

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	71°17.7'	182°39.4'	S 21°59.1'	210°17.4'	S 14°10.3'	132°50.7'	S 21°20.3'	130°36.2'	S 20°48.8'	55°22.7'	N 6°46.4'	
1	86°20.1'	197°39.1'	S 21°59.5'	225°16.8'	S 14°11.3'	147°52.6'	S 21°20.2'	145°38.5'	S 20°48.8'	70°24.7'	N 6°46.7'	
2	101°22.6'	212°38.9'	S 21°59.8'	240°16.2'	S 14°12.2'	162°54.6'	S 21°20.1'	160°40.7'	S 20°48.7'	85°26.7'	N 6°47.0'	
3	116°25.1'	227°38.6'	S 22°00.2'	255°15.6'	S 14°13.2'	177°56.5'	S 21°20.0'	175°42.9'	S 20°48.7'	100°28.7'	N 6°47.3'	
4	131°27.5'	242°38.4'	S 22°00.6'	270°15.0'	S 14°14.2'	192°58.5'	S 21°19.9'	190°45.1'	S 20°48.7'	115°30.7'	N 6°47.6'	
5	146°30.0'	257°38.2'	S 22°00.9'	285°14.5'	S 14°15.2'	208°00.4'	S 21°19.8'	205°47.4'	S 20°48.6'	130°32.7'	N 6°47.9'	
6	161°32.5'	272°37.9'	S 22°01.3'	300°13.9'	S 14°16.2'	223°02.3'	S 21°19.7'	220°49.6'	S 20°48.6'	145°34.7'	N 6°48.2'	
7	176°34.9'	287°37.7'	S 22°01.7'	315°13.3'	S 14°17.1'	238°04.3'	S 21°19.6'	235°51.8'	S 20°48.5'	160°36.7'	N 6°48.5'	
8	191°37.4'	302°37.4'	S 22°02.0'	330°12.7'	S 14°18.1'	253°06.2'	S 21°19.5'	250°54.0'	S 20°48.5'	175°38.7'	N 6°48.8'	
9	206°39.9'	317°37.2'	S 22°02.4'	345°12.1'	S 14°19.1'	268°08.2'	S 21°19.5'	265°56.2'	S 20°48.4'	190°40.7'	N 6°49.1'	
10	221°42.3'	332°37.0'	S 22°02.7'	0°11.6'	S 14°20.0'	283°10.1'	S 21°19.4'	280°58.5'	S 20°48.4'	205°42.7'	N 6°49.4'	
11	236°44.8'	347°36.7'	S 22°03.1'	15°11.0'	S 14°21.0'	298°12.1'	S 21°19.3'	296°00.7'	S 20°48.3'	220°44.7'	N 6°49.7'	
12	251°47.3'	2°36.5'	S 22°03.5'	30°10.4'	S 14°22.0'	313°14.0'	S 21°19.2'	311°02.9'	S 20°48.3'	235°46.7'	N 6°50.0'	
13	266°49.7'	17°36.2'	S 22°03.8'	45°09.8'	S 14°23.0'	328°15.9'	S 21°19.1'	326°05.1'	S 20°48.3'	250°48.7'	N 6°50.3'	
14	281°52.2'	32°36.0'	S 22°04.2'	60°09.2'	S 14°23.9'	343°17.9'	S 21°19.0'	341°07.4'	S 20°48.2'	265°50.7'	N 6°50.6'	
15	296°54.6'	47°35.7'	S 22°04.5'	75°08.6'	S 14°24.9'	358°19.8'	S 21°18.9'	356°09.6'	S 20°48.2'	280°52.6'	N 6°50.9'	
16	311°57.1'	62°35.5'	S 22°04.9'	90°08.1'	S 14°25.9'	13°21.8'	S 21°18.8'	11°11.8'	S 20°48.1'	295°54.6'	N 6°51.2'	
17	326°59.6'	77°35.3'	S 22°05.2'	105°07.5'	S 14°26.8'	28°23.7'	S 21°18.7'	26°14.0'	S 20°48.1'	310°56.6'	N 6°51.5'	
18	342°02.0'	92°35.0'	S 22°05.6'	120°06.9'	S 14°27.8'	43°25.7'	S 21°18.6'	41°16.2'	S 20°48.0'	325°58.6'	N 6°51.8'	
19	357°04.5'	107°34.8'	S 22°05.9'	135°06.3'	S 14°28.8'	58°27.6'	S 21°18.5'	56°18.5'	S 20°48.0'	341°00.6'	N 6°52.1'	
20	12°07.0'	122°34.5'	S 22°06.3'	150°05.7'	S 14°29.7'	73°29.5'	S 21°18.4'	71°20.7'	S 20°47.9'	356°02.6'	N 6°52.4'	
21	27°09.4'	137°34.3'	S 22°06.6'	165°05.1'	S 14°30.7'	88°31.5'	S 21°18.3'	86°22.9'	S 20°47.9'	11°04.6'	N 6°52.8'	
22	42°11.9'	152°34.0'	S 22°07.0'	180°04.5'	S 14°31.7'	103°33.4'	S 21°18.2'	101°25.1'	S 20°47.9'	26°06.5'	N 6°53.1'	
23	57°14.4'	167°33.8'	S 22°07.3'	195°04.0'	S 14°32.6'	118°35.4'	S 21°18.2'	116°27.3'	S 20°47.8'	41°08.5'	N 6°53.4'	
		SD 16.2'	d -0.4'		v -0.6'	d -1.0'		v 1.9'	d 0.1'		v 2.2'	d 0.0'
Mer. pass.		11 h 49 m 35 s		9 h 59 m		15 h 7 m		15 h 15 m		20 h 16 m		

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Arcturus	-Regulus	-Procyon	-Pollux	+Betelgeuse	+Aldebaran	+Capella	+Rigel
0	343°17.5'	N 24°11.3'	9.8'	3.2'	55.1'	111°59.8'	61°56.1'	32°15.1'	25°56.7'		19°06.9'		
1	357°46.3'	N 24°14.5'	9.7'	3.1'	55.1'	111°32.7'	61°25.3'	31°50.7'	25°26.1'		19°36.9'		
2	12°15.0'	N 24°17.5'	9.7'	2.9'	55.1'	111°05.5'	60°54.5'	31°26.6'	24°55.6'		20°07.0'		
3	26°43.7'	N 24°20.4'	9.6'	2.8'	55.1'	110°38.3'	60°23.7'	31°02.6'	24°25.0'		20°37.1'		
4	41°12.3'	N 24°23.3'	9.6'	2.7'	55.1'	110°11.0'	59°52.9'	30°38.7'	23°54.5'		21°07.2'		
5	55°40.9'	N 24°25.9'	9.5'	2.6'	55.2'	109°43.7'	59°22.1'	30°15.1'	23°23.9'		21°37.5'		
6	70°09.4'	N 24°28.5'	9.5'	2.4'	55.2'	109°16.4'	58°51.2'	29°51.6'	22°53.4'		22°07.7'		
7	84°37.9'	N 24°31.0'	9.5'	2.3'	55.2'	108°49.0'	58°20.3'	29°28.4'	22°22.8'		22°38.1'		
8	99°06.4'	N 24°33.3'	9.4'	2.2'	55.2'	108°21.6'	57°49.5'	29°05.3'	21°52.3'		23°08.4'		
9	113°34.8'	N 24°35.5'	9.4'	2.1'	55.2'	107°54.2'	57°18.6'	28°42.5'	21°21.8'		23°38.8'		
10	128°03.2'	N 24°37.5'	9.4'	1.9'	55.2'	107°26.7'	56°47.7'	28°19.9'	20°51.2'		24°09.3'		35°34.4'
11	142°31.6'	N 24°39.5'	9.3'	1.8'	55.3'	106°59.2'	56°16.7'	27°57.5'	20°20.7'		24°39.8'		35°49.4'
12	156°59.9'	N 24°41.3'	9.3'	1.7'	55.3'	106°31.6'	55°45.8'	27°35.3'	19°50.2'		25°10.3'		36°20.3'
13	171°28.2'	N 24°42.9'	9.2'	1.6'	55.3'	106°04.0'	55°14.8'	27°13.5'	19°19.7'		25°40.9'		36°36.2'
14	185°56.4'	N 24°44.5'	9.2'	1.4'	55.3'	105°36.4'	54°43.8'	26°51.9'	18°49.2'		26°11.5'		36°52.4'
15	200°24.6'	N 24°45.9'	9.2'	1.3'	55.3'	105°08.8'	54°12.9'	26°30.5'	18°18.7'		26°42.1'		37°08.9'
16	214°52.8'	N 24°47.2'	9.1'	1.2'	55.4'	104°41.1'	53°41.8'	26°09.5'	17°48.2'		27°12.8'		37°25.6'
17	229°21.0'	N 24°48.4'	9.1'	1.0'	55.4'	104°13.4'	53°10.8'	25°48.7'	17°17.8'	19°13.7'	27°43.5'		37°42.7'
18	243°49.1'	N 24°49.4'	9.1'	0.9'	55.4'	103°45.6'	52°39.8'	25°28.3'	16°47.4'	19°28.9'	28°14.2'	25°56.4'	37°60.0'
19	258°17.2'	N 24°50.3'	9.1'	0.8'	55.4'	103°17.9'	52°08.7'	25°08.2'	16°17.0'	19°44.8'	28°45.0'	26°11.6'	38°17.5'
20	272°45.2'	N 24°51.1'	9.0'	0.6'	55.4'	102°50.1'	51°37.7'	24°48.5'	15°46.7'	20°01.3'	29°15.8'	26°27.3'	38°35.3'
21	287°13.3'	N 24°51.7'	9.0'	0.5'	55.4'	102°22.2'	51°06.6'	24°29.1'	15°16.4'	20°18.3'	29°46.7'	26°43.4'	38°53.3'
22	301°41.3'	N 24°52.2'	9.0'	0.4'	55.5'	101°54.4'	50°35.5'	24°10.1'	14°46.1'	20°35.9'	30°17.5'	26°59.9'	39°11.6'
23	316°09.3'	N 24°52.6'	9.0'	0.2'	55.5'	101°26.5'	50°04.3'	23°51.5'	14°15.9'	20°54.0'	30°48.4'	27°16.9'	39°30.2'
Mer. pass.		1 h 9 m SD 15.0'	phase 98%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.2'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°55.4'	N 7°24.6'
Deneb	+1.2	49°28.3'	N 45°21.5'	Acrux	+0.8	173°04.0'	S 63°12.5'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.5'	Regulus	+1.4	207°38.0'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.7'
Vega	+0.0	80°35.9'	N 38°48.3'	Pollux	+1.2	243°21.2'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.3'	S 26°28.5'	Procyon	+0.4	244°54.1'	N 5°10.3'	Polaris	+2.0	315°05.4'	N 89°21.2'
Rigel Kent	-0.0	139°45.4'	S 60°55.0'	Adhara	+1.5	255°08.2'	S 28°59.9'	Achernar	+0.5	335°22.4'	S 57°08.2'
Arcturus	-0.1	145°51.3'	N 19°04.5'	Sirius	-1.4	258°28.9'	S 16°44.6'				
Hadar	+0.6	148°41.2'	S 60°28.1'	Canopus	-0.6	263°53.4'	S 52°42.3'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	72°16.8'	182°33.5' S 22°07.7'	210°03.4' S 14°33.6'	133°37.3' S 21°18.1'	131°29.6' S 20°47.8'	56°10.5' N 6°53.7'						
1	87°19.3'	197°33.3' S 22°08.0'	225°02.8' S 14°34.6'	148°39.2' S 21°18.0'	146°31.8' S 20°47.7'	71°12.5' N 6°54.0'						
2	102°21.8'	212°33.0' S 22°08.4'	240°02.2' S 14°35.5'	163°41.2' S 21°17.9'	161°34.0' S 20°47.7'	86°14.5' N 6°54.3'						
3	117°24.2'	227°32.8' S 22°08.7'	255°01.6' S 14°36.5'	178°43.1' S 21°17.8'	176°36.2' S 20°47.6'	101°16.4' N 6°54.6'						
4	132°26.7'	242°32.6' S 22°09.1'	270°01.0' S 14°37.5'	193°45.1' S 21°17.7'	191°38.4' S 20°47.6'	116°18.4' N 6°54.9'						
5	147°29.1'	257°32.3' S 22°09.4'	285°00.4' S 14°38.4'	208°47.0' S 21°17.6'	206°40.7' S 20°47.5'	131°20.4' N 6°55.2'						
6	162°31.6'	272°32.1' S 22°09.8'	299°59.8' S 14°39.4'	223°48.9' S 21°17.5'	221°42.9' S 20°47.5'	146°22.4' N 6°55.5'						
7	177°34.1'	287°31.8' S 22°10.1'	314°59.2' S 14°40.3'	238°50.9' S 21°17.4'	236°45.1' S 20°47.4'	161°24.3' N 6°55.8'						
8	192°36.5'	302°31.6' S 22°10.5'	329°58.6' S 14°41.3'	253°52.8' S 21°17.3'	251°47.3' S 20°47.4'	176°26.3' N 6°56.1'						
9	207°39.0'	317°31.3' S 22°10.8'	344°58.0' S 14°42.3'	268°54.8' S 21°17.2'	266°49.5' S 20°47.4'	191°28.3' N 6°56.5'						
10	222°41.5'	332°31.1' S 22°11.2'	359°57.5' S 14°43.2'	283°56.7' S 21°17.1'	281°51.8' S 20°47.3'	206°30.3' N 6°56.8'						
11	237°43.9'	347°30.8' S 22°11.5'	14°56.9' S 14°44.2'	298°58.6' S 21°17.0'	296°54.0' S 20°47.3'	221°32.2' N 6°57.1'						
12	252°46.4'	2°30.6' S 22°11.8'	29°56.3' S 14°45.1'	314°00.6' S 21°16.9'	311°56.2' S 20°47.2'	236°34.2' N 6°57.4'						
13	267°48.9'	17°30.3' S 22°12.2'	44°55.7' S 14°46.1'	329°02.5' S 21°16.8'	326°58.4' S 20°47.2'	251°36.2' N 6°57.7'						
14	282°51.3'	32°30.1' S 22°12.5'	59°55.1' S 14°47.0'	344°04.5' S 21°16.8'	342°00.6' S 20°47.1'	266°38.1' N 6°58.0'						
15	297°53.8'	47°29.8' S 22°12.9'	74°54.5' S 14°48.0'	359°06.4' S 21°16.7'	357°02.9' S 20°47.1'	281°40.1' N 6°58.3'						
16	312°56.3'	62°29.6' S 22°13.2'	89°53.9' S 14°49.0'	14°08.3' S 21°16.6'	12°05.1' S 20°47.0'	296°42.1' N 6°58.6'						
17	327°58.7'	77°29.3' S 22°13.5'	104°53.3' S 14°49.9'	29°10.3' S 21°16.5'	27°07.3' S 20°47.0'	311°44.0' N 6°58.9'						
18	343°01.2'	92°29.1' S 22°13.9'	119°52.7' S 14°50.9'	44°12.2' S 21°16.4'	42°09.5' S 20°46.9'	326°46.0' N 6°59.3'						
19	358°03.6'	107°28.8' S 22°14.2'	134°52.1' S 14°51.8'	59°14.1' S 21°16.3'	57°11.7' S 20°46.9'	341°47.9' N 6°59.6'						
20	13°06.1'	122°28.6' S 22°14.5'	149°51.5' S 14°52.8'	74°16.1' S 21°16.2'	72°14.0' S 20°46.8'	356°49.9' N 6°59.9'						
21	28°08.6'	137°28.3' S 22°14.9'	164°50.9' S 14°53.7'	89°18.0' S 21°16.1'	87°16.2' S 20°46.8'	11°51.9' N 7°00.2'						
22	43°11.0'	152°28.1' S 22°15.2'	179°50.3' S 14°54.7'	104°20.0' S 21°16.0'	102°18.4' S 20°46.8'	26°53.8' N 7°00.5'						
23	58°13.5'	167°27.8' S 22°15.5'	194°49.7' S 14°55.6'	119°21.9' S 21°15.9'	117°20.6' S 20°46.7'	41°55.8' N 7°00.8'						
Mer. pass.		SD 16.2' d -0.3'	v -0.6' d -1.0'	v 1.9' d 0.1'	v 2.2' d 0.0'	v 2.0' d 0.3'						
Mer. pass.		11 h 49 m 58 s	10 h 0 m	15 h 4 m	15 h 12 m	20 h 13 m						

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Arcturus	-Regulus	-Procyon	-Pollux	+Betelgeuse	+Capella	+Aldebaran	+Rigel
0	330°37.2'	N 24°52.9'	8.9'	0.1'	55.5'	100°58.5'	49°33.2'	23°33.3'	13°45.8'	21°12.6'	27°34.2'	31°19.4'	39°48.9'
1	345°05.2'	N 24°53.0'	8.9'	-0.0'	55.5'	100°30.6'	49°02.1'	23°15.5'	13°15.7'	21°31.7'	27°51.9'	31°50.3'	40°07.9'
2	359°33.1'	N 24°53.0'	8.9'	-0.1'	55.5'	100°02.6'	48°30.9'	22°58.2'	12°45.7'	21°51.2'	28°10.0'	32°21.3'	40°27.2'
3	14°01.0'	N 24°52.8'	8.9'	-0.3'	55.6'	99°34.6'	47°59.7'	22°41.4'	12°15.8'	22°11.2'	28°28.5'	32°52.3'	40°46.6'
4	28°28.9'	N 24°52.5'	8.9'	-0.4'	55.6'	99°06.6'	47°28.5'	22°25.0'	11°46.0'	22°31.6'	28°47.3'	33°23.4'	41°06.2'
5	42°56.7'	N 24°52.1'	8.8'	-0.5'	55.6'	98°38.5'	46°57.3'	22°09.1'	11°16.3'	22°52.4'	29°06.4'	33°54.5'	41°26.1'
6	57°24.6'	N 24°51.6'	8.8'	-0.7'	55.6'	98°10.5'	46°26.1'		10°46.8'	23°13.6'	29°25.9'	34°25.6'	41°46.2'
7	71°52.4'	N 24°50.9'	8.8'	-0.8'	55.6'	97°42.3'	45°54.8'		10°17.4'	23°35.2'	29°45.7'	34°56.7'	42°06.4'
8	86°20.2'	N 24°50.1'	8.8'	-0.9'	55.7'	97°14.2'	45°23.6'		9°48.3'	23°57.1'	30°05.8'	35°27.8'	42°26.9'
9	100°48.0'	N 24°49.1'	8.8'	-1.1'	55.7'	96°46.1'	44°52.3'		9°19.3'	24°19.4'	30°26.2'	35°59.0'	42°47.6'
10	115°15.8'	N 24°48.1'	8.8'	-1.2'	55.7'	96°17.9'	44°21.0'		8°50.7'	24°42.0'	30°46.9'	36°30.2'	43°08.4'
11	129°43.6'	N 24°46.8'	8.8'	-1.3'	55.7'	95°49.7'	43°49.7'		8°22.3'	25°04.9'	31°07.9'	37°01.5'	43°29.5'
12	144°11.3'	N 24°45.5'	8.8'	-1.5'	55.7'	95°21.4'	43°18.3'		7°54.3'	25°28.1'	31°29.2'	37°32.7'	43°50.7'
13	158°39.1'	N 24°44.0'	8.8'	-1.6'	55.8'	94°53.2'	42°47.0'		7°26.8'	25°51.6'	31°50.7'	38°04.0'	44°12.1'
14	173°06.9'	N 24°42.4'	8.7'	-1.8'	55.8'	94°24.9'	42°15.7'		6°59.8'	26°15.4'	32°12.5'	38°35.3'	44°33.6'
15	187°34.6'	N 24°40.6'	8.7'	-1.9'	55.8'	93°56.6'	41°44.3'			26°39.4'	32°34.6'	39°06.7'	44°55.4'
16	202°02.3'	N 24°38.7'	8.7'	-2.0'	55.8'	93°28.3'	41°12.9'			27°03.7'	32°56.9'	39°38.0'	45°17.3'
17	216°30.1'	N 24°36.7'	8.7'	-2.2'	55.8'	92°60.0'	40°41.5'			27°28.3'	33°19.4'	40°09.4'	45°39.3'
18	230°57.8'	N 24°34.6'	8.7'	-2.3'	55.9'	92°31.6'	40°10.1'			27°53.1'	33°42.2'	40°40.8'	46°01.6'
19	245°25.6'	N 24°32.3'	8.7'	-2.4'	55.9'	92°03.2'	39°38.6'			28°18.1'	34°05.2'	41°12.3'	46°23.9'
20	259°53.3'	N 24°29.9'	8.7'	-2.6'	55.9'	91°34.8'	39°07.2'			28°43.3'	34°28.4'	41°43.7'	46°46.5'
21	274°21.0'	N 24°27.3'	8.7'	-2.7'	55.9'	91°06.4'	38°35.7'			29°08.7'	34°51.8'	42°15.2'	47°09.2'
22	288°48.8'	N 24°24.6'	8.7'	-2.8'	55.9'	90°38.0'	38°04.3'			29°34.4'	35°15.4'	42°46.7'	47°32.0'
23	303°16.5'	N 24°21.8'	8.7'	-3.0'	56.0'	90°09.5'	37°32.8'			30°00.2'	35°39.2'	43°18.3'	47°55.0'
Mer. pass.		2 h 2 m SD 15.1'	phase 94%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.2'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°55.4'	N 7°24.6'
Deneb	+1.2	49°28.3'	N 45°21.5'	Acrux	+0.8	173°04.0'	S 63°12.5'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.5'	Regulus	+1.4	207°38.0'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.7'
Vega	+0.0	80°35.9'	N 38°48.3'	Pollux	+1.2	243°21.1'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.3'	S 26°28.5'	Procyon	+0.4	244°54.1'	N 5°10.3'	Polaris	+2.0	315°05.5'	N 89°21.2'
Rigel Kent	-0.0	139°45.4'	S 60°54.9'	Adhara	+1.5	255°08.1'	S 28°59.9'	Achernar	+0.5	335°22.4'	S 57°08.2'
Arcturus	-0.1	145°51.3'	N 19°04.5'	Sirius	-1.4	258°28.9'	S 16°44.6'				
Hadar	+0.6	148°41.1'	S 60°28.1'	Canopus	-0.6	263°53.3'	S 52°42.3'				

