Tuesday 01 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	40°15.8′	184°06.0′	S 14°21.0′	181°34.1′	S 14°20.8′	39°55.6′	S 1°32.9′	78°45.6′	S 16°27.6′	315°04.6′	N 23°52.4′
1	55°18.3′	199°06.0′	S 14°21.8′	196°33.5′	S 14°21.9′	54°58.3′	S 1°33.0′	93°48.1′	S 16°27.6′	330°07.2′	N 23°52.5′
2	70°20.7′	214°06.1′	S 14°22.6′	211°33.0′	S 14°22.9′	70°00.9′	S 1°33.1′	108°50.5′	S 16°27.6′	345°09.7′	N 23°52.7′
3	85°23.2′	229°06.1′	S 14°23.4′	226°32.4′	S 14°24.0′	85°03.6′	S 1°33.1′	123°52.9′	S 16°27.6′	0°12.2′	N 23°52.8′
4	100°25.7′	244°06.1′	S 14°24.2′	241°31.8′	S 14°25.0′	100°06.2′	S 1°33.2′	138°55.3′	S 16°27.6′	15°14.7′	N 23°52.9′
5	115°28.1′	259°06.1′	S 14°25.0′	256°31.2′	S 14°26.1′	115°08.8′	S 1°33.3′	153°57.8′	S 16°27.6′	30°17.3′	N 23°53.0′
6	130°30.6′	274°06.1′	S 14°25.8′	271°30.6′	S 14°27.1′	130°11.5′	S 1°33.3′	169°00.2′	S 16°27.6′	45°19.8′	N 23°53.1′
7	145°33.1′	289°06.2′	S 14°26.6′	286°30.0′	S 14°28.2′	145°14.1′	S 1°33.4′	184°02.6′	S 16°27.5′	60°22.3′	N 23°53.2′
8	160°35.5′	304°06.2′	S 14°27.4′	301°29.4′	S 14°29.2′	160°16.8′	S 1°33.5′	199°05.0′	S 16°27.5′	75°24.9′	N 23°53.3′
9	175°38.0′	319°06.2′	S 14°28.2′	316°28.9′	S 14°30.3′	175°19.4′	S 1°33.5′	214°07.5′	S 16°27.5′	90°27.4′	N 23°53.4′
10	190°40.5′	334°06.2′	S 14°29.0′	331°28.3′	S 14°31.3′	190°22.0′	S 1°33.6′	229°09.9′	S 16°27.5′	105°30.0′	N 23°53.6′
11	205°42.9′	349°06.2′	S 14°29.8′	346°27.7′	S 14°32.4′	205°24.7′	S 1°33.7′	244°12.3′	S 16°27.5′	120°32.5′	N 23°53.7′
12	220°45.4′	4°06.2′	S 14°30.6′	1°27.1′	S 14°33.4′	220°27.3′	S 1°33.7′	259°14.7′	S 16°27.5′	135°35.0′	N 23°53.8′
13	235°47.8′	19°06.3′	S 14°31.4′	16°26.5′	S 14°34.5′	235°30.0′	S 1°33.8′	274°17.2′	S 16°27.5′	150°37.6′	N 23°53.9′
14	250°50.3′	34°06.3′	S 14°32.2′	31°25.9′	S 14°35.5′	250°32.6′	S 1°33.9′	289°19.6′	S 16°27.4′	165°40.1′	N 23°54.0′
15	265°52.8′	49°06.3′	S 14°33.0′	46°25.3′	S 14°36.5′	265°35.2′	S 1°33.9′	304°22.0′	S 16°27.4′	180°42.7′	N 23°54.1′
16	280°55.2′	64°06.3′	S 14°33.8′	61°24.7′	S 14°37.6′	280°37.9′	S 1°34.0′	319°24.4′	S 16°27.4′	195°45.2′	N 23°54.2′
17	295°57.7′	79°06.3′	S 14°34.6′	76°24.1′	S 14°38.6′	295°40.5′	S 1°34.1′	334°26.9′	S 16°27.4′	210°47.8′	N 23°54.4′
18	311°00.2′	94°06.3′	S 14°35.4′	91°23.5′	S 14°39.7′	310°43.1′	S 1°34.1′	349°29.3′	S 16°27.4′	225°50.3′	N 23°54.5′
19	326°02.6′	109°06.3′	S 14°36.2′	106°23.0′	S 14°40.7′	325°45.8′	S 1°34.2′	4°31.7′	S 16°27.4′	240°52.9′	N 23°54.6′
20	341°05.1′	124°06.4′	S 14°37.0′	121°22.4′	S 14°41.7′	340°48.4′	S 1°34.3′	19°34.1′	S 16°27.3′	255°55.5′	N 23°54.7′
21	356°07.6′	139°06.4′	S 14°37.8′	136°21.8′	S 14°42.8′	355°51.1′	S 1°34.3′	34°36.6′	S 16°27.3′	270°58.0′	N 23°54.8′
22	11°10.0′	154°06.4′	S 14°38.6′	151°21.2′	S 14°43.8′	10°53.7′	S 1°34.4′	49°39.0′	S 16°27.3′	286°00.6′	N 23°54.9′
23	26°12.5′	169°06.4′	S 14°39.4′	166°20.6′	S 14°44.9′	25°56.3′	S 1°34.5′	64°41.4′	S 16°27.3′	301°03.1′	N 23°55.0′
		SD 16.1′ *d* -0.8′		*v* -0.6′ *d* -1.0′		*v* 2.6′ *d* -0.1′		*v* 2.4′ *d* 0.0′		*v* 2.5′ *d* 0.1′	
Mer. pass.		11 h 43 m 36 s		11 h 54 m		21 h 17 m		18 h 42 m		2 h 59 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Aldebaran	−Rigel	−Jupiter	−Fomalhaut	−Saturn	+Antares	+Rigil Kent	+Sun
0	91°37.9′	S 24°06.2′	5.9′	8.4′	59.1′			54°47.6′	32°32.1′	14°16.5′	54°37.3′	68°18.4′	86°22.9′
1	106°02.8′	S 23°57.8′	6.0′	8.6′	59.1′			54°12.1′	32°02.0′	13°42.7′	55°12.6′	68°43.5′	86°55.7′
2	120°27.8′	S 23°49.2′	6.1′	8.7′	59.1′			53°36.7′	31°32.0′	13°09.0′	55°47.9′	69°08.6′	87°28.5′
3	134°52.8′	S 23°40.5′	6.2′	8.9′	59.1′			53°01.2′	31°02.2′	12°35.5′	56°23.2′	69°33.9′	88°01.4′
4	149°18.0′	S 23°31.6′	6.3′	9.0′	59.1′		119°57.2′	52°25.7′	30°32.6′	12°02.1′	56°58.4′	69°59.1′	88°34.2′
5	163°43.3′	S 23°22.6′	6.4′	9.2′	59.1′		119°30.1′	51°50.3′	30°03.2′	11°29.0′	57°33.7′	70°24.5′	89°07.0′
6	178°08.7′	S 23°13.5′	6.5′	9.3′	59.1′		119°03.0′	51°14.9′	29°34.0′	10°56.1′	58°08.9′	70°49.8′	89°39.7′
7	192°34.1′	S 23°04.2′	6.6′	9.4′	59.1′		118°35.9′	50°39.5′	29°05.0′	10°23.4′	58°44.1′	71°15.3′	90°12.5′
8	206°59.7′	S 22°54.8′	6.7′	9.6′	59.1′	119°36.2′	118°08.6′	50°04.1′	28°36.3′	9°51.1′	59°19.4′	71°40.8′	90°45.3′
9	221°25.4′	S 22°45.2′	6.8′	9.7′	59.1′	119°01.4′	117°41.3′	49°28.7′	28°07.8′	9°19.1′	59°54.6′	72°06.3′	91°18.0′
10	235°51.2′	S 22°35.5′	6.9′	9.8′	59.0′	118°26.6′	117°13.9′	48°53.4′	27°39.5′	8°47.5′	60°29.7′	72°31.9′	91°50.7′
11	250°17.0′	S 22°25.6′	7.0′	10.0′	59.0′	117°51.8′	116°46.5′	48°18.0′	27°11.5′	8°16.4′	61°04.9′	72°57.5′	92°23.5′
12	264°43.0′	S 22°15.7′	7.1′	10.1′	59.0′	117°17.1′	116°19.0′	47°42.7′	26°43.7′	7°45.9′	61°40.1′	73°23.2′	92°56.2′
13	279°09.1′	S 22°05.6′	7.2′	10.2′	59.0′	116°42.3′	115°51.5′	47°07.3′	26°16.2′		62°15.2′	73°48.9′	93°28.9′
14	293°35.2′	S 21°55.3′	7.3′	10.4′	59.0′	116°07.5′	115°23.9′	46°32.0′	25°49.1′		62°50.4′	74°14.6′	94°01.5′
15	308°01.5′	S 21°45.0′	7.4′	10.5′	59.0′	115°32.8′	114°56.2′	45°56.7′	25°22.2′		63°25.5′	74°40.4′	94°34.2′
16	322°27.9′	S 21°34.5′	7.5′	10.6′	59.0′	114°58.0′	114°28.5′	45°21.5′	24°55.7′		64°00.6′	75°06.2′	95°06.8′
17	336°54.4′	S 21°23.8′	7.6′	10.7′	59.0′	114°23.3′	114°00.7′	44°46.2′	24°29.5′		64°35.7′	75°32.0′	95°39.5′
18	351°21.0′	S 21°13.1′	7.7′	10.9′	58.9′	113°48.6′	113°32.9′	44°11.0′	24°03.7′		65°10.8′	75°57.9′	96°12.1′
19	5°47.6′	S 21°02.2′	7.8′	11.0′	58.9′	113°13.9′	113°05.0′	43°35.7′	23°38.3′		65°45.8′	76°23.8′	96°44.7′
20	20°14.4′	S 20°51.3′	7.9′	11.1′	58.9′	112°39.2′	112°37.1′	43°00.5′	23°13.3′		66°20.9′	76°49.8′	97°17.3′
21	34°41.3′	S 20°40.2′	8.0′	11.2′	58.9′	112°04.5′	112°09.2′	42°25.3′	22°48.7′		66°55.9′	77°15.8′	97°49.9′
22	49°08.3′	S 20°28.9′	8.1′	11.3′	58.9′	111°29.8′	111°41.2′	41°50.1′	22°24.6′		67°31.0′	77°41.7′	98°22.4′
23	63°35.4′	S 20°17.6′	8.2′	11.4′	58.9′	110°55.1′	111°13.1′	41°15.0′	22°00.9′		68°06.0′	78°07.8′	98°55.0′
Mer. pass. 18 h 36 m SD 16.1′ phase 47%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3′	S 29°30.2′	Spica	+1.0	158°24.6′	S 11°16.6′	Betelgeuse	+0.5	270°53.9′	N 7°24.8′
Deneb	+1.2	49°27.1′	N 45°21.9′	Acrux	+0.8	173°02.7′	S 63°13.2′	Capella	+0.1	280°24.2′	N 46°01.1′
Altair	+0.8	62°01.8′	N 8°55.8′	Regulus	+1.4	207°36.5′	N 11°51.5′	Rigel	+0.2	281°05.4′	S 8°10.4′
Vega	+0.0	80°34.7′	N 38°48.5′	Pollux	+1.2	243°19.5′	N 27°58.2′	Aldebaran	+0.9	290°41.4′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.7′	N 5°10.1′	Polaris	+2.0	314°25.3′	N 89°21.6′
Rigil Kent	−0.0	139°43.5′	S 60°55.6′	Adhara	+1.5	255°07.1′	S 28°59.9′	Achernar	+0.5	335°21.0′	S 57°07.3′
Arcturus	−0.1	145°49.9′	N 19°04.0′	Sirius	−1.4	258°27.7′	S 16°44.6′				
Hadar	+0.6	148°39.3′	S 60°28.8′	Canopus	−0.6	263°52.9′	S 52°42.1′				

Wednesday 02 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	41°15.0′	184°06.4′	S 14°40.1′	181°20.0′	S 14°45.9′	40°59.0′	S 1°34.5′	79°43.8′	S 16°27.3′	316°05.7′	N 23°55.2′
1	56°17.4′	199°06.4′	S 14°40.9′	196°19.4′	S 14°46.9′	56°01.6′	S 1°34.6′	94°46.3′	S 16°27.3′	331°08.3′	N 23°55.3′
2	71°19.9′	214°06.4′	S 14°41.7′	211°18.8′	S 14°48.0′	71°04.2′	S 1°34.6′	109°48.7′	S 16°27.3′	346°10.8′	N 23°55.4′
3	86°22.3′	229°06.4′	S 14°42.5′	226°18.2′	S 14°49.0′	86°06.9′	S 1°34.7′	124°51.1′	S 16°27.2′	1°13.4′	N 23°55.5′
4	101°24.8′	244°06.4′	S 14°43.3′	241°17.6′	S 14°50.0′	101°09.5′	S 1°34.8′	139°53.5′	S 16°27.2′	16°16.0′	N 23°55.6′
5	116°27.3′	259°06.5′	S 14°44.1′	256°17.0′	S 14°51.1′	116°12.1′	S 1°34.8′	154°55.9′	S 16°27.2′	31°18.5′	N 23°55.7′
6	131°29.7′	274°06.5′	S 14°44.9′	271°16.4′	S 14°52.1′	131°14.8′	S 1°34.9′	169°58.4′	S 16°27.2′	46°21.1′	N 23°55.8′
7	146°32.2′	289°06.5′	S 14°45.7′	286°15.8′	S 14°53.1′	146°17.4′	S 1°35.0′	185°00.8′	S 16°27.2′	61°23.7′	N 23°56.0′
8	161°34.7′	304°06.5′	S 14°46.5′	301°15.2′	S 14°54.2′	161°20.0′	S 1°35.0′	200°03.2′	S 16°27.2′	76°26.3′	N 23°56.1′
9	176°37.1′	319°06.5′	S 14°47.3′	316°14.6′	S 14°55.2′	176°22.7′	S 1°35.1′	215°05.6′	S 16°27.1′	91°28.9′	N 23°56.2′
10	191°39.6′	334°06.5′	S 14°48.1′	331°14.0′	S 14°56.2′	191°25.3′	S 1°35.2′	230°08.1′	S 16°27.1′	106°31.4′	N 23°56.3′
11	206°42.1′	349°06.5′	S 14°48.8′	346°13.4′	S 14°57.3′	206°27.9′	S 1°35.2′	245°10.5′	S 16°27.1′	121°34.0′	N 23°56.4′
12	221°44.5′	4°06.5′	S 14°49.6′	1°12.8′	S 14°58.3′	221°30.6′	S 1°35.3′	260°12.9′	S 16°27.1′	136°36.6′	N 23°56.5′
13	236°47.0′	19°06.5′	S 14°50.4′	16°12.2′	S 14°59.3′	236°33.2′	S 1°35.3′	275°15.3′	S 16°27.1′	151°39.2′	N 23°56.6′
14	251°49.5′	34°06.5′	S 14°51.2′	31°11.6′	S 15°00.3′	251°35.8′	S 1°35.4′	290°17.7′	S 16°27.1′	166°41.8′	N 23°56.8′
15	266°51.9′	49°06.5′	S 14°52.0′	46°11.0′	S 15°01.4′	266°38.4′	S 1°35.5′	305°20.2′	S 16°27.0′	181°44.4′	N 23°56.9′
16	281°54.4′	64°06.5′	S 14°52.8′	61°10.4′	S 15°02.4′	281°41.1′	S 1°35.5′	320°22.6′	S 16°27.0′	196°47.0′	N 23°57.0′
17	296°56.8′	79°06.6′	S 14°53.6′	76°09.8′	S 15°03.4′	296°43.7′	S 1°35.6′	335°25.0′	S 16°27.0′	211°49.5′	N 23°57.1′
18	311°59.3′	94°06.6′	S 14°54.4′	91°09.2′	S 15°04.5′	311°46.3′	S 1°35.7′	350°27.4′	S 16°27.0′	226°52.1′	N 23°57.2′
19	327°01.8′	109°06.6′	S 14°55.1′	106°08.6′	S 15°05.5′	326°49.0′	S 1°35.7′	5°29.8′	S 16°27.0′	241°54.7′	N 23°57.3′
20	342°04.2′	124°06.6′	S 14°55.9′	121°08.0′	S 15°06.5′	341°51.6′	S 1°35.8′	20°32.3′	S 16°27.0′	256°57.3′	N 23°57.4′
21	357°06.7′	139°06.6′	S 14°56.7′	136°07.4′	S 15°07.5′	356°54.2′	S 1°35.8′	35°34.7′	S 16°26.9′	271°59.9′	N 23°57.6′
22	12°09.2′	154°06.6′	S 14°57.5′	151°06.8′	S 15°08.5′	11°56.9′	S 1°35.9′	50°37.1′	S 16°26.9′	287°02.5′	N 23°57.7′
23	27°11.6′	169°06.6′	S 14°58.3′	166°06.2′	S 15°09.6′	26°59.5′	S 1°36.0′	65°39.5′	S 16°26.9′	302°05.1′	N 23°57.8′
		SD 16.1′ *d* -0.8′		*v* -0.6′ *d* -1.0′		*v* 2.6′ *d* -0.1′		*v* 2.4′ *d* 0.0′		*v* 2.6′ *d* 0.1′	
Mer. pass.		11 h 43 m 35 s		11 h 55 m		21 h 12 m		18 h 38 m		2 h 55 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Rigel	−Aldebaran	−Jupiter	−Fomalhaut	+Saturn	+Altair	+Antares	+Sun
0	78°02.6′	S 20°06.2′	8.3′	11.6′	58.9′	110°45.0′	110°20.5′	40°39.8′	21°37.8′			68°41.0′	99°27.5′
1	92°29.9′	S 19°54.6′	8.4′	11.7′	58.9′	110°16.9′	109°45.8′	40°04.7′	21°15.1′			69°16.0′	100°00.1′
2	106°57.2′	S 19°42.9′	8.5′	11.8′	58.8′	109°48.8′	109°11.2′	39°29.5′	20°53.0′		38°41.3′	69°50.9′	100°32.6′
3	121°24.7′	S 19°31.2′	8.6′	11.9′	58.8′	109°20.6′	108°36.6′	38°54.4′	20°31.5′		38°56.3′	70°25.9′	101°05.1′
4	135°52.3′	S 19°19.3′	8.7′	12.0′	58.8′	108°52.4′	108°02.0′	38°19.3′	20°10.6′		39°11.7′	71°00.8′	101°37.6′
5	150°20.0′	S 19°07.3′	8.8′	12.1′	58.8′	108°24.1′	107°27.4′	37°44.3′	19°50.4′		39°27.4′	71°35.8′	102°10.0′
6	164°47.8′	S 18°55.2′	8.9′	12.2′	58.8′	107°55.9′	106°52.8′	37°09.2′	19°30.8′		39°43.4′	72°10.7′	102°42.5′
7	179°15.7′	S 18°43.0′	9.0′	12.3′	58.8′	107°27.6′	106°18.2′	36°34.2′	19°11.9′		39°59.8′	72°45.6′	103°14.9′
8	193°43.7′	S 18°30.7′	9.1′	12.4′	58.8′	106°59.2′	105°43.6′	35°59.1′	18°53.8′		40°16.5′	73°20.5′	103°47.3′
9	208°11.7′	S 18°18.3′	9.2′	12.5′	58.8′	106°30.9′	105°09.1′	35°24.1′			40°33.5′	73°55.3′	104°19.7′
10	222°39.9′	S 18°05.8′	9.3′	12.6′	58.7′	106°02.5′	104°34.5′	34°49.1′			40°50.8′	74°30.2′	104°52.1′
11	237°08.2′	S 17°53.2′	9.4′	12.7′	58.7′	105°34.1′	104°00.0′	34°14.2′		7°48.7′	41°08.4′	75°05.1′	105°24.5′
12	251°36.5′	S 17°40.6′	9.5′	12.8′	58.7′	105°05.7′	103°25.5′	33°39.2′		8°19.0′	41°26.4′	75°39.9′	105°56.9′
13	266°05.0′	S 17°27.8′	9.6′	12.9′	58.7′	104°37.3′	102°51.0′	33°04.3′		8°49.8′	41°44.6′	76°14.7′	106°29.2′
14	280°33.6′	S 17°14.9′	9.6′	13.0′	58.7′	104°08.8′	102°16.5′	32°29.3′		9°21.1′	42°03.0′	76°49.5′	107°01.6′
15	295°02.2′	S 17°02.0′	9.7′	13.0′	58.7′	103°40.3′	101°42.0′	31°54.4′		9°52.7′	42°21.8′	77°24.3′	107°33.9′
16	309°31.0′	S 16°48.9′	9.8′	13.1′	58.7′	103°11.8′	101°07.6′	31°19.5′		10°24.7′	42°40.8′	77°59.1′	108°06.2′
17	323°59.8′	S 16°35.8′	9.9′	13.2′	58.6′	102°43.3′	100°33.1′	30°44.7′		10°56.9′	43°00.0′	78°33.8′	108°38.5′
18	338°28.7′	S 16°22.6′	10.0′	13.3′	58.6′	102°14.8′	99°58.7′	30°09.8′		11°29.3′	43°19.6′	79°08.6′	109°10.8′
19	352°57.7′	S 16°09.3′	10.1′	13.4′	58.6′	101°46.3′	99°24.3′	29°35.0′		12°02.0′	43°39.3′	79°43.3′	109°43.0′
20	7°26.8′	S 15°55.9′	10.2′	13.5′	58.6′	101°17.7′	98°49.9′	29°00.2′		12°34.8′	43°59.3′	80°18.0′	110°15.3′
21	21°56.0′	S 15°42.5′	10.3′	13.5′	58.6′	100°49.2′	98°15.5′	28°25.4′		13°07.7′	44°19.6′	80°52.7′	110°47.5′
22	36°25.3′	S 15°29.0′	10.4′	13.6′	58.6′	100°20.6′	97°41.1′	27°50.6′		13°40.8′	44°40.0′	81°27.4′	111°19.7′
23	50°54.7′	S 15°15.3′	10.5′	13.7′	58.6′	99°52.0′	97°06.7′	27°15.9′		14°14.0′	45°00.7′	82°02.0′	111°51.9′
Mer. pass. 19 h 29 m SD 16.1′ phase 58%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.6′	Betelgeuse	+0.5	270°53.8′	N 7°24.8′
Deneb	+1.2	49°27.1′	N 45°21.9′	Acrux	+0.8	173°02.7′	S 63°13.2′	Capella	+0.1	280°24.2′	N 46°01.1′
Altair	+0.8	62°01.8′	N 8°55.8′	Regulus	+1.4	207°36.5′	N 11°51.5′	Rigel	+0.2	281°05.4′	S 8°10.4′
Vega	+0.0	80°34.7′	N 38°48.5′	Pollux	+1.2	243°19.5′	N 27°58.2′	Aldebaran	+0.9	290°41.4′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.7′	N 5°10.1′	Polaris	+2.0	314°25.2′	N 89°21.6′
Rigil Kent	−0.0	139°43.5′	S 60°55.6′	Adhara	+1.5	255°07.1′	S 28°59.9′	Achernar	+0.5	335°21.0′	S 57°07.3′
Arcturus	−0.1	145°49.9′	N 19°04.0′	Sirius	−1.4	258°27.7′	S 16°44.6′				
Hadar	+0.6	148°39.3′	S 60°28.8′	Canopus	−0.6	263°52.9′	S 52°42.1′				

Thursday 03 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	42°14.1′	184°06.6′	S 14°59.1′	181°05.5′	S 15°10.6′	42°02.1′	S 1°36.0′	80°41.9′	S 16°26.9′	317°07.7′	N 23°57.9′
1	57°16.6′	199°06.6′	S 14°59.8′	196°04.9′	S 15°11.6′	57°04.7′	S 1°36.1′	95°44.4′	S 16°26.9′	332°10.3′	N 23°58.0′
2	72°19.0′	214°06.6′	S 15°00.6′	211°04.3′	S 15°12.6′	72°07.4′	S 1°36.1′	110°46.8′	S 16°26.9′	347°13.0′	N 23°58.1′
3	87°21.5′	229°06.6′	S 15°01.4′	226°03.7′	S 15°13.6′	87°10.0′	S 1°36.2′	125°49.2′	S 16°26.8′	2°15.6′	N 23°58.2′
4	102°23.9′	244°06.6′	S 15°02.2′	241°03.1′	S 15°14.7′	102°12.6′	S 1°36.3′	140°51.6′	S 16°26.8′	17°18.2′	N 23°58.3′
5	117°26.4′	259°06.6′	S 15°03.0′	256°02.5′	S 15°15.7′	117°15.2′	S 1°36.3′	155°54.0′	S 16°26.8′	32°20.8′	N 23°58.5′
6	132°28.9′	274°06.6′	S 15°03.7′	271°01.9′	S 15°16.7′	132°17.9′	S 1°36.4′	170°56.4′	S 16°26.8′	47°23.4′	N 23°58.6′
7	147°31.3′	289°06.6′	S 15°04.5′	286°01.3′	S 15°17.7′	147°20.5′	S 1°36.4′	185°58.9′	S 16°26.8′	62°26.0′	N 23°58.7′
8	162°33.8′	304°06.6′	S 15°05.3′	301°00.7′	S 15°18.7′	162°23.1′	S 1°36.5′	201°01.3′	S 16°26.8′	77°28.6′	N 23°58.8′
9	177°36.3′	319°06.6′	S 15°06.1′	316°00.1′	S 15°19.7′	177°25.8′	S 1°36.6′	216°03.7′	S 16°26.7′	92°31.2′	N 23°58.9′
10	192°38.7′	334°06.6′	S 15°06.9′	330°59.4′	S 15°20.8′	192°28.4′	S 1°36.6′	231°06.1′	S 16°26.7′	107°33.9′	N 23°59.0′
11	207°41.2′	349°06.6′	S 15°07.6′	345°58.8′	S 15°21.8′	207°31.0′	S 1°36.7′	246°08.5′	S 16°26.7′	122°36.5′	N 23°59.1′
12	222°43.7′	4°06.6′	S 15°08.4′	0°58.2′	S 15°22.8′	222°33.6′	S 1°36.7′	261°10.9′	S 16°26.7′	137°39.1′	N 23°59.3′
13	237°46.1′	19°06.6′	S 15°09.2′	15°57.6′	S 15°23.8′	237°36.3′	S 1°36.8′	276°13.4′	S 16°26.7′	152°41.7′	N 23°59.4′
14	252°48.6′	34°06.6′	S 15°10.0′	30°57.0′	S 15°24.8′	252°38.9′	S 1°36.9′	291°15.8′	S 16°26.7′	167°44.4′	N 23°59.5′
15	267°51.1′	49°06.6′	S 15°10.8′	45°56.4′	S 15°25.8′	267°41.5′	S 1°36.9′	306°18.2′	S 16°26.6′	182°47.0′	N 23°59.6′
16	282°53.5′	64°06.6′	S 15°11.5′	60°55.8′	S 15°26.8′	282°44.1′	S 1°37.0′	321°20.6′	S 16°26.6′	197°49.6′	N 23°59.7′
17	297°56.0′	79°06.6′	S 15°12.3′	75°55.2′	S 15°27.8′	297°46.7′	S 1°37.0′	336°23.0′	S 16°26.6′	212°52.3′	N 23°59.8′
18	312°58.4′	94°06.6′	S 15°13.1′	90°54.5′	S 15°28.9′	312°49.4′	S 1°37.1′	351°25.4′	S 16°26.6′	227°54.9′	N 23°59.9′
19	328°00.9′	109°06.6′	S 15°13.9′	105°53.9′	S 15°29.9′	327°52.0′	S 1°37.2′	6°27.9′	S 16°26.6′	242°57.5′	N 24°00.1′
20	343°03.4′	124°06.6′	S 15°14.6′	120°53.3′	S 15°30.9′	342°54.6′	S 1°37.2′	21°30.3′	S 16°26.5′	258°00.2′	N 24°00.2′
21	358°05.8′	139°06.6′	S 15°15.4′	135°52.7′	S 15°31.9′	357°57.2′	S 1°37.3′	36°32.7′	S 16°26.5′	273°02.8′	N 24°00.3′
22	13°08.3′	154°06.6′	S 15°16.2′	150°52.1′	S 15°32.9′	12°59.9′	S 1°37.3′	51°35.1′	S 16°26.5′	288°05.4′	N 24°00.4′
23	28°10.8′	169°06.6′	S 15°17.0′	165°51.4′	S 15°33.9′	28°02.5′	S 1°37.4′	66°37.5′	S 16°26.5′	303°08.1′	N 24°00.5′
		SD 16.1′ *d* -0.8′		*v* -0.6′ *d* -1.0′		*v* 2.6′ *d* -0.1′		*v* 2.4′ *d* 0.0′		*v* 2.6′ *d* 0.1′	
Mer. pass.		11 h 43 m 35 s		11 h 56 m		21 h 8 m		18 h 34 m		2 h 51 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Rigel	−Aldebaran	−Jupiter	−Fomalhaut	+Saturn	+Altair	+Antares	+Sun
0	65°24.1′	S 15°01.7′	10.5′	13.8′	58.5′	99°23.5′	96°32.4′	26°41.1′		14°47.3′	45°21.6′	82°36.7′	112°24.1′
1	79°53.7′	S 14°47.9′	10.6′	13.8′	58.5′	98°54.9′	95°58.1′	26°06.4′		15°20.6′	45°42.7′	83°11.3′	112°56.3′
2	94°23.3′	S 14°34.1′	10.7′	13.9′	58.5′	98°26.3′	95°23.7′	25°31.7′		15°54.1′	46°04.0′	83°45.9′	113°28.4′
3	108°53.0′	S 14°20.2′	10.8′	14.0′	58.5′	97°57.7′	94°49.4′	24°57.1′		16°27.6′	46°25.5′	84°20.5′	114°00.6′
4	123°22.8′	S 14°06.2′	10.9′	14.0′	58.5′	97°29.1′	94°15.1′	24°22.4′		17°01.1′	46°47.2′	84°55.1′	114°32.7′
5	137°52.7′	S 13°52.2′	11.0′	14.1′	58.5′	97°00.5′	93°40.9′	23°47.8′		17°34.7′	47°09.1′	85°29.7′	115°04.8′
6	152°22.6′	S 13°38.1′	11.0′	14.2′	58.5′	96°31.9′	93°06.6′	23°13.2′		18°08.4′	47°31.2′	86°04.3′	115°36.9′
7	166°52.6′	S 13°23.9′	11.1′	14.2′	58.4′	96°03.3′	92°32.4′	22°38.6′		18°42.1′	47°53.4′	86°38.8′	116°09.0′
8	181°22.8′	S 13°09.7′	11.2′	14.3′	58.4′	95°34.7′	91°58.1′	22°04.0′		19°15.8′	48°15.8′	87°13.3′	116°41.0′
9	195°52.9′	S 12°55.4′	11.3′	14.3′	58.4′	95°06.1′	91°23.9′	21°29.5′		19°49.5′	48°38.4′	87°47.8′	117°13.1′
10	210°23.2′	S 12°41.1′	11.3′	14.4′	58.4′	94°37.5′	90°49.7′	20°55.0′		20°23.3′	49°01.2′	88°22.3′	117°45.1′
11	224°53.5′	S 12°26.7′	11.4′	14.5′	58.4′	94°09.0′	90°15.5′	20°20.5′		20°57.1′	49°24.1′	88°56.8′	118°17.1′
12	239°24.0′	S 12°12.2′	11.5′	14.5′	58.4′	93°40.4′	89°41.4′	19°46.1′		21°30.9′	49°47.2′	89°31.3′	118°49.1′
13	253°54.5′	S 11°57.7′	11.6′	14.6′	58.4′	93°11.8′	89°07.2′	19°11.7′		22°04.7′	50°10.4′	90°05.7′	119°21.1′
14	268°25.0′	S 11°43.2′	11.6′	14.6′	58.3′	92°43.2′	88°33.1′	18°37.3′		22°38.5′	50°33.7′	90°40.1′	119°53.0′
15	282°55.6′	S 11°28.6′	11.7′	14.7′	58.3′	92°14.7′	87°59.0′	18°02.9′		23°12.3′	50°57.2′	91°14.6′	
16	297°26.3′	S 11°13.9′	11.8′	14.7′	58.3′	91°46.1′	87°24.9′	17°28.6′		23°46.2′	51°20.9′	91°49.0′	
17	311°57.1′	S 10°59.2′	11.8′	14.8′	58.3′	91°17.6′	86°50.8′	16°54.3′	18°33.2′	24°20.1′	51°44.6′	92°23.3′	
18	326°27.9′	S 10°44.4′	11.9′	14.8′	58.3′	90°49.1′	86°16.7′	16°20.0′	18°50.2′	24°53.9′	52°08.5′	92°57.7′	
19	340°58.9′	S 10°29.6′	12.0′	14.9′	58.3′	90°20.6′	85°42.7′	15°45.8′	19°07.9′	25°27.8′	52°32.6′	93°32.1′	
20	355°29.8′	S 10°14.7′	12.0′	14.9′	58.2′	89°52.1′	85°08.6′	15°11.6′	19°26.3′	26°01.7′	52°56.7′	94°06.4′	
21	10°00.9′	S 9°59.9′	12.1′	14.9′	58.2′	89°23.6′	84°34.6′	14°37.4′	19°45.4′	26°35.5′	53°21.0′	94°40.7′	
22	24°32.0′	S 9°44.9′	12.2′	15.0′	58.2′	88°55.1′	84°00.6′	14°03.3′	20°05.1′	27°09.4′	53°45.4′	95°15.0′	
23	39°03.1′	S 9°29.9′	12.2′	15.0′	58.2′	88°26.6′	83°26.6′	13°29.3′	20°25.4′	27°43.3′	54°09.9′	95°49.3′	
Mer. pass. 20 h 19 m SD 16.0′ phase 69%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.6′	Betelgeuse	+0.5	270°53.8′	N 7°24.8′
Deneb	+1.2	49°27.1′	N 45°21.9′	Acrux	+0.8	173°02.7′	S 63°13.2′	Capella	+0.1	280°24.2′	N 46°01.2′
Altair	+0.8	62°01.8′	N 8°55.8′	Regulus	+1.4	207°36.5′	N 11°51.4′	Rigel	+0.2	281°05.4′	S 8°10.4′
Vega	+0.0	80°34.7′	N 38°48.5′	Pollux	+1.2	243°19.4′	N 27°58.2′	Aldebaran	+0.9	290°41.4′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.6′	N 5°10.1′	Polaris	+2.0	314°25.1′	N 89°21.6′
Rigil Kent	−0.0	139°43.5′	S 60°55.6′	Adhara	+1.5	255°07.1′	S 28°59.9′	Achernar	+0.5	335°21.0′	S 57°07.3′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.7′	S 16°44.6′				
Hadar	+0.6	148°39.3′	S 60°28.8′	Canopus	−0.6	263°52.9′	S 52°42.1′				

