

Friday 03 July 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	281°28.6'	178°56.1'	N 22°56.1'	216°09.6'	N 17°12.8'	345°46.4'	S 21°38.4'	339°19.3'	S 20°21.8'	277°30.3'	S 1°44.8'			
1	296°31.1'	193°56.0'	N 22°55.9'	231°11.4'	N 17°12.8'	0°49.2'	S 21°38.5'	354°21.9'	S 20°21.8'	292°31.4'	S 1°44.3'			
2	311°33.5'	208°55.9'	N 22°55.7'	246°13.1'	N 17°12.8'	15°52.0'	S 21°38.5'	9°24.6'	S 20°21.8'	307°32.5'	S 1°43.8'			
3	326°36.0'	223°55.8'	N 22°55.5'	261°14.8'	N 17°12.8'	30°54.8'	S 21°38.6'	24°27.2'	S 20°21.9'	322°33.6'	S 1°43.2'			
4	341°38.5'	238°55.7'	N 22°55.3'	276°16.6'	N 17°12.8'	45°57.6'	S 21°38.6'	39°29.8'	S 20°21.9'	337°34.7'	S 1°42.7'			
5	356°40.9'	253°55.5'	N 22°55.1'	291°18.3'	N 17°12.7'	61°00.4'	S 21°38.7'	54°32.5'	S 20°22.0'	352°35.8'	S 1°42.2'			
6	11°43.4'	268°55.4'	N 22°54.9'	306°20.0'	N 17°12.7'	76°03.2'	S 21°38.8'	69°35.1'	S 20°22.0'	7°36.8'	S 1°41.6'			
7	26°45.8'	283°55.3'	N 22°54.7'	321°21.7'	N 17°12.7'	91°05.9'	S 21°38.8'	84°37.8'	S 20°22.0'	22°37.9'	S 1°41.1'			
8	41°48.3'	298°55.2'	N 22°54.5'	336°23.4'	N 17°12.7'	106°08.7'	S 21°38.9'	99°40.4'	S 20°22.1'	37°39.0'	S 1°40.6'			
9	56°50.8'	313°55.1'	N 22°54.3'	351°25.1'	N 17°12.7'	121°11.5'	S 21°38.9'	114°43.0'	S 20°22.1'	52°40.1'	S 1°40.1'			
10	71°53.2'	328°55.0'	N 22°54.1'	6°26.8'	N 17°12.6'	136°14.3'	S 21°39.0'	129°45.7'	S 20°22.2'	67°41.2'	S 1°39.5'			
11	86°55.7'	343°54.9'	N 22°53.8'	21°28.5'	N 17°12.6'	151°17.1'	S 21°39.1'	144°48.3'	S 20°22.2'	82°42.3'	S 1°39.0'			
12	101°58.2'	358°54.8'	N 22°53.6'	36°30.2'	N 17°12.6'	166°19.9'	S 21°39.1'	159°51.0'	S 20°22.2'	97°43.4'	S 1°38.5'			
13	117°00.6'	13°54.7'	N 22°53.4'	51°31.9'	N 17°12.6'	181°22.7'	S 21°39.2'	174°53.6'	S 20°22.3'	112°44.5'	S 1°37.9'			
14	132°03.1'	28°54.5'	N 22°53.2'	66°33.6'	N 17°12.6'	196°25.5'	S 21°39.2'	189°56.2'	S 20°22.3'	127°45.6'	S 1°37.4'			
15	147°05.6'	43°54.4'	N 22°53.0'	81°35.3'	N 17°12.6'	211°28.3'	S 21°39.3'	204°58.9'	S 20°22.4'	142°46.6'	S 1°36.9'			
16	162°08.0'	58°54.3'	N 22°52.8'	96°37.0'	N 17°12.6'	226°31.0'	S 21°39.4'	220°01.5'	S 20°22.4'	157°47.7'	S 1°36.4'			
17	177°10.5'	73°54.2'	N 22°52.5'	111°38.7'	N 17°12.6'	241°33.8'	S 21°39.4'	235°04.2'	S 20°22.4'	172°48.8'	S 1°35.8'			
18	192°13.0'	88°54.1'	N 22°52.3'	126°40.4'	N 17°12.6'	256°36.6'	S 21°39.5'	250°06.8'	S 20°22.5'	187°49.9'	S 1°35.3'			
19	207°15.4'	103°54.0'	N 22°52.1'	141°42.0'	N 17°12.6'	271°39.4'	S 21°39.5'	265°09.5'	S 20°22.5'	202°51.0'	S 1°34.8'			
20	222°17.9'	118°53.9'	N 22°51.9'	156°43.7'	N 17°12.6'	286°42.2'	S 21°39.6'	280°12.1'	S 20°22.6'	217°52.1'	S 1°34.3'			
21	237°20.3'	133°53.8'	N 22°51.7'	171°45.4'	N 17°12.5'	301°45.0'	S 21°39.7'	295°14.7'	S 20°22.6'	232°53.2'	S 1°33.7'			
22	252°22.8'	148°53.7'	N 22°51.5'	186°47.0'	N 17°12.5'	316°47.8'	S 21°39.7'	310°17.4'	S 20°22.6'	247°54.3'	S 1°33.2'			
23	267°25.3'	163°53.5'	N 22°51.2'	201°48.7'	N 17°12.5'	331°50.6'	S 21°39.8'	325°20.0'	S 20°22.7'	262°55.4'	S 1°32.7'			
		SD 15.7' d -0.2'		v 1.7' d -0.0'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.1' d 0.5'				
Mer. pass.		12 h 4 m 21 s			9 h 34 m		0 h 57 m		1 h 22 m		5 h 30 m			

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Fomalhaut	-Altair	-Saturn	-Jupiter	+Antares	+Spica	+Arcturus	+Regulus
0	29°23.3'	S 20°57.8'	6.6'	-7.3'	58.8'	81°59.5'	54°03.5'	46°39.0'	40°30.2'		49°17.8'	54°37.1'	103°11.0'
1	43°48.9'	S 21°05.1'	6.5'	-7.2'	58.8'	81°25.8'	53°36.9'	46°03.8'	39°54.8'		49°52.6'	55°06.8'	103°46.0'
2	58°14.4'	S 21°12.3'	6.5'	-7.0'	58.8'	80°52.0'	53°10.6'	45°28.5'	39°19.3'		50°27.3'	55°36.6'	104°21.1'
3	72°39.9'	S 21°19.3'	6.5'	-6.9'	58.8'	80°18.4'	52°44.3'	44°53.2'	38°43.9'		51°02.0'	56°06.4'	104°56.2'
4	87°05.4'	S 21°26.2'	6.4'	-6.8'	58.8'	79°44.7'	52°18.2'	44°18.0'	38°08.5'		51°36.8'	56°36.3'	105°31.2'
5	101°30.8'	S 21°33.0'	6.4'	-6.6'	58.8'	79°11.0'	51°52.2'	43°42.8'	37°33.2'		52°11.5'	57°06.3'	106°06.2'
6	115°56.2'	S 21°39.6'	6.4'	-6.5'	58.8'	78°37.4'	51°26.4'	43°07.6'	36°57.8'		52°46.2'	57°36.3'	106°41.2'
7	130°21.5'	S 21°46.1'	6.3'	-6.3'	58.7'	78°03.8'	51°00.7'	42°32.4'	36°22.5'		53°20.9'	58°06.3'	107°16.2'
8	144°46.9'	S 21°52.4'	6.3'	-6.2'	58.7'	77°30.2'	50°35.2'	41°57.2'	35°47.2'		53°55.6'	58°36.4'	107°51.2'
9	159°12.1'	S 21°58.6'	6.2'	-6.0'	58.7'	76°56.7'	50°09.8'	41°22.1'	35°11.9'	10°08.7'	54°30.2'	59°06.5'	108°26.1'
10	173°37.4'	S 22°04.7'	6.2'	-5.9'	58.7'	76°23.1'	49°44.5'	40°47.0'	34°36.6'	10°36.5'	55°04.9'	59°36.7'	109°01.0'
11	188°02.6'	S 22°10.6'	6.2'	-5.8'	58.7'	75°49.6'	49°19.5'	40°11.9'	34°01.3'	11°05.0'	55°39.5'	60°06.9'	109°35.9'
12	202°27.8'	S 22°16.3'	6.2'	-5.6'	58.7'	75°16.2'	48°54.5'	39°36.8'	33°26.1'	11°34.1'	56°14.1'	60°37.1'	110°10.8'
13	216°52.9'	S 22°21.9'	6.1'	-5.5'	58.6'	74°42.7'	48°29.8'	39°01.7'	32°50.9'	12°03.6'	56°48.8'	61°07.4'	110°45.7'
14	231°18.1'	S 22°27.4'	6.1'	-5.3'	58.6'	74°09.3'	48°05.2'	38°26.7'	32°15.7'	12°33.6'	57°23.3'	61°37.7'	111°20.5'
15	245°43.2'	S 22°32.7'	6.1'	-5.2'	58.6'	73°35.9'	47°40.8'	37°51.7'	31°40.5'	13°04.0'	57°57.9'	62°08.0'	111°55.4'
16	260°08.2'	S 22°37.9'	6.0'	-5.0'	58.6'	73°02.5'	47°16.6'	37°16.7'	31°05.4'	13°34.7'	58°32.5'	62°38.3'	112°30.2'
17	274°33.3'	S 22°42.9'	6.0'	-4.9'	58.6'	72°29.2'	46°52.6'	36°41.7'	30°30.2'	14°05.8'	59°07.0'	63°08.7'	113°04.9'
18	288°58.3'	S 22°47.8'	6.0'	-4.7'	58.5'	71°55.9'	46°28.8'	36°06.8'	29°55.1'	14°37.1'	59°41.6'	63°39.1'	113°39.7'
19	303°23.3'	S 22°52.6'	6.0'	-4.6'	58.5'	71°22.6'	46°05.1'	35°31.9'	29°20.1'	15°08.6'	60°16.1'	64°09.6'	114°14.4'
20	317°48.3'	S 22°57.1'	6.0'	-4.4'	58.5'	70°49.4'	45°41.7'	34°57.0'	28°45.0'	15°40.3'	60°50.6'	64°40.0'	114°49.2'
21	332°13.3'	S 23°01.6'	6.0'	-4.3'	58.5'	70°16.1'	45°18.4'	34°22.1'	28°10.0'	16°12.3'	61°25.1'	65°10.5'	115°23.8'
22	346°38.2'	S 23°05.8'	5.9'	-4.1'	58.5'	69°43.0'	44°55.4'	33°47.2'	27°35.0'	16°44.4'	61°59.5'	65°41.0'	115°58.5'
23	1°03.2'	S 23°10.0'	5.9'	-4.0'	58.4'	69°09.8'	44°32.6'	33°12.4'	27°00.0'	17°16.6'	62°34.0'	66°11.5'	116°33.2'
Mer. pass. 22 h 56 m SD 16.0' phase 94%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.4'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.6'
Deneb	+1.2	49°27.8'	N 45°21.1'	Acrux	+0.8	173°04.0'	S 63°12.9'	Capella	+0.1	280°27.7'	N 46°00.9'
Altair	+0.8	62°03.2'	N 8°55.4'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.7'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.2'	Pollux	+1.2	243°22.2'	N 27°58.6'	Aldebaran	+0.9	290°44.1'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	315°55.6'	N 89°20.6'
Rigil Kent	-0.0	139°44.8'	S 60°55.3'	Adhara	+1.5	255°09.1'	S 29°00.0'	Achernar	+0.5	335°23.2'	S 57°07.8'
Arcturus	-0.1	145°51.1'	N 19°04.8'	Sirius	-1.4	258°29.8'	S 16°44.7'				
Hadar	+0.6	148°40.8'	S 60°28.4'	Canopus	-0.6	263°54.6'	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	282°27.7'	178°53.4'	N 22°51.0'	216°50.4'	N 17°12.5'		346°53.4'	S 21°39.8'	340°22.7'	S 20°22.7'	277°56.5'	S 1°32.2'		
1	297°30.2'	193°53.3'	N 22°50.8'	231°52.0'	N 17°12.5'		1°56.2'	S 21°39.9'	355°25.3'	S 20°22.8'	292°57.6'	S 1°31.6'		
2	312°32.7'	208°53.2'	N 22°50.6'	246°53.7'	N 17°12.5'		16°59.0'	S 21°39.9'	10°27.9'	S 20°22.8'	307°58.7'	S 1°31.1'		
3	327°35.1'	223°53.1'	N 22°50.3'	261°55.3'	N 17°12.5'		32°01.7'	S 21°40.0'	25°30.6'	S 20°22.8'	322°59.8'	S 1°30.6'		
4	342°37.6'	238°53.0'	N 22°50.1'	276°57.0'	N 17°12.6'		47°04.5'	S 21°40.1'	40°33.2'	S 20°22.9'	338°00.9'	S 1°30.1'		
5	357°40.1'	253°52.9'	N 22°49.9'	291°58.6'	N 17°12.6'		62°07.3'	S 21°40.1'	55°35.9'	S 20°22.9'	353°01.9'	S 1°29.5'		
6	12°42.5'	268°52.8'	N 22°49.7'	307°00.3'	N 17°12.6'		77°10.1'	S 21°40.2'	70°38.5'	S 20°23.0'	8°03.0'	S 1°29.0'		
7	27°45.0'	283°52.7'	N 22°49.4'	322°01.9'	N 17°12.6'		92°12.9'	S 21°40.2'	85°41.2'	S 20°23.0'	23°04.1'	S 1°28.5'		
8	42°47.5'	298°52.6'	N 22°49.2'	337°03.5'	N 17°12.6'		107°15.7'	S 21°40.3'	100°43.8'	S 20°23.0'	38°05.2'	S 1°28.0'		
9	57°49.9'	313°52.4'	N 22°49.0'	352°05.2'	N 17°12.6'		122°18.5'	S 21°40.4'	115°46.4'	S 20°23.1'	53°06.3'	S 1°27.4'		
10	72°52.4'	328°52.3'	N 22°48.7'	7°06.8'	N 17°12.6'		137°21.3'	S 21°40.4'	130°49.1'	S 20°23.1'	68°07.4'	S 1°26.9'		
11	87°54.8'	343°52.2'	N 22°48.5'	22°08.4'	N 17°12.6'		152°24.1'	S 21°40.5'	145°51.7'	S 20°23.2'	83°08.5'	S 1°26.4'		
12	102°57.3'	358°52.1'	N 22°48.3'	37°10.0'	N 17°12.6'		167°26.9'	S 21°40.5'	160°54.4'	S 20°23.2'	98°09.6'	S 1°25.9'		
13	117°59.8'	13°52.0'	N 22°48.1'	52°11.7'	N 17°12.6'		182°29.7'	S 21°40.6'	175°57.0'	S 20°23.2'	113°10.7'	S 1°25.3'		
14	133°02.2'	28°51.9'	N 22°47.8'	67°13.3'	N 17°12.7'		197°32.4'	S 21°40.7'	190°59.7'	S 20°23.3'	128°11.8'	S 1°24.8'		
15	148°04.7'	43°51.8'	N 22°47.6'	82°14.9'	N 17°12.7'		212°35.2'	S 21°40.7'	206°02.3'	S 20°23.3'	143°12.9'	S 1°24.3'		
16	163°07.2'	58°51.7'	N 22°47.4'	97°16.5'	N 17°12.7'		227°38.0'	S 21°40.8'	221°04.9'	S 20°23.4'	158°14.0'	S 1°23.8'		
17	178°09.6'	73°51.6'	N 22°47.1'	112°18.1'	N 17°12.7'		242°40.8'	S 21°40.8'	236°07.6'	S 20°23.4'	173°15.1'	S 1°23.2'		
18	193°12.1'	88°51.5'	N 22°46.9'	127°19.7'	N 17°12.7'		257°43.6'	S 21°40.9'	251°10.2'	S 20°23.5'	188°16.2'	S 1°22.7'		
19	208°14.6'	103°51.4'	N 22°46.7'	142°21.3'	N 17°12.7'		272°46.4'	S 21°41.0'	266°12.9'	S 20°23.5'	203°17.3'	S 1°22.2'		
20	223°17.0'	118°51.3'	N 22°46.4'	157°22.9'	N 17°12.8'		287°49.2'	S 21°41.0'	281°15.5'	S 20°23.5'	218°18.4'	S 1°21.7'		
21	238°19.5'	133°51.2'	N 22°46.2'	172°24.5'	N 17°12.8'		302°52.0'	S 21°41.1'	296°18.2'	S 20°23.6'	233°19.5'	S 1°21.1'		
22	253°22.0'	148°51.0'	N 22°45.9'	187°26.1'	N 17°12.8'		317°54.8'	S 21°41.1'	311°20.8'	S 20°23.6'	248°20.6'	S 1°20.6'		
23	268°24.4'	163°50.9'	N 22°45.7'	202°27.7'	N 17°12.8'		332°57.6'	S 21°41.2'	326°23.4'	S 20°23.7'	263°21.7'	S 1°20.1'		
		SD 15.7' <i>d</i> -0.2'		<i>v</i> 1.6' <i>d</i> 0.0'			<i>v</i> 2.8' <i>d</i> -0.1'		<i>v</i> 2.6' <i>d</i> -0.0'		<i>v</i> 1.1' <i>d</i> 0.5'			
Mer. pass.		12 h 4 m 32 s		9 h 32 m			0 h 52 m		1 h 18 m		5 h 28 m			

h	Moon					Lunar distance							
	GHA	dec	<i>v</i>	<i>d</i>	HP	-Fomalhaut	-Altair	-Saturn	-Jupiter	+Antares	+Rigil Kent	+Hadar	+Spica
0	15°28.1'	S 23°14.0'	5.9'	-3.8'	58.4'	68°36.7'	44°10.0'	32°37.6'	26°25.1'	17°49.0'			63°08.4'
1	29°53.0'	S 23°17.8'	5.9'	-3.7'	58.4'	68°03.6'	43°47.6'	32°02.9'	25°50.1'	18°21.5'			63°42.8'
2	44°17.9'	S 23°21.5'	5.9'	-3.5'	58.4'	67°30.6'	43°25.4'	31°28.1'	25°15.2'	18°54.0'			64°17.2'
3	58°42.8'	S 23°25.0'	5.9'	-3.4'	58.4'	66°57.6'	43°03.5'	30°53.4'	24°40.4'	19°26.7'			64°51.6'
4	73°07.7'	S 23°28.4'	5.9'	-3.2'	58.3'	66°24.6'	42°41.9'	30°18.7'	24°05.5'	19°59.5'			65°25.9'
5	87°32.5'	S 23°31.6'	5.9'	-3.1'	58.3'	65°51.6'	42°20.4'	29°44.0'	23°30.7'	20°32.4'			66°00.2'
6	101°57.4'	S 23°34.7'	5.9'	-2.9'	58.3'	65°18.7'	41°59.3'	29°09.4'	22°55.9'	21°05.3'			66°34.5'
7	116°22.3'	S 23°37.6'	5.9'	-2.8'	58.3'	64°45.9'	41°38.3'	28°34.8'	22°21.2'	21°38.3'			67°08.8'
8	130°47.2'	S 23°40.3'	5.9'	-2.6'	58.3'	64°13.1'	41°17.7'	28°00.2'	21°46.4'	22°11.3'			67°43.1'
9	145°12.0'	S 23°43.0'	5.9'	-2.5'	58.2'	63°40.3'	40°57.3'	27°25.7'	21°11.8'	22°44.4'			68°17.3'
10	159°36.9'	S 23°45.4'	5.9'	-2.3'	58.2'	63°07.5'	40°37.2'	26°51.2'	20°37.1'	23°17.5'			68°51.5'
11	174°01.8'	S 23°47.7'	5.9'	-2.1'	58.2'	62°34.8'	40°17.4'	26°16.7'	20°02.5'	23°50.6'	51°42.1'		69°25.7'
12	188°26.7'	S 23°49.9'	5.9'	-2.0'	58.2'	62°02.2'	39°57.9'	25°42.3'	19°27.9'	24°23.8'	52°12.4'		69°59.9'
13	202°51.6'	S 23°51.9'	5.9'	-1.8'	58.1'	61°29.6'	39°38.6'	25°07.8'	18°53.3'	24°57.0'	52°27.9'		70°34.0'
14	217°16.5'	S 23°53.7'	5.9'	-1.7'	58.1'	60°57.0'	39°19.7'	24°33.5'	18°18.8'	25°30.3'	52°43.6'		71°08.1'
15	231°41.4'	S 23°55.4'	5.9'	-1.5'	58.1'	60°24.5'	39°01.1'	23°59.1'	17°44.3'	26°03.5'	52°59.4'		71°42.2'
16	246°06.3'	S 23°56.9'	5.9'	-1.4'	58.1'	59°52.0'	38°42.8'	23°24.8'	17°09.9'	26°36.8'	53°15.5'		72°16.3'
17	260°31.3'	S 23°58.3'	6.0'	-1.2'	58.1'	59°19.6'	38°24.8'	22°50.5'	16°35.5'	27°10.1'	53°31.7'		72°50.3'
18	274°56.3'	S 23°59.5'	6.0'	-1.1'	58.0'	58°47.2'	38°07.1'	22°16.3'	16°01.1'	27°43.4'	53°48.1'		73°24.4'
19	289°21.2'	S 24°00.6'	6.0'	-0.9'	58.0'	58°14.8'	37°49.8'	21°42.1'	15°26.8'	28°16.7'	54°04.7'		73°58.3'
20	303°46.2'	S 24°01.5'	6.0'	-0.8'	58.0'	57°42.6'	37°32.8'	21°07.9'	14°52.5'	28°50.1'	54°21.5'		74°32.3'
21	318°11.3'	S 24°02.3'	6.1'	-0.6'	58.0'	57°10.3'	37°16.2'	20°33.8'	14°18.3'	29°23.4'	54°38.4'		75°06.3'
22	332°36.3'	S 24°02.9'	6.1'	-0.5'	57.9'	56°38.1'	36°59.9'	19°59.7'	13°44.1'	29°56.7'	54°55.5'		75°40.2'
23	347°01.4'	S 24°03.4'	6.1'	-0.3'	57.9'	56°06.0'	36°44.0'	19°25.7'	13°10.0'	30°30.0'	55°12.8'		76°14.1'
Mer. pass.		23 h 54 m SD 15.9'		phase 98%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.4'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.6'
Deneb	+1.2	49°27.8'	N 45°21.1'	Acrux	+0.8	173°04.0'	S 63°12.9'	Capella	+0.1	280°27.7'	N 46°00.9'
Altair	+0.8	62°03.2'	N 8°55.4'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.7'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.2'	Pollux	+1.2	243°22.2'	N 27°58.6'	Aldebaran	+0.9	290°44.1'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	315°55.1'	N 89°20.6'
Rigil Kent	-0.0	139°44.8'	S 60°55.3'	Adhara	+1.5	255°09.1'	S 29°00.0'	Achernar	+0.5	335°23.2'	S 57°07.8'
Arcturus	-0.1	145°51.1'	N 19°04.8'	Sirius	-1.4	258°29.8'	S 16°44.7'				
Hadar	+0.6	148°40.8'	S 60°28.4'	Canopus	-0.6	263°54.5'	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	283°26.9'	178°50.8'	N 22°45.5'	217°29.2'	N 17°12.9'		348°00.4'	S 21°41.3'	341°26.1'	S 20°23.7'	278°22.8'	S 1°19.6'		
1	298°29.3'	193°50.7'	N 22°45.2'	232°30.8'	N 17°12.9'		3°03.2'	S 21°41.3'	356°28.7'	S 20°23.7'	293°23.9'	S 1°19.1'		
2	313°31.8'	208°50.6'	N 22°45.0'	247°32.4'	N 17°12.9'		18°06.0'	S 21°41.4'	11°31.4'	S 20°23.8'	308°25.0'	S 1°18.5'		
3	328°34.3'	223°50.5'	N 22°44.8'	262°34.0'	N 17°12.9'		33°08.8'	S 21°41.4'	26°34.0'	S 20°23.8'	323°26.1'	S 1°18.0'		
4	343°36.7'	238°50.4'	N 22°44.5'	277°35.5'	N 17°13.0'		48°11.6'	S 21°41.5'	41°36.7'	S 20°23.9'	338°27.2'	S 1°17.5'		
5	358°39.2'	253°50.3'	N 22°44.3'	292°37.1'	N 17°13.0'		63°14.3'	S 21°41.6'	56°39.3'	S 20°23.9'	353°28.3'	S 1°17.0'		
6	13°41.7'	268°50.2'	N 22°44.0'	307°38.7'	N 17°13.0'		78°17.1'	S 21°41.6'	71°42.0'	S 20°23.9'	8°29.4'	S 1°16.4'		
7	28°44.1'	283°50.1'	N 22°43.8'	322°40.2'	N 17°13.1'		93°19.9'	S 21°41.7'	86°44.6'	S 20°24.0'	23°30.5'	S 1°15.9'		
8	43°46.6'	298°50.0'	N 22°43.5'	337°41.8'	N 17°13.1'		108°22.7'	S 21°41.7'	101°47.2'	S 20°24.0'	38°31.6'	S 1°15.4'		
9	58°49.1'	313°49.9'	N 22°43.3'	352°43.4'	N 17°13.1'		123°25.5'	S 21°41.8'	116°49.9'	S 20°24.1'	53°32.7'	S 1°14.9'		
10	73°51.5'	328°49.8'	N 22°43.0'	7°44.9'	N 17°13.2'		138°28.3'	S 21°41.9'	131°52.5'	S 20°24.1'	68°33.8'	S 1°14.4'		
11	88°54.0'	343°49.7'	N 22°42.8'	22°46.5'	N 17°13.2'		153°31.1'	S 21°41.9'	146°55.2'	S 20°24.1'	83°34.9'	S 1°13.8'		
12	103°56.5'	358°49.6'	N 22°42.6'	37°48.0'	N 17°13.2'		168°33.9'	S 21°42.0'	161°57.8'	S 20°24.2'	98°36.1'	S 1°13.3'		
13	118°58.9'	13°49.5'	N 22°42.3'	52°49.5'	N 17°13.3'		183°36.7'	S 21°42.0'	177°00.5'	S 20°24.2'	113°37.2'	S 1°12.8'		
14	134°01.4'	28°49.4'	N 22°42.1'	67°51.1'	N 17°13.3'		198°39.5'	S 21°42.1'	192°03.1'	S 20°24.3'	128°38.3'	S 1°12.3'		
15	149°03.8'	43°49.3'	N 22°41.8'	82°52.6'	N 17°13.4'		213°42.3'	S 21°42.2'	207°05.8'	S 20°24.3'	143°39.4'	S 1°11.8'		
16	164°06.3'	58°49.2'	N 22°41.6'	97°54.2'	N 17°13.4'		228°45.1'	S 21°42.2'	222°08.4'	S 20°24.3'	158°40.5'	S 1°11.2'		
17	179°08.8'	73°49.0'	N 22°41.3'	112°55.7'	N 17°13.4'		243°47.9'	S 21°42.3'	237°11.0'	S 20°24.4'	173°41.6'	S 1°10.7'		
18	194°11.2'	88°48.9'	N 22°41.1'	127°57.2'	N 17°13.5'		258°50.7'	S 21°42.3'	252°13.7'	S 20°24.4'	188°42.7'	S 1°10.2'		
19	209°13.7'	103°48.8'	N 22°40.8'	142°58.7'	N 17°13.5'		273°53.5'	S 21°42.4'	267°16.3'	S 20°24.5'	203°43.8'	S 1°09.7'		
20	224°16.2'	118°48.7'	N 22°40.6'	158°00.3'	N 17°13.6'		288°56.3'	S 21°42.4'	282°19.0'	S 20°24.5'	218°44.9'	S 1°09.2'		
21	239°18.6'	133°48.6'	N 22°40.3'	173°01.8'	N 17°13.6'		303°59.1'	S 21°42.5'	297°21.6'	S 20°24.5'	233°46.0'	S 1°08.6'		
22	254°21.1'	148°48.5'	N 22°40.0'	188°03.3'	N 17°13.7'		319°01.9'	S 21°42.6'	312°24.3'	S 20°24.6'	248°47.1'	S 1°08.1'		
23	269°23.6'	163°48.4'	N 22°39.8'	203°04.8'	N 17°13.7'		334°04.6'	S 21°42.6'	327°26.9'	S 20°24.6'	263°48.2'	S 1°07.6'		
		SD 15.7' d -0.2'		v 1.5' d 0.0'			v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.1' d 0.5'			
Mer. pass.		12 h 4 m 42 s		9 h 29 m			0 h 48 m		1 h 14 m		5 h 26 m			

