1'	N 19°42.7'	336°22.2'	N 26°48.3'		117°19.2'	S 20°53.2'	112°25.9'	S 19°51.6'	80°20.1'	S 12°04.6'		
13	71°40.2'	15°53.1'	N 19°43.3'	351°25.2'	N 26°48.0'		132°21.7'	S 20°53.2'	127°28.4'	S 19°51.6'	95°21.0'	S 12°04.1'		
14	86°42.7'	30°53.0'	N 19°43.8'	6°28.2'	N 26°47.6'		147°24.2'	S 20°53.2'	142°30.8'	S 19°51.6'	110°21.8'	S 12°03.5'		
15	101°45.2'	45°53.0'	N 19°44.4'	21°31.3'	N 26°47.2'		162°26.7'	S 20°53.2'	157°33.3'	S 19°51.6'	125°22.6'	S 12°02.9'		
16	116°47.6'	60°53.0'	N 19°44.9'	36°34.3'	N 26°46.8'		177°29.2'	S 20°53.2'	172°35.8'	S 19°51.6'	140°23.4'	S 12°02.4'		
17	131°50.1'	75°53.0'	N 19°45.4'	51°37.3'	N 26°46.5'		192°31.7'	S 20°53.2'	187°38.3'	S 19°51.7'	155°24.3'	S 12°01.8'		
18	146°52.5'	90°52.9'	N 19°46.0'	66°40.4'	N 26°46.1'		207°34.2'	S 20°53.3'	202°40.8'	S 19°51.7'	170°25.1'	S 12°01.3'		
19	161°55.0'	105°52.9'	N 19°46.5'	81°43.4'	N 26°45.7'		222°36.7'	S 20°53.3'	217°43.3'	S 19°51.7'	185°25.9'	S 12°00.7'		
20	176°57.5'	120°52.9'	N 19°47.0'	96°46.5'	N 26°45.3'		237°39.2'	S 20°53.3'	232°45.8'	S 19°51.7'	200°26.8'	S 12°00.1'		
21	191°59.9'	135°52.8'	N 19°47.6'	111°49.5'	N 26°45.0'		252°41.7'	S 20°53.3'	247°48.3'	S 19°51.7'	215°27.6'	S 11°59.6'		
22	207°02.4'	150°52.8'	N 19°48.1'	126°52.6'	N 26°44.6'		267°44.2'	S 20°53.3'	262°50.8'	S 19°51.7'	230°28.4'	S 11°59.0'		
23	222°04.9'	165°52.8'	N 19°48.6'	141°55.7'	N 26°44.2'		282°46.7'	S 20°53.3'	277°53.3'	S 19°51.7'	245°29.2'	S 11°58.4'		
		SD 15.8' d 0.5'		v 3.0' d -0.4'			v 2.5' d -0.0'		v 2.5' d -0.0'		v 0.8' d 0.6'			
Mer. pass.		11 h 56 m 28 s		13 h 34 m			4 h 12 m		4 h 32 m		6 h 39 m			

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	+Mars	+Fomalhaut	+Saturn	+Jupiter	+Altair	+Rigil Kent	+Hadar
0	229°22.2'	S 2°42.1'	16.4'	11.9'	54.0'	52°33.5'	31°56.4'	34°01.8'	63°19.5'	67°59.8'	69°33.8'	111°19.7'	114°00.1'
1	243°57.6'	S 2°30.2'	16.5'	12.0'	54.0'	52°06.5'	32°24.1'	34°27.3'	63°49.0'	68°29.3'	69°58.2'	111°38.9'	114°17.7'
2	258°33.1'	S 2°18.2'	16.5'	12.0'	54.0'	51°39.4'	32°51.8'	34°52.9'	64°18.6'	68°58.8'	70°22.6'	111°58.0'	114°35.3'
3	273°08.6'	S 2°06.3'	16.5'	12.0'	54.0'	51°12.3'	33°19.5'	35°18.6'	64°48.1'	69°28.3'	70°47.0'	112°17.0'	114°52.8'
4	287°44.0'	S 1°54.3'	16.5'	12.0'	54.0'	50°45.2'	33°47.2'	35°44.4'	65°17.6'	69°57.8'	71°11.5'	112°36.0'	115°10.2'
5	302°19.5'	S 1°42.3'	16.5'	12.0'	54.0'	50°18.2'	34°15.0'	36°10.3'	65°47.1'	70°27.3'	71°35.9'	112°55.0'	115°27.6'
6	316°55.0'	S 1°30.3'	16.5'	12.0'	54.0'	49°51.1'	34°42.7'	36°36.2'	66°16.6'	70°56.9'	72°00.4'	113°13.9'	115°44.9'
7	331°30.5'	S 1°18.3'	16.5'	12.0'	54.0'	49°24.0'	35°10.4'	37°02.3'	66°46.1'	71°26.4'	72°25.0'	113°32.7'	116°02.1'
8	346°05.9'	S 1°06.3'	16.5'	12.0'	54.0'	48°57.0'	35°38.2'	37°28.4'	67°15.6'	71°55.9'	72°49.5'	113°51.4'	116°19.2'
9	0°41.4'	S 0°54.3'	16.5'	12.0'	54.0'	48°29.9'	36°05.9'	37°54.5'	67°45.1'	72°25.4'	73°14.1'	114°10.1'	116°36.2'
10	15°16.9'	S 0°42.3'	16.5'	12.0'	54.0'	48°02.8'	36°33.6'	38°20.8'	68°14.7'	72°55.0'	73°38.7'	114°28.7'	116°53.2'
11	29°52.4'	S 0°30.3'	16.5'	12.0'	54.0'	47°35.7'	37°01.4'	38°47.1'	68°44.2'	73°24.5'	74°03.3'	114°47.3'	117°10.0'
12	44°27.9'	S 0°18.3'	16.5'	12.0'	54.0'	47°08.6'	37°29.1'	39°13.5'	69°13.7'	73°54.1'	74°28.0'	115°05.8'	117°26.8'
13	59°03.4'	S 0°06.3'	16.5'	12.0'	54.0'	46°41.5'	37°56.9'	39°39.9'	69°43.2'	74°23.6'	74°52.7'	115°24.2'	117°43.5'
14	73°38.8'	N 0°05.8'	16.5'	12.0'	54.0'	46°14.5'	38°24.7'	40°06.5'	70°12.8'	74°53.2'	75°17.4'	115°42.5'	118°00.1'
15	88°14.3'	N 0°17.8'	16.5'	12.0'	54.0'	45°47.4'	38°52.5'	40°33.0'	70°42.3'	75°22.7'	75°42.1'	116°00.8'	118°16.6'
16	102°49.8'	N 0°29.8'	16.5'	12.0'	54.0'	45°20.3'	39°20.2'	40°59.7'	71°11.9'	75°52.3'	76°06.9'	116°19.0'	118°33.0'
17	117°25.2'	N 0°41.8'	16.5'	12.0'	54.0'	44°53.2'	39°48.0'	41°26.4'	71°41.4'	76°21.8'	76°31.7'	116°37.1'	118°49.4'
18	132°00.7'	N 0°53.9'	16.4'	12.0'	54.0'	44°26.0'	40°15.8'	41°53.1'	72°11.0'	76°51.4'	76°56.5'	116°55.2'	119°05.6'
19	146°36.1'	N 1°05.9'	16.4'	12.0'	54.0'	43°58.9'	40°43.6'	42°19.9'	72°40.5'	77°21.0'	77°21.3'	117°13.1'	119°21.7'
20	161°11.6'	N 1°17.9'	16.4'	12.0'	54.0'	43°31.8'	41°11.4'	42°46.8'	73°10.1'	77°50.6'	77°46.1'	117°31.0'	119°37.8'
21	175°47.0'	N 1°29.9'	16.4'	12.0'	54.0'	43°04.7'	41°39.2'	43°13.7'	73°39.7'	78°20.2'	78°11.0'	117°48.8'	119°53.7'
22	190°22.4'	N 1°41.9'	16.4'	12.0'	54.0'	42°37.6'	42°07.0'	43°40.7'	74°09.3'	78°49.8'	78°35.9'	118°06.5'	
23	204°57.8'	N 1°54.0'	16.4'	12.0'	54.0'	42°10.4'	42°34.9'	44°07.7'	74°38.9'	79°19.4'	79°00.8'	118°24.2'	
Mer. pass.		8 h 57 m SD 14.7'		phase 20%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.8'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.1'	N 45°20.9'	Acrux	+0.8	173°03.6'	S 63°12.9'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.4'	N 8°55.2'	Regulus	+1.4	207°38.4'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.4'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°10.7'	N 89°20.8'
Rigil Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.7'	S 57°08.0'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.8'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.6'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	237°07.3'	180°52.7'	N 19°49.2'	156°58.8'	N 26°43.8'	297°49.2'	S 20°53.3'	292°55.8'	S 19°51.7'	260°30.1'	S 11°57.9'			
1	252°09.8'	195°52.7'	N 19°49.7'	172°01.8'	N 26°43.4'	312°51.7'	S 20°53.3'	307°58.3'	S 19°51.7'	275°30.9'	S 11°57.3'			
2	267°12.3'	210°52.7'	N 19°50.2'	187°04.9'	N 26°43.1'	327°54.2'	S 20°53.4'	323°00.8'	S 19°51.8'	290°31.7'	S 11°56.8'			
3	282°14.7'	225°52.6'	N 19°50.8'	202°08.0'	N 26°42.7'	342°56.7'	S 20°53.4'	338°03.3'	S 19°51.8'	305°32.5'	S 11°56.2'			
4	297°17.2'	240°52.6'	N 19°51.3'	217°11.1'	N 26°42.3'	357°59.2'	S 20°53.4'	353°05.8'	S 19°51.8'	320°33.4'	S 11°55.6'			
5	312°19.6'	255°52.6'	N 19°51.8'	232°14.2'	N 26°41.9'	13°01.7'	S 20°53.4'	8°08.3'	S 19°51.8'	335°34.2'	S 11°55.1'			
6	327°22.1'	270°52.5'	N 19°52.4'	247°17.3'	N 26°41.5'	28°04.2'	S 20°53.4'	23°10.8'	S 19°51.8'	350°35.0'	S 11°54.5'			
7	342°24.6'	285°52.5'	N 19°52.9'	262°20.4'	N 26°41.1'	43°06.7'	S 20°53.4'	38°13.3'	S 19°51.8'	5°35.9'	S 11°53.9'			
8	357°27.0'	300°52.5'	N 19°53.4'	277°23.5'	N 26°40.7'	58°09.2'	S 20°53.4'	53°15.8'	S 19°51.8'	20°36.7'	S 11°53.4'			
9	12°29.5'	315°52.4'	N 19°53.9'	292°26.6'	N 26°40.3'	73°11.7'	S 20°53.5'	68°18.3'	S 19°51.8'	35°37.5'	S 11°52.8'			
10	27°32.0'	330°52.4'	N 19°54.5'	307°29.7'	N 26°40.0'	88°14.2'	S 20°53.5'	83°20.8'	S 19°51.8'	50°38.3'	S 11°52.3'			
11	42°34.4'	345°52.4'	N 19°55.0'	322°32.9'	N 26°39.6'	103°16.7'	S 20°53.5'	98°23.3'	S 19°51.9'	65°39.2'	S 11°51.7'			
12	57°36.9'	0°52.3'	N 19°55.5'	337°36.0'	N 26°39.2'	118°19.2'	S 20°53.5'	113°25.8'	S 19°51.9'	80°40.0'	S 11°51.1'			
13	72°39.4'	15°52.3'	N 19°56.0'	352°39.1'	N 26°38.8'	133°21.7'	S 20°53.5'	128°28.3'	S 19°51.9'	95°40.8'	S 11°50.6'			
14	87°41.8'	30°52.3'	N 19°56.6'	7°42.3'	N 26°38.4'	148°24.2'	S 20°53.5'	143°30.8'	S 19°51.9'	110°41.7'	S 11°50.0'			
15	102°44.3'	45°52.2'	N 19°57.1'	22°45.4'	N 26°38.0'	163°26.7'	S 20°53.5'	158°33.3'	S 19°51.9'	125°42.5'	S 11°49.4'			
16	117°46.8'	60°52.2'	N 19°57.6'	37°48.5'	N 26°37.6'	178°29.2'	S 20°53.6'	173°35.8'	S 19°51.9'	140°43.3'	S 11°48.9'			
17	132°49.2'	75°52.2'	N 19°58.1'	52°51.7'	N 26°37.2'	193°31.8'	S 20°53.6'	188°38.3'	S 19°51.9'	155°44.2'	S 11°48.3'			
18	147°51.7'	90°52.1'	N 19°58.7'	67°54.8'	N 26°36.8'	208°34.3'	S 20°53.6'	203°40.8'	S 19°51.9'	170°45.0'	S 11°47.7'			
19	162°54.1'	105°52.1'	N 19°59.2'	82°58.0'	N 26°36.4'	223°36.8'	S 20°53.6'	218°43.3'	S 19°51.9'	185°45.8'	S 11°47.2'			
20	177°56.6'	120°52.1'	N 19°59.7'	98°01.2'	N 26°35.9'	238°39.3'	S 20°53.6'	233°45.8'	S 19°52.0'	200°46.6'	S 11°46.6'			
21	192°59.1'	135°52.0'	N 20°00.2'	113°04.3'	N 26°35.5'	253°41.8'	S 20°53.6'	248°48.3'	S 19°52.0'	215°47.5'	S 11°46.1'			
22	208°01.5'	150°52.0'	N 20°00.7'	128°07.5'	N 26°35.1'	268°44.3'	S 20°53.6'	263°50.8'	S 19°52.0'	230°48.3'	S 11°45.5'			
23	223°04.0'	165°51.9'	N 20°01.3'	143°10.7'	N 26°34.7'	283°46.8'	S 20°53.7'	278°53.3'	S 19°52.0'	245°49.1'	S 11°44.9'			
		SD 15.8' d 0.5'		v 3.1' d -0.4'		v 2.5' d -0.0'		v 2.5' d -0.0'		v 0.8' d 0.6'				
Mer. pass.		11 h 56 m 31 s		13 h 29 m		4 h 8 m		4 h 28 m		6 h 38 m				