Friday 04 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	43°13.2′	184°06.6′	S 15°17.7′	180°50.8′	S 15°34.9′	43°05.1′	S 1°37.4′	81°39.9′	S 16°26.5′	318°10.7′	N 24°00.6′
1	58°15.7′	199°06.6′	S 15°18.5′	195°50.2′	S 15°35.9′	58°07.7′	S 1°37.5′	96°42.4′	S 16°26.5′	333°13.4′	N 24°00.7′
2	73°18.2′	214°06.6′	S 15°19.3′	210°49.6′	S 15°36.9′	73°10.3′	S 1°37.6′	111°44.8′	S 16°26.4′	348°16.0′	N 24°00.9′
3	88°20.6′	229°06.6′	S 15°20.0′	225°49.0′	S 15°37.9′	88°13.0′	S 1°37.6′	126°47.2′	S 16°26.4′	3°18.7′	N 24°01.0′
4	103°23.1′	244°06.6′	S 15°20.8′	240°48.3′	S 15°38.9′	103°15.6′	S 1°37.7′	141°49.6′	S 16°26.4′	18°21.3′	N 24°01.1′
5	118°25.6′	259°06.6′	S 15°21.6′	255°47.7′	S 15°39.9′	118°18.2′	S 1°37.7′	156°52.0′	S 16°26.4′	33°24.0′	N 24°01.2′
6	133°28.0′	274°06.5′	S 15°22.4′	270°47.1′	S 15°40.9′	133°20.8′	S 1°37.8′	171°54.4′	S 16°26.4′	48°26.6′	N 24°01.3′
7	148°30.5′	289°06.5′	S 15°23.1′	285°46.5′	S 15°41.9′	148°23.4′	S 1°37.8′	186°56.8′	S 16°26.3′	63°29.3′	N 24°01.4′
8	163°32.9′	304°06.5′	S 15°23.9′	300°45.9′	S 15°42.9′	163°26.1′	S 1°37.9′	201°59.3′	S 16°26.3′	78°31.9′	N 24°01.5′
9	178°35.4′	319°06.5′	S 15°24.7′	315°45.2′	S 15°43.9′	178°28.7′	S 1°38.0′	217°01.7′	S 16°26.3′	93°34.6′	N 24°01.7′
10	193°37.9′	334°06.5′	S 15°25.4′	330°44.6′	S 15°44.9′	193°31.3′	S 1°38.0′	232°04.1′	S 16°26.3′	108°37.3′	N 24°01.8′
11	208°40.3′	349°06.5′	S 15°26.2′	345°44.0′	S 15°45.9′	208°33.9′	S 1°38.1′	247°06.5′	S 16°26.3′	123°39.9′	N 24°01.9′
12	223°42.8′	4°06.5′	S 15°27.0′	0°43.4′	S 15°46.9′	223°36.5′	S 1°38.1′	262°08.9′	S 16°26.3′	138°42.6′	N 24°02.0′
13	238°45.3′	19°06.5′	S 15°27.7′	15°42.7′	S 15°47.9′	238°39.1′	S 1°38.2′	277°11.3′	S 16°26.2′	153°45.3′	N 24°02.1′
14	253°47.7′	34°06.5′	S 15°28.5′	30°42.1′	S 15°48.9′	253°41.8′	S 1°38.2′	292°13.7′	S 16°26.2′	168°47.9′	N 24°02.2′
15	268°50.2′	49°06.5′	S 15°29.3′	45°41.5′	S 15°49.9′	268°44.4′	S 1°38.3′	307°16.1′	S 16°26.2′	183°50.6′	N 24°02.3′
16	283°52.7′	64°06.5′	S 15°30.0′	60°40.9′	S 15°50.9′	283°47.0′	S 1°38.3′	322°18.6′	S 16°26.2′	198°53.3′	N 24°02.5′
17	298°55.1′	79°06.5′	S 15°30.8′	75°40.2′	S 15°51.9′	298°49.6′	S 1°38.4′	337°21.0′	S 16°26.2′	213°55.9′	N 24°02.6′
18	313°57.6′	94°06.4′	S 15°31.6′	90°39.6′	S 15°52.9′	313°52.2′	S 1°38.5′	352°23.4′	S 16°26.1′	228°58.6′	N 24°02.7′
19	329°00.0′	109°06.4′	S 15°32.3′	105°39.0′	S 15°53.9′	328°54.8′	S 1°38.5′	7°25.8′	S 16°26.1′	244°01.3′	N 24°02.8′
20	344°02.5′	124°06.4′	S 15°33.1′	120°38.3′	S 15°54.8′	343°57.5′	S 1°38.6′	22°28.2′	S 16°26.1′	259°04.0′	N 24°02.9′
21	359°05.0′	139°06.4′	S 15°33.9′	135°37.7′	S 15°55.8′	359°00.1′	S 1°38.6′	37°30.6′	S 16°26.1′	274°06.6′	N 24°03.0′
22	14°07.4′	154°06.4′	S 15°34.6′	150°37.1′	S 15°56.8′	14°02.7′	S 1°38.7′	52°33.0′	S 16°26.1′	289°09.3′	N 24°03.1′
23	29°09.9′	169°06.4′	S 15°35.4′	165°36.5′	S 15°57.8′	29°05.3′	S 1°38.7′	67°35.4′	S 16°26.0′	304°12.0′	N 24°03.2′
		SD 16.1′ *d* -0.8′		*v* -0.6′ *d* -1.0′		*v* 2.6′ *d* -0.1′		*v* 2.4′ *d* 0.0′		*v* 2.7′ *d* 0.1′	
Mer. pass.		11 h 43 m 35 s		11 h 57 m		21 h 4 m		18 h 30 m		2 h 47 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Capella	−Rigel	−Aldebaran	−Jupiter	+Fomalhaut	+Saturn	+Altair	+Antares
0	53°34.3′	S 9°14.9′	12.3′	15.1′	58.2′	96°36.3′	87°58.2′	82°52.7′	12°55.3′	20°46.3′	28°17.1′	54°34.5′	96°23.5′
1	68°05.6′	S 8°59.9′	12.3′	15.1′	58.2′	96°04.0′	87°29.8′	82°18.7′	12°21.3′	21°07.8′	28°51.0′	54°59.2′	96°57.8′
2	82°37.0′	S 8°44.8′	12.4′	15.1′	58.1′	95°31.8′	87°01.4′	81°44.8′	11°47.5′	21°29.8′	29°24.8′	55°24.0′	97°32.0′
3	97°08.4′	S 8°29.6′	12.5′	15.2′	58.1′	94°59.5′	86°33.0′	81°10.9′	11°13.7′	21°52.2′	29°58.7′	55°48.9′	98°06.2′
4	111°39.8′	S 8°14.5′	12.5′	15.2′	58.1′	94°27.3′	86°04.6′	80°37.0′	10°39.9′	22°15.2′	30°32.5′	56°13.9′	98°40.4′
5	126°11.3′	S 7°59.3′	12.6′	15.2′	58.1′	93°55.0′	85°36.3′	80°03.1′	10°06.3′	22°38.5′	31°06.4′	56°39.0′	99°14.6′
6	140°42.9′	S 7°44.1′	12.6′	15.3′	58.1′	93°22.8′	85°08.0′	79°29.2′	9°32.8′	23°02.3′	31°40.2′	57°04.2′	99°48.8′
7	155°14.5′	S 7°28.8′	12.7′	15.3′	58.1′	92°50.6′	84°39.7′	78°55.4′	8°59.4′	23°26.5′	32°14.0′	57°29.5′	100°22.9′
8	169°46.2′	S 7°13.5′	12.7′	15.3′	58.0′	92°18.4′	84°11.4′	78°21.6′	8°26.1′	23°51.0′	32°47.8′	57°54.8′	100°57.0′
9	184°17.9′	S 6°58.2′	12.8′	15.3′	58.0′	91°46.2′	83°43.2′	77°47.8′	7°53.0′	24°15.9′	33°21.7′	58°20.3′	101°31.2′
10	198°49.6′	S 6°42.9′	12.8′	15.4′	58.0′	91°14.1′	83°14.9′	77°14.0′	7°20.1′	24°41.2′	33°55.5′	58°45.8′	102°05.2′
11	213°21.5′	S 6°27.5′	12.9′	15.4′	58.0′	90°41.9′	82°46.7′	76°40.2′	6°47.5′	25°06.7′	34°29.2′	59°11.4′	102°39.3′
12	227°53.3′	S 6°12.2′	12.9′	15.4′	58.0′	90°09.8′	82°18.6′	76°06.5′	6°15.1′	25°32.6′	35°03.0′	59°37.1′	103°13.4′
13	242°25.2′	S 5°56.8′	13.0′	15.4′	58.0′	89°37.7′	81°50.4′	75°32.7′	5°43.1′	25°58.7′	35°36.8′	60°02.8′	103°47.4′
14	256°57.2′	S 5°41.3′	13.0′	15.4′	57.9′	89°05.6′	81°22.3′	74°59.0′	5°11.6′	26°25.1′	36°10.5′	60°28.7′	104°21.4′
15	271°29.2′	S 5°25.9′	13.0′	15.5′	57.9′	88°33.5′	80°54.3′	74°25.3′		26°51.7′	36°44.3′	60°54.5′	104°55.4′
16	286°01.2′	S 5°10.5′	13.1′	15.5′	57.9′	88°01.5′	80°26.2′	73°51.7′		27°18.6′	37°18.0′	61°20.5′	105°29.4′
17	300°33.3′	S 4°55.0′	13.1′	15.5′	57.9′	87°29.4′	79°58.2′	73°18.0′		27°45.7′	37°51.7′	61°46.5′	106°03.4′
18	315°05.4′	S 4°39.5′	13.2′	15.5′	57.9′	86°57.4′	79°30.2′	72°44.4′		28°13.1′	38°25.5′	62°12.6′	106°37.3′
19	329°37.6′	S 4°24.0′	13.2′	15.5′	57.8′	86°25.4′	79°02.3′	72°10.8′		28°40.6′	38°59.1′	62°38.7′	107°11.3′
20	344°09.7′	S 4°08.5′	13.2′	15.5′	57.8′	85°53.4′	78°34.4′	71°37.2′		29°08.3′	39°32.8′	63°04.9′	107°45.2′
21	358°42.0′	S 3°53.0′	13.3′	15.5′	57.8′	85°21.5′	78°06.5′	71°03.6′		29°36.2′	40°06.5′	63°31.1′	108°19.1′
22	13°14.2′	S 3°37.4′	13.3′	15.5′	57.8′	84°49.5′	77°38.7′	70°30.1′		30°04.3′	40°40.1′	63°57.4′	108°52.9′
23	27°46.5′	S 3°21.9′	13.3′	15.5′	57.8′	84°17.6′	77°10.9′	69°56.5′		30°32.6′	41°13.8′	64°23.8′	109°26.8′
Mer. pass. 21 h 5 m SD 15.9′ phase 79%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.6′	Betelgeuse	+0.5	270°53.8′	N 7°24.8′
Deneb	+1.2	49°27.1′	N 45°21.9′	Acrux	+0.8	173°02.7′	S 63°13.2′	Capella	+0.1	280°24.2′	N 46°01.2′
Altair	+0.8	62°01.8′	N 8°55.8′	Regulus	+1.4	207°36.5′	N 11°51.4′	Rigel	+0.2	281°05.4′	S 8°10.4′
Vega	+0.0	80°34.7′	N 38°48.5′	Pollux	+1.2	243°19.4′	N 27°58.2′	Aldebaran	+0.9	290°41.4′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.6′	N 5°10.1′	Polaris	+2.0	314°25.1′	N 89°21.6′
Rigil Kent	−0.0	139°43.5′	S 60°55.6′	Adhara	+1.5	255°07.1′	S 28°59.9′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.7′	S 16°44.6′				
Hadar	+0.6	148°39.3′	S 60°28.8′	Canopus	−0.6	263°52.9′	S 52°42.1′				

Saturday 05 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	44°12.4′	184°06.4′	S 15°36.1′	180°35.8′	S 15°58.8′	44°07.9′	S 1°38.8′	82°37.8′	S 16°26.0′	319°14.7′	N 24°03.4′
1	59°14.8′	199°06.4′	S 15°36.9′	195°35.2′	S 15°59.8′	59°10.5′	S 1°38.8′	97°40.3′	S 16°26.0′	334°17.4′	N 24°03.5′
2	74°17.3′	214°06.3′	S 15°37.7′	210°34.6′	S 16°00.8′	74°13.1′	S 1°38.9′	112°42.7′	S 16°26.0′	349°20.1′	N 24°03.6′
3	89°19.8′	229°06.3′	S 15°38.4′	225°33.9′	S 16°01.8′	89°15.8′	S 1°38.9′	127°45.1′	S 16°26.0′	4°22.8′	N 24°03.7′
4	104°22.2′	244°06.3′	S 15°39.2′	240°33.3′	S 16°02.7′	104°18.4′	S 1°39.0′	142°47.5′	S 16°25.9′	19°25.4′	N 24°03.8′
5	119°24.7′	259°06.3′	S 15°39.9′	255°32.7′	S 16°03.7′	119°21.0′	S 1°39.1′	157°49.9′	S 16°25.9′	34°28.1′	N 24°03.9′
6	134°27.2′	274°06.3′	S 15°40.7′	270°32.0′	S 16°04.7′	134°23.6′	S 1°39.1′	172°52.3′	S 16°25.9′	49°30.8′	N 24°04.0′
7	149°29.6′	289°06.3′	S 15°41.5′	285°31.4′	S 16°05.7′	149°26.2′	S 1°39.2′	187°54.7′	S 16°25.9′	64°33.5′	N 24°04.2′
8	164°32.1′	304°06.3′	S 15°42.2′	300°30.8′	S 16°06.7′	164°28.8′	S 1°39.2′	202°57.1′	S 16°25.9′	79°36.2′	N 24°04.3′
9	179°34.5′	319°06.2′	S 15°43.0′	315°30.1′	S 16°07.7′	179°31.4′	S 1°39.3′	217°59.5′	S 16°25.8′	94°38.9′	N 24°04.4′
10	194°37.0′	334°06.2′	S 15°43.7′	330°29.5′	S 16°08.6′	194°34.0′	S 1°39.3′	233°01.9′	S 16°25.8′	109°41.6′	N 24°04.5′
11	209°39.5′	349°06.2′	S 15°44.5′	345°28.8′	S 16°09.6′	209°36.7′	S 1°39.4′	248°04.3′	S 16°25.8′	124°44.3′	N 24°04.6′
12	224°41.9′	4°06.2′	S 15°45.3′	0°28.2′	S 16°10.6′	224°39.3′	S 1°39.4′	263°06.8′	S 16°25.8′	139°47.0′	N 24°04.7′
13	239°44.4′	19°06.2′	S 15°46.0′	15°27.6′	S 16°11.6′	239°41.9′	S 1°39.5′	278°09.2′	S 16°25.8′	154°49.7′	N 24°04.8′
14	254°46.9′	34°06.2′	S 15°46.8′	30°26.9′	S 16°12.6′	254°44.5′	S 1°39.5′	293°11.6′	S 16°25.7′	169°52.4′	N 24°05.0′
15	269°49.3′	49°06.1′	S 15°47.5′	45°26.3′	S 16°13.5′	269°47.1′	S 1°39.6′	308°14.0′	S 16°25.7′	184°55.2′	N 24°05.1′
16	284°51.8′	64°06.1′	S 15°48.3′	60°25.7′	S 16°14.5′	284°49.7′	S 1°39.6′	323°16.4′	S 16°25.7′	199°57.9′	N 24°05.2′
17	299°54.3′	79°06.1′	S 15°49.0′	75°25.0′	S 16°15.5′	299°52.3′	S 1°39.7′	338°18.8′	S 16°25.7′	215°00.6′	N 24°05.3′
18	314°56.7′	94°06.1′	S 15°49.8′	90°24.4′	S 16°16.5′	314°54.9′	S 1°39.7′	353°21.2′	S 16°25.7′	230°03.3′	N 24°05.4′
19	329°59.2′	109°06.1′	S 15°50.5′	105°23.7′	S 16°17.4′	329°57.5′	S 1°39.8′	8°23.6′	S 16°25.6′	245°06.0′	N 24°05.5′
20	345°01.6′	124°06.0′	S 15°51.3′	120°23.1′	S 16°18.4′	345°00.1′	S 1°39.8′	23°26.0′	S 16°25.6′	260°08.7′	N 24°05.6′
21	0°04.1′	139°06.0′	S 15°52.0′	135°22.4′	S 16°19.4′	0°02.7′	S 1°39.9′	38°28.4′	S 16°25.6′	275°11.4′	N 24°05.8′
22	15°06.6′	154°06.0′	S 15°52.8′	150°21.8′	S 16°20.4′	15°05.4′	S 1°39.9′	53°30.8′	S 16°25.6′	290°14.2′	N 24°05.9′
23	30°09.0′	169°06.0′	S 15°53.5′	165°21.2′	S 16°21.3′	30°08.0′	S 1°40.0′	68°33.2′	S 16°25.6′	305°16.9′	N 24°06.0′
		SD 16.1′ *d* -0.8′		*v* -0.6′ *d* -1.0′		*v* 2.6′ *d* -0.1′		*v* 2.4′ *d* 0.0′		*v* 2.7′ *d* 0.1′	
Mer. pass.		11 h 43 m 37 s		11 h 58 m		21 h 0 m		18 h 27 m		2 h 43 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Mars	−Capella	−Rigel	−Aldebaran	+Jupiter	+Fomalhaut	+Saturn	+Altair
0	42°18.9′	S 3°06.4′	13.4′	15.6′	57.8′	84°57.3′	83°45.7′	76°43.2′	69°23.0′		31°00.9′	41°47.4′	64°50.2′
1	56°51.2′	S 2°50.8′	13.4′	15.6′	57.7′	84°23.3′	83°13.8′	76°15.5′	68°49.6′		31°29.5′	42°21.0′	65°16.6′
2	71°23.6′	S 2°35.2′	13.4′	15.6′	57.7′	83°49.3′	82°41.9′	75°47.8′	68°16.1′		31°58.2′	42°54.6′	65°43.1′
3	85°56.0′	S 2°19.7′	13.4′	15.6′	57.7′	83°15.4′	82°10.1′	75°20.2′	67°42.6′		32°27.0′	43°28.2′	66°09.6′
4	100°28.5′	S 2°04.1′	13.5′	15.6′	57.7′	82°41.4′	81°38.3′	74°52.6′	67°09.2′		32°55.9′	44°01.8′	66°36.2′
5	115°01.0′	S 1°48.6′	13.5′	15.6′	57.7′	82°07.5′	81°06.5′	74°25.1′	66°35.8′		33°25.0′	44°35.3′	67°02.8′
6	129°33.5′	S 1°33.0′	13.5′	15.6′	57.6′	81°33.6′	80°34.7′	73°57.6′	66°02.4′	4°50.1′	33°54.2′	45°08.8′	67°29.4′
7	144°06.0′	S 1°17.4′	13.5′	15.6′	57.6′	80°59.7′	80°03.0′	73°30.1′	65°29.1′	5°20.8′	34°23.4′	45°42.4′	67°56.1′
8	158°38.5′	S 1°01.9′	13.6′	15.6′	57.6′	80°25.8′	79°31.3′	73°02.7′	64°55.8′	5°52.2′	34°52.8′	46°15.9′	68°22.8′
9	173°11.1′	S 0°46.3′	13.6′	15.5′	57.6′	79°52.0′	78°59.6′	72°35.4′	64°22.4′	6°23.9′	35°22.3′	46°49.4′	68°49.6′
10	187°43.7′	S 0°30.8′	13.6′	15.5′	57.6′	79°18.1′	78°27.9′	72°08.1′	63°49.2′	6°56.0′	35°51.8′	47°22.8′	69°16.4′
11	202°16.3′	S 0°15.2′	13.6′	15.5′	57.6′	78°44.3′	77°56.3′	71°40.9′	63°15.9′	7°28.2′	36°21.5′	47°56.3′	69°43.2′
12	216°48.9′	N 0°00.3′	13.6′	15.5′	57.5′	78°10.5′	77°24.7′	71°13.7′	62°42.7′	8°00.7′	36°51.2′	48°29.7′	70°10.0′
13	231°21.6′	N 0°15.8′	13.7′	15.5′	57.5′	77°36.7′	76°53.1′	70°46.6′	62°09.4′	8°33.3′	37°21.0′	49°03.1′	70°36.9′
14	245°54.2′	N 0°31.3′	13.7′	15.5′	57.5′	77°03.0′	76°21.5′	70°19.5′	61°36.2′	9°06.1′	37°50.9′	49°36.5′	71°03.8′
15	260°26.9′	N 0°46.8′	13.7′	15.5′	57.5′	76°29.2′	75°50.0′	69°52.5′	61°03.1′	9°38.9′	38°20.9′	50°09.9′	71°30.7′
16	274°59.6′	N 1°02.3′	13.7′	15.5′	57.5′	75°55.5′	75°18.5′	69°25.5′	60°29.9′	10°11.8′	38°50.9′	50°43.3′	71°57.6′
17	289°32.3′	N 1°17.8′	13.7′	15.5′	57.4′	75°21.8′	74°47.0′	68°58.6′	59°56.8′	10°44.8′	39°21.0′	51°16.6′	72°24.6′
18	304°05.0′	N 1°33.3′	13.7′	15.4′	57.4′	74°48.1′	74°15.6′	68°31.8′	59°23.7′	11°17.9′	39°51.1′	51°49.9′	72°51.6′
19	318°37.8′	N 1°48.7′	13.7′	15.4′	57.4′	74°14.4′	73°44.2′	68°05.0′	58°50.6′	11°50.9′	40°21.3′	52°23.2′	73°18.6′
20	333°10.5′	N 2°04.1′	13.7′	15.4′	57.4′	73°40.8′	73°12.8′	67°38.3′	58°17.6′	12°24.0′	40°51.6′	52°56.5′	73°45.6′
21	347°43.3′	N 2°19.5′	13.8′	15.4′	57.4′	73°07.1′	72°41.4′	67°11.7′	57°44.6′	12°57.1′	41°21.9′	53°29.8′	74°12.6′
22	2°16.0′	N 2°34.9′	13.8′	15.4′	57.3′	72°33.5′	72°10.1′	66°45.1′	57°11.6′	13°30.3′	41°52.2′	54°03.1′	74°39.7′
23	16°48.8′	N 2°50.3′	13.8′	15.3′	57.3′	71°59.9′	71°38.8′	66°18.6′	56°38.6′	14°03.4′	42°22.6′	54°36.3′	75°06.8′
Mer. pass. 21 h 51 m SD 15.8′ phase 87%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.3′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.6′	Betelgeuse	+0.5	270°53.8′	N 7°24.8′
Deneb	+1.2	49°27.1′	N 45°21.9′	Acrux	+0.8	173°02.7′	S 63°13.2′	Capella	+0.1	280°24.2′	N 46°01.2′
Altair	+0.8	62°01.8′	N 8°55.8′	Regulus	+1.4	207°36.5′	N 11°51.4′	Rigel	+0.2	281°05.4′	S 8°10.4′
Vega	+0.0	80°34.7′	N 38°48.5′	Pollux	+1.2	243°19.4′	N 27°58.2′	Aldebaran	+0.9	290°41.4′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.6′	N 5°10.1′	Polaris	+2.0	314°25.0′	N 89°21.6′
Rigil Kent	−0.0	139°43.5′	S 60°55.6′	Adhara	+1.5	255°07.1′	S 28°59.9′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.7′	S 16°44.6′				
Hadar	+0.6	148°39.3′	S 60°28.8′	Canopus	−0.6	263°52.9′	S 52°42.2′				

Sunday 06 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	45°11.5′	184°06.0′	S 15°54.3′	180°20.5′	S 16°22.3′	45°10.6′	S 1°40.1′	83°35.6′	S 16°25.5′	320°19.6′	N 24°06.1′
1	60°14.0′	199°05.9′	S 15°55.0′	195°19.9′	S 16°23.3′	60°13.2′	S 1°40.1′	98°38.0′	S 16°25.5′	335°22.3′	N 24°06.2′
2	75°16.4′	214°05.9′	S 15°55.8′	210°19.2′	S 16°24.2′	75°15.8′	S 1°40.2′	113°40.5′	S 16°25.5′	350°25.1′	N 24°06.3′
3	90°18.9′	229°05.9′	S 15°56.5′	225°18.6′	S 16°25.2′	90°18.4′	S 1°40.2′	128°42.9′	S 16°25.5′	5°27.8′	N 24°06.4′
4	105°21.4′	244°05.9′	S 15°57.3′	240°17.9′	S 16°26.2′	105°21.0′	S 1°40.3′	143°45.3′	S 16°25.5′	20°30.5′	N 24°06.5′
5	120°23.8′	259°05.8′	S 15°58.0′	255°17.3′	S 16°27.1′	120°23.6′	S 1°40.3′	158°47.7′	S 16°25.4′	35°33.3′	N 24°06.7′
6	135°26.3′	274°05.8′	S 15°58.8′	270°16.6′	S 16°28.1′	135°26.2′	S 1°40.4′	173°50.1′	S 16°25.4′	50°36.0′	N 24°06.8′
7	150°28.8′	289°05.8′	S 15°59.5′	285°16.0′	S 16°29.1′	150°28.8′	S 1°40.4′	188°52.5′	S 16°25.4′	65°38.7′	N 24°06.9′
8	165°31.2′	304°05.8′	S 16°00.3′	300°15.4′	S 16°30.0′	165°31.4′	S 1°40.5′	203°54.9′	S 16°25.4′	80°41.5′	N 24°07.0′
9	180°33.7′	319°05.7′	S 16°01.0′	315°14.7′	S 16°31.0′	180°34.0′	S 1°40.5′	218°57.3′	S 16°25.3′	95°44.2′	N 24°07.1′
10	195°36.1′	334°05.7′	S 16°01.8′	330°14.1′	S 16°32.0′	195°36.6′	S 1°40.6′	233°59.7′	S 16°25.3′	110°46.9′	N 24°07.2′
11	210°38.6′	349°05.7′	S 16°02.5′	345°13.4′	S 16°32.9′	210°39.2′	S 1°40.6′	249°02.1′	S 16°25.3′	125°49.7′	N 24°07.3′
12	225°41.1′	4°05.7′	S 16°03.3′	0°12.8′	S 16°33.9′	225°41.8′	S 1°40.7′	264°04.5′	S 16°25.3′	140°52.4′	N 24°07.5′
13	240°43.5′	19°05.6′	S 16°04.0′	15°12.1′	S 16°34.8′	240°44.4′	S 1°40.7′	279°06.9′	S 16°25.3′	155°55.2′	N 24°07.6′
14	255°46.0′	34°05.6′	S 16°04.8′	30°11.5′	S 16°35.8′	255°47.0′	S 1°40.8′	294°09.3′	S 16°25.2′	170°57.9′	N 24°07.7′
15	270°48.5′	49°05.6′	S 16°05.5′	45°10.8′	S 16°36.8′	270°49.6′	S 1°40.8′	309°11.7′	S 16°25.2′	186°00.7′	N 24°07.8′
16	285°50.9′	64°05.6′	S 16°06.3′	60°10.2′	S 16°37.7′	285°52.2′	S 1°40.9′	324°14.1′	S 16°25.2′	201°03.4′	N 24°07.9′
17	300°53.4′	79°05.5′	S 16°07.0′	75°09.5′	S 16°38.7′	300°54.8′	S 1°40.9′	339°16.5′	S 16°25.2′	216°06.2′	N 24°08.0′
18	315°55.9′	94°05.5′	S 16°07.7′	90°08.8′	S 16°39.6′	315°57.4′	S 1°40.9′	354°18.9′	S 16°25.2′	231°08.9′	N 24°08.1′
19	330°58.3′	109°05.5′	S 16°08.5′	105°08.2′	S 16°40.6′	331°00.0′	S 1°41.0′	9°21.3′	S 16°25.1′	246°11.7′	N 24°08.2′
20	346°00.8′	124°05.5′	S 16°09.2′	120°07.5′	S 16°41.5′	346°02.6′	S 1°41.0′	24°23.7′	S 16°25.1′	261°14.4′	N 24°08.4′
21	1°03.3′	139°05.4′	S 16°10.0′	135°06.9′	S 16°42.5′	1°05.2′	S 1°41.1′	39°26.1′	S 16°25.1′	276°17.2′	N 24°08.5′
22	16°05.7′	154°05.4′	S 16°10.7′	150°06.2′	S 16°43.5′	16°07.8′	S 1°41.1′	54°28.5′	S 16°25.1′	291°20.0′	N 24°08.6′
23	31°08.2′	169°05.4′	S 16°11.4′	165°05.6′	S 16°44.4′	31°10.4′	S 1°41.2′	69°30.9′	S 16°25.0′	306°22.7′	N 24°08.7′
		SD 16.1′ *d* -0.7′		*v* -0.6′ *d* -1.0′		*v* 2.6′ *d* -0.0′		*v* 2.4′ *d* 0.0′		*v* 2.7′ *d* 0.1′	
Mer. pass.		11 h 43 m 39 s		11 h 59 m		20 h 56 m		18 h 23 m		2 h 38 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Mars	−Capella	−Rigel	−Aldebaran	+Jupiter	+Fomalhaut	+Saturn	+Altair
0	31°21.5′	N 3°05.6′	13.8′	15.3′	57.3′	71°26.3′	71°07.6′	65°52.1′	56°05.6′	14°36.6′	42°53.0′	55°09.5′	75°33.9′
1	45°54.3′	N 3°21.0′	13.8′	15.3′	57.3′	70°52.8′	70°36.4′	65°25.8′	55°32.7′	15°09.8′	43°23.5′	55°42.7′	76°00.9′
2	60°27.1′	N 3°36.3′	13.8′	15.3′	57.3′	70°19.2′	70°05.2′	64°59.5′	54°59.8′	15°42.9′	43°54.0′	56°15.9′	76°28.0′
3	74°59.8′	N 3°51.5′	13.8′	15.2′	57.2′	69°45.7′	69°34.0′	64°33.3′	54°27.0′	16°16.1′	44°24.6′	56°49.0′	76°55.2′
4	89°32.6′	N 4°06.8′	13.8′	15.2′	57.2′	69°12.2′	69°02.9′	64°07.1′	53°54.1′	16°49.3′	44°55.1′	57°22.2′	77°22.3′
5	104°05.4′	N 4°22.0′	13.8′	15.2′	57.2′	68°38.7′	68°31.8′	63°41.0′	53°21.3′	17°22.5′	45°25.8′	57°55.3′	77°49.4′
6	118°38.2′	N 4°37.2′	13.8′	15.2′	57.2′	68°05.3′	68°00.8′	63°15.0′	52°48.5′	17°55.6′	45°56.4′	58°28.4′	78°16.5′
7	133°10.9′	N 4°52.3′	13.8′	15.1′	57.2′	67°31.8′	67°29.8′	62°49.1′	52°15.8′	18°28.8′	46°27.1′	59°01.5′	78°43.7′
8	147°43.7′	N 5°07.5′	13.8′	15.1′	57.1′	66°58.4′	66°58.8′	62°23.3′	51°43.0′	19°01.9′	46°57.7′	59°34.5′	79°10.8′
9	162°16.5′	N 5°22.6′	13.8′	15.1′	57.1′	66°25.0′	66°27.8′	61°57.5′	51°10.4′	19°35.1′	47°28.5′	60°07.6′	79°38.0′
10	176°49.2′	N 5°37.6′	13.8′	15.0′	57.1′	65°51.6′	65°57.0′	61°31.9′	50°37.7′	20°08.2′	47°59.2′	60°40.6′	80°05.1′
11	191°22.0′	N 5°52.6′	13.7′	15.0′	57.1′	65°18.3′	65°26.1′	61°06.3′	50°05.0′	20°41.3′	48°30.0′	61°13.6′	80°32.3′
12	205°54.7′	N 6°07.6′	13.7′	15.0′	57.1′	64°44.9′	64°55.3′	60°40.8′	49°32.4′	21°14.4′	49°00.7′	61°46.6′	80°59.4′
13	220°27.4′	N 6°22.6′	13.7′	14.9′	57.0′	64°11.6′	64°24.5′	60°15.4′	48°59.8′	21°47.5′	49°31.5′	62°19.5′	81°26.6′
14	235°00.2′	N 6°37.5′	13.7′	14.9′	57.0′	63°38.3′	63°53.8′	59°50.1′	48°27.3′	22°20.6′	50°02.3′	62°52.5′	81°53.7′
15	249°32.9′	N 6°52.4′	13.7′	14.8′	57.0′	63°05.0′	63°23.1′	59°24.9′	47°54.8′	22°53.7′	50°33.2′	63°25.4′	82°20.8′
16	264°05.6′	N 7°07.2′	13.7′	14.8′	57.0′	62°31.8′	62°52.4′	58°59.8′	47°22.3′	23°26.7′	51°04.0′	63°58.3′	82°48.0′
17	278°38.3′	N 7°22.0′	13.7′	14.7′	57.0′	61°58.6′	62°21.8′	58°34.8′	46°49.8′	23°59.8′	51°34.9′	64°31.1′	83°15.1′
18	293°11.0′	N 7°36.8′	13.7′	14.7′	56.9′	61°25.3′	61°51.2′	58°09.8′	46°17.4′	24°32.8′	52°05.7′	65°04.0′	83°42.2′
19	307°43.6′	N 7°51.5′	13.7′	14.7′	56.9′	60°52.1′	61°20.7′	57°45.0′	45°45.0′	25°05.8′	52°36.6′	65°36.8′	84°09.4′
20	322°16.3′	N 8°06.1′	13.6′	14.6′	56.9′	60°19.0′	60°50.2′	57°20.3′	45°12.7′	25°38.8′	53°07.5′	66°09.6′	84°36.5′
21	336°48.9′	N 8°20.7′	13.6′	14.6′	56.9′	59°45.8′	60°19.8′	56°55.7′	44°40.3′	26°11.7′	53°38.4′	66°42.4′	85°03.6′
22	351°21.5′	N 8°35.3′	13.6′	14.5′	56.9′	59°12.7′	59°49.4′	56°31.2′	44°08.0′	26°44.7′	54°09.3′	67°15.2′	85°30.7′
23	5°54.1′	N 8°49.8′	13.6′	14.5′	56.8′	58°39.6′	59°19.1′	56°06.8′	43°35.8′	27°17.6′	54°40.2′	67°47.9′	85°57.7′
Mer. pass. 22 h 36 m SD 15.6′ phase 93%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.6′	Betelgeuse	+0.5	270°53.8′	N 7°24.7′
Deneb	+1.2	49°27.1′	N 45°21.9′	Acrux	+0.8	173°02.7′	S 63°13.2′	Capella	+0.1	280°24.2′	N 46°01.2′
Altair	+0.8	62°01.8′	N 8°55.8′	Regulus	+1.4	207°36.5′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.7′	N 38°48.5′	Pollux	+1.2	243°19.4′	N 27°58.2′	Aldebaran	+0.9	290°41.4′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.6′	N 5°10.1′	Polaris	+2.0	314°24.9′	N 89°21.6′
Rigil Kent	−0.0	139°43.5′	S 60°55.6′	Adhara	+1.5	255°07.1′	S 28°59.9′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.7′	S 16°44.6′				
Hadar	+0.6	148°39.3′	S 60°28.8′	Canopus	−0.6	263°52.9′	S 52°42.2′				