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Fomalhaut	-Altair	-Saturn	-Jupiter	+Antares	+Rigel Kent	+Hadar	+Acrux
0	1°26.5'	S 24°03.7'	6.1'	-0.2'	57.9'	55°33.9'	36°28.5'	18°51.7'	12°35.9'	31°03.4'	55°30.2'	59°45.7'	70°52.6'
1	15°51.6'	S 24°03.9'	6.2'	-0.0'	57.9'	55°01.9'		18°17.7'	12°01.9'	31°36.7'	55°47.8'	60°03.9'	71°08.7'
2	30°16.8'	S 24°03.9'	6.2'	0.1'	57.8'	54°29.9'		17°43.8'	11°28.0'	32°10.0'	56°05.5'	60°22.2'	71°24.8'
3	44°42.0'	S 24°03.8'	6.2'	0.3'	57.8'	53°58.0'		17°10.0'	10°54.1'	32°43.3'	56°23.4'	60°40.7'	71°41.0'
4	59°07.2'	S 24°03.5'	6.3'	0.4'	57.8'	53°26.2'		16°36.2'	10°20.4'	33°16.7'	56°41.5'	60°59.3'	71°57.2'
5	73°32.5'	S 24°03.0'	6.3'	0.6'	57.8'	52°54.4'		16°02.5'	9°46.7'	33°50.0'	56°59.6'	61°18.0'	72°13.5'
6	87°57.8'	S 24°02.4'	6.3'	0.7'	57.7'	52°22.6'		15°28.8'	9°13.1'	34°23.2'	57°18.0'	61°36.8'	72°29.9'
7	102°23.1'	S 24°01.7'	6.4'	0.9'	57.7'	51°50.9'		14°55.1'	8°39.6'	34°56.5'	57°36.4'	61°55.7'	72°46.4'
8	116°48.5'	S 24°00.8'	6.4'	1.0'	57.7'	51°19.3'		14°21.6'	8°06.3'	35°29.8'	57°55.0'	62°14.7'	73°02.9'
9	131°13.9'	S 23°59.8'	6.5'	1.2'	57.7'	50°47.8'		13°48.1'	7°33.1'	36°03.1'	58°13.7'	62°33.8'	73°19.5'
10	145°39.4'	S 23°58.6'	6.5'	1.3'	57.6'	50°16.3'		13°14.7'	7°00.1'	36°36.3'	58°32.6'	62°53.0'	73°36.1'
11	160°04.9'	S 23°57.3'	6.6'	1.5'	57.6'	49°44.8'		12°41.4'	6°27.3'	37°09.5'	58°51.5'	63°12.4'	73°52.8'
12	174°30.5'	S 23°55.8'	6.6'	1.6'	57.6'	49°13.5'		12°08.1'	5°54.8'	37°42.7'	59°10.6'	63°31.8'	74°09.6'
13	188°56.1'	S 23°54.2'	6.7'	1.8'	57.6'	48°42.2'		11°35.0'	5°22.7'	38°15.9'	59°29.8'	63°51.3'	74°26.4'
14	203°21.7'	S 23°52.4'	6.7'	1.9'	57.5'	48°11.0'		11°01.9'	4°51.0'	38°49.1'	59°49.1'	64°10.9'	74°43.3'
15	217°47.5'	S 23°50.5'	6.8'	2.0'	57.5'	47°39.8'		10°29.0'		39°22.3'	60°08.6'	64°30.6'	75°00.2'
16	232°13.2'	S 23°48.5'	6.8'	2.2'	57.5'	47°08.7'		9°56.2'		39°55.4'	60°28.1'	64°50.3'	75°17.2'
17	246°39.0'	S 23°46.3'	6.9'	2.3'	57.4'	46°37.7'		9°23.5'		40°28.5'	60°47.7'	65°10.2'	75°34.2'
18	261°04.9'	S 23°44.0'	6.9'	2.5'	57.4'	46°06.8'		8°51.0'		41°01.6'	61°07.5'	65°30.1'	75°51.3'
19	275°30.8'	S 23°41.5'	7.0'	2.6'	57.4'	45°36.0'		8°18.8'		41°34.7'	61°27.3'	65°50.1'	76°08.4'
20	289°56.8'	S 23°38.9'	7.0'	2.8'	57.4'	45°05.2'		7°46.7'		42°07.8'	61°47.2'	66°10.2'	76°25.5'
21	304°22.9'	S 23°36.1'	7.1'	2.9'	57.3'	44°34.5'		7°14.9'		42°40.8'	62°07.3'	66°30.4'	76°42.7'
22	318°49.0'	S 23°33.2'	7.2'	3.0'	57.3'	44°03.9'		6°43.5'		43°13.8'	62°27.4'	66°50.6'	76°60.0'
23	333°15.1'	S 23°30.2'	7.2'	3.2'	57.3'	43°33.4'		6°12.4'		43°46.8'	62°47.6'	67°10.9'	77°17.3'
Mer. pass.		0 h 51 m SD 15.8' phase 100%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.4'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.4'	N 7°24.6'
Deneb	+1.2	49°27.8'	N 45°21.1'	Acrux	+0.8	173°04.0'	S 63°12.9'	Capella	+0.1	280°27.7'	N 46°00.9'
Altair	+0.8	62°03.2'	N 8°55.4'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.7'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.2'	N 27°58.6'	Aldebaran	+0.9	290°44.1'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	315°54.6'	N 89°20.6'
Rigel Kent	-0.0	139°44.9'	S 60°55.3'	Adhara	+1.5	255°09.1'	S 29°00.0'	Achernar	+0.5	335°23.2'	S 57°07.8'
Arcturus	-0.1	145°51.1'	N 19°04.8'	Sirius	-1.4	258°29.8'	S 16°44.7'				
Hadar	+0.6	148°40.8'	S 60°28.4'	Canopus	-0.6	263°54.5'	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	284°26.0'	178°48.3'	N 22°39.5'	218°06.3'	N 17°13.8'	349°07.4'	S 21°42.7'	342°29.6'	S 20°24.7'	278°49.3'	S 1°07.1'			
1	299°28.5'	193°48.2'	N 22°39.3'	233°07.8'	N 17°13.8'	4°10.2'	S 21°42.7'	357°32.2'	S 20°24.7'	293°50.4'	S 1°06.6'			
2	314°31.0'	208°48.1'	N 22°39.0'	248°09.3'	N 17°13.9'	19°13.0'	S 21°42.8'	12°34.8'	S 20°24.7'	308°51.6'	S 1°06.0'			
3	329°33.4'	223°48.0'	N 22°38.8'	263°10.8'	N 17°13.9'	34°15.8'	S 21°42.9'	27°37.5'	S 20°24.8'	323°52.7'	S 1°05.5'			
4	344°35.9'	238°47.9'	N 22°38.5'	278°12.3'	N 17°14.0'	49°18.6'	S 21°42.9'	42°40.1'	S 20°24.8'	338°53.8'	S 1°05.0'			
5	359°38.3'	253°47.8'	N 22°38.3'	293°13.8'	N 17°14.0'	64°21.4'	S 21°43.0'	57°42.8'	S 20°24.9'	353°54.9'	S 1°04.5'			
6	14°40.8'	268°47.7'	N 22°38.0'	308°15.3'	N 17°14.1'	79°24.2'	S 21°43.0'	72°45.4'	S 20°24.9'	8°56.0'	S 1°04.0'			
7	29°43.3'	283°47.6'	N 22°37.7'	323°16.8'	N 17°14.1'	94°27.0'	S 21°43.1'	87°48.1'	S 20°24.9'	23°57.1'	S 1°03.5'			
8	44°45.7'	298°47.5'	N 22°37.5'	338°18.3'	N 17°14.2'	109°29.8'	S 21°43.2'	102°50.7'	S 20°25.0'	38°58.2'	S 1°02.9'			
9	59°48.2'	313°47.4'	N 22°37.2'	353°19.8'	N 17°14.2'	124°32.6'	S 21°43.2'	117°53.4'	S 20°25.0'	53°59.3'	S 1°02.4'			
10	74°50.7'	328°47.3'	N 22°37.0'	8°21.3'	N 17°14.3'	139°35.4'	S 21°43.3'	132°56.0'	S 20°25.1'	69°00.5'	S 1°01.9'			
11	89°53.1'	343°47.2'	N 22°36.7'	23°22.7'	N 17°14.4'	154°38.2'	S 21°43.3'	147°58.7'	S 20°25.1'	84°01.6'	S 1°01.4'			
12	104°55.6'	358°47.1'	N 22°36.4'	38°24.2'	N 17°14.4'	169°41.0'	S 21°43.4'	163°01.3'	S 20°25.1'	99°02.7'	S 1°00.9'			
13	119°58.1'	13°47.0'	N 22°36.2'	53°25.7'	N 17°14.5'	184°43.8'	S 21°43.5'	178°03.9'	S 20°25.2'	114°03.8'	S 1°00.4'			
14	135°00.5'	28°46.9'	N 22°35.9'	68°27.1'	N 17°14.5'	199°46.6'	S 21°43.5'	193°06.6'	S 20°25.2'	129°04.9'	S 0°59.8'			
15	150°03.0'	43°46.8'	N 22°35.6'	83°28.6'	N 17°14.6'	214°49.4'	S 21°43.6'	208°09.2'	S 20°25.3'	144°06.0'	S 0°59.3'			
16	165°05.4'	58°46.7'	N 22°35.4'	98°30.1'	N 17°14.7'	229°52.2'	S 21°43.6'	223°11.9'	S 20°25.3'	159°07.1'	S 0°58.8'			
17	180°07.9'	73°46.6'	N 22°35.1'	113°31.5'	N 17°14.7'	244°55.0'	S 21°43.7'	238°14.5'	S 20°25.4'	174°08.3'	S 0°58.3'			
18	195°10.4'	88°46.5'	N 22°34.8'	128°33.0'	N 17°14.8'	259°57.8'	S 21°43.8'	253°17.2'	S 20°25.4'	189°09.4'	S 0°57.8'			
19	210°12.8'	103°46.4'	N 22°34.6'	143°34.4'	N 17°14.9'	275°00.6'	S 21°43.8'	268°19.8'	S 20°25.4'	204°10.5'	S 0°57.3'			
20	225°15.3'	118°46.3'	N 22°34.3'	158°35.9'	N 17°14.9'	290°03.4'	S 21°43.9'	283°22.5'	S 20°25.5'	219°11.6'	S 0°56.7'			
21	240°17.8'	133°46.2'	N 22°34.0'	173°37.3'	N 17°15.0'	305°06.2'	S 21°43.9'	298°25.1'	S 20°25.5'	234°12.7'	S 0°56.2'			
22	255°20.2'	148°46.1'	N 22°33.8'	188°38.8'	N 17°15.1'	320°09.0'	S 21°44.0'	313°27.8'	S 20°25.6'	249°13.8'	S 0°55.7'			
23	270°22.7'	163°46.0'	N 22°33.5'	203°40.2'	N 17°15.1'	335°11.8'	S 21°44.1'	328°30.4'	S 20°25.6'	264°14.9'	S 0°55.2'			
		SD 15.7' d -0.3'		v 1.5' d 0.1'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.1' d 0.5'				
Mer. pass.		12 h 4 m 52 s		9 h 27 m		0 h 43 m		1 h 10 m		5 h 24 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Mars	-Achernar	-Fomalhaut	-Saturn	+Jupiter	+Antares	+Rigel Kent	+Hadar
0	347°41.4'	S 23°27.0'	7.3'	3.3'	57.3'	70°13.0'	69°20.7'	43°02.9'	5°41.9'		44°19.8'	63°07.9'	67°31.3'
1	2°07.7'	S 23°23.7'	7.4'	3.4'	57.2'	69°41.2'	69°04.1'	42°32.6'			44°52.7'	63°28.3'	67°51.7'
2	16°34.0'	S 23°20.3'	7.4'	3.6'	57.2'	69°09.3'	68°47.6'	42°02.3'			45°25.6'	63°48.7'	68°12.2'
3	31°00.5'	S 23°16.7'	7.5'	3.7'	57.2'	68°37.5'	68°31.3'	41°32.1'			45°58.5'	64°09.3'	68°32.7'
4	45°27.0'	S 23°13.0'	7.6'	3.8'	57.2'	68°05.7'	68°15.1'	41°02.1'			46°31.4'	64°29.9'	68°53.3'
5	59°53.5'	S 23°09.2'	7.6'	4.0'	57.1'	67°34.0'	67°59.0'	40°32.1'		4°22.2'	47°04.2'	64°50.6'	69°14.0'
6	74°20.2'	S 23°05.2'	7.7'	4.1'	57.1'	67°02.3'	67°43.0'	40°02.2'		4°52.8'	47°37.0'	65°11.3'	69°34.7'
7	88°46.9'	S 23°01.1'	7.8'	4.2'	57.1'	66°30.6'	67°27.1'	39°32.5'		5°24.0'	48°09.8'	65°32.2'	69°55.5'
8	103°13.7'	S 22°56.9'	7.9'	4.4'	57.0'	65°58.9'	67°11.3'	39°02.8'		5°55.6'	48°42.6'	65°53.0'	70°16.3'
9	117°40.5'	S 22°52.5'	7.9'	4.5'	57.0'	65°27.3'	66°55.7'	38°33.2'		6°27.5'	49°15.3'	66°14.0'	70°37.2'
10	132°07.5'	S 22°48.0'	8.0'	4.6'	57.0'	64°55.7'	66°40.2'	38°03.8'		6°59.5'	49°48.1'	66°35.0'	70°58.1'
11	146°34.5'	S 22°43.4'	8.1'	4.7'	57.0'	64°24.2'	66°24.8'	37°34.5'		7°31.7'	50°20.7'	66°56.1'	71°19.0'
12	161°01.6'	S 22°38.7'	8.2'	4.9'	56.9'	63°52.6'	66°09.5'	37°05.3'		8°04.1'	50°53.4'	67°17.3'	71°40.0'
13	175°28.7'	S 22°33.8'	8.2'	5.0'	56.9'	63°21.2'	65°54.4'	36°36.2'		8°36.5'	51°26.0'	67°38.5'	72°01.1'
14	189°56.0'	S 22°28.8'	8.3'	5.1'	56.9'	62°49.7'		36°07.2'		9°09.0'	51°58.6'	67°59.7'	72°22.2'
15	204°23.3'	S 22°23.7'	8.4'	5.2'	56.9'	62°18.3'		35°38.4'		9°41.5'	52°31.2'	68°21.0'	72°43.3'
16	218°50.7'	S 22°18.5'	8.5'	5.3'	56.8'	61°46.9'		35°09.6'		10°14.1'	53°03.7'	68°42.4'	73°04.4'
17	233°18.1'	S 22°13.1'	8.6'	5.5'	56.8'	61°15.5'		34°41.1'		10°46.7'	53°36.2'	69°03.8'	73°25.6'
18	247°45.7'	S 22°07.7'	8.6'	5.6'	56.8'	60°44.2'		34°12.6'	5°25.3'	11°19.3'	54°08.7'	69°25.2'	73°46.9'
19	262°13.3'	S 22°02.1'	8.7'	5.7'	56.7'	60°12.9'		33°44.4'	5°55.0'	11°52.0'	54°41.2'	69°46.7'	74°08.1'
20	276°41.1'	S 21°56.4'	8.8'	5.8'	56.7'	59°41.7'		33°16.2'	6°25.1'	12°24.6'	55°13.6'	70°08.3'	74°29.4'
21	291°08.9'	S 21°50.5'	8.9'	5.9'	56.7'	59°10.5'		32°48.2'	6°55.6'	12°57.3'	55°46.0'	70°29.8'	74°50.7'
22	305°36.8'	S 21°44.6'	9.0'	6.0'	56.7'	58°39.3'		32°20.4'	7°26.5'	13°29.9'	56°18.4'	70°51.5'	75°12.0'
23	320°04.7'	S 21°38.6'	9.1'	6.2'	56.6'	58°08.1'		31°52.7'	7°57.5'	14°02.5'	56°50.7'	71°13.1'	75°33.4'
Mer. pass.													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.4'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.3'	N 7°24.6'
Deneb	+1.2	49°27.8'	N 45°21.1'	Acrux	+0.8	173°04.0'	S 63°12.9'	Capella	+0.1	280°27.7'	N 46°00.9'
Altair	+0.8	62°03.2'	N 8°55.4'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.7'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.1'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	315°54.1'	N 89°20.6'
Rigel Kent	-0.0	139°44.9'	S 60°55.3'	Adhara	+1.5	255°09.1'	S 29°00.0'	Achernar	+0.5	335°23.2'	S 57°07.8'
Arcturus	-0.1	145°51.1'	N 19°04.8'	Sirius	-1.4	258°29.8'	S 16°44.7'				
Hadar	+0.6	148°40.8'	S 60°28.4'	Canopus	-0.6	263°54.5'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA		GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	285°25.2'		178°45.9'	N 22°33.2'	218°41.7'	N 17°15.2'	350°14.6'	S 21°44.1'	343°33.1'	S 20°25.6'	279°16.1'	S 0°54.7'
1	300°27.6'		193°45.8'	N 22°32.9'	233°43.1'	N 17°15.3'	5°17.4'	S 21°44.2'	358°35.7'	S 20°25.7'	294°17.2'	S 0°54.2'
2	315°30.1'		208°45.7'	N 22°32.7'	248°44.5'	N 17°15.4'	20°20.2'	S 21°44.2'	13°38.3'	S 20°25.7'	309°18.3'	S 0°53.7'
3	330°32.6'		223°45.6'	N 22°32.4'	263°46.0'	N 17°15.4'	35°23.0'	S 21°44.3'	28°41.0'	S 20°25.8'	324°19.4'	S 0°53.1'
4	345°35.0'		238°45.5'	N 22°32.1'	278°47.4'	N 17°15.5'	50°25.8'	S 21°44.4'	43°43.6'	S 20°25.8'	339°20.5'	S 0°52.6'
5	0°37.5'		253°45.4'	N 22°31.8'	293°48.8'	N 17°15.6'	65°28.6'	S 21°44.4'	58°46.3'	S 20°25.8'	354°21.7'	S 0°52.1'
6	15°39.9'		268°45.3'	N 22°31.6'	308°50.2'	N 17°15.7'	80°31.4'	S 21°44.5'	73°48.9'	S 20°25.9'	9°22.8'	S 0°51.6'
7	30°42.4'		283°45.2'	N 22°31.3'	323°51.6'	N 17°15.7'	95°34.2'	S 21°44.5'	88°51.6'	S 20°25.9'	24°23.9'	S 0°51.1'
8	45°44.9'		298°45.1'	N 22°31.0'	338°53.1'	N 17°15.8'	110°36.9'	S 21°44.6'	103°54.2'	S 20°26.0'	39°25.0'	S 0°50.6'
9	60°47.3'		313°45.0'	N 22°30.7'	353°54.5'	N 17°15.9'	125°39.7'	S 21°44.7'	118°56.9'	S 20°26.0'	54°26.1'	S 0°50.1'
10	75°49.8'		328°44.9'	N 22°30.5'	8°55.9'	N 17°16.0'	140°42.5'	S 21°44.7'	133°59.5'	S 20°26.0'	69°27.3'	S 0°49.5'
11	90°52.3'		343°44.8'	N 22°30.2'	23°57.3'	N 17°16.1'	155°45.3'	S 21°44.8'	149°02.2'	S 20°26.1'	84°28.4'	S 0°49.0'
12	105°54.7'		358°44.7'	N 22°29.9'	38°58.7'	N 17°16.1'	170°48.1'	S 21°44.8'	164°04.8'	S 20°26.1'	99°29.5'	S 0°48.5'
13	120°57.2'		13°44.6'	N 22°29.6'	54°00.1'	N 17°16.2'	185°50.9'	S 21°44.9'	179°07.5'	S 20°26.2'	114°30.6'	S 0°48.0'
14	135°59.7'		28°44.5'	N 22°29.3'	69°01.5'	N 17°16.3'	200°53.7'	S 21°45.0'	194°10.1'	S 20°26.2'	129°31.8'	S 0°47.5'
15	151°02.1'		43°44.4'	N 22°29.1'	84°02.9'	N 17°16.4'	215°56.5'	S 21°45.0'	209°12.8'	S 20°26.2'	144°32.9'	S 0°47.0'
16	166°04.6'		58°44.3'	N 22°28.8'	99°04.3'	N 17°16.5'	230°59.3'	S 21°45.1'	224°15.4'	S 20°26.3'	159°34.0'	S 0°46.5'
17	181°07.1'		73°44.2'	N 22°28.5'	114°05.7'	N 17°16.6'	246°02.1'	S 21°45.1'	239°18.1'	S 20°26.3'	174°35.1'	S 0°46.0'
18	196°09.5'		88°44.1'	N 22°28.2'	129°07.0'	N 17°16.6'	261°04.9'	S 21°45.2'	254°20.7'	S 20°26.4'	189°36.2'	S 0°45.4'
19	211°12.0'		103°44.1'	N 22°27.9'	144°08.4'	N 17°16.7'	276°07.7'	S 21°45.3'	269°23.4'	S 20°26.4'	204°37.4'	S 0°44.9'
20	226°14.4'		118°44.0'	N 22°27.6'	159°09.8'	N 17°16.8'	291°10.5'	S 21°45.3'	284°26.0'	S 20°26.5'	219°38.5'	S 0°44.4'
21	241°16.9'		133°43.9'	N 22°27.4'	174°11.2'	N 17°16.9'	306°13.3'	S 21°45.4'	299°28.6'	S 20°26.5'	234°39.6'	S 0°43.9'
22	256°19.4'		148°43.8'	N 22°27.1'	189°12.6'	N 17°17.0'	321°16.1'	S 21°45.4'	314°31.3'	S 20°26.5'	249°40.7'	S 0°43.4'
23	271°21.8'		163°43.7'	N 22°26.8'	204°13.9'	N 17°17.1'	336°18.9'	S 21°45.5'	329°33.9'	S 20°26.6'	264°41.9'	S 0°42.9'
			SD 15.7' d -0.3'		v 1.4' d 0.1'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.1' d 0.5'	
Mer. pass.			12 h 5 m 2 s		9 h 24 m		0 h 39 m		1 h 6 m		5 h 23 m	

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Rigel	-Venus	-Mars	-Fomalhaut	+Saturn	+Jupiter	+Altair	+Antares
0	334°32.8'	S 21°32.4'	9.1'	6.3'	56.6'		119°45.1'	57°37.0'	31°25.3'	8°28.8'	14°35.1'		57°23.0'
1	349°00.9'	S 21°26.1'	9.2'	6.4'	56.6'		119°13.6'	57°05.9'	30°57.9'	9°00.2'	15°07.7'		57°55.3'
2	3°29.1'	S 21°19.8'	9.3'	6.5'	56.5'		118°42.1'	56°34.9'	30°30.8'	9°31.7'	15°40.3'		58°27.5'
3	17°57.5'	S 21°13.3'	9.4'	6.6'	56.5'	119°38.6'	118°10.6'	56°03.8'	30°03.9'	10°03.3'	16°12.9'		58°59.7'
4	32°25.8'	S 21°06.7'	9.5'	6.7'	56.5'	119°12.0'	117°39.1'	55°32.9'	29°37.1'	10°34.9'	16°45.4'		59°31.9'
5	46°54.3'	S 20°60.0'	9.6'	6.8'	56.5'	118°45.3'	117°07.8'	55°01.9'	29°10.6'	11°06.7'	17°18.0'		60°04.1'
6	61°22.9'	S 20°53.2'	9.7'	6.9'	56.4'	118°18.7'	116°36.4'	54°31.0'	28°44.2'	11°38.4'	17°50.5'		60°36.2'
7	75°51.5'	S 20°46.3'	9.7'	7.0'	56.4'	117°52.0'	116°05.1'	54°00.1'	28°18.1'	12°10.2'	18°22.9'		61°08.3'
8	90°20.3'	S 20°39.2'	9.8'	7.1'	56.4'	117°25.3'	115°33.8'	53°29.3'	27°52.2'	12°42.1'	18°55.4'		61°40.4'
9	104°49.1'	S 20°32.1'	9.9'	7.2'	56.4'	116°58.5'	115°02.5'	52°58.4'	27°26.6'	13°13.9'	19°27.8'		62°12.4'
10	119°18.0'	S 20°24.9'	10.0'	7.3'	56.3'	116°31.8'	114°31.3'	52°27.7'	27°01.1'	13°45.8'	20°00.3'		62°44.4'
11	133°47.0'	S 20°17.6'	10.1'	7.4'	56.3'	116°05.0'	114°00.1'	51°56.9'	26°36.0'	14°17.7'	20°32.6'		63°16.4'
12	148°16.1'	S 20°10.2'	10.2'	7.5'	56.3'	115°38.2'	113°29.0'	51°26.2'	26°11.1'	14°49.5'	21°05.0'		63°48.3'
13	162°45.3'	S 20°02.7'	10.3'	7.6'	56.2'	115°11.4'	112°57.9'	50°55.5'	25°46.5'	15°21.4'	21°37.3'		64°20.2'
14	177°14.6'	S 19°55.1'	10.4'	7.7'	56.2'	114°44.6'	112°26.8'	50°24.8'	25°22.1'	15°53.3'	22°09.6'		64°52.1'
15	191°43.9'	S 19°47.4'	10.4'	7.8'	56.2'	114°17.7'	111°55.8'	49°54.2'	24°58.1'	16°25.2'	22°41.9'		65°23.9'
16	206°13.4'	S 19°39.6'	10.5'	7.9'	56.2'	113°50.9'	111°24.8'	49°23.6'	24°34.4'	16°57.0'	23°14.2'		65°55.8'
17	220°42.9'	S 19°31.7'	10.6'	8.0'	56.1'	113°24.0'	110°53.8'	48°53.1'	24°11.0'	17°28.9'	23°46.4'		66°27.5'
18	235°12.5'	S 19°23.7'	10.7'	8.1'	56.1'	112°57.1'	110°22.9'	48°22.6'	23°47.9'	18°00.7'	24°18.6'		66°59.3'
19	249°42.2'	S 19°15.6'	10.8'	8.2'	56.1'	112°30.3'	109°52.0'	47°52.1'	23°25.2'	18°32.5'	24°50.7'		67°31.0'
20	264°12.0'	S 19°07.5'	10.9'	8.2'	56.1'	112°03.4'	109°21.1'	47°21.6'	23°02.9'	19°04.3'	25°22.9'		68°02.7'
21	278°41.9'	S 18°59.2'	11.0'	8.3'	56.0'	111°36.5'	108°50.3'	46°51.2'	22°40.9'	19°36.1'	25°55.0'	36°59.9'	68°34.4'
22	293°11.9'	S 18°50.9'	11.1'	8.4'	56.0'	111°09.6'	108°19.5'	46°20.8'	22°19.4'	20°07.9'	26°27.1'	37°15.1'	69°06.0'
23	307°41.9'	S 18°42.5'	11.1'	8.5'	56.0'	110°42.7'	107°48.8'	45°50.5'	21°58.2'	20°39.6'	26°59.1'	37°30.5'	69°37.6'
Mer. pass.			1 h 46 m	SD 15.4'	phase 96%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec		
Fomalhaut	+1.2	15°18.4'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.3'	N 7°24.6'		
Deneb	+1.2	49°27.8'	N 45°21.1'	Acrux	+0.8	173°04.0'	S 63°12.9'	Capella	+0.1	280°27.7'	N 46°00.9'		
Altair	+0.8	62°03.1'	N 8°55.4'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.7'	S 8°10.7'		
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.1'	N 16°32.9'		
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	315°53.7'	N 89°20.6'		
Rigel Kent	-0.0	139°44.9'	S 60°55.3'	Adhara	+1.5	255°09.1'	S 29°00.0'	Achernar	+0.5	335°23.2'	S 57°07.8'		
Arcturus	-0.1	145°51.1'	N 19°04.8'	Sirius	-1.4	258°29.8'	S 16°44.7'						
Hadar	+0.6	148°40.8'	S 60°28.4'	Canopus	-0.6	263°54.5'	S 52°42.4'						

Thursday 09 July 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	287°23.4'	178°41.3'	N 22°19.4'	219°47.3'	N 17°19.6'	352°28.9'	S 21°47.0'	345°40.2'	S 20°27.6'	280°10.1'	S 0°30.2'			
1	302°25.9'	193°41.3'	N 22°19.1'	234°48.6'	N 17°19.8'	7°31.7'	S 21°47.0'	0°42.8'	S 20°27.6'	295°11.3'	S 0°29.7'			
2	317°28.4'	208°41.2'	N 22°18.8'	249°49.9'	N 17°19.9'	22°34.5'	S 21°47.1'	15°45.5'	S 20°27.7'	310°12.4'	S 0°29.2'			
3	332°30.8'	223°41.1'	N 22°18.5'	264°51.2'	N 17°20.0'	37°37.3'	S 21°47.2'	30°48.1'	S 20°27.7'	325°13.5'	S 0°28.7'			
4	347°33.3'	238°41.0'	N 22°18.2'	279°52.5'	N 17°20.1'	52°40.1'	S 21°47.2'	45°50.8'	S 20°27.8'	340°14.7'	S 0°28.2'			
5	2°35.8'	253°40.9'	N 22°17.9'	294°53.8'	N 17°20.2'	67°42.9'	S 21°47.3'	60°53.4'	S 20°27.8'	355°15.8'	S 0°27.7'			
6	17°38.2'	268°40.8'	N 22°17.6'	309°55.0'	N 17°20.3'	82°45.7'	S 21°47.3'	75°56.0'	S 20°27.8'	10°17.0'	S 0°27.1'			
7	32°40.7'	283°40.7'	N 22°17.3'	324°56.3'	N 17°20.4'	97°48.6'	S 21°47.4'	90°58.7'	S 20°27.9'	25°18.1'	S 0°26.6'			
8	47°43.2'	298°40.6'	N 22°16.9'	339°57.6'	N 17°20.6'	112°51.4'	S 21°47.5'	106°01.3'	S 20°27.9'	40°19.2'	S 0°26.1'			
9	62°45.6'	313°40.5'	N 22°16.6'	354°58.9'	N 17°20.7'	127°54.2'	S 21°47.5'	121°04.0'	S 20°28.0'	55°20.4'	S 0°25.6'			
10	77°48.1'	328°40.4'	N 22°16.3'	10°00.2'	N 17°20.8'	142°57.0'	S 21°47.6'	136°06.6'	S 20°28.0'	70°21.5'	S 0°25.1'			
11	92°50.5'	343°40.4'	N 22°16.0'	25°01.4'	N 17°20.9'	157°59.8'	S 21°47.6'	151°09.3'	S 20°28.1'	85°22.6'	S 0°24.6'			
12	107°53.0'	358°40.3'	N 22°15.7'	40°02.7'	N 17°21.0'	173°02.6'	S 21°47.7'	166°11.9'	S 20°28.1'	100°23.8'	S 0°24.1'			
13	122°55.5'	13°40.2'	N 22°15.4'	55°04.0'	N 17°21.2'	188°05.4'	S 21°47.7'	181°14.6'	S 20°28.1'	115°24.9'	S 0°23.6'			
14	137°57.9'	28°40.1'	N 22°15.1'	70°05.2'	N 17°21.3'	203°08.2'	S 21°47.8'	196°17.2'	S 20°28.2'	130°26.1'	S 0°23.1'			
15	153°00.4'	43°40.0'	N 22°14.8'	85°06.5'	N 17°21.4'	218°11.0'	S 21°47.9'	211°19.9'	S 20°28.2'	145°27.2'	S 0°22.6'			
16	168°02.9'	58°39.9'	N 22°14.5'	100°07.7'	N 17°21.5'	233°13.8'	S 21°47.9'	226°22.5'	S 20°28.3'	160°28.3'	S 0°22.1'			
17	183°05.3'	73°39.8'	N 22°14.1'	115°09.0'	N 17°21.7'	248°16.6'	S 21°48.0'	241°25.2'	S 20°28.3'	175°29.5'	S 0°21.6'			
18	198°07.8'	88°39.7'	N 22°13.8'	130°10.3'	N 17°21.8'	263°19.4'	S 21°48.0'	256°27.8'	S 20°28.3'	190°30.6'	S 0°21.1'			
19	213°10.3'	103°39.7'	N 22°13.5'	145°11.5'	N 17°21.9'	278°22.2'	S 21°48.1'	271°30.5'	S 20°28.4'	205°31.8'	S 0°20.6'			
20	228°12.7'	118°39.6'	N 22°13.2'	160°12.8'	N 17°22.0'	293°25.0'	S 21°48.2'	286°33.1'	S 20°28.4'	220°32.9'	S 0°20.1'			
21	243°15.2'	133°39.5'	N 22°12.9'	175°14.0'	N 17°22.2'	308°27.8'	S 21°48.2'	301°35.8'	S 20°28.5'	235°34.1'	S 0°19.6'			
22	258°17.7'	148°39.4'	N 22°12.6'	190°15.2'	N 17°22.3'	323°30.6'	S 21°48.3'	316°38.4'	S 20°28.5'	250°35.2'	S 0°19.1'			
23	273°20.1'	163°39.3'	N 22°12.2'	205°16.5'	N 17°22.4'	338°33.4'	S 21°48.3'	331°41.1'	S 20°28.5'	265°36.3'	S 0°18.6'			
		SD 15.7' d -0.3'		v 1.3' d 0.1'		v 2.8' d -0.1'		v 2.6' d -0.0'		v 1.1' d 0.5'				
Mer. pass.		12 h 5 m 19 s		9 h 20 m		0 h 30 m		0 h 57 m		5 h 19 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Aldebaran	-Venus	-Mars	-Fomalhaut	+Saturn	+Jupiter	+Altair	+Antares
0	310°40.7'	S 14°47.7'	13.2'	10.2'	55.3'	96°32.9'	95°11.2'	33°21.9'		33°45.5'	40°10.8'	45°09.5'	82°37.8'
1	325°12.9'	S 14°37.5'	13.3'	10.3'	55.3'	96°01.9'	94°41.3'	32°52.3'		34°16.6'	40°42.1'	45°30.2'	83°08.6'
2	339°45.2'	S 14°27.2'	13.3'	10.3'	55.3'	95°31.0'	94°11.5'	32°22.8'		34°47.7'	41°13.4'	45°51.0'	83°39.4'
3	354°17.5'	S 14°16.9'	13.4'	10.4'	55.3'	95°00.1'	93°41.7'	31°53.3'		35°18.8'	41°44.6'	46°11.9'	84°10.2'
4	8°50.0'	S 14°06.5'	13.5'	10.5'	55.3'	94°29.2'	93°11.9'	31°23.9'		35°49.8'	42°15.8'	46°32.9'	84°40.9'
5	23°22.4'	S 13°56.0'	13.6'	10.5'	55.2'	93°58.4'	92°42.1'	30°54.4'		36°20.8'	42°47.0'	46°54.0'	85°11.7'
6	37°55.0'	S 13°45.5'	13.6'	10.6'	55.2'	93°27.6'	92°12.4'	30°25.0'		36°51.8'	43°18.2'	47°15.3'	85°42.3'
7	52°27.6'	S 13°34.9'	13.7'	10.6'	55.2'	92°56.8'	91°42.7'	29°55.7'		37°22.7'	43°49.3'	47°36.7'	86°13.0'
8	67°00.3'	S 13°24.3'	13.8'	10.7'	55.2'	92°26.1'	91°13.1'	29°26.3'		37°53.6'	44°20.4'	47°58.2'	86°43.6'
9	81°33.1'	S 13°13.7'	13.8'	10.7'	55.1'	91°55.3'	90°43.4'	28°57.0'		38°24.5'	44°51.5'	48°19.8'	87°14.3'
10	96°06.0'	S 13°03.0'	13.9'	10.7'	55.1'	91°24.6'	90°13.8'	28°27.7'		38°55.4'	45°22.5'	48°41.5'	87°44.8'
11	110°38.9'	S 12°52.2'	14.0'	10.8'	55.1'	90°54.0'	89°44.2'	27°58.5'		39°26.2'	45°53.5'	49°03.3'	88°15.4'
12	125°11.8'	S 12°41.4'	14.0'	10.8'	55.1'	90°23.3'	89°14.7'	27°29.2'		39°57.1'	46°24.6'	49°25.2'	88°45.9'
13	139°44.9'	S 12°30.6'	14.1'	10.9'	55.1'	89°52.7'	88°45.2'	27°00.0'		40°27.9'	46°55.5'	49°47.2'	89°16.4'
14	154°18.0'	S 12°19.7'	14.2'	10.9'	55.0'	89°22.1'	88°15.7'	26°30.8'		40°58.6'	47°26.5'	50°09.3'	89°46.9'
15	168°51.2'	S 12°08.8'	14.2'	11.0'	55.0'	88°51.5'	87°46.2'	26°01.7'		41°29.4'	47°57.4'	50°31.5'	90°17.4'
16	183°24.4'	S 11°57.8'	14.3'	11.0'	55.0'	88°21.0'	87°16.8'	25°32.6'		42°00.1'	48°28.3'	50°53.8'	90°47.8'
17	197°57.7'	S 11°46.8'	14.4'	11.1'	55.0'	87°50.4'	86°47.4'	25°03.5'		42°30.8'	48°59.2'	51°16.1'	91°18.2'
18	212°31.1'	S 11°35.8'	14.4'	11.1'	55.0'	87°19.9'	86°18.0'	24°34.4'		43°01.5'	49°30.0'	51°38.6'	91°48.6'
19	227°04.5'	S 11°24.7'	14.5'	11.1'	54.9'	86°49.5'	85°48.7'	24°05.4'		43°32.2'	50°00.9'	52°01.1'	92°19.0'
20	241°38.0'	S 11°13.5'	14.5'	11.2'	54.9'	86°19.0'	85°19.4'	23°36.3'		44°02.8'	50°31.7'	52°23.7'	92°49.3'
21	256°11.5'	S 11°02.4'	14.6'	11.2'	54.9'	85°48.6'	84°50.1'	23°07.4'		44°33.4'	51°02.5'	52°46.4'	93°19.6'
22	270°45.1'	S 10°51.2'	14.7'	11.2'	54.9'	85°18.2'	84°20.8'	22°38.4'	18°50.8'	45°04.0'	51°33.2'	53°09.1'	93°49.9'
23	285°18.8'	S 10°39.9'	14.7'	11.3'	54.9'	84°47.8'	83°51.5'	22°09.5'	19°06.0'	45°34.6'	52°04.0'	53°31.9'	94°20.1'
Mer. pass.		3 h 24 m SD 15.1'		phase 85%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.4'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.3'	N 7°24.6'
Deneb	+1.2	49°27.8'	N 45°21.1'	Acrux	+0.8	173°04.1'	S 63°12.9'	Capella	+0.1	280°27.7'	N 46°00.9'
Altair	+0.8	62°03.1'	N 8°55.4'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.7'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	315°52.9'	N 89°20.6'
Rigil Kent	-0.0	139°44.9'	S 60°55.3'	Adhara	+1.5	255°09.1'	S 29°00.0'	Achernar	+0.5	335°23.1'	S 57°07.8'
Arcturus	-0.1	145°51.2'	N 19°04.8'	Sirius	-1.4	258°29.8'	S 16°44.7'				
Hadar	+0.6	148°40.8'	S 60°28.4'	Canopus	-0.6	263°54.5'	S 52°42.4'				