h	Moon					Lunar distance						
	GHA	dec	v	d	HP	-Sun	+Mars	+Fomalhaut	+Saturn	+Altair	+Jupiter	+Rigil Kent
0	219°33.2'	N 2°06.0'	16.4'	12.0'	54.0'	41°43.3'	43°02.7'	44°34.8'	75°08.5'	79°25.7'	79°49.0'	118°41.7'
1	234°08.6'	N 2°18.0'	16.4'	12.0'	54.0'	41°16.2'	43°30.5'	45°01.9'	75°38.1'	79°50.6'	80°18.6'	118°59.2'
2	248°44.0'	N 2°30.0'	16.4'	12.0'	54.0'	40°49.0'	43°58.4'	45°29.0'	76°07.7'	80°15.6'	80°48.2'	119°16.6'
3	263°19.3'	N 2°42.0'	16.3'	12.0'	54.0'	40°21.9'	44°26.3'	45°56.2'	76°37.3'	80°40.6'	81°17.8'	119°33.9'
4	277°54.7'	N 2°53.9'	16.3'	12.0'	54.1'		44°54.1'	46°23.5'	77°06.9'	81°05.6'	81°47.5'	119°51.1'
5	292°30.0'	N 3°05.9'	16.3'	12.0'	54.1'		45°22.0'	46°50.8'	77°36.5'	81°30.6'	82°17.1'	
6	307°05.3'	N 3°17.9'	16.3'	12.0'	54.1'		45°49.9'	47°18.1'	78°06.2'	81°55.6'	82°46.8'	
7	321°40.6'	N 3°29.9'	16.3'	12.0'	54.1'		46°17.8'	47°45.5'	78°35.8'	82°20.7'	83°16.4'	
8	336°15.9'	N 3°41.8'	16.2'	11.9'	54.1'		46°45.7'	48°12.9'	79°05.5'	82°45.7'	83°46.1'	
9	350°51.1'	N 3°53.8'	16.2'	11.9'	54.1'		47°13.6'	48°40.4'	79°35.1'	83°10.8'	84°15.8'	
10	5°26.3'	N 4°05.7'	16.2'	11.9'	54.1'		47°41.5'	49°07.9'	80°04.8'	83°35.9'	84°45.5'	
11	20°01.6'	N 4°17.6'	16.2'	11.9'	54.1'		48°09.4'	49°35.5'	80°34.5'	84°01.0'	85°15.2'	
12	34°36.7'	N 4°29.5'	16.2'	11.9'	54.1'		48°37.4'	50°03.0'	81°04.2'	84°26.2'	85°44.9'	
13	49°11.9'	N 4°41.4'	16.1'	11.9'	54.1'		49°05.3'	50°30.7'	81°33.9'	84°51.3'	86°14.6'	
14	63°47.0'	N 4°53.3'	16.1'	11.9'	54.1'		49°33.3'	50°58.3'	82°03.6'	85°16.5'	86°44.3'	
15	78°22.1'	N 5°05.1'	16.1'	11.9'	54.1'		50°01.3'	51°26.0'	82°33.3'	85°41.6'	87°14.1'	
16	92°57.2'	N 5°17.0'	16.1'	11.8'	54.1'		50°29.3'	51°53.8'	83°03.1'	86°06.8'	87°43.8'	
17	107°32.3'	N 5°28.8'	16.0'	11.8'	54.1'		50°57.3'	52°21.5'	83°32.8'	86°32.0'	88°13.6'	
18	122°07.3'	N 5°40.6'	16.0'	11.8'	54.1'		51°25.3'	52°49.3'	84°02.6'	86°57.2'	88°43.3'	
19	136°42.3'	N 5°52.4'	16.0'	11.8'	54.1'		51°53.3'	53°17.2'	84°32.3'	87°22.5'	89°13.1'	
20	151°17.3'	N 6°04.2'	15.9'	11.8'	54.2'		52°21.3'	53°45.0'	85°02.1'	87°47.7'	89°42.9'	
21	165°52.2'	N 6°16.0'	15.9'	11.7'	54.2'		52°49.3'	54°12.9'	85°31.9'	88°12.9'	90°12.7'	
22	180°27.1'	N 6°27.7'	15.9'	11.7'	54.2'		53°17.4'	54°40.9'	86°01.7'	88°38.2'	90°42.5'	
23	195°02.0'	N 6°39.5'	15.8'	11.7'	54.2'		53°45.5'	55°08.8'	86°31.5'	89°03.5'	91°12.3'	
Mer. pass.		9 h 38 m SD 14.7'		phase 13%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.8'	S 29°30.8'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.1'	N 45°20.9'	Acrux	+0.8	173°03.7'	S 63°12.9'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.4'	N 8°55.2'	Regulus	+1.4	207°38.5'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.4'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°10.6'	N 89°20.8'
Rigil Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.7'	S 57°08.0'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.8'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.6'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	238°06.5'	180°51.9'	N 20°01.8'	158°13.9'	N 26°34.3'		298°49.3'	S 20°53.7'		293°55.8'	S 19°52.0'		260°50.0'	S 11°44.4'				
1	253°08.9'	195°51.9'	N 20°02.3'	173°17.0'	N 26°33.9'		313°51.8'	S 20°53.7'		308°58.3'	S 19°52.0'		275°50.8'	S 11°43.8'				
2	268°11.4'	210°51.8'	N 20°02.8'	188°20.2'	N 26°33.5'		328°54.3'	S 20°53.7'		324°00.8'	S 19°52.0'		290°51.6'	S 11°43.2'				
3	283°13.9'	225°51.8'	N 20°03.3'	203°23.4'	N 26°33.1'		343°56.8'	S 20°53.7'		339°03.3'	S 19°52.0'		305°52.5'	S 11°42.7'				
4	298°16.3'	240°51.8'	N 20°03.8'	218°26.6'	N 26°32.7'		358°59.3'	S 20°53.7'		354°05.8'	S 19°52.1'		320°53.3'	S 11°42.1'				
5	313°18.8'	255°51.7'	N 20°04.4'	233°29.8'	N 26°32.2'		14°01.8'	S 20°53.7'		9°08.3'	S 19°52.1'		335°54.1'	S 11°41.5'				
6	328°21.2'	270°51.7'	N 20°04.9'	248°33.0'	N 26°31.8'		29°04.3'	S 20°53.8'		24°10.8'	S 19°52.1'		350°55.0'	S 11°41.0'				
7	343°23.7'	285°51.6'	N 20°05.4'	263°36.2'	N 26°31.4'		44°06.9'	S 20°53.8'		39°13.3'	S 19°52.1'		5°55.8'	S 11°40.4'				
8	358°26.2'	300°51.6'	N 20°05.9'	278°39.5'	N 26°31.0'		59°09.4'	S 20°53.8'		54°15.8'	S 19°52.1'		20°56.6'	S 11°39.8'				
9	13°28.6'	315°51.6'	N 20°06.4'	293°42.7'	N 26°30.6'		74°11.9'	S 20°53.8'		69°18.3'	S 19°52.1'		35°57.5'	S 11°39.3'				
10	28°31.1'	330°51.5'	N 20°06.9'	308°45.9'	N 26°30.1'		89°14.4'	S 20°53.8'		84°20.8'	S 19°52.1'		50°58.3'	S 11°38.7'				
11	43°33.6'	345°51.5'	N 20°07.4'	323°49.1'	N 26°29.7'		104°16.9'	S 20°53.8'		99°23.3'	S 19°52.1'		65°59.1'	S 11°38.1'				
12	58°36.0'	0°51.4'	N 20°07.9'	338°52.4'	N 26°29.3'		119°19.4'	S 20°53.9'		114°25.8'	S 19°52.1'		80°60.0'	S 11°37.6'				
13	73°38.5'	15°51.4'	N 20°08.5'	353°55.6'	N 26°28.9'		134°21.9'	S 20°53.9'		129°28.3'	S 19°52.2'		96°00.8'	S 11°37.0'				
14	88°41.0'	30°51.4'	N 20°09.0'	8°58.9'	N 26°28.4'		149°24.4'	S 20°53.9'		144°30.8'	S 19°52.2'		111°01.6'	S 11°36.5'				
15	103°43.4'	45°51.3'	N 20°09.5'	24°02.1'	N 26°28.0'		164°27.0'	S 20°53.9'		159°33.3'	S 19°52.2'		126°02.5'	S 11°35.9'				
16	118°45.9'	60°51.3'	N 20°10.0'	39°05.3'	N 26°27.6'		179°29.5'	S 20°53.9'		174°35.8'	S 19°52.2'		141°03.3'	S 11°35.3'				
17	133°48.4'	75°51.2'	N 20°10.5'	54°08.6'	N 26°27.1'		194°32.0'	S 20°53.9'		189°38.3'	S 19°52.2'		156°04.1'	S 11°34.8'				
18	148°50.8'	90°51.2'	N 20°11.0'	69°11.9'	N 26°26.7'		209°34.5'	S 20°53.9'		204°40.8'	S 19°52.2'		171°05.0'	S 11°34.2'				
19	163°53.3'	105°51.1'	N 20°11.5'	84°15.1'	N 26°26.3'		224°37.0'	S 20°54.0'		219°43.3'	S 19°52.2'		186°05.8'	S 11°33.6'				
20	178°55.7'	120°51.1'	N 20°12.0'	99°18.4'	N 26°25.8'		239°39.5'	S 20°54.0'		234°45.8'	S 19°52.2'		201°06.6'	S 11°33.1'				
21	193°58.2'	135°51.1'	N 20°12.5'	114°21.7'	N 26°25.4'		254°42.0'	S 20°54.0'		249°48.3'	S 19°52.3'		216°07.5'	S 11°32.5'				
22	209°00.7'	150°51.0'	N 20°13.0'	129°24.9'	N 26°25.0'		269°44.5'	S 20°54.0'		264°50.8'	S 19°52.3'		231°08.3'	S 11°31.9'				
23	224°03.1'	165°51.0'	N 20°13.5'	144°28.2'	N 26°24.5'		284°47.1'	S 20°54.0'		279°53.3'	S 19°52.3'		246°09.2'	S 11°31.4'				
		SD 15.8' d 0.5'		v 3.2' d -0.4'			v 2.5' d -0.0'			v 2.5' d -0.0'			v 0.8' d 0.6'					
Mer. pass.		11 h 56 m 35 s		13 h 24 m			4 h 4 m			4 h 24 m			6 h 36 m					

h	Moon					Lunar distance					
	GHA	dec	v	d	HP	+Mars	+Fomalhaut	+Achernar	+Saturn	+Altair	+Jupiter
0	209°36.9'	N 6°51.2'	15.8'	11.7'	54.2'	54°13.5'	55°36.8'		87°01.3'	89°28.8'	91°42.2'
1	224°11.7'	N 7°02.9'	15.8'	11.7'	54.2'	54°41.6'	56°04.9'		87°31.1'	89°54.1'	92°12.0'
2	238°46.5'	N 7°14.5'	15.7'	11.6'	54.2'	55°09.7'	56°32.9'		88°01.0'	90°19.4'	92°41.9'
3	253°21.2'	N 7°26.1'	15.7'	11.6'	54.2'	55°37.8'	57°01.0'		88°30.8'	90°44.7'	93°11.8'
4	267°55.9'	N 7°37.8'	15.7'	11.6'	54.2'	56°06.0'	57°29.2'		89°00.7'	91°10.0'	93°41.6'
5	282°30.6'	N 7°49.3'	15.6'	11.6'	54.2'	56°34.1'	57°57.3'		89°30.6'	91°35.3'	94°11.5'
6	297°05.2'	N 8°00.9'	15.6'	11.5'	54.2'	57°02.2'	58°25.5'		90°00.5'	92°00.7'	94°41.5'
7	311°39.8'	N 8°12.4'	15.6'	11.5'	54.2'	57°30.4'	58°53.7'		90°30.4'	92°26.0'	95°11.4'
8	326°14.4'	N 8°24.0'	15.5'	11.5'	54.3'	57°58.6'	59°22.0'		91°00.3'	92°51.4'	95°41.3'
9	340°48.9'	N 8°35.4'	15.5'	11.5'	54.3'	58°26.8'	59°50.3'		91°30.3'	93°16.8'	96°11.3'
10	355°23.4'	N 8°46.9'	15.4'	11.4'	54.3'	58°55.0'	60°18.6'		92°00.2'	93°42.1'	96°41.2'
11	9°57.8'	N 8°58.3'	15.4'	11.4'	54.3'	59°23.2'	60°46.9'		92°30.2'	94°07.5'	97°11.2'
12	24°32.2'	N 9°09.7'	15.4'	11.4'	54.3'	59°51.4'	61°15.3'		93°00.1'	94°32.9'	97°41.2'
13	39°06.6'	N 9°21.1'	15.3'	11.3'	54.3'	60°19.7'	61°43.6'		93°30.1'	94°58.3'	98°11.2'
14	53°40.9'	N 9°32.4'	15.3'	11.3'	54.3'	60°47.9'	62°12.1'		94°00.1'	95°23.7'	98°41.2'
15	68°15.1'	N 9°43.7'	15.2'	11.3'	54.3'	61°16.2'	62°40.5'		94°30.1'	95°49.1'	99°11.3'
16	82°49.4'	N 9°55.0'	15.2'	11.2'	54.3'	61°44.5'	63°09.0'		95°00.2'	96°14.5'	99°41.3'
17	97°23.5'	N 10°06.2'	15.1'	11.2'	54.4'	62°12.8'	63°37.5'		95°30.2'	96°39.9'	100°11.4'
18	111°57.7'	N 10°17.4'	15.1'	11.2'	54.4'	62°41.1'	64°06.0'		96°00.3'	97°05.3'	100°41.4'
19	126°31.7'	N 10°28.6'	15.0'	11.1'	54.4'	63°09.5'	64°34.6'		96°30.3'	97°30.7'	101°11.5'
20	141°05.8'	N 10°39.7'	15.0'	11.1'	54.4'	63°37.8'	65°03.1'		97°00.4'	97°56.1'	101°41.6'
21	155°39.8'	N 10°50.8'	14.9'	11.1'	54.4'	64°06.2'	65°31.7'		97°30.5'	98°21.5'	102°11.8'
22	170°13.7'	N 11°01.9'	14.9'	11.0'	54.4'	64°34.6'	66°00.4'		98°00.7'	98°47.0'	102°41.9'
23	184°47.6'	N 11°12.9'	14.8'	11.0'	54.4'	65°03.0'	66°29.0'	69°24.7'	98°30.8'	99°12.4'	103°12.1'
Mer. pass.		10 h 19 m SD 14.8'		phase 7%							

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.8'	S 29°30.8'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.5'	N 7°24.5'
Deneb	+1.2	49°28.1'	N 45°20.9'	Acrux	+0.8	173°03.7'	S 63°12.9'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.4'	N 8°55.2'	Regulus	+1.4	207°38.5'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.4'	N 38°48.0'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°10.4'	N 89°20.8'
Rigil Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.0'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.8'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.6'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	239°05.6'	180°50.9'	N 20°14.0'	159°31.5'	N 26°24.1'		299°49.6'	S 20°54.0'		294°55.8'	S 19°52.3'	261°10.0'	S 11°30.8'					
1	254°08.1'	195°50.9'	N 20°14.5'	174°34.8'	N 26°23.6'		314°52.1'	S 20°54.1'		309°58.3'	S 19°52.3'	276°10.8'	S 11°30.2'					
2	269°10.5'	210°50.8'	N 20°15.0'	189°38.1'	N 26°23.2'		329°54.6'	S 20°54.1'		325°00.8'	S 19°52.3'	291°11.7'	S 11°29.7'					
3	284°13.0'	225°50.8'	N 20°15.5'	204°41.4'	N 26°22.7'		344°57.1'	S 20°54.1'		340°03.3'	S 19°52.3'	306°12.5'	S 11°29.1'					
4	299°15.5'	240°50.8'	N 20°16.0'	219°44.7'	N 26°22.3'		359°59.6'	S 20°54.1'		355°05.8'	S 19°52.3'	321°13.3'	S 11°28.5'					
5	314°17.9'	255°50.7'	N 20°16.5'	234°48.0'	N 26°21.8'		15°02.2'	S 20°54.1'		10°08.3'	S 19°52.4'	336°14.2'	S 11°28.0'					
6	329°20.4'	270°50.7'	N 20°17.0'	249°51.3'	N 26°21.4'		30°04.7'	S 20°54.1'		25°10.8'	S 19°52.4'	351°15.0'	S 11°27.4'					
7	344°22.9'	285°50.6'	N 20°17.5'	264°54.6'	N 26°20.9'		45°07.2'	S 20°54.2'		40°13.3'	S 19°52.4'	6°15.9'	S 11°26.8'					
8	359°25.3'	300°50.6'	N 20°18.0'	279°58.0'	N 26°20.5'		60°09.7'	S 20°54.2'		55°15.8'	S 19°52.4'	21°16.7'	S 11°26.3'					
9	14°27.8'	315°50.5'	N 20°18.5'	295°01.3'	N 26°20.0'		75°12.2'	S 20°54.2'		70°18.4'	S 19°52.4'	36°17.5'	S 11°25.7'					
10	29°30.2'	330°50.5'	N 20°19.0'	310°04.6'	N 26°19.6'		90°14.8'	S 20°54.2'		85°20.9'	S 19°52.4'	51°18.4'	S 11°25.1'					
11	44°32.7'	345°50.4'	N 20°19.5'	325°07.9'	N 26°19.1'		105°17.3'	S 20°54.2'		100°23.4'	S 19°52.4'	66°19.2'	S 11°24.6'					
12	59°35.2'	0°50.4'	N 20°20.0'	340°11.3'	N 26°18.7'		120°19.8'	S 20°54.2'		115°25.9'	S 19°52.5'	81°20.0'	S 11°24.0'					
13	74°37.6'	15°50.4'	N 20°20.5'	355°14.6'	N 26°18.2'		135°22.3'	S 20°54.3'		130°28.4'	S 19°52.5'	96°20.9'	S 11°23.4'					
14	89°40.1'	30°50.3'	N 20°21.0'	10°18.0'	N 26°17.8'		150°24.8'	S 20°54.3'		145°30.9'	S 19°52.5'	111°21.7'	S 11°22.9'					
15	104°42.6'	45°50.3'	N 20°21.5'	25°21.3'	N 26°17.3'		165°27.4'	S 20°54.3'		160°33.4'	S 19°52.5'	126°22.6'	S 11°22.3'					
16	119°45.0'	60°50.2'	N 20°22.0'	40°24.7'	N 26°16.8'		180°29.9'	S 20°54.3'		175°35.9'	S 19°52.5'	141°23.4'	S 11°21.7'					
17	134°47.5'	75°50.2'	N 20°22.5'	55°28.0'	N 26°16.4'		195°32.4'	S 20°54.3'		190°38.4'	S 19°52.5'	156°24.2'	S 11°21.2'					
18	149°50.0'	90°50.1'	N 20°23.0'	70°31.4'	N 26°15.9'		210°34.9'	S 20°54.3'		205°40.9'	S 19°52.5'	171°25.1'	S 11°20.6'					
19	164°52.4'	105°50.1'	N 20°23.5'	85°34.8'	N 26°15.4'		225°37.4'	S 20°54.4'		220°43.4'	S 19°52.5'	186°25.9'	S 11°20.0'					
20	179°54.9'	120°50.0'	N 20°24.0'	100°38.1'	N 26°15.0'		240°40.0'	S 20°54.4'		235°45.9'	S 19°52.6'	201°26.8'	S 11°19.5'					
21	194°57.3'	135°50.0'	N 20°24.5'	115°41.5'	N 26°14.5'		255°42.5'	S 20°54.4'		250°48.4'	S 19°52.6'	216°27.6'	S 11°18.9'					
22	209°59.8'	150°49.9'	N 20°25.0'	130°44.9'	N 26°14.0'		270°45.0'	S 20°54.4'		265°50.9'	S 19°52.6'	231°28.4'	S 11°18.3'					
23	225°02.3'	165°49.9'	N 20°25.5'	145°48.3'	N 26°13.6'		285°47.5'	S 20°54.4'		280°53.5'	S 19°52.6'	246°29.3'	S 11°17.7'					
		SD 15.8' d 0.5'		v 3.3' d -0.5'			v 2.5' d -0.0'			v 2.5' d -0.0'		v 0.8' d 0.6'						
Mer. pass.		11 h 56 m 39 s		13 h 19 m			4 h 0 m			4 h 20 m		6 h 35 m						

h	Moon					Lunar distance					
	GHA	dec	v	d	HP	+Mars	+Fomalhaut	+Achernar	+Saturn	+Altair	+Jupiter
0	199°21.4'	N 11°23.8'	14.8'	10.9'	54.4'	65°31.4'	66°57.7'	69°39.7'	99°00.9'	99°37.8'	103°42.2'
1	213°55.2'	N 11°34.8'	14.7'	10.9'	54.5'	65°59.8'	67°26.4'	69°54.8'	99°31.1'	100°03.2'	104°12.4'
2	228°28.9'	N 11°45.7'	14.7'	10.9'	54.5'	66°28.3'	67°55.1'	70°10.0'	100°01.3'	100°28.6'	104°42.6'
3	243°02.6'	N 11°56.5'	14.6'	10.8'	54.5'	66°56.7'	68°23.9'	70°25.3'	100°31.5'	100°54.1'	105°12.8'
4	257°36.2'	N 12°07.3'	14.6'	10.8'	54.5'	67°25.2'	68°52.7'	70°40.6'	101°01.7'	101°19.5'	105°43.1'
5	272°09.8'	N 12°18.1'	14.5'	10.7'	54.5'	67°53.7'	69°21.5'	70°56.1'	101°31.9'	101°44.9'	106°13.3'
6	286°43.3'	N 12°28.8'	14.5'	10.7'	54.5'	68°22.2'	69°50.3'	71°11.6'	102°02.2'	102°10.3'	106°43.6'
7	301°16.8'	N 12°39.5'	14.4'	10.6'	54.5'	68°50.7'	70°19.2'	71°27.2'	102°32.4'	102°35.7'	107°13.9'
8	315°50.2'	N 12°50.1'	14.3'	10.6'	54.5'	69°19.3'	70°48.1'	71°42.8'	103°02.7'	103°01.1'	107°44.2'
9	330°23.5'	N 13°00.7'	14.3'	10.5'	54.6'	69°47.8'	71°17.0'	71°58.5'	103°33.0'	103°26.5'	108°14.5'
10	344°56.8'	N 13°11.2'	14.2'	10.5'	54.6'	70°16.4'	71°45.9'	72°14.3'	104°03.3'	103°51.9'	108°44.8'
11	359°30.0'	N 13°21.7'	14.2'	10.4'	54.6'	70°45.0'	72°14.8'	72°30.2'	104°33.6'	104°17.3'	109°15.2'
12	14°03.2'	N 13°32.1'	14.1'	10.4'	54.6'	71°13.6'	72°43.8'	72°46.1'	105°04.0'	104°42.7'	109°45.5'
13	28°36.3'	N 13°42.5'	14.1'	10.3'	54.6'	71°42.2'	73°12.8'	73°02.2'	105°34.3'	105°08.1'	110°15.9'
14	43°09.4'	N 13°52.8'	14.0'	10.3'	54.6'	72°10.9'	73°41.8'	73°18.2'	106°04.7'	105°33.4'	110°46.3'
15	57°42.4'	N 14°03.1'	13.9'	10.2'	54.6'	72°39.5'	74°10.9'	73°34.4'	106°35.1'	105°58.8'	111°16.7'
16	72°15.3'	N 14°13.3'	13.9'	10.2'	54.7'	73°08.2'	74°40.0'	73°50.6'	107°05.5'	106°24.1'	111°47.1'
17	86°48.2'	N 14°23.5'	13.8'	10.1'	54.7'	73°36.9'	75°09.0'	74°06.9'	107°36.0'	106°49.5'	112°17.6'
18	101°21.0'	N 14°33.6'	13.7'	10.1'	54.7'	74°05.6'	75°38.2'	74°23.2'	108°06.4'	107°14.8'	112°48.1'
19	115°53.8'	N 14°43.7'	13.7'	10.0'	54.7'	74°34.4'	76°07.3'	74°39.6'	108°36.9'	107°40.1'	113°18.6'
20	130°26.4'	N 14°53.7'	13.6'	9.9'	54.7'	75°03.1'	76°36.5'	74°56.1'	109°07.3'	108°05.4'	113°49.1'
21	144°59.1'	N 15°03.6'	13.6'	9.9'	54.7'	75°31.9'	77°05.6'	75°12.6'	109°37.8'	108°30.7'	114°19.6'
22	159°31.6'	N 15°13.5'	13.5'	9.8'	54.7'						
23	174°04.1'	N 15°23.3'	13.4'	9.8'	54.8'						
Mer. pass.		11 h 2 m SD 14.8'			phase 3%						