Monday 07 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	46°10.6′	184°05.3′	S 16°12.2′	180°04.9′	S 16°45.4′	46°13.0′	S 1°41.2′	84°33.3′	S 16°25.0′	321°25.5′	N 24°08.8′
1	61°13.1′	199°05.3′	S 16°12.9′	195°04.3′	S 16°46.3′	61°15.6′	S 1°41.3′	99°35.7′	S 16°25.0′	336°28.3′	N 24°08.9′
2	76°15.6′	214°05.3′	S 16°13.7′	210°03.6′	S 16°47.3′	76°18.2′	S 1°41.3′	114°38.2′	S 16°25.0′	351°31.0′	N 24°09.0′
3	91°18.0′	229°05.2′	S 16°14.4′	225°02.9′	S 16°48.2′	91°20.8′	S 1°41.4′	129°40.6′	S 16°25.0′	6°33.8′	N 24°09.1′
4	106°20.5′	244°05.2′	S 16°15.1′	240°02.3′	S 16°49.2′	106°23.4′	S 1°41.4′	144°43.0′	S 16°24.9′	21°36.6′	N 24°09.3′
5	121°23.0′	259°05.2′	S 16°15.9′	255°01.6′	S 16°50.1′	121°26.0′	S 1°41.5′	159°45.4′	S 16°24.9′	36°39.3′	N 24°09.4′
6	136°25.4′	274°05.1′	S 16°16.6′	270°01.0′	S 16°51.1′	136°28.6′	S 1°41.5′	174°47.8′	S 16°24.9′	51°42.1′	N 24°09.5′
7	151°27.9′	289°05.1′	S 16°17.4′	285°00.3′	S 16°52.0′	151°31.2′	S 1°41.6′	189°50.2′	S 16°24.9′	66°44.9′	N 24°09.6′
8	166°30.4′	304°05.1′	S 16°18.1′	299°59.7′	S 16°53.0′	166°33.8′	S 1°41.6′	204°52.6′	S 16°24.8′	81°47.7′	N 24°09.7′
9	181°32.8′	319°05.0′	S 16°18.8′	314°59.0′	S 16°53.9′	181°36.4′	S 1°41.7′	219°55.0′	S 16°24.8′	96°50.5′	N 24°09.8′
10	196°35.3′	334°05.0′	S 16°19.6′	329°58.3′	S 16°54.8′	196°39.0′	S 1°41.7′	234°57.4′	S 16°24.8′	111°53.2′	N 24°09.9′
11	211°37.7′	349°05.0′	S 16°20.3′	344°57.7′	S 16°55.8′	211°41.6′	S 1°41.8′	249°59.8′	S 16°24.8′	126°56.0′	N 24°10.1′
12	226°40.2′	4°04.9′	S 16°21.0′	359°57.0′	S 16°56.7′	226°44.2′	S 1°41.8′	265°02.2′	S 16°24.7′	141°58.8′	N 24°10.2′
13	241°42.7′	19°04.9′	S 16°21.8′	14°56.3′	S 16°57.7′	241°46.8′	S 1°41.8′	280°04.6′	S 16°24.7′	157°01.6′	N 24°10.3′
14	256°45.1′	34°04.9′	S 16°22.5′	29°55.7′	S 16°58.6′	256°49.4′	S 1°41.9′	295°07.0′	S 16°24.7′	172°04.4′	N 24°10.4′
15	271°47.6′	49°04.8′	S 16°23.2′	44°55.0′	S 16°59.6′	271°52.0′	S 1°41.9′	310°09.4′	S 16°24.7′	187°07.2′	N 24°10.5′
16	286°50.1′	64°04.8′	S 16°24.0′	59°54.4′	S 17°00.5′	286°54.6′	S 1°42.0′	325°11.8′	S 16°24.7′	202°10.0′	N 24°10.6′
17	301°52.5′	79°04.8′	S 16°24.7′	74°53.7′	S 17°01.4′	301°57.2′	S 1°42.0′	340°14.2′	S 16°24.6′	217°12.8′	N 24°10.7′
18	316°55.0′	94°04.7′	S 16°25.4′	89°53.0′	S 17°02.4′	316°59.8′	S 1°42.1′	355°16.6′	S 16°24.6′	232°15.5′	N 24°10.8′
19	331°57.5′	109°04.7′	S 16°26.2′	104°52.4′	S 17°03.3′	332°02.4′	S 1°42.1′	10°19.0′	S 16°24.6′	247°18.3′	N 24°11.0′
20	346°59.9′	124°04.7′	S 16°26.9′	119°51.7′	S 17°04.3′	347°05.0′	S 1°42.2′	25°21.4′	S 16°24.6′	262°21.1′	N 24°11.1′
21	2°02.4′	139°04.6′	S 16°27.6′	134°51.0′	S 17°05.2′	2°07.6′	S 1°42.2′	40°23.8′	S 16°24.5′	277°23.9′	N 24°11.2′
22	17°04.9′	154°04.6′	S 16°28.4′	149°50.4′	S 17°06.1′	17°10.2′	S 1°42.3′	55°26.2′	S 16°24.5′	292°26.7′	N 24°11.3′
23	32°07.3′	169°04.5′	S 16°29.1′	164°49.7′	S 17°07.1′	32°12.8′	S 1°42.3′	70°28.6′	S 16°24.5′	307°29.5′	N 24°11.4′
		SD 16.1′ *d* -0.7′		*v* -0.7′ *d* -0.9′		*v* 2.6′ *d* -0.0′		*v* 2.4′ *d* 0.0′		*v* 2.8′ *d* 0.1′	
Mer. pass.		11 h 43 m 42 s		12 h 0 m		20 h 52 m		18 h 19 m		2 h 34 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Capella	−Mars	−Rigel	−Aldebaran	+Jupiter	+Fomalhaut	+Achernar	+Saturn
0	20°26.7′	N 9°04.3′	13.6′	14.4′	56.8′	58°48.8′	58°06.5′	55°42.5′	43°03.6′	27°50.5′	55°11.1′		68°20.6′
1	34°59.3′	N 9°18.7′	13.5′	14.4′	56.8′	58°18.6′	57°33.4′	55°18.4′	42°31.4′	28°23.4′	55°42.0′		68°53.3′
2	49°31.8′	N 9°33.1′	13.5′	14.3′	56.8′	57°48.4′	57°00.4′	54°54.3′	41°59.2′	28°56.3′	56°12.9′	66°41.8′	69°26.0′
3	64°04.4′	N 9°47.4′	13.5′	14.3′	56.8′	57°18.3′	56°27.4′	54°30.4′	41°27.1′	29°29.1′	56°43.8′	66°56.8′	69°58.6′
4	78°36.9′	N 10°01.7′	13.5′	14.2′	56.7′	56°48.2′	55°54.4′	54°06.6′	40°55.0′	30°02.0′	57°14.7′	67°11.9′	70°31.3′
5	93°09.3′	N 10°15.9′	13.5′	14.2′	56.7′	56°18.2′	55°21.4′	53°42.9′	40°23.0′	30°34.8′	57°45.7′	67°27.1′	71°03.9′
6	107°41.8′	N 10°30.0′	13.4′	14.1′	56.7′	55°48.2′	54°48.4′	53°19.4′	39°51.0′	31°07.6′	58°16.6′	67°42.4′	71°36.5′
7	122°14.2′	N 10°44.1′	13.4′	14.0′	56.7′	55°18.3′	54°15.5′	52°56.0′	39°19.1′	31°40.3′	58°47.5′	67°57.8′	72°09.0′
8	136°46.6′	N 10°58.1′	13.4′	14.0′	56.6′	54°48.4′	53°42.6′	52°32.7′	38°47.1′	32°13.1′	59°18.4′	68°13.3′	72°41.6′
9	151°19.0′	N 11°12.1′	13.4′	13.9′	56.6′	54°18.6′	53°09.7′	52°09.5′	38°15.3′	32°45.8′	59°49.3′	68°28.8′	73°14.1′
10	165°51.3′	N 11°26.0′	13.3′	13.9′	56.6′	53°48.9′	52°36.8′	51°46.5′	37°43.4′	33°18.5′	60°20.2′	68°44.5′	73°46.6′
11	180°23.7′	N 11°39.9′	13.3′	13.8′	56.6′	53°19.2′	52°04.0′	51°23.6′	37°11.6′	33°51.2′	60°51.1′	69°00.2′	74°19.0′
12	194°56.0′	N 11°53.7′	13.3′	13.7′	56.6′	52°49.6′	51°31.2′	51°00.9′	36°39.9′	34°23.9′	61°22.0′	69°16.0′	74°51.5′
13	209°28.2′	N 12°07.4′	13.2′	13.7′	56.5′	52°20.0′	50°58.4′	50°38.3′	36°08.2′	34°56.5′	61°52.9′	69°31.9′	75°23.9′
14	224°00.5′	N 12°21.1′	13.2′	13.6′	56.5′	51°50.5′	50°25.6′	50°15.8′	35°36.5′	35°29.1′	62°23.8′	69°47.8′	75°56.3′
15	238°32.7′	N 12°34.7′	13.2′	13.5′	56.5′	51°21.1′	49°52.8′	49°53.5′	35°04.9′	36°01.7′	62°54.7′	70°03.8′	76°28.7′
16	253°04.8′	N 12°48.2′	13.1′	13.5′	56.5′	50°51.8′	49°20.1′	49°31.4′	34°33.3′	36°34.3′	63°25.6′	70°19.9′	77°01.0′
17	267°37.0′	N 13°01.7′	13.1′	13.4′	56.5′	50°22.5′	48°47.4′	49°09.4′	34°01.8′	37°06.8′	63°56.4′	70°36.1′	77°33.4′
18	282°09.1′	N 13°15.1′	13.1′	13.3′	56.4′	49°53.2′	48°14.7′	48°47.6′	33°30.4′	37°39.4′	64°27.3′	70°52.4′	78°05.7′
19	296°41.2′	N 13°28.4′	13.0′	13.3′	56.4′	49°24.1′	47°42.1′	48°25.9′	32°58.9′	38°11.9′	64°58.1′	71°08.7′	78°38.0′
20	311°13.2′	N 13°41.6′	13.0′	13.2′	56.4′	48°55.0′	47°09.4′	48°04.4′	32°27.6′	38°44.3′	65°29.0′	71°25.0′	79°10.2′
21	325°45.2′	N 13°54.8′	13.0′	13.1′	56.4′	48°26.0′	46°36.8′	47°43.1′	31°56.3′	39°16.8′	65°59.8′	71°41.5′	79°42.4′
22	340°17.2′	N 14°07.9′	12.9′	13.0′	56.3′	47°57.1′	46°04.2′	47°22.0′	31°25.0′	39°49.2′	66°30.6′	71°58.0′	80°14.6′
23	354°49.1′	N 14°21.0′	12.9′	13.0′	56.3′	47°28.2′	45°31.7′	47°01.0′	30°53.8′	40°21.7′	67°01.4′	72°14.5′	80°46.8′
Mer. pass. 23 h 21 m SD 15.5′ phase 98%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.6′	Betelgeuse	+0.5	270°53.8′	N 7°24.7′
Deneb	+1.2	49°27.1′	N 45°21.9′	Acrux	+0.8	173°02.7′	S 63°13.2′	Capella	+0.1	280°24.2′	N 46°01.2′
Altair	+0.8	62°01.8′	N 8°55.8′	Regulus	+1.4	207°36.5′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.7′	N 38°48.5′	Pollux	+1.2	243°19.4′	N 27°58.2′	Aldebaran	+0.9	290°41.4′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.6′	N 5°10.1′	Polaris	+2.0	314°24.8′	N 89°21.6′
Rigil Kent	−0.0	139°43.5′	S 60°55.6′	Adhara	+1.5	255°07.1′	S 28°59.9′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.6′	S 16°44.6′				
Hadar	+0.6	148°39.2′	S 60°28.8′	Canopus	−0.6	263°52.8′	S 52°42.2′				

Tuesday 08 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	47°09.8′	184°04.5′	S 16°29.8′	179°49.0′	S 17°08.0′	47°15.3′	S 1°42.3′	85°30.9′	S 16°24.5′	322°32.4′	N 24°11.5′
1	62°12.2′	199°04.5′	S 16°30.5′	194°48.3′	S 17°08.9′	62°17.9′	S 1°42.4′	100°33.3′	S 16°24.4′	337°35.2′	N 24°11.6′
2	77°14.7′	214°04.4′	S 16°31.3′	209°47.7′	S 17°09.9′	77°20.5′	S 1°42.4′	115°35.7′	S 16°24.4′	352°38.0′	N 24°11.7′
3	92°17.2′	229°04.4′	S 16°32.0′	224°47.0′	S 17°10.8′	92°23.1′	S 1°42.5′	130°38.1′	S 16°24.4′	7°40.8′	N 24°11.9′
4	107°19.6′	244°04.3′	S 16°32.7′	239°46.3′	S 17°11.7′	107°25.7′	S 1°42.5′	145°40.5′	S 16°24.4′	22°43.6′	N 24°12.0′
5	122°22.1′	259°04.3′	S 16°33.4′	254°45.7′	S 17°12.7′	122°28.3′	S 1°42.6′	160°42.9′	S 16°24.4′	37°46.4′	N 24°12.1′
6	137°24.6′	274°04.3′	S 16°34.2′	269°45.0′	S 17°13.6′	137°30.9′	S 1°42.6′	175°45.3′	S 16°24.3′	52°49.2′	N 24°12.2′
7	152°27.0′	289°04.2′	S 16°34.9′	284°44.3′	S 17°14.5′	152°33.5′	S 1°42.7′	190°47.7′	S 16°24.3′	67°52.0′	N 24°12.3′
8	167°29.5′	304°04.2′	S 16°35.6′	299°43.6′	S 17°15.4′	167°36.1′	S 1°42.7′	205°50.1′	S 16°24.3′	82°54.9′	N 24°12.4′
9	182°32.0′	319°04.1′	S 16°36.3′	314°43.0′	S 17°16.4′	182°38.7′	S 1°42.7′	220°52.5′	S 16°24.3′	97°57.7′	N 24°12.5′
10	197°34.4′	334°04.1′	S 16°37.1′	329°42.3′	S 17°17.3′	197°41.3′	S 1°42.8′	235°54.9′	S 16°24.2′	113°00.5′	N 24°12.6′
11	212°36.9′	349°04.1′	S 16°37.8′	344°41.6′	S 17°18.2′	212°43.8′	S 1°42.8′	250°57.3′	S 16°24.2′	128°03.3′	N 24°12.8′
12	227°39.3′	4°04.0′	S 16°38.5′	359°41.0′	S 17°19.1′	227°46.4′	S 1°42.9′	265°59.7′	S 16°24.2′	143°06.1′	N 24°12.9′
13	242°41.8′	19°04.0′	S 16°39.2′	14°40.3′	S 17°20.1′	242°49.0′	S 1°42.9′	281°02.1′	S 16°24.2′	158°09.0′	N 24°13.0′
14	257°44.3′	34°03.9′	S 16°40.0′	29°39.6′	S 17°21.0′	257°51.6′	S 1°43.0′	296°04.5′	S 16°24.1′	173°11.8′	N 24°13.1′
15	272°46.7′	49°03.9′	S 16°40.7′	44°38.9′	S 17°21.9′	272°54.2′	S 1°43.0′	311°06.9′	S 16°24.1′	188°14.6′	N 24°13.2′
16	287°49.2′	64°03.8′	S 16°41.4′	59°38.2′	S 17°22.8′	287°56.8′	S 1°43.0′	326°09.3′	S 16°24.1′	203°17.5′	N 24°13.3′
17	302°51.7′	79°03.8′	S 16°42.1′	74°37.6′	S 17°23.8′	302°59.4′	S 1°43.1′	341°11.7′	S 16°24.1′	218°20.3′	N 24°13.4′
18	317°54.1′	94°03.7′	S 16°42.8′	89°36.9′	S 17°24.7′	318°02.0′	S 1°43.1′	356°14.1′	S 16°24.0′	233°23.1′	N 24°13.5′
19	332°56.6′	109°03.7′	S 16°43.6′	104°36.2′	S 17°25.6′	333°04.5′	S 1°43.2′	11°16.5′	S 16°24.0′	248°26.0′	N 24°13.6′
20	347°59.1′	124°03.7′	S 16°44.3′	119°35.5′	S 17°26.5′	348°07.1′	S 1°43.2′	26°18.9′	S 16°24.0′	263°28.8′	N 24°13.8′
21	3°01.5′	139°03.6′	S 16°45.0′	134°34.9′	S 17°27.4′	3°09.7′	S 1°43.3′	41°21.3′	S 16°24.0′	278°31.6′	N 24°13.9′
22	18°04.0′	154°03.6′	S 16°45.7′	149°34.2′	S 17°28.3′	18°12.3′	S 1°43.3′	56°23.7′	S 16°23.9′	293°34.5′	N 24°14.0′
23	33°06.5′	169°03.5′	S 16°46.4′	164°33.5′	S 17°29.3′	33°14.9′	S 1°43.3′	71°26.1′	S 16°23.9′	308°37.3′	N 24°14.1′
		SD 16.1′	*d* -0.7′	*v* -0.7′	*d* -0.9′	*v* 2.6′	*d* -0.0′	*v* 2.4′	*d* 0.0′	*v* 2.8′	*d* 0.1′
Mer. pass.		11 h 43 m 45 s		12 h 1 m		20 h 47 m		18 h 15 m		2 h 29 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Capella	−Rigel	−Mars	−Aldebaran	+Jupiter	+Fomalhaut	+Achernar	+Saturn
0	9°21.0′	N 14°33.9′	12.9′	12.9′	56.3′	46°59.4′	46°40.2′	44°59.1′	30°22.7′	40°54.0′	67°32.2′	72°31.2′	81°19.0′
1	23°52.9′	N 14°46.8′	12.8′	12.8′	56.3′	46°30.7′	46°19.6′	44°26.6′	29°51.6′	41°26.4′	68°03.0′	72°47.8′	81°51.1′
2	38°24.7′	N 14°59.6′	12.8′	12.7′	56.3′	46°02.1′	45°59.2′	43°54.1′	29°20.6′	41°58.8′	68°33.8′	73°04.6′	82°23.2′
3	52°56.5′	N 15°12.4′	12.8′	12.7′	56.2′	45°33.6′	45°39.0′	43°21.6′	28°49.7′	42°31.1′	69°04.5′	73°21.4′	82°55.3′
4	67°28.3′	N 15°25.0′	12.7′	12.6′	56.2′	45°05.2′	45°18.9′	42°49.2′	28°18.8′	43°03.4′	69°35.3′	73°38.2′	83°27.4′
5	81°60.0′	N 15°37.6′	12.7′	12.5′	56.2′	44°36.8′	44°59.1′	42°16.8′	27°48.0′	43°35.6′	70°06.0′	73°55.1′	83°59.4′
6	96°31.7′	N 15°50.1′	12.6′	12.4′	56.2′	44°08.6′	44°39.5′	41°44.4′	27°17.2′	44°07.9′	70°36.7′	74°12.1′	84°31.5′
7	111°03.3′	N 16°02.5′	12.6′	12.3′	56.2′	43°40.4′	44°20.1′	41°12.0′	26°46.6′	44°40.1′	71°07.4′	74°29.0′	85°03.4′
8	125°34.9′	N 16°14.8′	12.6′	12.2′	56.1′	43°12.3′	44°00.8′	40°39.6′	26°16.0′	45°12.3′	71°38.1′	74°46.1′	85°35.4′
9	140°06.4′	N 16°27.0′	12.5′	12.2′	56.1′	42°44.3′	43°41.9′	40°07.3′	25°45.5′	45°44.5′	72°08.8′	75°03.2′	86°07.3′
10	154°38.0′	N 16°39.2′	12.5′	12.1′	56.1′	42°16.4′	43°23.1′	39°35.0′	25°15.1′	46°16.6′	72°39.5′	75°20.3′	86°39.3′
11	169°09.4′	N 16°51.3′	12.4′	12.0′	56.1′	41°48.7′	43°04.5′	39°02.7′	24°44.7′	46°48.8′	73°10.1′	75°37.5′	87°11.2′
12	183°40.9′	N 17°03.3′	12.4′	11.9′	56.0′	41°21.0′	42°46.2′	38°30.5′	24°14.5′	47°20.9′	73°40.7′	75°54.7′	87°43.0′
13	198°12.2′	N 17°15.2′	12.3′	11.8′	56.0′	40°53.4′	42°28.1′	37°58.3′	23°44.3′	47°52.9′	74°11.3′	76°11.9′	88°14.9′
14	212°43.6′	N 17°27.0′	12.3′	11.7′	56.0′	40°26.0′	42°10.2′	37°26.1′	23°14.3′	48°25.0′	74°41.9′	76°29.2′	88°46.7′
15	227°14.9′	N 17°38.7′	12.3′	11.6′	56.0′	39°58.7′	41°52.6′	36°53.9′	22°44.4′	48°57.0′	75°12.5′	76°46.6′	89°18.5′
16	241°46.1′	N 17°50.3′	12.2′	11.5′	56.0′	39°31.4′	41°35.3′	36°21.7′	22°14.5′	49°29.0′	75°43.1′	77°03.9′	89°50.2′
17	256°17.4′	N 18°01.8′	12.2′	11.4′	55.9′	39°04.3′	41°18.1′	35°49.6′	21°44.8′	50°01.0′	76°13.6′	77°21.3′	90°22.0′
18	270°48.5′	N 18°13.3′	12.1′	11.3′	55.9′	38°37.3′	41°01.3′	35°17.5′	21°15.2′	50°33.0′	76°44.2′	77°38.7′	90°53.7′
19	285°19.7′	N 18°24.6′	12.1′	11.3′	55.9′	38°10.5′	40°44.7′	34°45.4′	20°45.8′	51°04.9′	77°14.7′	77°56.2′	91°25.4′
20	299°50.7′	N 18°35.9′	12.0′	11.2′	55.9′	37°43.8′	40°28.3′	34°13.4′	20°16.5′	51°36.8′	77°45.2′	78°13.7′	91°57.1′
21	314°21.8′	N 18°47.0′	12.0′	11.1′	55.8′	37°17.2′	40°12.2′	33°41.4′	19°47.3′	52°08.7′	78°15.6′	78°31.2′	92°28.7′
22	328°52.8′	N 18°58.1′	11.9′	11.0′	55.8′	36°50.7′	39°56.4′	33°09.4′	19°18.3′	52°40.5′	78°46.1′	78°48.8′	93°00.3′
23	343°23.7′	N 19°09.1′	11.9′	10.9′	55.8′	36°24.4′	39°40.9′	32°37.4′	18°49.4′	53°12.4′	79°16.5′	79°06.3′	93°31.9′
Mer. pass. 0 h 9 m SD 15.4′ phase 100%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.6′	Betelgeuse	+0.5	270°53.8′	N 7°24.7′
Deneb	+1.2	49°27.1′	N 45°21.9′	Acrux	+0.8	173°02.7′	S 63°13.2′	Capella	+0.1	280°24.2′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.5′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.7′	N 38°48.5′	Pollux	+1.2	243°19.4′	N 27°58.2′	Aldebaran	+0.9	290°41.4′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.6′	N 5°10.1′	Polaris	+2.0	314°24.7′	N 89°21.6′
Rigil Kent	−0.0	139°43.5′	S 60°55.6′	Adhara	+1.5	255°07.1′	S 28°59.9′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.6′	S 16°44.7′				
Hadar	+0.6	148°39.2′	S 60°28.8′	Canopus	−0.6	263°52.8′	S 52°42.2′				

Wednesday 09 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	48°08.9′	184°03.5′	S 16°47.2′	179°32.8′	S 17°30.2′	48°17.5′	S 1°43.4′	86°28.5′	S 16°23.9′	323°40.2′	N 24°14.2′
1	63°11.4′	199°03.4′	S 16°47.9′	194°32.1′	S 17°31.1′	63°20.1′	S 1°43.4′	101°30.8′	S 16°23.9′	338°43.0′	N 24°14.3′
2	78°13.8′	214°03.4′	S 16°48.6′	209°31.4′	S 17°32.0′	78°22.6′	S 1°43.5′	116°33.2′	S 16°23.8′	353°45.9′	N 24°14.4′
3	93°16.3′	229°03.3′	S 16°49.3′	224°30.8′	S 17°32.9′	93°25.2′	S 1°43.5′	131°35.6′	S 16°23.8′	8°48.7′	N 24°14.5′
4	108°18.8′	244°03.3′	S 16°50.0′	239°30.1′	S 17°33.8′	108°27.8′	S 1°43.5′	146°38.0′	S 16°23.8′	23°51.6′	N 24°14.7′
5	123°21.2′	259°03.2′	S 16°50.7′	254°29.4′	S 17°34.7′	123°30.4′	S 1°43.6′	161°40.4′	S 16°23.8′	38°54.4′	N 24°14.8′
6	138°23.7′	274°03.2′	S 16°51.4′	269°28.7′	S 17°35.6′	138°33.0′	S 1°43.6′	176°42.8′	S 16°23.7′	53°57.3′	N 24°14.9′
7	153°26.2′	289°03.1′	S 16°52.2′	284°28.0′	S 17°36.6′	153°35.6′	S 1°43.7′	191°45.2′	S 16°23.7′	69°00.1′	N 24°15.0′
8	168°28.6′	304°03.1′	S 16°52.9′	299°27.3′	S 17°37.5′	168°38.1′	S 1°43.7′	206°47.6′	S 16°23.7′	84°03.0′	N 24°15.1′
9	183°31.1′	319°03.0′	S 16°53.6′	314°26.7′	S 17°38.4′	183°40.7′	S 1°43.7′	221°50.0′	S 16°23.7′	99°05.9′	N 24°15.2′
10	198°33.6′	334°03.0′	S 16°54.3′	329°26.0′	S 17°39.3′	198°43.3′	S 1°43.8′	236°52.4′	S 16°23.6′	114°08.7′	N 24°15.3′
11	213°36.0′	349°02.9′	S 16°55.0′	344°25.3′	S 17°40.2′	213°45.9′	S 1°43.8′	251°54.8′	S 16°23.6′	129°11.6′	N 24°15.4′
12	228°38.5′	4°02.9′	S 16°55.7′	359°24.6′	S 17°41.1′	228°48.5′	S 1°43.9′	266°57.2′	S 16°23.6′	144°14.5′	N 24°15.5′
13	243°41.0′	19°02.8′	S 16°56.4′	14°23.9′	S 17°42.0′	243°51.1′	S 1°43.9′	281°59.6′	S 16°23.6′	159°17.3′	N 24°15.7′
14	258°43.4′	34°02.8′	S 16°57.1′	29°23.2′	S 17°42.9′	258°53.6′	S 1°43.9′	297°02.0′	S 16°23.5′	174°20.2′	N 24°15.8′
15	273°45.9′	49°02.7′	S 16°57.8′	44°22.5′	S 17°43.8′	273°56.2′	S 1°44.0′	312°04.3′	S 16°23.5′	189°23.1′	N 24°15.9′
16	288°48.3′	64°02.7′	S 16°58.6′	59°21.8′	S 17°44.7′	288°58.8′	S 1°44.0′	327°06.7′	S 16°23.5′	204°25.9′	N 24°16.0′
17	303°50.8′	79°02.6′	S 16°59.3′	74°21.1′	S 17°45.6′	304°01.4′	S 1°44.1′	342°09.1′	S 16°23.5′	219°28.8′	N 24°16.1′
18	318°53.3′	94°02.5′	S 16°60.0′	89°20.5′	S 17°46.5′	319°04.0′	S 1°44.1′	357°11.5′	S 16°23.4′	234°31.7′	N 24°16.2′
19	333°55.7′	109°02.5′	S 17°00.7′	104°19.8′	S 17°47.4′	334°06.5′	S 1°44.1′	12°13.9′	S 16°23.4′	249°34.6′	N 24°16.3′
20	348°58.2′	124°02.4′	S 17°01.4′	119°19.1′	S 17°48.3′	349°09.1′	S 1°44.2′	27°16.3′	S 16°23.4′	264°37.4′	N 24°16.4′
21	4°00.7′	139°02.4′	S 17°02.1′	134°18.4′	S 17°49.2′	4°11.7′	S 1°44.2′	42°18.7′	S 16°23.4′	279°40.3′	N 24°16.5′
22	19°03.1′	154°02.3′	S 17°02.8′	149°17.7′	S 17°50.1′	19°14.3′	S 1°44.2′	57°21.1′	S 16°23.3′	294°43.2′	N 24°16.7′
23	34°05.6′	169°02.3′	S 17°03.5′	164°17.0′	S 17°51.0′	34°16.8′	S 1°44.3′	72°23.5′	S 16°23.3′	309°46.1′	N 24°16.8′
		SD 16.1′ *d* -0.7′		*v* -0.7′ *d* -0.9′		*v* 2.6′ *d* -0.0′		*v* 2.4′ *d* 0.0′		*v* 2.9′ *d* 0.1′	
Mer. pass.		11 h 43 m 50 s		12 h 2 m		20 h 43 m		18 h 11 m		2 h 25 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Betelgeuse	−Capella	−Mars	−Aldebaran	+Jupiter	+Achernar	+Fomalhaut	+Saturn
0	357°54.6′	N 19°19.9′	11.9′	10.8′	55.8′	39°31.8′	35°58.3′	32°05.5′	18°20.7′	53°44.2′	79°23.9′	79°46.9′	94°03.5′
1	12°25.5′	N 19°30.7′	11.8′	10.7′	55.8′	39°05.0′	35°32.3′	31°33.5′	17°52.2′	54°16.0′	79°41.6′	80°17.3′	94°35.0′
2	26°56.3′	N 19°41.4′	11.8′	10.6′	55.7′	38°38.3′	35°06.4′	31°01.7′	17°23.9′	54°47.7′	79°59.2′	80°47.7′	95°06.5′
3	41°27.1′	N 19°51.9′	11.7′	10.5′	55.7′	38°11.8′	34°40.7′	30°29.8′	16°55.9′	55°19.4′	80°16.9′	81°18.0′	95°38.0′
4	55°57.8′	N 20°02.4′	11.7′	10.4′	55.7′	37°45.4′	34°15.2′	29°57.9′	16°28.0′	55°51.2′	80°34.6′	81°48.4′	96°09.5′
5	70°28.5′	N 20°12.8′	11.6′	10.3′	55.7′	37°19.1′	33°49.8′	29°26.1′	16°00.4′	56°22.8′	80°52.3′	82°18.7′	96°40.9′
6	84°59.1′	N 20°23.0′	11.6′	10.2′	55.7′	36°53.0′	33°24.6′	28°54.4′	15°33.1′	56°54.5′	81°10.0′	82°49.0′	97°12.4′
7	99°29.7′	N 20°33.2′	11.5′	10.0′	55.6′	36°27.0′	32°59.6′	28°22.6′	15°06.0′	57°26.1′	81°27.8′	83°19.3′	97°43.7′
8	114°00.3′	N 20°43.2′	11.5′	9.9′	55.6′	36°01.1′	32°34.8′	27°50.9′	14°39.3′	57°57.7′	81°45.5′	83°49.5′	98°15.1′
9	128°30.8′	N 20°53.2′	11.5′	9.8′	55.6′	35°35.4′	32°10.2′	27°19.2′	14°12.9′	58°29.3′	82°03.3′	84°19.7′	98°46.5′
10	143°01.2′	N 21°03.0′	11.4′	9.7′	55.6′	35°09.9′	31°45.8′	26°47.5′	13°46.9′	59°00.9′	82°21.1′	84°49.9′	99°17.8′
11	157°31.6′	N 21°12.7′	11.4′	9.6′	55.6′	34°44.5′	31°21.5′	26°15.9′	13°21.3′	59°32.4′	82°38.9′	85°20.1′	99°49.1′
12	172°02.0′	N 21°22.3′	11.3′	9.5′	55.5′	34°19.3′	30°57.5′	25°44.2′	12°56.1′	60°03.9′	82°56.7′	85°50.3′	100°20.3′
13	186°32.3′	N 21°31.9′	11.3′	9.4′	55.5′	33°54.2′	30°33.7′	25°12.6′	12°31.4′	60°35.4′	83°14.5′	86°20.4′	100°51.6′
14	201°02.6′	N 21°41.3′	11.2′	9.3′	55.5′	33°29.4′	30°10.2′	24°41.1′	12°07.2′	61°06.9′	83°32.3′	86°50.6′	101°22.8′
15	215°32.8′	N 21°50.5′	11.2′	9.2′	55.5′	33°04.7′	29°46.9′	24°09.6′	11°43.7′	61°38.3′	83°50.2′	87°20.7′	101°54.0′
16	230°03.0′	N 21°59.7′	11.1′	9.1′	55.5′	32°40.2′	29°23.8′	23°38.1′	11°20.7′	62°09.7′	84°08.0′	87°50.7′	102°25.1′
17	244°33.1′	N 22°08.8′	11.1′	9.0′	55.4′	32°15.9′	29°00.9′	23°06.6′	10°58.4′	62°41.1′	84°25.9′	88°20.8′	102°56.3′
18	259°03.2′	N 22°17.7′	11.1′	8.8′	55.4′	31°51.8′	28°38.4′	22°35.2′		63°12.5′	84°43.7′	88°50.8′	103°27.4′
19	273°33.3′	N 22°26.6′	11.0′	8.7′	55.4′	31°27.9′	28°16.1′	22°03.8′		63°43.8′	85°01.6′	89°20.8′	103°58.5′
20	288°03.3′	N 22°35.3′	11.0′	8.6′	55.4′	31°04.2′	27°54.1′	21°32.4′		64°15.1′	85°19.4′	89°50.8′	104°29.6′
21	302°33.3′	N 22°43.9′	10.9′	8.5′	55.3′	30°40.7′	27°32.3′	21°01.0′		64°46.4′	85°37.3′	90°20.8′	105°00.6′
22	317°03.2′	N 22°52.4′	10.9′	8.4′	55.3′	30°17.5′	27°10.9′	20°29.7′		65°17.7′	85°55.2′	90°50.7′	105°31.6′
23	331°33.1′	N 23°00.8′	10.8′	8.3′	55.3′	29°54.5′	26°49.8′	19°58.5′		65°48.9′	86°13.0′	91°20.6′	106°02.6′
Mer. pass. 0 h 9 m SD 15.2′ phase 100%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.6′	Betelgeuse	+0.5	270°53.8′	N 7°24.7′
Deneb	+1.2	49°27.1′	N 45°21.9′	Acrux	+0.8	173°02.7′	S 63°13.2′	Capella	+0.1	280°24.2′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.5′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.7′	N 38°48.5′	Pollux	+1.2	243°19.4′	N 27°58.2′	Aldebaran	+0.9	290°41.4′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.6′	N 5°10.1′	Polaris	+2.0	314°24.5′	N 89°21.6′
Rigil Kent	−0.0	139°43.5′	S 60°55.6′	Adhara	+1.5	255°07.1′	S 28°59.9′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.6′	S 16°44.7′				
Hadar	+0.6	148°39.2′	S 60°28.8′	Canopus	−0.6	263°52.8′	S 52°42.2′				