h	Aries		Sun		Venus		Jupiter		Saturn		Mars	
	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	289°21.7'	178°37.2' N	22°04.0'	220°46.6' N	17°25.9'	354°43.5' S	21°49.8'	347°47.4' S	20°29.6'	281°05.1' S	0°06.1'	
1	304°24.2'	193°37.1' N	22°03.7'	235°47.8' N	17°26.0'	9°46.3' S	21°49.9'	2°50.0' S	20°29.6'	296°06.2' S	0°05.6'	
2	319°26.6'	208°37.0' N	22°03.4'	250°48.9' N	17°26.2'	24°49.1' S	21°49.9'	17°52.7' S	20°29.7'	311°07.4' S	0°05.1'	
3	334°29.1'	223°36.9' N	22°03.0'	265°50.1' N	17°26.3'	39°51.9' S	21°50.0'	32°55.3' S	20°29.7'	326°08.5' S	0°04.6'	
4	349°31.6'	238°36.9' N	22°02.7'	280°51.3' N	17°26.5'	54°54.7' S	21°50.1'	47°58.0' S	20°29.7'	341°09.7' S	0°04.1'	
5	4°34.0'	253°36.8' N	22°02.4'	295°52.4' N	17°26.6'	69°57.5' S	21°50.1'	63°00.6' S	20°29.8'	356°10.8' S	0°03.6'	
6	19°36.5'	268°36.7' N	22°02.0'	310°53.6' N	17°26.8'	85°00.3' S	21°50.2'	78°03.3' S	20°29.8'	11°12.0' S	0°03.1'	
7	34°39.0'	283°36.6' N	22°01.7'	325°54.7' N	17°26.9'	100°03.1' S	21°50.2'	93°05.9' S	20°29.9'	26°13.2' S	0°02.6'	
8	49°41.4'	298°36.5' N	22°01.3'	340°55.9' N	17°27.1'	115°05.9' S	21°50.3'	108°08.6' S	20°29.9'	41°14.3' S	0°02.1'	
9	64°43.9'	313°36.5' N	22°01.0'	355°57.0' N	17°27.2'	130°08.7' S	21°50.4'	123°11.2' S	20°29.9'	56°15.5' S	0°01.6'	
10	79°46.4'	328°36.4' N	22°00.7'	10°58.2' N	17°27.4'	145°11.5' S	21°50.4'	138°13.9' S	20°30.0'	71°16.6' S	0°01.1'	
11	94°48.8'	343°36.3' N	22°00.3'	25°59.3' N	17°27.5'	160°14.3' S	21°50.5'	153°16.5' S	20°30.0'	86°17.8' S	0°00.6'	
12	109°51.3'	358°36.2' N	21°60.0'	41°00.5' N	17°27.7'	175°17.1' S	21°50.5'	168°19.2' S	20°30.1'	101°18.9' S	0°00.1'	
13	124°53.7'	13°36.1' N	21°59.6'	56°01.6' N	17°27.8'	190°19.9' S	21°50.6'	183°21.8' S	20°30.1'	116°20.1' N	0°00.3'	
14	139°56.2'	28°36.1' N	21°59.3'	71°02.7' N	17°28.0'	205°22.7' S	21°50.7'	198°24.5' S	20°30.2'	131°21.3' N	0°00.8'	
15	154°58.7'	43°36.0' N	21°58.9'	86°03.9' N	17°28.1'	220°25.5' S	21°50.7'	213°27.1' S	20°30.2'	146°22.4' N	0°01.3'	
16	170°01.1'	58°35.9' N	21°58.6'	101°05.0' N	17°28.3'	235°28.3' S	21°50.8'	228°29.8' S	20°30.2'	161°23.6' N	0°01.8'	
17	185°03.6'	73°35.8' N	21°58.2'	116°06.1' N	17°28.5'	250°31.1' S	21°50.8'	243°32.4' S	20°30.3'	176°24.7' N	0°02.3'	
18	200°06.1'	88°35.7' N	21°57.9'	131°07.3' N	17°28.6'	265°33.9' S	21°50.9'	258°35.1' S	20°30.3'	191°25.9' N	0°02.8'	
19	215°08.5'	103°35.7' N	21°57.6'	146°08.4' N	17°28.8'	280°36.7' S	21°50.9'	273°37.8' S	20°30.4'	206°27.1' N	0°03.3'	
20	230°11.0'	118°35.6' N	21°57.2'	161°09.5' N	17°28.9'	295°39.5' S	21°51.0'	288°40.4' S	20°30.4'	221°28.2' N	0°03.8'	
21	245°13.5'	133°35.5' N	21°56.9'	176°10.6' N	17°29.1'	310°42.4' S	21°51.1'	303°43.1' S	20°30.4'	236°29.4' N	0°04.3'	
22	260°15.9'	148°35.4' N	21°56.5'	191°11.8' N	17°29.2'	325°45.2' S	21°51.1'	318°45.7' S	20°30.5'	251°30.5' N	0°04.8'	
23	275°18.4'	163°35.4' N	21°56.2'	206°12.9' N	17°29.4'	340°48.0' S	21°51.2'	333°48.4' S	20°30.5'	266°31.7' N	0°05.3'	
		SD 15.7' d -0.3'		v 1.1' d 0.2'		v 2.8' d -0.1'		v 2.7' d -0.0'		v 1.2' d 0.5'		
Mer. pass.		12 h 5 m 36 s		9 h 16 m		0 h 21 m		0 h 49 m		5 h 15 m		

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Aldebaran	-Venus	-Mars	+Fomalhaut	+Saturn	+Altair	+Jupiter
0	289°36.7'	S 5°49.5'	15.9'	11.9'	54.5'	111°37.0'	72°15.2'	71°48.2'	10°15.4'	27°37.3'	58°12.2'	63°20.6'	64°45.7'
1	304°11.6'	S 5°37.6'	15.9'	11.9'	54.5'	111°09.5'	71°45.3'	71°19.5'	9°47.4'	28°01.1'	58°42.3'	63°44.7'	65°16.0'
2	318°46.4'	S 5°25.7'	15.9'	11.9'	54.4'	110°42.0'	71°15.5'	70°50.9'	9°19.3'	28°25.2'	59°12.4'	64°08.9'	65°46.2'
3	333°21.4'	S 5°13.7'	16.0'	11.9'	54.4'	110°14.4'	70°45.6'	70°22.2'	8°51.4'	28°49.3'	59°42.4'	64°33.0'	66°16.4'
4	347°56.3'	S 5°01.8'	16.0'	12.0'	54.4'	109°46.9'	70°15.8'	69°53.6'	8°23.5'	29°13.7'	60°12.5'	64°57.2'	66°46.6'
5	2°31.3'	S 4°49.8'	16.0'	12.0'	54.4'	109°19.4'	69°46.0'	69°25.0'	7°55.7'	29°38.2'	60°42.5'	65°21.5'	67°16.8'
6	17°06.3'	S 4°37.9'	16.0'	12.0'	54.4'	108°52.0'	69°16.2'	68°56.4'	7°28.0'	30°02.8'	61°12.5'	65°45.7'	67°46.9'
7	31°41.3'	S 4°25.9'	16.1'	12.0'	54.4'	108°24.5'	68°46.4'	68°27.9'	7°00.5'	30°27.5'	61°42.5'	66°10.0'	68°17.1'
8	46°16.4'	S 4°13.9'	16.1'	12.0'	54.4'	107°57.1'	68°16.7'	67°59.3'	6°33.0'	30°52.4'	62°12.5'	66°34.3'	68°47.2'
9	60°51.5'	S 4°01.9'	16.1'	12.0'	54.4'	107°29.6'	67°46.9'	67°30.8'	6°05.8'	31°17.4'	62°42.5'	66°58.7'	69°17.4'
10	75°26.6'	S 3°49.8'	16.1'	12.0'	54.4'	107°02.2'	67°17.2'	67°02.3'	5°38.7'	31°42.5'	63°12.4'	67°23.0'	69°47.5'
11	90°01.8'	S 3°37.8'	16.2'	12.0'	54.3'	106°34.8'	66°47.4'	66°33.8'	5°11.9'	32°07.7'	63°42.4'	67°47.4'	70°17.6'
12	104°36.9'	S 3°25.8'	16.2'	12.0'	54.3'	106°07.4'	66°17.7'	66°05.3'	4°45.4'	32°33.1'	64°12.3'	68°11.9'	70°47.7'
13	119°12.1'	S 3°13.7'	16.2'	12.1'	54.3'	105°40.0'	65°48.0'	65°36.9'	4°19.3'	32°58.5'	64°42.2'	68°36.3'	71°17.8'
14	133°47.3'	S 3°01.7'	16.2'	12.1'	54.3'	105°12.6'	65°18.3'	65°08.4'	3°53.7'	33°24.0'	65°12.1'	69°00.8'	71°47.8'
15	148°22.5'	S 2°49.6'	16.2'	12.1'	54.3'	104°45.3'	64°48.7'	64°40.0'		33°49.6'	65°42.0'	69°25.3'	72°17.9'
16	162°57.8'	S 2°37.5'	16.3'	12.1'	54.3'	104°17.9'	64°19.0'	64°11.5'		34°15.3'	66°11.9'	69°49.8'	72°47.9'
17	177°33.1'	S 2°25.5'	16.3'	12.1'	54.3'	103°50.6'	63°49.3'	63°43.1'		34°41.1'	66°41.8'	70°14.3'	73°18.0'
18	192°08.3'	S 2°13.4'	16.3'	12.1'	54.3'	103°23.2'	63°19.7'	63°14.7'		35°07.0'	67°11.7'	70°38.9'	73°48.0'
19	206°43.6'	S 2°01.3'	16.3'	12.1'	54.3'	102°55.9'	62°50.0'	62°46.3'		35°33.0'	67°41.6'	71°03.4'	74°18.0'
20	221°18.9'	S 1°49.2'	16.3'	12.1'	54.3'	102°28.6'	62°20.4'	62°17.9'		35°59.0'	68°11.4'	71°28.0'	74°48.0'
21	235°54.3'	S 1°37.1'	16.3'	12.1'	54.3'	102°01.3'	61°50.8'	61°49.6'		36°25.1'	68°41.3'	71°52.7'	75°18.0'
22	250°29.6'	S 1°25.0'	16.4'	12.1'	54.3'	101°34.0'	61°21.2'	61°21.2'		36°51.3'	69°11.1'	72°17.3'	75°48.0'
23	265°05.0'	S 1°12.9'	16.4'	12.1'	54.3'	101°06.7'	60°51.6'	60°52.9'		37°17.5'	69°40.9'	72°42.0'	76°18.0'
Mer. pass.		4 h 50 m SD 14.9'		phase 68%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.3'	N 7°24.6'
Deneb	+1.2	49°27.7'	N 45°21.1'	Acrux	+0.8	173°04.1'	S 63°12.9'	Capella	+0.1	280°27.6'	N 46°00.9'
Altair	+0.8	62°03.1'	N 8°55.4'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.6'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	315°52.1'	N 89°20.6'
Rigil Kent	-0.0	139°44.9'	S 60°55.3'	Adhara	+1.5	255°09.1'	S 28°60.0'	Achernar	+0.5	335°23.1'	S 57°07.8'
Arcturus	-0.1	145°51.2'	N 19°04.8'	Sirius	-1.4	258°29.8'	S 16°44.7'				
Hadar	+0.6	148°40.8'	S 60°28.4'	Canopus	-0.6	263°54.5'	S 52°42.4'				

Sunday 12 July 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	290°20.9'	178°35.3'	N 21°55.8'	221°14.0'	N 17°29.6'	355°50.8'	S 21°51.2'	348°51.0'	S 20°30.6'	281°32.9'	N 0°05.8'			
1	305°23.3'	193°35.2'	N 21°55.4'	236°15.1'	N 17°29.7'	10°53.6'	S 21°51.3'	3°53.7'	S 20°30.6'	296°34.0'	N 0°06.3'			
2	320°25.8'	208°35.1'	N 21°55.1'	251°16.2'	N 17°29.9'	25°56.4'	S 21°51.4'	18°56.3'	S 20°30.7'	311°35.2'	N 0°06.8'			
3	335°28.2'	223°35.0'	N 21°54.7'	266°17.3'	N 17°30.1'	40°59.2'	S 21°51.4'	33°59.0'	S 20°30.7'	326°36.4'	N 0°07.3'			
4	350°30.7'	238°35.0'	N 21°54.4'	281°18.4'	N 17°30.2'	56°02.0'	S 21°51.5'	49°01.6'	S 20°30.7'	341°37.5'	N 0°07.7'			
5	5°33.2'	253°34.9'	N 21°54.0'	296°19.5'	N 17°30.4'	71°04.8'	S 21°51.5'	64°04.3'	S 20°30.8'	356°38.7'	N 0°08.2'			
6	20°35.6'	268°34.8'	N 21°53.7'	311°20.6'	N 17°30.6'	86°07.6'	S 21°51.6'	79°06.9'	S 20°30.8'	11°39.9'	N 0°08.7'			
7	35°38.1'	283°34.7'	N 21°53.3'	326°21.7'	N 17°30.7'	101°10.4'	S 21°51.7'	94°09.6'	S 20°30.9'	26°41.0'	N 0°09.2'			
8	50°40.6'	298°34.7'	N 21°53.0'	341°22.8'	N 17°30.9'	116°13.2'	S 21°51.7'	109°12.2'	S 20°30.9'	41°42.2'	N 0°09.7'			
9	65°43.0'	313°34.6'	N 21°52.6'	356°23.9'	N 17°31.0'	131°16.0'	S 21°51.8'	124°14.9'	S 20°30.9'	56°43.4'	N 0°10.2'			
10	80°45.5'	328°34.5'	N 21°52.3'	11°25.0'	N 17°31.2'	146°18.8'	S 21°51.8'	139°17.5'	S 20°31.0'	71°44.5'	N 0°10.7'			
11	95°48.0'	343°34.4'	N 21°51.9'	26°26.0'	N 17°31.4'	161°21.6'	S 21°51.9'	154°20.2'	S 20°31.0'	86°45.7'	N 0°11.2'			
12	110°50.4'	358°34.4'	N 21°51.5'	41°27.1'	N 17°31.6'	176°24.4'	S 21°52.0'	169°22.8'	S 20°31.1'	101°46.9'	N 0°11.7'			
13	125°52.9'	13°34.3'	N 21°51.2'	56°28.2'	N 17°31.7'	191°27.2'	S 21°52.0'	184°25.5'	S 20°31.1'	116°48.0'	N 0°12.2'			
14	140°55.4'	28°34.2'	N 21°50.8'	71°29.3'	N 17°31.9'	206°30.0'	S 21°52.1'	199°28.2'	S 20°31.1'	131°49.2'	N 0°12.7'			
15	155°57.8'	43°34.1'	N 21°50.5'	86°30.4'	N 17°32.1'	221°32.8'	S 21°52.1'	214°30.8'	S 20°31.2'	146°50.4'	N 0°13.1'			
16	171°00.3'	58°34.1'	N 21°50.1'	101°31.4'	N 17°32.2'	236°35.6'	S 21°52.2'	229°33.5'	S 20°31.2'	161°51.5'	N 0°13.6'			
17	186°02.7'	73°34.0'	N 21°49.7'	116°32.5'	N 17°32.4'	251°38.4'	S 21°52.2'	244°36.1'	S 20°31.3'	176°52.7'	N 0°14.1'			
18	201°05.2'	88°33.9'	N 21°49.4'	131°33.6'	N 17°32.6'	266°41.3'	S 21°52.3'	259°38.8'	S 20°31.3'	191°53.9'	N 0°14.6'			
19	216°07.7'	103°33.8'	N 21°49.0'	146°34.6'	N 17°32.7'	281°44.1'	S 21°52.4'	274°41.4'	S 20°31.4'	206°55.0'	N 0°15.1'			
20	231°10.1'	118°33.8'	N 21°48.6'	161°35.7'	N 17°32.9'	296°46.9'	S 21°52.4'	289°44.1'	S 20°31.4'	221°56.2'	N 0°15.6'			
21	246°12.6'	133°33.7'	N 21°48.3'	176°36.8'	N 17°33.1'	311°49.7'	S 21°52.5'	304°46.7'	S 20°31.4'	236°57.4'	N 0°16.1'			
22	261°15.1'	148°33.5'	N 21°47.9'	191°37.8'	N 17°33.3'	326°52.5'	S 21°52.5'	319°49.4'	S 20°31.5'	251°58.6'	N 0°16.6'			
23	276°17.5'	163°33.5'	N 21°47.5'	206°38.9'	N 17°33.4'	341°55.3'	S 21°52.6'	334°52.0'	S 20°31.5'	266°59.7'	N 0°17.1'			
		SD 15.7' d -0.4'		v 1.1' d 0.2'		v 2.8' d -0.1'		v 2.7' d -0.0'		v 1.2' d 0.5'				
Mer. pass.		12 h 5 m 43 s		9 h 14 m		0 h 17 m		0 h 44 m		5 h 13 m				

h	Moon					Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Rigel	-Venus	-Aldebaran	+Mars	+Fomalhaut	+Saturn	+Altair	
0	279°40.3'	S 1°00.8'	16.4'	12.1'	54.2'	100°39.4'	68°16.7'	60°24.5'	60°22.0'			37°43.8'	70°10.8'	73°06.6'
1	294°15.7'	S 0°48.7'	16.4'	12.1'	54.2'	100°12.1'	67°51.7'	59°56.2'	59°52.4'			38°10.2'	70°40.6'	73°31.3'
2	308°51.1'	S 0°36.6'	16.4'	12.1'	54.2'	99°44.8'	67°26.7'	59°27.9'	59°22.8'			38°36.6'	71°10.4'	73°56.0'
3	323°26.5'	S 0°24.5'	16.4'	12.1'	54.2'	99°17.6'	67°01.8'	58°59.6'	58°53.3'			39°03.1'	71°40.2'	74°20.8'
4	338°01.9'	S 0°12.5'	16.4'	12.1'	54.2'	98°50.3'	66°36.8'	58°31.3'	58°23.7'			39°29.7'	72°10.0'	74°45.5'
5	352°37.3'	S 0°00.4'	16.4'	12.1'	54.2'	98°23.1'	66°12.0'	58°03.0'	57°54.2'	4°01.6'		39°56.3'	72°39.8'	75°10.3'
6	7°12.7'	N 0°11.7'	16.4'	12.1'	54.2'	97°55.8'	65°47.1'	57°34.8'	57°24.6'	4°27.2'		40°22.9'	73°09.6'	75°35.0'
7	21°48.1'	N 0°23.8'	16.4'	12.1'	54.2'	97°28.6'	65°22.4'	57°06.5'	56°55.1'	4°53.3'		40°49.7'	73°39.4'	75°59.8'
8	36°23.5'	N 0°35.9'	16.4'	12.1'	54.2'	97°01.3'	64°57.6'	56°38.2'	56°25.5'	5°19.8'		41°16.4'	74°09.1'	76°24.6'
9	50°58.9'	N 0°48.0'	16.4'	12.1'	54.2'	96°34.1'	64°32.9'	56°10.0'	55°56.0'	5°46.5'		41°43.2'	74°38.9'	76°49.5'
10	65°34.3'	N 1°00.1'	16.4'	12.1'	54.2'	96°06.9'	64°08.2'	55°41.7'	55°26.5'	6°13.5'		42°10.1'	75°08.7'	77°14.3'
11	80°09.7'	N 1°12.1'	16.4'	12.1'	54.2'	95°39.7'	63°43.6'	55°13.5'	54°57.0'	6°40.6'		42°37.0'	75°38.4'	77°39.1'
12	94°45.2'	N 1°24.2'	16.4'	12.1'	54.2'	95°12.4'	63°19.0'	54°45.3'	54°27.4'	7°07.9'		43°04.0'	76°08.2'	78°04.0'
13	109°20.6'	N 1°36.3'	16.4'	12.1'	54.2'	94°45.2'	62°54.4'	54°17.0'	53°57.9'	7°35.2'		43°31.0'	76°38.0'	78°28.9'
14	123°56.0'	N 1°48.3'	16.4'	12.0'	54.2'	94°18.0'	62°29.9'	53°48.8'	53°28.4'	8°02.7'		43°58.0'	77°07.7'	78°53.8'
15	138°31.4'	N 2°00.4'	16.4'	12.0'	54.2'	93°50.8'	62°05.5'	53°20.6'	52°58.9'	8°30.3'		44°25.1'	77°37.5'	79°18.7'
16	153°06.8'	N 2°12.4'	16.4'	12.0'	54.2'	93°23.6'	61°41.1'	52°52.4'	52°29.4'	8°57.9'		44°52.2'	78°07.2'	79°43.6'
17	167°42.2'	N 2°24.4'	16.4'	12.0'	54.2'	92°56.4'	61°16.7'	52°24.2'	51°59.9'	9°25.6'		45°19.4'	78°37.0'	80°08.5'
18	182°17.6'	N 2°36.5'	16.4'	12.0'	54.2'	92°29.2'	60°52.4'	51°56.0'	51°30.4'	9°53.3'		45°46.5'	79°06.7'	80°33.5'
19	196°53.0'	N 2°48.5'	16.4'	12.0'	54.2'	92°02.0'	60°28.1'	51°27.8'	51°00.9'	10°21.1'		46°13.8'	79°36.5'	80°58.4'
20	211°28.3'	N 3°00.5'	16.4'	12.0'	54.2'	91°34.8'	60°03.8'	50°59.6'	50°31.4'	10°48.9'		46°41.1'	80°06.2'	81°23.4'
21	226°03.7'	N 3°12.5'	16.4'	12.0'	54.2'	91°07.6'	59°39.7'	50°31.4'	50°01.9'	11°16.7'		47°08.4'	80°36.0'	81°48.3'
22	240°39.0'	N 3°24.4'	16.3'	12.0'	54.2'	90°40.4'	59°15.5'	50°03.2'	49°32.5'	11°44.6'		47°35.7'	81°05.8'	82°13.3'
23	255°14.4'	N 3°36.4'	16.3'	12.0'	54.2'	90°13.1'	58°51.4'	49°35.0'	49°03.0'	12°12.5'		48°03.1'	81°35.5'	82°38.3'
Mer. pass.		5 h 30 m SD 14.8'		phase 59%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.3'	N 7°24.6'
Deneb	+1.2	49°27.7'	N 45°21.1'	Acrux	+0.8	173°04.1'	S 63°12.9'	Capella	+0.1	280°27.6'	N 46°00.9'
Altair	+0.8	62°03.1'	N 8°55.4'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.6'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°55.0'	N 5°10.3'	Polaris	+2.0	315°51.6'	N 89°20.6'
Rigel Kent	-0.0	139°44.9'	S 60°55.3'	Adhara	+1.5	255°09.1'	S 28°60.0'	Achernar	+0.5	335°23.1'	S 57°07.8'
Arcturus	-0.1	145°51.2'	N 19°04.8'	Sirius	-1.4	258°29.8'	S 16°44.7'				
Hadar	+0.6	148°40.8'	S 60°28.4'	Canopus	-0.6	263°54.5'	S 52°42.4'				