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.8'	S 29°30.8'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.5'	N 7°24.5'
Deneb	+1.2	49°28.1'	N 45°20.9'	Acrux	+0.8	173°03.7'	S 63°12.9'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.4'	N 8°55.2'	Regulus	+1.4	207°38.5'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.4'	N 38°48.0'	Pollux	+1.2	243°22.2'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°10.2'	N 89°20.8'
Rigil Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.0'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.8'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.6'				

Friday 22 May 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	240°04.7'	180°49.8'	N 20°25.9'	160°51.6'	N 26°13.1'	300°50.1'	S 20°54.5'	295°56.0'	S 19°52.6'	261°30.1'	S 11°17.2'			
1	255°07.2'	195°49.8'	N 20°26.4'	175°55.0'	N 26°12.6'	315°52.6'	S 20°54.5'	310°58.5'	S 19°52.6'	276°31.0'	S 11°16.6'			
2	270°09.7'	210°49.7'	N 20°26.9'	190°58.4'	N 26°12.2'	330°55.1'	S 20°54.5'	326°01.0'	S 19°52.6'	291°31.8'	S 11°16.0'			
3	285°12.1'	225°49.7'	N 20°27.4'	206°01.8'	N 26°11.7'	345°57.6'	S 20°54.5'	341°03.5'	S 19°52.7'	306°32.7'	S 11°15.5'			
4	300°14.6'	240°49.6'	N 20°27.9'	221°05.2'	N 26°11.2'	1°00.2'	S 20°54.5'	356°06.0'	S 19°52.7'	321°33.5'	S 11°14.9'			
5	315°17.1'	255°49.6'	N 20°28.4'	236°08.6'	N 26°10.7'	16°02.7'	S 20°54.5'	11°08.5'	S 19°52.7'	336°34.3'	S 11°14.3'			
6	330°19.5'	270°49.5'	N 20°28.9'	251°12.1'	N 26°10.2'	31°05.2'	S 20°54.6'	26°11.0'	S 19°52.7'	351°35.2'	S 11°13.8'			
7	345°22.0'	285°49.5'	N 20°29.4'	266°15.5'	N 26°09.8'	46°07.7'	S 20°54.6'	41°13.5'	S 19°52.7'	6°36.0'	S 11°13.2'			
8	0°24.5'	300°49.4'	N 20°29.8'	281°18.9'	N 26°09.3'	61°10.3'	S 20°54.6'	56°16.0'	S 19°52.7'	21°36.9'	S 11°12.6'			
9	15°26.9'	315°49.4'	N 20°30.3'	296°22.3'	N 26°08.8'	76°12.8'	S 20°54.6'	71°18.5'	S 19°52.7'	36°37.7'	S 11°12.1'			
10	30°29.4'	330°49.3'	N 20°30.8'	311°25.7'	N 26°08.3'	91°15.3'	S 20°54.6'	86°21.1'	S 19°52.8'	51°38.6'	S 11°11.5'			
11	45°31.8'	345°49.3'	N 20°31.3'	326°29.2'	N 26°07.8'	106°17.8'	S 20°54.7'	101°23.6'	S 19°52.8'	66°39.4'	S 11°10.9'			
12	60°34.3'	0°49.2'	N 20°31.8'	341°32.6'	N 26°07.3'	121°20.4'	S 20°54.7'	116°26.1'	S 19°52.8'	81°40.2'	S 11°10.4'			
13	75°36.8'	15°49.2'	N 20°32.3'	356°36.1'	N 26°06.9'	136°22.9'	S 20°54.7'	131°28.6'	S 19°52.8'	96°41.1'	S 11°09.8'			
14	90°39.2'	30°49.1'	N 20°32.7'	11°39.5'	N 26°06.4'	151°25.4'	S 20°54.7'	146°31.1'	S 19°52.8'	111°41.9'	S 11°09.2'			
15	105°41.7'	45°49.1'	N 20°33.2'	26°43.0'	N 26°05.9'	166°28.0'	S 20°54.7'	161°33.6'	S 19°52.8'	126°42.8'	S 11°08.6'			
16	120°44.2'	60°49.0'	N 20°33.7'	41°46.4'	N 26°05.4'	181°30.5'	S 20°54.8'	176°36.1'	S 19°52.8'	141°43.6'	S 11°08.1'			
17	135°46.6'	75°49.0'	N 20°34.2'	56°49.9'	N 26°04.9'	196°33.0'	S 20°54.8'	191°38.6'	S 19°52.9'	156°44.5'	S 11°07.5'			
18	150°49.1'	90°48.9'	N 20°34.7'	71°53.3'	N 26°04.4'	211°35.6'	S 20°54.8'	206°41.1'	S 19°52.9'	171°45.3'	S 11°06.9'			
19	165°51.6'	105°48.9'	N 20°35.1'	86°56.8'	N 26°03.9'	226°38.1'	S 20°54.8'	221°43.7'	S 19°52.9'	186°46.2'	S 11°06.4'			
20	180°54.0'	120°48.8'	N 20°35.6'	102°00.3'	N 26°03.4'	241°40.6'	S 20°54.8'	236°46.2'	S 19°52.9'	201°47.0'	S 11°05.8'			
21	195°56.5'	135°48.8'	N 20°36.1'	117°03.7'	N 26°02.9'	256°43.1'	S 20°54.8'	251°48.7'	S 19°52.9'	216°47.8'	S 11°05.2'			
22	210°59.0'	150°48.7'	N 20°36.6'	132°07.2'	N 26°02.4'	271°45.7'	S 20°54.9'	266°51.2'	S 19°52.9'	231°48.7'	S 11°04.7'			
23	226°01.4'	165°48.7'	N 20°37.0'	147°10.7'	N 26°01.9'	286°48.2'	S 20°54.9'	281°53.7'	S 19°52.9'	246°49.5'	S 11°04.1'			
		SD 15.8'	d 0.5'	v 3.4'	d -0.5'	v 2.5'	d -0.0'	v 2.5'	d -0.0'	v 0.8'	d 0.6'			
Mer. pass.		11 h 56 m 43 s		13 h 14 m		3 h 56 m		4 h 16 m		6 h 34 m				

h	Moon				
	GHA	dec	v	d	HP
0	188°36.6'	N 15°33.1'	13.4'	9.7'	54.8'
1	203°08.9'	N 15°42.8'	13.3'	9.6'	54.8'
2	217°41.2'	N 15°52.4'	13.2'	9.6'	54.8'
3	232°13.5'	N 16°02.0'	13.2'	9.5'	54.8'
4	246°45.6'	N 16°11.5'	13.1'	9.4'	54.8'
5	261°17.7'	N 16°20.9'	13.0'	9.4'	54.9'
6	275°49.8'	N 16°30.3'	13.0'	9.3'	54.9'
7	290°21.7'	N 16°39.6'	12.9'	9.2'	54.9'
8	304°53.6'	N 16°48.9'	12.8'	9.2'	54.9'
9	319°25.5'	N 16°58.0'	12.8'	9.1'	54.9'
10	333°57.2'	N 17°07.1'	12.7'	9.0'	54.9'
11	348°28.9'	N 17°16.2'	12.6'	9.0'	55.0'
12	3°00.5'	N 17°25.1'	12.6'	8.9'	55.0'
13	17°32.1'	N 17°34.0'	12.5'	8.8'	55.0'
14	32°03.6'	N 17°42.8'	12.4'	8.7'	55.0'
15	46°35.0'	N 17°51.5'	12.3'	8.7'	55.0'
16	61°06.3'	N 18°00.2'	12.3'	8.6'	55.0'
17	75°37.6'	N 18°08.8'	12.2'	8.5'	55.1'
18	90°08.8'	N 18°17.3'	12.1'	8.4'	55.1'
19	104°40.0'	N 18°25.7'	12.1'	8.3'	55.1'
20	119°11.0'	N 18°34.0'	12.0'	8.3'	55.1'
21	133°42.0'	N 18°42.3'	11.9'	8.2'	55.1'
22	148°12.9'	N 18°50.4'	11.9'	8.1'	55.1'
23	162°43.8'	N 18°58.5'	11.8'	8.0'	55.2'
Mer. pass.	11 h 48 m	SD 14.9'	phase 1%		

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.8'	S 29°30.8'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.5'	N 7°24.5'
Deneb	+1.2	49°28.1'	N 45°20.9'	Acrux	+0.8	173°03.7'	S 63°12.9'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.4'	N 8°55.3'	Regulus	+1.4	207°38.5'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.4'	N 38°48.0'	Pollux	+1.2	243°22.2'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°10.0'	N 89°20.8'
Rigil Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.0'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.8'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.6'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	241°03.9'	180°48.6'	N 20°37.5'	162°14.2'	N 26°01.4'	301°50.7'	S 20°54.9'	296°56.2'	S 19°53.0'	261°50.4'	S 11°03.5'			
1	256°06.3'	195°48.5'	N 20°38.0'	177°17.7'	N 26°00.9'	316°53.3'	S 20°54.9'	311°58.7'	S 19°53.0'	276°51.2'	S 11°03.0'			
2	271°08.8'	210°48.5'	N 20°38.5'	192°21.2'	N 26°00.4'	331°55.8'	S 20°54.9'	327°01.2'	S 19°53.0'	291°52.1'	S 11°02.4'			
3	286°11.3'	225°48.4'	N 20°38.9'	207°24.7'	N 25°59.9'	346°58.3'	S 20°55.0'	342°03.8'	S 19°53.0'	306°52.9'	S 11°01.8'			
4	301°13.7'	240°48.4'	N 20°39.4'	222°28.2'	N 25°59.4'	2°00.9'	S 20°55.0'	357°06.3'	S 19°53.0'	321°53.8'	S 11°01.2'			
5	316°16.2'	255°48.3'	N 20°39.9'	237°31.7'	N 25°58.9'	17°03.4'	S 20°55.0'	12°08.8'	S 19°53.0'	336°54.6'	S 11°00.7'			
6	331°18.7'	270°48.3'	N 20°40.3'	252°35.2'	N 25°58.4'	32°05.9'	S 20°55.0'	27°11.3'	S 19°53.0'	351°55.5'	S 11°00.1'			
7	346°21.1'	285°48.2'	N 20°40.8'	267°38.7'	N 25°57.8'	47°08.5'	S 20°55.0'	42°13.8'	S 19°53.1'	6°56.3'	S 10°59.5'			
8	1°23.6'	300°48.2'	N 20°41.3'	282°42.2'	N 25°57.3'	62°11.0'	S 20°55.1'	57°16.3'	S 19°53.1'	21°57.2'	S 10°59.0'			
9	16°26.1'	315°48.1'	N 20°41.8'	297°45.7'	N 25°56.8'	77°13.5'	S 20°55.1'	72°18.8'	S 19°53.1'	36°58.0'	S 10°58.4'			
10	31°28.5'	330°48.0'	N 20°42.2'	312°49.2'	N 25°56.3'	92°16.1'	S 20°55.1'	87°21.3'	S 19°53.1'	51°58.9'	S 10°57.8'			
11	46°31.0'	345°48.0'	N 20°42.7'	327°52.8'	N 25°55.8'	107°18.6'	S 20°55.1'	102°23.9'	S 19°53.1'	66°59.7'	S 10°57.3'			
12	61°33.5'	0°47.9'	N 20°43.2'	342°56.3'	N 25°55.3'	122°21.2'	S 20°55.1'	117°26.4'	S 19°53.1'	82°00.6'	S 10°56.7'			
13	76°35.9'	15°47.9'	N 20°43.6'	357°59.8'	N 25°54.7'	137°23.7'	S 20°55.2'	132°28.9'	S 19°53.1'	97°01.4'	S 10°56.1'			
14	91°38.4'	30°47.8'	N 20°44.1'	13°03.4'	N 25°54.2'	152°26.2'	S 20°55.2'	147°31.4'	S 19°53.2'	112°02.3'	S 10°55.5'			
15	106°40.8'	45°47.8'	N 20°44.6'	28°06.9'	N 25°53.7'	167°28.8'	S 20°55.2'	162°33.9'	S 19°53.2'	127°03.1'	S 10°55.0'			
16	121°43.3'	60°47.7'	N 20°45.0'	43°10.5'	N 25°53.2'	182°31.3'	S 20°55.2'	177°36.4'	S 19°53.2'	142°04.0'	S 10°54.4'			
17	136°45.8'	75°47.6'	N 20°45.5'	58°14.0'	N 25°52.7'	197°33.8'	S 20°55.2'	192°39.0'	S 19°53.2'	157°04.8'	S 10°53.8'			
18	151°48.2'	90°47.6'	N 20°46.0'	73°17.6'	N 25°52.1'	212°36.4'	S 20°55.3'	207°41.5'	S 19°53.2'	172°05.7'	S 10°53.3'			
19	166°50.7'	105°47.5'	N 20°46.4'	88°21.1'	N 25°51.6'	227°38.9'	S 20°55.3'	222°44.0'	S 19°53.2'	187°06.5'	S 10°52.7'			
20	181°53.2'	120°47.5'	N 20°46.9'	103°24.7'	N 25°51.1'	242°41.5'	S 20°55.3'	237°46.5'	S 19°53.2'	202°07.4'	S 10°52.1'			
21	196°55.6'	135°47.4'	N 20°47.3'	118°28.3'	N 25°50.5'	257°44.0'	S 20°55.3'	252°49.0'	S 19°53.3'	217°08.2'	S 10°51.5'			
22	211°58.1'	150°47.4'	N 20°47.8'	133°31.8'	N 25°50.0'	272°46.5'	S 20°55.3'	267°51.5'	S 19°53.3'	232°09.1'	S 10°51.0'			
23	227°00.6'	165°47.3'	N 20°48.3'	148°35.4'	N 25°49.5'	287°49.1'	S 20°55.4'	282°54.0'	S 19°53.3'	247°09.9'	S 10°50.4'			
		SD 15.8'	d 0.5'	v 3.5'	d -0.5'	v 2.5'	d -0.0'	v 2.5'	d -0.0'	v 0.8'	d 0.6'			
Mer. pass.		11 h 56 m 49 s		13 h 8 m		3 h 52 m		4 h 12 m		6 h 32 m				

h	Moon					Lunar distance				
	GHA	dec	v	d	HP	-Regulus	-Procyon	-Pollux	-Betelgeuse	-Venus
0	177°14.6'	N 19°06.5'	11.7'	7.9'	55.2'					
1	191°45.3'	N 19°14.5'	11.6'	7.8'	55.2'					
2	206°15.9'	N 19°22.3'	11.6'	7.7'	55.2'					
3	220°46.5'	N 19°30.1'	11.5'	7.7'	55.2'					
4	235°17.0'	N 19°37.7'	11.4'	7.6'	55.2'					
5	249°47.4'	N 19°45.3'	11.4'	7.5'	55.3'					
6	264°17.8'	N 19°52.8'	11.3'	7.4'	55.3'					
7	278°48.1'	N 20°00.2'	11.2'	7.3'	55.3'					
8	293°18.3'	N 20°07.5'	11.1'	7.2'	55.3'					
9	307°48.4'	N 20°14.7'	11.1'	7.1'	55.3'					
10	322°18.5'	N 20°21.8'	11.0'	7.0'	55.4'					
11	336°48.5'	N 20°28.8'	10.9'	6.9'	55.4'					
12	351°18.4'	N 20°35.7'	10.9'	6.8'	55.4'					
13	5°48.3'	N 20°42.5'	10.8'	6.7'	55.4'					
14	20°18.1'	N 20°49.3'	10.7'	6.6'	55.4'					
15	34°47.8'	N 20°55.9'	10.7'	6.5'	55.4'	77°00.8'	44°44.5'	41°06.7'	21°24.8'	7°53.1'
16	49°17.5'	N 21°02.4'	10.6'	6.4'	55.5'	76°29.5'	44°16.5'	40°35.6'	21°04.4'	7°24.7'
17	63°47.0'	N 21°08.8'	10.5'	6.3'	55.5'	75°58.3'	43°48.5'	40°04.5'	20°44.4'	6°56.8'
18	78°16.6'	N 21°15.2'	10.4'	6.2'	55.5'	75°27.0'	43°20.6'	39°33.4'	20°24.8'	
19	92°46.0'	N 21°21.4'	10.4'	6.1'	55.5'	74°55.7'	42°52.7'	39°02.2'	20°05.7'	
20	107°15.4'	N 21°27.5'	10.3'	6.0'	55.5'	74°24.4'	42°24.9'	38°31.1'	19°47.1'	
21	121°44.7'	N 21°33.5'	10.2'	5.9'	55.6'	73°53.0'	41°57.2'	37°59.9'	19°29.0'	
22	136°13.9'	N 21°39.4'	10.2'	5.8'	55.6'	73°21.7'	41°29.4'	37°28.7'	19°11.4'	
23	150°43.1'	N 21°45.2'	10.1'	5.7'	55.6'	72°50.3'	41°01.8'	36°57.5'	18°54.4'	
Mer. pass.		12 h 36 m SD 15.0'		phase 0%						