Thursday 10 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	49°08.1′	184°02.2′	S 17°04.2′	179°16.3′	S 17°51.9′	49°19.4′	S 1°44.3′	87°25.9′	S 16°23.3′	324°49.0′	N 24°16.9′
1	64°10.5′	199°02.2′	S 17°04.9′	194°15.6′	S 17°52.8′	64°22.0′	S 1°44.4′	102°28.3′	S 16°23.2′	339°51.9′	N 24°17.0′
2	79°13.0′	214°02.1′	S 17°05.6′	209°14.9′	S 17°53.7′	79°24.6′	S 1°44.4′	117°30.6′	S 16°23.2′	354°54.7′	N 24°17.1′
3	94°15.5′	229°02.0′	S 17°06.3′	224°14.2′	S 17°54.6′	94°27.2′	S 1°44.4′	132°33.0′	S 16°23.2′	9°57.6′	N 24°17.2′
4	109°17.9′	244°02.0′	S 17°07.0′	239°13.5′	S 17°55.5′	109°29.7′	S 1°44.5′	147°35.4′	S 16°23.2′	25°00.5′	N 24°17.3′
5	124°20.4′	259°01.9′	S 17°07.7′	254°12.8′	S 17°56.4′	124°32.3′	S 1°44.5′	162°37.8′	S 16°23.1′	40°03.4′	N 24°17.4′
6	139°22.8′	274°01.9′	S 17°08.4′	269°12.1′	S 17°57.2′	139°34.9′	S 1°44.5′	177°40.2′	S 16°23.1′	55°06.3′	N 24°17.5′
7	154°25.3′	289°01.8′	S 17°09.1′	284°11.4′	S 17°58.1′	154°37.5′	S 1°44.6′	192°42.6′	S 16°23.1′	70°09.2′	N 24°17.6′
8	169°27.8′	304°01.7′	S 17°09.8′	299°10.7′	S 17°59.0′	169°40.0′	S 1°44.6′	207°45.0′	S 16°23.1′	85°12.1′	N 24°17.8′
9	184°30.2′	319°01.7′	S 17°10.5′	314°10.0′	S 17°59.9′	184°42.6′	S 1°44.7′	222°47.4′	S 16°23.0′	100°15.0′	N 24°17.9′
10	199°32.7′	334°01.6′	S 17°11.2′	329°09.3′	S 18°00.8′	199°45.2′	S 1°44.7′	237°49.8′	S 16°23.0′	115°17.9′	N 24°18.0′
11	214°35.2′	349°01.6′	S 17°11.9′	344°08.6′	S 18°01.7′	214°47.8′	S 1°44.7′	252°52.1′	S 16°23.0′	130°20.8′	N 24°18.1′
12	229°37.6′	4°01.5′	S 17°12.6′	359°07.9′	S 18°02.6′	229°50.3′	S 1°44.8′	267°54.5′	S 16°23.0′	145°23.7′	N 24°18.2′
13	244°40.1′	19°01.4′	S 17°13.3′	14°07.2′	S 18°03.5′	244°52.9′	S 1°44.8′	282°56.9′	S 16°22.9′	160°26.6′	N 24°18.3′
14	259°42.6′	34°01.4′	S 17°14.0′	29°06.5′	S 18°04.3′	259°55.5′	S 1°44.8′	297°59.3′	S 16°22.9′	175°29.5′	N 24°18.4′
15	274°45.0′	49°01.3′	S 17°14.7′	44°05.8′	S 18°05.2′	274°58.1′	S 1°44.9′	313°01.7′	S 16°22.9′	190°32.4′	N 24°18.5′
16	289°47.5′	64°01.3′	S 17°15.4′	59°05.1′	S 18°06.1′	290°00.6′	S 1°44.9′	328°04.1′	S 16°22.9′	205°35.4′	N 24°18.6′
17	304°49.9′	79°01.2′	S 17°16.1′	74°04.4′	S 18°07.0′	305°03.2′	S 1°44.9′	343°06.5′	S 16°22.8′	220°38.3′	N 24°18.7′
18	319°52.4′	94°01.1′	S 17°16.8′	89°03.7′	S 18°07.9′	320°05.8′	S 1°45.0′	358°08.9′	S 16°22.8′	235°41.2′	N 24°18.9′
19	334°54.9′	109°01.1′	S 17°17.5′	104°03.0′	S 18°08.7′	335°08.3′	S 1°45.0′	13°11.2′	S 16°22.8′	250°44.1′	N 24°19.0′
20	349°57.3′	124°01.0′	S 17°18.2′	119°02.3′	S 18°09.6′	350°10.9′	S 1°45.0′	28°13.6′	S 16°22.7′	265°47.0′	N 24°19.1′
21	4°59.8′	139°00.9′	S 17°18.9′	134°01.6′	S 18°10.5′	5°13.5′	S 1°45.1′	43°16.0′	S 16°22.7′	280°49.9′	N 24°19.2′
22	20°02.3′	154°00.9′	S 17°19.6′	149°00.9′	S 18°11.4′	20°16.1′	S 1°45.1′	58°18.4′	S 16°22.7′	295°52.9′	N 24°19.3′
23	35°04.7′	169°00.8′	S 17°20.3′	164°00.2′	S 18°12.3′	35°18.6′	S 1°45.2′	73°20.8′	S 16°22.7′	310°55.8′	N 24°19.4′
		SD 16.1′ *d* -0.7′		*v* -0.7′ *d* -0.9′		*v* 2.6′ *d* -0.0′		*v* 2.4′ *d* 0.0′		*v* 2.9′ *d* 0.1′	
Mer. pass.		11 h 43 m 55 s		12 h 4 m		20 h 39 m		18 h 7 m		2 h 20 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Betelgeuse	−Capella	−Mars	−Aldebaran	+Jupiter	+Achernar	+Fomalhaut	+Saturn
0	346°02.9′	N 23°09.0′	10.8′	8.1′	55.3′	29°31.7′	26°29.0′	19°27.2′		66°20.2′	86°30.9′	91°50.5′	106°33.6′
1	0°32.7′	N 23°17.1′	10.8′	8.0′	55.3′	29°09.2′	26°08.5′	18°56.0′		66°51.3′	86°48.7′	92°20.4′	107°04.5′
2	15°02.5′	N 23°25.2′	10.7′	7.9′	55.2′	28°46.9′	25°48.4′	18°24.8′		67°22.5′	87°06.6′	92°50.2′	107°35.5′
3	29°32.2′	N 23°33.1′	10.7′	7.8′	55.2′	28°25.0′	25°28.6′	17°53.7′		67°53.7′	87°24.5′	93°20.0′	108°06.3′
4	44°01.9′	N 23°40.8′	10.6′	7.7′	55.2′	28°03.3′	25°09.3′	17°22.6′		68°24.8′	87°42.3′	93°49.8′	108°37.2′
5	58°31.5′	N 23°48.5′	10.6′	7.5′	55.2′	27°41.9′	24°50.2′	16°51.6′		68°55.9′	88°00.1′	94°19.6′	109°08.1′
6	73°01.1′	N 23°56.0′	10.6′	7.4′	55.2′	27°20.7′	24°31.6′	16°20.6′		69°27.0′	88°18.0′	94°49.3′	109°38.9′
7	87°30.7′	N 24°03.4′	10.5′	7.3′	55.2′	26°59.9′	24°13.4′	15°49.6′		69°58.0′	88°35.8′	95°19.1′	110°09.7′
8	102°00.2′	N 24°10.7′	10.5′	7.2′	55.1′	26°39.4′	23°55.6′	15°18.7′		70°29.0′	88°53.6′	95°48.8′	110°40.5′
9	116°29.7′	N 24°17.9′	10.4′	7.0′	55.1′	26°19.3′	23°38.3′	14°47.8′		71°00.0′	89°11.4′	96°18.4′	111°11.2′
10	130°59.1′	N 24°24.9′	10.4′	6.9′	55.1′	25°59.5′	23°21.4′	14°17.0′		71°31.0′	89°29.2′	96°48.1′	111°41.9′
11	145°28.5′	N 24°31.9′	10.4′	6.8′	55.1′	25°40.0′	23°05.0′	13°46.2′		72°02.0′	89°47.0′	97°17.7′	112°12.6′
12	159°57.9′	N 24°38.7′	10.3′	6.7′	55.1′	25°20.9′	22°49.0′	13°15.5′		72°32.9′	90°04.8′	97°47.3′	112°43.3′
13	174°27.3′	N 24°45.3′	10.3′	6.5′	55.0′	25°02.2′		12°44.9′		73°03.8′	90°22.5′	98°16.9′	113°14.0′
14	188°56.6′	N 24°51.9′	10.3′	6.4′	55.0′	24°43.9′		12°14.3′		73°34.7′	90°40.3′	98°46.4′	113°44.6′
15	203°25.9′	N 24°58.3′	10.2′	6.3′	55.0′	24°25.9′		11°43.8′		74°05.6′	90°58.0′	99°15.9′	114°15.2′
16	217°55.1′	N 25°04.6′	10.2′	6.2′	55.0′	24°08.4′		11°13.4′		74°36.4′	91°15.7′	99°45.4′	114°45.8′
17	232°24.3′	N 25°10.7′	10.2′	6.0′	55.0′	23°51.3′		10°43.1′		75°07.2′	91°33.4′	100°14.9′	115°16.3′
18	246°53.5′	N 25°16.7′	10.1′	5.9′	54.9′	23°34.7′		10°12.9′		75°38.0′	91°51.1′	100°44.3′	115°46.9′
19	261°22.6′	N 25°22.6′	10.1′	5.8′	54.9′	23°18.6′		9°42.8′		76°08.8′	92°08.8′	101°13.8′	116°17.4′
20	275°51.8′	N 25°28.4′	10.1′	5.6′	54.9′	23°02.9′		9°12.8′		76°39.5′	92°26.4′	101°43.2′	116°47.9′
21	290°20.8′	N 25°34.1′	10.1′	5.5′	54.9′			8°42.9′		77°10.3′	92°44.0′	102°12.5′	117°18.4′
22	304°49.9′	N 25°39.6′	10.0′	5.4′	54.9′			8°13.2′	10°37.9′	77°41.0′	93°01.6′	102°41.9′	117°48.8′
23	319°18.9′	N 25°44.9′	10.0′	5.2′	54.9′			7°43.7′	10°59.0′	78°11.7′	93°19.2′	103°11.2′	118°19.2′
Mer. pass. 0 h 58 m SD 15.1′ phase 98%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.6′	Betelgeuse	+0.5	270°53.8′	N 7°24.7′
Deneb	+1.2	49°27.1′	N 45°21.9′	Acrux	+0.8	173°02.7′	S 63°13.2′	Capella	+0.1	280°24.2′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.5′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.7′	N 38°48.5′	Pollux	+1.2	243°19.4′	N 27°58.2′	Aldebaran	+0.9	290°41.4′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.6′	N 5°10.1′	Polaris	+2.0	314°24.4′	N 89°21.6′
Rigil Kent	−0.0	139°43.5′	S 60°55.6′	Adhara	+1.5	255°07.1′	S 28°59.9′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.6′	S 16°44.7′				
Hadar	+0.6	148°39.2′	S 60°28.8′	Canopus	−0.6	263°52.8′	S 52°42.2′				

Friday 11 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	50°07.2′	184°00.7′	S 17°21.0′	178°59.5′	S 18°13.1′	50°21.2′	S 1°45.2′	88°23.2′	S 16°22.6′	325°58.7′	N 24°19.5′
1	65°09.7′	199°00.7′	S 17°21.7′	193°58.8′	S 18°14.0′	65°23.8′	S 1°45.2′	103°25.6′	S 16°22.6′	341°01.6′	N 24°19.6′
2	80°12.1′	214°00.6′	S 17°22.4′	208°58.1′	S 18°14.9′	80°26.3′	S 1°45.3′	118°27.9′	S 16°22.6′	356°04.6′	N 24°19.7′
3	95°14.6′	229°00.6′	S 17°23.1′	223°57.4′	S 18°15.8′	95°28.9′	S 1°45.3′	133°30.3′	S 16°22.6′	11°07.5′	N 24°19.8′
4	110°17.1′	244°00.5′	S 17°23.7′	238°56.6′	S 18°16.6′	110°31.5′	S 1°45.3′	148°32.7′	S 16°22.5′	26°10.4′	N 24°20.0′
5	125°19.5′	259°00.4′	S 17°24.4′	253°55.9′	S 18°17.5′	125°34.0′	S 1°45.4′	163°35.1′	S 16°22.5′	41°13.4′	N 24°20.1′
6	140°22.0′	274°00.3′	S 17°25.1′	268°55.2′	S 18°18.4′	140°36.6′	S 1°45.4′	178°37.5′	S 16°22.5′	56°16.3′	N 24°20.2′
7	155°24.4′	289°00.3′	S 17°25.8′	283°54.5′	S 18°19.2′	155°39.2′	S 1°45.4′	193°39.9′	S 16°22.4′	71°19.2′	N 24°20.3′
8	170°26.9′	304°00.2′	S 17°26.5′	298°53.8′	S 18°20.1′	170°41.7′	S 1°45.5′	208°42.2′	S 16°22.4′	86°22.2′	N 24°20.4′
9	185°29.4′	319°00.1′	S 17°27.2′	313°53.1′	S 18°21.0′	185°44.3′	S 1°45.5′	223°44.6′	S 16°22.4′	101°25.1′	N 24°20.5′
10	200°31.8′	334°00.1′	S 17°27.9′	328°52.4′	S 18°21.8′	200°46.9′	S 1°45.5′	238°47.0′	S 16°22.4′	116°28.1′	N 24°20.6′
11	215°34.3′	349°00.0′	S 17°28.6′	343°51.7′	S 18°22.7′	215°49.4′	S 1°45.6′	253°49.4′	S 16°22.3′	131°31.0′	N 24°20.7′
12	230°36.8′	3°59.9′	S 17°29.3′	358°51.0′	S 18°23.6′	230°52.0′	S 1°45.6′	268°51.8′	S 16°22.3′	146°33.9′	N 24°20.8′
13	245°39.2′	18°59.9′	S 17°29.9′	13°50.2′	S 18°24.4′	245°54.6′	S 1°45.6′	283°54.2′	S 16°22.3′	161°36.9′	N 24°20.9′
14	260°41.7′	33°59.8′	S 17°30.6′	28°49.5′	S 18°25.3′	260°57.1′	S 1°45.7′	298°56.6′	S 16°22.2′	176°39.8′	N 24°21.0′
15	275°44.2′	48°59.7′	S 17°31.3′	43°48.8′	S 18°26.2′	275°59.7′	S 1°45.7′	313°58.9′	S 16°22.2′	191°42.8′	N 24°21.2′
16	290°46.6′	63°59.7′	S 17°32.0′	58°48.1′	S 18°27.0′	291°02.3′	S 1°45.7′	329°01.3′	S 16°22.2′	206°45.7′	N 24°21.3′
17	305°49.1′	78°59.6′	S 17°32.7′	73°47.4′	S 18°27.9′	306°04.8′	S 1°45.8′	344°03.7′	S 16°22.2′	221°48.7′	N 24°21.4′
18	320°51.6′	93°59.5′	S 17°33.4′	88°46.7′	S 18°28.7′	321°07.4′	S 1°45.8′	359°06.1′	S 16°22.1′	236°51.7′	N 24°21.5′
19	335°54.0′	108°59.4′	S 17°34.0′	103°45.9′	S 18°29.6′	336°10.0′	S 1°45.8′	14°08.5′	S 16°22.1′	251°54.6′	N 24°21.6′
20	350°56.5′	123°59.4′	S 17°34.7′	118°45.2′	S 18°30.5′	351°12.5′	S 1°45.8′	29°10.9′	S 16°22.1′	266°57.6′	N 24°21.7′
21	5°58.9′	138°59.3′	S 17°35.4′	133°44.5′	S 18°31.3′	6°15.1′	S 1°45.9′	44°13.2′	S 16°22.0′	282°00.5′	N 24°21.8′
22	21°01.4′	153°59.2′	S 17°36.1′	148°43.8′	S 18°32.2′	21°17.7′	S 1°45.9′	59°15.6′	S 16°22.0′	297°03.5′	N 24°21.9′
23	36°03.9′	168°59.1′	S 17°36.8′	163°43.1′	S 18°33.0′	36°20.2′	S 1°45.9′	74°18.0′	S 16°22.0′	312°06.5′	N 24°22.0′
		SD 16.1′ *d* -0.7′		*v* -0.7′ *d* -0.9′		*v* 2.6′ *d* -0.0′		*v* 2.4′ *d* 0.0′		*v* 2.9′ *d* 0.1′	
Mer. pass.		11 h 44 m 2 s		12 h 5 m		20 h 35 m		18 h 4 m		2 h 16 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Regulus	−Procyon	−Pollux	−Mars	+Aldebaran	+Jupiter	+Achernar	+Fomalhaut
0	333°48.0′	N 25°50.2′	10.0′	5.1′	54.8′	72°26.9′	42°27.3′	35°53.4′	7°14.5′	11°20.7′	78°42.3′	93°36.7′	103°40.5′
1	348°16.9′	N 25°55.3′	10.0′	5.0′	54.8′	71°56.4′	42°01.4′	35°22.9′	6°45.5′	11°43.1′	79°13.0′	93°54.3′	104°09.7′
2	2°45.9′	N 26°00.3′	9.9′	4.9′	54.8′	71°26.0′	41°35.7′	34°52.4′	6°16.8′	12°06.1′	79°43.6′	94°11.8′	104°39.0′
3	17°14.8′	N 26°05.1′	9.9′	4.7′	54.8′	70°55.6′	41°10.1′	34°21.9′	5°48.6′	12°29.5′	80°14.2′	94°29.2′	105°08.2′
4	31°43.8′	N 26°09.9′	9.9′	4.6′	54.8′	70°25.2′	40°44.6′	33°51.5′	5°20.8′	12°53.5′	80°44.7′	94°46.7′	105°37.4′
5	46°12.6′	N 26°14.5′	9.9′	4.5′	54.8′	69°54.9′	40°19.2′	33°21.1′		13°17.8′	81°15.3′	95°04.1′	106°06.5′
6	60°41.5′	N 26°18.9′	9.9′	4.3′	54.7′	69°24.6′	39°54.0′	32°50.7′		13°42.6′	81°45.8′	95°21.5′	106°35.7′
7	75°10.4′	N 26°23.2′	9.8′	4.2′	54.7′	68°54.2′	39°28.8′	32°20.3′		14°07.7′	82°16.4′	95°38.9′	107°04.8′
8	89°39.2′	N 26°27.4′	9.8′	4.1′	54.7′	68°23.9′	39°03.8′	31°49.9′		14°33.1′	82°46.8′	95°56.2′	107°33.9′
9	104°08.0′	N 26°31.5′	9.8′	3.9′	54.7′	67°53.7′	38°38.9′	31°19.6′		14°58.8′	83°17.3′	96°13.5′	108°02.9′
10	118°36.8′	N 26°35.4′	9.8′	3.8′	54.7′	67°23.4′	38°14.1′	30°49.3′		15°24.7′	83°47.8′	96°30.8′	108°31.9′
11	133°05.6′	N 26°39.2′	9.8′	3.6′	54.7′	66°53.2′	37°49.4′	30°19.0′		15°50.9′	84°18.2′	96°48.0′	109°01.0′
12	147°34.4′	N 26°42.8′	9.8′	3.5′	54.6′	66°23.0′	37°24.9′	29°48.7′		16°17.3′	84°48.6′	97°05.3′	109°29.9′
13	162°03.1′	N 26°46.3′	9.7′	3.4′	54.6′	65°52.8′	37°00.5′	29°18.4′		16°43.9′	85°19.0′	97°22.4′	109°58.9′
14	176°31.9′	N 26°49.7′	9.7′	3.2′	54.6′	65°22.6′	36°36.3′	28°48.2′		17°10.7′	85°49.4′	97°39.6′	110°27.8′
15	191°00.6′	N 26°53.0′	9.7′	3.1′	54.6′	64°52.5′	36°12.2′	28°18.0′		17°37.7′	86°19.7′	97°56.7′	110°56.7′
16	205°29.3′	N 26°56.1′	9.7′	3.0′	54.6′	64°22.3′	35°48.3′	27°47.8′		18°04.8′	86°50.1′	98°13.8′	111°25.5′
17	219°58.0′	N 26°59.0′	9.7′	2.8′	54.6′	63°52.2′	35°24.5′	27°17.7′		18°32.1′	87°20.4′	98°30.8′	111°54.4′
18	234°26.7′	N 27°01.9′	9.7′	2.7′	54.6′	63°22.1′	35°00.8′	26°47.5′		18°59.4′	87°50.7′	98°47.8′	112°23.2′
19	248°55.4′	N 27°04.6′	9.7′	2.6′	54.5′	62°52.1′	34°37.4′	26°17.4′		19°26.9′	88°20.9′	99°04.7′	112°52.0′
20	263°24.1′	N 27°07.1′	9.7′	2.4′	54.5′	62°22.0′	34°14.1′	25°47.3′		19°54.5′	88°51.2′	99°21.7′	113°20.7′
21	277°52.8′	N 27°09.6′	9.7′	2.3′	54.5′	61°52.0′	33°50.9′	25°17.2′		20°22.2′	89°21.4′	99°38.5′	113°49.5′
22	292°21.5′	N 27°11.9′	9.7′	2.2′	54.5′	61°22.0′	33°28.0′	24°47.1′	5°05.5′	20°50.0′	89°51.7′	99°55.4′	114°18.2′
23	306°50.2′	N 27°14.0′	9.7′	2.0′	54.5′	60°52.0′	33°05.2′	24°17.1′	5°32.6′	21°17.9′	90°21.9′	100°12.2′	114°46.8′
Mer. pass. 1 h 49 m SD 15.0′ phase 94%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.6′	Betelgeuse	+0.5	270°53.8′	N 7°24.7′
Deneb	+1.2	49°27.1′	N 45°21.9′	Acrux	+0.8	173°02.7′	S 63°13.2′	Capella	+0.1	280°24.2′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.4′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.7′	N 38°48.5′	Pollux	+1.2	243°19.4′	N 27°58.2′	Aldebaran	+0.9	290°41.4′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.6′	N 5°10.1′	Polaris	+2.0	314°24.2′	N 89°21.6′
Rigil Kent	−0.0	139°43.5′	S 60°55.6′	Adhara	+1.5	255°07.1′	S 28°59.9′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.6′	S 16°44.7′				
Hadar	+0.6	148°39.2′	S 60°28.8′	Canopus	−0.6	263°52.8′	S 52°42.2′				

Saturday 12 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	51°06.3′	183°59.1′	S 17°37.5′	178°42.4′	S 18°33.9′	51°22.8′	S 1°46.0′	89°20.4′	S 16°22.0′	327°09.4′	N 24°22.1′
1	66°08.8′	198°59.0′	S 17°38.1′	193°41.6′	S 18°34.7′	66°25.3′	S 1°46.0′	104°22.8′	S 16°21.9′	342°12.4′	N 24°22.2′
2	81°11.3′	213°58.9′	S 17°38.8′	208°40.9′	S 18°35.6′	81°27.9′	S 1°46.0′	119°25.1′	S 16°21.9′	357°15.4′	N 24°22.3′
3	96°13.7′	228°58.8′	S 17°39.5′	223°40.2′	S 18°36.4′	96°30.5′	S 1°46.1′	134°27.5′	S 16°21.9′	12°18.3′	N 24°22.5′
4	111°16.2′	243°58.8′	S 17°40.2′	238°39.5′	S 18°37.3′	111°33.0′	S 1°46.1′	149°29.9′	S 16°21.8′	27°21.3′	N 24°22.6′
5	126°18.7′	258°58.7′	S 17°40.8′	253°38.7′	S 18°38.1′	126°35.6′	S 1°46.1′	164°32.3′	S 16°21.8′	42°24.3′	N 24°22.7′
6	141°21.1′	273°58.6′	S 17°41.5′	268°38.0′	S 18°39.0′	141°38.2′	S 1°46.2′	179°34.7′	S 16°21.8′	57°27.2′	N 24°22.8′
7	156°23.6′	288°58.5′	S 17°42.2′	283°37.3′	S 18°39.8′	156°40.7′	S 1°46.2′	194°37.0′	S 16°21.8′	72°30.2′	N 24°22.9′
8	171°26.1′	303°58.5′	S 17°42.9′	298°36.6′	S 18°40.7′	171°43.3′	S 1°46.2′	209°39.4′	S 16°21.7′	87°33.2′	N 24°23.0′
9	186°28.5′	318°58.4′	S 17°43.6′	313°35.8′	S 18°41.5′	186°45.8′	S 1°46.2′	224°41.8′	S 16°21.7′	102°36.2′	N 24°23.1′
10	201°31.0′	333°58.3′	S 17°44.2′	328°35.1′	S 18°42.4′	201°48.4′	S 1°46.3′	239°44.2′	S 16°21.7′	117°39.2′	N 24°23.2′
11	216°33.4′	348°58.2′	S 17°44.9′	343°34.4′	S 18°43.2′	216°50.9′	S 1°46.3′	254°46.6′	S 16°21.6′	132°42.1′	N 24°23.3′
12	231°35.9′	3°58.2′	S 17°45.6′	358°33.7′	S 18°44.1′	231°53.5′	S 1°46.3′	269°48.9′	S 16°21.6′	147°45.1′	N 24°23.4′
13	246°38.4′	18°58.1′	S 17°46.3′	13°32.9′	S 18°44.9′	246°56.1′	S 1°46.4′	284°51.3′	S 16°21.6′	162°48.1′	N 24°23.5′
14	261°40.8′	33°58.0′	S 17°46.9′	28°32.2′	S 18°45.8′	261°58.6′	S 1°46.4′	299°53.7′	S 16°21.6′	177°51.1′	N 24°23.6′
15	276°43.3′	48°57.9′	S 17°47.6′	43°31.5′	S 18°46.6′	277°01.2′	S 1°46.4′	314°56.1′	S 16°21.5′	192°54.1′	N 24°23.7′
16	291°45.8′	63°57.8′	S 17°48.3′	58°30.8′	S 18°47.4′	292°03.7′	S 1°46.4′	329°58.5′	S 16°21.5′	207°57.1′	N 24°23.8′
17	306°48.2′	78°57.8′	S 17°48.9′	73°30.0′	S 18°48.3′	307°06.3′	S 1°46.5′	345°00.8′	S 16°21.5′	223°00.1′	N 24°24.0′
18	321°50.7′	93°57.7′	S 17°49.6′	88°29.3′	S 18°49.1′	322°08.9′	S 1°46.5′	0°03.2′	S 16°21.4′	238°03.1′	N 24°24.1′
19	336°53.2′	108°57.6′	S 17°50.3′	103°28.6′	S 18°50.0′	337°11.4′	S 1°46.5′	15°05.6′	S 16°21.4′	253°06.1′	N 24°24.2′
20	351°55.6′	123°57.5′	S 17°51.0′	118°27.8′	S 18°50.8′	352°14.0′	S 1°46.6′	30°08.0′	S 16°21.4′	268°09.1′	N 24°24.3′
21	6°58.1′	138°57.4′	S 17°51.6′	133°27.1′	S 18°51.6′	7°16.5′	S 1°46.6′	45°10.4′	S 16°21.3′	283°12.1′	N 24°24.4′
22	22°00.6′	153°57.3′	S 17°52.3′	148°26.4′	S 18°52.5′	22°19.1′	S 1°46.6′	60°12.7′	S 16°21.3′	298°15.1′	N 24°24.5′
23	37°03.0′	168°57.3′	S 17°53.0′	163°25.6′	S 18°53.3′	37°21.6′	S 1°46.6′	75°15.1′	S 16°21.3′	313°18.1′	N 24°24.6′
		SD 16.1′ *d* -0.7′		*v* -0.7′ *d* -0.8′		*v* 2.6′ *d* -0.0′		*v* 2.4′ *d* 0.0′		*v* 3.0′ *d* 0.1′	
Mer. pass.		11 h 44 m 9 s		12 h 6 m		20 h 31 m		18 h 0 m		2 h 11 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Arcturus	−Regulus	−Procyon	−Pollux	+Mars	+Betelgeuse	+Capella	+Aldebaran
0	321°18.8′	N 27°16.0′	9.7′	1.9′	54.5′	108°56.9′	60°22.0′	32°42.6′	23°47.1′	6°00.3′			21°45.9′
1	335°47.5′	N 27°17.9′	9.7′	1.7′	54.5′	108°31.0′	59°52.0′	32°20.3′	23°17.1′	6°28.3′			22°13.9′
2	350°16.2′	N 27°19.7′	9.7′	1.6′	54.4′	108°05.1′	59°22.1′	31°58.1′	22°47.1′	6°56.7′			22°42.0′
3	4°44.9′	N 27°21.3′	9.7′	1.5′	54.4′	107°39.2′	58°52.2′	31°36.1′	22°17.1′	7°25.4′			23°10.2′
4	19°13.6′	N 27°22.7′	9.7′	1.3′	54.4′	107°13.3′	58°22.3′	31°14.3′	21°47.2′	7°54.2′			23°38.4′
5	33°42.2′	N 27°24.1′	9.7′	1.2′	54.4′	106°47.4′	57°52.4′	30°52.8′	21°17.3′	8°23.3′			24°06.7′
6	48°10.9′	N 27°25.3′	9.7′	1.1′	54.4′	106°21.5′	57°22.5′	30°31.5′	20°47.4′	8°52.5′			24°35.0′
7	62°39.6′	N 27°26.3′	9.7′	0.9′	54.4′	105°55.6′	56°52.6′	30°10.4′	20°17.5′	9°21.8′			25°03.3′
8	77°08.3′	N 27°27.3′	9.7′	0.8′	54.4′	105°29.7′	56°22.8′	29°49.5′	19°47.6′	9°51.2′			25°31.8′
9	91°37.1′	N 27°28.1′	9.7′	0.7′	54.4′	105°03.7′	55°53.0′	29°28.9′	19°17.8′	10°20.7′			26°00.2′
10	106°05.8′	N 27°28.7′	9.7′	0.5′	54.4′	104°37.8′	55°23.2′	29°08.6′	18°48.0′	10°50.3′			26°28.7′
11	120°34.5′	N 27°29.2′	9.7′	0.4′	54.3′	104°11.9′	54°53.4′	28°48.5′	18°18.2′	11°19.9′		22°36.7′	26°57.2′
12	135°03.3′	N 27°29.6′	9.8′	0.2′	54.3′	103°45.9′	54°23.6′	28°28.7′	17°48.4′	11°49.5′		22°51.8′	27°25.8′
13	149°32.0′	N 27°29.9′	9.8′	0.1′	54.3′	103°20.0′	53°53.9′	28°09.2′	17°18.7′	12°19.3′		23°07.3′	27°54.4′
14	164°00.8′	N 27°30.0′	9.8′	-0.0′	54.3′	102°54.0′	53°24.2′	27°50.0′	16°48.9′	12°49.0′		23°23.3′	28°23.0′
15	178°29.6′	N 27°30.0′	9.8′	-0.2′	54.3′	102°28.1′	52°54.4′	27°31.0′	16°19.2′	13°18.8′		23°39.7′	28°51.6′
16	192°58.4′	N 27°29.8′	9.8′	-0.3′	54.3′	102°02.1′	52°24.7′	27°12.4′	15°49.6′	13°48.6′		23°56.4′	29°20.3′
17	207°27.2′	N 27°29.5′	9.8′	-0.4′	54.3′	101°36.2′	51°55.0′	26°54.1′	15°19.9′	14°18.5′		24°13.6′	29°49.0′
18	221°56.1′	N 27°29.1′	9.9′	-0.6′	54.3′	101°10.2′	51°25.4′	26°36.2′	14°50.3′	14°48.3′		24°31.2′	30°17.7′
19	236°24.9′	N 27°28.5′	9.9′	-0.7′	54.3′	100°44.3′	50°55.7′	26°18.5′	14°20.7′	15°18.2′		24°49.1′	30°46.4′
20	250°53.8′	N 27°27.8′	9.9′	-0.8′	54.3′	100°18.3′	50°26.1′	26°01.2′	13°51.1′	15°48.1′	23°01.0′	25°07.3′	31°15.1′
21	265°22.7′	N 27°27.0′	9.9′	-1.0′	54.2′	99°52.4′	49°56.4′	25°44.3′	13°21.5′	16°18.0′	23°16.2′	25°25.9′	31°43.9′
22	279°51.6′	N 27°26.1′	10.0′	-1.1′	54.2′	99°26.4′	49°26.8′	25°27.8′	12°52.0′	16°47.9′	23°31.8′	25°44.8′	32°12.7′
23	294°20.6′	N 27°25.0′	10.0′	-1.2′	54.2′	99°00.4′	48°57.2′	25°11.6′	12°22.5′	17°17.8′	23°47.9′	26°04.0′	32°41.5′
Mer. pass. 2 h 40 m SD 14.9′ phase 88%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.6′	Betelgeuse	+0.5	270°53.8′	N 7°24.7′
Deneb	+1.2	49°27.1′	N 45°21.9′	Acrux	+0.8	173°02.6′	S 63°13.2′	Capella	+0.1	280°24.1′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.4′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.7′	N 38°48.5′	Pollux	+1.2	243°19.4′	N 27°58.2′	Aldebaran	+0.9	290°41.4′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.6′	N 5°10.1′	Polaris	+2.0	314°24.1′	N 89°21.6′
Rigil Kent	−0.0	139°43.5′	S 60°55.6′	Adhara	+1.5	255°07.1′	S 28°59.9′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.6′	S 16°44.7′				
Hadar	+0.6	148°39.2′	S 60°28.8′	Canopus	−0.6	263°52.8′	S 52°42.2′				