Friday 04 December 2020 UT1

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	73°16.0'	182°27.6'	S 22°15.9'	209°49.1'	S 14°56.6'	134°23.8'	S 21°15.8'	132°22.8'	S 20°46.7'	56°57.7'	N 7°01.1'	
1	88°18.4'	197°27.3'	S 22°16.2'	224°48.5'	S 14°57.5'	149°25.8'	S 21°15.7'	147°25.0'	S 20°46.6'	71°59.7'	N 7°01.4'	
2	103°20.9'	212°27.1'	S 22°16.5'	239°47.9'	S 14°58.5'	164°27.7'	S 21°15.6'	162°27.3'	S 20°46.6'	87°01.7'	N 7°01.8'	
3	118°23.4'	227°26.8'	S 22°16.9'	254°47.3'	S 14°59.4'	179°29.6'	S 21°15.5'	177°29.5'	S 20°46.5'	102°03.6'	N 7°02.1'	
4	133°25.8'	242°26.5'	S 22°17.2'	269°46.7'	S 15°00.4'	194°31.6'	S 21°15.4'	192°31.7'	S 20°46.5'	117°05.6'	N 7°02.4'	
5	148°28.3'	257°26.3'	S 22°17.5'	284°46.1'	S 15°01.3'	209°33.5'	S 21°15.3'	207°33.9'	S 20°46.4'	132°07.5'	N 7°02.7'	
6	163°30.8'	272°26.0'	S 22°17.8'	299°45.5'	S 15°02.3'	224°35.5'	S 21°15.2'	222°36.1'	S 20°46.4'	147°09.5'	N 7°03.0'	
7	178°33.2'	287°25.8'	S 22°18.2'	314°44.9'	S 15°03.2'	239°37.4'	S 21°15.2'	237°38.4'	S 20°46.3'	162°11.4'	N 7°03.3'	
8	193°35.7'	302°25.5'	S 22°18.5'	329°44.3'	S 15°04.1'	254°39.3'	S 21°15.1'	252°40.6'	S 20°46.3'	177°13.4'	N 7°03.7'	
9	208°38.1'	317°25.3'	S 22°18.8'	344°43.7'	S 15°05.1'	269°41.3'	S 21°15.0'	267°42.8'	S 20°46.3'	192°15.3'	N 7°04.0'	
10	223°40.6'	332°25.0'	S 22°19.1'	359°43.1'	S 15°06.0'	284°43.2'	S 21°14.9'	282°45.0'	S 20°46.2'	207°17.3'	N 7°04.3'	
11	238°43.1'	347°24.8'	S 22°19.5'	14°42.5'	S 15°07.0'	299°45.1'	S 21°14.8'	297°47.2'	S 20°46.2'	222°19.2'	N 7°04.6'	
12	253°45.5'	2°24.5'	S 22°19.8'	29°41.9'	S 15°07.9'	314°47.1'	S 21°14.7'	312°49.4'	S 20°46.1'	237°21.1'	N 7°04.9'	
13	268°48.0'	17°24.3'	S 22°20.1'	44°41.2'	S 15°08.9'	329°49.0'	S 21°14.6'	327°51.7'	S 20°46.1'	252°23.1'	N 7°05.2'	
14	283°50.5'	32°24.0'	S 22°20.4'	59°40.6'	S 15°09.8'	344°50.9'	S 21°14.5'	342°53.9'	S 20°46.0'	267°25.0'	N 7°05.6'	
15	298°52.9'	47°23.7'	S 22°20.8'	74°40.0'	S 15°10.7'	359°52.9'	S 21°14.4'	357°56.1'	S 20°46.0'	282°27.0'	N 7°05.9'	
16	313°55.4'	62°23.5'	S 22°21.1'	89°39.4'	S 15°11.7'	14°54.8'	S 21°14.3'	12°58.3'	S 20°45.9'	297°28.9'	N 7°06.2'	
17	328°57.9'	77°23.2'	S 22°21.4'	104°38.8'	S 15°12.6'	29°56.7'	S 21°14.2'	28°00.5'	S 20°45.9'	312°30.9'	N 7°06.5'	
18	344°00.3'	92°23.0'	S 22°21.7'	119°38.2'	S 15°13.6'	44°58.7'	S 21°14.1'	43°02.7'	S 20°45.8'	327°32.8'	N 7°06.8'	
19	359°02.8'	107°22.7'	S 22°22.0'	134°37.6'	S 15°14.5'	60°00.6'	S 21°14.0'	58°05.0'	S 20°45.8'	342°34.7'	N 7°07.2'	
20	14°05.3'	122°22.5'	S 22°22.3'	149°37.0'	S 15°15.4'	75°02.6'	S 21°13.9'	73°07.2'	S 20°45.7'	357°36.7'	N 7°07.5'	
21	29°07.7'	137°22.2'	S 22°22.7'	164°36.4'	S 15°16.4'	90°04.5'	S 21°13.8'	88°09.4'	S 20°45.7'	12°38.6'	N 7°07.8'	
22	44°10.2'	152°21.9'	S 22°23.0'	179°35.8'	S 15°17.3'	105°06.4'	S 21°13.7'	103°11.6'	S 20°45.7'	27°40.5'	N 7°08.1'	
23	59°12.6'	167°21.7'	S 22°23.3'	194°35.2'	S 15°18.2'	120°08.4'	S 21°13.6'	118°13.8'	S 20°45.6'	42°42.5'	N 7°08.4'	
		SD 16.2' d -0.3'		v -0.6' d -0.9'		v 1.9' d 0.1'		v 2.2' d 0.0'		v 1.9' d 0.3'		
Mer. pass.		11 h 50 m 22 s		10 h 1 m		15 h 0 m		15 h 8 m		20 h 10 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Arcturus	-Regulus	-Procyon	-Pollux	+Betelgeuse	+Capella	+Aldebaran	+Rigel
0	317°44.2'	N 24°18.8'	8.7'	-3.1'	56.0'	89°41.0'	37°01.3'			30°26.2'	36°03.3'	43°49.9'	48°18.1'
1	332°12.0'	N 24°15.7'	8.8'	-3.2'	56.0'	89°12.5'	36°29.7'			30°52.4'	36°27.5'	44°21.4'	48°41.3'
2	346°39.7'	N 24°12.5'	8.8'	-3.4'	56.0'	88°44.0'	35°58.2'			31°18.8'	36°51.8'	44°53.1'	49°04.7'
3	1°07.5'	N 24°09.2'	8.8'	-3.5'	56.0'	88°15.5'	35°26.7'			31°45.3'	37°16.4'	45°24.7'	49°28.2'
4	15°35.3'	N 24°05.7'	8.8'	-3.6'	56.1'	87°46.9'	34°55.1'			32°12.0'	37°41.1'	45°56.4'	49°51.9'
5	30°03.0'	N 24°02.0'	8.8'	-3.8'	56.1'	87°18.3'	34°23.5'			32°38.9'	38°06.0'	46°28.0'	50°15.7'
6	44°30.8'	N 23°58.3'	8.8'	-3.9'	56.1'	86°49.8'	33°51.9'			33°05.9'	38°31.1'	46°59.8'	50°39.6'
7	58°58.6'	N 23°54.4'	8.8'	-4.0'	56.1'	86°21.2'	33°20.3'			33°33.0'	38°56.3'	47°31.5'	51°03.6'
8	73°26.4'	N 23°50.4'	8.8'	-4.2'	56.1'	85°52.5'	32°48.7'			34°00.3'	39°21.7'	48°03.3'	51°27.7'
9	87°54.2'	N 23°46.2'	8.8'	-4.3'	56.2'	85°23.9'	32°17.1'			34°27.8'	39°47.2'	48°35.0'	51°52.0'
10	102°22.1'	N 23°41.9'	8.8'	-4.4'	56.2'	84°55.3'	31°45.5'			34°55.3'	40°12.9'	49°06.9'	52°16.4'
11	116°49.9'	N 23°37.5'	8.9'	-4.5'	56.2'	84°26.6'	31°13.8'			35°23.0'	40°38.7'	49°38.7'	52°40.9'
12	131°17.8'	N 23°33.0'	8.9'	-4.7'	56.2'	83°57.9'	30°42.2'		6°51.2'	35°50.8'	41°04.6'	50°10.6'	53°05.5'
13	145°45.7'	N 23°28.3'	8.9'	-4.8'	56.3'	83°29.2'	30°10.5'		7°18.4'	36°18.8'	41°30.7'	50°42.4'	53°30.2'
14	160°13.6'	N 23°23.5'	8.9'	-4.9'	56.3'	83°00.5'	29°38.8'		7°46.2'	36°46.8'	41°56.9'	51°14.4'	53°55.0'
15	174°41.5'	N 23°18.6'	8.9'	-5.1'	56.3'	82°31.8'	29°07.1'		8°14.6'	37°15.0'	42°23.3'	51°46.3'	54°19.9'
16	189°09.4'	N 23°13.5'	9.0'	-5.2'	56.3'	82°03.1'	28°35.4'		8°43.4'	37°43.2'	42°49.7'	52°18.3'	54°44.9'
17	203°37.4'	N 23°08.3'	9.0'	-5.3'	56.3'	81°34.3'	28°03.7'		9°12.6'	38°11.6'	43°16.3'	52°50.2'	55°10.1'
18	218°05.3'	N 23°03.0'	9.0'	-5.5'	56.4'	81°05.6'	27°32.0'		9°42.1'	38°40.1'	43°43.1'	53°22.2'	55°35.3'
19	232°33.3'	N 22°57.5'	9.0'	-5.6'	56.4'	80°36.8'	27°00.3'		10°11.9'	39°08.7'	44°09.9'	53°54.3'	56°00.6'
20	247°01.4'	N 22°51.9'	9.0'	-5.7'	56.4'	80°08.1'	26°28.6'		10°41.9'	39°37.4'	44°36.8'	54°26.3'	56°26.0'
21	261°29.4'	N 22°46.2'	9.1'	-5.8'	56.4'	79°39.3'	25°56.9'		11°12.2'	40°06.1'	45°03.9'	54°58.4'	56°51.5'
22	275°57.5'	N 22°40.4'	9.1'	-6.0'	56.5'	79°10.5'	25°25.2'	21°36.3'	11°42.7'	40°35.0'	45°31.0'	55°30.5'	57°17.1'
23	290°25.6'	N 22°34.4'	9.1'	-6.1'	56.5'	78°41.7'	24°53.4'	21°51.4'	12°13.3'	41°04.0'	45°58.3'	56°02.7'	57°42.8'
Mer. pass.		2 h 55 m SD 15.3' phase 88%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.2'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°55.4'	N 7°24.6'
Deneb	+1.2	49°28.3'	N 45°21.5'	Acrux	+0.8	173°04.0'	S 63°12.5'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.5'	Regulus	+1.4	207°37.9'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.7'
Vega	+0.0	80°35.9'	N 38°48.3'	Pollux	+1.2	243°21.1'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.3'	S 26°28.5'	Procyon	+0.4	244°54.1'	N 5°10.3'	Polaris	+2.0	315°05.6'	N 89°21.2'
Rigel Kent	-0.0	139°45.4'	S 60°54.9'	Adhara	+1.5	255°08.1'	S 28°59.9'	Achernar	+0.5	335°22.4'	S 57°08.2'
Arcturus	-0.1	145°51.3'	N 19°04.5'	Sirius	-1.4	258°28.9'	S 16°44.7'				
Hadar	+0.6	148°41.1'	S 60°28.1'	Canopus	-0.6	263°53.3'	S 52°42.3'				

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec		
0	78°11.7'	181°55.6'	S 22°50.2'	208°33.4'	S 16°45.7'	138°15.3'	S 21°04.1'	136°48.3'	S 20°41.0'	60°45.7'	N 7°40.8'							
1	93°14.1'	196°55.3'	S 22°50.4'	223°32.7'	S 16°46.5'	153°17.3'	S 21°04.0'	151°50.5'	S 20°40.9'	75°47.5'	N 7°41.1'							
2	108°16.6'	211°55.0'	S 22°50.7'	238°32.0'	S 16°47.4'	168°19.2'	S 21°03.9'	166°52.7'	S 20°40.9'	90°49.4'	N 7°41.5'							
3	123°19.1'	226°54.7'	S 22°50.9'	253°31.4'	S 16°48.3'	183°21.1'	S 21°03.8'	181°54.9'	S 20°40.8'	105°51.2'	N 7°41.8'							
4	138°21.5'	241°54.5'	S 22°51.1'	268°30.7'	S 16°49.1'	198°23.0'	S 21°03.7'	196°57.1'	S 20°40.8'	120°53.1'	N 7°42.2'							
5	153°24.0'	256°54.2'	S 22°51.4'	283°30.1'	S 16°50.0'	213°24.9'	S 21°03.6'	211°59.3'	S 20°40.7'	135°54.9'	N 7°42.5'							
6	168°26.4'	271°53.9'	S 22°51.6'	298°29.4'	S 16°50.9'	228°26.9'	S 21°03.5'	227°01.5'	S 20°40.7'	150°56.7'	N 7°42.9'							
7	183°28.9'	286°53.6'	S 22°51.8'	313°28.7'	S 16°51.7'	243°28.8'	S 21°03.4'	242°03.7'	S 20°40.6'	165°58.6'	N 7°43.2'							
8	198°31.4'	301°53.3'	S 22°52.1'	328°28.1'	S 16°52.6'	258°30.7'	S 21°03.3'	257°05.9'	S 20°40.6'	181°00.4'	N 7°43.6'							
9	213°33.8'	316°53.1'	S 22°52.3'	343°27.4'	S 16°53.4'	273°32.6'	S 21°03.2'	272°08.1'	S 20°40.5'	196°02.3'	N 7°43.9'							
10	228°36.3'	331°52.8'	S 22°52.5'	358°26.7'	S 16°54.3'	288°34.5'	S 21°03.1'	287°10.3'	S 20°40.5'	211°04.1'	N 7°44.3'							
11	243°38.8'	346°52.5'	S 22°52.8'	13°26.1'	S 16°55.2'	303°36.5'	S 21°03.0'	302°12.6'	S 20°40.4'	226°05.9'	N 7°44.6'							
12	258°41.2'	1°52.2'	S 22°53.0'	28°25.4'	S 16°56.0'	318°38.4'	S 21°02.9'	317°14.8'	S 20°40.4'	241°07.8'	N 7°45.0'							
13	273°43.7'	16°51.9'	S 22°53.2'	43°24.7'	S 16°56.9'	333°40.3'	S 21°02.8'	332°17.0'	S 20°40.3'	256°09.6'	N 7°45.3'							
14	288°46.2'	31°51.6'	S 22°53.5'	58°24.1'	S 16°57.7'	348°42.2'	S 21°02.7'	347°19.2'	S 20°40.3'	271°11.4'	N 7°45.7'							
15	303°48.6'	46°51.4'	S 22°53.7'	73°23.4'	S 16°58.6'	3°44.1'	S 21°02.6'	2°21.4'	S 20°40.2'	286°13.3'	N 7°46.0'							
16	318°51.1'	61°51.1'	S 22°53.9'	88°22.7'	S 16°59.4'	18°46.1'	S 21°02.5'	17°23.6'	S 20°40.2'	301°15.1'	N 7°46.4'							
17	333°53.6'	76°50.8'	S 22°54.2'	103°22.0'	S 17°00.3'	33°48.0'	S 21°02.4'	32°25.8'	S 20°40.1'	316°16.9'	N 7°46.7'							
18	348°56.0'	91°50.5'	S 22°54.4'	118°21.4'	S 17°01.2'	48°49.9'	S 21°02.3'	47°28.0'	S 20°40.1'	331°18.8'	N 7°47.1'							
19	3°58.5'	106°50.2'	S 22°54.6'	133°20.7'	S 17°02.0'	63°51.8'	S 21°02.2'	62°30.2'	S 20°40.0'	346°20.6'	N 7°47.4'							
20	19°00.9'	121°49.9'	S 22°54.8'	148°20.0'	S 17°02.9'	78°53.7'	S 21°02.1'	77°32.4'	S 20°40.0'	1°22.4'	N 7°47.8'							
21	34°03.4'	136°49.7'	S 22°55.1'	163°19.4'	S 17°03.7'	93°55.7'	S 21°02.0'	92°34.6'	S 20°39.9'	16°24.2'	N 7°48.1'							
22	49°05.9'	151°49.4'	S 22°55.3'	178°18.7'	S 17°04.6'	108°57.6'	S 21°01.9'	107°36.8'	S 20°39.9'	31°26.1'	N 7°48.5'							
23	64°08.3'	166°49.1'	S 22°55.5'	193°18.0'	S 17°05.4'	123°59.5'	S 21°01.8'	122°39.0'	S 20°39.8'	46°27.9'	N 7°48.8'							
		SD 16.2' d -0.2'		v -0.7' d -0.9'		v 1.9' d 0.1'		v 2.2' d 0.0'		v 1.8' d 0.3'								
Mer. pass.		11 h 52 m 32 s		10 h 6 m		14 h 45 m		14 h 51 m		19 h 55 m								

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Venus	-Arcturus	-Spica	+Regulus	+Pollux	+Procyon	+Adhara
0	256°07.7'	N 4°47.2'	11.3'	-14.6'	59.0'	77°25.7'	51°42.4'	34°23.1'	25°11.1'	30°11.9'	66°05.6'	66°40.9'	81°13.3'
1	270°38.0'	N 4°32.6'	11.3'	-14.6'	59.1'	76°53.1'	51°10.4'	34°01.5'	24°37.1'	30°46.7'	66°40.7'	67°13.8'	81°33.6'
2	285°08.4'	N 4°18.0'	11.3'	-14.6'	59.1'	76°20.4'	50°38.3'	33°40.2'	24°03.3'	31°21.5'	67°15.8'	67°46.7'	81°53.9'
3	299°38.7'	N 4°03.4'	11.3'	-14.7'	59.1'	75°47.7'	50°06.1'	33°19.2'	23°29.4'	31°56.3'	67°50.9'	68°19.7'	82°14.3'
4	314°09.0'	N 3°48.7'	11.3'	-14.7'	59.1'	75°15.0'	49°34.0'	32°58.5'	22°55.6'	32°31.2'	68°26.1'	68°52.7'	82°34.8'
5	328°39.3'	N 3°34.0'	11.3'	-14.7'	59.2'	74°42.2'	49°01.8'	32°38.2'	22°21.8'	33°06.2'	69°01.4'	69°25.8'	82°55.3'
6	343°09.6'	N 3°19.2'	11.3'	-14.8'	59.2'	74°09.4'	48°29.6'	32°18.3'	21°48.1'	33°41.1'	69°36.6'	69°58.9'	83°15.9'
7	357°39.9'	N 3°04.5'	11.3'	-14.8'	59.2'	73°36.5'	47°57.3'	31°58.8'	21°14.4'	34°16.2'	70°11.9'	70°32.1'	83°36.5'
8	12°10.1'	N 2°49.6'	11.2'	-14.8'	59.2'	73°03.6'	47°25.0'	31°39.6'	20°40.8'	34°51.2'	70°47.2'	71°05.3'	83°57.1'
9	26°40.4'	N 2°34.8'	11.2'	-14.9'	59.3'	72°30.7'	46°52.7'	31°20.8'	20°07.2'	35°26.3'	71°22.6'	71°38.6'	84°17.8'
10	41°10.6'	N 2°20.0'	11.2'	-14.9'	59.3'	71°57.8'	46°20.3'	31°02.5'	19°33.7'	36°01.5'	71°58.0'	72°11.9'	84°38.6'
11	55°40.8'	N 2°05.1'	11.2'	-14.9'	59.3'	71°24.8'	45°48.0'	30°44.6'	19°00.3'	36°36.7'	72°33.4'	72°45.2'	84°59.3'
12	70°11.0'	N 1°50.2'	11.2'	-14.9'	59.3'	70°51.8'	45°15.5'	30°27.1'	18°27.0'	37°11.9'	73°08.8'	73°18.6'	85°20.2'
13	84°41.1'	N 1°35.2'	11.1'	-15.0'	59.4'	70°18.8'	44°43.1'	30°10.1'	17°53.8'	37°47.2'	73°44.3'	73°52.1'	85°41.0'
14	99°11.3'	N 1°20.3'	11.1'	-15.0'	59.4'	69°45.7'	44°10.6'	29°53.6'	17°20.7'	38°22.5'	74°19.8'	74°25.5'	86°01.9'
15	113°41.4'	N 1°05.3'	11.1'	-15.0'	59.4'	69°12.6'	43°38.1'	29°37.6'	16°47.8'	38°57.8'	74°55.4'	74°59.1'	86°22.8'
16	128°11.5'	N 0°50.3'	11.1'	-15.0'	59.4'	68°39.5'	43°05.5'		16°15.0'	39°33.2'	75°31.0'	75°32.6'	86°43.8'
17	142°41.6'	N 0°35.3'	11.1'	-15.0'	59.5'	68°06.3'	42°33.0'		15°42.4'	40°08.6'	76°06.6'	76°06.2'	87°04.8'
18	157°11.6'	N 0°20.3'	11.0'	-15.0'	59.5'	67°33.1'	42°00.4'		15°10.0'	40°44.1'	76°42.2'	76°39.9'	87°25.8'
19	171°41.7'	N 0°05.2'	11.0'	-15.1'	59.5'	66°59.9'	41°27.7'		14°37.8'	41°19.6'	77°17.9'	77°13.6'	87°46.9'
20	186°11.7'	S 0°09.9'	11.0'	-15.1'	59.5'	66°26.6'	40°55.0'		14°05.9'	41°55.1'	77°53.6'	77°47.3'	88°08.0'
21	200°41.6'	S 0°24.9'	10.9'	-15.1'	59.6'	65°53.3'	40°22.3'		13°34.2'	42°30.7'	78°29.4'	78°21.0'	88°29.1'
22	215°11.6'	S 0°40.0'	10.9'	-15.1'	59.6'	65°20.0'	39°49.6'		13°02.9'	43°06.3'	79°05.1'	78°54.8'	88°50.2'
23	229°41.5'	S 0°55.1'	10.9'	-15.1'	59.6'	64°46.6'	39°16.9'		12°32.0'	43°42.0'	79°40.9'	79°28.7'	89°11.4'
Mer. pass.		7 h 10 m SD 16.1'		phase 39%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°55.3'	N 7°24.6'
Deneb	+1.2	49°28.3'	N 45°21.5'	Acrux	+0.8	173°03.9'	S 63°12.5'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.5'	Regulus	+1.4	207°37.9'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.7'
Vega	+0.0	80°35.9'	N 38°48.3'	Pollux	+1.2	243°21.1'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.3'	S 26°28.5'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°06.6'	N 89°21.2'
Rigil Kent	-0.0	139°45.3'	S 60°54.9'	Adhara	+1.5	255°08.1'	S 28°60.0'	Achernar	+0.5	335°22.4'	S 57°08.2'
Arcturus	-0.1	145°51.2'	N 19°04.5'	Sirius	-1.4	258°28.8'	S 16°44.7'				
Hadar	+0.6	148°41.1'	S 60°28.1'	Canopus	-0.6	263°53.3'	S 52°42.3'				

h	Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	79°10.8'	181°48.8'	S 22°55.7'	208°17.3'	S 17°06.3'	139°01.4'	S 21°01.7'	137°41.2'	S 20°39.8'	61°29.7'	N 7°49.2'
1	94°13.3'	196°48.5'	S 22°55.9'	223°16.7'	S 17°07.1'	154°03.3'	S 21°01.6'	152°43.4'	S 20°39.7'	76°31.5'	N 7°49.5'
2	109°15.7'	211°48.2'	S 22°56.2'	238°16.0'	S 17°08.0'	169°05.2'	S 21°01.5'	167°45.6'	S 20°39.7'	91°33.4'	N 7°49.9'
3	124°18.2'	226°48.0'	S 22°56.4'	253°15.3'	S 17°08.8'	184°07.2'	S 21°01.4'	182°47.8'	S 20°39.6'	106°35.2'	N 7°50.2'
4	139°20.7'	241°47.7'	S 22°56.6'	268°14.6'	S 17°09.6'	199°09.1'	S 21°01.3'	197°50.0'	S 20°39.6'	121°37.0'	N 7°50.6'
5	154°23.1'	256°47.4'	S 22°56.8'	283°14.0'	S 17°10.5'	214°11.0'	S 21°01.2'	212°52.2'	S 20°39.5'	136°38.8'	N 7°50.9'
6	169°25.6'	271°47.1'	S 22°57.0'	298°13.3'	S 17°11.3'	229°12.9'	S 21°01.1'	227°54.4'	S 20°39.5'	151°40.6'	N 7°51.3'
7	184°28.0'	286°46.8'	S 22°57.2'	313°12.6'	S 17°12.2'	244°14.8'	S 21°01.0'	242°56.6'	S 20°39.4'	166°42.5'	N 7°51.6'
8	199°30.5'	301°46.5'	S 22°57.5'	328°11.9'	S 17°13.0'	259°16.8'	S 21°00.9'	257°58.8'	S 20°39.4'	181°44.3'	N 7°52.0'
9	214°33.0'	316°46.2'	S 22°57.7'	343°11.2'	S 17°13.9'	274°18.7'	S 21°00.8'	273°01.0'	S 20°39.3'	196°46.1'	N 7°52.3'
10	229°35.4'	331°46.0'	S 22°57.9'	358°10.6'	S 17°14.7'	289°20.6'	S 21°00.7'	288°03.2'	S 20°39.3'	211°47.9'	N 7°52.7'
11	244°37.9'	346°45.7'	S 22°58.1'	13°09.9'	S 17°15.5'	304°22.5'	S 21°00.6'	303°05.5'	S 20°39.2'	226°49.7'	N 7°53.0'
12	259°40.4'	1°45.4'	S 22°58.3'	28°09.2'	S 17°16.4'	319°24.4'	S 21°00.5'	318°07.7'	S 20°39.2'	241°51.5'	N 7°53.4'
13	274°42.8'	16°45.1'	S 22°58.5'	43°08.5'	S 17°17.2'	334°26.3'	S 21°00.3'	333°09.9'	S 20°39.1'	256°53.3'	N 7°53.8'
14	289°45.3'	31°44.8'	S 22°58.7'	58°07.8'	S 17°18.1'	349°28.3'	S 21°00.2'	348°12.1'	S 20°39.1'	271°55.2'	N 7°54.1'
15	304°47.8'	46°44.5'	S 22°58.9'	73°07.2'	S 17°18.9'	4°30.2'	S 21°00.1'	3°14.3'	S 20°39.0'	286°57.0'	N 7°54.5'
16	319°50.2'	61°44.2'	S 22°59.2'	88°06.5'	S 17°19.7'	19°32.1'	S 21°00.0'	18°16.5'	S 20°39.0'	301°58.8'	N 7°54.8'
17	334°52.7'	76°43.9'	S 22°59.4'	103°05.8'	S 17°20.6'	34°34.0'	S 20°59.9'	33°18.7'	S 20°38.9'	317°00.6'	N 7°55.2'
18	349°55.2'	91°43.7'	S 22°59.6'	118°05.1'	S 17°21.4'	49°35.9'	S 20°59.8'	48°20.9'	S 20°38.9'	332°02.4'	N 7°55.5'
19	4°57.6'	106°43.4'	S 22°59.8'	133°04.4'	S 17°22.2'	64°37.8'	S 20°59.7'	63°23.1'	S 20°38.8'	347°04.2'	N 7°55.9'
20	20°00.1'	121°43.1'	S 22°60.0'	148°03.7'	S 17°23.1'	79°39.8'	S 20°59.6'	78°25.3'	S 20°38.8'	2°06.0'	N 7°56.2'
21	35°02.5'	136°42.8'	S 23°00.2'	163°03.1'	S 17°23.9'	94°41.7'	S 20°59.5'	93°27.5'	S 20°38.7'	17°07.8'	N 7°56.6'
22	50°05.0'	151°42.5'	S 23°00.4'	178°02.4'	S 17°24.7'	109°43.6'	S 20°59.4'	108°29.7'	S 20°38.7'	32°09.6'	N 7°57.0'
23	65°07.5'	166°42.2'	S 23°00.6'	193°01.7'	S 17°25.6'	124°45.5'	S 20°59.3'	123°31.9'	S 20°38.6'	47°11.4'	N 7°57.3'
		SD 16.2' d -0.2'		v -0.7' d -0.8'		v 1.9' d 0.1'		v 2.2' d 0.0'		v 1.8' d 0.4'	
Mer. pass.		11 h 52 m 59 s		10 h 7 m		14 h 42 m		14 h 47 m		19 h 52 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Antares	-Venus	-Spica	+Regulus	+Procyon	+Pollux	+Adhara
0	244°11.3'	S 1°10.2'	10.8'	-15.1'	59.6'	64°13.3'		38°44.1'	12°01.4'	44°17.7'	80°02.5'	80°16.8'	89°32.6'
1	258°41.2'	S 1°25.3'	10.8'	-15.1'	59.7'	63°39.8'		38°11.2'	11°31.4'	44°53.4'	80°36.4'	80°52.6'	89°53.8'
2	273°11.0'	S 1°40.4'	10.8'	-15.1'	59.7'	63°06.4'		37°38.4'	11°01.9'	45°29.1'	81°10.4'	81°28.5'	90°15.0'
3	287°40.8'	S 1°55.5'	10.7'	-15.1'	59.7'	62°32.9'		37°05.5'	10°33.1'	46°04.9'	81°44.4'	82°04.5'	90°36.2'
4	302°10.5'	S 2°10.6'	10.7'	-15.1'	59.7'	61°59.4'		36°32.6'		46°40.7'	82°18.4'	82°40.4'	90°57.5'
5	316°40.2'	S 2°25.8'	10.7'	-15.1'	59.7'	61°25.9'		35°59.6'		47°16.6'	82°52.4'	83°16.4'	91°18.8'
6	331°09.8'	S 2°40.9'	10.6'	-15.1'	59.8'	60°52.3'		35°26.7'		47°52.5'	83°26.5'	83°52.4'	91°40.0'
7	345°39.5'	S 2°56.0'	10.6'	-15.1'	59.8'	60°18.7'		34°53.7'		48°28.4'	84°00.6'	84°28.5'	92°01.3'
8	0°09.0'	S 3°11.1'	10.5'	-15.1'	59.8'	59°45.1'		34°20.6'		49°04.3'	84°34.7'	85°04.5'	92°22.6'
9	14°38.6'	S 3°26.2'	10.5'	-15.1'	59.8'	59°11.5'		33°47.6'		49°40.3'	85°08.9'	85°40.6'	92°43.9'
10	29°08.1'	S 3°41.3'	10.4'	-15.1'	59.9'	58°37.8'		33°14.5'		50°16.4'	85°43.1'	86°16.8'	93°05.2'
11	43°37.5'	S 3°56.4'	10.4'	-15.1'	59.9'	58°04.1'		32°41.4'		50°52.4'	86°17.4'	86°52.9'	93°26.5'
12	58°06.9'	S 4°11.5'	10.4'	-15.1'	59.9'	57°30.3'		32°08.2'		51°28.5'	86°51.6'	87°29.1'	93°47.9'
13	72°36.3'	S 4°26.5'	10.3'	-15.1'	59.9'	56°56.6'		31°35.1'		52°04.6'	87°25.9'	88°05.3'	94°09.2'
14	87°05.6'	S 4°41.6'	10.3'	-15.0'	59.9'	56°22.8'	48°08.4'	31°01.9'		52°40.7'	88°00.2'	88°41.6'	94°30.5'
15	101°34.8'	S 4°56.6'	10.2'	-15.0'	60.0'	55°49.0'	47°32.4'	30°28.7'		53°16.9'	88°34.6'	89°17.8'	94°51.8'
16	116°04.0'	S 5°11.6'	10.2'	-15.0'	60.0'	55°15.1'	46°56.3'	29°55.4'		53°53.1'	89°08.9'	89°54.1'	95°13.1'
17	130°33.2'	S 5°26.6'	10.1'	-15.0'	60.0'	54°41.3'	46°20.2'	29°22.1'		54°29.3'	89°43.3'	90°30.5'	95°34.4'
18	145°02.3'	S 5°41.6'	10.1'	-15.0'	60.0'	54°07.4'	45°44.1'	28°48.8'		55°05.6'	90°17.8'	91°06.8'	95°55.7'
19	159°31.3'	S 5°56.6'	10.0'	-14.9'	60.0'	53°33.4'	45°08.0'	28°15.5'		55°41.9'	90°52.2'	91°43.2'	96°16.9'
20	174°00.3'	S 6°11.5'	9.9'	-14.9'	60.1'	52°59.5'	44°31.9'	27°42.2'		56°18.2'	91°26.7'	92°19.6'	96°38.2'
21	188°29.3'	S 6°26.4'	9.9'	-14.9'	60.1'	52°25.5'	43°55.7'	27°08.8'		56°54.5'	92°01.2'	92°56.0'	96°59.4'
22	202°58.2'	S 6°41.3'	9.8'	-14.9'	60.1'	51°51.5'	43°19.5'	26°35.4'		57°30.9'	92°35.7'	93°32.5'	97°20.7'
23	217°27.0'	S 6°56.2'	9.8'	-14.8'	60.1'	51°17.5'	42°43.3'	26°01.9'		58°07.3'	93°10.2'	94°08.9'	97°41.9'
Mer. pass.		7 h 59 m SD 16.3' phase 28%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°55.3'	N 7°24.6'
Deneb	+1.2	49°28.3'	N 45°21.5'	Acrux	+0.8	173°03.9'	S 63°12.5'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.5'	Regulus	+1.4	207°37.9'	N 11°51.9'	Rigel	+0.2	281°06.7'	N 8°10.7'
Vega	+0.0	80°35.9'	N 38°48.3'	Pollux	+1.2	243°21.1'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.3'	S 26°28.5'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°06.9'	N 89°21.2'
Rigil Kent	-0.0	139°45.3'	S 60°54.9'	Adhara	+1.5	255°08.1'	S 28°60.0'	Achernar	+0.5	335°22.4'	S 57°08.2'
Arcturus	-0.1	145°51.2'	N 19°04.5'	Sirius	-1.4	258°28.8'	S 16°44.7'				
Hadar	+0.6	148°41.1'	S 60°28.1'	Canopus	-0.6	263°53.3'	S 52°42.3'				