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.8'	S 29°30.8'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.5'	N 7°24.5'
Deneb	+1.2	49°28.1'	N 45°20.9'	Acrux	+0.8	173°03.7'	S 63°12.9'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.4'	N 8°55.3'	Regulus	+1.4	207°38.5'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.4'	N 38°48.0'	Pollux	+1.2	243°22.2'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.1'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°09.7'	N 89°20.8'
Rigil Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.0'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.8'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.6'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec		
0	242°03.0'	180°47.2'	N 20°48.7'	163°39.0'	N 25°49.0'		302°51.6'	S 20°55.4'	297°56.6'	S 19°53.3'	262°10.8'	S 10°49.8'						
1	257°05.5'	195°47.2'	N 20°49.2'	178°42.6'	N 25°48.4'		317°54.2'	S 20°55.4'	312°59.1'	S 19°53.3'	277°11.6'	S 10°49.3'						
2	272°07.9'	210°47.1'	N 20°49.6'	193°46.2'	N 25°47.9'		332°56.7'	S 20°55.4'	328°01.6'	S 19°53.3'	292°12.5'	S 10°48.7'						
3	287°10.4'	225°47.1'	N 20°50.1'	208°49.8'	N 25°47.3'		347°59.2'	S 20°55.5'	343°04.1'	S 19°53.4'	307°13.3'	S 10°48.1'						
4	302°12.9'	240°47.0'	N 20°50.6'	223°53.3'	N 25°46.8'		3°01.8'	S 20°55.5'	358°06.6'	S 19°53.4'	322°14.2'	S 10°47.5'						
5	317°15.3'	255°46.9'	N 20°51.0'	238°56.9'	N 25°46.3'		18°04.3'	S 20°55.5'	13°09.1'	S 19°53.4'	337°15.0'	S 10°47.0'						
6	332°17.8'	270°46.9'	N 20°51.5'	254°00.5'	N 25°45.7'		33°06.9'	S 20°55.5'	28°11.7'	S 19°53.4'	352°15.9'	S 10°46.4'						
7	347°20.3'	285°46.8'	N 20°51.9'	269°04.2'	N 25°45.2'		48°09.4'	S 20°55.5'	43°14.2'	S 19°53.4'	7°16.7'	S 10°45.8'						
8	2°22.7'	300°46.8'	N 20°52.4'	284°07.8'	N 25°44.6'		63°12.0'	S 20°55.6'	58°16.7'	S 19°53.4'	22°17.6'	S 10°45.3'						
9	17°25.2'	315°46.7'	N 20°52.8'	299°11.4'	N 25°44.1'		78°14.5'	S 20°55.6'	73°19.2'	S 19°53.4'	37°18.4'	S 10°44.7'						
10	32°27.7'	330°46.6'	N 20°53.3'	314°15.0'	N 25°43.5'		93°17.0'	S 20°55.6'	88°21.7'	S 19°53.5'	52°19.3'	S 10°44.1'						
11	47°30.1'	345°46.6'	N 20°53.7'	329°18.6'	N 25°43.0'		108°19.6'	S 20°55.6'	103°24.3'	S 19°53.5'	67°20.1'	S 10°43.5'						
12	62°32.6'	0°46.5'	N 20°54.2'	344°22.2'	N 25°42.5'		123°22.1'	S 20°55.6'	118°26.8'	S 19°53.5'	82°21.0'	S 10°43.0'						
13	77°35.1'	15°46.4'	N 20°54.6'	359°25.9'	N 25°41.9'		138°24.7'	S 20°55.7'	133°29.3'	S 19°53.5'	97°21.8'	S 10°42.4'						
14	92°37.5'	30°46.4'	N 20°55.1'	14°29.5'	N 25°41.4'		153°27.2'	S 20°55.7'	148°31.8'	S 19°53.5'	112°22.7'	S 10°41.8'						
15	107°40.0'	45°46.3'	N 20°55.5'	29°33.1'	N 25°40.8'		168°29.8'	S 20°55.7'	163°34.3'	S 19°53.5'	127°23.5'	S 10°41.3'						
16	122°42.4'	60°46.3'	N 20°56.0'	44°36.8'	N 25°40.2'		183°32.3'	S 20°55.7'	178°36.9'	S 19°53.6'	142°24.4'	S 10°40.7'						
17	137°44.9'	75°46.2'	N 20°56.4'	59°40.4'	N 25°39.7'		198°34.9'	S 20°55.8'	193°39.4'	S 19°53.6'	157°25.3'	S 10°40.1'						
18	152°47.4'	90°46.1'	N 20°56.9'	74°44.0'	N 25°39.1'		213°37.4'	S 20°55.8'	208°41.9'	S 19°53.6'	172°26.1'	S 10°39.5'						
19	167°49.8'	105°46.1'	N 20°57.3'	89°47.7'	N 25°38.6'		228°40.0'	S 20°55.8'	223°44.4'	S 19°53.6'	187°27.0'	S 10°39.0'						
20	182°52.3'	120°46.0'	N 20°57.8'	104°51.3'	N 25°38.0'		243°42.5'	S 20°55.8'	238°46.9'	S 19°53.6'	202°27.8'	S 10°38.4'						
21	197°54.8'	135°45.9'	N 20°58.2'	119°55.0'	N 25°37.5'		258°45.1'	S 20°55.8'	253°49.4'	S 19°53.6'	217°28.7'	S 10°37.8'						
22	212°57.2'	150°45.9'	N 20°58.7'	134°58.7'	N 25°36.9'		273°47.6'	S 20°55.9'	268°52.0'	S 19°53.7'	232°29.5'	S 10°37.2'						
23	227°59.7'	165°45.8'	N 20°59.1'	150°02.3'	N 25°36.3'		288°50.1'	S 20°55.9'	283°54.5'	S 19°53.7'	247°30.4'	S 10°36.7'						
		SD 15.8'	d 0.5'	v 3.6'	d -0.5'		v 2.5'	d -0.0'	v 2.5'	d -0.0'	v 0.9'	d 0.6'						
Mer. pass.		11 h 56 m 54 s		13 h 2 m			3 h 48 m		4 h 8 m		6 h 31 m							

h	Moon					Lunar distance						
	GHA	dec	v	d	HP	-Spica	-Arcturus	-Regulus	-Procyon	-Pollux	-Betelgeuse	-Venus
0	165°12.2'	N 21°50.9'	10.0'	5.6'	55.6'			72°18.9'	40°34.2'	36°26.3'	18°38.1'	
1	179°41.3'	N 21°56.5'	10.0'	5.5'	55.6'			71°47.5'	40°06.7'	35°55.1'	18°22.3'	
2	194°10.3'	N 22°02.0'	9.9'	5.4'	55.7'			71°16.1'	39°39.2'	35°23.9'		
3	208°39.2'	N 22°07.4'	9.9'	5.3'	55.7'			70°44.6'	39°11.8'	34°52.6'		
4	223°08.0'	N 22°12.6'	9.8'	5.1'	55.7'		119°43.6'	70°13.1'	38°44.4'	34°21.3'		
5	237°36.8'	N 22°17.8'	9.7'	5.0'	55.7'		119°16.3'	69°41.6'	38°17.2'	33°50.1'		
6	252°05.5'	N 22°22.8'	9.7'	4.9'	55.7'		118°48.9'	69°10.1'	37°50.0'	33°18.8'		
7	266°34.2'	N 22°27.7'	9.6'	4.8'	55.8'		118°21.5'	68°38.6'	37°22.9'	32°47.5'		
8	281°02.8'	N 22°32.5'	9.5'	4.7'	55.8'		117°54.0'	68°07.0'	36°55.8'	32°16.2'		
9	295°31.3'	N 22°37.2'	9.5'	4.6'	55.8'		117°26.5'	67°35.4'	36°28.9'	31°44.8'		
10	309°59.8'	N 22°41.8'	9.4'	4.5'	55.8'		116°58.9'	67°03.8'	36°02.1'	31°13.5'		
11	324°28.2'	N 22°46.2'	9.4'	4.3'	55.8'		116°31.3'	66°32.2'	35°35.3'	30°42.2'		
12	338°56.6'	N 22°50.6'	9.3'	4.2'	55.9'	119°58.8'	116°03.6'	66°00.6'	35°08.7'	30°10.8'		
13	353°24.9'	N 22°54.8'	9.2'	4.1'	55.9'	119°27.3'	115°35.8'	65°28.9'	34°42.1'	29°39.4'		
14	7°53.1'	N 22°58.9'	9.2'	4.0'	55.9'	118°55.8'	115°08.0'	64°57.2'	34°15.7'	29°08.1'		
15	22°21.3'	N 23°02.9'	9.1'	3.9'	55.9'	118°24.3'	114°40.2'	64°25.5'	33°49.4'	28°36.7'		7°03.8'
16	36°49.4'	N 23°06.8'	9.1'	3.7'	55.9'	117°52.8'	114°12.3'	63°53.8'	33°23.2'	28°05.3'		7°32.3'
17	51°17.5'	N 23°10.5'	9.0'	3.6'	56.0'	117°21.2'	113°44.3'	63°22.0'	32°57.2'	27°33.9'		8°01.5'
18	65°45.5'	N 23°14.1'	9.0'	3.5'	56.0'	116°49.7'	113°16.3'	62°50.3'	32°31.3'	27°02.5'		8°31.1'
19	80°13.5'	N 23°17.6'	8.9'	3.4'	56.0'	116°18.1'	112°48.3'	62°18.5'	32°05.5'	26°31.1'		9°01.2'
20	94°41.4'	N 23°21.0'	8.9'	3.2'	56.0'	115°46.4'	112°20.2'	61°46.7'	31°39.9'	25°59.7'		9°31.6'
21	109°09.3'	N 23°24.2'	8.8'	3.1'	56.0'	115°14.8'	111°52.1'	61°14.9'	31°14.4'	25°28.3'		10°02.2'
22	123°37.1'	N 23°27.4'	8.8'	3.0'	56.1'	114°43.1'	111°23.9'	60°43.0'	30°49.1'	24°56.9'		10°33.2'
23	138°04.8'	N 23°30.4'	8.7'	2.9'	56.1'	114°11.4'	110°55.6'	60°11.2'	30°23.9'	24°25.5'		11°04.4'
Mer. pass.		13 h 27 m SD 15.2'		phase 2%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.8'	S 29°30.8'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.5'	N 7°24.5'
Deneb	+1.2	49°28.1'	N 45°20.9'	Acrux	+0.8	173°03.7'	S 63°12.9'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.4'	N 8°55.3'	Regulus	+1.4	207°38.5'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.4'	N 38°48.0'	Pollux	+1.2	243°22.2'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.0'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°09.4'	N 89°20.8'
Rigil Kent	-0.0	139°44.7'	S 60°55.1'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.0'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.8'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.6'				



h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	243°02.2'	180°45.7' N	20°59.6'	165°06.0' N	25°35.8'	303°52.7' S	20°55.9'	298°57.0' S	19°53.7'	262°31.2' S	10°36.1'	
1	258°04.6'	195°45.7' N	21°00.0'	180°09.7' N	25°35.2'	318°55.2' S	20°55.9'	313°59.5' S	19°53.7'	277°32.1' S	10°35.5'	
2	273°07.1'	210°45.6' N	21°00.5'	195°13.3' N	25°34.6'	333°57.8' S	20°56.0'	329°02.1' S	19°53.7'	292°33.0' S	10°35.0'	
3	288°09.6'	225°45.6' N	21°00.9'	210°17.0' N	25°34.1'	349°00.3' S	20°56.0'	344°04.6' S	19°53.7'	307°33.8' S	10°34.4'	
4	303°12.0'	240°45.5' N	21°01.3'	225°20.7' N	25°33.5'	4°02.9' S	20°56.0'	359°07.1' S	19°53.8'	322°34.7' S	10°33.8'	
5	318°14.5'	255°45.4' N	21°01.8'	240°24.4' N	25°32.9'	19°05.4' S	20°56.0'	14°09.6' S	19°53.8'	337°35.5' S	10°33.2'	
6	333°16.9'	270°45.4' N	21°02.2'	255°28.1' N	25°32.4'	34°08.0' S	20°56.0'	29°12.1' S	19°53.8'	352°36.4' S	10°32.7'	
7	348°19.4'	285°45.3' N	21°02.7'	270°31.7' N	25°31.8'	49°10.5' S	20°56.1'	44°14.7' S	19°53.8'	7°37.2' S	10°32.1'	
8	3°21.9'	300°45.2' N	21°03.1'	285°35.4' N	25°31.2'	64°13.1' S	20°56.1'	59°17.2' S	19°53.8'	22°38.1' S	10°31.5'	
9	18°24.3'	315°45.2' N	21°03.6'	300°39.1' N	25°30.6'	79°15.7' S	20°56.1'	74°19.7' S	19°53.8'	37°39.0' S	10°30.9'	
10	33°26.8'	330°45.1' N	21°04.0'	315°42.8' N	25°30.1'	94°18.2' S	20°56.1'	89°22.2' S	19°53.9'	52°39.8' S	10°30.4'	
11	48°29.3'	345°45.0' N	21°04.4'	330°46.5' N	25°29.5'	109°20.8' S	20°56.2'	104°24.7' S	19°53.9'	67°40.7' S	10°29.8'	
12	63°31.7'	0°45.0' N	21°04.9'	345°50.3' N	25°28.9'	124°23.3' S	20°56.2'	119°27.3' S	19°53.9'	82°41.5' S	10°29.2'	
13	78°34.2'	15°44.9' N	21°05.3'	0°54.0' N	25°28.3'	139°25.9' S	20°56.2'	134°29.8' S	19°53.9'	97°42.4' S	10°28.7'	
14	93°36.7'	30°44.8' N	21°05.7'	15°57.7' N	25°27.8'	154°28.4' S	20°56.2'	149°32.3' S	19°53.9'	112°43.2' S	10°28.1'	
15	108°39.1'	45°44.8' N	21°06.2'	31°01.4' N	25°27.2'	169°31.0' S	20°56.3'	164°34.8' S	19°53.9'	127°44.1' S	10°27.5'	
16	123°41.6'	60°44.7' N	21°06.6'	46°05.1' N	25°26.6'	184°33.5' S	20°56.3'	179°37.4' S	19°54.0'	142°45.0' S	10°26.9'	
17	138°44.1'	75°44.6' N	21°07.0'	61°08.8' N	25°26.0'	199°36.1' S	20°56.3'	194°39.9' S	19°54.0'	157°45.8' S	10°26.4'	
18	153°46.5'	90°44.6' N	21°07.5'	76°12.6' N	25°25.4'	214°38.6' S	20°56.3'	209°42.4' S	19°54.0'	172°46.7' S	10°25.8'	
19	168°49.0'	105°44.5' N	21°07.9'	91°16.3' N	25°24.8'	229°41.2' S	20°56.4'	224°44.9' S	19°54.0'	187°47.5' S	10°25.2'	
20	183°51.4'	120°44.4' N	21°08.3'	106°20.0' N	25°24.2'	244°43.7' S	20°56.4'	239°47.5' S	19°54.0'	202°48.4' S	10°24.6'	
21	198°53.9'	135°44.3' N	21°08.8'	121°23.8' N	25°23.7'	259°46.3' S	20°56.4'	254°50.0' S	19°54.0'	217°49.3' S	10°24.1'	
22	213°56.4'	150°44.3' N	21°09.2'	136°27.5' N	25°23.1'	274°48.9' S	20°56.4'	269°52.5' S	19°54.1'	232°50.1' S	10°23.5'	
23	228°58.8'	165°44.2' N	21°09.6'	151°31.3' N	25°22.5'	289°51.4' S	20°56.4'	284°55.0' S	19°54.1'	247°51.0' S	10°22.9'	
		SD 15.8' d 0.4'		v 3.7' d -0.6'		v 2.6' d -0.0'		v 2.5' d -0.0'		v 0.9' d 0.6'		
Mer. pass.		11 h 57 m 1 s		12 h 56 m		3 h 44 m		4 h 4 m		6 h 30 m		