Sunday 13 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	52°05.5′	183°57.2′	S 17°53.6′	178°24.9′	S 18°54.1′	52°24.2′	S 1°46.7′	90°17.5′	S 16°21.3′	328°21.1′	N 24°24.7′
1	67°07.9′	198°57.1′	S 17°54.3′	193°24.2′	S 18°55.0′	67°26.7′	S 1°46.7′	105°19.9′	S 16°21.2′	343°24.1′	N 24°24.8′
2	82°10.4′	213°57.0′	S 17°55.0′	208°23.4′	S 18°55.8′	82°29.3′	S 1°46.7′	120°22.2′	S 16°21.2′	358°27.1′	N 24°24.9′
3	97°12.9′	228°56.9′	S 17°55.6′	223°22.7′	S 18°56.6′	97°31.9′	S 1°46.8′	135°24.6′	S 16°21.2′	13°30.1′	N 24°25.0′
4	112°15.3′	243°56.8′	S 17°56.3′	238°22.0′	S 18°57.5′	112°34.4′	S 1°46.8′	150°27.0′	S 16°21.1′	28°33.1′	N 24°25.1′
5	127°17.8′	258°56.8′	S 17°57.0′	253°21.2′	S 18°58.3′	127°37.0′	S 1°46.8′	165°29.4′	S 16°21.1′	43°36.1′	N 24°25.2′
6	142°20.3′	273°56.7′	S 17°57.6′	268°20.5′	S 18°59.1′	142°39.5′	S 1°46.8′	180°31.8′	S 16°21.1′	58°39.1′	N 24°25.3′
7	157°22.7′	288°56.6′	S 17°58.3′	283°19.8′	S 18°59.9′	157°42.1′	S 1°46.9′	195°34.1′	S 16°21.0′	73°42.1′	N 24°25.4′
8	172°25.2′	303°56.5′	S 17°58.9′	298°19.0′	S 19°00.8′	172°44.6′	S 1°46.9′	210°36.5′	S 16°21.0′	88°45.2′	N 24°25.5′
9	187°27.7′	318°56.4′	S 17°59.6′	313°18.3′	S 19°01.6′	187°47.2′	S 1°46.9′	225°38.9′	S 16°21.0′	103°48.2′	N 24°25.7′
10	202°30.1′	333°56.3′	S 18°00.3′	328°17.6′	S 19°02.4′	202°49.7′	S 1°46.9′	240°41.3′	S 16°21.0′	118°51.2′	N 24°25.8′
11	217°32.6′	348°56.2′	S 18°00.9′	343°16.8′	S 19°03.2′	217°52.3′	S 1°47.0′	255°43.6′	S 16°20.9′	133°54.2′	N 24°25.9′
12	232°35.1′	3°56.2′	S 18°01.6′	358°16.1′	S 19°04.1′	232°54.8′	S 1°47.0′	270°46.0′	S 16°20.9′	148°57.2′	N 24°26.0′
13	247°37.5′	18°56.1′	S 18°02.3′	13°15.3′	S 19°04.9′	247°57.4′	S 1°47.0′	285°48.4′	S 16°20.9′	164°00.3′	N 24°26.1′
14	262°40.0′	33°56.0′	S 18°02.9′	28°14.6′	S 19°05.7′	262°59.9′	S 1°47.0′	300°50.8′	S 16°20.8′	179°03.3′	N 24°26.2′
15	277°42.4′	48°55.9′	S 18°03.6′	43°13.9′	S 19°06.5′	278°02.5′	S 1°47.1′	315°53.1′	S 16°20.8′	194°06.3′	N 24°26.3′
16	292°44.9′	63°55.8′	S 18°04.2′	58°13.1′	S 19°07.3′	293°05.0′	S 1°47.1′	330°55.5′	S 16°20.8′	209°09.4′	N 24°26.4′
17	307°47.4′	78°55.7′	S 18°04.9′	73°12.4′	S 19°08.2′	308°07.6′	S 1°47.1′	345°57.9′	S 16°20.7′	224°12.4′	N 24°26.5′
18	322°49.8′	93°55.6′	S 18°05.6′	88°11.6′	S 19°09.0′	323°10.1′	S 1°47.1′	1°00.3′	S 16°20.7′	239°15.4′	N 24°26.6′
19	337°52.3′	108°55.5′	S 18°06.2′	103°10.9′	S 19°09.8′	338°12.7′	S 1°47.2′	16°02.6′	S 16°20.7′	254°18.5′	N 24°26.7′
20	352°54.8′	123°55.4′	S 18°06.9′	118°10.1′	S 19°10.6′	353°15.2′	S 1°47.2′	31°05.0′	S 16°20.6′	269°21.5′	N 24°26.8′
21	7°57.2′	138°55.3′	S 18°07.5′	133°09.4′	S 19°11.4′	8°17.8′	S 1°47.2′	46°07.4′	S 16°20.6′	284°24.5′	N 24°26.9′
22	22°59.7′	153°55.3′	S 18°08.2′	148°08.7′	S 19°12.2′	23°20.3′	S 1°47.2′	61°09.8′	S 16°20.6′	299°27.6′	N 24°27.0′
23	38°02.2′	168°55.2′	S 18°08.8′	163°07.9′	S 19°13.0′	38°22.9′	S 1°47.3′	76°12.1′	S 16°20.5′	314°30.6′	N 24°27.1′
		SD 16.2′ *d* -0.7′		*v* -0.7′ *d* -0.8′		*v* 2.6′ *d* -0.0′		*v* 2.4′ *d* 0.0′		*v* 3.0′ *d* 0.1′	
Mer. pass.		11 h 44 m 17 s		12 h 7 m		20 h 27 m		17 h 56 m		2 h 6 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Sun	−Regulus	−Procyon	−Pollux	+Mars	+Betelgeuse	+Capella	+Aldebaran
0	308°49.6′	N 27°23.7′	10.0′	-1.4′	54.2′		48°27.6′	24°55.9′	11°53.1′	17°47.7′	24°04.3′	26°23.5′	33°10.3′
1	323°18.6′	N 27°22.4′	10.0′	-1.5′	54.2′		47°58.1′		11°23.7′	18°17.7′	24°21.1′	26°43.3′	33°39.1′
2	337°47.6′	N 27°20.9′	10.1′	-1.6′	54.2′		47°28.5′		10°54.3′	18°47.6′	24°38.3′	27°03.3′	34°07.9′
3	352°16.7′	N 27°19.3′	10.1′	-1.8′	54.2′		46°59.0′		10°25.0′	19°17.5′	24°55.9′	27°23.7′	34°36.8′
4	6°45.8′	N 27°17.5′	10.1′	-1.9′	54.2′		46°29.4′		9°55.7′	19°47.5′	25°13.8′	27°44.2′	35°05.6′
5	21°14.9′	N 27°15.6′	10.1′	-2.0′	54.2′		45°59.9′		9°26.5′	20°17.4′	25°32.1′	28°05.1′	35°34.5′
6	35°44.0′	N 27°13.6′	10.2′	-2.1′	54.2′		45°30.4′		8°57.3′	20°47.4′	25°50.6′	28°26.1′	36°03.4′
7	50°13.2′	N 27°11.4′	10.2′	-2.3′	54.2′		45°00.9′		8°28.2′	21°17.3′	26°09.5′	28°47.4′	36°32.3′
8	64°42.4′	N 27°09.2′	10.2′	-2.4′	54.2′		44°31.5′		7°59.2′	21°47.3′	26°28.7′	29°08.9′	37°01.2′
9	79°11.7′	N 27°06.8′	10.3′	-2.5′	54.2′		44°02.0′		7°30.3′	22°17.3′	26°48.2′	29°30.6′	37°30.1′
10	93°40.9′	N 27°04.2′	10.3′	-2.7′	54.2′		43°32.5′		7°01.5′	22°47.2′	27°08.0′	29°52.5′	37°59.0′
11	108°10.2′	N 27°01.5′	10.4′	-2.8′	54.1′		43°03.1′		6°32.8′	23°17.2′	27°28.0′	30°14.6′	38°27.9′
12	122°39.6′	N 26°58.7′	10.4′	-2.9′	54.1′		42°33.7′		6°04.3′	23°47.1′	27°48.3′	30°36.9′	38°56.8′
13	137°09.0′	N 26°55.8′	10.4′	-3.1′	54.1′		42°04.2′		5°36.0′	24°17.1′	28°08.8′	30°59.4′	39°25.7′
14	151°38.4′	N 26°52.8′	10.5′	-3.2′	54.1′		41°34.8′		5°08.0′	24°47.0′	28°29.6′	31°22.0′	39°54.7′
15	166°07.9′	N 26°49.6′	10.5′	-3.3′	54.1′		41°05.4′		4°40.3′	25°17.0′	28°50.6′	31°44.8′	40°23.6′
16	180°37.4′	N 26°46.3′	10.5′	-3.4′	54.1′		40°36.1′		4°13.0′	25°47.0′	29°11.8′	32°07.8′	40°52.6′
17	195°06.9′	N 26°42.9′	10.6′	-3.6′	54.1′		40°06.7′			26°16.9′	29°33.3′	32°30.9′	41°21.5′
18	209°36.5′	N 26°39.3′	10.6′	-3.7′	54.1′		39°37.3′			26°46.9′	29°54.9′	32°54.2′	41°50.5′
19	224°06.1′	N 26°35.6′	10.7′	-3.8′	54.1′		39°08.0′			27°16.8′	30°16.8′	33°17.6′	42°19.5′
20	238°35.8′	N 26°31.8′	10.7′	-3.9′	54.1′	119°35.6′	38°38.6′			27°46.8′	30°38.8′	33°41.2′	42°48.5′
21	253°05.5′	N 26°27.9′	10.8′	-4.1′	54.1′	119°08.6′	38°09.3′			28°16.8′	31°01.0′	34°04.8′	43°17.4′
22	267°35.3′	N 26°23.8′	10.8′	-4.2′	54.1′	118°41.5′	37°40.0′			28°46.7′	31°23.4′	34°28.7′	43°46.4′
23	282°05.1′	N 26°19.6′	10.8′	-4.3′	54.1′	118°14.4′	37°10.7′			29°16.7′	31°46.0′	34°52.6′	44°15.4′
Mer. pass. 3 h 32 m SD 14.8′ phase 81%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.6′	Betelgeuse	+0.5	270°53.8′	N 7°24.7′
Deneb	+1.2	49°27.1′	N 45°21.9′	Acrux	+0.8	173°02.6′	S 63°13.2′	Capella	+0.1	280°24.1′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.4′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.7′	N 38°48.5′	Pollux	+1.2	243°19.4′	N 27°58.2′	Aldebaran	+0.9	290°41.4′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.6′	N 5°10.1′	Polaris	+2.0	314°24.0′	N 89°21.6′
Rigil Kent	−0.0	139°43.5′	S 60°55.6′	Adhara	+1.5	255°07.1′	S 28°59.9′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.6′	S 16°44.7′				
Hadar	+0.6	148°39.2′	S 60°28.8′	Canopus	−0.6	263°52.8′	S 52°42.2′				

Monday 14 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	53°04.6′	183°55.1′	S 18°09.5′	178°07.2′	S 19°13.9′	53°25.4′	S 1°47.3′	91°14.5′	S 16°20.5′	329°33.7′	N 24°27.2′
1	68°07.1′	198°55.0′	S 18°10.1′	193°06.4′	S 19°14.7′	68°28.0′	S 1°47.3′	106°16.9′	S 16°20.5′	344°36.7′	N 24°27.3′
2	83°09.5′	213°54.9′	S 18°10.8′	208°05.7′	S 19°15.5′	83°30.5′	S 1°47.3′	121°19.3′	S 16°20.5′	359°39.7′	N 24°27.4′
3	98°12.0′	228°54.8′	S 18°11.4′	223°04.9′	S 19°16.3′	98°33.1′	S 1°47.4′	136°21.6′	S 16°20.4′	14°42.8′	N 24°27.5′
4	113°14.5′	243°54.7′	S 18°12.1′	238°04.2′	S 19°17.1′	113°35.6′	S 1°47.4′	151°24.0′	S 16°20.4′	29°45.8′	N 24°27.6′
5	128°16.9′	258°54.6′	S 18°12.8′	253°03.4′	S 19°17.9′	128°38.1′	S 1°47.4′	166°26.4′	S 16°20.4′	44°48.9′	N 24°27.8′
6	143°19.4′	273°54.5′	S 18°13.4′	268°02.7′	S 19°18.7′	143°40.7′	S 1°47.4′	181°28.7′	S 16°20.3′	59°51.9′	N 24°27.9′
7	158°21.9′	288°54.4′	S 18°14.1′	283°01.9′	S 19°19.5′	158°43.2′	S 1°47.5′	196°31.1′	S 16°20.3′	74°55.0′	N 24°28.0′
8	173°24.3′	303°54.3′	S 18°14.7′	298°01.2′	S 19°20.3′	173°45.8′	S 1°47.5′	211°33.5′	S 16°20.3′	89°58.1′	N 24°28.1′
9	188°26.8′	318°54.2′	S 18°15.4′	313°00.4′	S 19°21.1′	188°48.3′	S 1°47.5′	226°35.9′	S 16°20.2′	105°01.1′	N 24°28.2′
10	203°29.3′	333°54.1′	S 18°16.0′	327°59.7′	S 19°21.9′	203°50.9′	S 1°47.5′	241°38.2′	S 16°20.2′	120°04.2′	N 24°28.3′
11	218°31.7′	348°54.0′	S 18°16.7′	342°58.9′	S 19°22.7′	218°53.4′	S 1°47.6′	256°40.6′	S 16°20.2′	135°07.2′	N 24°28.4′
12	233°34.2′	3°53.9′	S 18°17.3′	357°58.2′	S 19°23.5′	233°56.0′	S 1°47.6′	271°43.0′	S 16°20.1′	150°10.3′	N 24°28.5′
13	248°36.7′	18°53.8′	S 18°17.9′	12°57.4′	S 19°24.3′	248°58.5′	S 1°47.6′	286°45.4′	S 16°20.1′	165°13.4′	N 24°28.6′
14	263°39.1′	33°53.7′	S 18°18.6′	27°56.7′	S 19°25.1′	264°01.0′	S 1°47.6′	301°47.7′	S 16°20.1′	180°16.4′	N 24°28.7′
15	278°41.6′	48°53.6′	S 18°19.2′	42°55.9′	S 19°25.9′	279°03.6′	S 1°47.6′	316°50.1′	S 16°20.0′	195°19.5′	N 24°28.8′
16	293°44.0′	63°53.5′	S 18°19.9′	57°55.2′	S 19°26.7′	294°06.1′	S 1°47.7′	331°52.5′	S 16°20.0′	210°22.6′	N 24°28.9′
17	308°46.5′	78°53.4′	S 18°20.5′	72°54.4′	S 19°27.5′	309°08.7′	S 1°47.7′	346°54.8′	S 16°20.0′	225°25.6′	N 24°29.0′
18	323°49.0′	93°53.3′	S 18°21.2′	87°53.7′	S 19°28.3′	324°11.2′	S 1°47.7′	1°57.2′	S 16°19.9′	240°28.7′	N 24°29.1′
19	338°51.4′	108°53.2′	S 18°21.8′	102°52.9′	S 19°29.1′	339°13.8′	S 1°47.7′	16°59.6′	S 16°19.9′	255°31.8′	N 24°29.2′
20	353°53.9′	123°53.1′	S 18°22.5′	117°52.1′	S 19°29.9′	354°16.3′	S 1°47.8′	32°01.9′	S 16°19.9′	270°34.8′	N 24°29.3′
21	8°56.4′	138°53.0′	S 18°23.1′	132°51.4′	S 19°30.7′	9°18.8′	S 1°47.8′	47°04.3′	S 16°19.8′	285°37.9′	N 24°29.4′
22	23°58.8′	153°52.9′	S 18°23.8′	147°50.6′	S 19°31.5′	24°21.4′	S 1°47.8′	62°06.7′	S 16°19.8′	300°41.0′	N 24°29.5′
23	39°01.3′	168°52.8′	S 18°24.4′	162°49.9′	S 19°32.3′	39°23.9′	S 1°47.8′	77°09.1′	S 16°19.8′	315°44.1′	N 24°29.6′
		SD 16.2′ *d* -0.6′		*v* -0.8′ *d* -0.8′		*v* 2.5′ *d* -0.0′		*v* 2.4′ *d* 0.0′		*v* 3.1′ *d* 0.1′	
Mer. pass.		11 h 44 m 26 s		12 h 8 m		20 h 23 m		17 h 52 m		2 h 1 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Sun	−Spica	−Arcturus	−Regulus	+Pollux	+Mars	+Betelgeuse	+Capella
0	296°34.9′	N 26°15.3′	10.9′	-4.4′	54.1′	117°47.4′	90°39.0′	88°12.3′	36°41.4′		29°46.6′	32°08.7′	35°16.7′
1	311°04.8′	N 26°10.9′	10.9′	-4.5′	54.1′	117°20.3′	90°09.5′	87°46.4′	36°12.1′		30°16.6′	32°31.6′	35°40.8′
2	325°34.7′	N 26°06.4′	11.0′	-4.7′	54.1′	116°53.3′	89°40.0′	87°20.6′	35°42.8′		30°46.6′	32°54.7′	36°05.1′
3	340°04.7′	N 26°01.7′	11.0′	-4.8′	54.1′	116°26.2′	89°10.5′	86°54.7′	35°13.6′		31°16.5′	33°17.9′	36°29.5′
4	354°34.8′	N 25°56.9′	11.1′	-4.9′	54.1′	115°59.2′	88°41.0′	86°28.9′	34°44.3′		31°46.5′	33°41.2′	36°54.0′
5	9°04.8′	N 25°52.0′	11.1′	-5.0′	54.1′	115°32.2′	88°11.6′	86°03.0′	34°15.1′		32°16.4′	34°04.7′	37°18.7′
6	23°35.0′	N 25°47.0′	11.2′	-5.1′	54.1′	115°05.1′	87°42.1′	85°37.2′	33°45.8′		32°46.4′	34°28.4′	37°43.4′
7	38°05.1′	N 25°41.8′	11.2′	-5.3′	54.1′	114°38.1′	87°12.6′	85°11.3′	33°16.6′	3°56.1′	33°16.4′	34°52.1′	38°08.2′
8	52°35.4′	N 25°36.6′	11.3′	-5.4′	54.1′	114°11.1′	86°43.1′	84°45.5′	32°47.4′	4°23.0′	33°46.4′	35°16.0′	38°33.1′
9	67°05.6′	N 25°31.2′	11.3′	-5.5′	54.1′	113°44.1′	86°13.7′	84°19.7′	32°18.2′	4°50.4′	34°16.3′	35°40.0′	38°58.0′
10	81°36.0′	N 25°25.7′	11.4′	-5.6′	54.1′	113°17.0′	85°44.2′	83°53.9′	31°49.0′	5°18.2′	34°46.3′	36°04.1′	39°23.1′
11	96°06.3′	N 25°20.1′	11.4′	-5.7′	54.1′	112°50.0′	85°14.7′	83°28.1′	31°19.8′	5°46.2′	35°16.3′	36°28.3′	39°48.3′
12	110°36.8′	N 25°14.4′	11.5′	-5.8′	54.1′	112°23.0′	84°45.3′	83°02.3′	30°50.6′	6°14.5′	35°46.3′	36°52.7′	40°13.5′
13	125°07.2′	N 25°08.5′	11.5′	-6.0′	54.1′	111°56.0′	84°15.8′	82°36.5′	30°21.5′	6°43.0′	36°16.2′	37°17.1′	40°38.8′
14	139°37.8′	N 25°02.6′	11.6′	-6.1′	54.1′	111°29.0′	83°46.3′	82°10.7′	29°52.3′	7°11.6′	36°46.2′	37°41.7′	41°04.2′
15	154°08.3′	N 24°56.5′	11.6′	-6.2′	54.1′	111°01.9′	83°16.9′	81°44.9′	29°23.2′	7°40.3′	37°16.2′	38°06.3′	41°29.7′
16	168°39.0′	N 24°50.3′	11.7′	-6.3′	54.1′	110°34.9′	82°47.4′	81°19.2′	28°54.0′	8°09.1′	37°46.2′	38°31.1′	41°55.2′
17	183°09.7′	N 24°44.0′	11.7′	-6.4′	54.1′	110°07.9′	82°17.9′	80°53.4′	28°24.9′	8°38.0′	38°16.2′	38°55.9′	42°20.9′
18	197°40.4′	N 24°37.6′	11.8′	-6.5′	54.1′	109°40.9′	81°48.5′	80°27.7′	27°55.8′	9°07.0′	38°46.2′	39°20.9′	42°46.6′
19	212°11.2′	N 24°31.1′	11.8′	-6.6′	54.1′	109°13.8′	81°19.0′	80°01.9′	27°26.7′	9°36.0′	39°16.2′	39°45.9′	43°12.3′
20	226°42.0′	N 24°24.5′	11.9′	-6.7′	54.1′	108°46.8′	80°49.5′	79°36.2′	26°57.6′	10°05.1′	39°46.2′	40°11.0′	43°38.1′
21	241°12.9′	N 24°17.7′	11.9′	-6.8′	54.1′	108°19.8′	80°20.1′	79°10.5′	26°28.6′	10°34.2′	40°16.3′	40°36.2′	44°04.0′
22	255°43.9′	N 24°10.9′	12.0′	-7.0′	54.1′	107°52.7′	79°50.6′	78°44.7′	25°59.5′	11°03.4′	40°46.3′	41°01.5′	44°30.0′
23	270°14.9′	N 24°03.9′	12.1′	-7.1′	54.1′	107°25.7′	79°21.1′	78°19.0′	25°30.5′	11°32.6′	41°16.3′	41°26.8′	44°56.0′
Mer. pass. 4 h 22 m SD 14.8′ phase 73%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.6′	Betelgeuse	+0.5	270°53.8′	N 7°24.7′
Deneb	+1.2	49°27.1′	N 45°21.9′	Acrux	+0.8	173°02.6′	S 63°13.2′	Capella	+0.1	280°24.1′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.4′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.7′	N 38°48.5′	Pollux	+1.2	243°19.3′	N 27°58.2′	Aldebaran	+0.9	290°41.4′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.6′	N 5°10.1′	Polaris	+2.0	314°23.9′	N 89°21.6′
Rigil Kent	−0.0	139°43.5′	S 60°55.6′	Adhara	+1.5	255°07.0′	S 28°59.9′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.6′	S 16°44.7′				
Hadar	+0.6	148°39.2′	S 60°28.8′	Canopus	−0.6	263°52.8′	S 52°42.2′				

Tuesday 15 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	54°03.8′	183°52.7′	S 18°25.0′	177°49.1′	S 19°33.1′	54°26.5′	S 1°47.8′	92°11.4′	S 16°19.8′	330°47.2′	N 24°29.7′
1	69°06.2′	198°52.6′	S 18°25.7′	192°48.4′	S 19°33.9′	69°29.0′	S 1°47.9′	107°13.8′	S 16°19.7′	345°50.2′	N 24°29.8′
2	84°08.7′	213°52.5′	S 18°26.3′	207°47.6′	S 19°34.6′	84°31.5′	S 1°47.9′	122°16.2′	S 16°19.7′	0°53.3′	N 24°29.9′
3	99°11.2′	228°52.4′	S 18°27.0′	222°46.8′	S 19°35.4′	99°34.1′	S 1°47.9′	137°18.5′	S 16°19.7′	15°56.4′	N 24°30.0′
4	114°13.6′	243°52.3′	S 18°27.6′	237°46.1′	S 19°36.2′	114°36.6′	S 1°47.9′	152°20.9′	S 16°19.6′	30°59.5′	N 24°30.1′
5	129°16.1′	258°52.2′	S 18°28.2′	252°45.3′	S 19°37.0′	129°39.1′	S 1°47.9′	167°23.3′	S 16°19.6′	46°02.6′	N 24°30.2′
6	144°18.5′	273°52.1′	S 18°28.9′	267°44.6′	S 19°37.8′	144°41.7′	S 1°48.0′	182°25.6′	S 16°19.6′	61°05.7′	N 24°30.3′
7	159°21.0′	288°52.0′	S 18°29.5′	282°43.8′	S 19°38.6′	159°44.2′	S 1°48.0′	197°28.0′	S 16°19.5′	76°08.8′	N 24°30.4′
8	174°23.5′	303°51.9′	S 18°30.1′	297°43.0′	S 19°39.3′	174°46.8′	S 1°48.0′	212°30.4′	S 16°19.5′	91°11.9′	N 24°30.5′
9	189°25.9′	318°51.8′	S 18°30.8′	312°42.3′	S 19°40.1′	189°49.3′	S 1°48.0′	227°32.7′	S 16°19.5′	106°15.0′	N 24°30.6′
10	204°28.4′	333°51.7′	S 18°31.4′	327°41.5′	S 19°40.9′	204°51.8′	S 1°48.0′	242°35.1′	S 16°19.4′	121°18.1′	N 24°30.7′
11	219°30.9′	348°51.6′	S 18°32.1′	342°40.7′	S 19°41.7′	219°54.4′	S 1°48.1′	257°37.5′	S 16°19.4′	136°21.2′	N 24°30.8′
12	234°33.3′	3°51.5′	S 18°32.7′	357°40.0′	S 19°42.5′	234°56.9′	S 1°48.1′	272°39.8′	S 16°19.4′	151°24.3′	N 24°30.9′
13	249°35.8′	18°51.4′	S 18°33.3′	12°39.2′	S 19°43.2′	249°59.4′	S 1°48.1′	287°42.2′	S 16°19.3′	166°27.4′	N 24°31.0′
14	264°38.3′	33°51.3′	S 18°34.0′	27°38.4′	S 19°44.0′	265°02.0′	S 1°48.1′	302°44.6′	S 16°19.3′	181°30.5′	N 24°31.1′
15	279°40.7′	48°51.2′	S 18°34.6′	42°37.7′	S 19°44.8′	280°04.5′	S 1°48.1′	317°47.0′	S 16°19.3′	196°33.6′	N 24°31.2′
16	294°43.2′	63°51.1′	S 18°35.2′	57°36.9′	S 19°45.6′	295°07.0′	S 1°48.1′	332°49.3′	S 16°19.2′	211°36.7′	N 24°31.3′
17	309°45.7′	78°51.0′	S 18°35.9′	72°36.1′	S 19°46.3′	310°09.6′	S 1°48.2′	347°51.7′	S 16°19.2′	226°39.8′	N 24°31.4′
18	324°48.1′	93°50.9′	S 18°36.5′	87°35.4′	S 19°47.1′	325°12.1′	S 1°48.2′	2°54.1′	S 16°19.2′	241°42.9′	N 24°31.5′
19	339°50.6′	108°50.8′	S 18°37.1′	102°34.6′	S 19°47.9′	340°14.6′	S 1°48.2′	17°56.4′	S 16°19.1′	256°46.0′	N 24°31.6′
20	354°53.0′	123°50.6′	S 18°37.7′	117°33.8′	S 19°48.7′	355°17.2′	S 1°48.2′	32°58.8′	S 16°19.1′	271°49.1′	N 24°31.7′
21	9°55.5′	138°50.5′	S 18°38.4′	132°33.1′	S 19°49.4′	10°19.7′	S 1°48.2′	48°01.2′	S 16°19.1′	286°52.2′	N 24°31.8′
22	24°58.0′	153°50.4′	S 18°39.0′	147°32.3′	S 19°50.2′	25°22.2′	S 1°48.3′	63°03.5′	S 16°19.0′	301°55.3′	N 24°31.9′
23	40°00.4′	168°50.3′	S 18°39.6′	162°31.5′	S 19°51.0′	40°24.8′	S 1°48.3′	78°05.9′	S 16°19.0′	316°58.5′	N 24°32.0′
		SD 16.2′ *d* -0.6′		*v* -0.8′ *d* -0.8′		*v* 2.5′ *d* -0.0′		*v* 2.4′ *d* 0.0′		*v* 3.1′ *d* 0.1′	
Mer. pass.		11 h 44 m 35 s		12 h 9 m		20 h 19 m		17 h 48 m		1 h 56 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Sun	−Spica	−Arcturus	−Regulus	+Pollux	+Procyon	+Mars	+Betelgeuse
0	284°45.9′	N 23°56.9′	12.1′	-7.2′	54.1′	106°58.7′	78°51.6′	77°53.3′	25°01.4′	12°01.8′		41°46.3′	41°52.3′
1	299°17.0′	N 23°49.7′	12.2′	-7.3′	54.1′	106°31.6′	78°22.1′	77°27.7′	24°32.4′	12°31.1′		42°16.4′	42°17.8′
2	313°48.2′	N 23°42.4′	12.2′	-7.4′	54.1′	106°04.6′	77°52.6′	77°02.0′	24°03.4′	13°00.4′		42°46.4′	42°43.4′
3	328°19.4′	N 23°35.0′	12.3′	-7.5′	54.2′	105°37.5′	77°23.1′	76°36.3′	23°34.5′	13°29.7′		43°16.5′	43°09.1′
4	342°50.7′	N 23°27.5′	12.3′	-7.6′	54.2′	105°10.5′	76°53.6′	76°10.7′	23°05.5′	13°59.0′		43°46.6′	43°34.8′
5	357°22.0′	N 23°19.9′	12.4′	-7.7′	54.2′	104°43.4′	76°24.1′	75°45.0′	22°36.6′	14°28.4′		44°16.6′	44°00.6′
6	11°53.4′	N 23°12.2′	12.4′	-7.8′	54.2′	104°16.3′	75°54.6′	75°19.4′	22°07.6′	14°57.7′	24°34.0′	44°46.7′	44°26.5′
7	26°24.8′	N 23°04.4′	12.5′	-7.9′	54.2′	103°49.2′	75°25.1′	74°53.8′	21°38.7′	15°27.1′	24°49.1′	45°16.8′	44°52.4′
8	40°56.3′	N 22°56.5′	12.5′	-8.0′	54.2′	103°22.2′	74°55.6′	74°28.2′	21°09.9′	15°56.5′	25°04.6′	45°46.9′	45°18.4′
9	55°27.8′	N 22°48.5′	12.6′	-8.1′	54.2′	102°55.1′	74°26.1′	74°02.6′	20°41.0′	16°26.0′	25°20.5′	46°17.0′	45°44.5′
10	69°59.4′	N 22°40.4′	12.6′	-8.2′	54.2′	102°28.0′	73°56.5′	73°37.0′	20°12.2′	16°55.4′	25°36.8′	46°47.1′	46°10.6′
11	84°31.1′	N 22°32.2′	12.7′	-8.3′	54.2′	102°00.9′	73°27.0′	73°11.4′	19°43.4′	17°24.9′	25°53.5′	47°17.3′	46°36.8′
12	99°02.8′	N 22°23.9′	12.7′	-8.4′	54.2′	101°33.8′	72°57.4′	72°45.8′	19°14.7′	17°54.3′	26°10.5′	47°47.4′	47°03.0′
13	113°34.5′	N 22°15.5′	12.8′	-8.5′	54.2′	101°06.7′	72°27.9′	72°20.3′	18°45.9′	18°23.8′	26°27.9′	48°17.5′	47°29.3′
14	128°06.3′	N 22°07.0′	12.9′	-8.6′	54.2′	100°39.5′	71°58.3′	71°54.8′	18°17.3′	18°53.3′	26°45.6′	48°47.7′	47°55.7′
15	142°38.2′	N 21°58.4′	12.9′	-8.7′	54.2′	100°12.4′	71°28.7′	71°29.2′	17°48.6′	19°22.9′	27°03.6′	49°17.9′	48°22.1′
16	157°10.1′	N 21°49.7′	13.0′	-8.8′	54.3′	99°45.2′	70°59.2′	71°03.7′	17°20.0′	19°52.4′	27°21.9′	49°48.1′	48°48.6′
17	171°42.0′	N 21°40.9′	13.0′	-8.9′	54.3′	99°18.1′	70°29.6′	70°38.2′	16°51.5′	20°21.9′	27°40.6′	50°18.2′	49°15.1′
18	186°14.0′	N 21°32.0′	13.1′	-9.0′	54.3′	98°50.9′	69°60.0′	70°12.8′	16°23.0′	20°51.5′	27°59.5′	50°48.4′	49°41.7′
19	200°46.1′	N 21°23.0′	13.1′	-9.1′	54.3′	98°23.7′	69°30.3′	69°47.3′	15°54.5′	21°21.1′	28°18.8′	51°18.7′	50°08.3′
20	215°18.2′	N 21°13.9′	13.2′	-9.2′	54.3′	97°56.6′	69°00.7′	69°21.9′	15°26.2′	21°50.7′	28°38.3′	51°48.9′	50°35.0′
21	229°50.4′	N 21°04.7′	13.2′	-9.3′	54.3′	97°29.4′	68°31.1′	68°56.4′	14°57.9′	22°20.3′	28°58.1′	52°19.1′	51°01.7′
22	244°22.6′	N 20°55.5′	13.3′	-9.4′	54.3′	97°02.2′	68°01.4′	68°31.0′	14°29.7′	22°49.9′	29°18.2′	52°49.4′	51°28.5′
23	258°54.9′	N 20°46.1′	13.3′	-9.5′	54.3′	96°34.9′	67°31.8′	68°05.6′	14°01.5′	23°19.6′	29°38.5′	53°19.7′	51°55.3′
Mer. pass. 5 h 11 m SD 14.8′ phase 65%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.6′	Betelgeuse	+0.5	270°53.8′	N 7°24.7′
Deneb	+1.2	49°27.1′	N 45°21.9′	Acrux	+0.8	173°02.6′	S 63°13.2′	Capella	+0.1	280°24.1′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.4′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.7′	N 38°48.5′	Pollux	+1.2	243°19.3′	N 27°58.2′	Aldebaran	+0.9	290°41.4′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.6′	N 5°10.1′	Polaris	+2.0	314°23.9′	N 89°21.6′
Rigil Kent	−0.0	139°43.4′	S 60°55.6′	Adhara	+1.5	255°07.0′	S 28°59.9′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.6′	S 16°44.7′				
Hadar	+0.6	148°39.2′	S 60°28.8′	Canopus	−0.6	263°52.8′	S 52°42.2′				