Monday 13 July 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	291°20.0'	178°33.5'	N 21°47.2'	221°39.9'	N 17°33.6'	356°58.1'	S 21°52.7'	349°54.7'	S 20°31.6'	282°00.9'	N 0°17.5'			
1	306°22.5'	193°33.4'	N 21°46.8'	236°41.0'	N 17°33.8'	12°00.9'	S 21°52.7'	4°57.3'	S 20°31.6'	297°02.1'	N 0°18.0'			
2	321°24.9'	208°33.3'	N 21°46.4'	251°42.0'	N 17°34.0'	27°03.7'	S 21°52.8'	19°60.0'	S 20°31.6'	312°03.3'	N 0°18.5'			
3	336°27.4'	223°33.3'	N 21°46.1'	266°43.1'	N 17°34.1'	42°06.5'	S 21°52.8'	35°02.6'	S 20°31.7'	327°04.4'	N 0°19.0'			
4	351°29.8'	238°33.2'	N 21°45.7'	281°44.1'	N 17°34.3'	57°09.3'	S 21°52.9'	50°05.3'	S 20°31.7'	342°05.6'	N 0°19.5'			
5	6°32.3'	253°33.1'	N 21°45.3'	296°45.2'	N 17°34.5'	72°12.1'	S 21°52.9'	65°08.0'	S 20°31.8'	357°06.8'	N 0°20.0'			
6	21°34.8'	268°33.0'	N 21°45.0'	311°46.2'	N 17°34.7'	87°14.9'	S 21°53.0'	80°10.6'	S 20°31.8'	12°08.0'	N 0°20.5'			
7	36°37.2'	283°33.0'	N 21°44.6'	326°47.2'	N 17°34.9'	102°17.7'	S 21°53.1'	95°13.3'	S 20°31.9'	27°09.1'	N 0°21.0'			
8	51°39.7'	298°32.9'	N 21°44.2'	341°48.3'	N 17°35.0'	117°20.5'	S 21°53.1'	110°15.9'	S 20°31.9'	42°10.3'	N 0°21.4'			
9	66°42.2'	313°32.8'	N 21°43.8'	356°49.3'	N 17°35.2'	132°23.3'	S 21°53.2'	125°18.6'	S 20°31.9'	57°11.5'	N 0°21.9'			
10	81°44.6'	328°32.8'	N 21°43.5'	11°50.3'	N 17°35.4'	147°26.1'	S 21°53.2'	140°21.2'	S 20°32.0'	72°12.7'	N 0°22.4'			
11	96°47.1'	343°32.7'	N 21°43.1'	26°51.4'	N 17°35.6'	162°28.9'	S 21°53.3'	155°23.9'	S 20°32.0'	87°13.8'	N 0°22.9'			
12	111°49.6'	358°32.6'	N 21°42.7'	41°52.4'	N 17°35.8'	177°31.8'	S 21°53.4'	170°26.5'	S 20°32.1'	102°15.0'	N 0°23.4'			
13	126°52.0'	13°32.5'	N 21°42.4'	56°53.4'	N 17°35.9'	192°34.6'	S 21°53.4'	185°29.2'	S 20°32.1'	117°16.2'	N 0°23.9'			
14	141°54.5'	28°32.5'	N 21°42.0'	71°54.4'	N 17°36.1'	207°37.4'	S 21°53.5'	200°31.8'	S 20°32.1'	132°17.4'	N 0°24.4'			
15	156°57.0'	43°32.4'	N 21°41.6'	86°55.4'	N 17°36.3'	222°40.2'	S 21°53.5'	215°34.5'	S 20°32.2'	147°18.6'	N 0°24.8'			
16	171°59.4'	58°32.3'	N 21°41.2'	101°56.5'	N 17°36.5'	237°43.0'	S 21°53.6'	230°37.1'	S 20°32.2'	162°19.7'	N 0°25.3'			
17	187°01.9'	73°32.3'	N 21°40.8'	116°57.5'	N 17°36.7'	252°45.8'	S 21°53.7'	245°39.8'	S 20°32.3'	177°20.9'	N 0°25.8'			
18	202°04.3'	88°32.2'	N 21°40.5'	131°58.5'	N 17°36.9'	267°48.6'	S 21°53.7'	260°42.5'	S 20°32.3'	192°22.1'	N 0°26.3'			
19	217°06.8'	103°32.1'	N 21°40.1'	146°59.5'	N 17°37.0'	282°51.4'	S 21°53.8'	275°45.1'	S 20°32.4'	207°23.3'	N 0°26.8'			
20	232°09.3'	118°32.1'	N 21°39.7'	162°00.5'	N 17°37.2'	297°54.2'	S 21°53.8'	290°47.8'	S 20°32.4'	222°24.5'	N 0°27.3'			
21	247°11.7'	133°32.0'	N 21°39.3'	177°01.5'	N 17°37.4'	312°57.0'	S 21°53.9'	305°50.4'	S 20°32.4'	237°25.6'	N 0°27.7'			
22	262°14.2'	148°31.9'	N 21°38.9'	192°02.5'	N 17°37.6'	327°59.8'	S 21°53.9'	320°53.1'	S 20°32.5'	252°26.8'	N 0°28.2'			
23	277°16.7'	163°31.8'	N 21°38.6'	207°03.5'	N 17°37.8'	343°02.6'	S 21°54.0'	335°55.7'	S 20°32.5'	267°28.0'	N 0°28.7'			
		SD 15.7' d -0.4'		v 1.0' d 0.2'		v 2.8' d -0.1'		v 2.7' d -0.0'		v 1.2' d 0.5'				
Mer. pass.		12 h 5 m 50 s		9 h 13 m		0 h 12 m		0 h 40 m		5 h 12 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Rigel	-Venus	-Aldebaran	+Mars	+Fomalhaut	+Saturn	+Altair
0	269°49.7'	N 3°48.4'	16.3'	11.9'	54.2'	89°45.9'	58°27.4'	49°06.8'	48°33.5'	12°40.4'	48°30.5'	82°05.3'	83°03.3'
1	284°25.0'	N 4°00.3'	16.3'	11.9'	54.2'	89°18.7'	58°03.4'	48°38.7'	48°04.0'	13°08.4'	48°57.9'	82°35.0'	83°28.3'
2	299°00.3'	N 4°12.2'	16.3'	11.9'	54.2'	88°51.5'	57°39.5'	48°10.5'	47°34.5'	13°36.3'	49°25.4'	83°04.8'	83°53.4'
3	313°35.6'	N 4°24.1'	16.3'	11.9'	54.2'	88°24.3'	57°15.6'	47°42.3'	47°05.0'	14°04.3'	49°52.9'	83°34.5'	84°18.4'
4	328°10.9'	N 4°36.0'	16.2'	11.9'	54.2'	87°57.1'	56°51.8'	47°14.1'	46°35.5'	14°32.3'	50°20.5'	84°04.3'	84°43.5'
5	342°46.1'	N 4°47.9'	16.2'	11.9'	54.2'	87°29.9'	56°28.1'	46°45.9'	46°06.0'	15°00.4'	50°48.1'	84°34.1'	85°08.5'
6	357°21.3'	N 4°59.8'	16.2'	11.8'	54.2'	87°02.6'	56°04.4'	46°17.8'	45°36.5'	15°28.4'	51°15.7'	85°03.8'	85°33.6'
7	11°56.5'	N 5°11.6'	16.2'	11.8'	54.2'	86°35.4'	55°40.7'	45°49.6'	45°07.0'	15°56.5'	51°43.3'	85°33.6'	85°58.6'
8	26°31.7'	N 5°23.4'	16.2'	11.8'	54.2'	86°08.2'	55°17.1'	45°21.4'	44°37.5'	16°24.5'	52°11.0'	86°03.4'	86°23.7'
9	41°06.9'	N 5°35.2'	16.1'	11.8'	54.2'	85°41.0'	54°53.6'	44°53.2'	44°08.1'	16°52.6'	52°38.7'	86°33.2'	86°48.8'
10	55°42.0'	N 5°47.0'	16.1'	11.8'	54.2'	85°13.7'	54°30.2'	44°25.1'	43°38.6'	17°20.7'	53°06.4'	87°03.0'	87°13.9'
11	70°17.2'	N 5°58.8'	16.1'	11.7'	54.2'	84°46.5'	54°06.8'	43°56.9'	43°09.0'	17°48.8'	53°34.1'	87°32.8'	87°39.0'
12	84°52.2'	N 6°10.5'	16.1'	11.7'	54.2'	84°19.2'	53°43.4'	43°28.7'	42°39.5'	18°17.0'	54°01.9'	88°02.6'	88°04.1'
13	99°27.3'	N 6°22.3'	16.0'	11.7'	54.2'	83°52.0'	53°20.2'	43°00.5'	42°10.0'	18°45.1'	54°29.7'	88°32.4'	88°29.2'
14	114°02.4'	N 6°34.0'	16.0'	11.7'	54.2'	83°24.7'	52°57.0'	42°32.3'	41°40.5'	19°13.3'	54°57.5'	89°02.2'	88°54.4'
15	128°37.4'	N 6°45.7'	16.0'	11.7'	54.2'	82°57.4'	52°33.9'	42°04.1'	41°11.0'	19°41.4'	55°25.4'	89°32.0'	89°19.5'
16	143°12.4'	N 6°57.3'	16.0'	11.6'	54.3'	82°30.2'	52°10.8'	41°35.9'	40°41.5'	20°09.6'	55°53.3'	90°01.8'	89°44.6'
17	157°47.3'	N 7°08.9'	15.9'	11.6'	54.3'	82°02.9'	51°47.8'	41°07.7'	40°12.0'	20°37.8'	56°21.2'	90°31.6'	90°09.8'
18	172°22.2'	N 7°20.6'	15.9'	11.6'	54.3'	81°35.6'	51°24.9'	40°39.5'	39°42.4'	21°06.0'	56°49.2'	91°01.5'	90°34.9'
19	186°57.1'	N 7°32.1'	15.9'	11.6'	54.3'	81°08.3'	51°02.1'	40°11.3'	39°12.9'	21°34.2'	57°17.1'	91°31.3'	91°00.1'
20	201°32.0'	N 7°43.7'	15.8'	11.5'	54.3'	80°41.0'	50°39.4'	39°43.1'	38°43.4'	22°02.5'	57°45.1'	92°01.2'	91°25.3'
21	216°06.8'	N 7°55.2'	15.8'	11.5'	54.3'	80°13.7'	50°16.7'	39°14.9'	38°13.8'	22°30.7'	58°13.1'	92°31.1'	91°50.4'
22	230°41.6'	N 8°06.8'	15.8'	11.5'	54.3'	79°46.4'	49°54.1'	38°46.7'	37°44.3'	22°59.0'	58°41.2'	93°00.9'	92°15.6'
23	245°16.4'	N 8°18.2'	15.7'	11.5'	54.3'	79°19.0'	49°31.6'	38°18.5'	37°14.7'	23°27.3'	59°09.3'	93°30.8'	92°40.8'
Mer. pass.													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.3'	N 7°24.6'
Deneb	+1.2	49°27.7'	N 45°21.1'	Acrux	+0.8	173°04.1'	S 63°12.9'	Capella	+0.1	280°27.6'	N 46°00.9'
Altair	+0.8	62°03.1'	N 8°55.4'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.6'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°55.0'	N 5°10.4'	Polaris	+2.0	315°51.2'	N 89°20.6'
Rigel Kent	-0.0	139°44.9'	S 60°55.3'	Adhara	+1.5	255°09.1'	S 28°60.0'	Achernar	+0.5	335°23.1'	S 57°07.8'
Arcturus	-0.1	145°51.2'	N 19°04.8'	Sirius	-1.4	258°29.8'	S 16°44.7'				
Hadar	+0.6	148°40.9'	S 60°28.4'	Canopus	-0.6	263°54.5'	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	292°19.1'	178°31.8'	N 21°38.2'	222°04.5'	N 17°38.0'	358°05.4'	S 21°54.1'	350°58.4'	S 20°32.6'	282°29.2'	N 0°29.2'			
1	307°21.6'	193°31.7'	N 21°37.8'	237°05.5'	N 17°38.2'	13°08.2'	S 21°54.1'	6°01.0'	S 20°32.6'	297°30.4'	N 0°29.7'			
2	322°24.1'	208°31.6'	N 21°37.4'	252°06.5'	N 17°38.4'	28°11.0'	S 21°54.2'	21°03.7'	S 20°32.6'	312°31.6'	N 0°30.2'			
3	337°26.5'	223°31.6'	N 21°37.0'	267°07.5'	N 17°38.5'	43°13.8'	S 21°54.2'	36°06.3'	S 20°32.7'	327°32.7'	N 0°30.6'			
4	352°29.0'	238°31.5'	N 21°36.6'	282°08.5'	N 17°38.7'	58°16.6'	S 21°54.3'	51°09.0'	S 20°32.7'	342°33.9'	N 0°31.1'			
5	7°31.5'	253°31.4'	N 21°36.3'	297°09.4'	N 17°38.9'	73°19.5'	S 21°54.4'	66°11.6'	S 20°32.8'	357°35.1'	N 0°31.6'			
6	22°33.9'	268°31.4'	N 21°35.9'	312°10.4'	N 17°39.1'	88°22.3'	S 21°54.4'	81°14.3'	S 20°32.8'	12°36.3'	N 0°32.1'			
7	37°36.4'	283°31.3'	N 21°35.5'	327°11.4'	N 17°39.3'	103°25.1'	S 21°54.5'	96°17.0'	S 20°32.8'	27°37.5'	N 0°32.6'			
8	52°38.8'	298°31.2'	N 21°35.1'	342°12.4'	N 17°39.5'	118°27.9'	S 21°54.5'	111°19.6'	S 20°32.9'	42°38.7'	N 0°33.0'			
9	67°41.3'	313°31.2'	N 21°34.7'	357°13.4'	N 17°39.7'	133°30.7'	S 21°54.6'	126°22.3'	S 20°32.9'	57°39.9'	N 0°33.5'			
10	82°43.8'	328°31.1'	N 21°34.3'	12°14.3'	N 17°39.9'	148°33.5'	S 21°54.6'	141°24.9'	S 20°33.0'	72°41.0'	N 0°34.0'			
11	97°46.2'	343°31.0'	N 21°33.9'	27°15.3'	N 17°40.1'	163°36.3'	S 21°54.7'	156°27.6'	S 20°33.0'	87°42.2'	N 0°34.5'			
12	112°48.7'	358°31.0'	N 21°33.5'	42°16.3'	N 17°40.3'	178°39.1'	S 21°54.8'	171°30.2'	S 20°33.1'	102°43.4'	N 0°35.0'			
13	127°51.2'	13°30.9'	N 21°33.2'	57°17.2'	N 17°40.5'	193°41.9'	S 21°54.8'	186°32.9'	S 20°33.1'	117°44.6'	N 0°35.5'			
14	142°53.6'	28°30.8'	N 21°32.8'	72°18.2'	N 17°40.7'	208°44.7'	S 21°54.9'	201°35.5'	S 20°33.1'	132°45.8'	N 0°35.9'			
15	157°56.1'	43°30.8'	N 21°32.4'	87°19.2'	N 17°40.9'	223°47.5'	S 21°54.9'	216°38.2'	S 20°33.2'	147°47.0'	N 0°36.4'			
16	172°58.6'	58°30.7'	N 21°32.0'	102°20.1'	N 17°41.0'	238°50.3'	S 21°55.0'	231°40.8'	S 20°33.2'	162°48.2'	N 0°36.9'			
17	188°01.0'	73°30.7'	N 21°31.6'	117°21.1'	N 17°41.2'	253°53.1'	S 21°55.1'	246°43.5'	S 20°33.3'	177°49.4'	N 0°37.4'			
18	203°03.5'	88°30.6'	N 21°31.2'	132°22.0'	N 17°41.4'	268°55.9'	S 21°55.1'	261°46.2'	S 20°33.3'	192°50.6'	N 0°37.8'			
19	218°05.9'	103°30.5'	N 21°30.8'	147°23.0'	N 17°41.6'	283°58.7'	S 21°55.2'	276°48.8'	S 20°33.3'	207°51.7'	N 0°38.3'			
20	233°08.4'	118°30.5'	N 21°30.4'	162°23.9'	N 17°41.8'	299°01.5'	S 21°55.2'	291°51.5'	S 20°33.4'	222°52.9'	N 0°38.8'			
21	248°10.9'	133°30.4'	N 21°30.0'	177°24.9'	N 17°42.0'	314°04.3'	S 21°55.3'	306°54.1'	S 20°33.4'	237°54.1'	N 0°39.3'			
22	263°13.3'	148°30.3'	N 21°29.6'	192°25.8'	N 17°42.2'	329°07.2'	S 21°55.3'	321°56.8'	S 20°33.5'	252°55.3'	N 0°39.8'			
23	278°15.8'	163°30.3'	N 21°29.2'	207°26.8'	N 17°42.4'	344°10.0'	S 21°55.4'	336°59.4'	S 20°33.5'	267°56.5'	N 0°40.2'			
		SD 15.7' d -0.4'		v 1.0' d 0.2'		v 2.8' d -0.1'		v 2.7' d -0.0'		v 1.2' d 0.5'				
Mer. pass.		12 h 5 m 57 s		9 h 11 m		0 h 8 m		0 h 36 m		5 h 10 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Rigel	-Venus	-Aldebaran	+Mars	+Fomalhaut	+Achernar	+Altair
0	259°51.1'	N 8°29.7'	15.7'	11.4'	54.3'	78°51.7'	49°09.2'	37°50.3'	36°45.1'	23°55.5'	59°37.4'		93°06.0'
1	274°25.8'	N 8°41.1'	15.6'	11.4'	54.3'	78°24.3'	48°46.9'	37°22.0'	36°15.6'	24°23.8'	60°05.5'		93°31.2'
2	289°00.4'	N 8°52.5'	15.6'	11.4'	54.3'	77°57.0'	48°24.6'	36°53.8'	35°46.0'	24°52.2'	60°33.7'		93°56.4'
3	303°35.0'	N 9°03.9'	15.6'	11.3'	54.3'	77°29.6'	48°02.5'	36°25.5'	35°16.4'	25°20.5'	61°01.8'		94°21.6'
4	318°09.6'	N 9°15.2'	15.5'	11.3'	54.3'	77°02.2'	47°40.5'	35°57.3'	34°46.8'	25°48.8'	61°30.0'		94°46.8'
5	332°44.1'	N 9°26.5'	15.5'	11.3'	54.4'	76°34.8'	47°18.5'	35°29.0'	34°17.2'	26°17.2'	61°58.3'		95°12.0'
6	347°18.6'	N 9°37.8'	15.4'	11.2'	54.4'	76°07.4'	46°56.7'	35°00.8'	33°47.6'	26°45.6'	62°26.5'		95°37.2'
7	1°53.1'	N 9°49.0'	15.4'	11.2'	54.4'	75°40.0'	46°34.9'	34°32.5'	33°18.0'	27°14.0'	62°54.8'		96°02.4'
8	16°27.4'	N 10°00.2'	15.4'	11.2'	54.4'	75°12.6'	46°13.3'	34°04.2'	32°48.4'	27°42.4'	63°23.1'		96°27.6'
9	31°01.8'	N 10°11.4'	15.3'	11.1'	54.4'	74°45.1'	45°51.8'	33°35.9'	32°18.8'	28°10.8'	63°51.4'		96°52.9'
10	45°36.1'	N 10°22.5'	15.3'	11.1'	54.4'	74°17.7'	45°30.4'	33°07.6'	31°49.2'	28°39.2'	64°19.8'		97°18.1'
11	60°10.4'	N 10°33.6'	15.2'	11.1'	54.4'	73°50.2'	45°09.1'	32°39.3'	31°19.5'	29°07.7'	64°48.2'		97°43.3'
12	74°44.6'	N 10°44.7'	15.2'	11.0'	54.4'	73°22.7'	44°47.9'	32°11.0'	30°49.9'	29°36.1'	65°16.6'		98°08.5'
13	89°18.8'	N 10°55.7'	15.1'	11.0'	54.4'	72°55.2'	44°26.8'	31°42.7'	30°20.2'	30°04.6'	65°45.0'		98°33.8'
14	103°52.9'	N 11°06.7'	15.1'	10.9'	54.5'	72°27.7'	44°05.9'	31°14.4'	29°50.6'	30°33.1'	66°13.5'		98°59.0'
15	118°26.9'	N 11°17.6'	15.0'	10.9'	54.5'	72°00.2'	43°45.1'	30°46.0'	29°20.9'	31°01.6'	66°41.9'		99°24.2'
16	133°01.0'	N 11°28.5'	15.0'	10.9'	54.5'	71°32.6'	43°24.4'	30°17.7'	28°51.2'	31°30.2'	67°10.4'	69°46.1'	99°49.5'
17	147°34.9'	N 11°39.4'	14.9'	10.8'	54.5'	71°05.1'	43°03.9'	29°49.3'	28°21.6'	31°58.7'	67°39.0'	70°01.1'	100°14.7'
18	162°08.8'	N 11°50.2'	14.9'	10.8'	54.5'	70°37.5'	42°43.5'	29°21.0'	27°51.9'	32°27.3'	68°07.5'	70°16.3'	100°39.9'
19	176°42.7'	N 12°01.0'	14.8'	10.7'	54.5'	70°09.9'	42°23.2'	28°52.6'	27°22.2'	32°55.9'	68°36.1'	70°31.5'	101°05.2'
20	191°16.5'	N 12°11.8'	14.7'	10.7'	54.5'	69°42.3'	42°03.1'	28°24.2'	26°52.5'	33°24.5'	69°04.7'	70°46.8'	101°30.4'
21	205°50.2'	N 12°22.5'	14.7'	10.7'	54.6'	69°14.7'	41°43.1'	27°55.8'	26°22.8'	33°53.1'	69°33.4'	71°02.2'	101°55.6'
22	220°23.9'	N 12°33.1'	14.6'	10.6'	54.6'	68°47.0'	41°23.3'	27°27.4'	25°53.1'	34°21.8'	70°02.0'	71°17.6'	102°20.8'
23	234°57.6'	N 12°43.7'	14.6'	10.6'	54.6'	68°19.4'	41°03.7'	26°59.0'	25°23.3'	34°50.4'	70°30.7'	71°33.2'	102°46.1'
Mer. pass.		6 h 52 m SD 14.8'		phase 40%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.3'	N 7°24.6'
Deneb	+1.2	49°27.7'	N 45°21.2'	Acrux	+0.8	173°04.1'	S 63°12.9'	Capella	+0.1	280°27.6'	N 46°00.9'
Altair	+0.8	62°03.1'	N 8°55.4'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.6'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°55.0'	N 5°10.4'	Polaris	+2.0	315°50.7'	N 89°20.6'
Rigil Kent	-0.0	139°44.9'	S 60°55.3'	Adhara	+1.5	255°09.1'	S 28°60.0'	Achernar	+0.5	335°23.1'	S 57°07.8'
Arcturus	-0.1	145°51.2'	N 19°04.8'	Sirius	-1.4	258°29.8'	S 16°44.7'				
Hadar	+0.6	148°40.9'	S 60°28.4'	Canopus	-0.6	263°54.5'	S 52°42.3'				

Thursday 16 July 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	294°17.4'	178°28.8'	N 21°19.1'	222°49.6'	N 17°47.5'	0°20.1'	S 21°56.8'	353°05.8'	S 20°34.6'	283°26.5'	N 0°52.1'			
1	309°19.9'	193°28.7'	N 21°18.7'	237°50.5'	N 17°47.7'	15°22.9'	S 21°56.9'	8°08.5'	S 20°34.6'	298°27.7'	N 0°52.6'			
2	324°22.3'	208°28.6'	N 21°18.3'	252°51.4'	N 17°47.9'	30°25.7'	S 21°57.0'	23°11.1'	S 20°34.6'	313°28.9'	N 0°53.1'			
3	339°24.8'	223°28.6'	N 21°17.8'	267°52.3'	N 17°48.1'	45°28.5'	S 21°57.0'	38°13.8'	S 20°34.7'	328°30.1'	N 0°53.5'			
4	354°27.3'	238°28.5'	N 21°17.4'	282°53.2'	N 17°48.4'	60°31.3'	S 21°57.1'	53°16.4'	S 20°34.7'	343°31.3'	N 0°54.0'			
5	9°29.7'	253°28.5'	N 21°17.0'	297°54.0'	N 17°48.6'	75°34.1'	S 21°57.1'	68°19.1'	S 20°34.8'	358°32.5'	N 0°54.5'			
6	24°32.2'	268°28.4'	N 21°16.6'	312°54.9'	N 17°48.8'	90°36.9'	S 21°57.2'	83°21.7'	S 20°34.8'	13°33.7'	N 0°55.0'			
7	39°34.7'	283°28.4'	N 21°16.2'	327°55.8'	N 17°49.0'	105°39.8'	S 21°57.3'	98°24.4'	S 20°34.8'	28°34.9'	N 0°55.4'			
8	54°37.1'	298°28.3'	N 21°15.8'	342°56.7'	N 17°49.2'	120°42.6'	S 21°57.3'	113°27.1'	S 20°34.9'	43°36.1'	N 0°55.9'			
9	69°39.6'	313°28.2'	N 21°15.3'	357°57.5'	N 17°49.4'	135°45.4'	S 21°57.4'	128°29.7'	S 20°34.9'	58°37.4'	N 0°56.4'			
10	84°42.0'	328°28.2'	N 21°14.9'	12°58.4'	N 17°49.6'	150°48.2'	S 21°57.4'	143°32.4'	S 20°35.0'	73°38.6'	N 0°56.8'			
11	99°44.5'	343°28.1'	N 21°14.5'	27°59.3'	N 17°49.8'	165°51.0'	S 21°57.5'	158°35.0'	S 20°35.0'	88°39.8'	N 0°57.3'			
12	114°47.0'	358°28.1'	N 21°14.1'	43°00.1'	N 17°50.0'	180°53.8'	S 21°57.5'	173°37.7'	S 20°35.0'	103°41.0'	N 0°57.8'			
13	129°49.4'	13°28.0'	N 21°13.7'	58°01.0'	N 17°50.3'	195°56.6'	S 21°57.6'	188°40.3'	S 20°35.1'	118°42.2'	N 0°58.2'			
14	144°51.9'	28°28.0'	N 21°13.2'	73°01.8'	N 17°50.5'	210°59.4'	S 21°57.7'	203°43.0'	S 20°35.1'	133°43.4'	N 0°58.7'			
15	159°54.4'	43°27.9'	N 21°12.8'	88°02.7'	N 17°50.7'	226°02.2'	S 21°57.7'	218°45.6'	S 20°35.2'	148°44.6'	N 0°59.2'			
16	174°56.8'	58°27.9'	N 21°12.4'	103°03.5'	N 17°50.9'	241°05.0'	S 21°57.8'	233°48.3'	S 20°35.2'	163°45.8'	N 0°59.7'			
17	189°59.3'	73°27.8'	N 21°12.0'	118°04.4'	N 17°51.1'	256°07.8'	S 21°57.8'	248°51.0'	S 20°35.3'	178°47.0'	N 1°00.1'			
18	205°01.8'	88°27.8'	N 21°11.6'	133°05.2'	N 17°51.3'	271°10.6'	S 21°57.9'	263°53.6'	S 20°35.3'	193°48.3'	N 1°00.6'			
19	220°04.2'	103°27.7'	N 21°11.1'	148°06.1'	N 17°51.5'	286°13.4'	S 21°57.9'	278°56.3'	S 20°35.3'	208°49.5'	N 1°01.1'			
20	235°06.7'	118°27.6'	N 21°10.7'	163°06.9'	N 17°51.8'	301°16.2'	S 21°58.0'	293°58.9'	S 20°35.4'	223°50.7'	N 1°01.5'			
21	250°09.2'	133°27.6'	N 21°10.3'	178°07.8'	N 17°52.0'	316°19.0'	S 21°58.1'	309°01.6'	S 20°35.4'	238°51.9'	N 1°02.0'			
22	265°11.6'	148°27.5'	N 21°09.8'	193°08.6'	N 17°52.2'	331°21.8'	S 21°58.1'	324°04.2'	S 20°35.5'	253°53.1'	N 1°02.5'			
23	280°14.1'	163°27.5'	N 21°09.4'	208°09.5'	N 17°52.4'	346°24.6'	S 21°58.2'	339°06.9'	S 20°35.5'	268°54.3'	N 1°02.9'			
		SD 15.7' d -0.4'		v 0.9' d 0.2'		v 2.8' d -0.1'		v 2.7' d -0.0'		v 1.2' d 0.5'				
Mer. pass.		12 h 6 m 8 s		9 h 8 m		23 h 54 m		0 h 28 m		5 h 6 m				

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Sun	-Betelgeuse	-Venus	-Aldebaran	+Mars	+Achernar	+Fomalhaut	+Altair
0	238°37.8'	N 16°51.9'	12.9'	9.1'	55.0'	56°41.3'	33°56.1'	15°06.6'	13°02.0'	46°54.2'	78°23.1'	82°36.3'	113°14.6'
1	253°09.7'	N 17°01.1'	12.8'	9.1'	55.1'	56°13.1'	33°29.5'	14°38.1'	12°32.7'	47°23.5'	78°40.3'	83°05.7'	113°39.6'
2	267°41.5'	N 17°10.1'	12.7'	9.0'	55.1'	55°44.8'	33°02.9'	14°09.6'	12°03.5'	47°52.7'	78°57.5'	83°35.1'	114°04.6'
3	282°13.3'	N 17°19.1'	12.7'	8.9'	55.1'	55°16.5'	32°36.5'	13°41.2'	11°34.5'	48°22.1'	79°14.8'	84°04.5'	114°29.5'
4	296°44.9'	N 17°28.1'	12.6'	8.9'	55.1'	54°48.2'	32°10.1'	13°12.7'	11°05.5'	48°51.4'	79°32.1'	84°34.0'	114°54.4'
5	311°16.5'	N 17°36.9'	12.5'	8.8'	55.1'	54°19.9'	31°43.9'	12°44.4'	10°36.7'	49°20.8'	79°49.5'	85°03.5'	115°19.3'
6	325°48.0'	N 17°45.7'	12.4'	8.7'	55.2'	53°51.6'	31°17.7'	12°16.0'	10°08.0'	49°50.2'	80°06.9'	85°33.0'	115°44.2'
7	340°19.5'	N 17°54.4'	12.4'	8.6'	55.2'	53°23.2'	30°51.7'	11°47.7'	9°39.5'	50°19.6'	80°24.4'	86°02.5'	116°09.1'
8	354°50.8'	N 18°03.1'	12.3'	8.6'	55.2'	52°54.8'	30°25.7'	11°19.5'	9°11.3'	50°49.1'	80°41.9'	86°32.1'	116°33.9'
9	9°22.1'	N 18°11.7'	12.2'	8.5'	55.2'	52°26.4'	29°59.9'	10°51.3'	8°43.3'	51°18.6'	80°59.4'	87°01.7'	116°58.7'
10	23°53.3'	N 18°20.1'	12.1'	8.4'	55.3'	51°57.9'	29°34.2'	10°23.2'	8°15.6'	51°48.1'	81°17.1'	87°31.3'	117°23.5'
11	38°24.4'	N 18°28.6'	12.0'	8.3'	55.3'	51°29.4'	29°08.6'	9°55.2'	7°48.3'	52°17.7'	81°34.7'	88°01.0'	117°48.2'
12	52°55.5'	N 18°36.9'	12.0'	8.3'	55.3'	51°00.9'	28°43.1'	9°27.4'	7°21.5'	52°47.2'	81°52.4'	88°30.7'	118°12.9'
13	67°26.4'	N 18°45.2'	11.9'	8.2'	55.3'	50°32.4'	28°17.8'	8°59.6'	6°55.1'	53°16.8'	82°10.1'	89°00.4'	118°37.6'
14	81°57.3'	N 18°53.3'	11.8'	8.1'	55.3'	50°03.8'	27°52.7'	8°32.0'		53°46.5'	82°27.9'	89°30.1'	119°02.3'
15	96°28.1'	N 19°01.4'	11.7'	8.0'	55.4'	49°35.2'	27°27.7'	8°04.6'		54°16.1'	82°45.7'	89°59.9'	119°26.9'
16	110°58.8'	N 19°09.4'	11.6'	7.9'	55.4'	49°06.6'	27°02.8'	7°37.5'		54°45.8'	83°03.6'	90°29.7'	119°51.5'
17	125°29.5'	N 19°17.4'	11.6'	7.8'	55.4'	48°37.9'	26°38.2'	7°10.6'		55°15.6'	83°21.5'	90°59.5'	
18	140°00.0'	N 19°25.2'	11.5'	7.8'	55.4'	48°09.2'	26°13.7'	6°44.0'		55°45.3'	83°39.5'	91°29.3'	
19	154°30.5'	N 19°33.0'	11.4'	7.7'	55.5'	47°40.5'	25°49.4'	6°17.9'		56°15.1'	83°57.4'	91°59.2'	
20	169°00.9'	N 19°40.6'	11.3'	7.6'	55.5'	47°11.8'	25°25.4'	5°52.3'		56°44.9'	84°15.4'	92°29.1'	
21	183°31.2'	N 19°48.2'	11.2'	7.5'	55.5'	46°43.0'	25°01.6'			57°14.8'	84°33.5'	92°59.0'	
22	198°01.4'	N 19°55.7'	11.1'	7.4'	55.5'	46°14.2'	24°38.0'			57°44.7'	84°51.6'	93°29.0'	
23	212°31.6'	N 20°03.1'	11.1'	7.3'	55.6'	45°45.4'	24°14.6'			58°14.6'	85°09.7'	93°59.0'	
Mer. pass.		8 h 21 m SD 15.0'		phase 23%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.3'	N 7°24.6'
Deneb	+1.2	49°27.7'	N 45°21.2'	Acrux	+0.8	173°04.1'	S 63°12.9'	Capella	+0.1	280°27.6'	N 46°00.9'
Altair	+0.8	62°03.1'	N 8°55.4'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.6'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°55.0'	N 5°10.4'	Polaris	+2.0	315°49.7'	N 89°20.6'
Rigil Kent	-0.0	139°44.9'	S 60°55.3'	Adhara	+1.5	255°09.1'	S 28°60.0'	Achernar	+0.5	335°23.1'	S 57°07.8'
Arcturus	-0.1	145°51.2'	N 19°04.8'	Sirius	-1.4	258°29.8'	S 16°44.6'				
Hadar	+0.6	148°40.9'	S 60°28.4'	Canopus	-0.6	263°54.5'	S 52°42.3'				