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Arcturus	-Regulus	-Procyon	-Pollux	+Venus	+Betelgeuse	+Capella	+Rigel
0	152°32.5' N	23°33.2'	8.7'	2.7'	56.1'	110°27.4'	59°39.3'	29°59.0'	23°54.1'	11°35.8'			
1	167°00.2' N	23°36.0'	8.6'	2.6'	56.1'	109°59.1'	59°07.4'	29°34.2'	23°22.7'	12°07.4'			
2	181°27.8' N	23°38.6'	8.6'	2.5'	56.1'	109°30.7'	58°35.5'	29°09.6'	22°51.3'	12°39.1'			
3	195°55.4' N	23°41.1'	8.5'	2.4'	56.2'	109°02.3'	58°03.5'	28°45.2'	22°20.0'	13°11.0'			34°26.3'
4	210°22.9' N	23°43.5'	8.5'	2.2'	56.2'	108°33.9'	57°31.5'	28°21.1'	21°48.6'	13°43.0'			34°41.7'
5	224°50.4' N	23°45.7'	8.4'	2.1'	56.2'	108°05.4'	56°59.6'	27°57.2'	21°17.2'	14°15.1'			34°57.3'
6	239°17.8' N	23°47.8'	8.4'	2.0'	56.2'	107°36.8'	56°27.6'	27°33.5'	20°45.9'	14°47.3'			35°13.3'
7	253°45.2' N	23°49.8'	8.4'	1.8'	56.2'	107°08.3'	55°55.5'	27°10.0'	20°14.6'	15°19.6'			35°29.7'
8	268°12.6' N	23°51.6'	8.3'	1.7'	56.3'	106°39.7'	55°23.5'	26°46.9'	19°43.3'	15°52.1'			35°46.3'
9	282°39.9' N	23°53.3'	8.3'	1.6'	56.3'	106°11.0'	54°51.4'	26°24.0'	19°12.0'	16°24.6'			36°03.3'
10	297°07.1' N	23°54.9'	8.2'	1.4'	56.3'	105°42.4'	54°19.3'	26°01.4'	18°40.7'	16°57.2'			36°20.6'
11	311°34.4' N	23°56.3'	8.2'	1.3'	56.3'	105°13.7'	53°47.2'	25°39.1'	18°09.5'	17°29.8'	18°09.9'		36°38.2'
12	326°01.6' N	23°57.7'	8.2'	1.2'	56.4'	104°44.9'	53°15.1'	25°17.1'	17°38.3'	18°02.6'	18°25.5'		36°56.1'
13	340°28.8' N	23°58.8'	8.1'	1.0'	56.4'	104°16.1'	52°43.0'	24°55.4'	17°07.2'	18°35.4'	18°41.8'	26°37.4'	37°14.2'
14	354°55.9' N	23°59.9'	8.1'	0.9'	56.4'	103°47.3'	52°10.8'	24°34.1'	16°36.1'	19°08.3'	18°58.8'	26°52.6'	37°32.7'
15	9°23.0' N	24°00.8'	8.1'	0.8'	56.4'	103°18.4'	51°38.6'	24°13.2'	16°05.1'	19°41.2'	19°16.4'	27°08.3'	37°51.4'
16	23°50.0' N	24°01.6'	8.0'	0.6'	56.4'	102°49.5'	51°06.4'	23°52.6'	15°34.1'	20°14.2'	19°34.6'	27°24.4'	38°10.4'
17	38°17.1' N	24°02.2'	8.0'	0.5'	56.5'	102°20.6'	50°34.2'	23°32.5'	15°03.2'	20°47.2'	19°53.4'	27°41.0'	38°29.7'
18	52°44.1' N	24°02.7'	8.0'	0.4'	56.5'	101°51.7'	50°01.9'	23°12.7'	14°32.4'	21°20.3'	20°12.8'	27°58.0'	38°49.2'
19	67°11.1' N	24°03.1'	8.0'	0.2'	56.5'	101°22.7'	49°29.7'	22°53.4'	14°01.7'	21°53.4'	20°32.7'	28°15.4'	39°09.0'
20	81°38.0' N	24°03.3'	7.9'	0.1'	56.5'	100°53.7'	48°57.4'	22°34.6'	13°31.0'	22°26.6'	20°53.2'	28°33.2'	39°29.0'
21	96°04.9' N	24°03.4'	7.9'	-0.0'	56.5'	100°24.6'	48°25.1'	22°16.3'	13°00.6'	22°59.9'	21°14.1'	28°51.5'	39°49.3'
22	110°31.8' N	24°03.4'	7.9'	-0.2'	56.6'	99°55.5'	47°52.7'	21°58.4'	12°30.2'	23°33.2'	21°35.5'	29°10.1'	40°09.8'
23	124°58.7' N	24°03.2'	7.9'	-0.3'	56.6'	99°26.4'	47°20.4'	21°41.1'	12°00.0'	24°06.5'	21°57.3'	29°29.1'	40°30.5'
Mer. pass.		14 h 21 m SD 15.3'		phase 5%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.8'	S 29°30.8'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.5'	N 7°24.5'
Deneb	+1.2	49°28.1'	N 45°20.9'	Acrux	+0.8	173°03.7'	S 63°12.9'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.4'	N 8°55.3'	Regulus	+1.4	207°38.5'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.4'	N 38°48.1'	Pollux	+1.2	243°22.2'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.0'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°09.2'	N 89°20.8'
Rigil Kent	-0.0	139°44.7'	S 60°55.2'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.0'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.8'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.6'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	244°01.3'	180°44.1'	N 21°10.1'	166°35.0'	N 25°21.9'	304°54.0'	S 20°56.5'	299°57.6'	S 19°54.1'	262°51.8'	S 10°22.3'			
1	259°03.8'	195°44.1'	N 21°10.5'	181°38.8'	N 25°21.3'	319°56.5'	S 20°56.5'	315°00.1'	S 19°54.1'	277°52.7'	S 10°21.8'			
2	274°06.2'	210°44.0'	N 21°10.9'	196°42.5'	N 25°20.7'	334°59.1'	S 20°56.5'	330°02.6'	S 19°54.1'	292°53.6'	S 10°21.2'			
3	289°08.7'	225°43.9'	N 21°11.3'	211°46.3'	N 25°20.1'	350°01.6'	S 20°56.5'	345°05.1'	S 19°54.1'	307°54.4'	S 10°20.6'			
4	304°11.2'	240°43.9'	N 21°11.8'	226°50.0'	N 25°19.5'	5°04.2'	S 20°56.6'	0°07.7'	S 19°54.2'	322°55.3'	S 10°20.0'			
5	319°13.6'	255°43.8'	N 21°12.2'	241°53.8'	N 25°18.9'	20°06.8'	S 20°56.6'	15°10.2'	S 19°54.2'	337°56.2'	S 10°19.5'			
6	334°16.1'	270°43.7'	N 21°12.6'	256°57.6'	N 25°18.3'	35°09.3'	S 20°56.6'	30°12.7'	S 19°54.2'	352°57.0'	S 10°18.9'			
7	349°18.6'	285°43.7'	N 21°13.1'	272°01.3'	N 25°17.7'	50°11.9'	S 20°56.6'	45°15.2'	S 19°54.2'	7°57.9'	S 10°18.3'			
8	4°21.0'	300°43.6'	N 21°13.5'	287°05.1'	N 25°17.1'	65°14.4'	S 20°56.7'	60°17.8'	S 19°54.2'	22°58.7'	S 10°17.7'			
9	19°23.5'	315°43.5'	N 21°13.9'	302°08.9'	N 25°16.5'	80°17.0'	S 20°56.7'	75°20.3'	S 19°54.2'	37°59.6'	S 10°17.2'			
10	34°25.9'	330°43.4'	N 21°14.3'	317°12.7'	N 25°15.9'	95°19.6'	S 20°56.7'	90°22.8'	S 19°54.3'	53°00.5'	S 10°16.6'			
11	49°28.4'	345°43.4'	N 21°14.7'	332°16.4'	N 25°15.3'	110°22.1'	S 20°56.7'	105°25.3'	S 19°54.3'	68°01.3'	S 10°16.0'			
12	64°30.9'	0°43.3'	N 21°15.2'	347°20.2'	N 25°14.7'	125°24.7'	S 20°56.8'	120°27.9'	S 19°54.3'	83°02.2'	S 10°15.4'			
13	79°33.3'	15°43.2'	N 21°15.6'	2°24.0'	N 25°14.1'	140°27.2'	S 20°56.8'	135°30.4'	S 19°54.3'	98°03.1'	S 10°14.9'			
14	94°35.8'	30°43.2'	N 21°16.0'	17°27.8'	N 25°13.4'	155°29.8'	S 20°56.8'	150°32.9'	S 19°54.3'	113°03.9'	S 10°14.3'			
15	109°38.3'	45°43.1'	N 21°16.4'	32°31.6'	N 25°12.8'	170°32.4'	S 20°56.8'	165°35.4'	S 19°54.4'	128°04.8'	S 10°13.7'			
16	124°40.7'	60°43.0'	N 21°16.9'	47°35.4'	N 25°12.2'	185°34.9'	S 20°56.9'	180°38.0'	S 19°54.4'	143°05.6'	S 10°13.2'			
17	139°43.2'	75°42.9'	N 21°17.3'	62°39.2'	N 25°11.6'	200°37.5'	S 20°56.9'	195°40.5'	S 19°54.4'	158°06.5'	S 10°12.6'			
18	154°45.7'	90°42.9'	N 21°17.7'	77°43.0'	N 25°11.0'	215°40.0'	S 20°56.9'	210°43.0'	S 19°54.4'	173°07.4'	S 10°12.0'			
19	169°48.1'	105°42.8'	N 21°18.1'	92°46.8'	N 25°10.4'	230°42.6'	S 20°56.9'	225°45.6'	S 19°54.4'	188°08.2'	S 10°11.4'			
20	184°50.6'	120°42.7'	N 21°18.5'	107°50.6'	N 25°09.8'	245°45.2'	S 20°57.0'	240°48.1'	S 19°54.4'	203°09.1'	S 10°10.9'			
21	199°53.1'	135°42.6'	N 21°18.9'	122°54.4'	N 25°09.1'	260°47.7'	S 20°57.0'	255°50.6'	S 19°54.5'	218°10.0'	S 10°10.3'			
22	214°55.5'	150°42.6'	N 21°19.4'	137°58.2'	N 25°08.5'	275°50.3'	S 20°57.0'	270°53.1'	S 19°54.5'	233°10.8'	S 10°09.7'			
23	229°58.0'	165°42.5'	N 21°19.8'	153°02.1'	N 25°07.9'	290°52.9'	S 20°57.0'	285°55.7'	S 19°54.5'	248°11.7'	S 10°09.1'			
		SD 15.8' d 0.4'		v 3.8' d -0.6'		v 2.6' d -0.0'		v 2.5' d -0.0'		v 0.9' d 0.6'				
Mer. pass.		11 h 57 m 7 s		12 h 50 m		3 h 40 m		4 h 0 m		6 h 28 m				

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Arcturus	-Regulus	-Procyon	-Pollux	+Betelgeuse	+Venus	+Capella	+Sun
0	139°25.6'	N 24°02.9'	7.8'	-0.5'	56.6'	98°57.2'	46°48.0'	21°24.3'	11°30.0'	22°19.6'	24°39.9'	29°48.5'	
1	153°52.4'	N 24°02.4'	7.8'	-0.6'	56.6'	98°28.1'	46°15.7'	21°08.1'	11°00.2'	22°42.3'	25°13.3'	30°08.2'	
2	168°19.2'	N 24°01.9'	7.8'	-0.7'	56.6'	97°58.9'	45°43.3'		10°30.7'	23°05.3'	25°46.7'	30°28.3'	
3	182°46.0'	N 24°01.1'	7.8'	-0.9'	56.7'	97°29.6'	45°10.8'		10°01.5'	23°28.8'	26°20.2'	30°48.7'	
4	197°12.8'	N 24°00.3'	7.8'	-1.0'	56.7'	97°00.4'	44°38.4'		9°32.5'	23°52.5'	26°53.8'	31°09.5'	40°07.1'
5	211°39.6'	N 23°59.3'	7.7'	-1.1'	56.7'	96°31.1'	44°05.9'		9°04.0'	24°16.7'	27°27.4'	31°30.5'	40°37.3'
6	226°06.3'	N 23°58.1'	7.7'	-1.3'	56.7'	96°01.8'	43°33.5'		8°36.0'	24°41.1'	28°01.0'	31°51.9'	41°07.5'
7	240°33.0'	N 23°56.8'	7.7'	-1.4'	56.8'	95°32.4'	43°01.0'		8°08.5'	25°05.9'	28°34.6'	32°13.5'	41°37.7'
8	254°59.8'	N 23°55.4'	7.7'	-1.6'	56.8'	95°03.1'	42°28.4'		7°41.6'	25°30.9'	29°08.3'	32°35.5'	42°08.0'
9	269°26.5'	N 23°53.9'	7.7'	-1.7'	56.8'	94°33.7'	41°55.9'			25°56.3'	29°42.0'	32°57.7'	42°38.2'
10	283°53.2'	N 23°52.2'	7.7'	-1.8'	56.8'	94°04.2'	41°23.4'			26°21.9'	30°15.8'	33°20.2'	43°08.5'
11	298°19.9'	N 23°50.3'	7.7'	-2.0'	56.8'	93°34.8'	40°50.8'			26°47.7'	30°49.6'	33°43.0'	43°38.9'
12	312°46.5'	N 23°48.4'	7.7'	-2.1'	56.9'	93°05.3'	40°18.2'			27°13.9'	31°23.4'	34°06.0'	44°09.2'
13	327°13.2'	N 23°46.3'	7.7'	-2.3'	56.9'	92°35.8'	39°45.6'			27°40.2'	31°57.3'	34°29.3'	44°39.6'
14	341°39.9'	N 23°44.0'	7.7'	-2.4'	56.9'	92°06.3'	39°13.0'			28°06.8'	32°31.2'	34°52.8'	45°10.0'
15	356°06.6'	N 23°41.6'	7.7'	-2.5'	56.9'	91°36.8'	38°40.3'			28°33.6'	33°05.1'	35°16.5'	45°40.4'
16	10°33.2'	N 23°39.1'	7.7'	-2.7'	57.0'	91°07.2'	38°07.7'			29°00.6'	33°39.1'	35°40.5'	46°10.8'
17	24°59.9'	N 23°36.4'	7.7'	-2.8'	57.0'	90°37.6'	37°35.0'			29°27.8'	34°13.1'	36°04.7'	46°41.3'
18	39°26.6'	N 23°33.6'	7.7'	-2.9'	57.0'	90°08.0'	37°02.3'			29°55.2'	34°47.1'	36°29.1'	47°11.8'
19	53°53.2'	N 23°30.7'	7.7'	-3.1'	57.0'	89°38.4'	36°29.6'			30°22.8'	35°21.1'	36°53.7'	47°42.3'
20	68°19.9'	N 23°27.6'	7.7'	-3.2'	57.0'	89°08.7'	35°56.8'			30°50.6'	35°55.2'	37°18.5'	48°12.8'
21	82°46.6'	N 23°24.4'	7.7'	-3.4'	57.1'	88°39.1'	35°24.1'			31°18.5'	36°29.4'	37°43.5'	48°43.4'
22	97°13.3'	N 23°21.0'	7.7'	-3.5'	57.1'	88°09.4'	34°51.3'			31°46.6'	37°03.5'	38°08.7'	49°14.0'
23	111°39.9'	N 23°17.5'	7.7'	-3.6'	57.1'	87°39.7'	34°18.5'			32°14.9'	37°37.7'	38°34.1'	49°44.6'
Mer. pass.		15 h 16 m SD 15.4'		phase 11%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.8'	S 29°30.8'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.1'	N 45°20.9'	Acrux	+0.8	173°03.7'	S 63°12.9'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.4'	N 8°55.3'	Regulus	+1.4	207°38.5'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.4'	N 38°48.1'	Pollux	+1.2	243°22.2'	N 27°58.6'	Aldebaran	+0.9	290°44.3'	N 16°32.8'
Antares	+1.1	112°20.0'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°08.9'	N 89°20.8'
Rigil Kent	-0.0	139°44.7'	S 60°55.2'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.0'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.8'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.6'				

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	245°00.4'	180°42.4'	N 21°20.2'	168°05.9'	N 25°07.3'	305°55.4'	S 20°57.1'	300°58.2'	S 19°54.5'	263°12.6'	S 10°08.6'			
1	260°02.9'	195°42.3'	N 21°20.6'	183°09.7'	N 25°06.7'	320°58.0'	S 20°57.1'	316°00.7'	S 19°54.5'	278°13.4'	S 10°08.0'			
2	275°05.4'	210°42.3'	N 21°21.0'	198°13.5'	N 25°06.0'	336°00.6'	S 20°57.1'	331°03.3'	S 19°54.5'	293°14.3'	S 10°07.4'			
3	290°07.8'	225°42.2'	N 21°21.4'	213°17.4'	N 25°05.4'	351°03.1'	S 20°57.1'	346°05.8'	S 19°54.6'	308°15.2'	S 10°06.8'			
4	305°10.3'	240°42.1'	N 21°21.8'	228°21.2'	N 25°04.8'	6°05.7'	S 20°57.2'	1°08.3'	S 19°54.6'	323°16.0'	S 10°06.3'			
5	320°12.8'	255°42.0'	N 21°22.2'	243°25.0'	N 25°04.2'	21°08.3'	S 20°57.2'	16°10.8'	S 19°54.6'	338°16.9'	S 10°05.7'			
6	335°15.2'	270°42.0'	N 21°22.7'	258°28.9'	N 25°03.5'	36°10.8'	S 20°57.2'	31°13.4'	S 19°54.6'	353°17.8'	S 10°05.1'			
7	350°17.7'	285°41.9'	N 21°23.1'	273°32.7'	N 25°02.9'	51°13.4'	S 20°57.2'	46°15.9'	S 19°54.6'	8°18.6'	S 10°04.5'			
8	5°20.2'	300°41.8'	N 21°23.5'	288°36.6'	N 25°02.3'	66°16.0'	S 20°57.3'	61°18.4'	S 19°54.7'	23°19.5'	S 10°03.9'			
9	20°22.6'	315°41.7'	N 21°23.9'	303°40.4'	N 25°01.6'	81°18.5'	S 20°57.3'	76°21.0'	S 19°54.7'	38°20.4'	S 10°03.4'			
10	35°25.1'	330°41.7'	N 21°24.3'	318°44.3'	N 25°01.0'	96°21.1'	S 20°57.3'	91°23.5'	S 19°54.7'	53°21.2'	S 10°02.8'			
11	50°27.5'	345°41.6'	N 21°24.7'	333°48.1'	N 25°00.4'	111°23.7'	S 20°57.3'	106°26.0'	S 19°54.7'	68°22.1'	S 10°02.2'			
12	65°30.0'	0°41.5'	N 21°25.1'	348°52.0'	N 24°59.7'	126°26.2'	S 20°57.4'	121°28.5'	S 19°54.7'	83°23.0'	S 10°01.6'			
13	80°32.5'	15°41.4'	N 21°25.5'	3°55.8'	N 24°59.1'	141°28.8'	S 20°57.4'	136°31.1'	S 19°54.7'	98°23.8'	S 10°01.1'			
14	95°34.9'	30°41.4'	N 21°25.9'	18°59.7'	N 24°58.4'	156°31.4'	S 20°57.4'	151°33.6'	S 19°54.8'	113°24.7'	S 10°00.5'			
15	110°37.4'	45°41.3'	N 21°26.3'	34°03.6'	N 24°57.8'	171°33.9'	S 20°57.5'	166°36.1'	S 19°54.8'	128°25.6'	S 9°59.9'			
16	125°39.9'	60°41.2'	N 21°26.7'	49°07.4'	N 24°57.2'	186°36.5'	S 20°57.5'	181°38.7'	S 19°54.8'	143°26.5'	S 9°59.3'			
17	140°42.3'	75°41.1'	N 21°27.1'	64°11.3'	N 24°56.5'	201°39.1'	S 20°57.5'	196°41.2'	S 19°54.8'	158°27.3'	S 9°58.8'			
18	155°44.8'	90°41.1'	N 21°27.5'	79°15.2'	N 24°55.9'	216°41.7'	S 20°57.5'	211°43.7'	S 19°54.8'	173°28.2'	S 9°58.2'			
19	170°47.3'	105°41.0'	N 21°27.9'	94°19.0'	N 24°55.2'	231°44.2'	S 20°57.6'	226°46.3'	S 19°54.9'	188°29.1'	S 9°57.6'			
20	185°49.7'	120°40.9'	N 21°28.3'	109°22.9'	N 24°54.6'	246°46.8'	S 20°57.6'	241°48.8'	S 19°54.9'	203°29.9'	S 9°57.0'			
21	200°52.2'	135°40.8'	N 21°28.7'	124°26.8'	N 24°53.9'	261°49.4'	S 20°57.6'	256°51.3'	S 19°54.9'	218°30.8'	S 9°56.5'			
22	215°54.7'	150°40.7'	N 21°29.1'	139°30.7'	N 24°53.3'	276°51.9'	S 20°57.6'	271°53.9'	S 19°54.9'	233°31.7'	S 9°55.9'			
23	230°57.1'	165°40.7'	N 21°29.5'	154°34.6'	N 24°52.6'	291°54.5'	S 20°57.7'	286°56.4'	S 19°54.9'	248°32.5'	S 9°55.3'			
		SD 15.8' d 0.4'		v 3.9' d -0.6'		v 2.6' d -0.0'		v 2.5' d -0.0'		v 0.9' d 0.6'				
Mer. pass.		11 h 57 m 14 s		12 h 44 m		3 h 36 m		3 h 55 m		6 h 27 m				