Wednesday 16 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	55°02.9′	183°50.2′	S 18°40.3′	177°30.8′	S 19°51.7′	55°27.3′	S 1°48.3′	93°08.2′	S 16°19.0′	332°01.6′	N 24°32.1′
1	70°05.4′	198°50.1′	S 18°40.9′	192°30.0′	S 19°52.5′	70°29.8′	S 1°48.3′	108°10.6′	S 16°18.9′	347°04.7′	N 24°32.2′
2	85°07.8′	213°50.0′	S 18°41.5′	207°29.2′	S 19°53.3′	85°32.4′	S 1°48.3′	123°13.0′	S 16°18.9′	2°07.8′	N 24°32.3′
3	100°10.3′	228°49.9′	S 18°42.1′	222°28.4′	S 19°54.0′	100°34.9′	S 1°48.3′	138°15.3′	S 16°18.9′	17°10.9′	N 24°32.4′
4	115°12.8′	243°49.8′	S 18°42.8′	237°27.7′	S 19°54.8′	115°37.4′	S 1°48.4′	153°17.7′	S 16°18.8′	32°14.1′	N 24°32.5′
5	130°15.2′	258°49.6′	S 18°43.4′	252°26.9′	S 19°55.5′	130°40.0′	S 1°48.4′	168°20.1′	S 16°18.8′	47°17.2′	N 24°32.6′
6	145°17.7′	273°49.5′	S 18°44.0′	267°26.1′	S 19°56.3′	145°42.5′	S 1°48.4′	183°22.4′	S 16°18.8′	62°20.3′	N 24°32.7′
7	160°20.1′	288°49.4′	S 18°44.6′	282°25.3′	S 19°57.1′	160°45.0′	S 1°48.4′	198°24.8′	S 16°18.7′	77°23.5′	N 24°32.8′
8	175°22.6′	303°49.3′	S 18°45.3′	297°24.6′	S 19°57.8′	175°47.6′	S 1°48.4′	213°27.2′	S 16°18.7′	92°26.6′	N 24°32.9′
9	190°25.1′	318°49.2′	S 18°45.9′	312°23.8′	S 19°58.6′	190°50.1′	S 1°48.4′	228°29.5′	S 16°18.6′	107°29.7′	N 24°33.0′
10	205°27.5′	333°49.1′	S 18°46.5′	327°23.0′	S 19°59.3′	205°52.6′	S 1°48.5′	243°31.9′	S 16°18.6′	122°32.9′	N 24°33.1′
11	220°30.0′	348°49.0′	S 18°47.1′	342°22.2′	S 20°00.1′	220°55.1′	S 1°48.5′	258°34.3′	S 16°18.6′	137°36.0′	N 24°33.2′
12	235°32.5′	3°48.9′	S 18°47.7′	357°21.5′	S 20°00.9′	235°57.7′	S 1°48.5′	273°36.6′	S 16°18.5′	152°39.1′	N 24°33.3′
13	250°34.9′	18°48.7′	S 18°48.4′	12°20.7′	S 20°01.6′	251°00.2′	S 1°48.5′	288°39.0′	S 16°18.5′	167°42.3′	N 24°33.4′
14	265°37.4′	33°48.6′	S 18°49.0′	27°19.9′	S 20°02.4′	266°02.7′	S 1°48.5′	303°41.4′	S 16°18.5′	182°45.4′	N 24°33.5′
15	280°39.9′	48°48.5′	S 18°49.6′	42°19.1′	S 20°03.1′	281°05.2′	S 1°48.5′	318°43.7′	S 16°18.4′	197°48.5′	N 24°33.6′
16	295°42.3′	63°48.4′	S 18°50.2′	57°18.3′	S 20°03.9′	296°07.8′	S 1°48.5′	333°46.1′	S 16°18.4′	212°51.7′	N 24°33.7′
17	310°44.8′	78°48.3′	S 18°50.8′	72°17.6′	S 20°04.6′	311°10.3′	S 1°48.6′	348°48.4′	S 16°18.4′	227°54.8′	N 24°33.8′
18	325°47.3′	93°48.2′	S 18°51.5′	87°16.8′	S 20°05.4′	326°12.8′	S 1°48.6′	3°50.8′	S 16°18.3′	242°58.0′	N 24°33.9′
19	340°49.7′	108°48.0′	S 18°52.1′	102°16.0′	S 20°06.1′	341°15.4′	S 1°48.6′	18°53.2′	S 16°18.3′	258°01.1′	N 24°34.0′
20	355°52.2′	123°47.9′	S 18°52.7′	117°15.2′	S 20°06.9′	356°17.9′	S 1°48.6′	33°55.5′	S 16°18.3′	273°04.3′	N 24°34.1′
21	10°54.6′	138°47.8′	S 18°53.3′	132°14.4′	S 20°07.6′	11°20.4′	S 1°48.6′	48°57.9′	S 16°18.2′	288°07.4′	N 24°34.2′
22	25°57.1′	153°47.7′	S 18°53.9′	147°13.7′	S 20°08.4′	26°22.9′	S 1°48.6′	64°00.3′	S 16°18.2′	303°10.6′	N 24°34.3′
23	40°59.6′	168°47.6′	S 18°54.5′	162°12.9′	S 20°09.1′	41°25.5′	S 1°48.7′	79°02.6′	S 16°18.2′	318°13.7′	N 24°34.4′
		SD 16.2′	*d* -0.6′	*v* -0.8′	*d* -0.8′	*v* 2.5′	*d* -0.0′	*v* 2.4′	*d* 0.0′	*v* 3.1′	*d* 0.1′
Mer. pass.		11 h 44 m 46 s		12 h 11 m		20 h 15 m		17 h 45 m		1 h 52 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Sun	−Arcturus	−Spica	−Regulus	+Pollux	+Procyon	+Betelgeuse	+Mars
0	273°27.2′	N 20°36.7′	13.4′	-9.5′	54.3′	96°07.7′	67°40.3′	67°02.1′	13°33.5′	23°49.2′	29°59.0′	52°22.2′	53°50.0′
1	287°59.5′	N 20°27.1′	13.4′	-9.6′	54.4′	95°40.4′	67°14.9′	66°32.4′	13°05.6′	24°18.9′	30°19.8′	52°49.1′	54°20.3′
2	302°32.0′	N 20°17.5′	13.5′	-9.7′	54.4′	95°13.2′	66°49.5′	66°02.7′	12°37.8′	24°48.6′	30°40.9′	53°16.1′	54°50.6′
3	317°04.4′	N 20°07.7′	13.5′	-9.8′	54.4′	94°45.9′	66°24.2′	65°33.0′	12°10.2′	25°18.3′	31°02.1′	53°43.1′	55°20.9′
4	331°36.9′	N 19°57.9′	13.6′	-9.9′	54.4′	94°18.6′	65°58.9′	65°03.3′	11°42.7′	25°48.1′	31°23.6′	54°10.2′	55°51.3′
5	346°09.5′	N 19°48.0′	13.6′	-10.0′	54.4′	93°51.3′	65°33.6′	64°33.6′	11°15.4′	26°17.8′	31°45.3′	54°37.3′	56°21.6′
6	0°42.1′	N 19°38.0′	13.7′	-10.1′	54.4′	93°24.0′	65°08.4′	64°03.8′	10°48.3′	26°47.6′	32°07.2′	55°04.5′	56°52.0′
7	15°14.8′	N 19°28.0′	13.7′	-10.2′	54.4′	92°56.7′	64°43.1′	63°34.1′	10°21.4′	27°17.3′	32°29.3′	55°31.7′	57°22.4′
8	29°47.5′	N 19°17.8′	13.7′	-10.2′	54.5′	92°29.3′	64°17.9′	63°04.3′	9°54.8′	27°47.1′	32°51.6′	55°58.9′	57°52.8′
9	44°20.2′	N 19°07.6′	13.8′	-10.3′	54.5′	92°02.0′	63°52.7′	62°34.5′	9°28.5′	28°16.9′	33°14.0′	56°26.2′	58°23.3′
10	58°53.0′	N 18°57.2′	13.8′	-10.4′	54.5′	91°34.6′	63°27.5′	62°04.7′	9°02.6′	28°46.8′	33°36.7′	56°53.5′	58°53.7′
11	73°25.8′	N 18°46.8′	13.9′	-10.5′	54.5′	91°07.2′	63°02.4′	61°34.9′	8°37.0′	29°16.6′	33°59.5′	57°20.9′	59°24.2′
12	87°58.7′	N 18°36.3′	13.9′	-10.6′	54.5′	90°39.8′	62°37.3′	61°05.0′	8°12.0′	29°46.5′	34°22.5′	57°48.3′	59°54.7′
13	102°31.7′	N 18°25.7′	14.0′	-10.7′	54.5′	90°12.4′	62°12.2′	60°35.2′	7°47.5′	30°16.4′	34°45.7′	58°15.8′	60°25.2′
14	117°04.6′	N 18°15.0′	14.0′	-10.7′	54.5′	89°44.9′	61°47.1′	60°05.3′	7°23.6′	30°46.3′	35°09.1′	58°43.3′	60°55.7′
15	131°37.6′	N 18°04.3′	14.1′	-10.8′	54.6′	89°17.5′	61°22.1′	59°35.4′		31°16.2′	35°32.6′	59°10.8′	61°26.2′
16	146°10.7′	N 17°53.5′	14.1′	-10.9′	54.6′	88°50.0′	60°57.0′	59°05.5′		31°46.2′	35°56.2′	59°38.4′	61°56.8′
17	160°43.8′	N 17°42.6′	14.1′	-11.0′	54.6′	88°22.5′	60°32.0′	58°35.6′		32°16.1′	36°20.0′	60°06.0′	62°27.4′
18	175°16.9′	N 17°31.6′	14.2′	-11.1′	54.6′	87°54.9′	60°07.1′	58°05.6′		32°46.1′	36°44.0′	60°33.7′	62°58.0′
19	189°50.1′	N 17°20.5′	14.2′	-11.1′	54.6′	87°27.4′	59°42.2′	57°35.7′		33°16.1′	37°08.0′	61°01.4′	63°28.6′
20	204°23.3′	N 17°09.4′	14.3′	-11.2′	54.6′	86°59.9′	59°17.3′	57°05.7′		33°46.1′	37°32.3′	61°29.1′	63°59.3′
21	218°56.6′	N 16°58.1′	14.3′	-11.3′	54.7′	86°32.3′	58°52.4′	56°35.7′		34°16.2′	37°56.6′	61°56.9′	64°30.0′
22	233°29.9′	N 16°46.8′	14.3′	-11.4′	54.7′	86°04.7′	58°27.6′	56°05.7′		34°46.3′	38°21.1′	62°24.8′	65°00.7′
23	248°03.2′	N 16°35.4′	14.4′	-11.5′	54.7′	85°37.0′	58°02.8′	55°35.6′		35°16.4′	38°45.8′	62°52.6′	65°31.4′
Mer. pass. 5 h 57 m SD 14.8′ phase 55%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.6′	Betelgeuse	+0.5	270°53.8′	N 7°24.7′
Deneb	+1.2	49°27.1′	N 45°21.9′	Acrux	+0.8	173°02.6′	S 63°13.2′	Capella	+0.1	280°24.1′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.4′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.8′	N 38°48.5′	Pollux	+1.2	243°19.3′	N 27°58.2′	Aldebaran	+0.9	290°41.3′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.5′	N 5°10.1′	Polaris	+2.0	314°23.9′	N 89°21.6′
Rigil Kent	−0.0	139°43.4′	S 60°55.6′	Adhara	+1.5	255°07.0′	S 28°60.0′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.6′	S 16°44.7′				
Hadar	+0.6	148°39.2′	S 60°28.8′	Canopus	−0.6	263°52.8′	S 52°42.2′				

Thursday 17 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	56°02.0′	183°47.5′	S 18°55.2′	177°12.1′	S 20°09.8′	56°28.0′	S 1°48.7′	94°05.0′	S 16°18.1′	333°16.9′	N 24°34.5′
1	71°04.5′	198°47.3′	S 18°55.8′	192°11.3′	S 20°10.6′	71°30.5′	S 1°48.7′	109°07.3′	S 16°18.1′	348°20.0′	N 24°34.6′
2	86°07.0′	213°47.2′	S 18°56.4′	207°10.5′	S 20°11.3′	86°33.0′	S 1°48.7′	124°09.7′	S 16°18.1′	3°23.2′	N 24°34.7′
3	101°09.4′	228°47.1′	S 18°57.0′	222°09.7′	S 20°12.1′	101°35.5′	S 1°48.7′	139°12.1′	S 16°18.0′	18°26.4′	N 24°34.8′
4	116°11.9′	243°47.0′	S 18°57.6′	237°08.9′	S 20°12.8′	116°38.1′	S 1°48.7′	154°14.4′	S 16°18.0′	33°29.5′	N 24°34.9′
5	131°14.4′	258°46.9′	S 18°58.2′	252°08.2′	S 20°13.5′	131°40.6′	S 1°48.7′	169°16.8′	S 16°18.0′	48°32.7′	N 24°35.0′
6	146°16.8′	273°46.7′	S 18°58.8′	267°07.4′	S 20°14.3′	146°43.1′	S 1°48.7′	184°19.1′	S 16°17.9′	63°35.8′	N 24°35.1′
7	161°19.3′	288°46.6′	S 18°59.4′	282°06.6′	S 20°15.0′	161°45.6′	S 1°48.8′	199°21.5′	S 16°17.9′	78°39.0′	N 24°35.2′
8	176°21.8′	303°46.5′	S 19°00.0′	297°05.8′	S 20°15.8′	176°48.2′	S 1°48.8′	214°23.9′	S 16°17.8′	93°42.2′	N 24°35.3′
9	191°24.2′	318°46.4′	S 19°00.7′	312°05.0′	S 20°16.5′	191°50.7′	S 1°48.8′	229°26.2′	S 16°17.8′	108°45.4′	N 24°35.4′
10	206°26.7′	333°46.2′	S 19°01.3′	327°04.2′	S 20°17.2′	206°53.2′	S 1°48.8′	244°28.6′	S 16°17.8′	123°48.5′	N 24°35.5′
11	221°29.1′	348°46.1′	S 19°01.9′	342°03.4′	S 20°18.0′	221°55.7′	S 1°48.8′	259°30.9′	S 16°17.7′	138°51.7′	N 24°35.6′
12	236°31.6′	3°46.0′	S 19°02.5′	357°02.6′	S 20°18.7′	236°58.2′	S 1°48.8′	274°33.3′	S 16°17.7′	153°54.9′	N 24°35.7′
13	251°34.1′	18°45.9′	S 19°03.1′	12°01.8′	S 20°19.4′	252°00.8′	S 1°48.8′	289°35.7′	S 16°17.7′	168°58.0′	N 24°35.8′
14	266°36.5′	33°45.7′	S 19°03.7′	27°01.1′	S 20°20.1′	267°03.3′	S 1°48.8′	304°38.0′	S 16°17.6′	184°01.2′	N 24°35.9′
15	281°39.0′	48°45.6′	S 19°04.3′	42°00.3′	S 20°20.9′	282°05.8′	S 1°48.9′	319°40.4′	S 16°17.6′	199°04.4′	N 24°35.9′
16	296°41.5′	63°45.5′	S 19°04.9′	56°59.5′	S 20°21.6′	297°08.3′	S 1°48.9′	334°42.7′	S 16°17.6′	214°07.6′	N 24°36.0′
17	311°43.9′	78°45.4′	S 19°05.5′	71°58.7′	S 20°22.3′	312°10.8′	S 1°48.9′	349°45.1′	S 16°17.5′	229°10.8′	N 24°36.1′
18	326°46.4′	93°45.2′	S 19°06.1′	86°57.9′	S 20°23.1′	327°13.4′	S 1°48.9′	4°47.5′	S 16°17.5′	244°13.9′	N 24°36.2′
19	341°48.9′	108°45.1′	S 19°06.7′	101°57.1′	S 20°23.8′	342°15.9′	S 1°48.9′	19°49.8′	S 16°17.5′	259°17.1′	N 24°36.3′
20	356°51.3′	123°45.0′	S 19°07.3′	116°56.3′	S 20°24.5′	357°18.4′	S 1°48.9′	34°52.2′	S 16°17.4′	274°20.3′	N 24°36.4′
21	11°53.8′	138°44.9′	S 19°07.9′	131°55.5′	S 20°25.2′	12°20.9′	S 1°48.9′	49°54.5′	S 16°17.4′	289°23.5′	N 24°36.5′
22	26°56.2′	153°44.7′	S 19°08.5′	146°54.7′	S 20°25.9′	27°23.4′	S 1°48.9′	64°56.9′	S 16°17.3′	304°26.7′	N 24°36.6′
23	41°58.7′	168°44.6′	S 19°09.1′	161°53.9′	S 20°26.7′	42°25.9′	S 1°48.9′	79°59.3′	S 16°17.3′	319°29.9′	N 24°36.7′
		SD 16.2′ *d* -0.6′		*v* -0.8′ *d* -0.7′		*v* 2.5′ *d* -0.0′		*v* 2.4′ *d* 0.0′		*v* 3.2′ *d* 0.1′	
Mer. pass.		11 h 44 m 57 s		12 h 12 m		20 h 11 m		17 h 41 m		1 h 47 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Sun	−Arcturus	−Spica	−Regulus	+Pollux	+Procyon	+Sirius	+Betelgeuse
0	262°36.6′	N 16°24.0′	14.4′	-11.5′	54.7′	85°09.4′	57°38.0′	55°05.6′		35°46.5′	39°10.5′	60°56.5′	63°20.5′
1	277°10.0′	N 16°12.5′	14.4′	-11.6′	54.7′	84°41.7′	57°13.3′	54°35.5′		36°16.6′	39°35.4′	61°14.8′	63°48.5′
2	291°43.4′	N 16°00.9′	14.5′	-11.7′	54.8′	84°14.1′	56°48.6′	54°05.4′		36°46.8′	40°00.4′	61°33.2′	64°16.5′
3	306°16.9′	N 15°49.2′	14.5′	-11.7′	54.8′	83°46.3′	56°23.9′	53°35.3′		37°17.0′	40°25.5′	61°51.7′	64°44.5′
4	320°50.4′	N 15°37.4′	14.5′	-11.8′	54.8′	83°18.6′	55°59.3′	53°05.1′		37°47.2′	40°50.7′	62°10.2′	65°12.5′
5	335°23.9′	N 15°25.6′	14.6′	-11.9′	54.8′	82°50.9′	55°34.8′	52°35.0′		38°17.4′	41°16.1′	62°28.9′	65°40.6′
6	349°57.5′	N 15°13.7′	14.6′	-12.0′	54.8′	82°23.1′	55°10.3′	52°04.8′		38°47.7′	41°41.5′	62°47.7′	66°08.8′
7	4°31.1′	N 15°01.8′	14.6′	-12.0′	54.9′	81°55.3′	54°45.8′	51°34.6′		39°18.0′	42°07.1′	63°06.6′	66°37.0′
8	19°04.8′	N 14°49.7′	14.7′	-12.1′	54.9′	81°27.5′	54°21.3′	51°04.3′		39°48.3′	42°32.7′	63°25.6′	67°05.2′
9	33°38.4′	N 14°37.6′	14.7′	-12.2′	54.9′	80°59.6′	53°57.0′	50°34.1′		40°18.6′	42°58.5′	63°44.6′	67°33.4′
10	48°12.1′	N 14°25.5′	14.7′	-12.2′	54.9′	80°31.7′	53°32.6′	50°03.8′		40°49.0′	43°24.4′	64°03.8′	68°01.7′
11	62°45.9′	N 14°13.2′	14.8′	-12.3′	55.0′	80°03.8′	53°08.4′	49°33.5′		41°19.3′	43°50.3′	64°23.1′	68°30.1′
12	77°19.6′	N 14°00.9′	14.8′	-12.4′	55.0′	79°35.9′	52°44.1′	49°03.1′		41°49.8′	44°16.4′	64°42.4′	68°58.4′
13	91°53.4′	N 13°48.5′	14.8′	-12.4′	55.0′	79°07.9′	52°20.0′	48°32.8′		42°20.2′	44°42.6′	65°01.9′	69°26.8′
14	106°27.2′	N 13°36.1′	14.8′	-12.5′	55.0′	78°40.0′	51°55.8′	48°02.4′	7°46.2′	42°50.7′	45°08.8′	65°21.4′	69°55.3′
15	121°01.0′	N 13°23.6′	14.9′	-12.6′	55.0′	78°12.0′	51°31.8′	47°32.0′	8°11.1′	43°21.2′	45°35.2′	65°41.1′	70°23.8′
16	135°34.9′	N 13°11.0′	14.9′	-12.6′	55.1′	77°43.9′	51°07.8′	47°01.6′	8°36.7′	43°51.7′	46°01.6′	66°00.8′	70°52.3′
17	150°08.8′	N 12°58.4′	14.9′	-12.7′	55.1′	77°15.9′	50°43.9′	46°31.1′	9°02.8′	44°22.2′	46°28.1′	66°20.6′	71°20.8′
18	164°42.6′	N 12°45.7′	14.9′	-12.8′	55.1′	76°47.8′	50°20.0′	46°00.7′	9°29.3′	44°52.8′	46°54.8′	66°40.5′	71°49.4′
19	179°16.6′	N 12°32.9′	14.9′	-12.8′	55.1′	76°19.7′	49°56.2′	45°30.2′	9°56.3′	45°23.4′	47°21.5′	67°00.5′	72°18.1′
20	193°50.5′	N 12°20.1′	15.0′	-12.9′	55.2′	75°51.5′	49°32.5′	44°59.6′	10°23.7′	45°54.0′	47°48.2′	67°20.6′	72°46.7′
21	208°24.5′	N 12°07.2′	15.0′	-12.9′	55.2′	75°23.3′	49°08.8′	44°29.1′	10°51.3′	46°24.7′	48°15.1′	67°40.7′	73°15.4′
22	222°58.5′	N 11°54.3′	15.0′	-13.0′	55.2′	74°55.1′	48°45.2′	43°58.5′	11°19.3′	46°55.4′	48°42.1′	68°00.9′	73°44.2′
23	237°32.4′	N 11°41.2′	15.0′	-13.1′	55.2′	74°26.9′	48°21.7′	43°27.9′	11°47.5′	47°26.1′	49°09.1′	68°21.3′	74°13.0′
Mer. pass. 6 h 41 m SD 14.9′ phase 46%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.7′	Betelgeuse	+0.5	270°53.7′	N 7°24.7′
Deneb	+1.2	49°27.2′	N 45°21.9′	Acrux	+0.8	173°02.6′	S 63°13.2′	Capella	+0.1	280°24.1′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.4′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.8′	N 38°48.4′	Pollux	+1.2	243°19.3′	N 27°58.2′	Aldebaran	+0.9	290°41.3′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.5′	N 5°10.1′	Polaris	+2.0	314°23.9′	N 89°21.7′
Rigil Kent	−0.0	139°43.4′	S 60°55.6′	Adhara	+1.5	255°07.0′	S 28°60.0′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.6′	S 16°44.7′				
Hadar	+0.6	148°39.2′	S 60°28.7′	Canopus	−0.6	263°52.8′	S 52°42.2′				

Friday 18 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	57°01.2′	183°44.5′	S 19°09.7′	176°53.1′	S 20°27.4′	57°28.5′	S 1°49.0′	95°01.6′	S 16°17.3′	334°33.1′	N 24°36.8′
1	72°03.6′	198°44.4′	S 19°10.3′	191°52.3′	S 20°28.1′	72°31.0′	S 1°49.0′	110°04.0′	S 16°17.2′	349°36.3′	N 24°36.9′
2	87°06.1′	213°44.2′	S 19°10.9′	206°51.5′	S 20°28.8′	87°33.5′	S 1°49.0′	125°06.3′	S 16°17.2′	4°39.4′	N 24°37.0′
3	102°08.6′	228°44.1′	S 19°11.5′	221°50.7′	S 20°29.5′	102°36.0′	S 1°49.0′	140°08.7′	S 16°17.2′	19°42.6′	N 24°37.1′
4	117°11.0′	243°44.0′	S 19°12.1′	236°49.9′	S 20°30.3′	117°38.5′	S 1°49.0′	155°11.0′	S 16°17.1′	34°45.8′	N 24°37.2′
5	132°13.5′	258°43.8′	S 19°12.7′	251°49.1′	S 20°31.0′	132°41.0′	S 1°49.0′	170°13.4′	S 16°17.1′	49°49.0′	N 24°37.3′
6	147°16.0′	273°43.7′	S 19°13.3′	266°48.3′	S 20°31.7′	147°43.5′	S 1°49.0′	185°15.8′	S 16°17.1′	64°52.2′	N 24°37.4′
7	162°18.4′	288°43.6′	S 19°13.9′	281°47.5′	S 20°32.4′	162°46.1′	S 1°49.0′	200°18.1′	S 16°17.0′	79°55.4′	N 24°37.5′
8	177°20.9′	303°43.4′	S 19°14.5′	296°46.7′	S 20°33.1′	177°48.6′	S 1°49.0′	215°20.5′	S 16°17.0′	94°58.6′	N 24°37.5′
9	192°23.4′	318°43.3′	S 19°15.1′	311°45.9′	S 20°33.8′	192°51.1′	S 1°49.0′	230°22.8′	S 16°16.9′	110°01.8′	N 24°37.6′
10	207°25.8′	333°43.2′	S 19°15.7′	326°45.1′	S 20°34.5′	207°53.6′	S 1°49.1′	245°25.2′	S 16°16.9′	125°05.0′	N 24°37.7′
11	222°28.3′	348°43.1′	S 19°16.3′	341°44.3′	S 20°35.2′	222°56.1′	S 1°49.1′	260°27.5′	S 16°16.9′	140°08.3′	N 24°37.8′
12	237°30.7′	3°42.9′	S 19°16.9′	356°43.5′	S 20°35.9′	237°58.6′	S 1°49.1′	275°29.9′	S 16°16.8′	155°11.5′	N 24°37.9′
13	252°33.2′	18°42.8′	S 19°17.5′	11°42.7′	S 20°36.7′	253°01.1′	S 1°49.1′	290°32.2′	S 16°16.8′	170°14.7′	N 24°38.0′
14	267°35.7′	33°42.7′	S 19°18.1′	26°41.9′	S 20°37.4′	268°03.6′	S 1°49.1′	305°34.6′	S 16°16.8′	185°17.9′	N 24°38.1′
15	282°38.1′	48°42.5′	S 19°18.6′	41°41.1′	S 20°38.1′	283°06.2′	S 1°49.1′	320°37.0′	S 16°16.7′	200°21.1′	N 24°38.2′
16	297°40.6′	63°42.4′	S 19°19.2′	56°40.3′	S 20°38.8′	298°08.7′	S 1°49.1′	335°39.3′	S 16°16.7′	215°24.3′	N 24°38.3′
17	312°43.1′	78°42.3′	S 19°19.8′	71°39.5′	S 20°39.5′	313°11.2′	S 1°49.1′	350°41.7′	S 16°16.6′	230°27.5′	N 24°38.4′
18	327°45.5′	93°42.1′	S 19°20.4′	86°38.7′	S 20°40.2′	328°13.7′	S 1°49.1′	5°44.0′	S 16°16.6′	245°30.7′	N 24°38.5′
19	342°48.0′	108°42.0′	S 19°21.0′	101°37.9′	S 20°40.9′	343°16.2′	S 1°49.1′	20°46.4′	S 16°16.6′	260°34.0′	N 24°38.6′
20	357°50.5′	123°41.8′	S 19°21.6′	116°37.1′	S 20°41.6′	358°18.7′	S 1°49.1′	35°48.7′	S 16°16.5′	275°37.2′	N 24°38.7′
21	12°52.9′	138°41.7′	S 19°22.2′	131°36.3′	S 20°42.3′	13°21.2′	S 1°49.1′	50°51.1′	S 16°16.5′	290°40.4′	N 24°38.7′
22	27°55.4′	153°41.6′	S 19°22.8′	146°35.5′	S 20°43.0′	28°23.7′	S 1°49.1′	65°53.4′	S 16°16.5′	305°43.6′	N 24°38.8′
23	42°57.9′	168°41.4′	S 19°23.3′	161°34.7′	S 20°43.7′	43°26.2′	S 1°49.2′	80°55.8′	S 16°16.4′	320°46.9′	N 24°38.9′
		SD 16.2′ *d* -0.6′		*v* -0.8′ *d* -0.7′		*v* 2.5′ *d* -0.0′		*v* 2.4′ *d* 0.0′		*v* 3.2′ *d* 0.1′	
Mer. pass.		11 h 45 m 10 s		12 h 13 m		20 h 7 m		17 h 37 m		1 h 41 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Acrux	−Sun	−Arcturus	−Spica	+Regulus	+Pollux	+Procyon	+Sirius
0	252°06.5′	N 11°28.2′	15.0′	-13.1′	55.3′	76°35.9′	73°58.6′	47°58.3′	42°57.2′	12°15.9′	47°56.9′	49°36.2′	68°41.7′
1	266°40.5′	N 11°15.1′	15.0′	-13.2′	55.3′	76°18.2′	73°30.3′	47°34.9′	42°26.6′	12°44.5′	48°27.7′	50°03.4′	69°02.2′
2	281°14.5′	N 11°01.9′	15.1′	-13.2′	55.3′	76°00.5′	73°02.0′	47°11.7′	41°55.9′	13°13.4′	48°58.5′	50°30.7′	69°22.7′
3	295°48.6′	N 10°48.6′	15.1′	-13.3′	55.4′	75°42.8′	72°33.7′	46°48.5′	41°25.1′	13°42.4′	49°29.3′	50°58.0′	69°43.4′
4	310°22.7′	N 10°35.3′	15.1′	-13.4′	55.4′	75°25.2′	72°05.3′	46°25.4′	40°54.4′	14°11.5′	50°00.2′	51°25.5′	70°04.1′
5	324°56.8′	N 10°22.0′	15.1′	-13.4′	55.4′	75°07.6′	71°36.9′	46°02.4′	40°23.6′	14°40.8′	50°31.1′	51°53.0′	70°24.9′
6	339°30.8′	N 10°08.6′	15.1′	-13.5′	55.4′	74°50.0′	71°08.4′	45°39.5′	39°52.8′	15°10.3′	51°02.1′	52°20.5′	70°45.7′
7	354°05.0′	N 9°55.1′	15.1′	-13.5′	55.5′	74°32.5′	70°39.9′	45°16.7′	39°22.0′	15°39.8′	51°33.1′	52°48.2′	71°06.7′
8	8°39.1′	N 9°41.6′	15.1′	-13.6′	55.5′	74°14.9′	70°11.4′	44°54.0′	38°51.1′	16°09.5′	52°04.1′	53°15.9′	71°27.7′
9	23°13.2′	N 9°28.0′	15.1′	-13.6′	55.5′	73°57.5′	69°42.9′	44°31.4′	38°20.2′	16°39.3′	52°35.1′	53°43.7′	71°48.8′
10	37°47.3′	N 9°14.4′	15.1′	-13.7′	55.5′	73°40.0′	69°14.3′	44°09.0′	37°49.3′	17°09.2′	53°06.2′	54°11.6′	72°10.0′
11	52°21.4′	N 9°00.7′	15.1′	-13.7′	55.6′	73°22.6′	68°45.7′	43°46.6′	37°18.3′	17°39.2′	53°37.3′	54°39.5′	72°31.2′
12	66°55.6′	N 8°47.0′	15.1′	-13.8′	55.6′	73°05.2′	68°17.0′	43°24.4′	36°47.4′	18°09.3′	54°08.5′	55°07.5′	72°52.5′
13	81°29.7′	N 8°33.2′	15.1′	-13.8′	55.6′	72°47.9′	67°48.3′	43°02.3′	36°16.3′	18°39.5′	54°39.6′	55°35.6′	73°13.9′
14	96°03.9′	N 8°19.4′	15.1′	-13.9′	55.7′	72°30.6′	67°19.6′	42°40.3′	35°45.3′	19°09.8′	55°10.9′	56°03.7′	73°35.3′
15	110°38.0′	N 8°05.5′	15.1′	-13.9′	55.7′	72°13.4′	66°50.9′	42°18.4′	35°14.2′	19°40.1′	55°42.1′	56°31.9′	73°56.8′
16	125°12.2′	N 7°51.6′	15.1′	-14.0′	55.7′	71°56.2′	66°22.1′	41°56.7′	34°43.1′	20°10.6′	56°13.4′	57°00.2′	74°18.4′
17	139°46.3′	N 7°37.6′	15.1′	-14.0′	55.7′	71°39.1′	65°53.2′	41°35.2′	34°12.0′	20°41.1′	56°44.7′	57°28.5′	74°40.1′
18	154°20.5′	N 7°23.6′	15.1′	-14.1′	55.8′	71°22.0′	65°24.4′	41°13.7′	33°40.8′	21°11.7′	57°16.1′	57°56.9′	75°01.8′
19	168°54.6′	N 7°09.5′	15.1′	-14.1′	55.8′	71°04.9′	64°55.5′	40°52.5′	33°09.7′	21°42.3′	57°47.5′	58°25.4′	75°23.6′
20	183°28.8′	N 6°55.4′	15.1′	-14.2′	55.8′	70°47.9′	64°26.6′	40°31.3′	32°38.4′	22°13.0′	58°18.9′	58°53.9′	75°45.4′
21	198°02.9′	N 6°41.3′	15.1′	-14.2′	55.9′	70°30.9′	63°57.6′	40°10.4′	32°07.2′	22°43.8′	58°50.4′	59°22.5′	76°07.3′
22	212°37.0′	N 6°27.1′	15.1′	-14.2′	55.9′	70°14.0′	63°28.6′	39°49.6′	31°35.9′	23°14.7′	59°21.9′	59°51.2′	76°29.3′
23	227°11.1′	N 6°12.8′	15.1′	-14.3′	55.9′	69°57.2′	62°59.6′	39°29.0′	31°04.6′	23°45.6′	59°53.4′	60°19.9′	76°51.3′
Mer. pass. 7 h 24 m SD 15.1′ phase 36%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.7′	Betelgeuse	+0.5	270°53.7′	N 7°24.7′
Deneb	+1.2	49°27.2′	N 45°21.9′	Acrux	+0.8	173°02.6′	S 63°13.2′	Capella	+0.1	280°24.1′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.4′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.8′	N 38°48.4′	Pollux	+1.2	243°19.3′	N 27°58.2′	Aldebaran	+0.9	290°41.3′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.5′	N 5°10.1′	Polaris	+2.0	314°24.0′	N 89°21.7′
Rigil Kent	−0.0	139°43.4′	S 60°55.6′	Adhara	+1.5	255°07.0′	S 28°60.0′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.6′	S 16°44.7′				
Hadar	+0.6	148°39.2′	S 60°28.7′	Canopus	−0.6	263°52.8′	S 52°42.2′				