Friday 11 December 2020 UT1

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	80°09.9'	181°41.9'	S 23°00.8'	208°01.0'	S 17°26.4'	139°47.4'	S 20°59.2'	138°34.1'	S 20°38.6'	62°13.2'	N 7°57.7'	
1	95°12.4'	196°41.6'	S 23°01.0'	223°00.3'	S 17°27.2'	154°49.3'	S 20°59.1'	153°36.3'	S 20°38.5'	77°15.0'	N 7°58.0'	
2	110°14.9'	211°41.4'	S 23°01.2'	237°59.6'	S 17°28.1'	169°51.3'	S 20°59.0'	168°38.5'	S 20°38.5'	92°16.8'	N 7°58.4'	
3	125°17.3'	226°41.1'	S 23°01.4'	252°58.9'	S 17°28.9'	184°53.2'	S 20°58.9'	183°40.7'	S 20°38.4'	107°18.6'	N 7°58.7'	
4	140°19.8'	241°40.8'	S 23°01.6'	267°58.3'	S 17°29.7'	199°55.1'	S 20°58.8'	198°42.9'	S 20°38.4'	122°20.4'	N 7°59.1'	
5	155°22.3'	256°40.5'	S 23°01.8'	282°57.6'	S 17°30.5'	214°57.0'	S 20°58.7'	213°45.1'	S 20°38.3'	137°22.2'	N 7°59.5'	
6	170°24.7'	271°40.2'	S 23°02.0'	297°56.9'	S 17°31.4'	229°58.9'	S 20°58.6'	228°47.3'	S 20°38.3'	152°24.0'	N 7°59.8'	
7	185°27.2'	286°39.9'	S 23°02.2'	312°56.2'	S 17°32.2'	245°00.8'	S 20°58.5'	243°49.5'	S 20°38.2'	167°25.8'	N 8°00.2'	
8	200°29.7'	301°39.6'	S 23°02.4'	327°55.5'	S 17°33.0'	260°02.7'	S 20°58.4'	258°51.7'	S 20°38.2'	182°27.6'	N 8°00.5'	
9	215°32.1'	316°39.3'	S 23°02.6'	342°54.8'	S 17°33.8'	275°04.7'	S 20°58.3'	273°53.9'	S 20°38.1'	197°29.4'	N 8°00.9'	
10	230°34.6'	331°39.0'	S 23°02.8'	357°54.1'	S 17°34.7'	290°06.6'	S 20°58.2'	288°56.1'	S 20°38.1'	212°31.2'	N 8°01.3'	
11	245°37.0'	346°38.7'	S 23°03.0'	12°53.4'	S 17°35.5'	305°08.5'	S 20°58.1'	303°58.3'	S 20°38.0'	227°33.0'	N 8°01.6'	
12	260°39.5'	1°38.5'	S 23°03.2'	27°52.7'	S 17°36.3'	320°10.4'	S 20°58.0'	319°00.5'	S 20°38.0'	242°34.8'	N 8°02.0'	
13	275°42.0'	16°38.2'	S 23°03.4'	42°52.0'	S 17°37.1'	335°12.3'	S 20°57.9'	334°02.7'	S 20°37.9'	257°36.6'	N 8°02.3'	
14	290°44.4'	31°37.9'	S 23°03.6'	57°51.3'	S 17°37.9'	350°14.2'	S 20°57.8'	349°04.9'	S 20°37.9'	272°38.4'	N 8°02.7'	
15	305°46.9'	46°37.6'	S 23°03.7'	72°50.6'	S 17°38.8'	5°16.1'	S 20°57.7'	4°07.1'	S 20°37.8'	287°40.2'	N 8°03.1'	
16	320°49.4'	61°37.3'	S 23°03.9'	87°49.9'	S 17°39.6'	20°18.1'	S 20°57.6'	19°09.3'	S 20°37.8'	302°42.0'	N 8°03.4'	
17	335°51.8'	76°37.0'	S 23°04.1'	102°49.3'	S 17°40.4'	35°20.0'	S 20°57.5'	34°11.5'	S 20°37.7'	317°43.8'	N 8°03.8'	
18	350°54.3'	91°36.7'	S 23°04.3'	117°48.6'	S 17°41.2'	50°21.9'	S 20°57.4'	49°13.7'	S 20°37.7'	332°45.5'	N 8°04.1'	
19	5°56.8'	106°36.4'	S 23°04.5'	132°47.9'	S 17°42.0'	65°23.8'	S 20°57.2'	64°15.9'	S 20°37.6'	347°47.3'	N 8°04.5'	
20	20°59.2'	121°36.1'	S 23°04.7'	147°47.2'	S 17°42.8'	80°25.7'	S 20°57.1'	79°18.1'	S 20°37.6'	2°49.1'	N 8°04.9'	
21	36°01.7'	136°35.8'	S 23°04.9'	162°46.5'	S 17°43.7'	95°27.6'	S 20°57.0'	94°20.3'	S 20°37.5'	17°50.9'	N 8°05.2'	
22	51°04.2'	151°35.5'	S 23°05.1'	177°45.8'	S 17°44.5'	110°29.5'	S 20°56.9'	109°22.5'	S 20°37.5'	32°52.7'	N 8°05.6'	
23	66°06.6'	166°35.2'	S 23°05.2'	192°45.1'	S 17°45.3'	125°31.4'	S 20°56.8'	124°24.7'	S 20°37.4'	47°54.5'	N 8°06.0'	
		SD 16.2'	d -0.2'		v -0.7' d -0.8'		v 1.9' d 0.1'		v 2.2' d 0.1'		v 1.8' d 0.4'	
Mer. pass.		11 h 53 m 27 s		10 h 8 m		14 h 39 m		14 h 44 m		19 h 49 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Hadar	-Sun	-Antares	-Venus	+Spica	+Arcturus	+Regulus	+Procyon
0	231°55.8'	S 7°11.0'	9.7'	-14.8'	60.1'	53°20.1'	50°43.5'	42°07.1'	25°28.5'			58°43.7'	93°44.8'
1	246°24.5'	S 7°25.8'	9.7'	-14.8'	60.1'	53°04.3'	50°09.4'	41°30.9'	24°55.0'			59°20.2'	94°19.4'
2	260°53.1'	S 7°40.6'	9.6'	-14.7'	60.2'	52°48.7'	49°35.3'	40°54.6'	24°21.5'			59°56.6'	94°54.0'
3	275°21.7'	S 7°55.3'	9.5'	-14.7'	60.2'	52°33.3'	49°01.2'	40°18.4'	23°48.0'			60°33.1'	95°28.6'
4	289°50.3'	S 8°10.0'	9.5'	-14.7'	60.2'		48°27.0'	39°42.1'	23°14.5'			61°09.6'	96°03.2'
5	304°18.7'	S 8°24.7'	9.4'	-14.6'	60.2'		47°52.9'	39°05.8'	22°40.9'			61°46.2'	96°37.9'
6	318°47.1'	S 8°39.3'	9.3'	-14.6'	60.2'		47°18.7'	38°29.6'	22°07.3'			62°22.8'	97°12.5'
7	333°15.5'	S 8°53.9'	9.3'	-14.5'	60.2'		46°44.5'	37°53.3'	21°33.7'	10°43.7'		62°59.4'	97°47.2'
8	347°43.8'	S 9°08.4'	9.2'	-14.5'	60.3'		46°10.2'	37°16.9'	21°00.1'	11°13.4'		63°36.0'	98°21.9'
9	2°12.0'	S 9°22.9'	9.1'	-14.4'	60.3'		45°36.0'	36°40.6'	20°26.5'	11°43.8'		64°12.6'	98°56.6'
10	16°40.1'	S 9°37.3'	9.1'	-14.4'	60.3'		45°01.7'	36°04.3'	19°52.8'	12°14.8'		64°49.3'	99°31.3'
11	31°08.2'	S 9°51.7'	9.0'	-14.3'	60.3'		44°27.4'	35°28.0'	19°19.1'	12°46.3'	28°56.3'	65°26.0'	100°06.1'
12	45°36.2'	S 10°06.1'	8.9'	-14.3'	60.3'		43°53.1'	34°51.6'	18°45.4'	13°18.3'	29°11.4'	66°02.7'	100°40.8'
13	60°04.1'	S 10°20.4'	8.9'	-14.2'	60.3'		43°18.8'	34°15.3'	18°11.7'	13°50.6'	29°27.0'	66°39.4'	101°15.6'
14	74°32.0'	S 10°34.6'	8.8'	-14.2'	60.3'		42°44.4'	33°39.0'	17°38.0'	14°23.4'	29°43.2'	67°16.1'	101°50.3'
15	88°59.8'	S 10°48.8'	8.7'	-14.1'	60.4'		42°10.1'	33°02.6'	17°04.2'	14°56.5'	30°00.0'	67°52.9'	102°25.1'
16	103°27.5'	S 11°02.9'	8.7'	-14.1'	60.4'		41°35.7'	32°26.3'	16°30.4'	15°29.9'	30°17.4'	68°29.7'	102°59.9'
17	117°55.2'	S 11°16.9'	8.6'	-14.0'	60.4'		41°01.3'	31°49.9'	15°56.7'	16°03.5'	30°35.2'	69°06.5'	103°34.7'
18	132°22.8'	S 11°30.9'	8.5'	-13.9'	60.4'		40°26.9'	31°13.6'	15°22.9'	16°37.4'	30°53.6'	69°43.3'	104°09.4'
19	146°50.3'	S 11°44.9'	8.4'	-13.9'	60.4'			30°37.3'	14°49.0'	17°11.6'	31°12.5'	70°20.1'	104°44.2'
20	161°17.7'	S 11°58.8'	8.4'	-13.8'	60.4'			30°01.0'	14°15.2'	17°45.9'	31°31.9'	70°57.0'	105°19.0'
21	175°45.0'	S 12°12.6'	8.3'	-13.7'	60.4'			29°24.6'	13°41.4'	18°20.4'	31°51.7'	71°33.9'	105°53.8'
22	190°12.3'	S 12°26.3'	8.2'	-13.7'	60.4'			28°48.3'	13°07.5'	18°55.0'	32°12.0'	72°10.7'	106°28.6'
23	204°39.5'	S 12°40.0'	8.1'	-13.6'	60.4'			28°12.1'	12°33.7'	19°29.8'	32°32.8'	72°47.6'	107°03.4'
Mer. pass.		8 h 51 m SD 16.4'	phase	18%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°55.3'	N 7°24.6'
Deneb	+1.2	49°28.3'	N 45°21.5'	Acrux	+0.8	173°03.9'	S 63°12.5'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.5'	Regulus	+1.4	207°37.9'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.7'
Vega	+0.0	80°35.9'	N 38°48.3'	Pollux	+1.2	243°21.1'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.3'	S 26°28.5'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°07.1'	N 89°21.2'
Rigel Kent	-0.0	139°45.3'	S 60°54.9'	Adhara	+1.5	255°08.1'	S 28°60.0'	Achernar	+0.5	335°22.4'	S 57°08.2'
Arcturus	-0.1	145°51.2'	N 19°04.5'	Sirius	-1.4	258°28.8'	S 16°44.7'				
Hadar	+0.6	148°41.1'	S 60°28.0'	Canopus	-0.6	263°53.3'	S 52°42.3'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	81°09.1'	181°35.0' S 23°05.4'	207°44.4' S 17°46.1'	140°33.4' S 20°56.7'	139°26.9' S 20°37.4'	62°56.3' N 8°06.3'						
1	96°11.5'	196°34.7' S 23°05.6'	222°43.7' S 17°46.9'	155°35.3' S 20°56.6'	154°29.1' S 20°37.3'	77°58.0' N 8°06.7'						
2	111°14.0'	211°34.4' S 23°05.8'	237°43.0' S 17°47.7'	170°37.2' S 20°56.5'	169°31.3' S 20°37.3'	92°59.8' N 8°07.0'						
3	126°16.5'	226°34.1' S 23°06.0'	252°42.3' S 17°48.5'	185°39.1' S 20°56.4'	184°33.5' S 20°37.2'	108°01.6' N 8°07.4'						
4	141°18.9'	241°33.8' S 23°06.1'	267°41.6' S 17°49.3'	200°41.0' S 20°56.3'	199°35.7' S 20°37.2'	123°03.4' N 8°07.8'						
5	156°21.4'	256°33.5' S 23°06.3'	282°40.9' S 17°50.1'	215°42.9' S 20°56.2'	214°37.9' S 20°37.1'	138°05.2' N 8°08.1'						
6	171°23.9'	271°33.2' S 23°06.5'	297°40.2' S 17°50.9'	230°44.8' S 20°56.1'	229°40.1' S 20°37.1'	153°06.9' N 8°08.5'						
7	186°26.3'	286°32.9' S 23°06.7'	312°39.5' S 17°51.7'	245°46.7' S 20°56.0'	244°42.3' S 20°37.0'	168°08.7' N 8°08.9'						
8	201°28.8'	301°32.6' S 23°06.9'	327°38.8' S 17°52.5'	260°48.7' S 20°55.9'	259°44.5' S 20°37.0'	183°10.5' N 8°09.2'						
9	216°31.3'	316°32.3' S 23°07.0'	342°38.1' S 17°53.4'	275°50.6' S 20°55.8'	274°46.7' S 20°36.9'	198°12.3' N 8°09.6'						
10	231°33.7'	331°32.0' S 23°07.2'	357°37.4' S 17°54.2'	290°52.5' S 20°55.7'	289°48.9' S 20°36.9'	213°14.0' N 8°10.0'						
11	246°36.2'	346°31.7' S 23°07.4'	12°36.6' S 17°55.0'	305°54.4' S 20°55.6'	304°51.1' S 20°36.8'	228°15.8' N 8°10.3'						
12	261°38.6'	1°31.4' S 23°07.6'	27°35.9' S 17°55.8'	320°56.3' S 20°55.5'	319°53.3' S 20°36.8'	243°17.6' N 8°10.7'						
13	276°41.1'	16°31.1' S 23°07.7'	42°35.2' S 17°56.6'	335°58.2' S 20°55.4'	334°55.5' S 20°36.7'	258°19.4' N 8°11.1'						
14	291°43.6'	31°30.8' S 23°07.9'	57°34.5' S 17°57.4'	351°00.1' S 20°55.3'	349°57.7' S 20°36.7'	273°21.1' N 8°11.4'						
15	306°46.0'	46°30.5' S 23°08.1'	72°33.8' S 17°58.2'	6°02.0' S 20°55.2'	4°59.9' S 20°36.6'	288°22.9' N 8°11.8'						
16	321°48.5'	61°30.3' S 23°08.3'	87°33.1' S 17°59.0'	21°04.0' S 20°55.0'	20°02.1' S 20°36.6'	303°24.7' N 8°12.1'						
17	336°51.0'	76°30.0' S 23°08.4'	102°32.4' S 17°59.8'	36°05.9' S 20°54.9'	35°04.3' S 20°36.5'	318°26.4' N 8°12.5'						
18	351°53.4'	91°29.7' S 23°08.6'	117°31.7' S 18°00.5'	51°07.8' S 20°54.8'	50°06.5' S 20°36.5'	333°28.2' N 8°12.9'						
19	6°55.9'	106°29.4' S 23°08.8'	132°31.0' S 18°01.3'	66°09.7' S 20°54.7'	65°08.7' S 20°36.4'	348°30.0' N 8°13.2'						
20	21°58.4'	121°29.1' S 23°08.9'	147°30.3' S 18°02.1'	81°11.6' S 20°54.6'	80°10.9' S 20°36.4'	3°31.7' N 8°13.6'						
21	37°00.8'	136°28.8' S 23°09.1'	162°29.6' S 18°02.9'	96°13.5' S 20°54.5'	95°13.1' S 20°36.3'	18°33.5' N 8°14.0'						
22	52°03.3'	151°28.5' S 23°09.3'	177°28.9' S 18°03.7'	111°15.4' S 20°54.4'	110°15.3' S 20°36.3'	33°35.3' N 8°14.4'						
23	67°05.8'	166°28.2' S 23°09.4'	192°28.2' S 18°04.5'	126°17.3' S 20°54.3'	125°17.5' S 20°36.2'	48°37.0' N 8°14.7'						
		SD 16.2' d -0.2'	v -0.7' d -0.8'	v 1.9' d 0.1'	v 2.2' d 0.1'	v 1.8' d 0.4'						
Mer. pass.		11 h 53 m 55 s	10 h 10 m	14 h 36 m	14 h 40 m	19 h 46 m						

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Antares	-Venus	+Spica	+Arcturus	+Regulus	+Adhara	+Procyon	+Pollux
0	219°06.7'	S 12°53.6'	8.1'	-13.5'	60.4'	27°35.8'	11°59.8'	20°04.8'	32°54.0'	73°24.6'	106°19.9'	107°38.2'	109°27.6'
1	233°33.7'	S 13°07.1'	8.0'	-13.4'	60.5'	26°59.5'	11°25.9'	20°39.9'	33°15.6'	74°01.5'	106°39.9'	108°13.0'	110°04.6'
2	248°00.7'	S 13°20.5'	7.9'	-13.4'	60.5'	26°23.3'	10°52.1'	21°15.1'	33°37.6'	74°38.4'	106°59.8'	108°47.8'	110°41.6'
3	262°27.6'	S 13°33.9'	7.8'	-13.3'	60.5'	25°47.1'	10°18.2'	21°50.4'	34°00.0'	75°15.4'	107°19.7'	109°22.6'	111°18.6'
4	276°54.4'	S 13°47.2'	7.7'	-13.2'	60.5'	25°10.9'	9°44.3'	22°25.8'	34°22.8'	75°52.4'	107°39.4'	109°57.4'	111°55.6'
5	291°21.2'	S 14°00.4'	7.7'	-13.1'	60.5'	24°34.8'	9°10.4'	23°01.3'	34°46.0'	76°29.4'	107°59.1'	110°32.2'	112°32.6'
6	305°47.8'	S 14°13.5'	7.6'	-13.0'	60.5'	23°58.7'	8°36.5'	23°36.9'	35°09.5'	77°06.4'	108°18.6'	111°06.9'	113°09.6'
7	320°14.4'	S 14°26.5'	7.5'	-12.9'	60.5'	23°22.6'	8°02.7'	24°12.6'	35°33.4'	77°43.4'	108°38.1'	111°41.7'	113°46.6'
8	334°40.9'	S 14°39.5'	7.4'	-12.9'	60.5'	22°46.6'	7°28.8'	24°48.4'	35°57.6'	78°20.4'	108°57.5'	112°16.5'	114°23.7'
9	349°07.3'	S 14°52.4'	7.3'	-12.8'	60.5'	22°10.6'	6°55.0'	25°24.2'	36°22.1'	78°57.4'	109°16.8'	112°51.2'	115°00.7'
10	3°33.7'	S 15°05.1'	7.3'	-12.7'	60.5'	21°34.7'	6°21.1'	26°00.1'	36°46.9'	79°34.4'	109°36.0'	113°25.9'	115°37.8'
11	17°59.9'	S 15°17.8'	7.2'	-12.6'	60.5'	20°58.8'	5°47.3'	26°36.1'	37°12.0'	80°11.5'	109°55.1'	114°00.6'	116°14.9'
12	32°26.1'	S 15°30.4'	7.1'	-12.5'	60.5'	20°23.0'	5°13.6'	27°12.1'	37°37.4'	80°48.5'	110°14.0'	114°35.3'	116°51.9'
13	46°52.2'	S 15°42.9'	7.0'	-12.4'	60.5'	19°47.3'	4°39.9'	27°48.2'	38°03.1'	81°25.6'	110°32.9'	115°10.0'	117°29.0'
14	61°18.2'	S 15°55.3'	6.9'	-12.3'	60.5'	19°11.7'	4°06.4'	28°24.3'	38°29.1'	82°02.7'	110°51.7'	115°44.7'	118°06.1'
15	75°44.2'	S 16°07.5'	6.9'	-12.2'	60.5'	18°36.1'	3°33.0'	29°00.4'	38°55.3'	82°39.7'	111°10.4'	116°19.3'	118°43.2'
16	90°10.0'	S 16°19.7'	6.8'	-12.1'	60.5'	18°00.7'	2°59.8'	29°36.7'	39°21.8'	83°16.8'	111°28.9'	116°53.9'	119°20.3'
17	104°35.8'	S 16°31.8'	6.7'	-12.0'	60.5'	17°25.3'	2°27.0'	30°12.9'	39°48.5'	83°53.9'	111°47.3'	117°28.5'	119°57.4'
18	119°01.5'	S 16°43.8'	6.6'	-11.9'	60.5'	16°50.1'		30°49.2'	40°15.5'	84°31.0'	112°05.6'	118°03.1'	
19	133°27.1'	S 16°55.7'	6.5'	-11.8'	60.5'	16°15.1'		31°25.5'	40°42.7'	85°08.1'	112°23.8'	118°37.6'	
20	147°52.7'	S 17°07.4'	6.5'	-11.6'	60.5'	15°40.1'		32°01.9'	41°10.1'	85°45.2'	112°41.9'	119°12.2'	
21	162°18.1'	S 17°19.1'	6.4'	-11.5'	60.5'	15°05.4'		32°38.3'	41°37.7'	86°22.3'	112°59.8'	119°46.6'	
22	176°43.5'	S 17°30.6'	6.3'	-11.4'	60.5'	14°30.9'		33°14.7'	42°05.5'	86°59.4'	113°17.6'		
23	191°08.8'	S 17°42.0'	6.2'	-11.3'	60.5'	13°56.6'		33°51.1'	42°33.5'	87°36.5'	113°35.3'		
Mer. pass.		9 h 45 m SD 16.5' phase 10%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°55.3'	N 7°24.6'
Deneb	+1.2	49°28.3'	N 45°21.5'	Acrux	+0.8	173°03.9'	S 63°12.5'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.5'	Regulus	+1.4	207°37.9'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.7'
Vega	+0.0	80°35.9'	N 38°48.3'	Pollux	+1.2	243°21.1'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.3'	S 26°28.5'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°07.2'	N 89°21.2'
Rigil Kent	-0.0	139°45.3'	S 60°54.9'	Adhara	+1.5	255°08.1'	S 28°60.0'	Achernar	+0.5	335°22.5'	S 57°08.2'
Arcturus	-0.1	145°51.2'	N 19°04.5'	Sirius	-1.4	258°28.8'	S 16°44.7'				
Hadar	+0.6	148°41.1'	S 60°28.0'	Canopus	-0.6	263°53.3'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	82°08.2'	181°27.9'	S 23°09.6'	207°27.4'	S 18°05.3'	141°19.2'	S 20°54.2'	140°19.7'	S 20°36.2'	63°38.8'	N 8°15.1'	
1	97°10.7'	196°27.6'	S 23°09.8'	222°26.7'	S 18°06.1'	156°21.1'	S 20°54.1'	155°21.9'	S 20°36.1'	78°40.6'	N 8°15.5'	
2	112°13.1'	211°27.3'	S 23°09.9'	237°26.0'	S 18°06.9'	171°23.1'	S 20°54.0'	170°24.1'	S 20°36.1'	93°42.3'	N 8°15.8'	
3	127°15.6'	226°27.0'	S 23°10.1'	252°25.3'	S 18°07.7'	186°25.0'	S 20°53.9'	185°26.3'	S 20°36.0'	108°44.1'	N 8°16.2'	
4	142°18.1'	241°26.7'	S 23°10.2'	267°24.6'	S 18°08.5'	201°26.9'	S 20°53.8'	200°28.5'	S 20°36.0'	123°45.8'	N 8°16.6'	
5	157°20.5'	256°26.4'	S 23°10.4'	282°23.9'	S 18°09.3'	216°28.8'	S 20°53.7'	215°30.7'	S 20°35.9'	138°47.6'	N 8°16.9'	
6	172°23.0'	271°26.1'	S 23°10.6'	297°23.2'	S 18°10.0'	231°30.7'	S 20°53.6'	230°32.9'	S 20°35.9'	153°49.4'	N 8°17.3'	
7	187°25.5'	286°25.8'	S 23°10.7'	312°22.4'	S 18°10.8'	246°32.6'	S 20°53.5'	245°35.0'	S 20°35.8'	168°51.1'	N 8°17.7'	
8	202°27.9'	301°25.5'	S 23°10.9'	327°21.7'	S 18°11.6'	261°34.5'	S 20°53.4'	260°37.2'	S 20°35.8'	183°52.9'	N 8°18.0'	
9	217°30.4'	316°25.2'	S 23°11.0'	342°21.0'	S 18°12.4'	276°36.4'	S 20°53.2'	275°39.4'	S 20°35.7'	198°54.6'	N 8°18.4'	
10	232°32.9'	331°24.9'	S 23°11.2'	357°20.3'	S 18°13.2'	291°38.3'	S 20°53.1'	290°41.6'	S 20°35.6'	213°56.4'	N 8°18.8'	
11	247°35.3'	346°24.6'	S 23°11.3'	12°19.6'	S 18°14.0'	306°40.2'	S 20°53.0'	305°43.8'	S 20°35.6'	228°58.1'	N 8°19.1'	
12	262°37.8'	1°24.3'	S 23°11.5'	27°18.9'	S 18°14.7'	321°42.1'	S 20°52.9'	320°46.0'	S 20°35.5'	243°59.9'	N 8°19.5'	
13	277°40.3'	16°24.0'	S 23°11.7'	42°18.1'	S 18°15.5'	336°44.1'	S 20°52.8'	335°48.2'	S 20°35.5'	259°01.6'	N 8°19.9'	
14	292°42.7'	31°23.7'	S 23°11.8'	57°17.4'	S 18°16.3'	351°46.0'	S 20°52.7'	350°50.4'	S 20°35.4'	274°03.4'	N 8°20.3'	
15	307°45.2'	46°23.4'	S 23°12.0'	72°16.7'	S 18°17.1'	6°47.9'	S 20°52.6'	5°52.6'	S 20°35.4'	289°05.1'	N 8°20.6'	
16	322°47.6'	61°23.1'	S 23°12.1'	87°16.0'	S 18°17.9'	21°49.8'	S 20°52.5'	20°54.8'	S 20°35.3'	304°06.9'	N 8°21.0'	
17	337°50.1'	76°22.8'	S 23°12.3'	102°15.3'	S 18°18.6'	36°51.7'	S 20°52.4'	35°57.0'	S 20°35.3'	319°08.6'	N 8°21.4'	
18	352°52.6'	91°22.5'	S 23°12.4'	117°14.6'	S 18°19.4'	51°53.6'	S 20°52.3'	50°59.2'	S 20°35.2'	334°10.4'	N 8°21.7'	
19	7°55.0'	106°22.2'	S 23°12.6'	132°13.8'	S 18°20.2'	66°55.5'	S 20°52.2'	66°01.4'	S 20°35.2'	349°12.1'	N 8°22.1'	
20	22°57.5'	121°21.9'	S 23°12.7'	147°13.1'	S 18°21.0'	81°57.4'	S 20°52.1'	81°03.6'	S 20°35.1'	4°13.9'	N 8°22.5'	
21	37°60.0'	136°21.6'	S 23°12.9'	162°12.4'	S 18°21.7'	96°59.3'	S 20°52.0'	96°05.8'	S 20°35.1'	19°15.6'	N 8°22.9'	
22	53°02.4'	151°21.3'	S 23°13.0'	177°11.7'	S 18°22.5'	112°01.2'	S 20°51.9'	111°08.0'	S 20°35.0'	34°17.4'	N 8°23.2'	
23	68°04.9'	166°21.0'	S 23°13.1'	192°10.9'	S 18°23.3'	127°03.1'	S 20°51.8'	126°10.2'	S 20°35.0'	49°19.1'	N 8°23.6'	
		SD 16.2'	d -0.2'		v -0.7'	d -0.8'		v 1.9'	d 0.1'		v 2.2'	d 0.1'
Mer. pass.		11 h 54 m 23 s		10 h 11 m		14 h 33 m		14 h 37 m		19 h 43 m		