Friday 17 July 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	295°16.5'	178°27.4'	N 21°09.0'	223°10.3'	N 17°52.6'	1°27.4'	S 21°58.2'	354°09.5'	S 20°35.5'	283°55.5'	N 1°03.4'			
1	310°19.0'	193°27.4'	N 21°08.6'	238°11.1'	N 17°52.8'	16°30.3'	S 21°58.3'	9°12.2'	S 20°35.6'	298°56.8'	N 1°03.9'			
2	325°21.5'	208°27.3'	N 21°08.1'	253°12.0'	N 17°53.1'	31°33.1'	S 21°58.3'	24°14.9'	S 20°35.6'	313°58.0'	N 1°04.3'			
3	340°23.9'	223°27.3'	N 21°07.7'	268°12.8'	N 17°53.3'	46°35.9'	S 21°58.4'	39°17.5'	S 20°35.7'	328°59.2'	N 1°04.8'			
4	355°26.4'	238°27.2'	N 21°07.3'	283°13.6'	N 17°53.5'	61°38.7'	S 21°58.5'	54°20.2'	S 20°35.7'	344°00.4'	N 1°05.3'			
5	10°28.9'	253°27.2'	N 21°06.8'	298°14.5'	N 17°53.7'	76°41.5'	S 21°58.5'	69°22.8'	S 20°35.8'	359°01.6'	N 1°05.7'			
6	25°31.3'	268°27.1'	N 21°06.4'	313°15.3'	N 17°53.9'	91°44.3'	S 21°58.6'	84°25.5'	S 20°35.8'	14°02.8'	N 1°06.2'			
7	40°33.8'	283°27.1'	N 21°06.0'	328°16.1'	N 17°54.2'	106°47.1'	S 21°58.6'	99°28.1'	S 20°35.8'	29°04.1'	N 1°06.7'			
8	55°36.3'	298°27.0'	N 21°05.6'	343°16.9'	N 17°54.4'	121°49.9'	S 21°58.7'	114°30.8'	S 20°35.9'	44°05.3'	N 1°07.1'			
9	70°38.7'	313°27.0'	N 21°05.1'	358°17.7'	N 17°54.6'	136°52.7'	S 21°58.7'	129°33.4'	S 20°35.9'	59°06.5'	N 1°07.6'			
10	85°41.2'	328°26.9'	N 21°04.7'	13°18.5'	N 17°54.8'	151°55.5'	S 21°58.8'	144°36.1'	S 20°36.0'	74°07.7'	N 1°08.1'			
11	100°43.7'	343°26.9'	N 21°04.2'	28°19.4'	N 17°55.0'	166°58.3'	S 21°58.9'	159°38.8'	S 20°36.0'	89°08.9'	N 1°08.5'			
12	115°46.1'	358°26.8'	N 21°03.8'	43°20.2'	N 17°55.3'	182°01.1'	S 21°58.9'	174°41.4'	S 20°36.0'	104°10.2'	N 1°09.0'			
13	130°48.6'	13°26.8'	N 21°03.4'	58°21.0'	N 17°55.5'	197°03.9'	S 21°59.0'	189°44.1'	S 20°36.1'	119°11.4'	N 1°09.4'			
14	145°51.0'	28°26.7'	N 21°02.9'	73°21.8'	N 17°55.7'	212°06.7'	S 21°59.0'	204°46.7'	S 20°36.1'	134°12.6'	N 1°09.9'			
15	160°53.5'	43°26.7'	N 21°02.5'	88°22.6'	N 17°55.9'	227°09.5'	S 21°59.1'	219°49.4'	S 20°36.2'	149°13.8'	N 1°10.4'			
16	175°56.0'	58°26.6'	N 21°02.1'	103°23.4'	N 17°56.1'	242°12.3'	S 21°59.1'	234°52.0'	S 20°36.2'	164°15.1'	N 1°10.8'			
17	190°58.4'	73°26.6'	N 21°01.6'	118°24.2'	N 17°56.4'	257°15.1'	S 21°59.2'	249°54.7'	S 20°36.3'	179°16.3'	N 1°11.3'			
18	206°00.9'	88°26.5'	N 21°01.2'	133°25.0'	N 17°56.6'	272°17.9'	S 21°59.3'	264°57.4'	S 20°36.3'	194°17.5'	N 1°11.8'			
19	221°03.4'	103°26.5'	N 21°00.7'	148°25.8'	N 17°56.8'	287°20.8'	S 21°59.3'	280°00.0'	S 20°36.3'	209°18.7'	N 1°12.2'			
20	236°05.8'	118°26.4'	N 21°00.3'	163°26.6'	N 17°57.0'	302°23.6'	S 21°59.4'	295°02.7'	S 20°36.4'	224°19.9'	N 1°12.7'			
21	251°08.3'	133°26.4'	N 20°59.9'	178°27.4'	N 17°57.3'	317°26.4'	S 21°59.4'	310°05.3'	S 20°36.4'	239°21.2'	N 1°13.2'			
22	266°10.8'	148°26.3'	N 20°59.4'	193°28.2'	N 17°57.5'	332°29.2'	S 21°59.5'	325°08.0'	S 20°36.5'	254°22.4'	N 1°13.6'			
23	281°13.2'	163°26.3'	N 20°59.0'	208°29.0'	N 17°57.7'	347°32.0'	S 21°59.5'	340°10.6'	S 20°36.5'	269°23.6'	N 1°14.1'			
		SD 15.7' d -0.4'		v 0.8' d 0.2'		v 2.8' d -0.1'		v 2.7' d -0.0'		v 1.2' d 0.5'				
Mer. pass.		12 h 6 m 13 s		9 h 7 m		23 h 50 m		0 h 23 m		5 h 4 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Sun	-Capella	-Betelgeuse	-Venus	+Aldebaran	+Mars	+Achernar	+Fomalhaut
0	227°01.6'	N 20°10.4'	11.0'	7.2'	55.6'	45°16.5'	27°27.2'	23°51.5'			58°44.5'	85°27.9'	94°29.0'
1	241°31.6'	N 20°17.6'	10.9'	7.1'	55.6'	44°47.6'	27°11.5'	23°28.7'			59°14.5'	85°46.1'	94°59.0'
2	256°01.5'	N 20°24.8'	10.8'	7.0'	55.6'	44°18.7'		23°06.1'			59°44.5'	86°04.3'	95°29.1'
3	270°31.3'	N 20°31.8'	10.7'	6.9'	55.7'	43°49.8'		22°43.9'			60°14.5'	86°22.5'	95°59.2'
4	285°01.1'	N 20°38.7'	10.6'	6.8'	55.7'	43°20.8'		22°22.0'			60°44.6'	86°40.8'	96°29.3'
5	299°30.7'	N 20°45.6'	10.6'	6.7'	55.7'	42°51.8'		22°00.5'			61°14.7'	86°59.1'	96°59.5'
6	314°00.3'	N 20°52.3'	10.5'	6.6'	55.7'	42°22.7'		21°39.3'			61°44.8'	87°17.5'	97°29.7'
7	328°29.8'	N 20°59.0'	10.4'	6.5'	55.8'	41°53.6'		21°18.5'			62°15.0'	87°35.9'	97°59.9'
8	342°59.2'	N 21°05.5'	10.3'	6.4'	55.8'	41°24.5'		20°58.0'			62°45.2'	87°54.2'	98°30.1'
9	357°28.5'	N 21°11.9'	10.2'	6.3'	55.8'	40°55.4'		20°38.1'			63°15.5'	88°12.7'	99°00.4'
10	11°57.7'	N 21°18.3'	10.2'	6.2'	55.9'	40°26.2'		20°18.5'			63°45.7'	88°31.1'	99°30.7'
11	26°26.9'	N 21°24.5'	10.1'	6.1'	55.9'			19°59.5'		6°47.3'	64°16.0'	88°49.6'	100°01.0'
12	40°55.9'	N 21°30.7'	10.0'	6.0'	55.9'			19°40.9'		7°14.0'	64°46.4'	89°08.1'	100°31.4'
13	55°24.9'	N 21°36.7'	9.9'	5.9'	55.9'			19°22.9'		7°41.4'	65°16.7'	89°26.6'	101°01.8'
14	69°53.8'	N 21°42.6'	9.8'	5.8'	56.0'			19°05.4'		8°09.4'	65°47.2'	89°45.1'	101°32.2'
15	84°22.7'	N 21°48.4'	9.7'	5.7'	56.0'			18°48.5'		8°37.8'	66°17.6'	90°03.7'	102°02.6'
16	98°51.4'	N 21°54.2'	9.7'	5.6'	56.0'			18°32.2'	5°49.3'	9°06.6'	66°48.1'	90°22.3'	102°33.0'
17	113°20.1'	N 21°59.8'	9.6'	5.5'	56.0'				6°15.4'	9°35.7'	67°18.6'	90°40.9'	103°03.5'
18	127°48.7'	N 22°05.3'	9.5'	5.4'	56.1'				6°42.0'	10°05.2'	67°49.1'	90°59.5'	103°34.0'
19	142°17.2'	N 22°10.6'	9.4'	5.3'	56.1'				7°09.2'	10°34.9'	68°19.7'	91°18.1'	104°04.6'
20	156°45.6'	N 22°15.9'	9.3'	5.2'	56.1'				7°36.8'	11°04.8'	68°50.3'	91°36.8'	104°35.1'
21	171°13.9'	N 22°21.1'	9.3'	5.0'	56.2'				8°04.8'	11°35.0'	69°21.0'	91°55.4'	105°05.7'
22	185°42.2'	N 22°26.1'	9.2'	4.9'	56.2'				8°33.1'	12°05.3'	69°51.6'	92°14.1'	105°36.4'
23	200°10.4'	N 22°31.0'	9.1'	4.8'	56.2'				9°01.6'	12°35.8'	70°22.4'	92°32.8'	106°07.0'
Mer. pass.		9 h 10 m SD 15.2'		phase 15%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.3'	N 7°24.6'
Deneb	+1.2	49°27.7'	N 45°21.2'	Acrux	+0.8	173°04.1'	S 63°12.9'	Capella	+0.1	280°27.6'	N 46°00.9'
Altair	+0.8	62°03.1'	N 8°55.4'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.6'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°55.0'	N 5°10.4'	Polaris	+2.0	315°49.1'	N 89°20.6'
Rigil Kent	-0.0	139°44.9'	S 60°55.3'	Adhara	+1.5	255°09.1'	S 28°60.0'	Achernar	+0.5	335°23.1'	S 57°07.8'
Arcturus	-0.1	145°51.2'	N 19°04.8'	Sirius	-1.4	258°29.8'	S 16°44.6'				
Hadar	+0.6	148°40.9'	S 60°28.4'	Canopus	-0.6	263°54.5'	S 52°42.3'				

Saturday 18 July 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	296°15.7'	178°26.2'	N 20°58.5'	223°29.8'	N 17°57.9'	2°34.8'	S 21°59.6'	355°13.3'	S 20°36.5'	284°24.9'	N 1°14.5'			
1	311°18.2'	193°26.2'	N 20°58.1'	238°30.5'	N 17°58.2'	17°37.6'	S 21°59.7'	10°15.9'	S 20°36.6'	299°26.1'	N 1°15.0'			
2	326°20.6'	208°26.1'	N 20°57.7'	253°31.3'	N 17°58.4'	32°40.4'	S 21°59.7'	25°18.6'	S 20°36.6'	314°27.3'	N 1°15.5'			
3	341°23.1'	223°26.1'	N 20°57.2'	268°32.1'	N 17°58.6'	47°43.2'	S 21°59.8'	40°21.3'	S 20°36.7'	329°28.5'	N 1°15.9'			
4	356°25.5'	238°26.1'	N 20°56.8'	283°32.9'	N 17°58.8'	62°46.0'	S 21°59.8'	55°23.9'	S 20°36.7'	344°29.8'	N 1°16.4'			
5	11°28.0'	253°26.0'	N 20°56.3'	298°33.7'	N 17°59.1'	77°48.8'	S 21°59.9'	70°26.6'	S 20°36.7'	359°31.0'	N 1°16.8'			
6	26°30.5'	268°26.0'	N 20°55.9'	313°34.4'	N 17°59.3'	92°51.6'	S 21°59.9'	85°29.2'	S 20°36.8'	14°32.2'	N 1°17.3'			
7	41°32.9'	283°25.9'	N 20°55.4'	328°35.2'	N 17°59.5'	107°54.4'	S 21°60.0'	100°31.9'	S 20°36.8'	29°33.5'	N 1°17.8'			
8	56°35.4'	298°25.9'	N 20°55.0'	343°36.0'	N 17°59.7'	122°57.2'	S 22°00.1'	115°34.5'	S 20°36.9'	44°34.7'	N 1°18.2'			
9	71°37.9'	313°25.8'	N 20°54.5'	358°36.7'	N 17°60.0'	138°00.0'	S 22°00.1'	130°37.2'	S 20°36.9'	59°35.9'	N 1°18.7'			
10	86°40.3'	328°25.8'	N 20°54.1'	13°37.5'	N 18°00.2'	153°02.8'	S 22°00.2'	145°39.9'	S 20°37.0'	74°37.1'	N 1°19.1'			
11	101°42.8'	343°25.7'	N 20°53.6'	28°38.3'	N 18°00.4'	168°05.6'	S 22°00.2'	160°42.5'	S 20°37.0'	89°38.4'	N 1°19.6'			
12	116°45.3'	358°25.7'	N 20°53.2'	43°39.0'	N 18°00.6'	183°08.4'	S 22°00.3'	175°45.2'	S 20°37.0'	104°39.6'	N 1°20.1'			
13	131°47.7'	13°25.7'	N 20°52.7'	58°39.8'	N 18°00.9'	198°11.2'	S 22°00.3'	190°47.8'	S 20°37.1'	119°40.8'	N 1°20.5'			
14	146°50.2'	28°25.6'	N 20°52.3'	73°40.6'	N 18°01.1'	213°14.0'	S 22°00.4'	205°50.5'	S 20°37.1'	134°42.1'	N 1°21.0'			
15	161°52.7'	43°25.6'	N 20°51.8'	88°41.3'	N 18°01.3'	228°16.8'	S 22°00.4'	220°53.1'	S 20°37.2'	149°43.3'	N 1°21.4'			
16	176°55.1'	58°25.5'	N 20°51.4'	103°42.1'	N 18°01.6'	243°19.7'	S 22°00.5'	235°55.8'	S 20°37.2'	164°44.5'	N 1°21.9'			
17	191°57.6'	73°25.5'	N 20°50.9'	118°42.8'	N 18°01.8'	258°22.5'	S 22°00.6'	250°58.5'	S 20°37.2'	179°45.8'	N 1°22.4'			
18	207°00.0'	88°25.4'	N 20°50.5'	133°43.6'	N 18°02.0'	273°25.3'	S 22°00.6'	266°01.1'	S 20°37.3'	194°47.0'	N 1°22.8'			
19	222°02.5'	103°25.4'	N 20°50.0'	148°44.3'	N 18°02.2'	288°28.1'	S 22°00.7'	281°03.8'	S 20°37.3'	209°48.3'	N 1°23.3'			
20	237°05.0'	118°25.3'	N 20°49.6'	163°45.1'	N 18°02.5'	303°30.9'	S 22°00.7'	296°06.4'	S 20°37.4'	224°49.5'	N 1°23.7'			
21	252°07.4'	133°25.3'	N 20°49.1'	178°45.8'	N 18°02.7'	318°33.7'	S 22°00.8'	311°09.1'	S 20°37.4'	239°50.7'	N 1°24.2'			
22	267°09.9'	148°25.3'	N 20°48.7'	193°46.5'	N 18°02.9'	333°36.5'	S 22°00.8'	326°11.7'	S 20°37.5'	254°52.0'	N 1°24.6'			
23	282°12.4'	163°25.2'	N 20°48.2'	208°47.3'	N 18°03.2'	348°39.3'	S 22°00.9'	341°14.4'	S 20°37.5'	269°53.2'	N 1°25.1'			
		SD 15.7' d -0.5'		v 0.8' d 0.2'		v 2.8' d -0.1'		v 2.7' d -0.0'		v 1.2' d 0.5'				
Mer. pass.		12 h 6 m 18 s		9 h 6 m		23 h 45 m		0 h 19 m		5 h 2 m				

h	Moon					Lunar distance						
	GHA	dec	v	d	HP	-Procyon	+Venus	+Aldebaran	+Rigel	+Mars	+Achernar	+Fomalhaut
0	214°38.5'	N 22°35.9'	9.0'	4.7'	56.2'	36°42.5'	+9°30.3'	13°06.5'		70°53.1'	92°51.5'	106°37.7'
1	229°06.6'	N 22°40.5'	9.0'	4.6'	56.3'	36°15.3'	9°59.3'	13°37.3'		71°23.9'	93°10.2'	107°08.4'
2	243°34.5'	N 22°45.1'	8.9'	4.5'	56.3'	35°48.1'	10°28.4'	14°08.2'		71°54.7'	93°28.9'	107°39.1'
3	258°02.4'	N 22°49.6'	8.8'	4.3'	56.3'	35°21.0'	10°57.7'	14°39.3'		72°25.6'	93°47.6'	108°09.8'
4	272°30.2'	N 22°53.9'	8.7'	4.2'	56.4'	34°54.1'	11°27.1'	15°10.5'		72°56.5'	94°06.3'	108°40.6'
5	286°58.0'	N 22°58.1'	8.7'	4.1'	56.4'	34°27.2'	11°56.7'	15°41.7'		73°27.4'	94°25.1'	109°11.4'
6	301°25.6'	N 23°02.2'	8.6'	4.0'	56.4'	34°00.4'	12°26.4'	16°13.1'		73°58.4'	94°43.8'	109°42.2'
7	315°53.2'	N 23°06.2'	8.5'	3.8'	56.4'	33°33.8'	12°56.2'	16°44.5'		74°29.4'	95°02.6'	110°13.0'
8	330°20.7'	N 23°10.1'	8.5'	3.7'	56.5'	33°07.2'	13°26.0'	17°16.1'		75°00.4'	95°21.3'	110°43.9'
9	344°48.2'	N 23°13.8'	8.4'	3.6'	56.5'	32°40.8'	13°56.0'	17°47.7'		75°31.5'	95°40.0'	111°14.8'
10	359°15.6'	N 23°17.4'	8.3'	3.5'	56.5'	32°14.6'	14°26.1'	18°19.4'		76°02.6'	95°58.8'	111°45.7'
11	13°42.9'	N 23°20.8'	8.2'	3.3'	56.6'	31°48.4'	14°56.2'	18°51.2'		76°33.7'	96°17.5'	112°16.6'
12	28°10.1'	N 23°24.2'	8.2'	3.2'	56.6'	31°22.4'	15°26.4'	19°23.0'		77°04.9'	96°36.3'	112°47.5'
13	42°37.3'	N 23°27.4'	8.1'	3.1'	56.6'	30°56.6'	15°56.7'	19°54.9'		77°36.1'	96°55.0'	113°18.5'
14	57°04.4'	N 23°30.5'	8.0'	3.0'	56.6'	30°31.0'	16°27.1'	20°26.9'		78°07.4'	97°13.8'	113°49.5'
15	71°31.5'	N 23°33.4'	8.0'	2.8'	56.7'	30°05.5'	16°57.5'	20°59.0'		78°38.6'	97°32.5'	114°20.5'
16	85°58.4'	N 23°36.3'	7.9'	2.7'	56.7'	29°40.2'	17°28.0'	21°31.1'		79°10.0'	97°51.2'	114°51.6'
17	100°25.4'	N 23°39.0'	7.9'	2.6'	56.7'	29°15.1'	17°58.6'	22°03.2'	34°08.9'	79°41.3'	98°09.9'	115°22.6'
18	114°52.2'	N 23°41.5'	7.8'	2.4'	56.8'	28°50.1'	18°29.2'	22°35.5'	34°24.1'	80°12.7'	98°28.6'	115°53.7'
19	129°19.0'	N 23°43.9'	7.7'	2.3'	56.8'	28°25.5'	18°59.9'	23°07.7'	34°39.7'	80°44.1'	98°47.3'	116°24.8'
20	143°45.7'	N 23°46.2'	7.7'	2.2'	56.8'	28°01.0'	19°30.6'	23°40.1'	34°55.7'	81°15.6'	99°06.0'	116°55.9'
21	158°12.4'	N 23°48.4'	7.6'	2.0'	56.8'	27°36.8'	20°01.4'	24°12.5'	35°12.0'	81°47.1'	99°24.6'	117°27.0'
22	172°39.0'	N 23°50.4'	7.6'	1.9'	56.9'	27°12.8'	20°32.2'	24°44.9'	35°28.6'	82°18.6'	99°43.3'	117°58.1'
23	187°05.6'	N 23°52.3'	7.5'	1.7'	56.9'	26°49.1'	21°03.1'	25°17.4'	35°45.6'	82°50.2'	100°01.9'	118°29.3'
Mer. pass.		10 h 3 m SD 15.3'		phase 8%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.3'	N 7°24.6'
Deneb	+1.2	49°27.7'	N 45°21.2'	Acrux	+0.8	173°04.1'	S 63°12.9'	Capella	+0.1	280°27.6'	N 46°00.9'
Altair	+0.8	62°03.1'	N 8°55.4'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.6'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°54.9'	N 5°10.4'	Polaris	+2.0	315°48.6'	N 89°20.6'
Rigil Kent	-0.0	139°45.0'	S 60°55.3'	Adhara	+1.5	255°09.1'	S 28°60.0'	Achernar	+0.5	335°23.0'	S 57°07.8'
Arcturus	-0.1	145°51.2'	N 19°04.8'	Sirius	-1.4	258°29.7'	S 16°44.6'				
Hadar	+0.6	148°40.9'	S 60°28.4'	Canopus	-0.6	263°54.5'	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	297°14.8'	178°25.2'	N 20°47.7'	223°48.0'	N 18°03.4'	3°42.1'	S 22°01.0'	356°17.0'	S 20°37.5'	284°54.4'	N 1°25.5'			
1	312°17.3'	193°25.1'	N 20°47.3'	238°48.8'	N 18°03.6'	18°44.9'	S 22°01.0'	11°19.7'	S 20°37.6'	299°55.7'	N 1°26.0'			
2	327°19.8'	208°25.1'	N 20°46.8'	253°49.5'	N 18°03.9'	33°47.7'	S 22°01.1'	26°22.4'	S 20°37.6'	314°56.9'	N 1°26.5'			
3	342°22.2'	223°25.1'	N 20°46.4'	268°50.2'	N 18°04.1'	48°50.5'	S 22°01.1'	41°25.0'	S 20°37.7'	329°58.2'	N 1°26.9'			
4	357°24.7'	238°25.0'	N 20°45.9'	283°51.0'	N 18°04.3'	63°53.3'	S 22°01.2'	56°27.7'	S 20°37.7'	344°59.4'	N 1°27.4'			
5	12°27.2'	253°25.0'	N 20°45.4'	298°51.7'	N 18°04.6'	78°56.1'	S 22°01.2'	71°30.3'	S 20°37.7'	0°00.6'	N 1°27.8'			
6	27°29.6'	268°24.9'	N 20°45.0'	313°52.4'	N 18°04.8'	93°58.9'	S 22°01.3'	86°33.0'	S 20°37.8'	15°01.9'	N 1°28.3'			
7	42°32.1'	283°24.9'	N 20°44.5'	328°53.1'	N 18°05.0'	109°01.7'	S 22°01.3'	101°35.6'	S 20°37.8'	30°03.1'	N 1°28.7'			
8	57°34.5'	298°24.9'	N 20°44.1'	343°53.9'	N 18°05.2'	124°04.5'	S 22°01.4'	116°38.3'	S 20°37.9'	45°04.4'	N 1°29.2'			
9	72°37.0'	313°24.8'	N 20°43.6'	358°54.6'	N 18°05.5'	139°07.3'	S 22°01.5'	131°41.0'	S 20°37.9'	60°05.6'	N 1°29.6'			
10	87°39.5'	328°24.8'	N 20°43.1'	13°55.3'	N 18°05.7'	154°10.1'	S 22°01.5'	146°43.6'	S 20°38.0'	75°06.9'	N 1°30.1'			
11	102°41.9'	343°24.7'	N 20°42.7'	28°56.0'	N 18°05.9'	169°12.9'	S 22°01.6'	161°46.3'	S 20°38.0'	90°08.1'	N 1°30.5'			
12	117°44.4'	358°24.7'	N 20°42.2'	43°56.7'	N 18°06.2'	184°15.7'	S 22°01.6'	176°48.9'	S 20°38.0'	105°09.3'	N 1°31.0'			
13	132°46.9'	13°24.7'	N 20°41.7'	58°57.5'	N 18°06.4'	199°18.5'	S 22°01.7'	191°51.6'	S 20°38.1'	120°10.6'	N 1°31.5'			
14	147°49.3'	28°24.6'	N 20°41.3'	73°58.2'	N 18°06.6'	214°21.3'	S 22°01.7'	206°54.2'	S 20°38.1'	135°11.8'	N 1°31.9'			
15	162°51.8'	43°24.6'	N 20°40.8'	88°58.9'	N 18°06.9'	229°24.1'	S 22°01.8'	221°56.9'	S 20°38.2'	150°13.1'	N 1°32.4'			
16	177°54.3'	58°24.5'	N 20°40.3'	103°59.6'	N 18°07.1'	244°27.0'	S 22°01.9'	236°59.6'	S 20°38.2'	165°14.3'	N 1°32.8'			
17	192°56.7'	73°24.5'	N 20°39.9'	119°00.3'	N 18°07.3'	259°29.8'	S 22°01.9'	252°02.2'	S 20°38.2'	180°15.6'	N 1°33.3'			
18	207°59.2'	88°24.5'	N 20°39.4'	134°01.0'	N 18°07.6'	274°32.6'	S 22°02.0'	267°04.9'	S 20°38.3'	195°16.8'	N 1°33.7'			
19	223°01.6'	103°24.4'	N 20°38.9'	149°01.7'	N 18°07.8'	289°35.4'	S 22°02.0'	282°07.5'	S 20°38.3'	210°18.1'	N 1°34.2'			
20	238°04.1'	118°24.4'	N 20°38.5'	164°02.4'	N 18°08.1'	304°38.2'	S 22°02.1'	297°10.2'	S 20°38.4'	225°19.3'	N 1°34.6'			
21	253°06.6'	133°24.4'	N 20°38.0'	179°03.1'	N 18°08.3'	319°41.0'	S 22°02.1'	312°12.8'	S 20°38.4'	240°20.6'	N 1°35.1'			
22	268°09.0'	148°24.3'	N 20°37.5'	194°03.8'	N 18°08.5'	334°43.8'	S 22°02.2'	327°15.5'	S 20°38.4'	255°21.8'	N 1°35.5'			
23	283°11.5'	163°24.3'	N 20°37.1'	209°04.5'	N 18°08.8'	349°46.6'	S 22°02.2'	342°18.2'	S 20°38.5'	270°23.1'	N 1°36.0'			
		SD 15.7' d -0.5'		v 0.7' d 0.2'		v 2.8' d -0.1'		v 2.7' d -0.0'		v 1.2' d 0.5'				
Mer. pass.		12 h 6 m 22 s		9 h 4 m		23 h 41 m		0 h 15 m		5 h 0 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Procyon	+Betelgeuse	+Venus	+Capella	+Aldebaran	+Rigel	+Mars	+Achernar
0	201°32.1'	N 23°54.0'	7.5'	1.6'	56.9'	26°25.6'		21°34.0'		25°49.9'	36°02.9'	83°21.8'	100°20.5'
1	215°58.6'	N 23°55.7'	7.4'	1.5'	57.0'	26°02.5'		17°55.2'	22°05.0'	26°22.5'	36°20.6'	83°53.5'	100°39.1'
2	230°25.0'	N 23°57.1'	7.3'	1.3'	57.0'	25°39.6'		18°10.4'	22°36.0'	26°55.2'	36°38.6'	84°25.1'	100°57.7'
3	244°51.3'	N 23°58.5'	7.3'	1.2'	57.0'	25°17.1'		18°26.4'	23°07.1'	26°22.2'	27°27.9'	36°56.9'	101°16.2'
4	259°17.6'	N 23°59.7'	7.2'	1.1'	57.0'	24°54.9'		18°43.1'	23°38.2'	26°37.3'	28°00.6'	37°15.5'	101°34.8'
5	273°43.8'	N 24°00.7'	7.2'	0.9'	57.1'	24°33.1'		19°00.5'	24°09.3'	26°52.9'	28°33.4'	37°34.4'	101°53.3'
6	288°10.0'	N 24°01.6'	7.2'	0.8'	57.1'	24°11.7'		19°18.6'	24°40.5'	27°09.0'	29°06.2'	37°53.6'	102°11.7'
7	302°36.2'	N 24°02.4'	7.1'	0.6'	57.1'	23°50.7'		19°37.3'	25°11.8'	27°25.6'	29°39.1'	38°13.1'	102°30.2'
8	317°02.3'	N 24°03.0'	7.1'	0.5'	57.2'	23°30.0'		19°56.7'	25°43.1'	27°42.7'	30°12.0'	38°32.9'	102°48.6'
9	331°28.4'	N 24°03.5'	7.0'	0.3'	57.2'	23°09.9'		20°16.7'	26°14.4'	28°00.2'	30°45.0'	38°53.0'	103°07.0'
10	345°54.4'	N 24°03.8'	7.0'	0.2'	57.2'	22°50.1'		20°37.2'	26°45.8'	28°18.2'	31°18.0'	39°13.3'	103°25.3'
11	0°20.4'	N 24°04.0'	6.9'	0.1'	57.2'	22°30.9'		20°58.3'	27°17.2'	28°36.6'	31°51.0'	39°33.9'	103°43.7'
12	14°46.3'	N 24°04.1'	6.9'	-0.1'	57.3'	22°12.2'		21°19.8'	27°48.6'	28°55.5'	32°24.1'	39°54.8'	104°01.9'
13	29°12.3'	N 24°04.0'	6.9'	-0.2'	57.3'	21°54.0'		21°41.9'	28°20.1'	29°14.7'	32°57.2'	40°15.9'	104°20.2'
14	43°38.1'	N 24°03.7'	6.8'	-0.4'	57.3'	21°36.3'		22°04.5'	28°51.6'	29°34.4'	33°30.4'	40°37.3'	104°38.4'
15	58°04.0'	N 24°03.4'	6.8'	-0.5'	57.4'	21°19.2'		22°27.5'	29°23.2'	29°54.4'	34°03.6'	40°58.9'	104°56.5'
16	72°29.8'	N 24°02.8'	6.8'	-0.7'	57.4'	21°02.8'		22°50.9'	29°54.8'	30°14.9'	34°36.9'	41°20.7'	105°14.7'
17	86°55.5'	N 24°02.2'	6.7'	-0.8'	57.4'	20°47.0'		23°14.8'	30°26.5'	30°35.7'	35°10.2'	41°42.8'	105°32.7'
18	101°21.3'	N 24°01.3'	6.7'	-1.0'	57.4'			23°39.0'	30°58.1'	30°56.9'	35°43.5'	42°05.1'	105°50.8'
19	115°47.0'	N 24°00.4'	6.7'	-1.1'	57.5'			24°03.7'	31°29.9'	31°18.4'	36°16.9'	42°27.7'	106°08.7'
20	130°12.7'	N 23°59.2'	6.7'	-1.3'	57.5'			24°28.6'	32°01.6'	31°40.2'	36°50.3'	42°50.4'	106°26.7'
21	144°38.4'	N 23°58.0'	6.6'	-1.4'	57.5'			24°54.0'	32°33.4'	32°02.4'	37°23.7'	43°13.4'	106°44.5'
22	159°04.0'	N 23°56.6'	6.6'	-1.6'	57.6'			25°19.6'	33°05.2'	32°24.9'	37°57.2'	43°36.6'	107°02.4'
23	173°29.6'	N 23°55.0'	6.6'	-1.7'	57.6'								
Mer. pass.		10 h 59 m SD 15.5'		phase 4%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.3'	N 7°24.6'
Deneb	+1.2	49°27.7'	N 45°21.2'	Acrux	+0.8	173°04.2'	S 63°12.9'	Capella	+0.1	280°27.6'	N 46°00.9'
Altair	+0.8	62°03.1'	N 8°55.4'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.6'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°54.9'	N 5°10.4'	Polaris	+2.0	315°48.0'	N 89°20.6'
Rigel Kent	-0.0	139°45.0'	S 60°55.3'	Adhara	+1.5	255°09.1'	S 28°60.0'	Achernar	+0.5	335°23.0'	S 57°07.8'
Arcturus	-0.1	145°51.2'	N 19°04.8'	Sirius	-1.4	258°29.7'	S 16°44.6'				
Hadar	+0.6	148°40.9'	S 60°28.4'	Canopus	-0.6	263°54.5'	S 52°42.3'				