Saturday 19 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	58°00.3′	183°41.3′	S 19°23.9′	176°33.9′	S 20°44.4′	58°28.7′	S 1°49.2′	95°58.1′	S 16°16.4′	335°50.1′	N 24°39.0′
1	73°02.8′	198°41.2′	S 19°24.5′	191°33.0′	S 20°45.1′	73°31.3′	S 1°49.2′	111°00.5′	S 16°16.4′	350°53.3′	N 24°39.1′
2	88°05.2′	213°41.0′	S 19°25.1′	206°32.2′	S 20°45.7′	88°33.8′	S 1°49.2′	126°02.9′	S 16°16.3′	5°56.5′	N 24°39.2′
3	103°07.7′	228°40.9′	S 19°25.7′	221°31.4′	S 20°46.4′	103°36.3′	S 1°49.2′	141°05.2′	S 16°16.3′	20°59.8′	N 24°39.3′
4	118°10.2′	243°40.8′	S 19°26.3′	236°30.6′	S 20°47.1′	118°38.8′	S 1°49.2′	156°07.6′	S 16°16.2′	36°03.0′	N 24°39.4′
5	133°12.6′	258°40.6′	S 19°26.9′	251°29.8′	S 20°47.8′	133°41.3′	S 1°49.2′	171°09.9′	S 16°16.2′	51°06.2′	N 24°39.5′
6	148°15.1′	273°40.5′	S 19°27.4′	266°29.0′	S 20°48.5′	148°43.8′	S 1°49.2′	186°12.3′	S 16°16.2′	66°09.5′	N 24°39.6′
7	163°17.6′	288°40.3′	S 19°28.0′	281°28.2′	S 20°49.2′	163°46.3′	S 1°49.2′	201°14.6′	S 16°16.1′	81°12.7′	N 24°39.6′
8	178°20.0′	303°40.2′	S 19°28.6′	296°27.4′	S 20°49.9′	178°48.8′	S 1°49.2′	216°17.0′	S 16°16.1′	96°15.9′	N 24°39.7′
9	193°22.5′	318°40.1′	S 19°29.2′	311°26.6′	S 20°50.6′	193°51.3′	S 1°49.2′	231°19.3′	S 16°16.0′	111°19.2′	N 24°39.8′
10	208°25.0′	333°39.9′	S 19°29.8′	326°25.7′	S 20°51.3′	208°53.8′	S 1°49.2′	246°21.7′	S 16°16.0′	126°22.4′	N 24°39.9′
11	223°27.4′	348°39.8′	S 19°30.3′	341°24.9′	S 20°51.9′	223°56.3′	S 1°49.2′	261°24.0′	S 16°16.0′	141°25.7′	N 24°40.0′
12	238°29.9′	3°39.6′	S 19°30.9′	356°24.1′	S 20°52.6′	238°58.8′	S 1°49.2′	276°26.4′	S 16°15.9′	156°28.9′	N 24°40.1′
13	253°32.3′	18°39.5′	S 19°31.5′	11°23.3′	S 20°53.3′	254°01.3′	S 1°49.2′	291°28.7′	S 16°15.9′	171°32.1′	N 24°40.2′
14	268°34.8′	33°39.4′	S 19°32.1′	26°22.5′	S 20°54.0′	269°03.8′	S 1°49.2′	306°31.1′	S 16°15.9′	186°35.4′	N 24°40.3′
15	283°37.3′	48°39.2′	S 19°32.6′	41°21.7′	S 20°54.7′	284°06.3′	S 1°49.2′	321°33.4′	S 16°15.8′	201°38.6′	N 24°40.4′
16	298°39.7′	63°39.1′	S 19°33.2′	56°20.9′	S 20°55.3′	299°08.8′	S 1°49.3′	336°35.8′	S 16°15.8′	216°41.9′	N 24°40.4′
17	313°42.2′	78°38.9′	S 19°33.8′	71°20.0′	S 20°56.0′	314°11.3′	S 1°49.3′	351°38.1′	S 16°15.7′	231°45.1′	N 24°40.5′
18	328°44.7′	93°38.8′	S 19°34.4′	86°19.2′	S 20°56.7′	329°13.8′	S 1°49.3′	6°40.5′	S 16°15.7′	246°48.4′	N 24°40.6′
19	343°47.1′	108°38.6′	S 19°34.9′	101°18.4′	S 20°57.4′	344°16.3′	S 1°49.3′	21°42.8′	S 16°15.7′	261°51.6′	N 24°40.7′
20	358°49.6′	123°38.5′	S 19°35.5′	116°17.6′	S 20°58.1′	359°18.8′	S 1°49.3′	36°45.2′	S 16°15.6′	276°54.9′	N 24°40.8′
21	13°52.1′	138°38.3′	S 19°36.1′	131°16.8′	S 20°58.7′	14°21.3′	S 1°49.3′	51°47.5′	S 16°15.6′	291°58.1′	N 24°40.9′
22	28°54.5′	153°38.2′	S 19°36.7′	146°15.9′	S 20°59.4′	29°23.8′	S 1°49.3′	66°49.9′	S 16°15.5′	307°01.4′	N 24°41.0′
23	43°57.0′	168°38.1′	S 19°37.2′	161°15.1′	S 21°00.1′	44°26.3′	S 1°49.3′	81°52.2′	S 16°15.5′	322°04.7′	N 24°41.1′
		SD 16.2′ *d* -0.6′		*v* -0.8′ *d* -0.7′		*v* 2.5′ *d* -0.0′		*v* 2.4′ *d* 0.0′		*v* 3.2′ *d* 0.1′	
Mer. pass.		11 h 45 m 23 s		12 h 14 m		20 h 3 m		17 h 33 m		1 h 36 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Acrux	−Sun	−Arcturus	−Spica	+Regulus	+Pollux	+Procyon	+Adhara
0	241°45.3′	N 5°58.6′	15.1′	-14.3′	56.0′	69°40.4′	62°30.5′	39°08.5′	30°33.3′	24°16.6′	60°25.0′	60°48.7′	76°51.2′
1	256°19.4′	N 5°44.2′	15.1′	-14.4′	56.0′	69°23.7′	62°01.4′	38°48.3′	30°01.9′	24°47.6′	60°56.6′	61°17.6′	77°07.7′
2	270°53.5′	N 5°29.9′	15.1′	-14.4′	56.0′	69°07.0′	61°32.2′	38°28.2′	29°30.5′	25°18.8′	61°28.3′	61°46.5′	77°24.3′
3	285°27.5′	N 5°15.5′	15.1′	-14.4′	56.1′	68°50.4′	61°03.0′	38°08.4′	28°59.1′	25°49.9′	61°60.0′	62°15.4′	77°41.0′
4	300°01.6′	N 5°01.0′	15.1′	-14.5′	56.1′	68°33.8′	60°33.8′	37°48.7′	28°27.6′	26°21.1′	62°31.7′	62°44.5′	77°57.7′
5	314°35.7′	N 4°46.6′	15.0′	-14.5′	56.1′	68°17.3′	60°04.5′	37°29.3′	27°56.1′	26°52.4′	63°03.5′	63°13.6′	78°14.5′
6	329°09.7′	N 4°32.0′	15.0′	-14.6′	56.2′	68°00.9′	59°35.2′	37°10.0′	27°24.6′	27°23.8′	63°35.3′	63°42.7′	78°31.4′
7	343°43.7′	N 4°17.5′	15.0′	-14.6′	56.2′	67°44.6′	59°05.9′	36°51.0′	26°53.1′	27°55.2′	64°07.2′	64°11.9′	78°48.3′
8	358°17.7′	N 4°02.9′	15.0′	-14.6′	56.2′	67°28.3′	58°36.5′	36°32.2′	26°21.5′	28°26.6′	64°39.0′	64°41.2′	79°05.3′
9	12°51.7′	N 3°48.3′	15.0′	-14.7′	56.3′	67°12.1′	58°07.1′	36°13.7′	25°49.9′	28°58.1′	65°11.0′	65°10.5′	79°22.3′
10	27°25.7′	N 3°33.6′	14.9′	-14.7′	56.3′	66°55.9′	57°37.6′	35°55.4′	25°18.3′	29°29.7′	65°43.0′	65°39.9′	79°39.4′
11	41°59.6′	N 3°18.9′	14.9′	-14.7′	56.3′	66°39.9′	57°08.1′	35°37.4′	24°46.7′	30°01.3′	66°15.0′	66°09.4′	79°56.6′
12	56°33.6′	N 3°04.2′	14.9′	-14.8′	56.4′	66°23.9′	56°38.6′	35°19.6′	24°15.0′	30°33.0′	66°47.0′	66°38.9′	80°13.8′
13	71°07.5′	N 2°49.5′	14.9′	-14.8′	56.4′	66°08.0′	56°09.0′	35°02.2′	23°43.3′	31°04.7′	67°19.1′	67°08.4′	80°31.1′
14	85°41.4′	N 2°34.7′	14.9′	-14.8′	56.4′	65°52.1′	55°39.3′	34°44.9′	23°11.6′	31°36.4′	67°51.2′	67°38.1′	80°48.5′
15	100°15.2′	N 2°19.9′	14.8′	-14.8′	56.5′	65°36.4′	55°09.7′	34°28.0′	22°39.9′	32°08.3′	68°23.4′	68°07.7′	81°05.9′
16	114°49.0′	N 2°05.0′	14.8′	-14.9′	56.5′	65°20.7′	54°40.0′	34°11.4′	22°08.2′	32°40.1′	68°55.6′	68°37.5′	81°23.3′
17	129°22.8′	N 1°50.1′	14.8′	-14.9′	56.5′	65°05.1′	54°10.2′	33°55.1′	21°36.4′	33°12.1′	69°27.9′	69°07.2′	81°40.9′
18	143°56.6′	N 1°35.3′	14.7′	-14.9′	56.6′	64°49.7′	53°40.4′	33°39.1′	21°04.6′	33°44.0′	70°00.2′	69°37.1′	81°58.4′
19	158°30.4′	N 1°20.3′	14.7′	-14.9′	56.6′	64°34.3′	53°10.6′	33°23.4′	20°32.8′	34°16.1′	70°32.5′	70°07.0′	82°16.0′
20	173°04.1′	N 1°05.4′	14.7′	-15.0′	56.6′	64°19.0′	52°40.7′		20°01.0′	34°48.1′	71°04.9′	70°36.9′	82°33.7′
21	187°37.7′	N 0°50.4′	14.6′	-15.0′	56.7′	64°03.7′	52°10.8′		19°29.2′	35°20.3′	71°37.4′	71°06.9′	82°51.4′
22	202°11.4′	N 0°35.4′	14.6′	-15.0′	56.7′	63°48.6′	51°40.9′		18°57.4′	35°52.5′	72°09.8′	71°37.0′	83°09.2′
23	216°45.0′	N 0°20.4′	14.6′	-15.0′	56.7′		51°10.9′		18°25.5′	36°24.7′	72°42.3′	72°07.1′	83°27.0′
Mer. pass. 8 h 7 m SD 15.3′ phase 27%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.7′	Betelgeuse	+0.5	270°53.7′	N 7°24.7′
Deneb	+1.2	49°27.2′	N 45°21.9′	Acrux	+0.8	173°02.6′	S 63°13.2′	Capella	+0.1	280°24.1′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.4′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.8′	N 38°48.4′	Pollux	+1.2	243°19.3′	N 27°58.2′	Aldebaran	+0.9	290°41.3′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.5′	N 5°10.1′	Polaris	+2.0	314°24.0′	N 89°21.7′
Rigil Kent	−0.0	139°43.4′	S 60°55.6′	Adhara	+1.5	255°07.0′	S 28°60.0′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.6′	S 16°44.7′				
Hadar	+0.6	148°39.2′	S 60°28.7′	Canopus	−0.6	263°52.7′	S 52°42.2′				

Sunday 20 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	58°59.5′	183°37.9′	S 19°37.8′	176°14.3′	S 21°00.7′	59°28.8′	S 1°49.3′	96°54.6′	S 16°15.5′	337°07.9′	N 24°41.2′
1	74°01.9′	198°37.8′	S 19°38.4′	191°13.5′	S 21°01.4′	74°31.3′	S 1°49.3′	111°56.9′	S 16°15.4′	352°11.2′	N 24°41.2′
2	89°04.4′	213°37.6′	S 19°38.9′	206°12.7′	S 21°02.1′	89°33.8′	S 1°49.3′	126°59.3′	S 16°15.4′	7°14.4′	N 24°41.3′
3	104°06.8′	228°37.5′	S 19°39.5′	221°11.8′	S 21°02.7′	104°36.3′	S 1°49.3′	142°01.6′	S 16°15.4′	22°17.7′	N 24°41.4′
4	119°09.3′	243°37.3′	S 19°40.1′	236°11.0′	S 21°03.4′	119°38.8′	S 1°49.3′	157°04.0′	S 16°15.3′	37°21.0′	N 24°41.5′
5	134°11.8′	258°37.2′	S 19°40.6′	251°10.2′	S 21°04.1′	134°41.3′	S 1°49.3′	172°06.3′	S 16°15.3′	52°24.2′	N 24°41.6′
6	149°14.2′	273°37.0′	S 19°41.2′	266°09.4′	S 21°04.7′	149°43.8′	S 1°49.3′	187°08.7′	S 16°15.2′	67°27.5′	N 24°41.7′
7	164°16.7′	288°36.9′	S 19°41.8′	281°08.5′	S 21°05.4′	164°46.3′	S 1°49.3′	202°11.0′	S 16°15.2′	82°30.8′	N 24°41.8′
8	179°19.2′	303°36.7′	S 19°42.3′	296°07.7′	S 21°06.1′	179°48.8′	S 1°49.3′	217°13.4′	S 16°15.2′	97°34.0′	N 24°41.8′
9	194°21.6′	318°36.6′	S 19°42.9′	311°06.9′	S 21°06.7′	194°51.3′	S 1°49.3′	232°15.7′	S 16°15.1′	112°37.3′	N 24°41.9′
10	209°24.1′	333°36.4′	S 19°43.5′	326°06.1′	S 21°07.4′	209°53.8′	S 1°49.3′	247°18.1′	S 16°15.1′	127°40.6′	N 24°42.0′
11	224°26.6′	348°36.3′	S 19°44.0′	341°05.2′	S 21°08.0′	224°56.3′	S 1°49.3′	262°20.4′	S 16°15.0′	142°43.8′	N 24°42.1′
12	239°29.0′	3°36.1′	S 19°44.6′	356°04.4′	S 21°08.7′	239°58.8′	S 1°49.3′	277°22.8′	S 16°15.0′	157°47.1′	N 24°42.2′
13	254°31.5′	18°36.0′	S 19°45.2′	11°03.6′	S 21°09.4′	255°01.3′	S 1°49.3′	292°25.1′	S 16°15.0′	172°50.4′	N 24°42.3′
14	269°33.9′	33°35.8′	S 19°45.7′	26°02.8′	S 21°10.0′	270°03.8′	S 1°49.3′	307°27.5′	S 16°14.9′	187°53.7′	N 24°42.4′
15	284°36.4′	48°35.7′	S 19°46.3′	41°01.9′	S 21°10.7′	285°06.3′	S 1°49.3′	322°29.8′	S 16°14.9′	202°57.0′	N 24°42.4′
16	299°38.9′	63°35.5′	S 19°46.9′	56°01.1′	S 21°11.3′	300°08.8′	S 1°49.3′	337°32.2′	S 16°14.8′	218°00.2′	N 24°42.5′
17	314°41.3′	78°35.4′	S 19°47.4′	71°00.3′	S 21°12.0′	315°11.3′	S 1°49.3′	352°34.5′	S 16°14.8′	233°03.5′	N 24°42.6′
18	329°43.8′	93°35.2′	S 19°48.0′	85°59.4′	S 21°12.6′	330°13.8′	S 1°49.3′	7°36.9′	S 16°14.8′	248°06.8′	N 24°42.7′
19	344°46.3′	108°35.1′	S 19°48.5′	100°58.6′	S 21°13.3′	345°16.3′	S 1°49.3′	22°39.2′	S 16°14.7′	263°10.1′	N 24°42.8′
20	359°48.7′	123°34.9′	S 19°49.1′	115°57.8′	S 21°13.9′	0°18.8′	S 1°49.3′	37°41.6′	S 16°14.7′	278°13.4′	N 24°42.9′
21	14°51.2′	138°34.8′	S 19°49.7′	130°57.0′	S 21°14.6′	15°21.3′	S 1°49.3′	52°43.9′	S 16°14.6′	293°16.7′	N 24°42.9′
22	29°53.7′	153°34.6′	S 19°50.2′	145°56.1′	S 21°15.2′	30°23.8′	S 1°49.3′	67°46.2′	S 16°14.6′	308°19.9′	N 24°43.0′
23	44°56.1′	168°34.5′	S 19°50.8′	160°55.3′	S 21°15.9′	45°26.3′	S 1°49.3′	82°48.6′	S 16°14.6′	323°23.2′	N 24°43.1′
		SD 16.2′	*d* -0.6′	*v* -0.8′	*d* -0.7′	*v* 2.5′	*d* -0.0′	*v* 2.3′	*d* 0.0′	*v* 3.3′	*d* 0.1′
Mer. pass.		11 h 45 m 37 s		12 h 16 m		19 h 59 m		17 h 30 m		1 h 31 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Rigil Kent	−Hadar	−Sun	−Spica	+Regulus	+Procyon	+Pollux	+Adhara
0	231°18.6′	N 0°05.4′	14.5′	-15.1′	56.8′	65°55.1′	63°15.6′	50°40.8′	17°53.7′	36°57.0′	72°37.3′	73°14.9′	83°44.9′
1	245°52.1′	S 0°09.7′	14.5′	-15.1′	56.8′	65°32.4′	62°54.5′	50°10.7′	17°21.9′	37°29.3′	73°07.5′	73°47.5′	84°02.8′
2	260°25.6′	S 0°24.8′	14.5′	-15.1′	56.8′	65°09.8′	62°33.6′	49°40.6′	16°50.0′	38°01.7′	73°37.8′	74°20.1′	84°20.8′
3	274°59.0′	S 0°39.9′	14.4′	-15.1′	56.9′	64°47.2′	62°12.6′	49°10.4′	16°18.2′	38°34.1′	74°08.1′	74°52.8′	84°38.8′
4	289°32.5′	S 0°55.0′	14.4′	-15.1′	56.9′	64°24.6′	61°51.8′	48°40.2′	15°46.4′	39°06.6′	74°38.5′	75°25.5′	84°56.9′
5	304°05.8′	S 1°10.1′	14.3′	-15.1′	56.9′	64°02.1′	61°31.0′	48°10.0′	15°14.6′	39°39.1′	75°08.9′	75°58.3′	85°15.0′
6	318°39.2′	S 1°25.3′	14.3′	-15.2′	57.0′	63°39.7′	61°10.3′	47°39.7′	14°42.9′	40°11.7′	75°39.4′	76°31.1′	85°33.1′
7	333°12.4′	S 1°40.4′	14.2′	-15.2′	57.0′	63°17.3′	60°49.7′	47°09.3′	14°11.2′	40°44.3′	76°10.0′	77°04.0′	85°51.3′
8	347°45.7′	S 1°55.6′	14.2′	-15.2′	57.0′	62°54.9′	60°29.2′	46°39.0′	13°39.5′	41°17.0′	76°40.5′	77°36.9′	86°09.5′
9	2°18.9′	S 2°10.8′	14.1′	-15.2′	57.1′	62°32.7′	60°08.7′	46°08.5′	13°07.9′	41°49.7′	77°11.2′	78°09.8′	86°27.8′
10	16°52.0′	S 2°26.0′	14.1′	-15.2′	57.1′	62°10.4′	59°48.3′	45°38.1′	12°36.4′	42°22.5′	77°41.9′	78°42.8′	86°46.1′
11	31°25.1′	S 2°41.2′	14.0′	-15.2′	57.2′	61°48.3′	59°28.1′	45°07.5′	12°05.0′	42°55.3′	78°12.6′	79°15.9′	87°04.4′
12	45°58.1′	S 2°56.4′	14.0′	-15.2′	57.2′	61°26.2′	59°07.9′	44°37.0′	11°33.6′	43°28.2′	78°43.4′	79°49.0′	87°22.8′
13	60°31.1′	S 3°11.6′	13.9′	-15.2′	57.2′	61°04.1′	58°47.8′	44°06.4′	11°02.4′	44°01.1′	79°14.3′	80°22.1′	87°41.2′
14	75°04.0′	S 3°26.8′	13.9′	-15.2′	57.3′	60°42.2′	58°27.8′	43°35.7′	10°31.4′	44°34.0′	79°45.1′	80°55.2′	87°59.6′
15	89°36.9′	S 3°42.0′	13.8′	-15.2′	57.3′	60°20.3′	58°07.9′	43°05.0′	10°00.5′	45°07.1′	80°16.1′	81°28.5′	88°18.1′
16	104°09.7′	S 3°57.3′	13.8′	-15.2′	57.3′	59°58.5′	57°48.0′	42°34.3′	9°29.9′	45°40.1′	80°47.1′	82°01.7′	88°36.6′
17	118°42.5′	S 4°12.5′	13.7′	-15.2′	57.4′	59°36.7′	57°28.3′	42°03.5′	8°59.5′	46°13.2′	81°18.1′	82°35.0′	88°55.1′
18	133°15.2′	S 4°27.7′	13.6′	-15.2′	57.4′	59°15.1′	57°08.8′	41°32.7′	8°29.4′	46°46.4′	81°49.2′	83°08.4′	89°13.7′
19	147°47.8′	S 4°43.0′	13.6′	-15.2′	57.4′	58°53.5′	56°49.3′	41°01.8′	7°59.8′	47°19.6′	82°20.3′	83°41.8′	89°32.3′
20	162°20.4′	S 4°58.2′	13.5′	-15.2′	57.5′	58°32.0′	56°29.9′	40°30.9′	7°30.6′	47°52.9′	82°51.5′	84°15.2′	89°50.9′
21	176°52.9′	S 5°13.5′	13.4′	-15.2′	57.5′	58°10.6′	56°10.7′		7°02.0′	48°26.2′	83°22.7′	84°48.7′	90°09.6′
22	191°25.4′	S 5°28.7′	13.4′	-15.2′	57.6′	57°49.3′	55°51.5′			48°59.5′	83°54.0′	85°22.2′	90°28.2′
23	205°57.7′	S 5°43.9′	13.3′	-15.2′	57.6′	57°28.1′	55°32.5′			49°32.9′	84°25.3′	85°55.8′	90°46.9′
Mer. pass. 8 h 50 m SD 15.5′ phase 18%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.7′	Betelgeuse	+0.5	270°53.7′	N 7°24.7′
Deneb	+1.2	49°27.2′	N 45°21.9′	Acrux	+0.8	173°02.6′	S 63°13.2′	Capella	+0.1	280°24.1′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.4′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.8′	N 38°48.4′	Pollux	+1.2	243°19.3′	N 27°58.2′	Aldebaran	+0.9	290°41.3′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.5′	N 5°10.1′	Polaris	+2.0	314°24.1′	N 89°21.7′
Rigil Kent	−0.0	139°43.4′	S 60°55.6′	Adhara	+1.5	255°07.0′	S 28°60.0′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.6′	S 16°44.7′				
Hadar	+0.6	148°39.2′	S 60°28.7′	Canopus	−0.6	263°52.7′	S 52°42.2′				

Monday 21 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	59°58.6′	183°34.3′	S 19°51.3′	175°54.5′	S 21°16.5′	60°28.8′	S 1°49.3′	97°50.9′	S 16°14.5′	338°26.5′	N 24°43.2′
1	75°01.1′	198°34.2′	S 19°51.9′	190°53.6′	S 21°17.2′	75°31.3′	S 1°49.3′	112°53.3′	S 16°14.5′	353°29.8′	N 24°43.3′
2	90°03.5′	213°34.0′	S 19°52.4′	205°52.8′	S 21°17.8′	90°33.7′	S 1°49.3′	127°55.6′	S 16°14.4′	8°33.1′	N 24°43.4′
3	105°06.0′	228°33.9′	S 19°53.0′	220°52.0′	S 21°18.5′	105°36.2′	S 1°49.3′	142°58.0′	S 16°14.4′	23°36.4′	N 24°43.4′
4	120°08.4′	243°33.7′	S 19°53.5′	235°51.1′	S 21°19.1′	120°38.7′	S 1°49.3′	158°00.3′	S 16°14.4′	38°39.7′	N 24°43.5′
5	135°10.9′	258°33.5′	S 19°54.1′	250°50.3′	S 21°19.7′	135°41.2′	S 1°49.3′	173°02.7′	S 16°14.3′	53°43.0′	N 24°43.6′
6	150°13.4′	273°33.4′	S 19°54.6′	265°49.5′	S 21°20.4′	150°43.7′	S 1°49.3′	188°05.0′	S 16°14.3′	68°46.3′	N 24°43.7′
7	165°15.8′	288°33.2′	S 19°55.2′	280°48.6′	S 21°21.0′	165°46.2′	S 1°49.3′	203°07.4′	S 16°14.2′	83°49.6′	N 24°43.8′
8	180°18.3′	303°33.1′	S 19°55.7′	295°47.8′	S 21°21.6′	180°48.7′	S 1°49.3′	218°09.7′	S 16°14.2′	98°52.9′	N 24°43.9′
9	195°20.8′	318°32.9′	S 19°56.3′	310°46.9′	S 21°22.3′	195°51.2′	S 1°49.3′	233°12.0′	S 16°14.2′	113°56.2′	N 24°43.9′
10	210°23.2′	333°32.8′	S 19°56.8′	325°46.1′	S 21°22.9′	210°53.7′	S 1°49.3′	248°14.4′	S 16°14.1′	128°59.5′	N 24°44.0′
11	225°25.7′	348°32.6′	S 19°57.4′	340°45.3′	S 21°23.6′	225°56.2′	S 1°49.3′	263°16.7′	S 16°14.1′	144°02.8′	N 24°44.1′
12	240°28.2′	3°32.4′	S 19°57.9′	355°44.4′	S 21°24.2′	240°58.6′	S 1°49.3′	278°19.1′	S 16°14.0′	159°06.1′	N 24°44.2′
13	255°30.6′	18°32.3′	S 19°58.5′	10°43.6′	S 21°24.8′	256°01.1′	S 1°49.3′	293°21.4′	S 16°14.0′	174°09.4′	N 24°44.3′
14	270°33.1′	33°32.1′	S 19°59.0′	25°42.8′	S 21°25.4′	271°03.6′	S 1°49.3′	308°23.8′	S 16°14.0′	189°12.7′	N 24°44.3′
15	285°35.6′	48°32.0′	S 19°59.6′	40°41.9′	S 21°26.1′	286°06.1′	S 1°49.3′	323°26.1′	S 16°13.9′	204°16.0′	N 24°44.4′
16	300°38.0′	63°31.8′	S 20°00.1′	55°41.1′	S 21°26.7′	301°08.6′	S 1°49.3′	338°28.5′	S 16°13.9′	219°19.4′	N 24°44.5′
17	315°40.5′	78°31.6′	S 20°00.7′	70°40.2′	S 21°27.3′	316°11.1′	S 1°49.3′	353°30.8′	S 16°13.8′	234°22.7′	N 24°44.6′
18	330°42.9′	93°31.5′	S 20°01.2′	85°39.4′	S 21°28.0′	331°13.6′	S 1°49.3′	8°33.1′	S 16°13.8′	249°26.0′	N 24°44.7′
19	345°45.4′	108°31.3′	S 20°01.8′	100°38.6′	S 21°28.6′	346°16.1′	S 1°49.3′	23°35.5′	S 16°13.8′	264°29.3′	N 24°44.7′
20	0°47.9′	123°31.2′	S 20°02.3′	115°37.7′	S 21°29.2′	1°18.5′	S 1°49.3′	38°37.8′	S 16°13.7′	279°32.6′	N 24°44.8′
21	15°50.3′	138°31.0′	S 20°02.9′	130°36.9′	S 21°29.8′	16°21.0′	S 1°49.3′	53°40.2′	S 16°13.7′	294°35.9′	N 24°44.9′
22	30°52.8′	153°30.8′	S 20°03.4′	145°36.0′	S 21°30.5′	31°23.5′	S 1°49.3′	68°42.5′	S 16°13.6′	309°39.3′	N 24°45.0′
23	45°55.3′	168°30.7′	S 20°03.9′	160°35.2′	S 21°31.1′	46°26.0′	S 1°49.3′	83°44.9′	S 16°13.6′	324°42.6′	N 24°45.1′
		SD 16.2′ *d* -0.5′		*v* -0.8′ *d* -0.6′		*v* 2.5′ *d* 0.0′		*v* 2.3′ *d* 0.0′		*v* 3.3′ *d* 0.1′	
Mer. pass.		11 h 45 m 52 s		12 h 17 m		19 h 55 m		17 h 26 m		1 h 26 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Achernar	−Rigil Kent	−Hadar	−Spica	+Regulus	+Procyon	+Pollux	+Adhara
0	220°30.0′	S 5°59.1′	13.2′	-15.2′	57.6′		57°07.0′	55°13.7′		50°06.4′	84°56.7′	86°29.4′	91°05.6′
1	235°02.3′	S 6°14.3′	13.2′	-15.2′	57.7′		56°46.0′	54°54.9′		50°39.9′	85°28.1′	87°03.1′	91°24.4′
2	249°34.5′	S 6°29.6′	13.1′	-15.2′	57.7′		56°25.1′	54°36.3′		51°13.4′	85°59.6′	87°36.8′	91°43.1′
3	264°06.6′	S 6°44.7′	13.0′	-15.2′	57.7′		56°04.3′	54°17.9′		51°47.0′	86°31.1′	88°10.5′	92°01.9′
4	278°38.6′	S 6°59.9′	13.0′	-15.2′	57.8′		55°43.6′	53°59.5′		52°20.6′	87°02.6′	88°44.3′	92°20.7′
5	293°10.6′	S 7°15.1′	12.9′	-15.2′	57.8′		55°23.0′	53°41.4′		52°54.3′	87°34.2′	89°18.1′	92°39.5′
6	307°42.5′	S 7°30.3′	12.8′	-15.1′	57.8′		55°02.6′	53°23.4′		53°28.0′	88°05.9′	89°52.0′	92°58.3′
7	322°14.3′	S 7°45.4′	12.7′	-15.1′	57.9′		54°42.3′	53°05.5′		54°01.8′	88°37.5′	90°26.0′	93°17.1′
8	336°46.0′	S 8°00.5′	12.7′	-15.1′	57.9′		54°22.1′	52°47.8′		54°35.7′	89°09.3′	90°59.9′	93°36.0′
9	351°17.7′	S 8°15.6′	12.6′	-15.1′	57.9′		54°02.0′	52°30.2′		55°09.5′	89°41.0′	91°34.0′	93°54.8′
10	5°49.2′	S 8°30.7′	12.5′	-15.1′	58.0′	114°21.8′	53°42.1′	52°12.9′		55°43.4′	90°12.8′	92°08.0′	94°13.7′
11	20°20.7′	S 8°45.8′	12.4′	-15.0′	58.0′		53°22.3′	51°55.7′		56°17.4′	90°44.7′	92°42.1′	94°32.6′
12	34°52.1′	S 9°00.8′	12.3′	-15.0′	58.1′		53°02.6′	51°38.6′		56°51.4′	91°16.6′	93°16.3′	94°51.4′
13	49°23.5′	S 9°15.8′	12.2′	-15.0′	58.1′		52°43.1′	51°21.8′		57°25.5′	91°48.5′	93°50.5′	95°10.3′
14	63°54.7′	S 9°30.8′	12.2′	-15.0′	58.1′		52°23.7′	51°05.1′		57°59.6′	92°20.5′	94°24.7′	95°29.2′
15	78°25.9′	S 9°45.8′	12.1′	-14.9′	58.2′		52°04.5′	50°48.7′		58°33.7′	92°52.5′	94°59.0′	95°48.1′
16	92°56.9′	S 10°00.7′	12.0′	-14.9′	58.2′		51°45.5′	50°32.4′		59°07.9′	93°24.5′	95°33.3′	96°07.0′
17	107°27.9′	S 10°15.6′	11.9′	-14.9′	58.2′		51°26.6′	50°16.3′		59°42.2′	93°56.6′	96°07.7′	96°25.9′
18	121°58.8′	S 10°30.5′	11.8′	-14.8′	58.3′		51°07.9′	50°00.5′		60°16.5′	94°28.7′	96°42.1′	96°44.7′
19	136°29.6′	S 10°45.4′	11.7′	-14.8′	58.3′		50°49.4′	49°44.8′	7°32.8′	60°50.8′	95°00.9′	97°16.6′	97°03.6′
20	151°00.3′	S 11°00.2′	11.6′	-14.8′	58.3′		50°31.0′	49°29.4′	8°03.0′	61°25.2′	95°33.1′	97°51.1′	97°22.5′
21	165°31.0′	S 11°14.9′	11.5′	-14.7′	58.4′		50°12.8′	49°14.1′	8°33.7′	61°59.6′	96°05.3′	98°25.6′	97°41.3′
22	180°01.5′	S 11°29.7′	11.4′	-14.7′	58.4′		49°54.8′		9°05.0′	62°34.1′	96°37.6′	99°00.2′	98°00.2′
23	194°31.9′	S 11°44.4′	11.3′	-14.7′	58.4′		49°37.1′		9°36.6′	63°08.6′	97°09.9′	99°34.9′	98°19.0′
Mer. pass. 9 h 36 m SD 15.7′ phase 11%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.7′	Betelgeuse	+0.5	270°53.7′	N 7°24.7′
Deneb	+1.2	49°27.2′	N 45°21.9′	Acrux	+0.8	173°02.5′	S 63°13.2′	Capella	+0.1	280°24.1′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.4′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.8′	N 38°48.4′	Pollux	+1.2	243°19.3′	N 27°58.2′	Aldebaran	+0.9	290°41.3′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.5′	N 5°10.1′	Polaris	+2.0	314°24.1′	N 89°21.7′
Rigil Kent	−0.0	139°43.4′	S 60°55.6′	Adhara	+1.5	255°07.0′	S 28°60.0′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.6′	S 16°44.7′				
Hadar	+0.6	148°39.1′	S 60°28.7′	Canopus	−0.6	263°52.7′	S 52°42.2′				