h	Moon				Lunar distance						
	GHA	dec	v	d	HP	-Antares	+Venus	+Spica	+Arcturus	+Regulus	+Adhara
0	205°34.0'	S 17°53.3'	6.1'	-11.2'	60.5'	13°22.5'		34°27.6'	43°01.7'	88°13.6'	113°52.8'
1	219°59.2'	S 18°04.5'	6.1'	-11.1'	60.5'	12°48.7'		35°04.1'	43°30.1'	88°50.7'	114°10.2'
2	234°24.2'	S 18°15.6'	6.0'	-10.9'	60.5'	12°15.3'	2°52.9'	35°40.6'	43°58.6'	89°27.8'	114°27.5'
3	248°49.2'	S 18°26.5'	5.9'	-10.8'	60.5'	11°42.2'	3°26.0'	36°17.2'	44°27.4'	90°04.9'	114°44.6'
4	263°14.1'	S 18°37.3'	5.8'	-10.7'	60.5'	11°09.6'	3°59.4'	36°53.7'	44°56.3'	90°42.0'	115°01.5'
5	277°39.0'	S 18°48.0'	5.8'	-10.6'	60.5'	10°37.4'	4°33.0'	37°30.3'	45°25.3'	91°19.1'	115°18.4'
6	292°03.7'	S 18°58.6'	5.7'	-10.4'	60.5'	10°05.9'	5°06.7'	38°06.9'	45°54.5'	91°56.2'	115°35.0'
7	306°28.4'	S 19°09.1'	5.6'	-10.3'	60.5'	9°35.0'	5°40.4'	38°43.5'	46°23.9'	92°33.3'	115°51.5'
8	320°53.0'	S 19°19.4'	5.5'	-10.2'	60.5'		6°14.3'	39°20.1'	46°53.3'	93°10.4'	116°07.9'
9	335°17.5'	S 19°29.5'	5.5'	-10.0'	60.5'		6°48.1'	39°56.7'	47°23.0'	93°47.5'	116°24.0'
10	349°42.0'	S 19°39.6'	5.4'	-9.9'	60.5'		7°22.0'	40°33.3'	47°52.7'	94°24.6'	116°40.1'
11	4°06.4'	S 19°49.5'	5.3'	-9.8'	60.5'		7°55.9'	41°10.0'	48°22.6'	95°01.6'	116°55.9'
12	18°30.7'	S 19°59.3'	5.2'	-9.6'	60.5'		8°29.8'	41°46.6'	48°52.6'	95°38.7'	117°11.6'
13	32°54.9'	S 20°08.9'	5.2'	-9.5'	60.5'		9°03.8'	42°23.3'	49°22.7'	96°15.8'	117°27.1'
14	47°19.1'	S 20°18.4'	5.1'	-9.4'	60.5'		9°37.7'	42°59.9'	49°52.9'	96°52.8'	117°42.4'
15	61°43.2'	S 20°27.8'	5.0'	-9.2'	60.5'		10°11.6'	43°36.6'	50°23.3'	97°29.9'	
16	76°07.2'	S 20°37.0'	5.0'	-9.1'	60.5'		10°45.6'	44°13.3'	50°53.7'	98°06.9'	
17	90°31.2'	S 20°46.0'	4.9'	-8.9'	60.4'		11°19.5'	44°49.9'	51°24.2'	98°43.9'	
18	104°55.1'	S 20°55.0'	4.8'	-8.8'	60.4'		11°53.5'	45°26.6'	51°54.9'	99°20.9'	
19	119°18.9'	S 21°03.7'	4.8'	-8.6'	60.4'		12°27.4'	46°03.2'	52°25.6'	99°57.9'	
20	133°42.7'	S 21°12.4'	4.7'	-8.5'	60.4'		13°01.3'	46°39.9'	52°56.4'	100°34.9'	
21	148°06.4'	S 21°20.8'	4.6'	-8.3'	60.4'		13°35.3'	47°16.6'	53°27.3'	101°11.9'	
22	162°30.0'	S 21°29.2'	4.6'	-8.2'	60.4'		14°09.2'	47°53.2'	53°58.2'	101°48.8'	
23	176°53.6'	S 21°37.3'	4.5'	-8.0'	60.4'						
Mer. pass.		10 h 43 m SD 16.5'		phase 4%							

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°55.3'	N 7°24.6'
Deneb	+1.2	49°28.3'	N 45°21.5'	Acrux	+0.8	173°03.8'	S 63°12.5'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.5'	Regulus	+1.4	207°37.9'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.7'
Vega	+0.0	80°35.9'	N 38°48.3'	Pollux	+1.2	243°21.1'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.3'	S 26°28.5'	Procyon	+0.4	244°54.0'	N 5°10.3'	Polaris	+2.0	315°07.4'	N 89°21.3'
Rigil Kent	-0.0	139°45.3'	S 60°54.9'	Adhara	+1.5	255°08.1'	S 28°60.0'	Achernar	+0.5	335°22.5'	S 57°08.2'
Arcturus	-0.1	145°51.2'	N 19°04.5'	Sirius	-1.4	258°28.8'	S 16°44.7'				
Hadar	+0.6	148°41.0'	S 60°28.0'	Canopus	-0.6	263°53.3'	S 52°42.4'				

Monday 14 December 2020 UT1

h	Aries			Sun			Venus			Jupiter			Saturn			Mars		
	GHA	GHA	dec	GHA	dec		GHA	dec		GHA	dec		GHA	dec		GHA	dec	
0	83°07.4'	181°20.7'	S 23°13.3'	207°10.2'	S 18°24.0'		142°05.0'	S 20°51.6'		141°12.4'	S 20°34.9'		64°20.9'	N 8°24.0'				
1	98°09.8'	196°20.4'	S 23°13.4'	222°09.5'	S 18°24.8'		157°07.0'	S 20°51.5'		156°14.6'	S 20°34.9'		79°22.6'	N 8°24.4'				
2	113°12.3'	211°20.1'	S 23°13.6'	237°08.8'	S 18°25.6'		172°08.9'	S 20°51.4'		171°16.8'	S 20°34.8'		94°24.3'	N 8°24.7'				
3	128°14.8'	226°19.8'	S 23°13.7'	252°08.0'	S 18°26.4'		187°10.8'	S 20°51.3'		186°19.0'	S 20°34.8'		109°26.1'	N 8°25.1'				
4	143°17.2'	241°19.5'	S 23°13.9'	267°07.3'	S 18°27.1'		202°12.7'	S 20°51.2'		201°21.2'	S 20°34.7'		124°27.8'	N 8°25.5'				
5	158°19.7'	256°19.2'	S 23°14.0'	282°06.6'	S 18°27.9'		217°14.6'	S 20°51.1'		216°23.4'	S 20°34.7'		139°29.6'	N 8°25.9'				
6	173°22.1'	271°18.9'	S 23°14.1'	297°05.9'	S 18°28.7'		232°16.5'	S 20°51.0'		231°25.6'	S 20°34.6'		154°31.3'	N 8°26.2'				
7	188°24.6'	286°18.6'	S 23°14.3'	312°05.1'	S 18°29.4'		247°18.4'	S 20°50.9'		246°27.8'	S 20°34.6'		169°33.0'	N 8°26.6'				
8	203°27.1'	301°18.3'	S 23°14.4'	327°04.4'	S 18°30.2'		262°20.3'	S 20°50.8'		261°29.9'	S 20°34.5'		184°34.8'	N 8°27.0'				
9	218°29.5'	316°18.0'	S 23°14.6'	342°03.7'	S 18°31.0'		277°22.2'	S 20°50.7'		276°32.1'	S 20°34.5'		199°36.5'	N 8°27.4'				
10	233°32.0'	331°17.7'	S 23°14.7'	357°03.0'	S 18°31.7'		292°24.1'	S 20°50.6'		291°34.3'	S 20°34.4'		214°38.2'	N 8°27.7'				
11	248°34.5'	346°17.4'	S 23°14.8'	12°02.2'	S 18°32.5'		307°26.0'	S 20°50.5'		306°36.5'	S 20°34.4'		229°40.0'	N 8°28.1'				
12	263°36.9'	1°17.1'	S 23°15.0'	27°01.5'	S 18°33.2'		322°27.9'	S 20°50.4'		321°38.7'	S 20°34.3'		244°41.7'	N 8°28.5'				
13	278°39.4'	16°16.8'	S 23°15.1'	42°00.8'	S 18°34.0'		337°29.8'	S 20°50.3'		336°40.9'	S 20°34.2'		259°43.4'	N 8°28.9'				
14	293°41.9'	31°16.5'	S 23°15.2'	57°00.0'	S 18°34.8'		352°31.7'	S 20°50.1'		351°43.1'	S 20°34.2'		274°45.2'	N 8°29.2'				
15	308°44.3'	46°16.2'	S 23°15.4'	71°59.3'	S 18°35.5'		7°33.6'	S 20°50.0'		6°45.3'	S 20°34.1'		289°46.9'	N 8°29.6'				
16	323°46.8'	61°15.9'	S 23°15.5'	86°58.6'	S 18°36.3'		22°35.6'	S 20°49.9'		21°47.5'	S 20°34.1'		304°48.6'	N 8°30.0'				
17	338°49.3'	76°15.6'	S 23°15.6'	101°57.8'	S 18°37.0'		37°37.5'	S 20°49.8'		36°49.7'	S 20°34.0'		319°50.4'	N 8°30.4'				
18	353°51.7'	91°15.3'	S 23°15.8'	116°57.1'	S 18°37.8'		52°39.4'	S 20°49.7'		51°51.9'	S 20°34.0'		334°52.1'	N 8°30.7'				
19	8°54.2'	106°15.0'	S 23°15.9'	131°56.4'	S 18°38.5'		67°41.3'	S 20°49.6'		66°54.1'	S 20°33.9'		349°53.8'	N 8°31.1'				
20	23°56.6'	121°14.7'	S 23°16.0'	146°55.6'	S 18°39.3'		82°43.2'	S 20°49.5'		81°56.3'	S 20°33.9'		4°55.6'	N 8°31.5'				
21	38°59.1'	136°14.4'	S 23°16.2'	161°54.9'	S 18°40.0'		97°45.1'	S 20°49.4'		96°58.5'	S 20°33.8'		19°57.3'	N 8°31.9'				
22	54°01.6'	151°14.1'	S 23°16.3'	176°54.2'	S 18°40.8'		112°47.0'	S 20°49.3'		112°00.7'	S 20°33.8'		34°59.0'	N 8°32.2'				
23	69°04.0'	166°13.8'	S 23°16.4'	191°53.4'	S 18°41.5'		127°48.9'	S 20°49.2'		127°02.9'	S 20°33.7'		50°00.7'	N 8°32.6'				
		SD 16.2'	d -0.1'		v -0.7'	d -0.8'		v 1.9'	d 0.1'		v 2.2'	d 0.1'		v 1.7'	d 0.4'			
Mer. pass.		11 h 54 m 52 s		10 h 12 m			14 h 30 m			14 h 33 m			19 h 40 m					

h	Moon				
	GHA	dec	v	d	HP
0	191°17.2'	S 21°45.4'	4.5'	-7.9'	60.4'
1	205°40.6'	S 21°53.2'	4.4'	-7.7'	60.4'
2	220°04.0'	S 22°00.9'	4.4'	-7.5'	60.3'
3	234°27.4'	S 22°08.5'	4.3'	-7.4'	60.3'
4	248°50.7'	S 22°15.9'	4.3'	-7.2'	60.3'
5	263°14.0'	S 22°23.1'	4.2'	-7.1'	60.3'
6	277°37.2'	S 22°30.2'	4.2'	-6.9'	60.3'
7	292°00.4'	S 22°37.1'	4.1'	-6.7'	60.3'
8	306°23.5'	S 22°43.8'	4.1'	-6.6'	60.3'
9	320°46.6'	S 22°50.4'	4.0'	-6.4'	60.2'
10	335°09.6'	S 22°56.8'	4.0'	-6.2'	60.2'
11	349°32.6'	S 23°03.1'	4.0'	-6.1'	60.2'
12	3°55.6'	S 23°09.1'	3.9'	-5.9'	60.2'
13	18°18.5'	S 23°15.1'	3.9'	-5.7'	60.2'
14	32°41.4'	S 23°20.8'	3.9'	-5.6'	60.1'
15	47°04.3'	S 23°26.4'	3.8'	-5.4'	60.1'
16	61°27.1'	S 23°31.8'	3.8'	-5.2'	60.1'
17	75°49.9'	S 23°37.0'	3.8'	-5.1'	60.1'
18	90°12.7'	S 23°42.1'	3.8'	-4.9'	60.1'
19	104°35.5'	S 23°47.0'	3.7'	-4.7'	60.0'
20	118°58.2'	S 23°51.7'	3.7'	-4.5'	60.0'
21	133°20.9'	S 23°56.2'	3.7'	-4.4'	60.0'
22	147°43.6'	S 24°00.6'	3.7'	-4.2'	60.0'
23	162°06.3'	S 24°04.8'	3.7'	-4.0'	60.0'
Mer. pass.	11 h 44 m SD 16.5'	phase 1%			

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.9'	Spica	+1.0	158°26.0'	S 11°16.0'	Betelgeuse	+0.5	270°55.3'	N 7°24.6'
Deneb	+1.2	49°28.3'	N 45°21.5'	Acrux	+0.8	173°03.8'	S 63°12.5'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.5'	Regulus	+1.4	207°37.9'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.7'
Vega	+0.0	80°35.9'	N 38°48.3'	Pollux	+1.2	243°21.1'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.3'	S 26°28.5'	Procyon	+0.4	244°54.0'	N 5°10.2'	Polaris	+2.0	315°07.5'	N 89°21.3'
Rigil Kent	-0.0	139°45.3'	S 60°54.9'	Adhara	+1.5	255°08.1'	S 28°60.0'	Achernar	+0.5	335°22.5'	S 57°08.2'
Arcturus	-0.1	145°51.2'	N 19°04.5'	Sirius	-1.4	258°28.8'	S 16°44.7'				
Hadar	+0.6	148°41.0'	S 60°28.0'	Canopus	-0.6	263°53.3'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	84°06.5'	181°13.5'	S 23°16.5'	206°52.7'	S 18°42.3'	142°50.8'	S 20°49.1'	142°05.1'	S 20°33.7'	65°02.5'	N 8°33.0'	
1	99°09.0'	196°13.2'	S 23°16.7'	221°52.0'	S 18°43.0'	157°52.7'	S 20°49.0'	157°07.2'	S 20°33.6'	80°04.2'	N 8°33.4'	
2	114°11.4'	211°12.9'	S 23°16.8'	236°51.2'	S 18°43.8'	172°54.6'	S 20°48.8'	172°09.4'	S 20°33.6'	95°05.9'	N 8°33.8'	
3	129°13.9'	226°12.6'	S 23°16.9'	251°50.5'	S 18°44.5'	187°56.5'	S 20°48.7'	187°11.6'	S 20°33.5'	110°07.6'	N 8°34.1'	
4	144°16.4'	241°12.3'	S 23°17.0'	266°49.8'	S 18°45.3'	202°58.4'	S 20°48.6'	202°13.8'	S 20°33.5'	125°09.3'	N 8°34.5'	
5	159°18.8'	256°12.0'	S 23°17.2'	281°49.0'	S 18°46.0'	218°00.3'	S 20°48.5'	217°16.0'	S 20°33.4'	140°11.1'	N 8°34.9'	
6	174°21.3'	271°11.7'	S 23°17.3'	296°48.3'	S 18°46.8'	233°02.2'	S 20°48.4'	232°18.2'	S 20°33.4'	155°12.8'	N 8°35.3'	
7	189°23.8'	286°11.4'	S 23°17.4'	311°47.5'	S 18°47.5'	248°04.1'	S 20°48.3'	247°20.4'	S 20°33.3'	170°14.5'	N 8°35.7'	
8	204°26.2'	301°11.1'	S 23°17.5'	326°46.8'	S 18°48.3'	263°06.0'	S 20°48.2'	262°22.6'	S 20°33.2'	185°16.2'	N 8°36.0'	
9	219°28.7'	316°10.8'	S 23°17.6'	341°46.1'	S 18°49.0'	278°07.9'	S 20°48.1'	277°24.8'	S 20°33.2'	200°17.9'	N 8°36.4'	
10	234°31.1'	331°10.5'	S 23°17.8'	356°45.3'	S 18°49.8'	293°09.8'	S 20°48.0'	292°27.0'	S 20°33.1'	215°19.7'	N 8°36.8'	
11	249°33.6'	346°10.2'	S 23°17.9'	11°44.6'	S 18°50.5'	308°11.7'	S 20°47.9'	307°29.2'	S 20°33.1'	230°21.4'	N 8°37.2'	
12	264°36.1'	1°09.9'	S 23°18.0'	26°43.8'	S 18°51.2'	323°13.6'	S 20°47.8'	322°31.4'	S 20°33.0'	245°23.1'	N 8°37.6'	
13	279°38.5'	16°09.6'	S 23°18.1'	41°43.1'	S 18°52.0'	338°15.5'	S 20°47.7'	337°33.6'	S 20°33.0'	260°24.8'	N 8°37.9'	
14	294°41.0'	31°09.3'	S 23°18.2'	56°42.3'	S 18°52.7'	353°17.5'	S 20°47.5'	352°35.8'	S 20°32.9'	275°26.5'	N 8°38.3'	
15	309°43.5'	46°09.0'	S 23°18.3'	71°41.6'	S 18°53.4'	8°19.4'	S 20°47.4'	7°37.9'	S 20°32.9'	290°28.2'	N 8°38.7'	
16	324°45.9'	61°08.7'	S 23°18.4'	86°40.9'	S 18°54.2'	23°21.3'	S 20°47.3'	22°40.1'	S 20°32.8'	305°29.9'	N 8°39.1'	
17	339°48.4'	76°08.4'	S 23°18.6'	101°40.1'	S 18°54.9'	38°23.2'	S 20°47.2'	37°42.3'	S 20°32.8'	320°31.6'	N 8°39.5'	
18	354°50.9'	91°08.1'	S 23°18.7'	116°39.4'	S 18°55.6'	53°25.1'	S 20°47.1'	52°44.5'	S 20°32.7'	335°33.4'	N 8°39.8'	
19	9°53.3'	106°07.8'	S 23°18.8'	131°38.6'	S 18°56.4'	68°27.0'	S 20°47.0'	67°46.7'	S 20°32.7'	350°35.1'	N 8°40.2'	
20	24°55.8'	121°07.4'	S 23°18.9'	146°37.9'	S 18°57.1'	83°28.9'	S 20°46.9'	82°48.9'	S 20°32.6'	5°36.8'	N 8°40.6'	
21	39°58.3'	136°07.1'	S 23°19.0'	161°37.1'	S 18°57.8'	98°30.8'	S 20°46.8'	97°51.1'	S 20°32.6'	20°38.5'	N 8°41.0'	
22	55°00.7'	151°06.8'	S 23°19.1'	176°36.4'	S 18°58.6'	113°32.7'	S 20°46.7'	112°53.3'	S 20°32.5'	35°40.2'	N 8°41.4'	
23	70°03.2'	166°06.5'	S 23°19.2'	191°35.6'	S 18°59.3'	128°34.6'	S 20°46.6'	127°55.5'	S 20°32.5'	50°41.9'	N 8°41.8'	
		SD 16.2'	d -0.1'		v -0.7'	d -0.7'		v 1.9'	d 0.1'		v 2.2'	d 0.1'
Mer. pass.		11 h 55 m 21 s			10 h 13 m		14 h 27 m		14 h 30 m		19 h 38 m	

h	Moon				Lunar distance						
	GHA	dec	v	d	HP	-Mars	-Achernar	-Fomalhaut	-Altair	-Saturn	-Jupiter
0	176°29.0'	S 24°08.8'	3.7'	-3.8'	59.9'						
1	190°51.6'	S 24°12.7'	3.7'	-3.7'	59.9'						
2	205°14.3'	S 24°16.4'	3.7'	-3.5'	59.9'						
3	219°36.9'	S 24°19.9'	3.6'	-3.3'	59.9'						
4	233°59.6'	S 24°23.2'	3.6'	-3.1'	59.8'						
5	248°22.2'	S 24°26.3'	3.6'	-3.0'	59.8'						
6	262°44.9'	S 24°29.3'	3.7'	-2.8'	59.8'						
7	277°07.5'	S 24°32.1'	3.7'	-2.6'	59.8'						
8	291°30.2'	S 24°34.7'	3.7'	-2.4'	59.7'						
9	305°52.9'	S 24°37.1'	3.7'	-2.3'	59.7'						
10	320°15.6'	S 24°39.4'	3.7'	-2.1'	59.7'	107°05.9'	79°42.0'	61°56.5'	40°45.4'	25°57.2'	25°14.7'
11	334°38.3'	S 24°41.5'	3.7'	-1.9'	59.7'	106°30.7'	79°21.5'	61°22.2'	40°25.3'	25°21.5'	24°39.3'
12	349°01.0'	S 24°43.4'	3.7'	-1.7'	59.6'	105°55.5'	79°01.1'	60°47.8'	40°05.5'	24°45.9'	24°03.9'
13	3°23.7'	S 24°45.1'	3.7'	-1.6'	59.6'	105°20.3'	78°40.7'	60°13.6'	39°46.1'	24°10.3'	23°28.6'
14	17°46.4'	S 24°46.7'	3.8'	-1.4'	59.6'	104°45.2'	78°20.4'	59°39.4'	39°27.0'	23°34.8'	22°53.3'
15	32°09.2'	S 24°48.1'	3.8'	-1.2'	59.5'	104°10.1'	78°00.1'	59°05.2'	39°08.3'	22°59.3'	22°18.1'
16	46°32.0'	S 24°49.3'	3.8'	-1.0'	59.5'	103°35.1'	77°40.0'	58°31.1'	38°50.0'	22°23.9'	21°43.0'
17	60°54.8'	S 24°50.3'	3.9'	-0.9'	59.5'	103°00.1'	77°19.9'	57°57.1'	38°32.0'	21°48.5'	21°07.8'
18	75°17.7'	S 24°51.1'	3.9'	-0.7'	59.5'	102°25.1'	76°59.9'	57°23.1'	38°14.4'	21°13.2'	20°32.8'
19	89°40.6'	S 24°51.8'	3.9'	-0.5'	59.4'	101°50.2'	76°40.0'	56°49.2'	37°57.1'	20°37.9'	19°57.8'
20	104°03.5'	S 24°52.3'	4.0'	-0.3'	59.4'	101°15.3'	76°20.1'	56°15.3'	37°40.3'	20°02.7'	19°22.8'
21	118°26.4'	S 24°52.7'	4.0'	-0.2'	59.4'	100°40.4'	76°00.4'	55°41.5'	37°23.8'	19°27.6'	18°47.9'
22	132°49.4'	S 24°52.8'	4.0'	0.0'	59.3'	100°05.6'	75°40.7'	55°07.8'	37°07.8'	18°52.5'	18°13.1'
23	147°12.5'	S 24°52.8'	4.1'	0.2'	59.3'	99°30.8'	75°21.1'	54°34.2'	36°52.2'	18°17.5'	17°38.4'
Mer. pass.		12 h 46 m SD 16.3'		phase 0%							