Monday 20 July 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec		GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	298°14.0'	178°24.3'	N 20°36.6'	224°05.2'	N 18°09.0'		4°49.4'	S 22°02.3'	357°20.8'	S 20°38.5'	285°24.3'	N 1°36.4'		
1	313°16.4'	193°24.2'	N 20°36.1'	239°05.9'	N 18°09.2'		19°52.2'	S 22°02.4'	12°23.5'	S 20°38.6'	300°25.6'	N 1°36.9'		
2	328°18.9'	208°24.2'	N 20°35.6'	254°06.6'	N 18°09.5'		34°55.0'	S 22°02.4'	27°26.1'	S 20°38.6'	315°26.8'	N 1°37.3'		
3	343°21.4'	223°24.2'	N 20°35.2'	269°07.2'	N 18°09.7'		49°57.8'	S 22°02.5'	42°28.8'	S 20°38.7'	330°28.1'	N 1°37.8'		
4	358°23.8'	238°24.1'	N 20°34.7'	284°07.9'	N 18°09.9'		65°00.6'	S 22°02.5'	57°31.4'	S 20°38.7'	345°29.3'	N 1°38.2'		
5	13°26.3'	253°24.1'	N 20°34.2'	299°08.6'	N 18°10.2'		80°03.4'	S 22°02.6'	72°34.1'	S 20°38.7'	0°30.6'	N 1°38.7'		
6	28°28.8'	268°24.0'	N 20°33.7'	314°09.3'	N 18°10.4'		95°06.2'	S 22°02.6'	87°36.8'	S 20°38.8'	15°31.8'	N 1°39.1'		
7	43°31.2'	283°24.0'	N 20°33.3'	329°10.0'	N 18°10.6'		110°09.0'	S 22°02.7'	102°39.4'	S 20°38.8'	30°33.1'	N 1°39.6'		
8	58°33.7'	298°24.0'	N 20°32.8'	344°10.6'	N 18°10.9'		125°11.8'	S 22°02.7'	117°42.1'	S 20°38.9'	45°34.3'	N 1°40.0'		
9	73°36.1'	313°23.9'	N 20°32.3'	359°11.3'	N 18°11.1'		140°14.6'	S 22°02.8'	132°44.7'	S 20°38.9'	60°35.6'	N 1°40.5'		
10	88°38.6'	328°23.9'	N 20°31.8'	14°12.0'	N 18°11.4'		155°17.4'	S 22°02.9'	147°47.4'	S 20°38.9'	75°36.9'	N 1°40.9'		
11	103°41.1'	343°23.9'	N 20°31.3'	29°12.7'	N 18°11.6'		170°20.2'	S 22°02.9'	162°50.0'	S 20°39.0'	90°38.1'	N 1°41.4'		
12	118°43.5'	358°23.8'	N 20°30.9'	44°13.3'	N 18°11.8'		185°23.0'	S 22°03.0'	177°52.7'	S 20°39.0'	105°39.4'	N 1°41.8'		
13	133°46.0'	13°23.8'	N 20°30.4'	59°14.0'	N 18°12.1'		200°25.8'	S 22°03.0'	192°55.3'	S 20°39.1'	120°40.6'	N 1°42.3'		
14	148°48.5'	28°23.8'	N 20°29.9'	74°14.7'	N 18°12.3'		215°28.6'	S 22°03.1'	207°58.0'	S 20°39.1'	135°41.9'	N 1°42.7'		
15	163°50.9'	43°23.7'	N 20°29.4'	89°15.3'	N 18°12.5'		230°31.4'	S 22°03.1'	223°00.7'	S 20°39.2'	150°43.1'	N 1°43.1'		
16	178°53.4'	58°23.7'	N 20°28.9'	104°16.0'	N 18°12.8'		245°34.2'	S 22°03.2'	238°03.3'	S 20°39.2'	165°44.4'	N 1°43.6'		
17	193°55.9'	73°23.7'	N 20°28.5'	119°16.7'	N 18°13.0'		260°37.0'	S 22°03.2'	253°06.0'	S 20°39.2'	180°45.7'	N 1°44.0'		
18	208°58.3'	88°23.7'	N 20°28.0'	134°17.3'	N 18°13.3'		275°39.8'	S 22°03.3'	268°08.6'	S 20°39.3'	195°46.9'	N 1°44.5'		
19	224°00.8'	103°23.6'	N 20°27.5'	149°18.0'	N 18°13.5'		290°42.6'	S 22°03.4'	283°11.3'	S 20°39.3'	210°48.2'	N 1°44.9'		
20	239°03.3'	118°23.6'	N 20°27.0'	164°18.6'	N 18°13.7'		305°45.4'	S 22°03.4'	298°13.9'	S 20°39.4'	225°49.4'	N 1°45.4'		
21	254°05.7'	133°23.6'	N 20°26.5'	179°19.3'	N 18°14.0'		320°48.2'	S 22°03.5'	313°16.6'	S 20°39.4'	240°50.7'	N 1°45.8'		
22	269°08.2'	148°23.5'	N 20°26.0'	194°19.9'	N 18°14.2'		335°51.0'	S 22°03.5'	328°19.3'	S 20°39.4'	255°52.0'	N 1°46.3'		
23	284°10.6'	163°23.5'	N 20°25.6'	209°20.6'	N 18°14.5'		350°53.8'	S 22°03.6'	343°21.9'	S 20°39.5'	270°53.2'	N 1°46.7'		
		SD 15.7' d -0.5'		v 0.7' d 0.2'			v 2.8' d -0.1'		v 2.7' d -0.0'		v 1.3' d 0.4'			
Mer. pass.		12 h 6 m 25 s		9 h 3 m			23 h 36 m		0 h 11 m		4 h 58 m			

h	Moon				
	GHA	dec	v	d	HP
0	187°55.2'	N 23°53.3'	6.6'	-1.9'	57.6'
1	202°20.8'	N 23°51.4'	6.6'	-2.0'	57.6'
2	216°46.4'	N 23°49.4'	6.5'	-2.2'	57.7'
3	231°11.9'	N 23°47.3'	6.5'	-2.3'	57.7'
4	245°37.4'	N 23°45.0'	6.5'	-2.5'	57.7'
5	260°03.0'	N 23°42.5'	6.5'	-2.6'	57.7'
6	274°28.5'	N 23°39.9'	6.5'	-2.8'	57.8'
7	288°54.0'	N 23°37.2'	6.5'	-2.9'	57.8'
8	303°19.5'	N 23°34.3'	6.5'	-3.0'	57.8'
9	317°44.9'	N 23°31.2'	6.5'	-3.2'	57.8'
10	332°10.4'	N 23°28.0'	6.5'	-3.3'	57.9'
11	346°35.9'	N 23°24.7'	6.5'	-3.5'	57.9'
12	1°01.4'	N 23°21.2'	6.5'	-3.6'	57.9'
13	15°26.8'	N 23°17.5'	6.5'	-3.8'	58.0'
14	29°52.3'	N 23°13.8'	6.5'	-3.9'	58.0'
15	44°17.8'	N 23°09.8'	6.5'	-4.1'	58.0'
16	58°43.3'	N 23°05.7'	6.5'	-4.2'	58.0'
17	73°08.8'	N 23°01.5'	6.5'	-4.4'	58.1'
18	87°34.3'	N 22°57.1'	6.5'	-4.5'	58.1'
19	101°59.8'	N 22°52.6'	6.5'	-4.7'	58.1'
20	116°25.3'	N 22°47.9'	6.5'	-4.8'	58.1'
21	130°50.8'	N 22°43.1'	6.5'	-5.0'	58.2'
22	145°16.3'	N 22°38.1'	6.6'	-5.1'	58.2'
23	159°41.9'	N 22°33.0'	6.6'	-5.3'	58.2'
Mer. pass.	11 h 56 m SD 15.7' phase 1%				

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.3'	N 7°24.6'
Deneb	+1.2	49°27.7'	N 45°21.2'	Acrux	+0.8	173°04.2'	S 63°12.9'	Capella	+0.1	280°27.6'	N 46°00.9'
Altair	+0.8	62°03.1'	N 8°55.4'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.6'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°54.9'	N 5°10.4'	Polaris	+2.0	315°47.5'	N 89°20.6'
Rigil Kent	-0.0	139°45.0'	S 60°55.3'	Adhara	+1.5	255°09.1'	S 28°60.0'	Achernar	+0.5	335°23.0'	S 57°07.8'
Arcturus	-0.1	145°51.2'	N 19°04.8'	Sirius	-1.4	258°29.7'	S 16°44.6'				
Hadar	+0.6	148°40.9'	S 60°28.4'	Canopus	-0.6	263°54.5'	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	299°13.1'	178°23.5'	N 20°25.1'	224°21.2'	N 18°14.7'		5°56.6'	S 22°03.6'	358°24.6'	S 20°39.5'	285°54.5'	N 1°47.2'		
1	314°15.6'	193°23.4'	N 20°24.6'	239°21.9'	N 18°14.9'		20°59.4'	S 22°03.7'	13°27.2'	S 20°39.6'	300°55.8'	N 1°47.6'		
2	329°18.0'	208°23.4'	N 20°24.1'	254°22.5'	N 18°15.2'		36°02.2'	S 22°03.7'	28°29.9'	S 20°39.6'	315°57.0'	N 1°48.0'		
3	344°20.5'	223°23.4'	N 20°23.6'	269°23.2'	N 18°15.4'		51°05.0'	S 22°03.8'	43°32.5'	S 20°39.6'	330°58.3'	N 1°48.5'		
4	359°23.0'	238°23.4'	N 20°23.1'	284°23.8'	N 18°15.6'		66°07.8'	S 22°03.9'	58°35.2'	S 20°39.7'	345°59.5'	N 1°48.9'		
5	14°25.4'	253°23.3'	N 20°22.6'	299°24.4'	N 18°15.9'		81°10.6'	S 22°03.9'	73°37.9'	S 20°39.7'	1°00.8'	N 1°49.4'		
6	29°27.9'	268°23.3'	N 20°22.1'	314°25.1'	N 18°16.1'		96°13.4'	S 22°04.0'	88°40.5'	S 20°39.8'	16°02.1'	N 1°49.8'		
7	44°30.4'	283°23.3'	N 20°21.7'	329°25.7'	N 18°16.4'		111°16.2'	S 22°04.0'	103°43.2'	S 20°39.8'	31°03.3'	N 1°50.3'		
8	59°32.8'	298°23.2'	N 20°21.2'	344°26.3'	N 18°16.6'		126°19.0'	S 22°04.1'	118°45.8'	S 20°39.9'	46°04.6'	N 1°50.7'		
9	74°35.3'	313°23.2'	N 20°20.7'	359°27.0'	N 18°16.8'		141°21.9'	S 22°04.1'	133°48.5'	S 20°39.9'	61°05.9'	N 1°51.1'		
10	89°37.8'	328°23.2'	N 20°20.2'	14°27.6'	N 18°17.1'		156°24.7'	S 22°04.2'	148°51.1'	S 20°39.9'	76°07.1'	N 1°51.6'		
11	104°40.2'	343°23.2'	N 20°19.7'	29°28.2'	N 18°17.3'		171°27.5'	S 22°04.2'	163°53.8'	S 20°40.0'	91°08.4'	N 1°52.0'		
12	119°42.7'	358°23.1'	N 20°19.2'	44°28.8'	N 18°17.6'		186°30.3'	S 22°04.3'	178°56.5'	S 20°40.0'	106°09.7'	N 1°52.5'		
13	134°45.1'	13°23.1'	N 20°18.7'	59°29.5'	N 18°17.8'		201°33.1'	S 22°04.4'	193°59.1'	S 20°40.1'	121°11.0'	N 1°52.9'		
14	149°47.6'	28°23.1'	N 20°18.2'	74°30.1'	N 18°18.1'		216°35.9'	S 22°04.4'	209°01.8'	S 20°40.1'	136°12.2'	N 1°53.3'		
15	164°50.1'	43°23.1'	N 20°17.7'	89°30.7'	N 18°18.3'		231°38.7'	S 22°04.5'	224°04.4'	S 20°40.1'	151°13.5'	N 1°53.8'		
16	179°52.5'	58°23.0'	N 20°17.2'	104°31.3'	N 18°18.5'		246°41.5'	S 22°04.5'	239°07.1'	S 20°40.2'	166°14.8'	N 1°54.2'		
17	194°55.0'	73°23.0'	N 20°16.7'	119°31.9'	N 18°18.8'		261°44.3'	S 22°04.6'	254°09.7'	S 20°40.2'	181°16.0'	N 1°54.7'		
18	209°57.5'	88°23.0'	N 20°16.2'	134°32.6'	N 18°19.0'		276°47.1'	S 22°04.6'	269°12.4'	S 20°40.3'	196°17.3'	N 1°55.1'		
19	224°59.9'	103°22.9'	N 20°15.7'	149°33.2'	N 18°19.3'		291°49.9'	S 22°04.7'	284°15.1'	S 20°40.3'	211°18.6'	N 1°55.5'		
20	240°02.4'	118°22.9'	N 20°15.2'	164°33.8'	N 18°19.5'		306°52.7'	S 22°04.7'	299°17.7'	S 20°40.3'	226°19.9'	N 1°56.0'		
21	255°04.9'	133°22.9'	N 20°14.7'	179°34.4'	N 18°19.7'		321°55.5'	S 22°04.8'	314°20.4'	S 20°40.4'	241°21.1'	N 1°56.4'		
22	270°07.3'	148°22.9'	N 20°14.2'	194°35.0'	N 18°20.0'		336°58.3'	S 22°04.8'	329°23.0'	S 20°40.4'	256°22.4'	N 1°56.9'		
23	285°09.8'	163°22.9'	N 20°13.7'	209°35.6'	N 18°20.2'		352°01.1'	S 22°04.9'	344°25.7'	S 20°40.5'	271°23.7'	N 1°57.3'		
		SD 15.7' d -0.5'		v 0.6' d 0.2'			v 2.8' d -0.1'		v 2.7' d -0.0'		v 1.3' d 0.4'			
Mer. pass.		12 h 6 m 28 s		9 h 2 m			23 h 32 m		0 h 6 m		4 h 56 m			

h	Moon					Lunar distance						
	GHA	dec	v	d	HP	-Antares	-Rigil Kent	-Hadar	-Acrux	-Spica	-Arcturus	-Regulus
0	174°07.5'	N 22°27.8'	6.6'	-5.4'	58.2'							
1	188°33.1'	N 22°22.4'	6.6'	-5.5'	58.2'							
2	202°58.7'	N 22°16.8'	6.6'	-5.7'	58.3'							
3	217°24.3'	N 22°11.1'	6.6'	-5.8'	58.3'							
4	231°49.9'	N 22°05.3'	6.7'	-6.0'	58.3'							
5	246°15.6'	N 21°59.3'	6.7'	-6.1'	58.3'							
6	260°41.3'	N 21°53.2'	6.7'	-6.3'	58.4'							
7	275°07.0'	N 21°47.0'	6.7'	-6.4'	58.4'							
8	289°32.8'	N 21°40.6'	6.8'	-6.5'	58.4'							
9	303°58.5'	N 21°34.0'	6.8'	-6.7'	58.4'							
10	318°24.3'	N 21°27.4'	6.8'	-6.8'	58.5'							
11	332°50.2'	N 21°20.6'	6.9'	-6.9'	58.5'							
12	347°16.0'	N 21°13.6'	6.9'	-7.1'	58.5'		107°24.2'	103°05.1'	94°32.6'	75°13.3'	75°47.4'	21°13.6'
13	1°41.9'	N 21°06.5'	6.9'	-7.2'	58.5'		107°00.7'	102°42.0'	94°13.5'	74°38.7'	75°16.3'	20°39.5'
14	16°07.8'	N 20°59.3'	7.0'	-7.4'	58.5'	119°58.7'	106°37.2'	102°18.9'	93°54.3'	74°04.1'	74°45.3'	20°05.4'
15	30°33.8'	N 20°52.0'	7.0'	-7.5'	58.6'	119°24.1'	106°13.6'	101°55.8'	93°35.2'	73°29.5'	74°14.2'	19°31.3'
16	44°59.8'	N 20°44.5'	7.0'	-7.6'	58.6'	118°49.4'	105°50.0'	101°32.5'	93°16.0'	72°54.9'	73°43.1'	18°57.2'
17	59°25.8'	N 20°36.8'	7.1'	-7.8'	58.6'	118°14.8'	105°26.2'	101°09.2'	92°56.8'	72°20.2'	73°12.1'	18°23.2'
18	73°51.9'	N 20°29.1'	7.1'	-7.9'	58.6'	117°40.1'	105°02.4'	100°45.9'	92°37.6'	71°45.5'	72°41.0'	17°49.2'
19	88°18.0'	N 20°21.2'	7.1'	-8.0'	58.6'	117°05.4'	104°38.6'	100°22.5'	92°18.3'	71°10.8'	72°10.0'	17°15.2'
20	102°44.2'	N 20°13.2'	7.2'	-8.1'	58.7'	116°30.6'	104°14.7'	99°59.1'	91°59.0'	70°36.1'	71°38.9'	16°41.2'
21	117°10.3'	N 20°05.0'	7.2'	-8.3'	58.7'	115°55.9'	103°50.7'	99°35.6'	91°39.7'	70°01.4'	71°07.9'	16°07.4'
22	131°36.6'	N 19°56.8'	7.3'	-8.4'	58.7'	115°21.1'	103°26.6'	99°12.0'	91°20.4'	69°26.6'	70°36.8'	15°33.5'
23	146°02.8'	N 19°48.4'	7.3'	-8.5'	58.7'	114°46.3'	103°02.5'	98°48.4'	91°01.1'	68°51.8'	70°05.8'	14°59.8'
Mer. pass.		12 h 53 m SD 15.9'		phase 0%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.3'	N 7°24.6'
Deneb	+1.2	49°27.7'	N 45°21.2'	Acrux	+0.8	173°04.2'	S 63°12.9'	Capella	+0.1	280°27.6'	N 46°00.9'
Altair	+0.8	62°03.1'	N 8°55.4'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.6'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°54.9'	N 5°10.4'	Polaris	+2.0	315°47.0'	N 89°20.6'
Rigil Kent	-0.0	139°45.0'	S 60°55.3'	Adhara	+1.5	255°09.0'	S 28°60.0'	Achernar	+0.5	335°23.0'	S 57°07.8'
Arcturus	-0.1	145°51.2'	N 19°04.8'	Sirius	-1.4	258°29.7'	S 16°44.6'				
Hadar	+0.6	148°40.9'	S 60°28.4'	Canopus	-0.6	263°54.5'	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	300°12.3'	178°22.8'	N 20°13.2'	224°36.2'	N 18°20.5'	7°03.9'	S 22°05.0'	359°28.3'	S 20°40.5'	286°25.0'	N 1°57.7'			
1	315°14.7'	193°22.8'	N 20°12.7'	239°36.8'	N 18°20.7'	22°06.7'	S 22°05.0'	14°31.0'	S 20°40.6'	301°26.2'	N 1°58.2'			
2	330°17.2'	208°22.8'	N 20°12.2'	254°37.4'	N 18°21.0'	37°09.5'	S 22°05.1'	29°33.7'	S 20°40.6'	316°27.5'	N 1°58.6'			
3	345°19.6'	223°22.8'	N 20°11.7'	269°38.0'	N 18°21.2'	52°12.3'	S 22°05.1'	44°36.3'	S 20°40.6'	331°28.8'	N 1°59.1'			
4	0°22.1'	238°22.7'	N 20°11.2'	284°38.6'	N 18°21.4'	67°15.1'	S 22°05.2'	59°39.0'	S 20°40.7'	346°30.1'	N 1°59.5'			
5	15°24.6'	253°22.7'	N 20°10.7'	299°39.2'	N 18°21.7'	82°17.9'	S 22°05.2'	74°41.6'	S 20°40.7'	1°31.3'	N 1°59.9'			
6	30°27.0'	268°22.7'	N 20°10.2'	314°39.8'	N 18°21.9'	97°20.7'	S 22°05.3'	89°44.3'	S 20°40.8'	16°32.6'	N 2°00.4'			
7	45°29.5'	283°22.7'	N 20°09.7'	329°40.4'	N 18°22.2'	112°23.5'	S 22°05.3'	104°46.9'	S 20°40.8'	31°33.9'	N 2°00.8'			
8	60°32.0'	298°22.6'	N 20°09.2'	344°41.0'	N 18°22.4'	127°26.3'	S 22°05.4'	119°49.6'	S 20°40.8'	46°35.2'	N 2°01.2'			
9	75°34.4'	313°22.6'	N 20°08.7'	359°41.6'	N 18°22.6'	142°29.1'	S 22°05.5'	134°52.3'	S 20°40.9'	61°36.5'	N 2°01.7'			
10	90°36.9'	328°22.6'	N 20°08.2'	14°42.1'	N 18°22.9'	157°31.9'	S 22°05.5'	149°54.9'	S 20°40.9'	76°37.7'	N 2°02.1'			
11	105°39.4'	343°22.6'	N 20°07.7'	29°42.7'	N 18°23.1'	172°34.7'	S 22°05.6'	164°57.6'	S 20°41.0'	91°39.0'	N 2°02.5'			
12	120°41.8'	358°22.6'	N 20°07.2'	44°43.3'	N 18°23.4'	187°37.5'	S 22°05.6'	180°00.2'	S 20°41.0'	106°40.3'	N 2°03.0'			
13	135°44.3'	13°22.5'	N 20°06.7'	59°43.9'	N 18°23.6'	202°40.3'	S 22°05.7'	195°02.9'	S 20°41.0'	121°41.6'	N 2°03.4'			
14	150°46.7'	28°22.5'	N 20°06.2'	74°44.5'	N 18°23.9'	217°43.1'	S 22°05.7'	210°05.5'	S 20°41.1'	136°42.9'	N 2°03.8'			
15	165°49.2'	43°22.5'	N 20°05.7'	89°45.1'	N 18°24.1'	232°45.9'	S 22°05.8'	225°08.2'	S 20°41.1'	151°44.2'	N 2°04.3'			
16	180°51.7'	58°22.5'	N 20°05.1'	104°45.6'	N 18°24.3'	247°48.7'	S 22°05.8'	240°10.9'	S 20°41.2'	166°45.4'	N 2°04.7'			
17	195°54.1'	73°22.5'	N 20°04.6'	119°46.2'	N 18°24.6'	262°51.5'	S 22°05.9'	255°13.5'	S 20°41.2'	181°46.7'	N 2°05.1'			
18	210°56.6'	88°22.4'	N 20°04.1'	134°46.8'	N 18°24.8'	277°54.3'	S 22°05.9'	270°16.2'	S 20°41.3'	196°48.0'	N 2°05.6'			
19	225°59.1'	103°22.4'	N 20°03.6'	149°47.3'	N 18°25.1'	292°57.1'	S 22°06.0'	285°18.8'	S 20°41.3'	211°49.3'	N 2°06.0'			
20	241°01.5'	118°22.4'	N 20°03.1'	164°47.9'	N 18°25.3'	307°59.9'	S 22°06.0'	300°21.5'	S 20°41.3'	226°50.6'	N 2°06.4'			
21	256°04.0'	133°22.4'	N 20°02.6'	179°48.5'	N 18°25.6'	323°02.6'	S 22°06.1'	315°24.1'	S 20°41.4'	241°51.9'	N 2°06.9'			
22	271°06.5'	148°22.4'	N 20°02.1'	194°49.0'	N 18°25.8'	338°05.4'	S 22°06.2'	330°26.8'	S 20°41.4'	256°53.2'	N 2°07.3'			
23	286°08.9'	163°22.3'	N 20°01.6'	209°49.6'	N 18°26.1'	353°08.2'	S 22°06.2'	345°29.5'	S 20°41.5'	271°54.4'	N 2°07.7'			
		SD 15.7' d -0.5'		v 0.6' d 0.2'		v 2.8' d -0.1'		v 2.7' d -0.0'		v 1.3' d 0.4'				
Mer. pass.		12 h 6 m 30 s		9 h 1 m		23 h 27 m		0 h 2 m		4 h 54 m				

h	Moon				Lunar distance							
	GHA	dec	v	d	HP	-Antares	-Rigil Kent	-Hadar	-Acrux	-Arcturus	-Spica	-Regulus
0	160°29.1'	N 19°39.8'	7.4'	-8.7'	58.7'	114°11.4'	102°38.3'	98°24.8'	90°41.7'	69°34.8'	68°17.0'	14°26.1'
1	174°55.5'	N 19°31.2'	7.4'	-8.8'	58.8'	113°36.6'	102°14.1'	98°01.1'	90°22.3'	69°03.8'	67°42.2'	13°52.5'
2	189°21.9'	N 19°22.4'	7.4'	-8.9'	58.8'	113°01.7'	101°49.8'	97°37.4'	90°02.9'	68°32.8'	67°07.3'	13°19.1'
3	203°48.3'	N 19°13.5'	7.5'	-9.0'	58.8'	112°26.8'	101°25.5'	97°13.6'	89°43.6'	68°01.8'	66°32.5'	12°45.7'
4	218°14.8'	N 19°04.5'	7.5'	-9.1'	58.8'	111°51.9'	101°01.1'	96°49.8'	89°24.1'	67°30.8'	65°57.6'	12°12.5'
5	232°41.3'	N 18°55.3'	7.6'	-9.3'	58.8'	111°16.9'	100°36.6'	96°26.0'	89°04.7'	66°59.9'	65°22.7'	11°39.5'
6	247°07.9'	N 18°46.0'	7.6'	-9.4'	58.8'	110°42.0'	100°12.1'	96°02.1'	88°45.3'	66°29.0'	64°47.8'	11°06.7'
7	261°34.5'	N 18°36.7'	7.7'	-9.5'	58.9'	110°07.0'	99°47.6'	95°38.2'	88°25.9'	65°58.0'	64°12.9'	10°34.1'
8	276°01.2'	N 18°27.1'	7.7'	-9.6'	58.9'	109°32.0'	99°23.0'	95°14.3'	88°06.5'	65°27.1'	63°37.9'	10°01.8'
9	290°27.9'	N 18°17.5'	7.8'	-9.7'	58.9'	108°56.9'	98°58.4'	94°50.3'	87°47.0'	64°56.3'	63°03.0'	9°29.8'
10	304°54.7'	N 18°07.8'	7.8'	-9.9'	58.9'	108°21.9'	98°33.7'	94°26.3'	87°27.6'	64°25.4'	62°28.0'	8°58.2'
11	319°21.5'	N 17°57.9'	7.9'	-10.0'	58.9'	107°46.8'	98°09.0'	94°02.3'	87°08.2'	63°54.6'	61°53.0'	8°27.0'
12	333°48.4'	N 17°48.0'	7.9'	-10.1'	58.9'	107°11.7'	97°44.3'	93°38.2'	86°48.7'	63°23.8'	61°18.0'	7°56.5'
13	348°15.3'	N 17°37.9'	8.0'	-10.2'	59.0'	106°36.6'	97°19.5'	93°14.2'	86°29.3'	62°53.0'	60°43.0'	
14	2°42.2'	N 17°27.7'	8.0'	-10.3'	59.0'	106°01.5'	96°54.7'	92°50.1'	86°09.9'	62°22.3'	60°08.0'	
15	17°09.3'	N 17°17.4'	8.1'	-10.4'	59.0'	105°26.4'	96°29.8'	92°25.9'	85°50.5'	61°51.6'	59°32.9'	
16	31°36.3'	N 17°07.0'	8.1'	-10.5'	59.0'	104°51.2'	96°04.9'	92°01.8'	85°31.1'	61°20.9'	58°57.9'	
17	46°03.4'	N 16°56.5'	8.2'	-10.6'	59.0'	104°16.0'	95°40.0'	91°37.6'	85°11.7'	60°50.3'	58°22.8'	
18	60°30.6'	N 16°45.8'	8.2'	-10.7'	59.0'	103°40.8'	95°15.1'	91°13.5'	84°52.3'	60°19.7'	57°47.7'	
19	74°57.8'	N 16°35.1'	8.3'	-10.8'	59.1'	103°05.6'	94°50.1'	90°49.3'	84°32.9'	59°49.1'	57°12.7'	
20	89°25.1'	N 16°24.3'	8.3'	-10.9'	59.1'	102°30.4'	94°25.1'	90°25.1'	84°13.6'	59°18.6'	56°37.6'	
21	103°52.4'	N 16°13.3'	8.4'	-11.0'	59.1'	101°55.1'	94°00.0'	90°00.9'	83°54.2'	58°48.1'	56°02.5'	
22	118°19.7'	N 16°02.3'	8.4'	-11.1'	59.1'	101°19.9'	93°35.0'	89°36.6'	83°34.9'	58°17.7'	55°27.3'	
23	132°47.2'	N 15°51.2'	8.5'	-11.2'	59.1'	100°44.6'	93°09.9'	89°12.4'	83°15.6'	57°47.3'	54°52.2'	
Mer. pass.		13 h 49 m SD 16.0'		phase 2%								

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.3'	N 7°24.6'
Deneb	+1.2	49°27.7'	N 45°21.2'	Acrux	+0.8	173°04.2'	S 63°12.9'	Capella	+0.1	280°27.6'	N 46°00.9'
Altair	+0.8	62°03.1'	N 8°55.5'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.6'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°54.9'	N 5°10.4'	Polaris	+2.0	315°46.5'	N 89°20.6'
Rigil Kent	-0.0	139°45.0'	S 60°55.3'	Adhara	+1.5	255°09.0'	S 28°59.9'	Achernar	+0.5	335°23.0'	S 57°07.8'
Arcturus	-0.1	145°51.2'	N 19°04.8'	Sirius	-1.4	258°29.7'	S 16°44.6'				
Hadar	+0.6	148°40.9'	S 60°28.4'	Canopus	-0.6	263°54.5'	S 52°42.3'				

Thursday 23 July 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec		GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	301°11.4'	178°22.3'	N 20°01.0'	224°50.2'	N 18°26.3'		8°11.0'	S 22°06.3'	0°32.1'	S 20°41.5'	286°55.7'	N 2°08.2'		
1	316°13.9'	193°22.3'	N 20°00.5'	239°50.7'	N 18°26.5'		23°13.8'	S 22°06.3'	15°34.8'	S 20°41.5'	301°57.0'	N 2°08.6'		
2	331°16.3'	208°22.3'	N 20°00.0'	254°51.3'	N 18°26.8'		38°16.6'	S 22°06.4'	30°37.4'	S 20°41.6'	316°58.3'	N 2°09.0'		
3	346°18.8'	223°22.3'	N 19°59.5'	269°51.8'	N 18°27.0'		53°19.4'	S 22°06.4'	45°40.1'	S 20°41.6'	331°59.6'	N 2°09.5'		
4	1°21.2'	238°22.3'	N 19°59.0'	284°52.4'	N 18°27.3'		68°22.2'	S 22°06.5'	60°42.7'	S 20°41.7'	347°00.9'	N 2°09.9'		
5	16°23.7'	253°22.2'	N 19°58.5'	299°53.0'	N 18°27.5'		83°25.0'	S 22°06.5'	75°45.4'	S 20°41.7'	2°02.2'	N 2°10.3'		
6	31°26.2'	268°22.2'	N 19°57.9'	314°53.5'	N 18°27.8'		98°27.8'	S 22°06.6'	90°48.0'	S 20°41.7'	17°03.5'	N 2°10.8'		
7	46°28.6'	283°22.2'	N 19°57.4'	329°54.1'	N 18°28.0'		113°30.6'	S 22°06.6'	105°50.7'	S 20°41.8'	32°04.8'	N 2°11.2'		
8	61°31.1'	298°22.2'	N 19°56.9'	344°54.6'	N 18°28.2'		128°33.4'	S 22°06.7'	120°53.4'	S 20°41.8'	47°06.1'	N 2°11.6'		
9	76°33.6'	313°22.2'	N 19°56.4'	359°55.1'	N 18°28.5'		143°36.2'	S 22°06.8'	135°56.0'	S 20°41.9'	62°07.4'	N 2°12.1'		
10	91°36.0'	328°22.2'	N 19°55.9'	14°55.7'	N 18°28.7'		158°39.0'	S 22°06.8'	150°58.7'	S 20°41.9'	77°08.7'	N 2°12.5'		
11	106°38.5'	343°22.2'	N 19°55.3'	29°56.2'	N 18°29.0'		173°41.8'	S 22°06.9'	166°01.3'	S 20°42.0'	92°09.9'	N 2°12.9'		
12	121°41.0'	358°22.1'	N 19°54.8'	44°56.8'	N 18°29.2'		188°44.6'	S 22°06.9'	181°04.0'	S 20°42.0'	107°11.2'	N 2°13.3'		
13	136°43.4'	13°22.1'	N 19°54.3'	59°57.3'	N 18°29.5'		203°47.4'	S 22°07.0'	196°06.6'	S 20°42.0'	122°12.5'	N 2°13.8'		
14	151°45.9'	28°22.1'	N 19°53.8'	74°57.9'	N 18°29.7'		218°50.2'	S 22°07.0'	211°09.3'	S 20°42.1'	137°13.8'	N 2°14.2'		
15	166°48.4'	43°22.1'	N 19°53.3'	89°58.4'	N 18°29.9'		233°53.0'	S 22°07.1'	226°12.0'	S 20°42.1'	152°15.1'	N 2°14.6'		
16	181°50.8'	58°22.1'	N 19°52.7'	104°58.9'	N 18°30.2'		248°55.8'	S 22°07.1'	241°14.6'	S 20°42.2'	167°16.4'	N 2°15.1'		
17	196°53.3'	73°22.1'	N 19°52.2'	119°59.5'	N 18°30.4'		263°58.6'	S 22°07.2'	256°17.3'	S 20°42.2'	182°17.7'	N 2°15.5'		
18	211°55.7'	88°22.1'	N 19°51.7'	134°60.0'	N 18°30.7'		279°01.4'	S 22°07.2'	271°19.9'	S 20°42.2'	197°19.0'	N 2°15.9'		
19	226°58.2'	103°22.0'	N 19°51.2'	150°00.5'	N 18°30.9'		294°04.2'	S 22°07.3'	286°22.6'	S 20°42.3'	212°20.3'	N 2°16.3'		
20	242°00.7'	118°22.0'	N 19°50.6'	165°01.0'	N 18°31.2'		309°07.0'	S 22°07.3'	301°25.2'	S 20°42.3'	227°21.6'	N 2°16.8'		
21	257°03.1'	133°22.0'	N 19°50.1'	180°01.6'	N 18°31.4'		324°09.8'	S 22°07.4'	316°27.9'	S 20°42.4'	242°22.9'	N 2°17.2'		
22	272°05.6'	148°22.0'	N 19°49.6'	195°02.1'	N 18°31.7'		339°12.6'	S 22°07.4'	331°30.6'	S 20°42.4'	257°24.2'	N 2°17.6'		
23	287°08.1'	163°22.0'	N 19°49.1'	210°02.6'	N 18°31.9'		354°15.4'	S 22°07.5'	346°33.2'	S 20°42.4'	272°25.5'	N 2°18.0'		
		SD 15.7' d -0.5'		v 0.5' d 0.2'			v 2.8' d -0.1'		v 2.7' d -0.0'		v 1.3' d 0.4'			
Mer. pass.		12 h 6 m 32 s		9 h 0 m			23 h 23 m		23 h 54 m		4 h 52 m			