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Acrux	-Spica	-Arcturus	-Regulus	+Pollux	+Procyon	+Betelgeuse	+Sun
0	126°06.6'	N 23°13.9'	7.7'	-3.8'	57.1'	101°22.7'	87°49.6'	87°10.0'	33°45.8'			32°43.3'	50°15.2'
1	140°33.3'	N 23°10.1'	7.7'	-3.9'	57.2'	101°05.3'	87°16.8'	86°40.2'	33°12.9'			33°11.8'	50°45.9'
2	155°00.0'	N 23°06.2'	7.7'	-4.0'	57.2'	100°47.8'	86°43.9'	86°10.5'	32°40.1'			33°40.5'	51°16.6'
3	169°26.7'	N 23°02.2'	7.7'	-4.2'	57.2'	100°30.3'	86°11.0'	85°40.7'	32°07.3'			34°09.4'	51°47.3'
4	183°53.5'	N 22°58.0'	7.7'	-4.3'	57.2'	100°12.7'	85°38.1'	85°10.9'	31°34.4'			34°38.4'	52°18.0'
5	198°20.2'	N 22°53.7'	7.8'	-4.5'	57.2'	99°55.1'	85°05.1'	84°41.1'	31°01.6'			35°07.5'	52°48.8'
6	212°47.0'	N 22°49.2'	7.8'	-4.6'	57.3'	99°37.5'	84°32.1'	84°11.3'	30°28.7'			35°36.7'	53°19.5'
7	227°13.7'	N 22°44.6'	7.8'	-4.7'	57.3'	99°19.7'	83°59.2'	83°41.4'	29°55.8'			36°06.1'	53°50.3'
8	241°40.5'	N 22°39.9'	7.8'	-4.9'	57.3'	99°02.0'	83°26.1'	83°11.6'	29°22.9'	8°16.7'		36°35.5'	54°21.2'
9	256°07.3'	N 22°35.0'	7.8'	-5.0'	57.3'	98°44.2'	82°53.1'	82°41.7'	28°50.0'	8°44.9'		37°05.1'	54°52.0'
10	270°34.1'	N 22°30.0'	7.8'	-5.1'	57.4'	98°26.3'	82°20.0'	82°11.8'	28°17.1'	9°13.7'		37°34.8'	55°22.0'
11	285°01.0'	N 22°24.9'	7.9'	-5.3'	57.4'	98°08.4'	81°46.9'	81°41.9'	27°44.1'	9°43.0'		38°04.6'	55°53.8'
12	299°27.8'	N 22°19.7'	7.9'	-5.4'	57.4'	97°50.4'	81°13.8'	81°12.0'	27°11.2'	10°12.7'		38°34.5'	56°24.7'
13	313°54.7'	N 22°14.3'	7.9'	-5.5'	57.4'	97°32.4'	80°40.7'	80°42.1'	26°38.2'	10°42.8'		39°04.5'	56°55.7'
14	328°21.6'	N 22°08.7'	7.9'	-5.7'	57.4'	97°14.4'	80°07.6'	80°12.2'	26°05.3'	11°13.2'	20°38.4'	39°34.6'	57°26.6'
15	342°48.5'	N 22°03.1'	7.9'	-5.8'	57.5'	96°56.3'	79°34.4'	79°42.2'	25°32.3'	11°43.9'	20°53.9'	40°04.8'	57°57.6'
16	357°15.4'	N 21°57.3'	8.0'	-5.9'	57.5'	96°38.2'	79°01.2'	79°12.3'	24°59.3'	12°14.9'	21°09.9'	40°35.1'	58°28.7'
17	1°42.4'	N 21°51.4'	8.0'	-6.1'	57.5'	96°20.0'	78°27.9'	78°42.3'	24°26.4'	12°46.1'	21°26.7'	41°05.4'	58°59.7'
18	26°09.4'	N 21°45.3'	8.0'	-6.2'	57.5'	96°01.8'	77°54.7'	78°12.4'	23°53.4'	13°17.5'	21°44.0'	41°35.9'	59°30.8'
19	40°36.4'	N 21°39.1'	8.0'	-6.3'	57.6'	95°43.5'	77°21.4'	77°42.4'	23°20.4'	13°49.0'	22°02.0'	42°06.5'	60°01.9'
20	55°03.4'	N 21°32.8'	8.1'	-6.4'	57.6'	95°25.3'	76°48.1'	77°12.4'	22°47.4'	14°20.8'	22°20.6'	42°37.1'	60°33.0'
21	69°30.5'	N 21°26.4'	8.1'	-6.6'	57.6'	95°06.9'	76°14.8'	76°42.4'	22°14.5'	14°52.7'	22°39.7'	43°07.8'	61°04.2'
22	83°57.5'	N 21°19.8'	8.1'	-6.7'	57.6'	94°48.6'	75°41.5'	76°12.4'	21°41.5'	15°24.7'	22°59.3'	43°38.6'	61°35.3'
23	98°24.7'	N 21°13.1'	8.1'	-6.8'	57.7'	94°30.2'	75°08.1'	75°42.4'	21°08.5'	15°56.9'	23°19.5'	44°09.5'	62°06.5'
Mer. pass.		16 h 11 m SD 15.6'		phase 18%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.7'	S 29°30.8'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.0'	N 45°20.9'	Acrux	+0.8	173°03.7'	S 63°12.9'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.4'	N 8°55.3'	Regulus	+1.4	207°38.5'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.4'	N 38°48.1'	Pollux	+1.2	243°22.2'	N 27°58.6'	Aldebaran	+0.9	290°44.2'	N 16°32.8'
Antares	+1.1	112°20.0'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°08.6'	N 89°20.8'
Rigil Kent	-0.0	139°44.7'	S 60°55.2'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.0'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.8'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.6'				

Thursday 28 May 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec		GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	245°59.6'	180°40.6'	N 21°29.9'	169°38.5'	N 24°52.0'		306°57.1'	S 20°57.7'	301°58.9'	S 19°55.0'	263°33.4'	S 9°54.7'		
1	261°02.0'	195°40.5'	N 21°30.3'	184°42.3'	N 24°51.3'		321°59.7'	S 20°57.7'	317°01.5'	S 19°55.0'	278°34.3'	S 9°54.2'		
2	276°04.5'	210°40.4'	N 21°30.7'	199°46.2'	N 24°50.7'		337°02.2'	S 20°57.7'	332°04.0'	S 19°55.0'	293°35.2'	S 9°53.6'		
3	291°07.0'	225°40.3'	N 21°31.1'	214°50.1'	N 24°50.0'		352°04.8'	S 20°57.8'	347°06.5'	S 19°55.0'	308°36.0'	S 9°53.0'		
4	306°09.4'	240°40.3'	N 21°31.5'	229°54.0'	N 24°49.4'		7°07.4'	S 20°57.8'	2°09.1'	S 19°55.0'	323°36.9'	S 9°52.4'		
5	321°11.9'	255°40.2'	N 21°31.9'	244°57.9'	N 24°48.7'		22°10.0'	S 20°57.8'	17°11.6'	S 19°55.0'	338°37.8'	S 9°51.9'		
6	336°14.4'	270°40.1'	N 21°32.3'	260°01.8'	N 24°48.1'		37°12.5'	S 20°57.9'	32°14.1'	S 19°55.1'	353°38.6'	S 9°51.3'		
7	351°16.8'	285°40.0'	N 21°32.7'	275°05.7'	N 24°47.4'		52°15.1'	S 20°57.9'	47°16.7'	S 19°55.1'	8°39.5'	S 9°50.7'		
8	6°19.3'	300°39.9'	N 21°33.1'	290°09.7'	N 24°46.8'		67°17.7'	S 20°57.9'	62°19.2'	S 19°55.1'	23°40.4'	S 9°50.1'		
9	21°21.8'	315°39.9'	N 21°33.5'	305°13.6'	N 24°46.1'		82°20.3'	S 20°57.9'	77°21.7'	S 19°55.1'	38°41.3'	S 9°49.5'		
10	36°24.2'	330°39.8'	N 21°33.9'	320°17.5'	N 24°45.4'		97°22.8'	S 20°58.0'	92°24.3'	S 19°55.1'	53°42.1'	S 9°49.0'		
11	51°26.7'	345°39.7'	N 21°34.3'	335°21.4'	N 24°44.8'		112°25.4'	S 20°58.0'	107°26.8'	S 19°55.2'	68°43.0'	S 9°48.4'		
12	66°29.2'	0°39.6'	N 21°34.7'	350°25.3'	N 24°44.1'		127°28.0'	S 20°58.0'	122°29.3'	S 19°55.2'	83°43.9'	S 9°47.8'		
13	81°31.6'	15°39.5'	N 21°35.1'	5°29.2'	N 24°43.5'		142°30.6'	S 20°58.1'	137°31.9'	S 19°55.2'	98°44.7'	S 9°47.2'		
14	96°34.1'	30°39.5'	N 21°35.5'	20°33.2'	N 24°42.8'		157°33.1'	S 20°58.1'	152°34.4'	S 19°55.2'	113°45.6'	S 9°46.7'		
15	111°36.5'	45°39.4'	N 21°35.8'	35°37.1'	N 24°42.1'		172°35.7'	S 20°58.1'	167°36.9'	S 19°55.2'	128°46.5'	S 9°46.1'		
16	126°39.0'	60°39.3'	N 21°36.2'	50°41.0'	N 24°41.5'		187°38.3'	S 20°58.1'	182°39.5'	S 19°55.3'	143°47.4'	S 9°45.5'		
17	141°41.5'	75°39.2'	N 21°36.6'	65°44.9'	N 24°40.8'		202°40.9'	S 20°58.2'	197°42.0'	S 19°55.3'	158°48.2'	S 9°44.9'		
18	156°43.9'	90°39.1'	N 21°37.0'	80°48.9'	N 24°40.1'		217°43.5'	S 20°58.2'	212°44.5'	S 19°55.3'	173°49.1'	S 9°44.4'		
19	171°46.4'	105°39.0'	N 21°37.4'	95°52.8'	N 24°39.4'		232°46.0'	S 20°58.2'	227°47.1'	S 19°55.3'	188°50.0'	S 9°43.8'		
20	186°48.9'	120°39.0'	N 21°37.8'	110°56.7'	N 24°38.8'		247°48.6'	S 20°58.2'	242°49.6'	S 19°55.3'	203°50.9'	S 9°43.2'		
21	201°51.3'	135°38.9'	N 21°38.2'	126°00.7'	N 24°38.1'		262°51.2'	S 20°58.3'	257°52.1'	S 19°55.4'	218°51.7'	S 9°42.6'		
22	216°53.8'	150°38.8'	N 21°38.6'	141°04.6'	N 24°37.4'		277°53.8'	S 20°58.3'	272°54.7'	S 19°55.4'	233°52.6'	S 9°42.1'		
23	231°56.3'	165°38.7'	N 21°38.9'	156°08.6'	N 24°36.7'		292°56.4'	S 20°58.3'	287°57.2'	S 19°55.4'	248°53.5'	S 9°41.5'		
		SD 15.8' d 0.4'		v 3.9' d -0.7'			v 2.6' d -0.0'		v 2.5' d -0.0'		v 0.9' d 0.6'			
Mer. pass.		11 h 57 m 22 s		12 h 38 m			3 h 32 m		3 h 51 m		6 h 25 m			

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Acrux	-Arcturus	-Spica	-Regulus	+Pollux	+Procyon	+Betelgeuse	+Sun
0	112°51.8'	N 21°06.3'	8.2'	-7.0'	57.7'	94°11.8'	75°12.4'	74°34.7'	20°35.6'	16°29.1'	23°40.2'	44°40.4'	62°37.7'
1	127°19.0'	N 20°59.3'	8.2'	-7.1'	57.7'	93°53.4'	74°42.4'	74°01.3'	20°02.7'	17°01.5'	24°01.3'	45°11.4'	63°09.0'
2	141°46.2'	N 20°52.2'	8.2'	-7.2'	57.7'	93°34.9'	74°12.4'	73°27.9'	19°29.7'	17°34.0'	24°22.9'	45°42.5'	63°40.3'
3	156°13.4'	N 20°45.0'	8.3'	-7.3'	57.7'	93°16.4'	73°42.4'	72°54.4'	18°56.8'	18°06.6'	24°44.9'	46°13.7'	64°11.6'
4	170°40.7'	N 20°37.7'	8.3'	-7.5'	57.8'	92°57.9'	73°12.4'	72°21.0'	18°24.0'	18°39.3'	25°07.4'	46°44.9'	64°42.9'
5	185°08.0'	N 20°30.2'	8.3'	-7.6'	57.8'	92°39.3'	72°42.3'	71°47.5'	17°51.1'	19°12.0'	25°30.3'	47°16.2'	65°14.2'
6	199°35.3'	N 20°22.7'	8.4'	-7.7'	57.8'	92°20.7'	72°12.3'	71°13.9'	17°18.3'	19°44.9'	25°53.5'	47°47.5'	65°45.6'
7	214°02.6'	N 20°15.0'	8.4'	-7.8'	57.8'	92°02.1'	71°42.3'	70°40.4'	16°45.5'	20°17.8'	26°17.1'	48°19.0'	66°17.0'
8	228°30.0'	N 20°07.1'	8.4'	-7.9'	57.9'	91°43.5'	71°12.3'	70°06.8'	16°12.8'	20°50.8'	26°41.1'	48°50.5'	66°48.4'
9	242°57.5'	N 19°59.2'	8.5'	-8.1'	57.9'	91°24.9'	70°42.3'	69°33.2'	15°40.1'	21°23.8'	27°05.4'	49°22.0'	67°19.9'
10	257°24.9'	N 19°51.1'	8.5'	-8.2'	57.9'	91°06.2'	70°12.3'	68°59.6'	15°07.5'	21°56.9'	27°30.1'	49°53.6'	67°51.3'
11	271°52.4'	N 19°42.9'	8.5'	-8.3'	57.9'	90°47.5'	69°42.3'	68°26.0'	14°34.9'	22°30.1'	27°55.1'	50°25.3'	68°22.8'
12	286°19.9'	N 19°34.6'	8.6'	-8.4'	57.9'	90°28.8'	69°12.2'	67°52.3'	14°02.4'	23°03.3'	28°20.3'	50°57.0'	68°54.3'
13	300°47.5'	N 19°26.2'	8.6'	-8.5'	58.0'	90°10.1'	68°42.2'	67°18.6'	13°30.1'	23°36.6'	28°45.9'	51°28.8'	69°25.9'
14	315°15.1'	N 19°17.7'	8.6'	-8.7'	58.0'	89°51.4'	68°12.3'	66°44.9'	12°57.8'	24°10.0'	29°11.8'	52°00.6'	69°57.5'
15	329°42.7'	N 19°09.0'	8.7'	-8.8'	58.0'	89°32.6'	67°42.3'	66°11.2'	12°25.7'	24°43.4'	29°37.9'	52°32.5'	70°29.1'
16	344°10.4'	N 19°00.2'	8.7'	-8.9'	58.0'	89°13.9'	67°12.3'	65°37.5'	11°53.7'	25°16.8'	30°04.2'	53°04.5'	71°00.7'
17	358°38.1'	N 18°51.4'	8.7'	-9.0'	58.1'	88°55.1'	66°42.3'	65°03.7'	11°21.8'	25°50.3'	30°30.9'	53°36.5'	71°32.3'
18	13°05.8'	N 18°42.4'	8.8'	-9.1'	58.1'	88°36.3'	66°12.4'	64°29.9'	10°50.2'	26°23.8'	30°57.7'	54°08.6'	72°04.0'
19	27°33.6'	N 18°33.2'	8.8'	-9.2'	58.1'	88°17.6'	65°42.4'	63°56.1'	10°18.8'	26°57.4'	31°24.8'	54°40.7'	72°35.7'
20	42°01.4'	N 18°24.0'	8.8'	-9.3'	58.1'	87°58.8'	65°12.5'	63°22.2'	9°47.7'	27°31.1'	31°52.2'	55°12.8'	73°07.4'
21	56°29.2'	N 18°14.7'	8.9'	-9.4'	58.2'	87°40.0'	64°42.6'	62°48.4'	9°16.9'	28°04.7'	32°19.7'	55°45.0'	73°39.2'
22	70°57.1'	N 18°05.2'	8.9'	-9.6'	58.2'	87°21.2'	64°12.7'	62°14.5'	8°46.5'	28°38.5'	32°47.4'	56°17.3'	74°11.0'
23	85°25.0'	N 17°55.7'	9.0'	-9.7'	58.2'	87°02.4'	63°42.8'	61°40.6'	8°16.6'	29°12.2'	33°15.4'	56°49.6'	74°42.8'
Mer. pass.		17 h 6 m SD 15.7' phase 27%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.7'	S 29°30.8'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.0'	N 45°20.9'	Acrux	+0.8	173°03.7'	S 63°12.9'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.4'	N 8°55.3'	Regulus	+1.4	207°38.5'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.4'	N 38°48.1'	Pollux	+1.2	243°22.2'	N 27°58.6'	Aldebaran	+0.9	290°44.2'	N 16°32.8'
Antares	+1.1	112°20.0'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°08.4'	N 89°20.8'
Rigil Kent	-0.0	139°44.7'	S 60°55.2'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.0'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.8'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.6'				