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.9'	Spica	+1.0	158°25.9'	S 11°16.0'	Betelgeuse	+0.5	270°55.3'	N 7°24.6'
Deneb	+1.2	49°28.3'	N 45°21.5'	Acrux	+0.8	173°03.8'	S 63°12.5'	Capella	+0.1	280°26.3'	N 46°01.0'
Altair	+0.8	62°03.5'	N 8°55.5'	Regulus	+1.4	207°37.9'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.7'
Vega	+0.0	80°35.9'	N 38°48.3'	Pollux	+1.2	243°21.1'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.3'	S 26°28.5'	Procyon	+0.4	244°54.0'	N 5°10.2'	Polaris	+2.0	315°07.6'	N 89°21.3'
Rigil Kent	-0.0	139°45.2'	S 60°54.9'	Adhara	+1.5	255°08.1'	S 28°60.0'	Achernar	+0.5	335°22.5'	S 57°08.2'
Arcturus	-0.1	145°51.2'	N 19°04.5'	Sirius	-1.4	258°28.8'	S 16°44.7'				
Hadar	+0.6	148°41.0'	S 60°28.0'	Canopus	-0.6	263°53.3'	S 52°42.4'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	85°05.6'	181°06.2'	S 23°19.3'	206°34.9'	S 19°00.0'	143°36.5'	S 20°46.5'	142°57.7'	S 20°32.4'	65°43.6'	N 8°42.1'
1	100°08.1'	196°05.9'	S 23°19.4'	221°34.1'	S 19°00.8'	158°38.4'	S 20°46.3'	157°59.9'	S 20°32.4'	80°45.3'	N 8°42.5'
2	115°10.6'	211°05.6'	S 23°19.5'	236°33.4'	S 19°01.5'	173°40.3'	S 20°46.2'	173°02.1'	S 20°32.3'	95°47.0'	N 8°42.9'
3	130°13.0'	226°05.3'	S 23°19.6'	251°32.6'	S 19°02.2'	188°42.2'	S 20°46.1'	188°04.2'	S 20°32.2'	110°48.7'	N 8°43.3'
4	145°15.5'	241°05.0'	S 23°19.7'	266°31.9'	S 19°02.9'	203°44.1'	S 20°46.0'	203°06.4'	S 20°32.2'	125°50.4'	N 8°43.7'
5	160°18.0'	256°04.7'	S 23°19.8'	281°31.1'	S 19°03.7'	218°46.0'	S 20°45.9'	218°08.6'	S 20°32.1'	140°52.1'	N 8°44.1'
6	175°20.4'	271°04.4'	S 23°19.9'	296°30.4'	S 19°04.4'	233°47.9'	S 20°45.8'	233°10.8'	S 20°32.1'	155°53.8'	N 8°44.4'
7	190°22.9'	286°04.1'	S 23°20.0'	311°29.6'	S 19°05.1'	248°49.8'	S 20°45.7'	248°13.0'	S 20°32.0'	170°55.5'	N 8°44.8'
8	205°25.4'	301°03.8'	S 23°20.1'	326°28.9'	S 19°05.8'	263°51.7'	S 20°45.6'	263°15.2'	S 20°32.0'	185°57.2'	N 8°45.2'
9	220°27.8'	316°03.5'	S 23°20.2'	341°28.1'	S 19°06.6'	278°53.6'	S 20°45.5'	278°17.4'	S 20°31.9'	200°58.9'	N 8°45.6'
10	235°30.3'	331°03.2'	S 23°20.3'	356°27.4'	S 19°07.3'	293°55.5'	S 20°45.4'	293°19.6'	S 20°31.9'	216°00.6'	N 8°46.0'
11	250°32.7'	346°02.9'	S 23°20.4'	11°26.6'	S 19°08.0'	308°57.4'	S 20°45.2'	308°21.8'	S 20°31.8'	231°02.3'	N 8°46.4'
12	265°35.2'	1°02.6'	S 23°20.5'	26°25.9'	S 19°08.7'	323°59.3'	S 20°45.1'	323°24.0'	S 20°31.8'	246°04.0'	N 8°46.8'
13	280°37.7'	16°02.3'	S 23°20.6'	41°25.1'	S 19°09.4'	339°01.2'	S 20°45.0'	338°26.2'	S 20°31.7'	261°05.7'	N 8°47.1'
14	295°40.1'	31°02.0'	S 23°20.7'	56°24.4'	S 19°10.1'	354°03.1'	S 20°44.9'	353°28.3'	S 20°31.7'	276°07.4'	N 8°47.5'
15	310°42.6'	46°01.7'	S 23°20.8'	71°23.6'	S 19°10.9'	9°05.0'	S 20°44.8'	8°30.5'	S 20°31.6'	291°09.1'	N 8°47.9'
16	325°45.1'	61°01.3'	S 23°20.9'	86°22.9'	S 19°11.6'	24°06.9'	S 20°44.7'	23°32.7'	S 20°31.6'	306°10.8'	N 8°48.3'
17	340°47.5'	76°01.0'	S 23°21.0'	101°22.1'	S 19°12.3'	39°08.8'	S 20°44.6'	38°34.9'	S 20°31.5'	321°12.5'	N 8°48.7'
18	355°50.0'	91°00.7'	S 23°21.1'	116°21.4'	S 19°13.0'	54°10.7'	S 20°44.5'	53°37.1'	S 20°31.4'	336°14.2'	N 8°49.1'
19	10°52.5'	106°00.4'	S 23°21.2'	131°20.6'	S 19°13.7'	69°12.6'	S 20°44.4'	68°39.3'	S 20°31.4'	351°15.8'	N 8°49.5'
20	25°54.9'	121°00.1'	S 23°21.3'	146°19.8'	S 19°14.4'	84°14.5'	S 20°44.3'	83°41.5'	S 20°31.3'	6°17.5'	N 8°49.8'
21	40°57.4'	135°59.8'	S 23°21.4'	161°19.1'	S 19°15.1'	99°16.4'	S 20°44.1'	98°43.7'	S 20°31.3'	21°19.2'	N 8°50.2'
22	55°59.9'	150°59.5'	S 23°21.5'	176°18.3'	S 19°15.8'	114°18.3'	S 20°44.0'	113°45.9'	S 20°31.2'	36°20.9'	N 8°50.6'
23	71°02.3'	165°59.2'	S 23°21.5'	191°17.6'	S 19°16.6'	129°20.2'	S 20°43.9'	128°48.1'	S 20°31.2'	51°22.6'	N 8°51.0'
		SD 16.2' d -0.1'		v -0.8' d -0.7'		v 1.9' d 0.1'		v 2.2' d 0.1'		v 1.7' d 0.4'	
Mer. pass.		11 h 55 m 50 s		10 h 14 m		14 h 24 m		14 h 26 m		19 h 35 m	

h	Moon				Lunar distance					
	GHA	dec	v	d	HP	-Mars	-Achernar	-Fomalhaut	-Saturn	-Jupiter
0	161°35.6'	S 24°52.6'	4.1'	0.4'	59.3'	98°56.1'	75°01.6'	54°00.6'	17°42.5'	17°03.7'
1	175°58.7'	S 24°52.3'	4.2'	0.5'	59.3'	98°21.3'	74°42.2'	53°27.0'	17°07.7'	16°29.1'
2	190°21.9'	S 24°51.7'	4.2'	0.7'	59.2'	97°46.7'	74°22.9'	52°53.6'	16°32.9'	15°54.5'
3	204°45.1'	S 24°51.0'	4.3'	0.9'	59.2'	97°12.1'	74°03.6'	52°20.2'	15°58.1'	15°20.1'
4	219°08.4'	S 24°50.2'	4.3'	1.0'	59.2'	96°37.5'	73°44.5'	51°46.9'	15°23.5'	14°45.7'
5	233°31.7'	S 24°49.1'	4.4'	1.2'	59.1'	96°02.9'	73°25.5'	51°13.6'	14°49.0'	14°11.4'
6	247°55.1'	S 24°47.9'	4.4'	1.4'	59.1'	95°28.4'	73°06.6'	50°40.5'	14°14.5'	13°37.3'
7	262°18.5'	S 24°46.5'	4.5'	1.5'	59.1'	94°53.9'	72°47.7'	50°07.4'	13°40.2'	13°03.2'
8	276°42.0'	S 24°45.0'	4.6'	1.7'	59.0'	94°19.5'	72°29.0'	49°34.4'	13°06.0'	12°29.2'
9	291°05.6'	S 24°43.3'	4.6'	1.9'	59.0'	93°45.1'	72°10.4'	49°01.4'	12°31.9'	11°55.4'
10	305°29.2'	S 24°41.4'	4.7'	2.0'	59.0'	93°10.8'	71°51.9'	48°28.6'	11°57.9'	11°21.7'
11	319°52.9'	S 24°39.4'	4.8'	2.2'	58.9'	92°36.5'	71°33.5'	47°55.8'	11°24.1'	10°48.2'
12	334°16.7'	S 24°37.2'	4.8'	2.4'	58.9'	92°02.2'	71°15.2'	47°23.1'	10°50.5'	10°14.8'
13	348°40.6'	S 24°34.8'	4.9'	2.5'	58.9'	91°28.0'	70°57.0'	46°50.5'	10°17.0'	9°41.7'
14	3°04.5'	S 24°32.3'	5.0'	2.7'	58.8'	90°53.9'	70°39.0'	46°18.0'	9°43.8'	9°08.8'
15	17°28.5'	S 24°29.6'	5.1'	2.8'	58.8'	90°19.7'	70°21.0'	45°45.6'	9°10.8'	8°36.1'
16	31°52.5'	S 24°26.8'	5.1'	3.0'	58.8'	89°45.7'	70°03.2'	45°13.3'	8°38.1'	8°03.7'
17	46°16.7'	S 24°23.8'	5.2'	3.2'	58.7'	89°11.6'	69°45.5'	44°41.0'	8°05.7'	7°31.7'
18	60°40.9'	S 24°20.6'	5.3'	3.3'	58.7'	88°37.6'	69°27.9'	44°08.9'	7°33.7'	7°00.1'
19	75°05.2'	S 24°17.3'	5.4'	3.5'	58.7'	88°03.7'	69°10.4'	43°36.9'	7°02.2'	6°29.1'
20	89°29.5'	S 24°13.9'	5.5'	3.6'	58.6'	87°29.8'	68°53.0'	43°04.9'	6°31.2'	
21	103°54.0'	S 24°10.2'	5.5'	3.8'	58.6'	86°55.9'	68°35.8'	42°33.1'		
22	118°18.6'	S 24°06.5'	5.6'	3.9'	58.5'	86°22.1'	68°18.7'	42°01.3'		
23	132°43.2'	S 24°02.6'	5.7'	4.1'	58.5'	85°48.3'	68°01.7'	41°29.7'		
Mer. pass.		13 h 47 m SD 16.2'		phase 2%						

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.9'	Spica	+1.0	158°25.9'	S 11°16.0'	Betelgeuse	+0.5	270°55.3'	N 7°24.6'
Deneb	+1.2	49°28.3'	N 45°21.5'	Acrux	+0.8	173°03.8'	S 63°12.5'	Capella	+0.1	280°26.3'	N 46°01.1'
Altair	+0.8	62°03.5'	N 8°55.5'	Regulus	+1.4	207°37.8'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.7'
Vega	+0.0	80°35.9'	N 38°48.3'	Pollux	+1.2	243°21.0'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.2'	S 26°28.5'	Procyon	+0.4	244°54.0'	N 5°10.2'	Polaris	+2.0	315°07.8'	N 89°21.3'
Rigil Kent	-0.0	139°45.2'	S 60°54.9'	Adhara	+1.5	255°08.1'	S 28°60.0'	Achernar	+0.5	335°22.5'	S 57°08.2'
Arcturus	-0.1	145°51.2'	N 19°04.5'	Sirius	-1.4	258°28.8'	S 16°44.7'				
Hadar	+0.6	148°41.0'	S 60°28.0'	Canopus	-0.6	263°53.3'	S 52°42.4'				

Thursday 17 December 2020 UT1

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	86°04.8'		180°58.9'	S 23°21.6'	206°16.8'	S 19°17.3'	144°22.1'	S 20°43.8'	143°50.2'	S 20°31.1'	66°24.3'	N 8°51.4'
1	101°07.2'		195°58.6'	S 23°21.7'	221°16.0'	S 19°18.0'	159°24.0'	S 20°43.7'	158°52.4'	S 20°31.1'	81°26.0'	N 8°51.8'
2	116°09.7'		210°58.3'	S 23°21.8'	236°15.3'	S 19°18.7'	174°25.9'	S 20°43.6'	173°54.6'	S 20°31.0'	96°27.7'	N 8°52.2'
3	131°12.2'		225°58.0'	S 23°21.9'	251°14.5'	S 19°19.4'	189°27.8'	S 20°43.5'	188°56.8'	S 20°31.0'	111°29.3'	N 8°52.6'
4	146°14.6'		240°57.7'	S 23°22.0'	266°13.8'	S 19°20.1'	204°29.7'	S 20°43.4'	203°59.0'	S 20°30.9'	126°31.0'	N 8°52.9'
5	161°17.1'		255°57.4'	S 23°22.1'	281°13.0'	S 19°20.8'	219°31.6'	S 20°43.3'	219°01.2'	S 20°30.9'	141°32.7'	N 8°53.3'
6	176°19.6'		270°57.1'	S 23°22.1'	296°12.2'	S 19°21.5'	234°33.5'	S 20°43.1'	234°03.4'	S 20°30.8'	156°34.4'	N 8°53.7'
7	191°22.0'		285°56.7'	S 23°22.2'	311°11.5'	S 19°22.2'	249°35.4'	S 20°43.0'	249°05.6'	S 20°30.8'	171°36.1'	N 8°54.1'
8	206°24.5'		300°56.4'	S 23°22.3'	326°10.7'	S 19°22.9'	264°37.3'	S 20°42.9'	264°07.8'	S 20°30.7'	186°37.7'	N 8°54.5'
9	221°27.0'		315°56.1'	S 23°22.4'	341°09.9'	S 19°23.6'	279°39.2'	S 20°42.8'	279°10.0'	S 20°30.6'	201°39.4'	N 8°54.9'
10	236°29.4'		330°55.8'	S 23°22.5'	356°09.2'	S 19°24.3'	294°41.1'	S 20°42.7'	294°12.1'	S 20°30.6'	216°41.1'	N 8°55.3'
11	251°31.9'		345°55.5'	S 23°22.5'	11°08.4'	S 19°25.0'	309°43.0'	S 20°42.6'	309°14.3'	S 20°30.5'	231°42.8'	N 8°55.7'
12	266°34.4'		0°55.2'	S 23°22.6'	26°07.6'	S 19°25.7'	324°44.9'	S 20°42.5'	324°16.5'	S 20°30.5'	246°44.5'	N 8°56.1'
13	281°36.8'		15°54.9'	S 23°22.7'	41°06.9'	S 19°26.4'	339°46.8'	S 20°42.4'	339°18.7'	S 20°30.4'	261°46.1'	N 8°56.4'
14	296°39.3'		30°54.6'	S 23°22.8'	56°06.1'	S 19°27.1'	354°48.7'	S 20°42.3'	354°20.9'	S 20°30.4'	276°47.8'	N 8°56.8'
15	311°41.7'		45°54.3'	S 23°22.8'	71°05.3'	S 19°27.8'	9°50.6'	S 20°42.1'	9°23.1'	S 20°30.3'	291°49.5'	N 8°57.2'
16	326°44.2'		60°54.0'	S 23°22.9'	86°04.6'	S 19°28.4'	24°52.5'	S 20°42.0'	24°25.3'	S 20°30.3'	306°51.2'	N 8°57.6'
17	341°46.7'		75°53.7'	S 23°23.0'	101°03.8'	S 19°29.1'	39°54.4'	S 20°41.9'	39°27.5'	S 20°30.2'	321°52.8'	N 8°58.0'
18	356°49.1'		90°53.4'	S 23°23.1'	116°03.0'	S 19°29.8'	54°56.3'	S 20°41.8'	54°29.6'	S 20°30.2'	336°54.5'	N 8°58.4'
19	11°51.6'		105°53.1'	S 23°23.1'	131°02.3'	S 19°30.5'	69°58.2'	S 20°41.7'	69°31.8'	S 20°30.1'	351°56.2'	N 8°58.8'
20	26°54.1'		120°52.7'	S 23°23.2'	146°01.5'	S 19°31.2'	85°00.1'	S 20°41.6'	84°34.0'	S 20°30.1'	6°57.9'	N 8°59.2'
21	41°56.5'		135°52.4'	S 23°23.3'	161°00.7'	S 19°31.9'	100°02.0'	S 20°41.5'	99°36.2'	S 20°30.0'	21°59.5'	N 8°59.6'
22	56°59.0'		150°52.1'	S 23°23.3'	175°60.0'	S 19°32.6'	115°03.9'	S 20°41.4'	114°38.4'	S 20°29.9'	37°01.2'	N 8°60.0'
23	72°01.5'		165°51.8'	S 23°23.4'	190°59.2'	S 19°33.3'	130°05.8'	S 20°41.3'	129°40.6'	S 20°29.9'	52°02.9'	N 9°00.4'
			SD 16.2' d -0.1'		v -0.8' d -0.7'		v 1.9' d 0.1'		v 2.2' d 0.1'		v 1.7' d 0.4'	
Mer. pass.			11 h 56 m 20 s		10 h 15 m		14 h 21 m		14 h 23 m		19 h 32 m	

h	Moon					Lunar distance						
	GHA	dec	v	d	HP	-Rigel	-Mars	-Achernar	-Fomalhaut	-Saturn	-Jupiter	+Sun
0	147°07.9'	S 23°58.5'	5.8'	4.2'	58.5'		85°14.6'	67°44.9'	40°58.2'			
1	161°32.7'	S 23°54.3'	5.9'	4.4'	58.4'		84°40.9'	67°28.2'	40°26.8'			
2	175°57.6'	S 23°49.9'	6.0'	4.5'	58.4'		84°07.3'	67°11.6'	39°55.5'			
3	190°22.6'	S 23°45.4'	6.1'	4.7'	58.4'		83°33.7'	66°55.2'	39°24.3'			
4	204°47.7'	S 23°40.7'	6.2'	4.8'	58.3'		83°00.2'	66°38.9'	38°53.3'			
5	219°12.9'	S 23°35.9'	6.3'	4.9'	58.3'		82°26.7'	66°22.7'	38°22.4'			
6	233°38.2'	S 23°31.0'	6.4'	5.1'	58.3'		81°53.3'	66°06.7'	37°51.6'			
7	248°03.5'	S 23°25.9'	6.5'	5.2'	58.2'		81°19.9'	65°50.8'	37°20.9'			
8	262°29.0'	S 23°20.7'	6.6'	5.4'	58.2'		80°46.5'	65°35.0'	36°50.4'			
9	276°54.6'	S 23°15.4'	6.7'	5.5'	58.1'		80°13.2'	65°19.4'	36°20.0'			
10	291°20.2'	S 23°09.9'	6.8'	5.6'	58.1'		79°39.9'	65°04.0'	35°49.7'			
11	305°46.0'	S 23°04.2'	6.9'	5.8'	58.1'		79°06.7'	64°48.7'	35°19.6'			
12	320°11.9'	S 22°58.5'	7.0'	5.9'	58.0'		78°33.6'	64°33.5'	34°49.7'			
13	334°37.9'	S 22°52.6'	7.1'	6.0'	58.0'		78°00.5'		34°19.9'			
14	349°03.9'	S 22°46.6'	7.2'	6.1'	58.0'		77°27.4'		33°50.2'			
15	3°30.1'	S 22°40.4'	7.3'	6.3'	57.9'		76°54.4'		33°20.7'		5°43.5'	
16	17°56.4'	S 22°34.1'	7.4'	6.4'	57.9'		76°21.4'		32°51.4'		6°12.8'	
17	32°22.8'	S 22°27.7'	7.5'	6.5'	57.8'		75°48.5'		32°22.3'		6°42.7'	
18	46°49.3'	S 22°21.2'	7.6'	6.7'	57.8'		75°15.6'		31°53.3'		7°13.0'	
19	61°15.9'	S 22°14.6'	7.7'	6.8'	57.8'		74°42.8'		31°24.6'		7°43.8'	40°27.5'
20	75°42.6'	S 22°07.8'	7.8'	6.9'	57.7'		74°10.0'		30°56.0'		8°14.8'	40°58.8'
21	90°09.4'	S 22°00.9'	7.9'	7.0'	57.7'		73°37.2'		30°27.6'		8°46.1'	41°30.0'
22	104°36.3'	S 21°53.9'	8.0'	7.1'	57.7'	119°33.7'	73°04.5'		29°59.4'		9°17.5'	42°01.3'
23	119°03.3'	S 21°46.7'	8.1'	7.2'	57.6'	119°06.4'	72°31.9'		29°31.5'		9°49.1'	42°32.4'
Mer. pass.			14 h 45 m SD 15.9'		phase 7%							