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Vega	-Antares	-Hadar	-Acrux	-Arcturus	-Spica	+Regulus	+Sun
0	147°14.6'	N 15°39.9'	8.5'	-11.3'	59.1'		100°09.3'	88°48.2'	82°56.4'	57°17.0'	54°17.1'		
1	161°42.2'	N 15°28.6'	8.6'	-11.4'	59.1'		99°34.0'	88°23.9'	82°37.1'	56°46.7'	53°41.9'		
2	176°09.7'	N 15°17.2'	8.6'	-11.5'	59.1'		98°58.7'	87°59.7'	82°17.9'	56°16.5'	53°06.8'		
3	190°37.3'	N 15°05.7'	8.7'	-11.6'	59.2'		98°23.4'	87°35.4'	81°58.7'	55°46.4'	52°31.6'		
4	205°05.0'	N 14°54.1'	8.7'	-11.7'	59.2'		97°48.0'	87°11.2'	81°39.6'	55°16.3'	51°56.5'		
5	219°32.7'	N 14°42.4'	8.8'	-11.8'	59.2'		97°12.7'	86°46.9'	81°20.4'	54°46.2'	51°21.3'		
6	234°00.5'	N 14°30.6'	8.8'	-11.9'	59.2'		96°37.3'	86°22.7'	81°01.4'	54°16.2'	50°46.1'		
7	248°28.3'	N 14°18.7'	8.9'	-12.0'	59.2'		96°01.9'	85°58.4'	80°42.3'	53°46.3'	50°11.0'		
8	262°56.2'	N 14°06.7'	8.9'	-12.1'	59.2'		95°26.5'	85°34.2'	80°23.3'	53°16.5'	49°35.8'		
9	277°24.1'	N 13°54.7'	9.0'	-12.1'	59.2'		94°51.1'	85°10.0'	80°04.3'	52°46.7'	49°00.6'		
10	291°52.1'	N 13°42.5'	9.0'	-12.2'	59.2'		94°15.7'	84°45.8'	79°45.4'	52°17.1'	48°25.4'		
11	306°20.1'	N 13°30.3'	9.1'	-12.3'	59.2'		93°40.3'	84°21.6'	79°26.5'	51°47.4'	47°50.2'	7°55.5'	
12	320°48.2'	N 13°18.0'	9.1'	-12.4'	59.3'		93°04.9'	83°57.4'	79°07.6'	51°17.9'	47°15.0'	8°26.3'	
13	335°16.3'	N 13°05.6'	9.2'	-12.5'	59.3'		92°29.4'	83°33.2'	78°48.8'	50°48.5'	46°39.8'	8°57.7'	
14	349°44.5'	N 12°53.1'	9.2'	-12.5'	59.3'		91°54.0'	83°09.0'	78°30.0'	50°19.1'	46°04.7'	9°29.7'	
15	4°12.7'	N 12°40.6'	9.3'	-12.6'	59.3'		91°18.5'	82°44.9'	78°11.3'	49°49.9'	45°29.5'	10°02.0'	
16	18°41.0'	N 12°28.0'	9.3'	-12.7'	59.3'		90°43.0'	82°20.8'	77°52.7'	49°20.7'	44°54.3'	10°34.8'	
17	33°09.3'	N 12°15.3'	9.4'	-12.8'	59.3'	101°21.7'	90°07.6'	81°56.7'	77°34.1'	48°51.7'	44°19.1'	11°07.8'	
18	47°37.7'	N 12°02.5'	9.4'	-12.8'	59.3'	101°06.6'	89°32.1'	81°32.6'	77°15.5'	48°22.7'	43°43.9'	11°41.1'	
19	62°06.1'	N 11°49.7'	9.5'	-12.9'	59.3'	100°51.5'	88°56.6'	81°08.5'	76°57.0'	47°53.9'	43°08.7'	12°14.6'	40°23.7'
20	76°34.6'	N 11°36.8'	9.5'	-13.0'	59.3'	100°36.4'	88°21.1'	80°44.5'	76°38.6'	47°25.1'	42°33.6'	12°48.3'	40°57.0'
21	91°03.1'	N 11°23.8'	9.6'	-13.0'	59.3'	100°21.1'	87°45.6'	80°20.5'	76°20.2'	46°56.5'	41°58.4'	13°22.2'	41°30.2'
22	105°31.6'	N 11°10.7'	9.6'	-13.1'	59.3'	100°05.9'	87°10.1'	79°56.5'	76°01.9'	46°28.0'	41°23.2'	13°56.3'	42°03.5'
23	120°00.2'	N 10°57.6'	9.6'	-13.2'	59.4'	99°50.5'	86°34.5'	79°32.6'	75°43.6'	45°59.6'	40°48.1'	14°30.5'	42°36.8'
Mer. pass.		14 h 43 m SD 16.1'		phase 7%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.3'	N 7°24.6'
Deneb	+1.2	49°27.7'	N 45°21.2'	Acrux	+0.8	173°04.2'	S 63°12.9'	Capella	+0.1	280°27.5'	N 46°00.9'
Altair	+0.8	62°03.1'	N 8°55.5'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.6'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°44.0'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°54.9'	N 5°10.4'	Polaris	+2.0	315°46.1'	N 89°20.6'
Rigil Kent	-0.0	139°45.0'	S 60°55.3'	Adhara	+1.5	255°09.0'	S 28°59.9'	Achernar	+0.5	335°23.0'	S 57°07.8'
Arcturus	-0.1	145°51.2'	N 19°04.8'	Sirius	-1.4	258°29.7'	S 16°44.6'				
Hadar	+0.6	148°40.9'	S 60°28.4'	Canopus	-0.6	263°54.5'	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	302°10.5'	178°22.0'	N 19°48.5'	225°03.1'	N 18°32.1'	9°18.2'	S 22°07.6'	1°35.9'	S 20°42.5'	287°26.8'	N 2°18.5'			
1	317°13.0'	193°22.0'	N 19°48.0'	240°03.7'	N 18°32.4'	24°21.0'	S 22°07.6'	16°38.5'	S 20°42.5'	302°28.1'	N 2°18.9'			
2	332°15.5'	208°22.0'	N 19°47.5'	255°04.2'	N 18°32.6'	39°23.8'	S 22°07.7'	31°41.2'	S 20°42.6'	317°29.4'	N 2°19.3'			
3	347°17.9'	223°21.9'	N 19°46.9'	270°04.7'	N 18°32.9'	54°26.6'	S 22°07.7'	46°43.8'	S 20°42.6'	332°30.7'	N 2°19.7'			
4	2°20.4'	238°21.9'	N 19°46.4'	285°05.2'	N 18°33.1'	69°29.4'	S 22°07.8'	61°46.5'	S 20°42.6'	347°32.0'	N 2°20.2'			
5	17°22.8'	253°21.9'	N 19°45.9'	300°05.7'	N 18°33.4'	84°32.2'	S 22°07.8'	76°49.2'	S 20°42.7'	2°33.3'	N 2°20.6'			
6	32°25.3'	268°21.9'	N 19°45.3'	315°06.2'	N 18°33.6'	99°35.0'	S 22°07.9'	91°51.8'	S 20°42.7'	17°34.7'	N 2°21.0'			
7	47°27.8'	283°21.9'	N 19°44.8'	330°06.7'	N 18°33.9'	114°37.7'	S 22°07.9'	106°54.5'	S 20°42.8'	32°36.0'	N 2°21.4'			
8	62°30.2'	298°21.9'	N 19°44.3'	345°07.2'	N 18°34.1'	129°40.5'	S 22°08.0'	121°57.1'	S 20°42.8'	47°37.3'	N 2°21.9'			
9	77°32.7'	313°21.9'	N 19°43.7'	0°07.8'	N 18°34.3'	144°43.3'	S 22°08.0'	136°59.8'	S 20°42.9'	62°38.6'	N 2°22.3'			
10	92°35.2'	328°21.9'	N 19°43.2'	15°08.3'	N 18°34.6'	159°46.1'	S 22°08.1'	152°02.4'	S 20°42.9'	77°39.9'	N 2°22.7'			
11	107°37.6'	343°21.9'	N 19°42.7'	30°08.8'	N 18°34.8'	174°48.9'	S 22°08.1'	167°05.1'	S 20°42.9'	92°41.2'	N 2°23.1'			
12	122°40.1'	358°21.9'	N 19°42.1'	45°09.3'	N 18°35.1'	189°51.7'	S 22°08.2'	182°07.7'	S 20°43.0'	107°42.5'	N 2°23.6'			
13	137°42.6'	13°21.9'	N 19°41.6'	60°09.8'	N 18°35.3'	204°54.5'	S 22°08.2'	197°10.4'	S 20°43.0'	122°43.8'	N 2°24.0'			
14	152°45.0'	28°21.8'	N 19°41.1'	75°10.3'	N 18°35.6'	219°57.3'	S 22°08.3'	212°13.1'	S 20°43.1'	137°45.1'	N 2°24.4'			
15	167°47.5'	43°21.8'	N 19°40.5'	90°10.8'	N 18°35.8'	235°00.1'	S 22°08.4'	227°15.7'	S 20°43.1'	152°46.4'	N 2°24.8'			
16	182°50.0'	58°21.8'	N 19°40.0'	105°11.3'	N 18°36.0'	250°02.9'	S 22°08.4'	242°18.4'	S 20°43.1'	167°47.7'	N 2°25.2'			
17	197°52.4'	73°21.8'	N 19°39.5'	120°11.7'	N 18°36.3'	265°05.7'	S 22°08.5'	257°21.0'	S 20°43.2'	182°49.0'	N 2°25.7'			
18	212°54.9'	88°21.8'	N 19°38.9'	135°12.2'	N 18°36.5'	280°08.5'	S 22°08.5'	272°23.7'	S 20°43.2'	197°50.4'	N 2°26.1'			
19	227°57.3'	103°21.8'	N 19°38.4'	150°12.7'	N 18°36.8'	295°11.3'	S 22°08.6'	287°26.3'	S 20°43.3'	212°51.7'	N 2°26.5'			
20	242°59.8'	118°21.8'	N 19°37.8'	165°13.2'	N 18°37.0'	310°14.1'	S 22°08.6'	302°29.0'	S 20°43.3'	227°53.0'	N 2°26.9'			
21	258°02.3'	133°21.8'	N 19°37.3'	180°13.7'	N 18°37.3'	325°16.9'	S 22°08.7'	317°31.7'	S 20°43.3'	242°54.3'	N 2°27.3'			
22	273°04.7'	148°21.8'	N 19°36.8'	195°14.2'	N 18°37.5'	340°19.7'	S 22°08.7'	332°34.3'	S 20°43.4'	257°55.6'	N 2°27.8'			
23	288°07.2'	163°21.8'	N 19°36.2'	210°14.7'	N 18°37.8'	355°22.5'	S 22°08.8'	347°37.0'	S 20°43.4'	272°56.9'	N 2°28.2'			
		SD 15.7' d -0.5'		v 0.5' d 0.2'		v 2.8' d -0.1'		v 2.7' d -0.0'		v 1.3' d 0.4'				
Mer. pass.		12 h 6 m 33 s		8 h 59 m		23 h 18 m		23 h 49 m		4 h 50 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Saturn	-Altair	-Hadar	-Acrux	-Arcturus	-Spica	+Regulus	+Sun
0	134°28.9'	N 10°44.5'	9.7'	-13.2'	59.4'			79°08.7'	75°25.5'	45°31.4'	40°12.9'	15°04.8'	43°10.0'
1	148°57.6'	N 10°31.2'	9.7'	-13.3'	59.4'			78°44.8'	75°07.4'	45°03.3'	39°37.8'	15°39.2'	43°43.3'
2	163°26.3'	N 10°17.9'	9.8'	-13.4'	59.4'			78°21.0'	74°49.3'	44°35.3'	39°02.7'	16°13.7'	44°16.6'
3	177°55.1'	N 10°04.6'	9.8'	-13.4'	59.4'			77°57.2'	74°31.3'	44°07.5'	38°27.5'	16°48.3'	44°49.9'
4	192°23.9'	N 9°51.1'	9.9'	-13.5'	59.4'			77°33.4'	74°13.5'	43°39.8'	37°52.4'	17°23.0'	45°23.2'
5	206°52.7'	N 9°37.7'	9.9'	-13.5'	59.4'			77°09.7'	73°55.6'	43°12.3'	37°17.3'	17°57.8'	45°56.5'
6	221°21.6'	N 9°24.1'	9.9'	-13.6'	59.4'			76°46.1'	73°37.9'	42°44.9'	36°42.3'	18°32.6'	46°29.8'
7	235°50.6'	N 9°10.5'	10.0'	-13.6'	59.4'			76°22.4'	73°20.2'	42°17.7'	36°07.2'	19°07.5'	47°03.1'
8	250°19.5'	N 8°56.9'	10.0'	-13.7'	59.4'			75°58.9'	73°02.7'	41°50.6'	35°32.2'	19°42.4'	47°36.4'
9	264°48.6'	N 8°43.2'	10.1'	-13.7'	59.4'			75°35.3'	72°45.2'	41°23.8'	34°57.1'	20°17.4'	48°09.8'
10	279°17.6'	N 8°29.5'	10.1'	-13.8'	59.4'			75°11.9'	72°27.8'	40°57.1'	34°22.1'	20°52.4'	48°43.1'
11	293°46.7'	N 8°15.7'	10.1'	-13.8'	59.4'			74°48.5'	72°10.5'	40°30.6'	33°47.1'	21°27.5'	49°16.4'
12	308°15.8'	N 8°01.8'	10.2'	-13.9'	59.4'			74°25.1'	71°53.2'	40°04.4'	33°12.2'	22°02.6'	49°49.8'
13	322°45.0'	N 7°48.0'	10.2'	-13.9'	59.4'			74°01.8'	71°36.1'	39°38.3'	32°37.2'	22°37.8'	50°23.1'
14	337°14.2'	N 7°34.0'	10.2'	-14.0'	59.4'			73°38.6'	71°19.1'	39°12.4'	32°02.3'	23°13.0'	50°56.4'
15	351°43.4'	N 7°20.1'	10.3'	-14.0'	59.4'			73°15.4'	71°02.1'	38°46.8'	31°27.4'	23°48.2'	51°29.8'
16	6°12.7'	N 7°06.1'	10.3'	-14.1'	59.4'		119°50.8'	72°52.3'	70°45.3'	38°21.3'	30°52.6'	24°23.4'	52°03.1'
17	20°42.0'	N 6°52.0'	10.3'	-14.1'	59.4'		119°22.5'	72°29.2'	70°28.5'	37°56.2'	30°17.7'	24°58.7'	52°36.5'
18	35°11.3'	N 6°37.9'	10.4'	-14.1'	59.4'		118°25.5'	72°06.3'	70°11.9'	37°31.2'	29°42.9'	25°34.0'	53°09.8'
19	49°40.7'	N 6°23.8'	10.4'	-14.2'	59.4'		117°57.0'	71°43.4'	69°55.4'	37°06.5'	29°08.2'	26°09.3'	53°43.2'
20	64°10.1'	N 6°09.6'	10.4'	-14.2'	59.4'		117°28.3'	71°20.5'	69°38.9'	36°42.1'	28°33.5'	26°44.6'	54°16.5'
21	78°39.5'	N 5°55.4'	10.5'	-14.2'	59.4'		116°59.6'	70°57.8'	69°22.6'	36°17.9'	27°58.8'	27°20.0'	54°49.9'
22	93°08.9'	N 5°41.2'	10.5'	-14.3'	59.4'		116°30.8'	70°35.1'	69°06.4'	35°54.1'	27°24.2'	27°55.3'	55°23.2'
23	107°38.4'	N 5°26.9'	10.5'	-14.3'	59.4'	119°57.9'	116°02.0'	70°12.5'	68°50.3'	35°30.5'	26°49.6'	28°30.7'	55°56.6'
Mer. pass.		15 h 34 m SD 16.2'		phase 14%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.3'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.3'	N 7°24.6'
Deneb	+1.2	49°27.7'	N 45°21.2'	Acrux	+0.8	173°04.2'	S 63°12.9'	Capella	+0.1	280°27.5'	N 46°00.9'
Altair	+0.8	62°03.1'	N 8°55.5'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.6'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°43.9'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°54.9'	N 5°10.4'	Polaris	+2.0	315°45.7'	N 89°20.6'
Rigil Kent	-0.0	139°45.0'	S 60°55.3'	Adhara	+1.5	255°09.0'	S 28°59.9'	Achernar	+0.5	335°23.0'	S 57°07.8'
Arcturus	-0.1	145°51.2'	N 19°04.8'	Sirius	-1.4	258°29.7'	S 16°44.6'				
Hadar	+0.6	148°40.9'	S 60°28.4'	Canopus	-0.6	263°54.5'	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	303°09.7'	178°21.8'	N 19°35.7'	225°15.1'	N 18°38.0'	10°25.3'	S 22°08.8'	2°39.6'	S 20°43.5'	287°58.2'	N 2°28.6'			
1	318°12.1'	193°21.8'	N 19°35.1'	240°15.6'	N 18°38.2'	25°28.1'	S 22°08.9'	17°42.3'	S 20°43.5'	302°59.6'	N 2°29.0'			
2	333°14.6'	208°21.8'	N 19°34.6'	255°16.1'	N 18°38.5'	40°30.8'	S 22°08.9'	32°44.9'	S 20°43.5'	318°00.9'	N 2°29.4'			
3	348°17.1'	223°21.8'	N 19°34.1'	270°16.6'	N 18°38.7'	55°33.6'	S 22°09.0'	47°47.6'	S 20°43.6'	333°02.2'	N 2°29.9'			
4	3°19.5'	238°21.8'	N 19°33.5'	285°17.1'	N 18°39.0'	70°36.4'	S 22°09.0'	62°50.2'	S 20°43.6'	348°03.5'	N 2°30.3'			
5	18°22.0'	253°21.8'	N 19°33.0'	300°17.5'	N 18°39.2'	85°39.2'	S 22°09.1'	77°52.9'	S 20°43.7'	3°04.8'	N 2°30.7'			
6	33°24.4'	268°21.8'	N 19°32.4'	315°18.0'	N 18°39.5'	100°42.0'	S 22°09.1'	92°55.6'	S 20°43.7'	18°06.1'	N 2°31.1'			
7	48°26.9'	283°21.8'	N 19°31.9'	330°18.5'	N 18°39.7'	115°44.8'	S 22°09.2'	107°58.2'	S 20°43.7'	33°07.5'	N 2°31.5'			
8	63°29.4'	298°21.8'	N 19°31.3'	345°18.9'	N 18°39.9'	130°47.6'	S 22°09.3'	123°00.9'	S 20°43.8'	48°08.8'	N 2°32.0'			
9	78°31.8'	313°21.7'	N 19°30.8'	0°19.4'	N 18°40.2'	145°50.4'	S 22°09.3'	138°03.5'	S 20°43.8'	63°10.1'	N 2°32.4'			
10	93°34.3'	328°21.7'	N 19°30.2'	15°19.9'	N 18°40.4'	160°53.2'	S 22°09.4'	153°06.2'	S 20°43.9'	78°11.4'	N 2°32.8'			
11	108°36.8'	343°21.7'	N 19°29.7'	30°20.3'	N 18°40.7'	175°56.0'	S 22°09.4'	168°08.8'	S 20°43.9'	93°12.7'	N 2°33.2'			
12	123°39.2'	358°21.7'	N 19°29.1'	45°20.8'	N 18°40.9'	190°58.8'	S 22°09.5'	183°11.5'	S 20°44.0'	108°14.1'	N 2°33.6'			
13	138°41.7'	13°21.7'	N 19°28.6'	60°21.3'	N 18°41.2'	206°01.6'	S 22°09.5'	198°14.2'	S 20°44.0'	123°15.4'	N 2°34.0'			
14	153°44.2'	28°21.7'	N 19°28.0'	75°21.7'	N 18°41.4'	221°04.4'	S 22°09.6'	213°16.8'	S 20°44.0'	138°16.7'	N 2°34.4'			
15	168°46.6'	43°21.7'	N 19°27.5'	90°22.2'	N 18°41.6'	236°07.2'	S 22°09.6'	228°19.5'	S 20°44.1'	153°18.0'	N 2°34.9'			
16	183°49.1'	58°21.7'	N 19°26.9'	105°22.6'	N 18°41.9'	251°09.9'	S 22°09.7'	243°22.1'	S 20°44.1'	168°19.4'	N 2°35.3'			
17	198°51.6'	73°21.7'	N 19°26.4'	120°23.1'	N 18°42.1'	266°12.7'	S 22°09.7'	258°24.8'	S 20°44.2'	183°20.7'	N 2°35.7'			
18	213°54.0'	88°21.7'	N 19°25.8'	135°23.5'	N 18°42.4'	281°15.5'	S 22°09.8'	273°27.4'	S 20°44.2'	198°22.0'	N 2°36.1'			
19	228°56.5'	103°21.7'	N 19°25.3'	150°24.0'	N 18°42.6'	296°18.3'	S 22°09.8'	288°30.1'	S 20°44.2'	213°23.3'	N 2°36.5'			
20	243°58.9'	118°21.7'	N 19°24.7'	165°24.4'	N 18°42.9'	311°21.1'	S 22°09.9'	303°32.7'	S 20°44.3'	228°24.7'	N 2°36.9'			
21	259°01.4'	133°21.7'	N 19°24.2'	180°24.9'	N 18°43.1'	326°23.9'	S 22°09.9'	318°35.4'	S 20°44.3'	243°26.0'	N 2°37.4'			
22	274°03.9'	148°21.7'	N 19°23.6'	195°25.3'	N 18°43.3'	341°26.7'	S 22°10.0'	333°38.1'	S 20°44.4'	258°27.3'	N 2°37.8'			
23	289°06.3'	163°21.7'	N 19°23.1'	210°25.8'	N 18°43.6'	356°29.5'	S 22°10.0'	348°40.7'	S 20°44.4'	273°28.7'	N 2°38.2'			
		SD 15.7' d -0.5'		v 0.5' d 0.2'		v 2.8' d -0.1'		v 2.7' d -0.0'		v 1.3' d 0.4'				
Mer. pass.		12 h 6 m 34 s		8 h 59 m		23 h 14 m		23 h 45 m		4 h 48 m				

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Saturn	-Altair	-Hadar	-AcruX	-Arcturus	-Spica	+Regulus	+Sun
0	122°07.9'	N 5°12.7'	10.5'	-14.3'	59.5'	119°22.0'	115°33.1'	69°50.0'	68°34.3'	35°07.2'	26°15.0'	29°06.1'	56°29.9'
1	136°37.5'	N 4°58.3'	10.6'	-14.3'	59.5'	118°46.1'	115°04.1'	69°27.5'	68°18.5'	34°44.2'	25°40.6'	29°41.5'	57°03.3'
2	151°07.0'	N 4°44.0'	10.6'	-14.4'	59.5'	118°10.1'	114°35.1'	69°05.2'	68°02.7'	34°21.5'	25°06.1'	30°17.0'	57°36.6'
3	165°36.6'	N 4°29.6'	10.6'	-14.4'	59.5'	117°34.2'	114°06.0'	68°42.9'	67°47.1'	33°59.2'	24°31.8'	30°52.4'	58°10.0'
4	180°06.2'	N 4°15.2'	10.6'	-14.4'	59.5'	116°58.3'	113°36.8'	68°20.7'	67°31.6'	33°37.2'	23°57.5'	31°27.8'	58°43.3'
5	194°35.8'	N 4°00.8'	10.6'	-14.4'	59.5'	116°22.3'	113°07.6'	67°58.6'	67°16.3'	33°15.5'	23°23.2'	32°03.3'	59°16.7'
6	209°05.5'	N 3°46.4'	10.7'	-14.5'	59.5'	115°46.4'	112°38.4'	67°36.7'	67°01.0'	32°54.3'	22°49.1'	32°38.7'	59°50.0'
7	223°35.1'	N 3°31.9'	10.7'	-14.5'	59.5'	115°10.5'	112°09.1'	67°14.8'		32°33.4'	22°15.0'	33°14.2'	60°23.4'
8	238°04.8'	N 3°17.4'	10.7'	-14.5'	59.5'	114°34.6'	111°39.8'	66°53.0'		32°12.9'	21°41.1'	33°49.7'	60°56.7'
9	252°34.5'	N 3°03.0'	10.7'	-14.5'	59.5'	113°58.6'	111°10.4'	66°31.3'		31°52.8'	21°07.2'	34°25.2'	61°30.1'
10	267°04.3'	N 2°48.4'	10.7'	-14.5'	59.4'	113°22.7'	110°40.9'	66°09.7'		31°33.1'	20°33.4'	35°00.7'	62°03.4'
11	281°34.0'	N 2°33.9'	10.8'	-14.5'	59.4'	112°46.8'	110°11.5'	65°48.2'		31°13.8'	19°59.8'	35°36.2'	62°36.7'
12	296°03.8'	N 2°19.4'	10.8'	-14.5'	59.4'	112°10.9'	109°42.0'	65°26.9'		30°55.0'	19°26.2'	36°11.7'	63°10.1'
13	310°33.5'	N 2°04.8'	10.8'	-14.6'	59.4'	111°35.0'	109°12.4'	65°05.6'		30°36.6'	18°52.8'	36°47.2'	63°43.4'
14	325°03.3'	N 1°50.3'	10.8'	-14.6'	59.4'	110°59.1'	108°42.8'	64°44.5'		30°18.7'	18°19.6'	37°22.7'	64°16.7'
15	339°33.1'	N 1°35.7'	10.8'	-14.6'	59.4'	110°23.2'	108°13.2'	64°23.4'		30°01.3'	17°46.5'	37°58.2'	64°50.0'
16	354°02.9'	N 1°21.2'	10.8'	-14.6'	59.4'	109°47.3'	107°43.5'	64°02.5'		29°44.4'	17°13.6'	38°33.7'	65°23.3'
17	8°32.7'	N 1°06.6'	10.8'	-14.6'	59.4'	109°11.4'	107°13.8'	63°41.7'		29°28.0'	16°40.9'	39°09.2'	65°56.6'
18	23°02.6'	N 0°52.0'	10.8'	-14.6'	59.4'	108°35.5'	106°44.1'	63°21.1'		29°12.1'	16°08.3'	39°44.7'	66°29.9'
19	37°32.4'	N 0°37.4'	10.8'	-14.6'	59.4'	107°59.6'	106°14.3'	63°00.6'			15°36.1'	40°20.2'	67°03.2'
20	52°02.3'	N 0°22.8'	10.9'	-14.6'	59.4'	107°23.7'	105°44.6'	62°40.2'			15°04.0'	40°55.7'	67°36.5'
21	66°32.1'	N 0°08.3'	10.9'	-14.6'	59.4'	106°47.9'	105°14.8'	62°19.9'			14°32.3'	41°31.3'	68°09.8'
22	81°02.0'	S 0°06.3'	10.9'	-14.6'	59.4'	106°12.0'	104°44.9'	61°59.7'			14°00.9'	42°06.8'	68°43.1'
23	95°31.8'	S 0°20.9'	10.9'	-14.6'	59.4'	105°36.1'	104°15.1'	61°39.8'			13°29.8'	42°42.3'	69°16.4'
Mer. pass.		16 h 25 m SD 16.2'		phase 22%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.2'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.3'	N 7°24.6'
Deneb	+1.2	49°27.7'	N 45°21.2'	AcruX	+0.8	173°04.2'	S 63°12.9'	Capella	+0.1	280°27.5'	N 46°00.9'
Altair	+0.8	62°03.1'	N 8°55.5'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.6'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°43.9'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°54.9'	N 5°10.4'	Polaris	+2.0	315°45.2'	N 89°20.6'
Rigil Kent	-0.0	139°45.0'	S 60°55.3'	Adhara	+1.5	255°09.0'	S 28°59.9'	Achernar	+0.5	335°22.9'	S 57°07.8'
Arcturus	-0.1	145°51.2'	N 19°04.8'	Sirius	-1.4	258°29.7'	S 16°44.6'				
Hadar	+0.6	148°41.0'	S 60°28.4'	Canopus	-0.6	263°54.5'	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	304°08.8'	178°21.7'	N 19°22.5'	225°26.2'	N 18°43.8'	11°32.3'	S 22°10.1'	3°43.4'	S 20°44.4'	288°30.0'	N 2°38.6'			
1	319°11.3'	193°21.7'	N 19°22.0'	240°26.7'	N 18°44.1'	26°35.1'	S 22°10.1'	18°46.0'	S 20°44.5'	303°31.3'	N 2°39.0'			
2	334°13.7'	208°21.7'	N 19°21.4'	255°27.1'	N 18°44.3'	41°37.9'	S 22°10.2'	33°48.7'	S 20°44.5'	318°32.6'	N 2°39.4'			
3	349°16.2'	223°21.7'	N 19°20.8'	270°27.5'	N 18°44.6'	56°40.7'	S 22°10.2'	48°51.3'	S 20°44.6'	333°34.0'	N 2°39.8'			
4	4°18.7'	238°21.7'	N 19°20.3'	285°28.0'	N 18°44.8'	71°43.4'	S 22°10.3'	63°54.0'	S 20°44.6'	348°35.3'	N 2°40.2'			
5	19°21.1'	253°21.7'	N 19°19.7'	300°28.4'	N 18°45.0'	86°46.2'	S 22°10.3'	78°56.6'	S 20°44.6'	3°36.6'	N 2°40.7'			
6	34°23.6'	268°21.8'	N 19°19.2'	315°28.8'	N 18°45.3'	101°49.0'	S 22°10.4'	93°59.3'	S 20°44.7'	18°38.0'	N 2°41.1'			
7	49°26.1'	283°21.8'	N 19°18.6'	330°29.3'	N 18°45.5'	116°51.8'	S 22°10.5'	109°02.0'	S 20°44.7'	33°39.3'	N 2°41.5'			
8	64°28.5'	298°21.8'	N 19°18.0'	345°29.7'	N 18°45.8'	131°54.6'	S 22°10.5'	124°04.6'	S 20°44.8'	48°40.6'	N 2°41.9'			
9	79°31.0'	313°21.8'	N 19°17.5'	0°30.1'	N 18°46.0'	146°57.4'	S 22°10.6'	139°07.3'	S 20°44.8'	63°42.0'	N 2°42.3'			
10	94°33.4'	328°21.8'	N 19°16.9'	15°30.6'	N 18°46.2'	162°00.2'	S 22°10.6'	154°09.9'	S 20°44.8'	78°43.3'	N 2°42.7'			
11	109°35.9'	343°21.8'	N 19°16.4'	30°31.0'	N 18°46.5'	177°03.0'	S 22°10.7'	169°12.6'	S 20°44.9'	93°44.6'	N 2°43.1'			
12	124°38.4'	358°21.8'	N 19°15.8'	45°31.4'	N 18°46.7'	192°05.8'	S 22°10.7'	184°15.2'	S 20°44.9'	108°46.0'	N 2°43.5'			
13	139°40.8'	13°21.8'	N 19°15.2'	60°31.8'	N 18°47.0'	207°08.6'	S 22°10.8'	199°17.9'	S 20°45.0'	123°47.3'	N 2°43.9'			
14	154°43.3'	28°21.8'	N 19°14.7'	75°32.3'	N 18°47.2'	222°11.3'	S 22°10.8'	214°20.5'	S 20°45.0'	138°48.6'	N 2°44.3'			
15	169°45.8'	43°21.8'	N 19°14.1'	90°32.7'	N 18°47.4'	237°14.1'	S 22°10.9'	229°23.2'	S 20°45.0'	153°50.0'	N 2°44.8'			
16	184°48.2'	58°21.8'	N 19°13.5'	105°33.1'	N 18°47.7'	252°16.9'	S 22°10.9'	244°25.9'	S 20°45.1'	168°51.3'	N 2°45.2'			
17	199°50.7'	73°21.8'	N 19°13.0'	120°33.5'	N 18°47.9'	267°19.7'	S 22°11.0'	259°28.5'	S 20°45.1'	183°52.7'	N 2°45.6'			
18	214°53.2'	88°21.8'	N 19°12.4'	135°33.9'	N 18°48.2'	282°22.5'	S 22°11.0'	274°31.2'	S 20°45.2'	198°54.0'	N 2°46.0'			
19	229°55.6'	103°21.8'	N 19°11.9'	150°34.3'	N 18°48.4'	297°25.3'	S 22°11.1'	289°33.8'	S 20°45.2'	213°55.3'	N 2°46.4'			
20	244°58.1'	118°21.8'	N 19°11.3'	165°34.8'	N 18°48.7'	312°28.1'	S 22°11.1'	304°36.5'	S 20°45.2'	228°56.7'	N 2°46.8'			
21	260°00.5'	133°21.8'	N 19°10.7'	180°35.2'	N 18°48.9'	327°30.9'	S 22°11.2'	319°39.1'	S 20°45.3'	243°58.0'	N 2°47.2'			
22	275°03.0'	148°21.8'	N 19°10.2'	195°35.6'	N 18°49.1'	342°33.7'	S 22°11.2'	334°41.8'	S 20°45.3'	258°59.4'	N 2°47.6'			
23	290°05.5'	163°21.8'	N 19°09.6'	210°36.0'	N 18°49.4'	357°36.4'	S 22°11.3'	349°44.4'	S 20°45.4'	274°00.7'	N 2°48.0'			
		SD 15.7' d -0.6'		v 0.4' d 0.2'		v 2.8' d -0.1'		v 2.7' d -0.0'		v 1.3' d 0.4'				
Mer. pass.		12 h 6 m 33 s		8 h 58 m		23 h 10 m		23 h 41 m		4 h 46 m				