Friday 29 May 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	246°58.7'	180°38.6'	N 21°39.3'	171°12.5'	N 24°36.1'	307°58.9'	S 20°58.4'	302°59.8'	S 19°55.4'	263°54.4'	S 9°40.9'			
1	262°01.2'	195°38.6'	N 21°39.7'	186°16.5'	N 24°35.4'	323°01.5'	S 20°58.4'	318°02.3'	S 19°55.4'	278°55.2'	S 9°40.3'			
2	277°03.7'	210°38.5'	N 21°40.1'	201°20.4'	N 24°34.7'	338°04.1'	S 20°58.4'	333°04.8'	S 19°55.5'	293°56.1'	S 9°39.7'			
3	292°06.1'	225°38.4'	N 21°40.5'	216°24.4'	N 24°34.0'	353°06.7'	S 20°58.4'	348°07.4'	S 19°55.5'	308°57.0'	S 9°39.2'			
4	307°08.6'	240°38.3'	N 21°40.8'	231°28.3'	N 24°33.4'	8°09.3'	S 20°58.5'	3°09.9'	S 19°55.5'	323°57.9'	S 9°38.6'			
5	322°11.0'	255°38.2'	N 21°41.2'	246°32.3'	N 24°32.7'	23°11.8'	S 20°58.5'	18°12.4'	S 19°55.5'	338°58.8'	S 9°38.0'			
6	337°13.5'	270°38.1'	N 21°41.6'	261°36.2'	N 24°32.0'	38°14.4'	S 20°58.5'	33°15.0'	S 19°55.5'	353°59.6'	S 9°37.4'			
7	352°16.0'	285°38.0'	N 21°42.0'	276°40.2'	N 24°31.3'	53°17.0'	S 20°58.6'	48°17.5'	S 19°55.6'	9°00.5'	S 9°36.9'			
8	7°18.4'	300°38.0'	N 21°42.4'	291°44.2'	N 24°30.6'	68°19.6'	S 20°58.6'	63°20.1'	S 19°55.6'	24°01.4'	S 9°36.3'			
9	22°20.9'	315°37.9'	N 21°42.7'	306°48.1'	N 24°29.9'	83°22.2'	S 20°58.6'	78°22.6'	S 19°55.6'	39°02.3'	S 9°35.7'			
10	37°23.4'	330°37.8'	N 21°43.1'	321°52.1'	N 24°29.3'	98°24.8'	S 20°58.6'	93°25.1'	S 19°55.6'	54°03.1'	S 9°35.1'			
11	52°25.8'	345°37.7'	N 21°43.5'	336°56.1'	N 24°28.6'	113°27.4'	S 20°58.7'	108°27.7'	S 19°55.6'	69°04.0'	S 9°34.5'			
12	67°28.3'	0°37.6'	N 21°43.9'	352°00.0'	N 24°27.9'	128°29.9'	S 20°58.7'	123°30.2'	S 19°55.7'	84°04.9'	S 9°34.0'			
13	82°30.8'	15°37.5'	N 21°44.2'	7°04.0'	N 24°27.2'	143°32.5'	S 20°58.7'	138°32.7'	S 19°55.7'	99°05.8'	S 9°33.4'			
14	97°33.2'	30°37.5'	N 21°44.6'	22°08.0'	N 24°26.5'	158°35.1'	S 20°58.8'	153°35.3'	S 19°55.7'	114°06.6'	S 9°32.8'			
15	112°35.7'	45°37.4'	N 21°45.0'	37°12.0'	N 24°25.8'	173°37.7'	S 20°58.8'	168°37.8'	S 19°55.7'	129°07.5'	S 9°32.2'			
16	127°38.1'	60°37.3'	N 21°45.4'	52°15.9'	N 24°25.1'	188°40.3'	S 20°58.8'	183°40.4'	S 19°55.7'	144°08.4'	S 9°31.7'			
17	142°40.6'	75°37.2'	N 21°45.7'	67°19.9'	N 24°24.4'	203°42.9'	S 20°58.9'	198°42.9'	S 19°55.8'	159°09.3'	S 9°31.1'			
18	157°43.1'	90°37.1'	N 21°46.1'	82°23.9'	N 24°23.7'	218°45.5'	S 20°58.9'	213°45.4'	S 19°55.8'	174°10.2'	S 9°30.5'			
19	172°45.5'	105°37.0'	N 21°46.5'	97°27.9'	N 24°23.0'	233°48.0'	S 20°58.9'	228°48.0'	S 19°55.8'	189°11.0'	S 9°29.9'			
20	187°48.0'	120°36.9'	N 21°46.8'	112°31.9'	N 24°22.3'	248°50.6'	S 20°58.9'	243°50.5'	S 19°55.8'	204°11.9'	S 9°29.3'			
21	202°50.5'	135°36.8'	N 21°47.2'	127°35.9'	N 24°21.6'	263°53.2'	S 20°59.0'	258°53.1'	S 19°55.8'	219°12.8'	S 9°28.8'			
22	217°52.9'	150°36.8'	N 21°47.6'	142°39.8'	N 24°20.9'	278°55.8'	S 20°59.0'	273°55.6'	S 19°55.9'	234°13.7'	S 9°28.2'			
23	232°55.4'	165°36.7'	N 21°48.0'	157°43.8'	N 24°20.2'	293°58.4'	S 20°59.0'	288°58.1'	S 19°55.9'	249°14.6'	S 9°27.6'			
		SD 15.8' d 0.4'		v 4.0' d -0.7'		v 2.6' d -0.0'		v 2.5' d -0.0'		v 0.9' d 0.6'				
Mer. pass.		11 h 57 m 30 s		12 h 32 m		3 h 27 m		3 h 47 m		6 h 24 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Acrux	-Arcturus	-Spica	-Regulus	+Pollux	+Procyon	+Sirius	+Sun
0	99°53.0'	N 17°46.0'	9.0'	-9.8'	58.2'	86°43.6'	63°12.9'	61°06.7'	7°47.3'	29°46.0'	33°43.5'	56°37.2'	75°14.6'
1	114°21.0'	N 17°36.2'	9.0'	-9.9'	58.2'	86°24.8'	62°43.1'	60°32.7'		30°19.9'	34°11.8'	56°58.6'	75°46.5'
2	128°49.0'	N 17°26.4'	9.1'	-10.0'	58.3'	86°06.0'	62°13.3'	59°58.8'		30°53.7'	34°40.3'	57°20.2'	76°18.3'
3	143°17.1'	N 17°16.4'	9.1'	-10.1'	58.3'	85°47.2'	61°43.5'	59°24.8'		31°27.7'	35°09.0'	57°41.9'	76°50.3'
4	157°45.2'	N 17°06.3'	9.1'	-10.2'	58.3'	85°28.4'	61°13.7'	58°50.7'		32°01.6'	35°37.8'	58°03.7'	77°22.2'
5	172°13.3'	N 16°56.1'	9.2'	-10.3'	58.3'	85°09.6'	60°43.9'	58°16.7'		32°35.6'	36°06.8'	58°25.7'	77°54.1'
6	186°41.5'	N 16°45.8'	9.2'	-10.4'	58.4'	84°50.8'	60°14.2'	57°42.7'		33°09.6'	36°36.0'	58°47.9'	78°26.1'
7	201°09.7'	N 16°35.4'	9.2'	-10.5'	58.4'	84°32.0'	59°44.5'	57°08.6'		33°43.7'	37°05.3'	59°10.1'	78°58.1'
8	215°37.9'	N 16°24.9'	9.3'	-10.6'	58.4'	84°13.3'	59°14.8'	56°34.5'		34°17.8'	37°34.7'	59°32.6'	79°30.2'
9	230°06.2'	N 16°14.3'	9.3'	-10.7'	58.4'	83°54.5'	58°45.2'	56°00.4'		34°51.9'	38°04.3'	59°55.1'	80°02.2'
10	244°34.6'	N 16°03.6'	9.4'	-10.8'	58.4'	83°35.8'	58°15.6'	55°26.2'		35°26.1'	38°34.0'	60°17.8'	80°34.3'
11	259°02.9'	N 15°52.8'	9.4'	-10.9'	58.5'	83°17.0'	57°46.0'	54°52.1'		36°00.3'	39°03.9'	60°40.6'	81°06.4'
12	273°31.3'	N 15°41.9'	9.4'	-11.0'	58.5'	82°58.3'	57°16.5'	54°17.9'		36°34.6'	39°33.9'	61°03.5'	81°38.6'
13	287°59.7'	N 15°30.9'	9.5'	-11.1'	58.5'	82°39.6'	56°47.0'	53°43.7'		37°08.8'	40°04.0'	61°26.6'	82°10.7'
14	302°28.2'	N 15°19.8'	9.5'	-11.2'	58.5'	82°20.9'	56°17.5'	53°09.5'		37°43.2'	40°34.2'	61°49.8'	82°42.9'
15	316°56.7'	N 15°08.6'	9.5'	-11.3'	58.6'	82°02.3'	55°48.1'	52°35.2'		38°17.5'	41°04.6'	62°13.1'	83°15.2'
16	331°25.2'	N 14°57.4'	9.6'	-11.4'	58.6'	81°43.6'	55°18.4'	52°01.0'		38°51.9'	41°35.0'	62°36.5'	83°47.4'
17	345°53.8'	N 14°46.0'	9.6'	-11.5'	58.6'	81°25.0'	54°49.7'	51°26.7'		39°26.3'	42°05.6'	63°00.0'	84°19.7'
18	0°22.4'	N 14°34.6'	9.6'	-11.5'	58.6'	81°06.4'	54°20.1'	50°52.4'		40°00.7'	42°36.3'	63°23.7'	84°52.0'
19	14°51.0'	N 14°23.0'	9.7'	-11.6'	58.6'	80°47.8'	53°50.9'	50°18.1'		40°35.2'	43°07.1'	63°47.4'	85°24.3'
20	29°19.7'	N 14°11.4'	9.7'	-11.7'	58.7'	80°29.3'	53°21.7'	49°43.7'		41°09.7'	43°38.0'	64°11.3'	85°56.6'
21	43°48.4'	N 13°59.7'	9.7'	-11.8'	58.7'	80°10.8'	52°52.6'	49°09.4'		41°44.2'	44°09.0'	64°35.2'	86°29.0'
22	58°17.1'	N 13°47.8'	9.8'	-11.9'	58.7'	79°52.3'	52°23.6'	48°35.0'		42°18.8'	44°40.1'	64°59.3'	87°01.4'
23	72°45.9'	N 13°36.0'	9.8'	-12.0'	58.7'	79°33.9'	51°54.6'	48°00.6'	7°48.1'	42°53.4'	45°11.3'	65°23.5'	87°33.8'
Mer. pass.		17 h 58 m SD 15.9'		phase 37%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.7'	S 29°30.8'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.0'	N 45°20.9'	Acrux	+0.8	173°03.7'	S 63°12.9'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.4'	N 8°55.3'	Regulus	+1.4	207°38.5'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.4'	N 38°48.1'	Pollux	+1.2	243°22.2'	N 27°58.6'	Aldebaran	+0.9	290°44.2'	N 16°32.8'
Antares	+1.1	112°20.0'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°08.2'	N 89°20.7'
Rigil Kent	-0.0	139°44.7'	S 60°55.2'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.0'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.8'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.6'				