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.9'	Spica	+1.0	158°25.9'	S 11°16.0'	Betelgeuse	+0.5	270°55.3'	N 7°24.6'
Deneb	+1.2	49°28.3'	N 45°21.5'	Acrux	+0.8	173°03.8'	S 63°12.5'	Capella	+0.1	280°26.3'	N 46°01.1'
Altair	+0.8	62°03.5'	N 8°55.5'	Regulus	+1.4	207°37.8'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.7'
Vega	+0.0	80°35.9'	N 38°48.3'	Pollux	+1.2	243°21.0'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.2'	S 26°28.5'	Procyon	+0.4	244°54.0'	N 5°10.2'	Polaris	+2.0	315°08.0'	N 89°21.3'
Rigel Kent	-0.0	139°45.2'	S 60°54.9'	Adhara	+1.5	255°08.1'	S 28°60.0'	Achernar	+0.5	335°22.5'	S 57°08.2'
Arcturus	-0.1	145°51.2'	N 19°04.4'	Sirius	-1.4	258°28.8'	S 16°44.7'				
Hadar	+0.6	148°41.0'	S 60°28.0'	Canopus	-0.6	263°53.3'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	87°03.9'		180°51.5'	S 23°23.5'	205°58.4'	S 19°34.0'	145°07.7'	S 20°41.1'	144°42.8'	S 20°29.8'	67°04.5'	N 9°00.8'
1	102°06.4'		195°51.2'	S 23°23.5'	220°57.7'	S 19°34.6'	160°09.6'	S 20°41.0'	159°45.0'	S 20°29.8'	82°06.2'	N 9°01.1'
2	117°08.9'		210°50.9'	S 23°23.6'	235°56.9'	S 19°35.3'	175°11.5'	S 20°40.9'	174°47.2'	S 20°29.7'	97°07.9'	N 9°01.5'
3	132°11.3'		225°50.6'	S 23°23.7'	250°56.1'	S 19°36.0'	190°13.4'	S 20°40.8'	189°49.3'	S 20°29.7'	112°09.5'	N 9°01.9'
4	147°13.8'		240°50.3'	S 23°23.7'	265°55.3'	S 19°36.7'	205°15.3'	S 20°40.7'	204°51.5'	S 20°29.6'	127°11.2'	N 9°02.3'
5	162°16.2'		255°50.0'	S 23°23.8'	280°54.6'	S 19°37.4'	220°17.2'	S 20°40.6'	219°53.7'	S 20°29.6'	142°12.9'	N 9°02.7'
6	177°18.7'		270°49.7'	S 23°23.9'	295°53.8'	S 19°38.0'	235°19.1'	S 20°40.5'	234°55.9'	S 20°29.5'	157°14.5'	N 9°03.1'
7	192°21.2'		285°49.4'	S 23°23.9'	310°53.0'	S 19°38.7'	250°21.0'	S 20°40.4'	249°58.1'	S 20°29.5'	172°16.2'	N 9°03.5'
8	207°23.6'		300°49.0'	S 23°24.0'	325°52.2'	S 19°39.4'	265°22.9'	S 20°40.2'	265°00.3'	S 20°29.4'	187°17.9'	N 9°03.9'
9	222°26.1'		315°48.7'	S 23°24.0'	340°51.5'	S 19°40.1'	280°24.8'	S 20°40.1'	280°02.5'	S 20°29.3'	202°19.5'	N 9°04.3'
10	237°28.6'		330°48.4'	S 23°24.1'	355°50.7'	S 19°40.7'	295°26.6'	S 20°40.0'	295°04.7'	S 20°29.3'	217°21.2'	N 9°04.7'
11	252°31.0'		345°48.1'	S 23°24.2'	10°49.9'	S 19°41.4'	310°28.5'	S 20°39.9'	310°06.8'	S 20°29.2'	232°22.8'	N 9°05.1'
12	267°33.5'		0°47.8'	S 23°24.2'	25°49.1'	S 19°42.1'	325°30.4'	S 20°39.8'	325°09.0'	S 20°29.2'	247°24.5'	N 9°05.5'
13	282°36.0'		15°47.5'	S 23°24.3'	40°48.4'	S 19°42.8'	340°32.3'	S 20°39.7'	340°11.2'	S 20°29.1'	262°26.2'	N 9°05.9'
14	297°38.4'		30°47.2'	S 23°24.3'	55°47.6'	S 19°43.4'	355°34.2'	S 20°39.6'	355°13.4'	S 20°29.1'	277°27.8'	N 9°06.3'
15	312°40.9'		45°46.9'	S 23°24.4'	70°46.8'	S 19°44.1'	10°36.1'	S 20°39.5'	10°15.6'	S 20°29.0'	292°29.5'	N 9°06.7'
16	327°43.4'		60°46.6'	S 23°24.4'	85°46.0'	S 19°44.8'	25°38.0'	S 20°39.3'	25°17.8'	S 20°29.0'	307°31.1'	N 9°07.1'
17	342°45.8'		75°46.3'	S 23°24.5'	100°45.2'	S 19°45.5'	40°39.9'	S 20°39.2'	40°20.0'	S 20°28.9'	322°32.8'	N 9°07.4'
18	357°48.3'		90°46.0'	S 23°24.5'	115°44.5'	S 19°46.1'	55°41.8'	S 20°39.1'	55°22.1'	S 20°28.9'	337°34.4'	N 9°07.8'
19	12°50.7'		105°45.6'	S 23°24.6'	130°43.7'	S 19°46.8'	70°43.7'	S 20°39.0'	70°24.3'	S 20°28.8'	352°36.1'	N 9°08.2'
20	27°53.2'		120°45.3'	S 23°24.7'	145°42.9'	S 19°47.5'	85°45.6'	S 20°38.9'	85°26.5'	S 20°28.7'	7°37.7'	N 9°08.6'
21	42°55.7'		135°45.0'	S 23°24.7'	160°42.1'	S 19°48.1'	100°47.5'	S 20°38.8'	100°28.7'	S 20°28.7'	22°39.4'	N 9°09.0'
22	57°58.1'		150°44.7'	S 23°24.8'	175°41.3'	S 19°48.8'	115°49.4'	S 20°38.7'	115°30.9'	S 20°28.6'	37°41.1'	N 9°09.4'
23	73°00.6'		165°44.4'	S 23°24.8'	190°40.6'	S 19°49.4'	130°51.3'	S 20°38.6'	130°33.1'	S 20°28.6'	52°42.7'	N 9°09.8'
			SD 16.2'	d -0.1'	v -0.8'	d -0.7'	v 1.9'	d 0.1'	v 2.2'	d 0.1'	v 1.7'	d 0.4'
Mer. pass.			11 h 56 m 49 s		10 h 17 m		14 h 18 m		14 h 19 m		19 h 30 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Aldebaran	-Rigel	-Mars	-Fomalhaut	+Saturn	+Jupiter	+Altair	+Sun
0	133°30.4'	S 21°39.5'	8.2'	7.4'	57.6'	119°27.6'	118°39.1'	71°59.3'	29°03.7'	10°31.1'	10°52.6'		43°34.6'
1	147°57.7'	S 21°32.1'	8.3'	7.5'	57.6'	118°54.2'	118°11.8'	71°26.8'	28°36.2'	11°03.0'	11°24.5'		44°05.7'
2	162°25.0'	S 21°24.7'	8.5'	7.6'	57.5'	118°20.8'	117°44.5'	70°54.3'	28°09.0'	11°35.0'	11°56.4'		44°36.6'
3	176°52.5'	S 21°17.1'	8.6'	7.7'	57.5'	117°47.5'	117°17.1'	70°21.8'	27°41.9'	12°07.1'	12°28.4'		45°07.6'
4	191°20.1'	S 21°09.4'	8.7'	7.8'	57.4'	117°14.2'	116°49.7'	69°49.4'	27°15.2'	12°39.3'	13°00.4'		45°38.5'
5	205°47.7'	S 21°01.6'	8.8'	7.9'	57.4'	116°40.9'	116°22.3'	69°17.1'	26°48.7'	13°11.5'	13°32.5'		46°09.3'
6	220°15.5'	S 20°53.7'	8.9'	8.0'	57.4'	116°07.7'	115°54.9'	68°44.8'	26°22.5'	13°43.7'	14°04.5'		46°40.1'
7	234°43.4'	S 20°45.7'	9.0'	8.1'	57.3'	115°34.5'	115°27.5'	68°12.5'	25°56.5'	14°15.9'	14°36.6'		47°10.9'
8	249°11.4'	S 20°37.6'	9.1'	8.2'	57.3'	115°01.4'	115°00.0'	67°40.3'	25°30.9'	14°48.1'	15°08.7'		47°41.6'
9	263°39.5'	S 20°29.3'	9.2'	8.3'	57.3'	114°28.4'	114°32.6'	67°08.1'	25°05.6'	15°20.4'	15°40.7'		48°12.2'
10	278°07.7'	S 20°21.0'	9.3'	8.4'	57.2'	113°55.3'	114°05.1'	66°36.0'	24°40.6'	15°52.6'	16°12.8'		48°42.9'
11	292°36.1'	S 20°12.6'	9.4'	8.5'	57.2'	113°22.3'	113°37.7'	66°03.9'	24°15.9'	16°24.9'	16°44.8'		49°13.4'
12	307°04.5'	S 20°04.1'	9.5'	8.6'	57.1'	112°49.4'	113°10.2'	65°31.9'	23°51.6'	16°57.1'	17°16.9'		49°44.0'
13	321°33.0'	S 19°55.5'	9.7'	8.7'	57.1'	112°16.5'	112°42.7'	64°59.9'	23°27.7'	17°29.3'	17°48.9'		50°14.4'
14	336°01.7'	S 19°46.8'	9.8'	8.8'	57.1'	111°43.6'	112°15.2'	64°28.0'	23°04.1'	18°01.6'	18°20.9'		50°44.9'
15	350°30.5'	S 19°38.0'	9.9'	8.9'	57.0'	111°10.8'	111°47.8'	63°56.1'	22°41.0'	18°33.7'	18°52.9'		51°15.3'
16	4°59.3'	S 19°29.1'	10.0'	9.0'	57.0'	110°38.1'	111°20.3'	63°24.3'	22°18.2'	19°05.9'	19°24.8'	37°27.8'	51°45.6'
17	19°28.3'	S 19°20.1'	10.1'	9.1'	57.0'	110°05.4'	110°52.8'	62°52.5'	21°55.9'	19°38.1'	19°56.8'	37°42.9'	52°15.9'
18	33°57.4'	S 19°11.0'	10.2'	9.2'	56.9'	109°32.7'	110°25.3'	62°20.7'	21°34.1'	20°10.2'	20°28.7'	37°58.4'	52°46.2'
19	48°26.6'	S 19°01.9'	10.3'	9.2'	56.9'	109°00.0'	109°57.9'	61°49.1'	21°12.7'	20°42.3'	21°00.5'	38°14.1'	53°16.4'
20	62°55.9'	S 18°52.6'	10.4'	9.3'	56.9'	108°27.5'	109°30.4'	61°17.4'	20°51.9'	21°14.4'	21°32.4'	38°30.1'	53°46.6'
21	77°25.3'	S 18°43.3'	10.5'	9.4'	56.8'	107°54.9'	109°02.9'	60°45.8'	20°31.5'	21°46.5'	22°04.2'	38°46.4'	54°16.7'
22	91°54.8'	S 18°33.9'	10.6'	9.5'	56.8'	107°22.4'	108°35.5'	60°14.2'	20°11.7'	22°18.5'	22°36.0'	39°02.9'	54°46.8'
23	106°24.4'	S 18°24.4'	10.7'	9.6'	56.7'	106°49.9'	108°08.0'	59°42.7'	19°52.5'	22°50.5'	23°07.8'	39°19.7'	55°16.8'
Mer. pass.			15 h 39 m SD 15.7'		phase 14%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.9'	Spica	+1.0	158°25.9'	S 11°16.0'	Betelgeuse	+0.5	270°55.3'	N 7°24.6'
Deneb	+1.2	49°28.3'	N 45°21.5'	Acrux	+0.8	173°03.8'	S 63°12.5'	Capella	+0.1	280°26.3'	N 46°01.1'
Altair	+0.8	62°03.5'	N 8°55.5'	Regulus	+1.4	207°37.8'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.7'
Vega	+0.0	80°35.9'	N 38°48.3'	Pollux	+1.2	243°21.0'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.2'	S 26°28.5'	Procyon	+0.4	244°54.0'	N 5°10.2'	Polaris	+2.0	315°08.3'	N 89°21.3'
Rigil Kent	-0.0	139°45.2'	S 60°54.9'	Adhara	+1.5	255°08.1'	S 29°00.0'	Achernar	+0.5	335°22.5'	S 57°08.2'
Arcturus	-0.1	145°51.2'	N 19°04.4'	Sirius	-1.4	258°28.8'	S 16°44.7'				
Hadar	+0.6	148°41.0'	S 60°28.0'	Canopus	-0.6	263°53.3'	S 52°42.4'				

Saturday 19 December 2020 UT1

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	88°03.1'	180°44.1' S	23°24.8'	205°39.8' S	19°50.1'	145°53.2' S	20°38.4'	145°35.3' S	20°28.5'	67°44.4' N	9°10.2'	
1	103°05.5'	195°43.8' S	23°24.9'	220°39.0' S	19°50.8'	160°55.1' S	20°38.3'	160°37.5' S	20°28.5'	82°46.0' N	9°10.6'	
2	118°08.0'	210°43.5' S	23°24.9'	235°38.2' S	19°51.4'	175°57.0' S	20°38.2'	175°39.6' S	20°28.4'	97°47.7' N	9°11.0'	
3	133°10.5'	225°43.2' S	23°25.0'	250°37.4' S	19°52.1'	190°58.9' S	20°38.1'	190°41.8' S	20°28.4'	112°49.3' N	9°11.4'	
4	148°12.9'	240°42.9' S	23°25.0'	265°36.6' S	19°52.7'	206°00.8' S	20°38.0'	205°44.0' S	20°28.3'	127°51.0' N	9°11.8'	
5	163°15.4'	255°42.5' S	23°25.1'	280°35.9' S	19°53.4'	221°02.7' S	20°37.9'	220°46.2' S	20°28.3'	142°52.6' N	9°12.2'	
6	178°17.8'	270°42.2' S	23°25.1'	295°35.1' S	19°54.1'	236°04.6' S	20°37.8'	235°48.4' S	20°28.2'	157°54.2' N	9°12.6'	
7	193°20.3'	285°41.9' S	23°25.2'	310°34.3' S	19°54.7'	251°06.5' S	20°37.6'	250°50.6' S	20°28.1'	172°55.9' N	9°13.0'	
8	208°22.8'	300°41.6' S	23°25.2'	325°33.5' S	19°55.4'	266°08.4' S	20°37.5'	265°52.8' S	20°28.1'	187°57.5' N	9°13.4'	
9	223°25.2'	315°41.3' S	23°25.2'	340°32.7' S	19°56.0'	281°10.2' S	20°37.4'	280°54.9' S	20°28.0'	202°59.2' N	9°13.8'	
10	238°27.7'	330°41.0' S	23°25.3'	355°31.9' S	19°56.7'	296°12.1' S	20°37.3'	295°57.1' S	20°28.0'	218°00.8' N	9°14.2'	
11	253°30.2'	345°40.7' S	23°25.3'	10°31.1' S	19°57.3'	311°14.0' S	20°37.2'	310°59.3' S	20°27.9'	233°02.5' N	9°14.6'	
12	268°32.6'	0°40.4' S	23°25.4'	25°30.3' S	19°58.0'	326°15.9' S	20°37.1'	326°01.5' S	20°27.9'	248°04.1' N	9°15.0'	
13	283°35.1'	15°40.1' S	23°25.4'	40°29.6' S	19°58.6'	341°17.8' S	20°37.0'	341°03.7' S	20°27.8'	263°05.8' N	9°15.4'	
14	298°37.6'	30°39.8' S	23°25.4'	55°28.8' S	19°59.3'	356°19.7' S	20°36.8'	356°05.9' S	20°27.8'	278°07.4' N	9°15.8'	
15	313°40.0'	45°39.4' S	23°25.5'	70°28.0' S	19°59.9'	11°21.6' S	20°36.7'	11°08.0' S	20°27.7'	293°09.0' N	9°16.2'	
16	328°42.5'	60°39.1' S	23°25.5'	85°27.2' S	20°00.6'	26°23.5' S	20°36.6'	26°10.2' S	20°27.7'	308°10.7' N	9°16.6'	
17	343°45.0'	75°38.8' S	23°25.5'	100°26.4' S	20°01.2'	41°25.4' S	20°36.5'	41°12.4' S	20°27.6'	323°12.3' N	9°17.0'	
18	358°47.4'	90°38.5' S	23°25.6'	115°25.6' S	20°01.9'	56°27.3' S	20°36.4'	56°14.6' S	20°27.5'	338°13.9' N	9°17.4'	
19	13°49.9'	105°38.2' S	23°25.6'	130°24.8' S	20°02.5'	71°29.2' S	20°36.3'	71°16.8' S	20°27.5'	353°15.6' N	9°17.8'	
20	28°52.3'	120°37.9' S	23°25.6'	145°24.0' S	20°03.1'	86°31.1' S	20°36.2'	86°19.0' S	20°27.4'	8°17.2' N	9°18.2'	
21	43°54.8'	135°37.6' S	23°25.7'	160°23.2' S	20°03.8'	101°33.0' S	20°36.1'	101°21.2' S	20°27.4'	23°18.9' N	9°18.6'	
22	58°57.3'	150°37.3' S	23°25.7'	175°22.4' S	20°04.4'	116°34.9' S	20°35.9'	116°23.3' S	20°27.3'	38°20.5' N	9°19.0'	
23	73°59.7'	165°37.0' S	23°25.7'	190°21.6' S	20°05.1'	131°36.8' S	20°35.8'	131°25.5' S	20°27.3'	53°22.1' N	9°19.4'	
	SD 16.2' d -0.0'		v -0.8' d -0.6'		v 1.9' d 0.1'		v 2.2' d 0.1'		v 1.6' d 0.4'			
Mer. pass.	11 h 57 m 19 s		10 h 18 m		14 h 15 m		14 h 16 m		19 h 27 m			

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Rigel	-Aldebaran	-Mars	-Fomalhaut	+Saturn	+Jupiter	+Altair	+Sun
0	120°54.1'	S 18°14.8'	10.8'	9.7'	56.7'	107°40.6'	106°17.5'	59°11.3'	19°33.8'	23°22.5'	23°39.5'	39°36.8'	55°46.8'
1	135°23.9'	S 18°05.1'	10.9'	9.7'	56.7'	107°13.1'	105°45.1'	58°39.8'	19°15.8'	23°54.4'	24°11.2'	39°54.1'	56°16.8'
2	149°53.8'	S 17°55.4'	11.0'	9.8'	56.6'	106°45.7'	105°12.8'	58°08.5'	18°58.4'	24°26.3'	24°42.8'	40°11.6'	56°46.7'
3	164°23.9'	S 17°45.6'	11.1'	9.9'	56.6'	106°18.3'	104°40.5'	57°37.1'	18°41.7'	24°58.2'	25°14.5'	40°29.4'	57°16.5'
4	178°54.0'	S 17°35.7'	11.2'	10.0'	56.6'	105°50.9'	104°08.3'	57°05.9'	18°25.6'	25°30.0'	25°46.1'	40°47.4'	57°46.3'
5	193°24.2'	S 17°25.7'	11.3'	10.0'	56.5'	105°23.5'	103°36.1'	56°34.6'		26°01.8'	26°17.6'	41°05.6'	58°16.1'
6	207°54.6'	S 17°15.7'	11.4'	10.1'	56.5'	104°56.1'	103°03.9'	56°03.4'		26°33.6'	26°49.1'	41°24.0'	58°45.9'
7	222°25.0'	S 17°05.6'	11.5'	10.2'	56.5'	104°28.7'	102°31.8'	55°32.3'		27°05.4'	27°20.6'	41°42.7'	59°15.6'
8	236°55.5'	S 16°55.4'	11.6'	10.3'	56.4'	104°01.4'	101°59.7'	55°01.2'		27°37.1'	27°52.1'	42°01.5'	59°45.2'
9	251°26.2'	S 16°45.1'	11.7'	10.3'	56.4'	103°34.0'	101°27.6'	54°30.1'		28°08.8'	28°23.5'	42°20.5'	60°14.8'
10	265°56.9'	S 16°34.8'	11.8'	10.4'	56.4'	103°06.7'	100°55.6'	53°59.1'		28°40.4'	28°54.9'	42°39.7'	60°44.4'
11	280°27.7'	S 16°24.4'	11.9'	10.5'	56.3'	102°39.4'	100°23.7'	53°28.1'		29°12.0'	29°26.2'	42°59.1'	61°13.9'
12	294°58.6'	S 16°14.0'	12.0'	10.5'	56.3'	102°12.1'	99°51.8'	52°57.2'		29°43.6'	29°57.6'	43°18.7'	61°43.4'
13	309°29.7'	S 16°03.5'	12.1'	10.6'	56.3'	101°44.8'	99°19.9'	52°26.3'		30°15.1'	30°28.8'	43°38.4'	62°12.8'
14	324°00.8'	S 15°52.9'	12.2'	10.6'	56.2'	101°17.6'	98°48.1'	51°55.5'		30°46.6'	31°00.1'	43°58.3'	62°42.2'
15	338°32.0'	S 15°42.2'	12.3'	10.7'	56.2'	100°50.3'	98°16.3'	51°24.7'		31°18.1'	31°31.3'	44°18.4'	63°11.6'
16	353°03.3'	S 15°31.5'	12.4'	10.8'	56.2'	100°23.1'	97°44.5'	50°53.9'		31°49.5'	32°02.5'	44°38.6'	63°40.9'
17	7°34.7'	S 15°20.8'	12.5'	10.8'	56.1'	99°55.9'	97°12.8'	50°23.2'		32°20.9'	32°33.6'	44°59.0'	64°10.2'
18	22°06.2'	S 15°10.0'	12.6'	10.9'	56.1'	99°28.7'	96°41.1'	49°52.6'		32°52.3'	33°04.7'	45°19.5'	64°39.5'
19	36°37.7'	S 14°59.1'	12.7'	10.9'	56.1'	99°01.6'	96°09.4'	49°21.9'		33°23.6'	33°35.8'	45°40.2'	65°08.7'
20	51°09.4'	S 14°48.2'	12.8'	11.0'	56.0'	98°34.4'	95°37.8'	48°51.3'		33°54.9'	34°06.8'	46°01.0'	65°37.8'
21	65°41.2'	S 14°37.2'	12.8'	11.0'	56.0'	98°07.3'	95°06.3'	48°20.8'		34°26.2'	34°37.8'	46°22.0'	66°07.0'
22	80°13.0'	S 14°26.1'	12.9'	11.1'	56.0'	97°40.2'	94°34.8'	47°50.3'		34°57.4'	35°08.8'	46°43.0'	66°36.1'
23	94°44.9'	S 14°15.1'	13.0'	11.1'	55.9'	97°13.1'	94°03.3'	47°19.9'		35°28.6'	35°39.7'	47°04.2'	67°05.1'
Mer. pass.	16 h 29 m SD 15.5' phase 22%												

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.9'	Spica	+1.0	158°25.9'	S 11°16.0'	Betelgeuse	+0.5	270°55.3'	N 7°24.6'
Deneb	+1.2	49°28.3'	N 45°21.4'	Acrux	+0.8	173°03.7'	S 63°12.5'	Capella	+0.1	280°26.3'	N 46°01.1'
Altair	+0.8	62°03.5'	N 8°55.5'	Regulus	+1.4	207°37.8'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.7'
Vega	+0.0	80°35.9'	N 38°48.3'	Pollux	+1.2	243°21.0'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.2'	S 26°28.5'	Procyon	+0.4	244°54.0'	N 5°10.2'	Polaris	+2.0	315°08.6'	N 89°21.3'
Rigil Kent	-0.0	139°45.2'	S 60°54.9'	Adhara	+1.5	255°08.1'	S 29°00.0'	Achernar	+0.5	335°22.5'	S 57°08.2'
Arcturus	-0.1	145°51.2'	N 19°04.4'	Sirius	-1.4	258°28.8'	S 16°44.7'				
Hadar	+0.6	148°40.9'	S 60°28.0'	Canopus	-0.6	263°53.3'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	89°02.2'	180°36.7'	S 23°25.8'	205°20.8'	S 20°05.7'	146°38.7'	S 20°35.7'	146°27.7'	S 20°27.2'	68°23.8'	N 9°19.8'	
1	104°04.7'	195°36.3'	S 23°25.8'	220°20.0'	S 20°06.3'	161°40.5'	S 20°35.6'	161°29.9'	S 20°27.2'	83°25.4'	N 9°20.2'	
2	119°07.1'	210°36.0'	S 23°25.8'	235°19.3'	S 20°07.0'	176°42.4'	S 20°35.5'	176°32.1'	S 20°27.1'	98°27.0'	N 9°20.6'	
3	134°09.6'	225°35.7'	S 23°25.8'	250°18.5'	S 20°07.6'	191°44.3'	S 20°35.4'	191°34.3'	S 20°27.0'	113°28.7'	N 9°21.0'	
4	149°12.1'	240°35.4'	S 23°25.9'	265°17.7'	S 20°08.2'	206°46.2'	S 20°35.3'	206°36.4'	S 20°27.0'	128°30.3'	N 9°21.4'	
5	164°14.5'	255°35.1'	S 23°25.9'	280°16.9'	S 20°08.9'	221°48.1'	S 20°35.1'	221°38.6'	S 20°26.9'	143°31.9'	N 9°21.8'	
6	179°17.0'	270°34.8'	S 23°25.9'	295°16.1'	S 20°09.5'	236°50.0'	S 20°35.0'	236°40.8'	S 20°26.9'	158°33.5'	N 9°22.2'	
7	194°19.5'	285°34.5'	S 23°25.9'	310°15.3'	S 20°10.1'	251°51.9'	S 20°34.9'	251°43.0'	S 20°26.8'	173°35.2'	N 9°22.6'	
8	209°21.9'	300°34.2'	S 23°25.9'	325°14.5'	S 20°10.8'	266°53.8'	S 20°34.8'	266°45.2'	S 20°26.8'	188°36.8'	N 9°23.0'	
9	224°24.4'	315°33.9'	S 23°26.0'	340°13.7'	S 20°11.4'	281°55.7'	S 20°34.7'	281°47.4'	S 20°26.7'	203°38.4'	N 9°23.4'	
10	239°26.8'	330°33.6'	S 23°26.0'	355°12.9'	S 20°12.0'	296°57.6'	S 20°34.6'	296°49.6'	S 20°26.7'	218°40.1'	N 9°23.8'	
11	254°29.3'	345°33.2'	S 23°26.0'	10°12.1'	S 20°12.7'	311°59.5'	S 20°34.4'	311°51.7'	S 20°26.6'	233°41.7'	N 9°24.2'	
12	269°31.8'	0°32.9'	S 23°26.0'	25°11.3'	S 20°13.3'	327°01.4'	S 20°34.3'	326°53.9'	S 20°26.6'	248°43.3'	N 9°24.6'	
13	284°34.2'	15°32.6'	S 23°26.0'	40°10.5'	S 20°13.9'	342°03.3'	S 20°34.2'	341°56.1'	S 20°26.5'	263°44.9'	N 9°25.0'	
14	299°36.7'	30°32.3'	S 23°26.1'	55°09.7'	S 20°14.5'	357°05.2'	S 20°34.1'	356°58.3'	S 20°26.4'	278°46.6'	N 9°25.4'	
15	314°39.2'	45°32.0'	S 23°26.1'	70°08.9'	S 20°15.2'	12°07.0'	S 20°34.0'	12°00.5'	S 20°26.4'	293°48.2'	N 9°25.8'	
16	329°41.6'	60°31.7'	S 23°26.1'	85°08.1'	S 20°15.8'	27°08.9'	S 20°33.9'	27°02.7'	S 20°26.3'	308°49.8'	N 9°26.2'	
17	344°44.1'	75°31.4'	S 23°26.1'	100°07.3'	S 20°16.4'	42°10.8'	S 20°33.8'	42°04.8'	S 20°26.3'	323°51.4'	N 9°26.6'	
18	359°46.6'	90°31.1'	S 23°26.1'	115°06.5'	S 20°17.0'	57°12.7'	S 20°33.6'	57°07.0'	S 20°26.2'	338°53.0'	N 9°27.0'	
19	14°49.0'	105°30.8'	S 23°26.1'	130°05.7'	S 20°17.7'	72°14.6'	S 20°33.5'	72°09.2'	S 20°26.2'	353°54.7'	N 9°27.4'	
20	29°51.5'	120°30.4'	S 23°26.1'	145°04.9'	S 20°18.3'	87°16.5'	S 20°33.4'	87°11.4'	S 20°26.1'	8°56.3'	N 9°27.8'	
21	44°54.0'	135°30.1'	S 23°26.2'	160°04.1'	S 20°18.9'	102°18.4'	S 20°33.3'	102°13.6'	S 20°26.1'	23°57.9'	N 9°28.2'	
22	59°56.4'	150°29.8'	S 23°26.2'	175°03.3'	S 20°19.5'	117°20.3'	S 20°33.2'	117°15.8'	S 20°26.0'	38°59.5'	N 9°28.6'	
23	74°58.9'	165°29.5'	S 23°26.2'	190°02.5'	S 20°20.1'	132°22.2'	S 20°33.1'	132°17.9'	S 20°25.9'	54°01.1'	N 9°29.0'	
		SD 16.2' d -0.0'		v -0.8' d -0.6'		v 1.9' d 0.1'		v 2.2' d 0.1'		v 1.6' d 0.4'		
Mer. pass.		11 h 57 m 49 s		10 h 19 m		14 h 12 m		14 h 12 m		19 h 24 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Capella	-Rigel	-Aldebaran	-Mars	+Fomalhaut	+Saturn	+Jupiter	+Sun
0	109°17.0'	S 14°03.9'	13.1'	11.2'	55.9'	106°50.1'	96°46.1'	93°31.8'	46°49.4'		35°59.7'	36°10.6'	67°34.1'
1	123°49.1'	S 13°52.7'	13.2'	11.2'	55.9'	106°21.2'	96°19.1'	93°00.4'	46°19.1'		36°30.8'	36°41.4'	68°03.1'
2	138°21.3'	S 13°41.5'	13.3'	11.3'	55.8'	105°52.4'	95°52.1'	92°29.0'	45°48.7'		37°01.9'	37°12.2'	68°32.0'
3	152°53.5'	S 13°30.2'	13.4'	11.3'	55.8'	105°23.6'	95°25.1'	91°57.7'	45°18.5'		37°33.0'	37°43.0'	69°00.9'
4	167°25.9'	S 13°18.9'	13.4'	11.4'	55.8'	104°54.7'	94°58.1'	91°26.4'	44°48.2'		38°04.0'	38°13.8'	69°29.8'
5	181°58.3'	S 13°07.5'	13.5'	11.4'	55.7'	104°25.9'	94°31.2'	90°55.1'	44°18.0'		38°35.0'	38°44.5'	69°58.6'
6	196°30.9'	S 12°56.0'	13.6'	11.5'	55.7'	103°57.2'	94°04.3'	90°23.9'	43°47.8'		39°05.9'	39°15.2'	70°27.4'
7	211°03.5'	S 12°44.6'	13.7'	11.5'	55.7'	103°28.4'	93°37.4'	89°52.7'	43°17.7'		39°36.9'	39°45.8'	70°56.2'
8	225°36.1'	S 12°33.1'	13.8'	11.6'	55.7'	102°59.7'	93°10.5'	89°21.5'	42°47.6'		40°07.7'	40°16.5'	71°24.9'
9	240°08.9'	S 12°21.5'	13.8'	11.6'	55.6'	102°31.0'	92°43.7'	88°50.4'	42°17.6'		40°38.6'	40°47.0'	71°53.6'
10	254°41.7'	S 12°09.9'	13.9'	11.6'	55.6'	102°02.3'	92°16.9'	88°19.3'	41°47.6'		41°09.4'	41°17.6'	72°22.2'
11	269°14.6'	S 11°58.3'	14.0'	11.7'	55.6'	101°33.6'	91°50.1'	87°48.2'	41°17.6'		41°40.2'	41°48.1'	72°50.9'
12	283°47.6'	S 11°46.6'	14.1'	11.7'	55.5'	101°05.0'	91°23.4'	87°17.2'	40°47.7'		42°11.0'	42°18.6'	73°19.4'
13	298°20.7'	S 11°34.9'	14.1'	11.7'	55.5'	100°36.4'	90°56.7'	86°46.2'	40°17.8'		42°41.7'	42°49.1'	73°48.0'
14	312°53.8'	S 11°23.2'	14.2'	11.8'	55.5'	100°07.8'	90°30.0'	86°15.3'	39°48.0'		43°12.4'	43°19.5'	74°16.5'
15	327°27.0'	S 11°11.4'	14.3'	11.8'	55.5'	99°39.2'	90°03.3'	85°44.3'	39°18.2'	18°28.4'	43°43.0'	43°49.9'	74°45.0'
16	342°00.3'	S 10°59.6'	14.3'	11.9'	55.4'	99°10.6'	89°36.6'	85°13.5'	38°48.4'	18°43.9'	44°13.7'	44°20.2'	75°13.4'
17	356°33.6'	S 10°47.7'	14.4'	11.9'	55.4'	98°42.1'	89°10.0'	84°42.6'	38°18.7'	18°60.0'	44°44.3'	44°50.6'	75°41.9'
18	11°07.0'	S 10°35.8'	14.5'	11.9'	55.4'	98°13.6'	88°43.5'	84°11.8'	37°49.0'	19°16.6'	45°14.8'	45°20.9'	76°10.3'
19	25°40.5'	S 10°23.9'	14.5'	11.9'	55.3'	97°45.1'	88°16.9'	83°41.0'	37°19.3'	19°33.8'	45°45.4'	45°51.1'	76°38.6'
20	40°14.0'	S 10°12.0'	14.6'	12.0'	55.3'	97°16.7'	87°50.4'	83°10.2'	36°49.7'	19°51.4'	46°15.9'	46°21.4'	77°06.9'
21	54°47.7'	S 9°60.0'	14.7'	12.0'	55.3'	96°48.2'	87°23.9'	82°39.5'	36°20.1'	20°09.6'	46°46.4'	46°51.6'	77°35.2'
22	69°21.3'	S 9°48.0'	14.7'	12.0'	55.3'	96°19.8'	86°57.4'	82°08.8'	35°50.6'	20°28.2'	47°16.8'	47°21.7'	78°03.5'
23	83°55.1'	S 9°35.9'	14.8'	12.1'	55.2'	95°51.4'	86°31.0'	81°38.1'	35°21.1'	20°47.3'	47°47.2'	47°51.9'	78°31.7'
Mer. pass.		17 h 14 m SD 15.2'		phase 31%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.9'	Spica	+1.0	158°25.9'	S 11°16.0'	Betelgeuse	+0.5	270°55.3'	N 7°24.6'
Deneb	+1.2	49°28.3'	N 45°21.4'	Acrux	+0.8	173°03.7'	S 63°12.5'	Capella	+0.1	280°26.3'	N 46°01.1'
Altair	+0.8	62°03.5'	N 8°55.5'	Regulus	+1.4	207°37.8'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.7'
Vega	+0.0	80°35.9'	N 38°48.3'	Pollux	+1.2	243°21.0'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.2'	S 26°28.5'	Procyon	+0.4	244°54.0'	N 5°10.2'	Polaris	+2.0	315°08.9'	N 89°21.3'
Rigil Kent	-0.0	139°45.2'	S 60°54.9'	Adhara	+1.5	255°08.1'	S 29°00.0'	Achernar	+0.5	335°22.5'	S 57°08.2'
Arcturus	-0.1	145°51.2'	N 19°04.4'	Sirius	-1.4	258°28.8'	S 16°44.7'				
Hadar	+0.6	148°40.9'	S 60°28.0'	Canopus	-0.6	263°53.3'	S 52°42.4'				