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Saturn	-Altair	-Rigel Kent	-Hadar	-Antares	-Spica	+Regulus	+Sun
0	110°01.7'	S 0°35.5'	10.9'	-14.6'	59.4'	105°00.3'	103°45.2'	63°33.3'	61°19.9'	57°33.6'	12°59.2'	43°17.8'	69°49.7'
1	124°31.6'	S 0°50.1'	10.9'	-14.6'	59.4'	104°24.4'	103°15.3'	63°11.5'	61°00.2'	56°58.2'	12°29.0'	43°53.3'	70°22.9'
2	139°01.4'	S 1°04.6'	10.9'	-14.6'	59.4'	103°48.6'	102°45.3'	62°49.7'	60°40.6'	56°22.8'	11°59.2'	44°28.8'	70°56.2'
3	153°31.3'	S 1°19.2'	10.9'	-14.5'	59.4'	103°12.7'	102°15.4'	62°28.1'	60°21.2'	55°47.5'	11°30.1'	45°04.3'	71°29.4'
4	168°01.2'	S 1°33.7'	10.9'	-14.5'	59.4'	102°36.9'	101°45.4'	62°06.6'	60°01.9'	55°12.1'	11°01.5'	45°39.8'	72°02.7'
5	182°31.1'	S 1°48.2'	10.9'	-14.5'	59.4'	102°01.1'	101°15.4'	61°45.2'	59°42.8'	54°36.7'		46°15.3'	72°35.9'
6	197°00.9'	S 2°02.8'	10.9'	-14.5'	59.4'	101°25.3'	100°45.4'	61°23.9'	59°23.9'	54°01.4'		46°50.8'	73°09.2'
7	211°30.8'	S 2°17.3'	10.9'	-14.5'	59.4'	100°49.4'	100°15.4'	61°02.8'	59°05.1'	53°26.0'		47°26.3'	73°42.4'
8	226°00.7'	S 2°31.8'	10.9'	-14.5'	59.4'	100°13.6'	99°45.4'	60°41.8'	58°46.5'	52°50.7'		48°01.8'	74°15.6'
9	240°30.5'	S 2°46.2'	10.9'	-14.5'	59.4'	99°37.8'	99°15.4'	60°21.0'	58°28.0'	52°15.4'		48°37.2'	74°48.8'
10	255°00.4'	S 3°00.7'	10.8'	-14.4'	59.4'	99°02.1'	98°45.3'	60°00.3'	58°09.7'	51°40.1'		49°12.7'	75°22.0'
11	269°30.2'	S 3°15.1'	10.8'	-14.4'	59.4'	98°26.3'	98°26.3'	59°39.8'	57°51.6'	51°04.8'		49°48.2'	75°55.2'
12	284°00.0'	S 3°29.6'	10.8'	-14.4'	59.4'	97°50.5'	97°45.2'	59°19.4'	57°33.7'	50°29.6'		50°23.6'	76°28.4'
13	298°29.9'	S 3°43.9'	10.8'	-14.4'	59.4'	97°14.7'	97°15.1'	58°59.1'	57°15.9'	49°54.3'		50°59.1'	77°01.6'
14	312°59.7'	S 3°58.3'	10.8'	-14.3'	59.3'	96°39.0'	96°45.0'	58°39.0'	56°58.4'	49°19.1'		51°34.6'	77°34.8'
15	327°29.5'	S 4°12.7'	10.8'	-14.3'	59.3'	96°03.2'	96°14.9'	58°19.1'	56°41.0'	48°43.8'		52°10.0'	78°07.9'
16	341°59.3'	S 4°27.0'	10.8'	-14.3'	59.3'	95°27.5'	95°44.9'	57°59.3'	56°23.8'	48°08.6'		52°45.5'	78°41.1'
17	356°29.1'	S 4°41.3'	10.8'	-14.3'	59.3'	94°51.8'	95°14.8'	57°39.7'	56°06.8'	47°33.4'		53°20.9'	79°14.2'
18	10°58.8'	S 4°55.5'	10.8'	-14.2'	59.3'	94°16.1'	94°44.7'	57°20.3'	55°50.0'	46°58.2'		53°56.3'	79°47.4'
19	25°28.6'	S 5°09.8'	10.7'	-14.2'	59.3'	93°40.3'	94°14.6'	57°01.0'	55°33.4'	46°23.1'		54°31.7'	80°20.5'
20	39°58.3'	S 5°24.0'	10.7'	-14.2'	59.3'	93°04.6'	93°44.5'	56°41.9'	55°16.9'	45°47.9'		55°07.1'	80°53.6'
21	54°28.0'	S 5°38.1'	10.7'	-14.1'	59.3'	92°28.9'	93°14.4'	56°23.0'	55°00.7'	45°12.8'		55°42.6'	81°26.7'
22	68°57.7'	S 5°52.3'	10.7'	-14.1'	59.3'	91°53.3'	92°44.3'	56°04.3'	54°44.7'	44°37.7'		56°18.0'	81°59.8'
23	83°27.4'	S 6°06.4'	10.7'	-14.1'	59.3'	91°17.6'	92°14.2'	55°45.7'	54°29.0'	44°02.6'		56°53.3'	82°32.9'
Mer. pass.		17 h 15 m SD 16.2'		phase 33%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.2'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.3'	N 7°24.6'
Deneb	+1.2	49°27.7'	N 45°21.2'	Acrux	+0.8	173°04.2'	S 63°12.9'	Capella	+0.1	280°27.5'	N 46°00.9'
Altair	+0.8	62°03.1'	N 8°55.5'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.6'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.3'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°43.9'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°54.9'	N 5°10.4'	Polaris	+2.0	315°44.8'	N 89°20.6'
Rigel Kent	-0.0	139°45.0'	S 60°55.3'	Adhara	+1.5	255°09.0'	S 28°59.9'	Achernar	+0.5	335°22.9'	S 57°07.8'
Arcturus	-0.1	145°51.2'	N 19°04.8'	Sirius	-1.4	258°29.7'	S 16°44.6'				
Hadar	+0.6	148°41.0'	S 60°28.4'	Canopus	-0.6	263°54.5'	S 52°42.3'				

Monday 27 July 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	305°07.9'	178°21.8'	N 19°09.0'	225°36.4'	N 18°49.6'	12°39.2'	S 22°11.3'	4°47.1'	S 20°45.4'	289°02.1'	N 2°48.4'			
1	320°10.4'	193°21.9'	N 19°08.4'	240°36.8'	N 18°49.9'	27°42.0'	S 22°11.4'	19°49.8'	S 20°45.4'	304°03.4'	N 2°48.8'			
2	335°12.9'	208°21.9'	N 19°07.9'	255°37.2'	N 18°50.1'	42°44.8'	S 22°11.4'	34°52.4'	S 20°45.5'	319°04.7'	N 2°49.2'			
3	350°15.3'	223°21.9'	N 19°07.3'	270°37.6'	N 18°50.3'	57°47.6'	S 22°11.5'	49°55.1'	S 20°45.5'	334°06.1'	N 2°49.6'			
4	5°17.8'	238°21.9'	N 19°06.7'	285°38.0'	N 18°50.6'	72°50.4'	S 22°11.5'	64°57.7'	S 20°45.6'	349°07.4'	N 2°50.0'			
5	20°20.3'	253°21.9'	N 19°06.2'	300°38.4'	N 18°50.8'	87°53.2'	S 22°11.6'	80°00.4'	S 20°45.6'	4°08.8'	N 2°50.4'			
6	35°22.7'	268°21.9'	N 19°05.6'	315°38.8'	N 18°51.0'	102°56.0'	S 22°11.6'	95°03.0'	S 20°45.6'	19°10.1'	N 2°50.9'			
7	50°25.2'	283°21.9'	N 19°05.0'	330°39.2'	N 18°51.3'	117°58.7'	S 22°11.7'	110°05.7'	S 20°45.7'	34°11.5'	N 2°51.3'			
8	65°27.7'	298°21.9'	N 19°04.4'	345°39.6'	N 18°51.5'	133°01.5'	S 22°11.7'	125°08.3'	S 20°45.7'	49°12.8'	N 2°51.7'			
9	80°30.1'	313°21.9'	N 19°03.9'	0°40.0'	N 18°51.8'	148°04.3'	S 22°11.8'	140°11.0'	S 20°45.8'	64°14.2'	N 2°52.1'			
10	95°32.6'	328°21.9'	N 19°03.3'	15°40.4'	N 18°52.0'	163°07.1'	S 22°11.8'	155°13.7'	S 20°45.8'	79°15.5'	N 2°52.5'			
11	110°35.0'	343°22.0'	N 19°02.7'	30°40.8'	N 18°52.2'	178°09.9'	S 22°11.9'	170°16.3'	S 20°45.9'	94°16.9'	N 2°52.9'			
12	125°37.5'	358°22.0'	N 19°02.1'	45°41.1'	N 18°52.5'	193°12.7'	S 22°11.9'	185°19.0'	S 20°45.9'	109°18.2'	N 2°53.3'			
13	140°40.0'	13°22.0'	N 19°01.6'	60°41.5'	N 18°52.7'	208°15.5'	S 22°12.0'	200°21.6'	S 20°45.9'	124°19.6'	N 2°53.7'			
14	155°42.4'	28°22.0'	N 19°01.0'	75°41.9'	N 18°53.0'	223°18.3'	S 22°12.0'	215°24.3'	S 20°46.0'	139°20.9'	N 2°54.1'			
15	170°44.9'	43°22.0'	N 19°00.4'	90°42.3'	N 18°53.2'	238°21.0'	S 22°12.1'	230°26.9'	S 20°46.0'	154°22.3'	N 2°54.5'			
16	185°47.4'	58°22.0'	N 18°59.8'	105°42.7'	N 18°53.4'	253°23.8'	S 22°12.1'	245°29.6'	S 20°46.1'	169°23.6'	N 2°54.9'			
17	200°49.8'	73°22.0'	N 18°59.3'	120°43.1'	N 18°53.7'	268°26.6'	S 22°12.2'	260°32.2'	S 20°46.1'	184°25.0'	N 2°55.3'			
18	215°52.3'	88°22.0'	N 18°58.7'	135°43.4'	N 18°53.9'	283°29.4'	S 22°12.2'	275°34.9'	S 20°46.1'	199°26.3'	N 2°55.7'			
19	230°54.8'	103°22.0'	N 18°58.1'	150°43.8'	N 18°54.1'	298°32.2'	S 22°12.3'	290°37.6'	S 20°46.2'	214°27.7'	N 2°56.1'			
20	245°57.2'	118°22.1'	N 18°57.5'	165°44.2'	N 18°54.4'	313°35.0'	S 22°12.3'	305°40.2'	S 20°46.2'	229°29.0'	N 2°56.5'			
21	260°59.7'	133°22.1'	N 18°56.9'	180°44.6'	N 18°54.6'	328°37.8'	S 22°12.4'	320°42.9'	S 20°46.3'	244°30.4'	N 2°56.9'			
22	276°02.2'	148°22.1'	N 18°56.4'	195°44.9'	N 18°54.9'	343°40.5'	S 22°12.5'	335°45.5'	S 20°46.3'	259°31.8'	N 2°57.3'			
23	291°04.6'	163°22.1'	N 18°55.8'	210°45.3'	N 18°55.1'	358°43.3'	S 22°12.5'	350°48.2'	S 20°46.3'	274°33.1'	N 2°57.7'			
		SD 15.7' d -0.6'		v 0.4' d 0.2'		v 2.8' d -0.1'		v 2.7' d -0.0'		v 1.4' d 0.4'				
Mer. pass.		12 h 6 m 33 s		8 h 57 m		23 h 5 m		23 h 37 m		4 h 43 m				

h	Moon				Lunar distance								
	GHA	dec	v	d	HP	-Vega	-Rigil Kent	-Hadar	-Antares	+Spica	+Arcturus	+Regulus	+Sun
0	97°57.1'	S 6°20.4'	10.6'	-14.0'	59.3'	80°22.7'	55°27.3'	54°13.4'	43°27.5'			57°28.7'	83°06.0'
1	112°26.7'	S 6°34.5'	10.6'	-14.0'	59.3'	80°07.4'	55°09.2'	53°58.0'	42°52.5'			58°04.1'	83°39.1'
2	126°56.3'	S 6°48.5'	10.6'	-13.9'	59.3'	79°52.2'	54°51.2'		42°17.4'			58°39.5'	84°12.1'
3	141°25.9'	S 7°02.4'	10.6'	-13.9'	59.3'	79°37.0'	54°33.4'		41°42.4'			59°14.8'	84°45.2'
4	155°55.5'	S 7°16.3'	10.5'	-13.9'	59.2'	79°21.9'	54°15.8'		41°07.4'			59°50.2'	85°18.2'
5	170°25.1'	S 7°30.2'	10.5'	-13.8'	59.2'		53°58.5'		40°32.4'			60°25.5'	85°51.2'
6	184°54.6'	S 7°44.0'	10.5'	-13.8'	59.2'		53°41.3'		39°57.5'			61°00.9'	86°24.3'
7	199°24.1'	S 7°57.7'	10.5'	-13.7'	59.2'		53°24.3'		39°22.6'			61°36.2'	86°57.3'
8	213°53.6'	S 8°11.5'	10.4'	-13.7'	59.2'		53°07.6'		38°47.6'			62°11.5'	87°30.3'
9	228°23.0'	S 8°25.1'	10.4'	-13.6'	59.2'		52°51.1'		38°12.8'	10°46.8'		62°46.8'	88°03.2'
10	242°52.4'	S 8°38.7'	10.4'	-13.6'	59.2'		52°34.8'		37°37.9'	11°14.7'		63°22.1'	88°36.2'
11	257°21.8'	S 8°52.3'	10.4'	-13.5'	59.2'		52°18.7'		37°03.1'	11°43.3'		63°57.4'	89°09.2'
12	271°51.2'	S 9°05.8'	10.3'	-13.5'	59.2'		52°02.8'		36°28.3'	12°12.5'		64°32.6'	89°42.1'
13	286°20.5'	S 9°19.3'	10.3'	-13.4'	59.2'		51°47.2'		35°53.5'	12°42.2'		65°07.9'	90°15.1'
14	300°49.8'	S 9°32.7'	10.3'	-13.3'	59.2'		51°31.9'		35°18.8'	13°12.3'		65°43.2'	90°48.0'
15	315°19.0'	S 9°46.0'	10.2'	-13.3'	59.1'				34°44.0'	13°42.9'	28°52.5'	66°18.4'	91°20.9'
16	329°48.3'	S 9°59.3'	10.2'	-13.2'	59.1'				34°09.3'	14°13.7'	29°07.6'	66°53.6'	91°53.8'
17	344°17.5'	S 10°12.6'	10.2'	-13.2'	59.1'				33°34.7'	14°44.9'	29°23.1'	67°28.9'	92°26.7'
18	358°46.6'	S 10°25.7'	10.1'	-13.1'	59.1'				33°00.1'	15°16.4'	29°39.1'	68°04.1'	92°59.6'
19	13°15.7'	S 10°38.8'	10.1'	-13.0'	59.1'				32°25.5'	15°48.2'	29°55.7'	68°39.3'	93°32.5'
20	27°44.8'	S 10°51.9'	10.0'	-13.0'	59.1'				31°50.9'	16°20.1'	30°12.7'	69°14.5'	94°05.3'
21	42°13.9'	S 11°04.9'	10.0'	-12.9'	59.1'				31°16.4'	16°52.3'	30°30.2'	69°49.6'	94°38.2'
22	56°42.9'	S 11°17.8'	10.0'	-12.8'	59.1'				30°41.9'	17°24.7'	30°48.1'	70°24.8'	95°11.0'
23	71°11.9'	S 11°30.6'	9.9'	-12.8'	59.1'				30°07.5'	17°57.2'	31°06.5'	70°59.9'	95°43.8'
Mer. pass.		18 h 5 m SD 16.2'		phase 44%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.2'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.2'	N 7°24.6'
Deneb	+1.2	49°27.7'	N 45°21.2'	Acrux	+0.8	173°04.2'	S 63°12.9'	Capella	+0.1	280°27.5'	N 46°00.9'
Altair	+0.8	62°03.1'	N 8°55.5'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.6'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.4'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°43.9'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°54.9'	N 5°10.4'	Polaris	+2.0	315°44.3'	N 89°20.6'
Rigil Kent	-0.0	139°45.0'	S 60°55.3'	Adhara	+1.5	255°09.0'	S 28°59.9'	Achernar	+0.5	335°22.9'	S 57°07.8'
Arcturus	-0.1	145°51.2'	N 19°04.8'	Sirius	-1.4	258°29.7'	S 16°44.6'				
Hadar	+0.6	148°41.0'	S 60°28.4'	Canopus	-0.6	263°54.5'	S 52°42.3'				

Table with columns for planets (Aries, Sun, Venus, Jupiter, Saturn, Mars) showing GHA and dec values from 0 to 23 hours.

Table showing Moon data (GHA, dec, v, d, HP) and Lunar distance (Altair, Saturn, Jupiter, Antares, Spica, Arcturus, Regulus, Sun) from 0 to 23 hours.

Table listing star data (Star, mag, SHA, dec) for various stars including Fomalhaut, Deneb, Altair, Vega, Antares, Rigil Kent, Arcturus, Hadar, Spica, Acrux, Pollux, Procyon, Adhara, Sirius, Canopus, Betelgeuse, Capella, Rigel, Aldebaran, Polaris, and Achernar.

Friday 31 July 2020 UT1

h	Aries			Sun			Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec	
0	309°04.5'	178°23.9'	N 18°11.9'	226°08.5'	N 19°11.9'	17°06.3'	S 22°16.1'	9°01.9'	S 20°49.2'	291°13.8'	N 3°26.1'			
1	324°07.0'	193°23.9'	N 18°11.3'	241°08.8'	N 19°12.1'	32°09.1'	S 22°16.1'	24°04.5'	S 20°49.3'	306°15.2'	N 3°26.5'			
2	339°09.4'	208°23.9'	N 18°10.7'	256°09.1'	N 19°12.3'	47°11.8'	S 22°16.2'	39°07.2'	S 20°49.3'	321°16.6'	N 3°26.9'			
3	354°11.9'	223°24.0'	N 18°10.1'	271°09.3'	N 19°12.5'	62°14.6'	S 22°16.2'	54°09.8'	S 20°49.3'	336°18.0'	N 3°27.3'			
4	9°14.4'	238°24.0'	N 18°09.5'	286°09.6'	N 19°12.7'	77°17.4'	S 22°16.3'	69°12.5'	S 20°49.4'	351°19.5'	N 3°27.7'			
5	24°16.8'	253°24.0'	N 18°08.8'	301°09.9'	N 19°13.0'	92°20.2'	S 22°16.3'	84°15.1'	S 20°49.4'	6°20.9'	N 3°28.0'			
6	39°19.3'	268°24.1'	N 18°08.2'	316°10.1'	N 19°13.2'	107°22.9'	S 22°16.4'	99°17.8'	S 20°49.5'	21°22.3'	N 3°28.4'			
7	54°21.7'	283°24.1'	N 18°07.6'	331°10.4'	N 19°13.4'	122°25.7'	S 22°16.4'	114°20.4'	S 20°49.5'	36°23.7'	N 3°28.8'			
8	69°24.2'	298°24.1'	N 18°07.0'	346°10.6'	N 19°13.6'	137°28.5'	S 22°16.5'	129°23.1'	S 20°49.5'	51°25.1'	N 3°29.2'			
9	84°26.7'	313°24.2'	N 18°06.3'	1°10.9'	N 19°13.8'	152°31.3'	S 22°16.5'	144°25.8'	S 20°49.6'	66°26.5'	N 3°29.6'			
10	99°29.1'	328°24.2'	N 18°05.7'	16°11.1'	N 19°14.1'	167°34.0'	S 22°16.6'	159°28.4'	S 20°49.6'	81°27.9'	N 3°29.9'			
11	114°31.6'	343°24.2'	N 18°05.1'	31°11.4'	N 19°14.3'	182°36.8'	S 22°16.6'	174°31.1'	S 20°49.7'	96°29.3'	N 3°30.3'			
12	129°34.1'	358°24.3'	N 18°04.5'	46°11.6'	N 19°14.5'	197°39.6'	S 22°16.7'	189°33.7'	S 20°49.7'	111°30.7'	N 3°30.7'			
13	144°36.5'	13°24.3'	N 18°03.8'	61°11.9'	N 19°14.7'	212°42.3'	S 22°16.7'	204°36.4'	S 20°49.7'	126°32.1'	N 3°31.1'			
14	159°39.0'	28°24.4'	N 18°03.2'	76°12.1'	N 19°14.9'	227°45.1'	S 22°16.8'	219°39.0'	S 20°49.8'	141°33.5'	N 3°31.4'			
15	174°41.5'	43°24.4'	N 18°02.6'	91°12.4'	N 19°15.2'	242°47.9'	S 22°16.8'	234°41.7'	S 20°49.8'	156°35.0'	N 3°31.8'			
16	189°43.9'	58°24.4'	N 18°02.0'	106°12.6'	N 19°15.4'	257°50.7'	S 22°16.9'	249°44.3'	S 20°49.9'	171°36.4'	N 3°32.2'			
17	204°46.4'	73°24.5'	N 18°01.3'	121°12.9'	N 19°15.6'	272°53.4'	S 22°16.9'	264°47.0'	S 20°49.9'	186°37.8'	N 3°32.6'			
18	219°48.9'	88°24.5'	N 18°00.7'	136°13.1'	N 19°15.8'	287°56.2'	S 22°17.0'	279°49.6'	S 20°49.9'	201°39.2'	N 3°32.9'			
19	234°51.3'	103°24.5'	N 18°00.1'	151°13.4'	N 19°16.0'	302°59.0'	S 22°17.0'	294°52.3'	S 20°50.0'	216°40.6'	N 3°33.3'			
20	249°53.8'	118°24.6'	N 17°59.4'	166°13.6'	N 19°16.2'	318°01.8'	S 22°17.1'	309°54.9'	S 20°50.0'	231°42.0'	N 3°33.7'			
21	264°56.2'	133°24.6'	N 17°58.8'	181°13.9'	N 19°16.5'	333°04.5'	S 22°17.1'	324°57.6'	S 20°50.0'	246°43.4'	N 3°34.1'			
22	279°58.7'	148°24.7'	N 17°58.2'	196°14.1'	N 19°16.7'	348°07.3'	S 22°17.1'	340°00.2'	S 20°50.1'	261°44.9'	N 3°34.4'			
23	295°01.2'	163°24.7'	N 17°57.5'	211°14.3'	N 19°16.9'	3°10.1'	S 22°17.2'	355°02.9'	S 20°50.1'	276°46.3'	N 3°34.8'			
		SD 15.7' d -0.6'		v 0.3' d 0.2'		v 2.8' d -0.0'		v 2.7' d -0.0'		v 1.4' d 0.4'				
Mer. pass.		12 h 6 m 23 s		8 h 55 m		22 h 47 m		23 h 20 m		4 h 35 m				

h	Moon					Lunar distance							
	GHA	dec	v	d	HP	-Fomalhaut	-Altair	-Saturn	-Jupiter	+Antares	+Rigel Kent	+Hadar	+Spica
0	46°24.4'	S 22°46.7'	6.8'	-4.7'	58.0'	72°25.3'	46°52.9'	34°40.0'	27°01.6'	14°07.2'			59°09.8'
1	60°50.2'	S 22°51.4'	6.8'	-4.6'	58.0'	71°52.8'	46°29.6'	34°05.8'	26°27.3'	14°37.9'			59°43.6'
2	75°16.0'	S 22°56.0'	6.8'	-4.4'	58.0'	71°20.2'	46°06.4'	33°31.6'	25°52.9'	15°08.8'			60°17.4'
3	89°41.7'	S 23°00.4'	6.7'	-4.3'	57.9'	70°47.7'	45°43.5'	32°57.5'	25°18.6'	15°40.0'			60°51.2'
4	104°07.5'	S 23°04.7'	6.7'	-4.1'	57.9'	70°15.2'	45°20.7'	32°23.3'	24°44.4'	16°11.3'			61°24.9'
5	118°33.2'	S 23°08.8'	6.7'	-4.0'	57.9'	69°42.7'	44°58.1'	31°49.2'	24°10.1'	16°42.7'			61°58.7'
6	132°58.9'	S 23°12.8'	6.7'	-3.9'	57.9'	69°10.3'	44°35.8'	31°15.1'	23°35.9'	17°14.3'			62°32.4'
7	147°24.6'	S 23°16.7'	6.7'	-3.7'	57.9'	68°37.9'	44°13.6'	30°41.0'	23°01.7'	17°46.1'			63°06.1'
8	161°50.3'	S 23°20.4'	6.7'	-3.6'	57.9'	68°05.5'	43°51.7'	30°07.0'	22°27.5'	18°17.9'			63°39.8'
9	176°16.0'	S 23°23.9'	6.7'	-3.4'	57.8'	67°33.2'	43°29.9'	29°32.9'	21°53.3'	18°49.9'			64°13.4'
10	190°41.7'	S 23°27.3'	6.7'	-3.3'	57.8'	67°00.9'	43°08.4'	28°58.9'	21°19.2'	19°21.9'			64°47.1'
11	205°07.3'	S 23°30.6'	6.6'	-3.1'	57.8'	66°28.6'	42°47.2'	28°24.9'	20°45.1'	19°54.0'			65°20.7'
12	219°32.9'	S 23°33.7'	6.6'	-3.0'	57.8'	65°56.4'	42°26.1'	27°51.0'	20°11.0'	20°26.2'			65°54.4'
13	233°58.6'	S 23°36.7'	6.6'	-2.8'	57.8'	65°24.1'	42°05.3'	27°17.0'	19°36.9'	20°58.5'		54°37.4'	66°28.0'
14	248°24.2'	S 23°39.5'	6.6'	-2.7'	57.7'	64°52.0'	41°44.7'	26°43.1'	19°02.9'	21°30.8'		54°52.5'	67°01.6'
15	262°49.8'	S 23°42.2'	6.6'	-2.5'	57.7'	64°19.8'	41°24.4'	26°09.2'	18°28.8'	22°03.2'		55°07.8'	67°35.1'
16	277°15.5'	S 23°44.8'	6.6'	-2.4'	57.7'	63°47.7'	41°04.4'	25°35.4'	17°54.9'	22°35.6'		55°23.4'	68°08.7'
17	291°41.1'	S 23°47.2'	6.6'	-2.2'	57.7'	63°15.6'	40°44.6'	25°01.5'	17°20.9'	23°08.1'		55°39.0'	68°42.2'
18	306°06.7'	S 23°49.4'	6.6'	-2.1'	57.7'	62°43.6'	40°25.0'	24°27.7'	16°47.0'	23°40.6'		55°54.9'	69°15.7'
19	320°32.3'	S 23°51.5'	6.6'	-1.9'	57.6'	62°11.6'	40°05.8'	23°54.0'	16°13.1'	24°13.1'	52°05.8'	56°10.9'	69°49.2'
20	334°58.0'	S 23°53.4'	6.6'	-1.8'	57.6'	61°39.6'	39°46.8'	23°20.2'	15°39.2'	24°45.7'	52°21.0'	56°27.1'	70°22.7'
21	349°23.6'	S 23°55.2'	6.6'	-1.7'	57.6'	61°07.7'	39°28.1'	22°46.5'	15°05.4'	25°18.3'	52°36.3'	56°43.4'	70°56.2'
22	3°49.2'	S 23°56.9'	6.6'	-1.5'	57.6'	60°35.8'	39°09.7'	22°12.8'	14°31.6'	25°50.9'	52°51.9'	56°59.9'	71°29.6'
23	18°14.9'	S 23°58.4'	6.7'	-1.4'	57.6'	60°04.0'	38°51.6'	21°39.1'	13°57.8'	26°23.6'	53°07.6'	57°16.5'	72°03.0'
Mer. pass.		21 h 44 m SD 15.8'		phase 85%									

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°18.2'	S 29°30.7'	Spica	+1.0	158°26.1'	S 11°16.0'	Betelgeuse	+0.5	270°56.2'	N 7°24.6'
Deneb	+1.2	49°27.7'	N 45°21.2'	Acrux	+0.8	173°04.3'	S 63°12.9'	Capella	+0.1	280°27.5'	N 46°00.9'
Altair	+0.8	62°03.1'	N 8°55.5'	Regulus	+1.4	207°38.6'	N 11°52.2'	Rigel	+0.2	281°07.5'	S 8°10.7'
Vega	+0.0	80°35.2'	N 38°48.4'	Pollux	+1.2	243°22.1'	N 27°58.6'	Aldebaran	+0.9	290°43.9'	N 16°32.9'
Antares	+1.1	112°20.0'	S 26°28.6'	Procyon	+0.4	244°54.9'	N 5°10.4'	Polaris	+2.0	315°42.1'	N 89°20.6'
Rigel Kent	-0.0	139°45.1'	S 60°55.3'	Adhara	+1.5	255°09.0'	S 28°59.9'	Achernar	+0.5	335°22.9'	S 57°07.7'
Arcturus	-0.1	145°51.2'	N 19°04.8'	Sirius	-1.4	258°29.7'	S 16°44.6'				
Hadar	+0.6	148°41.0'	S 60°28.4'	Canopus	-0.6	263°54.4'	S 52°42.3'				