Saturday 30 May 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	247°57.9'	180°36.6'	N 21°48.3'	172°47.8'	N 24°19.5'	309°01.0'	S 20°59.1'	304°00.7'	S 19°55.9'	264°15.4'	S 9°27.0'			
1	263°00.3'	195°36.5'	N 21°48.7'	187°51.8'	N 24°18.8'	324°03.6'	S 20°59.1'	319°03.2'	S 19°55.9'	279°16.3'	S 9°26.5'			
2	278°02.8'	210°36.4'	N 21°49.1'	202°55.8'	N 24°18.1'	339°06.2'	S 20°59.1'	334°05.8'	S 19°55.9'	294°17.2'	S 9°25.9'			
3	293°05.3'	225°36.3'	N 21°49.4'	217°59.8'	N 24°17.4'	354°08.7'	S 20°59.1'	349°08.3'	S 19°56.0'	309°18.1'	S 9°25.3'			
4	308°07.7'	240°36.2'	N 21°49.8'	233°03.8'	N 24°16.7'	9°11.3'	S 20°59.2'	4°10.8'	S 19°56.0'	324°19.0'	S 9°24.7'			
5	323°10.2'	255°36.1'	N 21°50.1'	248°07.8'	N 24°16.0'	24°13.9'	S 20°59.2'	19°13.4'	S 19°56.0'	339°19.9'	S 9°24.1'			
6	338°12.6'	270°36.1'	N 21°50.5'	263°11.8'	N 24°15.3'	39°16.5'	S 20°59.2'	34°15.9'	S 19°56.0'	354°20.7'	S 9°23.6'			
7	353°15.1'	285°36.0'	N 21°50.9'	278°15.8'	N 24°14.6'	54°19.1'	S 20°59.3'	49°18.5'	S 19°56.0'	9°21.6'	S 9°23.0'			
8	8°17.6'	300°35.9'	N 21°51.2'	293°19.8'	N 24°13.9'	69°21.7'	S 20°59.3'	64°21.0'	S 19°56.1'	24°22.5'	S 9°22.4'			
9	23°20.0'	315°35.8'	N 21°51.6'	308°23.9'	N 24°13.2'	84°24.3'	S 20°59.3'	79°23.5'	S 19°56.1'	39°23.4'	S 9°21.8'			
10	38°22.5'	330°35.7'	N 21°52.0'	323°27.9'	N 24°12.5'	99°26.9'	S 20°59.4'	94°26.1'	S 19°56.1'	54°24.3'	S 9°21.3'			
11	53°25.0'	345°35.6'	N 21°52.3'	338°31.9'	N 24°11.8'	114°29.5'	S 20°59.4'	109°28.6'	S 19°56.1'	69°25.1'	S 9°20.7'			
12	68°27.4'	0°35.5'	N 21°52.7'	353°35.9'	N 24°11.1'	129°32.1'	S 20°59.4'	124°31.2'	S 19°56.1'	84°26.0'	S 9°20.1'			
13	83°29.9'	15°35.4'	N 21°53.0'	8°39.9'	N 24°10.3'	144°34.7'	S 20°59.5'	139°33.7'	S 19°56.2'	99°26.9'	S 9°19.5'			
14	98°32.4'	30°35.3'	N 21°53.4'	23°43.9'	N 24°09.6'	159°37.3'	S 20°59.5'	154°36.3'	S 19°56.2'	114°27.8'	S 9°18.9'			
15	113°34.8'	45°35.3'	N 21°53.8'	38°48.0'	N 24°08.9'	174°39.9'	S 20°59.5'	169°38.8'	S 19°56.2'	129°28.7'	S 9°18.4'			
16	128°37.3'	60°35.2'	N 21°54.1'	53°52.0'	N 24°08.2'	189°42.4'	S 20°59.5'	184°41.3'	S 19°56.2'	144°29.6'	S 9°17.8'			
17	143°39.8'	75°35.1'	N 21°54.5'	68°56.0'	N 24°07.5'	204°45.0'	S 20°59.6'	199°43.9'	S 19°56.2'	159°30.4'	S 9°17.2'			
18	158°42.2'	90°35.0'	N 21°54.8'	84°00.0'	N 24°06.8'	219°47.6'	S 20°59.6'	214°46.4'	S 19°56.3'	174°31.3'	S 9°16.6'			
19	173°44.7'	105°34.9'	N 21°55.2'	99°04.0'	N 24°06.1'	234°50.2'	S 20°59.6'	229°49.0'	S 19°56.3'	189°32.2'	S 9°16.1'			
20	188°47.1'	120°34.8'	N 21°55.5'	114°08.1'	N 24°05.3'	249°52.8'	S 20°59.7'	244°51.5'	S 19°56.3'	204°33.1'	S 9°15.5'			
21	203°49.6'	135°34.7'	N 21°55.9'	129°12.1'	N 24°04.6'	264°55.4'	S 20°59.7'	259°54.1'	S 19°56.3'	219°34.0'	S 9°14.9'			
22	218°52.1'	150°34.6'	N 21°56.2'	144°16.1'	N 24°03.9'	279°58.0'	S 20°59.7'	274°56.6'	S 19°56.4'	234°34.9'	S 9°14.3'			
23	233°54.5'	165°34.5'	N 21°56.6'	159°20.2'	N 24°03.2'	295°00.6'	S 20°59.8'	289°59.1'	S 19°56.4'	249°35.8'	S 9°13.7'			
		SD 15.8' d 0.4'		v 4.0' d -0.7'		v 2.6' d -0.0'		v 2.5' d -0.0'		v 0.9' d 0.6'				
Mer. pass.		11 h 57 m 38 s		12 h 26 m		3 h 23 m		3 h 43 m		6 h 23 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Hadar	-Acrux	-Arcturus	-Spica	+Regulus	+Pollux	+Procyon	+Sun
0	87°14.7'	N 13°24.0'	9.8'	-12.1'	58.8'	84°06.5'	79°15.4'	51°25.7'	47°26.2'	8°18.0'	43°28.0'	45°42.5'	88°06.3'
1	101°43.5'	N 13°11.9'	9.9'	-12.1'	58.8'	83°42.9'	78°57.0'	50°56.8'	46°51.8'	8°48.5'	44°02.7'	46°13.9'	88°38.8'
2	116°12.4'	N 12°59.8'	9.9'	-12.2'	58.8'	83°19.3'	78°38.7'	50°28.0'	46°17.4'	9°19.6'	44°37.4'	46°45.4'	89°11.3'
3	130°41.3'	N 12°47.6'	9.9'	-12.3'	58.8'	82°55.6'	78°20.4'	49°59.3'	45°42.9'	9°51.1'	45°12.1'	47°16.9'	89°43.8'
4	145°10.2'	N 12°35.2'	10.0'	-12.4'	58.8'	82°32.0'	78°02.1'	49°30.6'	45°08.4'	10°23.0'	45°46.8'	47°48.5'	90°16.3'
5	159°39.2'	N 12°22.9'	10.0'	-12.5'	58.9'	82°08.4'	77°43.9'	49°02.1'	44°34.0'	10°55.2'	46°21.6'	48°20.2'	90°48.9'
6	174°08.1'	N 12°10.4'	10.0'	-12.5'	58.9'	81°44.8'	77°25.7'	48°33.6'	43°59.5'	11°27.8'	46°56.4'	48°52.0'	91°21.5'
7	188°37.2'	N 11°57.9'	10.0'	-12.6'	58.9'	81°21.2'	77°07.6'	48°05.2'	43°24.9'	12°00.5'	47°31.2'	49°23.9'	91°54.1'
8	203°06.2'	N 11°45.3'	10.1'	-12.7'	58.9'	80°57.6'	76°49.5'	47°36.9'	42°50.4'	12°33.5'	48°06.1'	49°55.8'	92°26.8'
9	217°35.3'	N 11°32.6'	10.1'	-12.8'	59.0'	80°34.1'	76°31.4'	47°08.7'	42°15.9'	13°06.7'	48°41.0'	50°27.8'	92°59.5'
10	232°04.3'	N 11°19.8'	10.1'	-12.8'	59.0'	80°10.5'	76°13.4'	46°40.6'	41°41.3'	13°40.1'	49°15.9'	50°59.9'	93°32.2'
11	246°33.5'	N 11°07.0'	10.1'	-12.9'	59.0'	79°47.0'	75°55.5'	46°12.6'	41°06.7'	14°13.6'	49°50.9'	51°32.0'	94°04.9'
12	261°02.6'	N 10°54.1'	10.2'	-13.0'	59.0'	79°23.5'	75°37.6'	45°44.7'	40°32.2'	14°47.3'	50°25.8'	52°04.3'	94°37.7'
13	275°31.8'	N 10°41.1'	10.2'	-13.0'	59.0'	78°60.0'	75°19.8'	45°16.9'	39°57.6'	15°21.1'	51°00.8'	52°36.6'	95°10.5'
14	290°00.9'	N 10°28.1'	10.2'	-13.1'	59.1'	78°36.5'	75°02.0'	44°49.2'	39°23.0'	15°55.1'	51°35.9'	53°08.9'	95°43.3'
15	304°30.2'	N 10°15.0'	10.2'	-13.2'	59.1'	78°13.1'	74°44.3'	44°21.7'	38°48.4'	16°29.1'	52°10.9'	53°41.3'	96°16.1'
16	318°59.4'	N 10°01.8'	10.3'	-13.2'	59.1'	77°49.7'	74°26.6'	43°54.2'	38°13.8'	17°03.3'	52°46.0'	54°13.8'	96°49.0'
17	333°28.6'	N 9°48.6'	10.3'	-13.3'	59.1'	77°26.3'	74°09.0'	43°26.9'	37°39.1'	17°37.5'	53°21.1'	54°46.4'	97°21.9'
18	347°57.9'	N 9°35.3'	10.3'	-13.4'	59.1'	77°02.9'	73°51.5'	42°59.8'	37°04.5'	18°11.9'	53°56.3'	55°19.0'	97°54.8'
19	2°27.2'	N 9°21.9'	10.3'	-13.4'	59.2'	76°39.6'	73°34.0'	42°32.7'	36°29.9'	18°46.3'	54°31.5'	55°51.6'	98°27.7'
20	16°56.5'	N 9°08.5'	10.3'	-13.5'	59.2'	76°16.3'	73°16.6'	42°05.9'	35°55.2'	19°20.8'	55°06.7'	56°24.4'	99°00.7'
21	31°25.9'	N 8°55.0'	10.4'	-13.5'	59.2'	75°53.0'	72°59.3'	41°39.2'	35°20.6'	19°55.3'	55°41.9'	56°57.1'	99°33.6'
22	45°55.2'	N 8°41.5'	10.4'	-13.6'	59.2'	75°29.8'	72°42.1'	41°12.6'	34°45.9'	20°30.0'	56°17.1'	57°30.0'	100°06.6'
23	60°24.6'	N 8°27.9'	10.4'	-13.6'	59.2'	75°06.6'	72°24.9'	40°46.2'	34°11.3'	21°04.7'	56°52.4'	58°02.9'	100°39.7'
Mer. pass.		18 h 50 m SD 16.0'		phase 48%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.7'	S 29°30.8'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.0'	N 45°20.9'	Acrux	+0.8	173°03.7'	S 63°12.9'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.3'	N 8°55.3'	Regulus	+1.4	207°38.5'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.3'	N 38°48.1'	Pollux	+1.2	243°22.2'	N 27°58.6'	Aldebaran	+0.9	290°44.2'	N 16°32.8'
Antares	+1.1	112°20.0'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°08.0'	N 89°20.7'
Rigil Kent	-0.0	139°44.7'	S 60°55.2'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°08.0'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.8'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.6'				

Sunday 31 May 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	248°57.0'	180°34.4'	N 21°56.9'	174°24.2'	N 24°02.5'	310°03.2'	S 20°59.8'	305°01.7'	S 19°56.4'	264°36.6'	S 9°13.2'			
1	263°59.5'	195°34.3'	N 21°57.3'	189°28.2'	N 24°01.7'	325°05.8'	S 20°59.8'	320°04.2'	S 19°56.4'	279°37.5'	S 9°12.6'			
2	279°01.9'	210°34.3'	N 21°57.6'	204°32.3'	N 24°01.0'	340°08.4'	S 20°59.9'	335°06.8'	S 19°56.4'	294°38.4'	S 9°12.0'			
3	294°04.4'	225°34.2'	N 21°58.0'	219°36.3'	N 24°00.3'	355°11.0'	S 20°59.9'	350°09.3'	S 19°56.5'	309°39.3'	S 9°11.4'			
4	309°06.9'	240°34.1'	N 21°58.3'	234°40.3'	N 23°59.6'	10°13.6'	S 20°59.9'	5°11.9'	S 19°56.5'	324°40.2'	S 9°10.8'			
5	324°09.3'	255°34.0'	N 21°58.7'	249°44.4'	N 23°58.8'	25°16.2'	S 20°60.0'	20°14.4'	S 19°56.5'	339°41.1'	S 9°10.3'			
6	339°11.8'	270°33.9'	N 21°59.0'	264°48.4'	N 23°58.1'	40°18.8'	S 20°60.0'	35°17.0'	S 19°56.5'	354°42.0'	S 9°09.7'			
7	354°14.2'	285°33.8'	N 21°59.4'	279°52.5'	N 23°57.4'	55°21.4'	S 21°00.0'	50°19.5'	S 19°56.5'	9°42.8'	S 9°09.1'			
8	9°16.7'	300°33.7'	N 21°59.7'	294°56.5'	N 23°56.6'	70°24.0'	S 21°00.0'	65°22.0'	S 19°56.6'	24°43.7'	S 9°08.5'			
9	24°19.2'	315°33.6'	N 22°00.1'	310°00.5'	N 23°55.9'	85°26.6'	S 21°00.1'	80°24.6'	S 19°56.6'	39°44.6'	S 9°08.0'			
10	39°21.6'	330°33.5'	N 22°00.4'	325°04.6'	N 23°55.2'	100°29.2'	S 21°00.1'	95°27.1'	S 19°56.6'	54°45.5'	S 9°07.4'			
11	54°24.1'	345°33.4'	N 22°00.8'	340°08.6'	N 23°54.4'	115°31.8'	S 21°00.1'	110°29.7'	S 19°56.6'	69°46.4'	S 9°06.8'			
12	69°26.6'	0°33.3'	N 22°01.1'	355°12.7'	N 23°53.7'	130°34.4'	S 21°00.2'	125°32.2'	S 19°56.7'	84°47.3'	S 9°06.2'			
13	84°29.0'	15°33.2'	N 22°01.5'	10°16.7'	N 23°53.0'	145°37.0'	S 21°00.2'	140°34.8'	S 19°56.7'	99°48.2'	S 9°05.6'			
14	99°31.5'	30°33.1'	N 22°01.8'	25°20.8'	N 23°52.2'	160°39.6'	S 21°00.2'	155°37.3'	S 19°56.7'	114°49.1'	S 9°05.1'			
15	114°34.0'	45°33.0'	N 22°02.1'	40°24.8'	N 23°51.5'	175°42.2'	S 21°00.3'	170°39.9'	S 19°56.7'	129°49.9'	S 9°04.5'			
16	129°36.4'	60°32.9'	N 22°02.5'	55°28.9'	N 23°50.8'	190°44.8'	S 21°00.3'	185°42.4'	S 19°56.7'	144°50.8'	S 9°03.9'			
17	144°38.9'	75°32.9'	N 22°02.8'	70°32.9'	N 23°50.0'	205°47.4'	S 21°00.3'	200°45.0'	S 19°56.8'	159°51.7'	S 9°03.3'			
18	159°41.4'	90°32.8'	N 22°03.2'	85°37.0'	N 23°49.3'	220°50.0'	S 21°00.4'	215°47.5'	S 19°56.8'	174°52.6'	S 9°02.7'			
19	174°43.8'	105°32.7'	N 22°03.5'	100°41.1'	N 23°48.6'	235°52.6'	S 21°00.4'	230°50.1'	S 19°56.8'	189°53.5'	S 9°02.2'			
20	189°46.3'	120°32.6'	N 22°03.8'	115°45.1'	N 23°47.8'	250°55.2'	S 21°00.4'	245°52.6'	S 19°56.8'	204°54.4'	S 9°01.6'			
21	204°48.7'	135°32.5'	N 22°04.2'	130°49.2'	N 23°47.1'	265°57.8'	S 21°00.5'	260°55.1'	S 19°56.9'	219°55.3'	S 9°01.0'			
22	219°51.2'	150°32.4'	N 22°04.5'	145°53.2'	N 23°46.3'	281°00.4'	S 21°00.5'	275°57.7'	S 19°56.9'	234°56.2'	S 9°00.4'			
23	234°53.7'	165°32.3'	N 22°04.8'	160°57.3'	N 23°45.6'	296°03.0'	S 21°00.5'	291°00.2'	S 19°56.9'	249°57.1'	S 8°59.8'			
		SD 15.8' d 0.3'		v 4.0' d -0.7'		v 2.6' d -0.0'		v 2.5' d -0.0'		v 0.9' d 0.6'				
Mer. pass.		11 h 57 m 47 s		12 h 19 m		3 h 19 m		3 h 39 m		6 h 21 m				

h	Moon				Lunar distance									
	GHA	dec	v	d	HP	-Hadar	-Acrux	-Arcturus	-Spica	+Regulus	+Pollux	+Procyon	+Sun	
0	74°54.0'	N 8°14.3'	10.4'	-13.7'	59.3'	74°43.4'	72°07.8'	40°20.0'	33°36.6'	21°39.5'	57°27.7'	58°35.8'	101°12.7'	
1	89°23.4'	N 8°00.6'	10.4'	-13.8'	59.3'	74°20.3'	71°50.8'	39°53.9'	33°02.0'	22°14.3'	58°03.1'	59°08.8'	101°45.8'	
2	103°52.8'	N 7°46.8'	10.4'	-13.8'	59.3'	73°57.3'	71°33.9'	39°28.1'	32°27.4'	22°49.2'	58°38.4'	59°41.9'	102°18.9'	
3	118°22.2'	N 7°33.0'	10.4'	-13.9'	59.3'	73°34.2'	71°17.0'	39°02.4'	31°52.7'	23°24.1'	59°13.8'	60°15.0'	102°52.1'	
4	132°51.7'	N 7°19.1'	10.5'	-13.9'	59.3'	73°11.3'	71°00.2'	38°36.9'	31°18.1'	23°59.1'	59°49.2'	60°48.1'	103°25.2'	
5	147°21.1'	N 7°05.2'	10.5'	-14.0'	59.3'	72°48.3'	70°43.6'	38°11.7'	30°43.5'	24°34.1'	60°24.6'	61°21.3'	103°58.4'	
6	161°50.6'	N 6°51.3'	10.5'	-14.0'	59.4'	72°25.5'	70°27.0'	37°46.7'	30°08.8'	25°09.2'	61°00.1'	61°54.6'	104°31.6'	
7	176°20.1'	N 6°37.3'	10.5'	-14.0'	59.4'	72°02.6'	70°10.5'	37°21.8'	29°34.2'	25°44.3'	61°35.6'	62°27.9'	105°04.8'	
8	190°49.5'	N 6°23.2'	10.5'	-14.1'	59.4'	71°39.9'	69°54.1'	36°57.3'	28°59.7'	26°19.5'	62°11.1'	63°01.2'	105°38.1'	
9	205°19.0'	N 6°09.1'	10.5'	-14.1'	59.4'	71°17.2'	69°37.8'	36°32.9'	28°25.1'	26°54.7'	62°46.6'	63°34.6'	106°11.3'	
10	219°48.5'	N 5°55.0'	10.5'	-14.2'	59.4'	70°54.5'	69°21.6'	36°08.9'	27°50.6'	27°29.9'	63°22.2'	64°08.1'	106°44.6'	
11	234°18.1'	N 5°40.8'	10.5'	-14.2'	59.5'	70°31.9'	69°05.5'	35°45.1'	27°16.0'	28°05.2'	63°57.8'	64°41.5'	107°17.9'	
12	248°47.6'	N 5°26.6'	10.5'	-14.3'	59.5'	70°09.4'	68°49.4'	35°21.5'	26°41.5'	28°40.6'	64°33.4'	65°15.1'	107°51.3'	
13	263°17.1'	N 5°12.3'	10.5'	-14.3'	59.5'	69°47.0'	68°33.5'	34°58.3'	26°07.1'	29°15.9'	65°09.0'	65°48.6'	108°24.6'	
14	277°46.6'	N 4°58.0'	10.5'	-14.3'	59.5'	69°24.6'	68°17.8'	34°35.3'	25°32.6'	29°51.3'	65°44.6'	66°22.2'	108°58.0'	
15	292°16.1'	N 4°43.7'	10.5'	-14.4'	59.5'	69°02.3'	68°02.1'	34°12.7'	24°58.2'	30°26.8'	66°20.3'	66°55.9'	109°31.4'	
16	306°45.7'	N 4°29.4'	10.5'	-14.4'	59.5'	68°40.0'	67°46.5'	33°50.3'	24°23.9'	31°02.3'	66°56.0'	67°29.5'	110°04.9'	
17	321°15.2'	N 4°15.0'	10.5'	-14.4'	59.6'	68°17.9'	67°31.0'	33°28.3'	23°49.6'	31°37.8'	67°31.8'	68°03.3'	110°38.3'	
18	335°44.7'	N 4°00.5'	10.5'	-14.5'	59.6'	67°55.8'	67°15.7'	33°06.7'	23°15.3'	32°13.3'	68°07.5'	68°37.0'	111°11.8'	
19	350°14.3'	N 3°46.1'	10.5'	-14.5'	59.6'	67°33.8'	67°00.5'	32°45.4'	22°41.1'	32°48.9'	68°43.3'	69°10.8'	111°45.3'	
20	4°43.8'	N 3°31.6'	10.5'	-14.5'	59.6'	67°11.9'		32°24.5'	22°07.0'	33°24.5'	69°19.1'	69°44.6'	112°18.8'	
21	19°13.3'	N 3°17.1'	10.5'	-14.5'	59.6'	66°50.1'		32°03.9'	21°32.9'	34°00.1'	69°54.9'	70°18.5'	112°52.4'	
22	33°42.9'	N 3°02.5'	10.5'	-14.6'	59.6'	66°28.3'		31°43.8'	20°58.9'	34°35.8'	70°30.7'	70°52.4'	113°25.9'	
23	48°12.4'	N 2°47.9'	10.5'	-14.6'	59.7'	66°06.7'		31°24.0'	20°25.1'	35°11.5'	71°06.6'	71°26.3'	113°59.5'	
Mer. pass.		19 h 40 m SD 16.2'		phase 60%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.7'	S 29°30.8'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.5'
Deneb	+1.2	49°28.0'	N 45°20.9'	Acrux	+0.8	173°03.7'	S 63°12.9'	Capella	+0.1	280°27.9'	N 46°01.0'
Altair	+0.8	62°03.3'	N 8°55.3'	Regulus	+1.4	207°38.5'	N 11°52.1'	Rigel	+0.2	281°07.8'	S 8°10.9'
Vega	+0.0	80°35.3'	N 38°48.1'	Pollux	+1.2	243°22.2'	N 27°58.6'	Aldebaran	+0.9	290°44.2'	N 16°32.8'
Antares	+1.1	112°20.0'	S 26°28.5'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	316°07.8'	N 89°20.7'
Rigil Kent	-0.0	139°44.7'	S 60°55.2'	Adhara	+1.5	255°09.1'	S 29°00.2'	Achernar	+0.5	335°23.6'	S 57°07.9'
Arcturus	-0.1	145°51.1'	N 19°04.7'	Sirius	-1.4	258°29.8'	S 16°44.8'				
Hadar	+0.6	148°40.6'	S 60°28.3'	Canopus	-0.6	263°54.5'	S 52°42.6'				