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	91°00.5'	180°21.7'	S 23°26.1'	204°42.2'	S 20°35.2'	148°09.4'	S 20°30.2'	148°12.5'	S 20°24.5'	69°41.4'	N 9°39.2'
1	106°02.9'	195°21.4'	S 23°26.1'	219°41.4'	S 20°35.8'	163°11.3'	S 20°30.0'	163°14.7'	S 20°24.5'	84°43.0'	N 9°39.6'
2	121°05.4'	210°21.1'	S 23°26.1'	234°40.6'	S 20°36.4'	178°13.2'	S 20°29.9'	178°16.8'	S 20°24.4'	99°44.6'	N 9°40.0'
3	136°07.9'	225°20.8'	S 23°26.1'	249°39.7'	S 20°37.0'	193°15.1'	S 20°29.8'	193°19.0'	S 20°24.4'	114°46.2'	N 9°40.4'
4	151°10.3'	240°20.5'	S 23°26.1'	264°38.9'	S 20°37.5'	208°17.0'	S 20°29.7'	208°21.2'	S 20°24.3'	129°47.7'	N 9°40.8'
5	166°12.8'	255°20.2'	S 23°26.1'	279°38.1'	S 20°38.1'	223°18.9'	S 20°29.6'	223°23.4'	S 20°24.3'	144°49.3'	N 9°41.2'
6	181°15.3'	270°19.9'	S 23°26.1'	294°37.3'	S 20°38.7'	238°20.8'	S 20°29.5'	238°25.6'	S 20°24.2'	159°50.9'	N 9°41.6'
7	196°17.7'	285°19.6'	S 23°26.0'	309°36.5'	S 20°39.3'	253°22.7'	S 20°29.3'	253°27.8'	S 20°24.1'	174°52.5'	N 9°42.0'
8	211°20.2'	300°19.2'	S 23°26.0'	324°35.6'	S 20°39.9'	268°24.5'	S 20°29.2'	268°29.9'	S 20°24.1'	189°54.1'	N 9°42.5'
9	226°22.7'	315°18.9'	S 23°26.0'	339°34.8'	S 20°40.5'	283°26.4'	S 20°29.1'	283°32.1'	S 20°24.0'	204°55.7'	N 9°42.9'
10	241°25.1'	330°18.6'	S 23°26.0'	354°34.0'	S 20°41.0'	298°28.3'	S 20°29.0'	298°34.3'	S 20°24.0'	219°57.3'	N 9°43.3'
11	256°27.6'	345°18.3'	S 23°26.0'	9°33.2'	S 20°41.6'	313°30.2'	S 20°28.9'	313°36.5'	S 20°23.9'	234°58.9'	N 9°43.7'
12	271°30.0'	0°18.0'	S 23°26.0'	24°32.4'	S 20°42.2'	328°32.1'	S 20°28.8'	328°38.7'	S 20°23.9'	250°00.5'	N 9°44.1'
13	286°32.5'	15°17.7'	S 23°25.9'	39°31.5'	S 20°42.8'	343°34.0'	S 20°28.6'	343°40.8'	S 20°23.8'	265°02.1'	N 9°44.5'
14	301°35.0'	30°17.4'	S 23°25.9'	54°30.7'	S 20°43.4'	358°35.9'	S 20°28.5'	358°43.0'	S 20°23.8'	280°03.7'	N 9°44.9'
15	316°37.4'	45°17.1'	S 23°25.9'	69°29.9'	S 20°43.9'	13°37.8'	S 20°28.4'	13°45.2'	S 20°23.7'	295°05.3'	N 9°45.3'
16	331°39.9'	60°16.8'	S 23°25.9'	84°29.1'	S 20°44.5'	28°39.6'	S 20°28.3'	28°47.4'	S 20°23.6'	310°06.9'	N 9°45.7'
17	346°42.4'	75°16.4'	S 23°25.8'	99°28.2'	S 20°45.1'	43°41.5'	S 20°28.2'	43°49.6'	S 20°23.6'	325°08.5'	N 9°46.1'
18	1°44.8'	90°16.1'	S 23°25.8'	114°27.4'	S 20°45.7'	58°43.4'	S 20°28.1'	58°51.7'	S 20°23.5'	340°10.0'	N 9°46.6'
19	16°47.3'	105°15.8'	S 23°25.8'	129°26.6'	S 20°46.2'	73°45.3'	S 20°27.9'	73°53.9'	S 20°23.5'	355°11.6'	N 9°47.0'
20	31°49.8'	120°15.5'	S 23°25.8'	144°25.8'	S 20°46.8'	88°47.2'	S 20°27.8'	88°56.1'	S 20°23.4'	10°13.2'	N 9°47.4'
21	46°52.2'	135°15.2'	S 23°25.7'	159°25.0'	S 20°47.4'	103°49.1'	S 20°27.7'	103°58.3'	S 20°23.4'	25°14.8'	N 9°47.8'
22	61°54.7'	150°14.9'	S 23°25.7'	174°24.1'	S 20°47.9'	118°51.0'	S 20°27.6'	119°00.5'	S 20°23.3'	40°16.4'	N 9°48.2'
23	76°57.2'	165°14.6'	S 23°25.7'	189°23.3'	S 20°48.5'	133°52.9'	S 20°27.5'	134°02.6'	S 20°23.2'	55°18.0'	N 9°48.6'
		SD 16.3'	<i>d</i> 0.0'	<i>v</i> -0.8' <i>d</i> -0.6'		<i>v</i> 1.9' <i>d</i> 0.1'		<i>v</i> 2.2' <i>d</i> 0.1'		<i>v</i> 1.6' <i>d</i> 0.4'	
Mer. pass.		11 h 58 m 49 s		10 h 22 m		14 h 6 m		14 h 5 m		19 h 19 m	

h	Moon				HP	Lunar distance							
	GHA	dec	<i>v</i>	<i>d</i>		-Capella	-Rigel	-Aldebaran	-Mars	+Fomalhaut	+Jupiter	+Saturn	+Sun
0	88°15.8'	S 4°28.2'	16.0'	12.5'	54.7'	84°09.4'	75°40.5'	69°00.3'	23°16.8'	30°18.8'	60°17.1'	60°19.3'	90°08.6'
1	102°50.8'	S 4°15.7'	16.0'	12.5'	54.7'	83°41.6'	75°14.9'	68°30.3'	22°48.4'	30°44.1'	60°46.6'	60°49.0'	90°36.2'
2	117°25.8'	S 4°03.2'	16.1'	12.5'	54.6'	83°13.8'	74°49.4'	68°00.3'	22°20.0'	31°09.5'	61°16.1'	61°18.8'	91°03.8'
3	132°00.9'	S 3°50.6'	16.1'	12.5'	54.6'	82°46.1'	74°23.9'	67°30.3'	21°51.7'	31°35.0'	61°45.5'	61°48.5'	91°31.3'
4	146°36.0'	S 3°38.1'	16.1'	12.5'	54.6'	82°18.4'	73°58.4'	67°00.4'	21°23.5'	32°00.5'	62°15.0'	62°18.3'	91°58.8'
5	161°11.1'	S 3°25.6'	16.1'	12.5'	54.6'	81°50.7'	73°33.0'	66°30.5'	20°55.3'	32°26.2'	62°44.4'	62°48.0'	92°26.3'
6	175°46.2'	S 3°13.1'	16.2'	12.5'	54.6'	81°23.1'	73°07.6'	66°00.6'	20°27.2'	32°52.0'	63°13.8'	63°17.7'	92°53.7'
7	190°21.4'	S 3°00.5'	16.2'	12.5'	54.5'	80°55.4'	72°42.3'	65°30.7'	19°59.1'	33°17.8'	63°43.2'	63°47.3'	93°21.2'
8	204°56.6'	S 2°48.0'	16.2'	12.5'	54.5'	80°27.8'	72°17.0'	65°00.9'	19°31.1'	33°43.8'	64°12.6'	64°17.0'	93°48.6'
9	219°31.8'	S 2°35.5'	16.3'	12.5'	54.5'	80°00.2'	71°51.7'	64°31.0'	19°03.1'	34°09.8'	64°41.9'	64°46.6'	94°16.0'
10	234°07.1'	S 2°22.9'	16.3'	12.5'	54.5'	79°32.6'	71°26.5'	64°01.2'	18°35.3'	34°35.9'	65°11.3'	65°16.2'	94°43.4'
11	248°42.4'	S 2°10.4'	16.3'	12.5'	54.5'	79°05.1'	71°01.3'	63°31.4'	18°07.5'	35°02.1'	65°40.6'	65°45.8'	95°10.8'
12	263°17.7'	S 1°57.8'	16.3'	12.5'	54.5'	78°37.6'	70°36.1'	63°01.6'	17°39.7'	35°28.4'	66°09.9'	66°15.4'	95°38.2'
13	277°53.0'	S 1°45.3'	16.3'	12.5'	54.5'	78°10.1'	70°11.0'	62°31.8'	17°12.1'	35°54.7'	66°39.2'	66°45.0'	96°05.5'
14	292°28.3'	S 1°32.7'	16.4'	12.5'	54.4'	77°42.6'	69°46.0'	62°02.1'	16°44.5'	36°21.1'	67°08.5'	67°14.5'	96°32.8'
15	307°03.7'	S 1°20.2'	16.4'	12.5'	54.4'	77°15.1'	69°20.9'	61°32.3'	16°17.1'	36°47.5'	67°37.7'	67°44.0'	97°00.2'
16	321°39.1'	S 1°07.7'	16.4'	12.5'	54.4'	76°47.7'	68°55.9'	61°02.6'	15°49.7'	37°14.0'	68°07.0'	68°13.6'	97°27.5'
17	336°14.5'	S 0°55.1'	16.4'	12.5'	54.4'	76°20.3'	68°31.0'	60°32.9'	15°22.4'	37°40.6'	68°36.2'	68°43.1'	97°54.7'
18	350°49.9'	S 0°42.6'	16.4'	12.5'	54.4'	75°52.9'	68°06.1'	60°03.2'	14°55.3'	38°07.2'	69°05.4'	69°12.6'	98°22.0'
19	5°25.3'	S 0°30.0'	16.4'	12.5'	54.4'	75°25.5'	67°41.2'	59°33.6'	14°28.2'	38°33.9'	69°34.6'	69°42.0'	98°49.3'
20	20°00.8'	S 0°17.5'	16.5'	12.5'	54.4'	74°58.2'	67°16.4'	59°03.9'	14°01.3'	39°00.6'	70°03.8'	70°11.5'	99°16.5'
21	34°36.2'	S 0°05.0'	16.5'	12.5'	54.3'	74°30.9'	66°51.6'	58°34.3'	13°34.6'	39°27.4'	70°33.0'	70°41.0'	99°43.7'
22	49°11.7'	N 0°07.5'	16.5'	12.5'	54.3'	74°03.6'	66°26.9'	58°04.6'	13°08.0'	39°54.2'	71°02.1'	71°10.4'	100°11.0'
23	63°47.2'	N 0°20.1'	16.5'	12.5'	54.3'	73°36.3'	66°02.2'	57°35.0'	12°41.5'	40°21.1'	71°31.3'	71°39.8'	100°38.2'
Mer. pass.		18 h 38 m SD 14.9' phase 50%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.9'	Spica	+1.0	158°25.9'	S 11°16.1'	Betelgeuse	+0.5	270°55.3'	N 7°24.6'
Deneb	+1.2	49°28.4'	N 45°21.4'	Acrux	+0.8	173°03.7'	S 63°12.5'	Capella	+0.1	280°26.3'	N 46°01.1'
Altair	+0.8	62°03.5'	N 8°55.5'	Regulus	+1.4	207°37.8'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.7'
Vega	+0.0	80°35.9'	N 38°48.2'	Pollux	+1.2	243°21.0'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.2'	S 26°28.5'	Procyon	+0.4	244°54.0'	N 5°10.2'	Polaris	+2.0	315°09.6'	N 89°21.3'
Rigil Kent	-0.0	139°45.1'	S 60°54.9'	Adhara	+1.5	255°08.1'	S 29°00.0'	Achernar	+0.5	335°22.5'	S 57°08.2'
Arcturus	-0.1	145°51.2'	N 19°04.4'	Sirius	-1.4	258°28.8'	S 16°44.7'				
Hadar	+0.6	148°40.9'	S 60°28.0'	Canopus	-0.6	263°53.3'	S 52°42.4'				

Wednesday 23 December 2020 UT1

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	91°59.6'	S 23°25.6'	180°14.3'	S 23°25.6'	204°22.5'	S 20°49.1'	148°54.7'	S 20°27.3'	149°04.8'	S 20°23.2'	70°19.6'	N 9°49.0'
1	107°02.1'	S 23°25.6'	195°14.0'	S 23°25.6'	219°21.6'	S 20°49.6'	163°56.6'	S 20°27.2'	164°07.0'	S 20°23.1'	85°21.1'	N 9°49.4'
2	122°04.5'	S 23°25.6'	210°13.7'	S 23°25.6'	234°20.8'	S 20°50.2'	178°58.5'	S 20°27.1'	179°09.2'	S 20°23.1'	100°22.7'	N 9°49.8'
3	137°07.0'	S 23°25.5'	225°13.3'	S 23°25.5'	249°20.0'	S 20°50.8'	194°00.4'	S 20°27.0'	194°11.4'	S 20°23.0'	115°24.3'	N 9°50.3'
4	152°09.5'	S 23°25.5'	240°13.0'	S 23°25.5'	264°19.2'	S 20°51.3'	209°02.3'	S 20°26.9'	209°13.5'	S 20°23.0'	130°25.9'	N 9°50.7'
5	167°11.9'	S 23°25.5'	255°12.7'	S 23°25.5'	279°18.3'	S 20°51.9'	224°04.2'	S 20°26.8'	224°15.7'	S 20°22.9'	145°27.5'	N 9°51.1'
6	182°14.4'	S 23°25.4'	270°12.4'	S 23°25.4'	294°17.5'	S 20°52.4'	239°06.1'	S 20°26.6'	239°17.9'	S 20°22.8'	160°29.1'	N 9°51.5'
7	197°16.9'	S 23°25.4'	285°12.1'	S 23°25.4'	309°16.7'	S 20°53.0'	254°08.0'	S 20°26.5'	254°20.1'	S 20°22.8'	175°30.6'	N 9°51.9'
8	212°19.3'	S 23°25.4'	300°11.8'	S 23°25.4'	324°15.8'	S 20°53.6'	269°09.8'	S 20°26.4'	269°22.3'	S 20°22.7'	190°32.2'	N 9°52.3'
9	227°21.8'	S 23°25.3'	315°11.5'	S 23°25.3'	339°15.0'	S 20°54.1'	284°11.7'	S 20°26.3'	284°24.4'	S 20°22.7'	205°33.8'	N 9°52.7'
10	242°24.3'	S 23°25.3'	330°11.2'	S 23°25.3'	354°14.2'	S 20°54.7'	299°13.6'	S 20°26.2'	299°26.6'	S 20°22.6'	220°35.4'	N 9°53.1'
11	257°26.7'	S 23°25.2'	345°10.9'	S 23°25.2'	9°13.4'	S 20°55.2'	314°15.5'	S 20°26.0'	314°28.8'	S 20°22.6'	235°36.9'	N 9°53.6'
12	272°29.2'	S 23°25.2'	0°10.5'	S 23°25.2'	24°12.5'	S 20°55.8'	329°17.4'	S 20°25.9'	329°31.0'	S 20°22.5'	250°38.5'	N 9°54.0'
13	287°31.7'	S 23°25.2'	15°10.2'	S 23°25.2'	39°11.7'	S 20°56.3'	344°19.3'	S 20°25.8'	344°33.1'	S 20°22.4'	265°40.1'	N 9°54.4'
14	302°34.1'	S 23°25.1'	30°09.9'	S 23°25.1'	54°10.9'	S 20°56.9'	359°21.2'	S 20°25.7'	359°35.3'	S 20°22.4'	280°41.7'	N 9°54.8'
15	317°36.6'	S 23°25.1'	45°09.6'	S 23°25.1'	69°10.0'	S 20°57.4'	14°23.0'	S 20°25.6'	14°37.5'	S 20°22.3'	295°43.2'	N 9°55.2'
16	332°39.0'	S 23°25.0'	60°09.3'	S 23°25.0'	84°09.2'	S 20°58.0'	29°24.9'	S 20°25.5'	29°39.7'	S 20°22.3'	310°44.8'	N 9°55.6'
17	347°41.5'	S 23°25.0'	75°09.0'	S 23°25.0'	99°08.4'	S 20°58.5'	44°26.8'	S 20°25.3'	44°41.9'	S 20°22.2'	325°46.4'	N 9°56.0'
18	2°44.0'	S 23°24.9'	90°08.7'	S 23°24.9'	114°07.5'	S 20°59.1'	59°28.7'	S 20°25.2'	59°44.0'	S 20°22.2'	340°48.0'	N 9°56.5'
19	17°46.4'	S 23°24.9'	105°08.4'	S 23°24.9'	129°06.7'	S 20°59.6'	74°30.6'	S 20°25.1'	74°46.2'	S 20°22.1'	355°49.5'	N 9°56.9'
20	32°48.9'	S 23°24.9'	120°08.1'	S 23°24.9'	144°05.9'	S 21°00.2'	89°32.5'	S 20°25.0'	89°48.4'	S 20°22.1'	10°51.1'	N 9°57.3'
21	47°51.4'	S 23°24.8'	135°07.7'	S 23°24.8'	159°05.0'	S 21°00.7'	104°34.4'	S 20°24.9'	104°50.6'	S 20°22.0'	25°52.7'	N 9°57.7'
22	62°53.8'	S 23°24.8'	150°07.4'	S 23°24.8'	174°04.2'	S 21°01.3'	119°36.2'	S 20°24.7'	119°52.8'	S 20°21.9'	40°54.3'	N 9°58.1'
23	77°56.3'	S 23°24.7'	165°07.1'	S 23°24.7'	189°03.3'	S 21°01.8'	134°38.1'	S 20°24.6'	134°54.9'	S 20°21.9'	55°55.8'	N 9°58.5'
		<i>d</i> 0.0'	SD 16.3'	<i>d</i> -0.6'	<i>d</i> -0.8'	<i>d</i> -0.6'	<i>d</i> 1.9'	<i>d</i> 0.1'	<i>d</i> 2.2'	<i>d</i> 0.1'	<i>d</i> 1.6'	<i>d</i> 0.4'
Mer. pass.		11 h 59 m 19 s			10 h 23 m		14 h 3 m		14 h 2 m		19 h 17 m	

h	Moon					Lunar distance							
	GHA	dec	<i>v</i>	<i>d</i>	HP	–Capella	–Rigel	–Aldebaran	–Mars	+Fomalhaut	+Jupiter	+Saturn	+Sun
0	78°22.7'	N 0°32.6'	16.5'	12.5'	54.3'	73°09.1'	65°37.6'	57°05.4'	12°15.3'	40°48.0'	72°00.4'	72°09.2'	101°05.3'
1	92°58.2'	N 0°45.1'	16.5'	12.5'	54.3'	72°41.9'	65°13.0'	56°35.8'	11°49.2'	41°14.9'	72°29.5'	72°38.6'	101°32.5'
2	107°33.7'	N 0°57.6'	16.5'	12.5'	54.3'	72°14.7'	64°48.5'	56°06.3'	11°23.4'	41°41.9'	72°58.7'	73°08.0'	101°59.7'
3	122°09.2'	N 1°10.0'	16.5'	12.5'	54.3'	71°47.5'	64°24.0'	55°36.7'	10°57.8'	42°09.0'	73°27.8'	73°37.4'	102°26.8'
4	136°44.7'	N 1°22.5'	16.5'	12.5'	54.3'	71°20.3'	63°59.5'	55°07.2'	10°32.5'	42°36.1'	73°56.9'	74°06.8'	102°54.0'
5	151°20.2'	N 1°35.0'	16.5'	12.5'	54.3'	70°53.2'	63°35.1'	54°37.6'	10°07.5'	43°03.2'	74°25.9'	74°36.1'	103°21.1'
6	165°55.8'	N 1°47.5'	16.5'	12.4'	54.2'	70°26.1'	63°10.8'	54°08.1'	9°42.9'	43°30.3'	74°55.0'	75°05.5'	103°48.3'
7	180°31.3'	N 1°59.9'	16.5'	12.4'	54.2'	69°59.0'	62°46.5'	53°38.6'	9°18.6'	43°57.5'	75°24.1'	75°34.8'	104°15.4'
8	195°06.8'	N 2°12.3'	16.5'	12.4'	54.2'	69°32.0'	62°22.3'	53°09.1'	8°54.8'	44°24.7'	75°53.1'	76°04.2'	104°42.5'
9	209°42.4'	N 2°24.8'	16.5'	12.4'	54.2'	69°04.9'	61°58.1'	52°39.6'	8°31.5'	44°52.0'	76°22.2'	76°33.5'	105°09.6'
10	224°17.9'	N 2°37.2'	16.5'	12.4'	54.2'	68°37.9'	61°33.9'	52°10.1'	8°08.8'	45°19.3'	76°51.2'	77°02.8'	105°36.7'
11	238°53.4'	N 2°49.6'	16.5'	12.4'	54.2'	68°10.9'	61°09.8'	51°40.6'	7°46.7'	45°46.6'	77°20.2'	77°32.1'	106°03.7'
12	253°29.0'	N 3°02.0'	16.5'	12.4'	54.2'	67°44.0'	60°45.8'	51°11.2'		46°13.9'	77°49.3'	78°01.4'	106°30.8'
13	268°04.5'	N 3°14.3'	16.5'	12.4'	54.2'	67°17.0'	60°21.8'	50°41.7'		46°41.3'	78°18.3'	78°30.7'	106°57.9'
14	282°40.0'	N 3°26.7'	16.5'	12.3'	54.2'	66°50.1'	59°57.9'	50°12.3'		47°08.7'	78°47.3'	78°60.0'	107°24.9'
15	297°15.5'	N 3°39.0'	16.5'	12.3'	54.2'	66°23.2'	59°34.0'	49°42.8'		47°36.1'	79°16.3'	79°29.2'	107°52.0'
16	311°51.0'	N 3°51.4'	16.5'	12.3'	54.2'	65°56.4'	59°10.2'	49°13.4'		48°03.6'	79°45.3'	79°58.5'	108°19.0'
17	326°26.5'	N 4°03.7'	16.5'	12.3'	54.1'	65°29.5'	58°46.5'	48°44.0'		48°31.0'	80°14.3'	80°27.8'	108°46.1'
18	341°02.0'	N 4°16.0'	16.5'	12.3'	54.1'	65°02.7'	58°22.8'	48°14.6'		48°58.5'	80°43.2'	80°57.0'	109°13.1'
19	355°37.5'	N 4°28.2'	16.5'	12.3'	54.1'	64°35.9'	57°59.1'	47°45.2'		49°26.1'	81°12.2'	81°26.3'	109°40.1'
20	10°13.0'	N 4°40.5'	16.5'	12.2'	54.1'	64°09.2'	57°35.6'	47°15.8'		49°53.6'	81°41.2'	81°55.5'	110°07.1'
21	24°48.4'	N 4°52.7'	16.4'	12.2'	54.1'	63°42.4'	57°12.1'	46°46.4'		50°21.2'	82°10.2'	82°24.8'	110°34.2'
22	39°23.9'	N 5°04.9'	16.4'	12.2'	54.1'	63°15.7'	56°48.6'	46°17.0'		50°48.8'	82°39.1'	82°54.0'	111°01.2'
23	53°59.3'	N 5°17.1'	16.4'	12.2'	54.1'	62°49.1'	56°25.2'	45°47.6'		51°16.4'	83°08.1'	83°23.3'	111°28.2'
Mer. pass.		19 h 18 m SD 14.8'			phase 60%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.9'	Spica	+1.0	158°25.9'	S 11°16.1'	Betelgeuse	+0.5	270°55.3'	N 7°24.6'
Deneb	+1.2	49°28.4'	N 45°21.4'	Acrux	+0.8	173°03.7'	S 63°12.5'	Capella	+0.1	280°26.3'	N 46°01.1'
Altair	+0.8	62°03.5'	N 8°55.5'	Regulus	+1.4	207°37.8'	N 11°51.9'	Rigel	+0.2	281°06.7'	N 8°10.7'
Vega	+0.0	80°35.9'	N 38°48.2'	Pollux	+1.2	243°21.0'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.2'	S 26°28.5'	Procyon	+0.4	244°54.0'	N 5°10.2'	Polaris	+2.0	315°09.9'	N 89°21.3'
Rigil Kent	-0.0	139°45.1'	S 60°54.9'	Adhara	+1.5	255°08.1'	S 29°00.0'	Achernar	+0.5	335°22.5'	S 57°08.2'
Arcturus	-0.1	145°51.1'	N 19°04.4'	Sirius	-1.4	258°28.8'	S 16°44.7'				
Hadar	+0.6	148°40.9'	S 60°28.0'	Canopus	-0.6	263°53.3'	S 52°42.4'				

Thursday 24 December 2020 UT1

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	92°58.8'	180°06.8' S	23°24.7'	204°02.5' S	21°02.3'	149°40.0' S	20°24.5'	149°57.1' S	20°21.8'	70°57.4' N	9°58.9'	
1	108°01.2'	195°06.5' S	23°24.6'	219°01.7' S	21°02.9'	164°41.9' S	20°24.4'	164°59.3' S	20°21.8'	85°59.0' N	9°59.4'	
2	123°03.7'	210°06.2' S	23°24.6'	234°00.8' S	21°03.4'	179°43.8' S	20°24.3'	180°01.5' S	20°21.7'	101°00.5' N	9°59.8'	
3	138°06.1'	225°05.9' S	23°24.5'	248°60.0' S	21°04.0'	194°45.7' S	20°24.1'	195°03.6' S	20°21.6'	116°02.1' N	10°00.2'	
4	153°08.6'	240°05.6' S	23°24.4'	263°59.2' S	21°04.5'	209°47.6' S	20°24.0'	210°05.8' S	20°21.6'	131°03.7' N	10°00.6'	
5	168°11.1'	255°05.3' S	23°24.4'	278°58.3' S	21°05.0'	224°49.4' S	20°23.9'	225°08.0' S	20°21.5'	146°05.2' N	10°01.0'	
6	183°13.5'	270°05.0' S	23°24.3'	293°57.5' S	21°05.6'	239°51.3' S	20°23.8'	240°10.2' S	20°21.5'	161°06.8' N	10°01.4'	
7	198°16.0'	285°04.6' S	23°24.3'	308°56.6' S	21°06.1'	254°53.2' S	20°23.7'	255°12.4' S	20°21.4'	176°08.4' N	10°01.8'	
8	213°18.5'	300°04.3' S	23°24.2'	323°55.8' S	21°06.6'	269°55.1' S	20°23.5'	270°14.5' S	20°21.4'	191°09.9' N	10°02.3'	
9	228°20.9'	315°04.0' S	23°24.2'	338°55.0' S	21°07.2'	284°57.0' S	20°23.4'	285°16.7' S	20°21.3'	206°11.5' N	10°02.7'	
10	243°23.4'	330°03.7' S	23°24.1'	353°54.1' S	21°07.7'	299°58.9' S	20°23.3'	300°18.9' S	20°21.2'	221°13.0' N	10°03.1'	
11	258°25.9'	345°03.4' S	23°24.0'	8°53.3' S	21°08.2'	315°00.7' S	20°23.2'	315°21.1' S	20°21.2'	236°14.6' N	10°03.5'	
12	273°28.3'	0°03.1' S	23°24.0'	23°52.4' S	21°08.8'	330°02.6' S	20°23.1'	330°23.2' S	20°21.1'	251°16.2' N	10°03.9'	
13	288°30.8'	15°02.8' S	23°23.9'	38°51.6' S	21°09.3'	345°04.5' S	20°22.9'	345°25.4' S	20°21.1'	266°17.7' N	10°04.3'	
14	303°33.3'	30°02.5' S	23°23.9'	53°50.7' S	21°09.8'	0°06.4' S	20°22.8'	0°27.6' S	20°21.0'	281°19.3' N	10°04.8'	
15	318°35.7'	45°02.2' S	23°23.8'	68°49.9' S	21°10.3'	15°08.3' S	20°22.7'	15°29.8' S	20°21.0'	296°20.8' N	10°05.2'	
16	333°38.2'	60°01.9' S	23°23.7'	83°49.1' S	21°10.9'	30°10.2' S	20°22.6'	30°31.9' S	20°20.9'	311°22.4' N	10°05.6'	
17	348°40.6'	75°01.5' S	23°23.7'	98°48.2' S	21°11.4'	45°12.1' S	20°22.5'	45°34.1' S	20°20.8'	326°24.0' N	10°06.0'	
18	3°43.1'	90°01.2' S	23°23.6'	113°47.4' S	21°11.9'	60°13.9' S	20°22.3'	60°36.3' S	20°20.8'	341°25.5' N	10°06.4'	
19	18°45.6'	105°00.9' S	23°23.5'	128°46.5' S	21°12.4'	75°15.8' S	20°22.2'	75°38.5' S	20°20.7'	356°27.1' N	10°06.8'	
20	33°48.0'	120°00.6' S	23°23.5'	143°45.7' S	21°12.9'	90°17.7' S	20°22.1'	90°40.7' S	20°20.7'	11°28.6' N	10°07.3'	
21	48°50.5'	135°00.3' S	23°23.4'	158°44.8' S	21°13.5'	105°19.6' S	20°22.0'	105°42.8' S	20°20.6'	26°30.2' N	10°07.7'	
22	63°53.0'	150°00.0' S	23°23.3'	173°44.0' S	21°14.0'	120°21.5' S	20°21.9'	120°45.0' S	20°20.6'	41°31.7' N	10°08.1'	
23	78°55.4'	164°59.7' S	23°23.3'	188°43.1' S	21°14.5'	135°23.4' S	20°21.7'	135°47.2' S	20°20.5'	56°33.3' N	10°08.5'	
		SD 16.3' <i>d</i> 0.1'		<i>v</i> -0.8' <i>d</i> -0.5'		<i>v</i> 1.9' <i>d</i> 0.1'		<i>v</i> 2.2' <i>d</i> 0.1'		<i>v</i> 1.6' <i>d</i> 0.4'		
Mer. pass.		11 h 59 m 48 s		10 h 24 m		14 h 0 m		13 h 58 m		19 h 14 m		

h	Moon				Lunar distance								
	GHA	dec	<i>v</i>	<i>d</i>	HP	-Betelgeuse	-Capella	-Rigel	-Aldebaran	+Mars	+Fomalhaut	+Jupiter	+Sun
0	68°34.7'	N 5°29.3'	16.4'	12.2'	54.1'	64°14.7'	62°22.4'	56°01.9'	45°18.3'		51°44.1'	83°37.0'	111°55.2'
1	83°10.1'	N 5°41.5'	16.4'	12.1'	54.1'	63°46.7'	61°55.8'	55°38.7'	44°48.9'		52°11.7'	84°06.0'	112°22.2'
2	97°45.5'	N 5°53.6'	16.4'	12.1'	54.1'	63°18.7'	61°29.2'	55°15.5'	44°19.5'		52°39.4'	84°34.9'	112°49.2'
3	112°20.9'	N 6°05.7'	16.4'	12.1'	54.1'	62°50.8'	61°02.6'	54°52.4'	43°50.2'		53°07.1'	85°03.9'	113°16.2'
4	126°56.2'	N 6°17.8'	16.3'	12.1'	54.1'	62°22.9'	60°36.1'	54°29.4'	43°20.8'		53°34.9'	85°32.8'	113°43.2'
5	141°31.6'	N 6°29.8'	16.3'	12.0'	54.1'	61°54.9'	60°09.6'	54°06.4'	42°51.5'		54°02.6'	86°01.8'	114°10.2'
6	156°06.9'	N 6°41.9'	16.3'	12.0'	54.1'	61°27.0'	59°43.1'	53°43.5'	42°22.2'		54°30.4'	86°30.7'	114°37.2'
7	170°42.2'	N 6°53.9'	16.3'	12.0'	54.1'	60°59.2'	59°16.7'	53°20.7'	41°52.8'		54°58.2'	86°59.7'	115°04.2'
8	185°17.4'	N 7°05.9'	16.2'	12.0'	54.1'	60°31.3'	58°50.2'	52°58.0'	41°23.5'		55°26.0'	87°28.6'	115°31.1'
9	199°52.7'	N 7°17.8'	16.2'	11.9'	54.1'	60°03.4'	58°23.9'	52°35.3'	40°54.2'		55°53.8'	87°57.5'	115°58.1'
10	214°27.9'	N 7°29.7'	16.2'	11.9'	54.1'	59°35.6'	57°57.5'	52°12.7'	40°24.9'		56°21.7'	88°26.5'	116°25.1'
11	229°03.1'	N 7°41.7'	16.2'	11.9'	54.1'	59°07.8'	57°31.2'	51°50.3'	39°55.6'		56°49.6'	88°55.4'	116°52.1'
12	243°38.2'	N 7°53.5'	16.1'	11.8'	54.1'	58°40.0'	57°04.9'	51°27.8'	39°26.3'	7°50.7'	57°17.4'	89°24.4'	117°19.1'
13	258°13.4'	N 8°05.4'	16.1'	11.8'	54.1'	58°12.2'	56°38.6'	51°05.5'	38°57.0'	8°12.8'	57°45.3'	89°53.3'	117°46.1'
14	272°48.5'	N 8°17.2'	16.1'	11.8'	54.1'	57°44.4'	56°12.4'	50°43.3'	38°27.7'	8°35.6'	58°13.3'	90°22.2'	118°13.1'
15	287°23.6'	N 8°29.0'	16.1'	11.8'	54.1'	57°16.7'	55°46.2'	50°21.1'	37°58.4'	8°58.8'	58°41.2'	90°51.2'	118°40.1'
16	301°58.6'	N 8°40.7'	16.0'	11.7'	54.1'	56°48.9'	55°20.1'	49°59.1'	37°29.1'	9°22.6'	59°09.2'	91°20.1'	119°07.1'
17	316°33.7'	N 8°52.4'	16.0'	11.7'	54.1'	56°21.2'	55°54.0'	49°37.1'	36°59.8'	9°46.8'	59°37.1'	91°49.1'	119°34.1'
18	331°08.7'	N 9°04.1'	16.0'	11.7'	54.1'	55°53.5'	54°27.9'	49°15.2'	36°30.5'	10°11.4'	60°05.1'	92°18.0'	
19	345°43.6'	N 9°15.8'	15.9'	11.6'	54.1'	55°25.8'	54°01.9'	48°53.5'	36°01.2'	10°36.3'	60°33.2'	92°47.0'	
20	0°18.5'	N 9°27.4'	15.9'	11.6'	54.1'	54°58.2'	53°35.8'	48°31.8'	35°31.9'	11°01.5'	61°01.2'	93°15.9'	
21	14°53.4'	N 9°39.0'	15.9'	11.6'	54.1'	54°30.5'	53°09.9'	48°10.2'	35°02.7'	11°27.0'	61°29.2'	93°44.9'	
22	29°28.3'	N 9°50.5'	15.8'	11.5'	54.1'	54°02.9'	52°44.0'	47°48.8'	34°33.4'	11°52.7'	61°57.3'	94°13.9'	
23	44°03.1' N	10°02.1' N	15.8'	11.5'	54.1'	53°35.3'	52°18.1'	47°27.4'	34°04.1'	12°18.6'	62°25.4'	94°42.8'	
Mer. pass.		19 h 59 m SD 14.8' phase 69%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.9'	Spica	+1.0	158°25.9'	S 11°16.1'	Betelgeuse	+0.5	270°55.3'	N 7°24.6'
Deneb	+1.2	49°28.4'	N 45°21.4'	Acrux	+0.8	173°03.7'	S 63°12.5'	Capella	+0.1	280°26.3'	N 46°01.1'
Altair	+0.8	62°03.5'	N 8°55.4'	Regulus	+1.4	207°37.8'	N 11°51.9'	Rigel	+0.2	281°06.7'	N 8°10.8'
Vega	+0.0	80°35.9'	N 38°48.2'	Pollux	+1.2	243°21.0'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.2'	S 26°28.5'	Procyon	+0.4	244°54.0'	N 5°10.2'	Polaris	+2.0	315°10.3'	N 89°21.3'
Rigel Kent	-0.0	139°45.1'	S 60°54.9'	Adhara	+1.5	255°08.1'	S 29°00.0'	Achernar	+0.5	335°22.5'	S 57°08.2'
Arcturus	-0.1	145°51.1'	N 19°04.4'	Sirius	-1.4	258°28.8'	S 16°44.7'				
Hadar	+0.6	148°40.9'	S 60°28.0'	Canopus	-0.6	263°53.3'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	95°56.2'	179°44.6' S 23°18.9'	203°00.2' S 21°38.5'	151°55.6' S 20°15.8'	152°33.8' S 20°17.7'	72°48.7' N 10°29.1'						
1	110°58.6'	194°44.3' S 23°18.8'	218°00.3' S 21°39.0'	166°57.4' S 20°15.7'	167°36.0' S 20°17.6'	87°50.2' N 10°29.6'						
2	126°01.1'	209°44.0' S 23°18.7'	232°59.5' S 21°39.4'	181°59.3' S 20°15.6'	182°38.1' S 20°17.5'	102°51.7' N 10°30.0'						
3	141°03.6'	224°43.7' S 23°18.6'	247°58.6' S 21°39.9'	197°01.2' S 20°15.4'	197°40.3' S 20°17.5'	117°53.2' N 10°30.4'						
4	156°06.0'	239°43.4' S 23°18.4'	262°57.7' S 21°40.4'	212°03.1' S 20°15.3'	212°42.5' S 20°17.4'	132°54.8' N 10°30.8'						
5	171°08.5'	254°43.1' S 23°18.3'	277°56.8' S 21°40.8'	227°05.0' S 20°15.2'	227°44.6' S 20°17.4'	147°56.3' N 10°31.3'						
6	186°11.0'	269°42.8' S 23°18.2'	292°56.0' S 21°41.3'	242°06.8' S 20°15.1'	242°46.8' S 20°17.3'	162°57.8' N 10°31.7'						
7	201°13.4'	284°42.5' S 23°18.1'	307°55.1' S 21°41.7'	257°08.7' S 20°14.9'	257°49.0' S 20°17.2'	177°59.3' N 10°32.1'						
8	216°15.9'	299°42.1' S 23°18.0'	322°54.2' S 21°42.2'	272°10.6' S 20°14.8'	272°51.2' S 20°17.2'	193°00.8' N 10°32.5'						
9	231°18.4'	314°41.8' S 23°17.9'	337°53.4' S 21°42.6'	287°12.5' S 20°14.7'	287°53.3' S 20°17.1'	208°02.4' N 10°33.0'						
10	246°20.8'	329°41.5' S 23°17.8'	352°52.5' S 21°43.1'	302°14.4' S 20°14.6'	302°55.5' S 20°17.1'	223°03.9' N 10°33.4'						
11	261°23.3'	344°41.2' S 23°17.6'	7°51.6' S 21°43.5'	317°16.2' S 20°14.4'	317°57.7' S 20°17.0'	238°05.4' N 10°33.8'						
12	276°25.7'	359°40.9' S 23°17.5'	22°50.8' S 21°44.0'	332°18.1' S 20°14.3'	332°59.9' S 20°16.9'	253°06.9' N 10°34.2'						
13	291°28.2'	14°40.6' S 23°17.4'	37°49.9' S 21°44.4'	347°20.0' S 20°14.2'	348°02.0' S 20°16.9'	268°08.4' N 10°34.7'						
14	306°30.7'	29°40.3' S 23°17.3'	52°49.0' S 21°44.9'	2°21.9' S 20°14.1'	3°04.2' S 20°16.8'	283°10.0' N 10°35.1'						
15	321°33.1'	44°40.0' S 23°17.2'	67°48.2' S 21°45.3'	17°23.8' S 20°14.0'	18°06.4' S 20°16.8'	298°11.5' N 10°35.5'						
16	336°35.6'	59°39.7' S 23°17.0'	82°47.3' S 21°45.8'	32°25.6' S 20°13.8'	33°08.6' S 20°16.7'	313°13.0' N 10°35.9'						
17	351°38.1'	74°39.4' S 23°16.9'	97°46.4' S 21°46.2'	47°27.5' S 20°13.7'	48°10.7' S 20°16.7'	328°14.5' N 10°36.4'						
18	6°40.5'	89°39.1' S 23°16.8'	112°45.5' S 21°46.7'	62°29.4' S 20°13.6'	63°12.9' S 20°16.6'	343°16.0' N 10°36.8'						
19	21°43.0'	104°38.8' S 23°16.7'	127°44.7' S 21°47.1'	77°31.3' S 20°13.5'	78°15.1' S 20°16.5'	358°17.5' N 10°37.2'						
20	36°45.5'	119°38.5' S 23°16.5'	142°43.8' S 21°47.6'	92°33.2' S 20°13.3'	93°17.2' S 20°16.5'	13°19.0' N 10°37.6'						
21	51°47.9'	134°38.2' S 23°16.4'	157°42.9' S 21°48.0'	107°35.0' S 20°13.2'	108°19.4' S 20°16.4'	28°20.5' N 10°38.1'						
22	66°50.4'	149°37.9' S 23°16.3'	172°42.0' S 21°48.4'	122°36.9' S 20°13.1'	123°21.6' S 20°16.4'	43°22.1' N 10°38.5'						
23	81°52.8'	164°37.6' S 23°16.2'	187°41.2' S 21°48.9'	137°38.8' S 20°13.0'	138°23.8' S 20°16.3'	58°23.6' N 10°38.9'						
		SD 16.3' d 0.1'	v -0.9' d -0.5'	v 1.9' d 0.1'	v 2.2' d 0.1'	v 1.5' d 0.4'						
Mer. pass.		12 h 1 m 17 s	10 h 29 m	13 h 51 m	13 h 48 m	19 h 7 m						

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Pollux	-Capella	-Betelgeuse	-Aldebaran	+Mars	+Achernar	+Fomalhaut	+Altair
0	37°29.0'	N 18°27.0'	13.1'	8.8'	54.4'	53°50.8'	32°37.2'	31°45.5'	10°30.0'	35°03.4'	80°41.5'	85°42.1'	115°15.4'
1	52°01.1'	N 18°35.8'	13.0'	8.7'	54.5'	53°20.8'	32°16.2'	31°20.3'	10°03.0'	35°32.1'	80°58.7'	86°11.0'	115°39.5'
2	66°33.1'	N 18°44.5'	12.9'	8.6'	54.5'	52°50.7'	31°55.3'	30°55.4'	9°36.3'	36°00.9'	81°15.9'	86°39.9'	116°03.6'
3	81°05.0'	N 18°53.1'	12.9'	8.5'	54.5'	52°20.7'	31°34.7'	30°30.5'	9°09.9'	36°29.7'	81°33.2'	87°08.9'	116°27.6'
4	95°36.9'	N 19°01.6'	12.8'	8.4'	54.5'	51°50.6'	31°14.3'	30°05.8'	8°44.0'	36°58.5'	81°50.5'	87°37.9'	116°51.6'
5	110°08.7'	N 19°10.0'	12.7'	8.4'	54.5'	51°20.6'	30°54.1'	29°41.2'	8°18.5'	37°27.4'	82°07.9'	88°06.9'	117°15.6'
6	124°40.4'	N 19°18.4'	12.7'	8.3'	54.5'	50°50.5'	30°34.2'	29°16.7'	7°53.5'	37°56.2'	82°25.2'	88°35.9'	117°39.6'
7	139°12.1'	N 19°26.7'	12.6'	8.2'	54.5'	50°20.4'	30°14.5'	28°52.4'	7°29.1'	38°25.1'	82°42.7'	89°04.9'	118°03.4'
8	153°43.7'	N 19°34.9'	12.5'	8.1'	54.6'	49°50.2'	29°55.0'	28°28.3'		38°54.0'	83°00.1'	89°34.0'	118°27.3'
9	168°15.2'	N 19°43.0'	12.4'	8.0'	54.6'	49°20.1'	29°35.8'	28°04.3'		39°23.0'	83°17.6'	90°03.1'	118°51.1'
10	182°46.6'	N 19°51.0'	12.4'	7.9'	54.6'	48°49.9'	29°16.9'	27°40.5'		39°51.9'	83°35.1'	90°32.2'	119°14.9'
11	197°18.0'	N 19°59.0'	12.3'	7.9'	54.6'	48°19.8'	28°58.3'	27°16.9'		40°20.9'	83°52.6'	91°01.3'	119°38.6'
12	211°49.3'	N 20°06.8'	12.2'	7.8'	54.6'	47°49.6'	28°39.9'	26°53.5'		40°49.9'	84°10.2'	91°30.4'	
13	226°20.6'	N 20°14.6'	12.2'	7.7'	54.6'	47°19.4'	28°21.9'	26°30.2'		41°19.0'	84°27.8'	91°59.5'	
14	240°51.7'	N 20°22.3'	12.1'	7.6'	54.6'	46°49.2'	28°04.1'	26°07.2'		41°48.0'	84°45.5'	92°28.7'	
15	255°22.8'	N 20°29.9'	12.0'	7.5'	54.7'	46°18.9'	27°46.7'	25°44.4'		42°17.1'	85°03.1'	92°57.9'	
16	269°53.8'	N 20°37.4'	12.0'	7.4'	54.7'	45°48.7'	27°29.7'	25°21.9'		42°46.2'	85°20.8'	93°27.1'	
17	284°24.8'	N 20°44.8'	11.9'	7.3'	54.7'	45°18.4'	27°12.9'	24°59.5'		43°15.3'	85°38.5'	93°56.3'	
18	298°55.7'	N 20°52.1'	11.8'	7.2'	54.7'	44°48.1'	26°56.6'	24°37.5'		43°44.5'	85°56.2'	94°25.5'	
19	313°26.5'	N 20°59.4'	11.7'	7.1'	54.7'	44°17.8'	26°40.6'	24°15.7'		44°13.6'	86°14.0'	94°54.7'	
20	327°57.2'	N 21°06.5'	11.7'	7.0'	54.7'	43°47.5'	26°25.0'	23°54.2'		44°42.8'	86°31.8'	95°24.0'	
21	342°27.9'	N 21°13.6'	11.6'	7.0'	54.8'	43°17.1'		23°32.9'		45°12.0'	86°49.6'	95°53.3'	
22	356°58.5'	N 21°20.5'	11.5'	6.9'	54.8'	42°46.8'		23°12.0'		45°41.3'	87°07.4'	96°22.6'	
23	11°29.0'	N 21°27.4'	11.5'	6.8'	54.8'	42°16.4'		22°51.4'		46°10.5'	87°25.3'	96°51.9'	
Mer. pass.													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.9'	Spica	+1.0	158°25.8'	S 11°16.1'	Betelgeuse	+0.5	270°55.3'	N 7°24.6'
Deneb	+1.2	49°28.4'	N 45°21.4'	Acrux	+0.8	173°03.6'	S 63°12.5'	Capella	+0.1	280°26.2'	N 46°01.1'
Altair	+0.8	62°03.5'	N 8°55.4'	Regulus	+1.4	207°37.8'	N 11°51.9'	Rigel	+0.2	281°06.7'	S 8°10.8'
Vega	+0.0	80°35.9'	N 38°48.2'	Pollux	+1.2	243°21.0'	N 27°58.4'	Aldebaran	+0.9	290°43.1'	N 16°33.0'
Antares	+1.1	112°20.2'	S 26°28.5'	Procyon	+0.4	244°53.9'	N 5°10.2'	Polaris	+2.0	315°11.1'	N 89°21.3'
Rigil Kent	-0.0	139°45.1'	S 60°54.9'	Adhara	+1.5	255°08.0'	S 29°00.0'	Achernar	+0.5	335°22.6'	S 57°08.2'
Arcturus	-0.1	145°51.1'	N 19°04.4'	Sirius	-1.4	258°28.8'	S 16°44.7'				
Hadar	+0.6	148°40.8'	S 60°28.0'	Canopus	-0.6	263°53.3'	S 52°42.4'				

Thursday 31 December 2020 UT1

Table with columns for planets (Aries, Sun, Venus, Jupiter, Saturn, Mars) and rows for hours (0-23). Includes Right Ascension and Declination for each planet and Mer. pass. times.

Table with columns for Moon (GHA, dec, v, d, HP) and Lunar distance (+Spica, -Arcturus, -Regulus, -Pollux, +Betelgeuse, +Capella, +Aldebaran, +Rigel). Includes Mer. pass. time of 0 h 50 m SD 15.3' phase 99%.

Table with columns for Star (Star, mag, SHA, dec) and rows listing stars such as Fomalhaut, Deneb, Altair, Vega, Antares, Rigel Kent, Arcturus, Hadar, Spica, Acrux, Regulus, Pollux, Procyon, Adhara, Sirius, Canopus, Betelgeuse, Capella, Aldebaran, Polaris, and Achernar.