Tuesday 22 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	60°57.7′	183°30.5′	S 20°04.5′	175°34.3′	S 21°31.7′	61°28.5′	S 1°49.3′	98°47.2′	S 16°13.5′	339°45.9′	N 24°45.1′
1	76°00.2′	198°30.3′	S 20°05.0′	190°33.5′	S 21°32.3′	76°31.0′	S 1°49.3′	113°49.5′	S 16°13.5′	354°49.2′	N 24°45.2′
2	91°02.7′	213°30.2′	S 20°05.6′	205°32.6′	S 21°32.9′	91°33.5′	S 1°49.3′	128°51.9′	S 16°13.5′	9°52.5′	N 24°45.3′
3	106°05.1′	228°30.0′	S 20°06.1′	220°31.8′	S 21°33.5′	106°35.9′	S 1°49.3′	143°54.2′	S 16°13.4′	24°55.9′	N 24°45.4′
4	121°07.6′	243°29.9′	S 20°06.6′	235°31.0′	S 21°34.2′	121°38.4′	S 1°49.3′	158°56.6′	S 16°13.4′	39°59.2′	N 24°45.5′
5	136°10.0′	258°29.7′	S 20°07.2′	250°30.1′	S 21°34.8′	136°40.9′	S 1°49.3′	173°58.9′	S 16°13.3′	55°02.5′	N 24°45.5′
6	151°12.5′	273°29.5′	S 20°07.7′	265°29.3′	S 21°35.4′	151°43.4′	S 1°49.3′	189°01.2′	S 16°13.3′	70°05.9′	N 24°45.6′
7	166°15.0′	288°29.4′	S 20°08.2′	280°28.4′	S 21°36.0′	166°45.9′	S 1°49.3′	204°03.6′	S 16°13.3′	85°09.2′	N 24°45.7′
8	181°17.4′	303°29.2′	S 20°08.8′	295°27.6′	S 21°36.6′	181°48.3′	S 1°49.2′	219°05.9′	S 16°13.2′	100°12.5′	N 24°45.8′
9	196°19.9′	318°29.0′	S 20°09.3′	310°26.7′	S 21°37.2′	196°50.8′	S 1°49.2′	234°08.3′	S 16°13.2′	115°15.8′	N 24°45.9′
10	211°22.4′	333°28.9′	S 20°09.8′	325°25.9′	S 21°37.8′	211°53.3′	S 1°49.2′	249°10.6′	S 16°13.1′	130°19.2′	N 24°45.9′
11	226°24.8′	348°28.7′	S 20°10.4′	340°25.0′	S 21°38.4′	226°55.8′	S 1°49.2′	264°13.0′	S 16°13.1′	145°22.5′	N 24°46.0′
12	241°27.3′	3°28.5′	S 20°10.9′	355°24.2′	S 21°39.0′	241°58.3′	S 1°49.2′	279°15.3′	S 16°13.0′	160°25.9′	N 24°46.1′
13	256°29.8′	18°28.4′	S 20°11.4′	10°23.3′	S 21°39.7′	257°00.8′	S 1°49.2′	294°17.6′	S 16°13.0′	175°29.2′	N 24°46.2′
14	271°32.2′	33°28.2′	S 20°12.0′	25°22.5′	S 21°40.3′	272°03.2′	S 1°49.2′	309°20.0′	S 16°13.0′	190°32.5′	N 24°46.2′
15	286°34.7′	48°28.0′	S 20°12.5′	40°21.6′	S 21°40.9′	287°05.7′	S 1°49.2′	324°22.3′	S 16°12.9′	205°35.9′	N 24°46.3′
16	301°37.2′	63°27.9′	S 20°13.0′	55°20.8′	S 21°41.5′	302°08.2′	S 1°49.2′	339°24.7′	S 16°12.9′	220°39.2′	N 24°46.4′
17	316°39.6′	78°27.7′	S 20°13.6′	70°19.9′	S 21°42.1′	317°10.7′	S 1°49.2′	354°27.0′	S 16°12.8′	235°42.5′	N 24°46.5′
18	331°42.1′	93°27.5′	S 20°14.1′	85°19.1′	S 21°42.7′	332°13.1′	S 1°49.2′	9°29.3′	S 16°12.8′	250°45.9′	N 24°46.5′
19	346°44.5′	108°27.4′	S 20°14.6′	100°18.2′	S 21°43.3′	347°15.6′	S 1°49.2′	24°31.7′	S 16°12.8′	265°49.2′	N 24°46.6′
20	1°47.0′	123°27.2′	S 20°15.2′	115°17.4′	S 21°43.9′	2°18.1′	S 1°49.2′	39°34.0′	S 16°12.7′	280°52.6′	N 24°46.7′
21	16°49.5′	138°27.0′	S 20°15.7′	130°16.5′	S 21°44.5′	17°20.6′	S 1°49.2′	54°36.3′	S 16°12.7′	295°55.9′	N 24°46.8′
22	31°51.9′	153°26.8′	S 20°16.2′	145°15.7′	S 21°45.1′	32°23.1′	S 1°49.2′	69°38.7′	S 16°12.6′	310°59.3′	N 24°46.8′
23	46°54.4′	168°26.7′	S 20°16.7′	160°14.8′	S 21°45.7′	47°25.5′	S 1°49.2′	84°41.0′	S 16°12.6′	326°02.6′	N 24°46.9′
		SD 16.2′	*d* -0.5′	*v* -0.8′	*d* -0.6′	*v* 2.5′	*d* 0.0′	*v* 2.3′	*d* 0.0′	*v* 3.3′	*d* 0.1′
Mer. pass.		11 h 46 m 7 s		12 h 18 m		19 h 51 m		17 h 22 m		1 h 21 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Rigil Kent	+Spica	+Arcturus	+Regulus	+Procyon	+Adhara	+Pollux	+Sirius
0	209°02.2′	S 11°59.0′	11.2′	-14.6′	58.5′	49°19.5′	10°08.7′		63°43.1′	97°42.2′	98°37.9′	100°09.5′	105°27.2′
1	223°32.5′	S 12°13.6′	11.1′	-14.6′	58.5′	49°02.1′	10°41.0′		64°17.7′	98°14.6′	98°56.7′	100°44.3′	105°51.2′
2	238°02.6′	S 12°28.2′	11.0′	-14.5′	58.5′	48°44.9′	11°13.6′		64°52.4′	98°47.0′	99°15.5′	101°19.0′	106°15.1′
3	252°32.6′	S 12°42.7′	10.9′	-14.5′	58.6′	48°27.9′	11°46.5′		65°27.0′	99°19.5′	99°34.3′	101°53.8′	106°39.1′
4	267°02.6′	S 12°57.2′	10.8′	-14.4′	58.6′	48°11.2′	12°19.5′		66°01.8′	99°51.9′	99°53.0′	102°28.7′	107°03.0′
5	281°32.4′	S 13°11.6′	10.7′	-14.4′	58.6′	47°54.6′	12°52.8′	32°15.6′	66°36.5′	100°24.4′	100°11.8′	103°03.6′	107°26.8′
6	296°02.1′	S 13°25.9′	10.6′	-14.3′	58.7′	47°38.3′	13°26.3′	32°30.7′	67°11.4′	100°57.0′	100°30.5′	103°38.5′	107°50.7′
7	310°31.7′	S 13°40.3′	10.5′	-14.3′	58.7′	47°22.3′	13°59.9′	32°46.3′	67°46.2′	101°29.5′	100°49.2′	104°13.4′	108°14.5′
8	325°01.3′	S 13°54.5′	10.4′	-14.2′	58.7′	47°06.5′	14°33.6′	33°02.3′	68°21.1′	102°02.1′	101°07.8′	104°48.5′	108°38.3′
9	339°30.7′	S 14°08.7′	10.3′	-14.1′	58.8′	46°50.9′	15°07.5′	33°18.7′	68°56.0′	102°34.7′	101°26.5′	105°23.5′	109°02.0′
10	353°60.0′	S 14°22.8′	10.2′	-14.1′	58.8′	46°35.6′	15°41.5′	33°35.6′	69°31.0′	103°07.4′	101°45.1′	105°58.6′	109°25.7′
11	8°29.2′	S 14°36.9′	10.1′	-14.0′	58.8′		16°15.7′	33°53.0′	70°06.1′	103°40.0′	102°03.7′	106°33.7′	109°49.4′
12	22°58.3′	S 14°50.9′	10.0′	-13.9′	58.9′		16°49.9′	34°10.7′	70°41.1′	104°12.7′	102°22.2′	107°08.9′	110°13.0′
13	37°27.2′	S 15°04.9′	9.9′	-13.9′	58.9′		17°24.2′	34°28.9′	71°16.2′	104°45.4′	102°40.7′	107°44.1′	110°36.5′
14	51°56.1′	S 15°18.8′	9.8′	-13.8′	58.9′		17°58.7′	34°47.4′	71°51.4′	105°18.2′	102°59.2′	108°19.4′	111°00.1′
15	66°24.9′	S 15°32.6′	9.6′	-13.7′	59.0′		18°33.2′	35°06.4′	72°26.6′	105°50.9′	103°17.6′	108°54.7′	111°23.5′
16	80°53.5′	S 15°46.3′	9.5′	-13.7′	59.0′		19°07.8′	35°25.8′	73°01.8′	106°23.7′	103°36.0′	109°30.0′	111°46.9′
17	95°22.0′	S 15°60.0′	9.4′	-13.6′	59.0′		19°42.5′	35°45.5′	73°37.0′	106°56.5′	103°54.3′	110°05.4′	112°10.3′
18	109°50.4′	S 16°13.6′	9.3′	-13.5′	59.1′		20°17.2′	36°05.6′	74°12.3′	107°29.4′	104°12.6′	110°40.8′	112°33.6′
19	124°18.7′	S 16°27.1′	9.2′	-13.4′	59.1′		20°52.1′	36°26.0′	74°47.7′	108°02.2′	104°30.9′	111°16.2′	112°56.8′
20	138°46.9′	S 16°40.6′	9.1′	-13.4′	59.1′		21°27.0′	36°46.8′	75°23.1′	108°35.1′	104°49.1′	111°51.7′	113°20.0′
21	153°15.0′	S 16°53.9′	8.9′	-13.3′	59.1′		22°01.9′	37°08.0′	75°58.5′	109°08.0′	105°07.2′	112°27.2′	113°43.1′
22	167°42.9′	S 17°07.2′	8.8′	-13.2′	59.2′		22°37.0′	37°29.5′	76°33.9′	109°40.9′	105°25.3′	113°02.8′	114°06.2′
23	182°10.8′	S 17°20.4′	8.7′	-13.1′	59.2′		23°12.1′	37°51.3′	77°09.4′	110°13.8′	105°43.3′	113°38.4′	114°29.1′
Mer. pass. 10 h 25 m SD 15.9′ phase 5%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.7′	Betelgeuse	+0.5	270°53.7′	N 7°24.7′
Deneb	+1.2	49°27.2′	N 45°21.9′	Acrux	+0.8	173°02.5′	S 63°13.2′	Capella	+0.1	280°24.1′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.4′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.8′	N 38°48.4′	Pollux	+1.2	243°19.3′	N 27°58.2′	Aldebaran	+0.9	290°41.3′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.5′	N 5°10.1′	Polaris	+2.0	314°24.1′	N 89°21.7′
Rigil Kent	−0.0	139°43.4′	S 60°55.6′	Adhara	+1.5	255°07.0′	S 28°60.0′	Achernar	+0.5	335°21.0′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.5′	S 16°44.7′				
Hadar	+0.6	148°39.1′	S 60°28.7′	Canopus	−0.6	263°52.7′	S 52°42.2′				

Wednesday 23 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	61°56.9′	183°26.5′	S 20°17.3′	175°13.9′	S 21°46.2′	62°28.0′	S 1°49.2′	99°43.4′	S 16°12.5′	341°06.0′	N 24°47.0′
1	76°59.3′	198°26.3′	S 20°17.8′	190°13.1′	S 21°46.8′	77°30.5′	S 1°49.1′	114°45.7′	S 16°12.5′	356°09.3′	N 24°47.1′
2	92°01.8′	213°26.2′	S 20°18.3′	205°12.2′	S 21°47.4′	92°33.0′	S 1°49.1′	129°48.0′	S 16°12.5′	11°12.7′	N 24°47.1′
3	107°04.3′	228°26.0′	S 20°18.8′	220°11.4′	S 21°48.0′	107°35.4′	S 1°49.1′	144°50.4′	S 16°12.4′	26°16.0′	N 24°47.2′
4	122°06.7′	243°25.8′	S 20°19.4′	235°10.5′	S 21°48.6′	122°37.9′	S 1°49.1′	159°52.7′	S 16°12.4′	41°19.4′	N 24°47.3′
5	137°09.2′	258°25.6′	S 20°19.9′	250°09.7′	S 21°49.2′	137°40.4′	S 1°49.1′	174°55.1′	S 16°12.3′	56°22.7′	N 24°47.4′
6	152°11.7′	273°25.5′	S 20°20.4′	265°08.8′	S 21°49.8′	152°42.9′	S 1°49.1′	189°57.4′	S 16°12.3′	71°26.1′	N 24°47.4′
7	167°14.1′	288°25.3′	S 20°20.9′	280°07.9′	S 21°50.4′	167°45.3′	S 1°49.1′	204°59.7′	S 16°12.2′	86°29.5′	N 24°47.5′
8	182°16.6′	303°25.1′	S 20°21.4′	295°07.1′	S 21°51.0′	182°47.8′	S 1°49.1′	220°02.1′	S 16°12.2′	101°32.8′	N 24°47.6′
9	197°19.0′	318°25.0′	S 20°22.0′	310°06.2′	S 21°51.5′	197°50.3′	S 1°49.1′	235°04.4′	S 16°12.2′	116°36.2′	N 24°47.7′
10	212°21.5′	333°24.8′	S 20°22.5′	325°05.4′	S 21°52.1′	212°52.8′	S 1°49.1′	250°06.7′	S 16°12.1′	131°39.5′	N 24°47.7′
11	227°24.0′	348°24.6′	S 20°23.0′	340°04.5′	S 21°52.7′	227°55.2′	S 1°49.1′	265°09.1′	S 16°12.1′	146°42.9′	N 24°47.8′
12	242°26.4′	3°24.4′	S 20°23.5′	355°03.6′	S 21°53.3′	242°57.7′	S 1°49.1′	280°11.4′	S 16°12.0′	161°46.3′	N 24°47.9′
13	257°28.9′	18°24.3′	S 20°24.0′	10°02.8′	S 21°53.9′	258°00.2′	S 1°49.0′	295°13.7′	S 16°12.0′	176°49.6′	N 24°47.9′
14	272°31.4′	33°24.1′	S 20°24.6′	25°01.9′	S 21°54.4′	273°02.7′	S 1°49.0′	310°16.1′	S 16°11.9′	191°53.0′	N 24°48.0′
15	287°33.8′	48°23.9′	S 20°25.1′	40°01.1′	S 21°55.0′	288°05.1′	S 1°49.0′	325°18.4′	S 16°11.9′	206°56.4′	N 24°48.1′
16	302°36.3′	63°23.7′	S 20°25.6′	55°00.2′	S 21°55.6′	303°07.6′	S 1°49.0′	340°20.8′	S 16°11.9′	221°59.7′	N 24°48.2′
17	317°38.8′	78°23.6′	S 20°26.1′	69°59.3′	S 21°56.2′	318°10.1′	S 1°49.0′	355°23.1′	S 16°11.8′	237°03.1′	N 24°48.2′
18	332°41.2′	93°23.4′	S 20°26.6′	84°58.5′	S 21°56.7′	333°12.5′	S 1°49.0′	10°25.4′	S 16°11.8′	252°06.5′	N 24°48.3′
19	347°43.7′	108°23.2′	S 20°27.1′	99°57.6′	S 21°57.3′	348°15.0′	S 1°49.0′	25°27.8′	S 16°11.7′	267°09.9′	N 24°48.4′
20	2°46.2′	123°23.0′	S 20°27.6′	114°56.7′	S 21°57.9′	3°17.5′	S 1°49.0′	40°30.1′	S 16°11.7′	282°13.2′	N 24°48.5′
21	17°48.6′	138°22.8′	S 20°28.1′	129°55.9′	S 21°58.5′	18°19.9′	S 1°49.0′	55°32.4′	S 16°11.6′	297°16.6′	N 24°48.5′
22	32°51.1′	153°22.7′	S 20°28.7′	144°55.0′	S 21°59.0′	33°22.4′	S 1°49.0′	70°34.8′	S 16°11.6′	312°20.0′	N 24°48.6′
23	47°53.5′	168°22.5′	S 20°29.2′	159°54.1′	S 21°59.6′	48°24.9′	S 1°48.9′	85°37.1′	S 16°11.6′	327°23.4′	N 24°48.7′
		SD 16.2′ *d* -0.5′		*v* -0.9′ *d* -0.6′		*v* 2.5′ *d* 0.0′		*v* 2.3′ *d* 0.0′		*v* 3.4′ *d* 0.1′	
Mer. pass.		11 h 46 m 24 s		12 h 20 m		19 h 47 m		17 h 18 m		1 h 15 m	

h	Moon					Lunar distance						
	GHA	dec	*v*	*d*	HP	+Spica	+Arcturus	+Regulus	+Adhara	+Procyon	+Pollux	+Sirius
0	196°38.5′	S 17°33.5′	8.6′	-13.0′	59.2′	23°47.2′	38°13.4′	77°45.0′	106°01.3′	110°46.7′	114°14.0′	114°52.0′
1	211°06.1′	S 17°46.5′	8.5′	-12.9′	59.3′	24°22.4′	38°35.8′	78°20.5′	106°19.2′	111°19.7′	114°49.7′	115°14.8′
2	225°33.5′	S 17°59.5′	8.4′	-12.8′	59.3′	24°57.7′	38°58.5′	78°56.1′	106°37.1′	111°52.6′	115°25.4′	115°37.6′
3	240°00.9′	S 18°12.3′	8.2′	-12.7′	59.3′	25°33.0′	39°21.6′	79°31.8′	106°54.8′	112°25.6′	116°01.1′	116°00.2′
4	254°28.1′	S 18°25.0′	8.1′	-12.6′	59.3′	26°08.4′	39°44.9′	80°07.5′	107°12.6′	112°58.5′	116°36.9′	116°22.8′
5	268°55.2′	S 18°37.7′	8.0′	-12.5′	59.4′	26°43.9′	40°08.5′	80°43.2′	107°30.2′	113°31.5′	117°12.7′	116°45.2′
6	283°22.2′	S 18°50.2′	7.9′	-12.4′	59.4′							
7	297°49.1′	S 19°02.7′	7.7′	-12.3′	59.4′							
8	312°15.9′	S 19°15.0′	7.6′	-12.2′	59.5′							
9	326°42.5′	S 19°27.3′	7.5′	-12.1′	59.5′							
10	341°09.0′	S 19°39.4′	7.4′	-12.0′	59.5′							
11	355°35.4′	S 19°51.4′	7.3′	-11.9′	59.5′							
12	10°01.6′	S 20°03.3′	7.1′	-11.8′	59.6′							
13	24°27.8′	S 20°15.1′	7.0′	-11.7′	59.6′							
14	38°53.8′	S 20°26.8′	6.9′	-11.6′	59.6′							
15	53°19.7′	S 20°38.4′	6.8′	-11.4′	59.6′							
16	67°45.4′	S 20°49.8′	6.6′	-11.3′	59.7′							
17	82°11.1′	S 21°01.2′	6.5′	-11.2′	59.7′							
18	96°36.6′	S 21°12.4′	6.4′	-11.1′	59.7′							
19	111°02.0′	S 21°23.5′	6.3′	-10.9′	59.7′							
20	125°27.3′	S 21°34.4′	6.2′	-10.8′	59.8′							
21	139°52.4′	S 21°45.2′	6.0′	-10.7′	59.8′							
22	154°17.5′	S 21°55.9′	5.9′	-10.6′	59.8′							
23	168°42.4′	S 22°06.5′	5.8′	-10.4′	59.8′							
Mer. pass. 11 h 18 m SD 16.2′ phase 1%												

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.5′	S 11°16.7′	Betelgeuse	+0.5	270°53.7′	N 7°24.7′
Deneb	+1.2	49°27.2′	N 45°21.9′	Acrux	+0.8	173°02.5′	S 63°13.2′	Capella	+0.1	280°24.1′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.3′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.8′	N 38°48.4′	Pollux	+1.2	243°19.3′	N 27°58.2′	Aldebaran	+0.9	290°41.3′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.5′	N 5°10.1′	Polaris	+2.0	314°24.1′	N 89°21.7′
Rigil Kent	−0.0	139°43.4′	S 60°55.6′	Adhara	+1.5	255°07.0′	S 28°60.0′	Achernar	+0.5	335°21.1′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.5′	S 16°44.7′				
Hadar	+0.6	148°39.1′	S 60°28.7′	Canopus	−0.6	263°52.7′	S 52°42.2′				

Thursday 24 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	62°56.0′	183°22.3′	S 20°29.7′	174°53.3′	S 22°00.2′	63°27.4′	S 1°48.9′	100°39.4′	S 16°11.5′	342°26.7′	N 24°48.7′
1	77°58.5′	198°22.1′	S 20°30.2′	189°52.4′	S 22°00.7′	78°29.8′	S 1°48.9′	115°41.8′	S 16°11.5′	357°30.1′	N 24°48.8′
2	93°00.9′	213°21.9′	S 20°30.7′	204°51.5′	S 22°01.3′	93°32.3′	S 1°48.9′	130°44.1′	S 16°11.4′	12°33.5′	N 24°48.9′
3	108°03.4′	228°21.8′	S 20°31.2′	219°50.7′	S 22°01.9′	108°34.8′	S 1°48.9′	145°46.4′	S 16°11.4′	27°36.9′	N 24°48.9′
4	123°05.9′	243°21.6′	S 20°31.7′	234°49.8′	S 22°02.4′	123°37.2′	S 1°48.9′	160°48.8′	S 16°11.3′	42°40.3′	N 24°49.0′
5	138°08.3′	258°21.4′	S 20°32.2′	249°48.9′	S 22°03.0′	138°39.7′	S 1°48.9′	175°51.1′	S 16°11.3′	57°43.6′	N 24°49.1′
6	153°10.8′	273°21.2′	S 20°32.7′	264°48.1′	S 22°03.5′	153°42.2′	S 1°48.9′	190°53.4′	S 16°11.2′	72°47.0′	N 24°49.2′
7	168°13.3′	288°21.0′	S 20°33.2′	279°47.2′	S 22°04.1′	168°44.6′	S 1°48.9′	205°55.8′	S 16°11.2′	87°50.4′	N 24°49.2′
8	183°15.7′	303°20.9′	S 20°33.7′	294°46.3′	S 22°04.7′	183°47.1′	S 1°48.8′	220°58.1′	S 16°11.2′	102°53.8′	N 24°49.3′
9	198°18.2′	318°20.7′	S 20°34.2′	309°45.5′	S 22°05.2′	198°49.6′	S 1°48.8′	236°00.4′	S 16°11.1′	117°57.2′	N 24°49.4′
10	213°20.6′	333°20.5′	S 20°34.7′	324°44.6′	S 22°05.8′	213°52.0′	S 1°48.8′	251°02.8′	S 16°11.1′	133°00.6′	N 24°49.4′
11	228°23.1′	348°20.3′	S 20°35.2′	339°43.7′	S 22°06.3′	228°54.5′	S 1°48.8′	266°05.1′	S 16°11.0′	148°04.0′	N 24°49.5′
12	243°25.6′	3°20.1′	S 20°35.7′	354°42.9′	S 22°06.9′	243°56.9′	S 1°48.8′	281°07.4′	S 16°11.0′	163°07.3′	N 24°49.6′
13	258°28.0′	18°19.9′	S 20°36.2′	9°42.0′	S 22°07.4′	258°59.4′	S 1°48.8′	296°09.8′	S 16°10.9′	178°10.7′	N 24°49.6′
14	273°30.5′	33°19.8′	S 20°36.7′	24°41.1′	S 22°08.0′	274°01.9′	S 1°48.8′	311°12.1′	S 16°10.9′	193°14.1′	N 24°49.7′
15	288°33.0′	48°19.6′	S 20°37.2′	39°40.2′	S 22°08.5′	289°04.3′	S 1°48.8′	326°14.4′	S 16°10.8′	208°17.5′	N 24°49.8′
16	303°35.4′	63°19.4′	S 20°37.7′	54°39.4′	S 22°09.1′	304°06.8′	S 1°48.7′	341°16.8′	S 16°10.8′	223°20.9′	N 24°49.8′
17	318°37.9′	78°19.2′	S 20°38.2′	69°38.5′	S 22°09.6′	319°09.3′	S 1°48.7′	356°19.1′	S 16°10.8′	238°24.3′	N 24°49.9′
18	333°40.4′	93°19.0′	S 20°38.7′	84°37.6′	S 22°10.2′	334°11.7′	S 1°48.7′	11°21.4′	S 16°10.7′	253°27.7′	N 24°50.0′
19	348°42.8′	108°18.8′	S 20°39.2′	99°36.7′	S 22°10.7′	349°14.2′	S 1°48.7′	26°23.8′	S 16°10.7′	268°31.1′	N 24°50.0′
20	3°45.3′	123°18.7′	S 20°39.7′	114°35.9′	S 22°11.3′	4°16.7′	S 1°48.7′	41°26.1′	S 16°10.6′	283°34.5′	N 24°50.1′
21	18°47.8′	138°18.5′	S 20°40.2′	129°35.0′	S 22°11.8′	19°19.1′	S 1°48.7′	56°28.4′	S 16°10.6′	298°37.9′	N 24°50.2′
22	33°50.2′	153°18.3′	S 20°40.7′	144°34.1′	S 22°12.4′	34°21.6′	S 1°48.7′	71°30.8′	S 16°10.5′	313°41.3′	N 24°50.2′
23	48°52.7′	168°18.1′	S 20°41.2′	159°33.2′	S 22°12.9′	49°24.0′	S 1°48.7′	86°33.1′	S 16°10.5′	328°44.7′	N 24°50.3′
		SD 16.2′ *d* -0.5′		*v* -0.9′ *d* -0.6′		*v* 2.5′ *d* 0.0′		*v* 2.3′ *d* 0.0′		*v* 3.4′ *d* 0.1′	
Mer. pass.		11 h 46 m 41 s		12 h 21 m		19 h 43 m		17 h 15 m		1 h 10 m	

h	Moon					Lunar distance					
	GHA	dec	*v*	*d*	HP	−Jupiter	−Achernar	−Deneb	−Fomalhaut	−Saturn	−Altair
0	183°07.2′	S 22°16.9′	5.7′	-10.3′	59.8′						
1	197°31.9′	S 22°27.2′	5.6′	-10.1′	59.9′						
2	211°56.4′	S 22°37.3′	5.4′	-10.0′	59.9′						
3	226°20.9′	S 22°47.3′	5.3′	-9.9′	59.9′						
4	240°45.2′	S 22°57.1′	5.2′	-9.7′	59.9′						
5	255°09.4′	S 23°06.9′	5.1′	-9.6′	59.9′						
6	269°33.5′	S 23°16.4′	5.0′	-9.4′	60.0′						
7	283°57.4′	S 23°25.8′	4.9′	-9.3′	60.0′						
8	298°21.3′	S 23°35.1′	4.7′	-9.1′	60.0′						
9	312°45.1′	S 23°44.2′	4.6′	-8.9′	60.0′						
10	327°08.7′	S 23°53.1′	4.5′	-8.8′	60.0′						
11	341°32.2′	S 24°01.9′	4.4′	-8.6′	60.0′						
12	355°55.6′	S 24°10.5′	4.3′	-8.5′	60.1′						
13	10°18.9′	S 24°19.0′	4.2′	-8.3′	60.1′						
14	24°42.1′	S 24°27.3′	4.1′	-8.1′	60.1′						
15	39°05.2′	S 24°35.4′	4.0′	-8.0′	60.1′						
16	53°28.2′	S 24°43.4′	3.9′	-7.8′	60.1′						
17	67°51.1′	S 24°51.2′	3.8′	-7.6′	60.1′	106°06.5′	89°20.0′	88°44.7′	81°13.2′	66°51.0′	57°02.9′
18	82°13.9′	S 24°58.8′	3.7′	-7.5′	60.1′	105°29.7′	88°58.8′	88°29.0′	80°38.0′	66°14.5′	56°35.8′
19	96°36.6′	S 25°06.3′	3.6′	-7.3′	60.2′	104°53.0′	88°37.6′	88°13.3′	80°02.7′	65°37.9′	56°08.8′
20	110°59.2′	S 25°13.6′	3.5′	-7.1′	60.2′	104°16.2′	88°16.5′	87°57.6′	79°27.4′	65°01.3′	55°41.9′
21	125°21.7′	S 25°20.7′	3.4′	-6.9′	60.2′	103°39.4′	87°55.3′	87°41.9′	78°52.1′	64°24.8′	55°15.1′
22	139°44.1′	S 25°27.6′	3.3′	-6.7′	60.2′	103°02.6′	87°34.1′	87°26.2′	78°16.8′	63°48.2′	54°48.5′
23	154°06.5′	S 25°34.3′	3.2′	-6.6′	60.2′	102°25.8′	87°12.9′	87°10.5′	77°41.5′	63°11.6′	54°22.0′
Mer. pass. 12 h 17 m SD 16.3′ phase 0%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.4′	S 11°16.7′	Betelgeuse	+0.5	270°53.7′	N 7°24.7′
Deneb	+1.2	49°27.2′	N 45°21.9′	Acrux	+0.8	173°02.5′	S 63°13.2′	Capella	+0.1	280°24.1′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.3′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.8′	N 38°48.4′	Pollux	+1.2	243°19.3′	N 27°58.2′	Aldebaran	+0.9	290°41.3′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.5′	N 5°10.0′	Polaris	+2.0	314°24.0′	N 89°21.7′
Rigil Kent	−0.0	139°43.4′	S 60°55.6′	Adhara	+1.5	255°07.0′	S 28°60.0′	Achernar	+0.5	335°21.1′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.5′	S 16°44.7′				
Hadar	+0.6	148°39.1′	S 60°28.7′	Canopus	−0.6	263°52.7′	S 52°42.2′				

Friday 25 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	63°55.1′	183°17.9′	S 20°41.7′	174°32.4′	S 22°13.4′	64°26.5′	S 1°48.6′	101°35.4′	S 16°10.4′	343°48.1′	N 24°50.4′
1	78°57.6′	198°17.7′	S 20°42.2′	189°31.5′	S 22°14.0′	79°29.0′	S 1°48.6′	116°37.8′	S 16°10.4′	358°51.5′	N 24°50.4′
2	94°00.1′	213°17.5′	S 20°42.7′	204°30.6′	S 22°14.5′	94°31.4′	S 1°48.6′	131°40.1′	S 16°10.4′	13°54.9′	N 24°50.5′
3	109°02.5′	228°17.3′	S 20°43.2′	219°29.7′	S 22°15.1′	109°33.9′	S 1°48.6′	146°42.4′	S 16°10.3′	28°58.3′	N 24°50.6′
4	124°05.0′	243°17.2′	S 20°43.7′	234°28.9′	S 22°15.6′	124°36.3′	S 1°48.6′	161°44.7′	S 16°10.3′	44°01.7′	N 24°50.6′
5	139°07.5′	258°17.0′	S 20°44.2′	249°28.0′	S 22°16.1′	139°38.8′	S 1°48.6′	176°47.1′	S 16°10.2′	59°05.1′	N 24°50.7′
6	154°09.9′	273°16.8′	S 20°44.7′	264°27.1′	S 22°16.7′	154°41.3′	S 1°48.6′	191°49.4′	S 16°10.2′	74°08.6′	N 24°50.7′
7	169°12.4′	288°16.6′	S 20°45.2′	279°26.2′	S 22°17.2′	169°43.7′	S 1°48.5′	206°51.7′	S 16°10.1′	89°12.0′	N 24°50.8′
8	184°14.9′	303°16.4′	S 20°45.6′	294°25.3′	S 22°17.7′	184°46.2′	S 1°48.5′	221°54.1′	S 16°10.1′	104°15.4′	N 24°50.9′
9	199°17.3′	318°16.2′	S 20°46.1′	309°24.5′	S 22°18.2′	199°48.6′	S 1°48.5′	236°56.4′	S 16°10.0′	119°18.8′	N 24°50.9′
10	214°19.8′	333°16.0′	S 20°46.6′	324°23.6′	S 22°18.8′	214°51.1′	S 1°48.5′	251°58.7′	S 16°10.0′	134°22.2′	N 24°51.0′
11	229°22.3′	348°15.8′	S 20°47.1′	339°22.7′	S 22°19.3′	229°53.5′	S 1°48.5′	267°01.1′	S 16°09.9′	149°25.6′	N 24°51.1′
12	244°24.7′	3°15.6′	S 20°47.6′	354°21.8′	S 22°19.8′	244°56.0′	S 1°48.5′	282°03.4′	S 16°09.9′	164°29.0′	N 24°51.1′
13	259°27.2′	18°15.4′	S 20°48.1′	9°20.9′	S 22°20.4′	259°58.5′	S 1°48.4′	297°05.7′	S 16°09.9′	179°32.4′	N 24°51.2′
14	274°29.6′	33°15.3′	S 20°48.6′	24°20.0′	S 22°20.9′	275°00.9′	S 1°48.4′	312°08.0′	S 16°09.8′	194°35.9′	N 24°51.3′
15	289°32.1′	48°15.1′	S 20°49.0′	39°19.2′	S 22°21.4′	290°03.4′	S 1°48.4′	327°10.4′	S 16°09.8′	209°39.3′	N 24°51.3′
16	304°34.6′	63°14.9′	S 20°49.5′	54°18.3′	S 22°21.9′	305°05.8′	S 1°48.4′	342°12.7′	S 16°09.7′	224°42.7′	N 24°51.4′
17	319°37.0′	78°14.7′	S 20°50.0′	69°17.4′	S 22°22.4′	320°08.3′	S 1°48.4′	357°15.0′	S 16°09.7′	239°46.1′	N 24°51.4′
18	334°39.5′	93°14.5′	S 20°50.5′	84°16.5′	S 22°23.0′	335°10.7′	S 1°48.4′	12°17.4′	S 16°09.6′	254°49.5′	N 24°51.5′
19	349°42.0′	108°14.3′	S 20°51.0′	99°15.6′	S 22°23.5′	350°13.2′	S 1°48.3′	27°19.7′	S 16°09.6′	269°53.0′	N 24°51.6′
20	4°44.4′	123°14.1′	S 20°51.5′	114°14.7′	S 22°24.0′	5°15.6′	S 1°48.3′	42°22.0′	S 16°09.5′	284°56.4′	N 24°51.6′
21	19°46.9′	138°13.9′	S 20°51.9′	129°13.9′	S 22°24.5′	20°18.1′	S 1°48.3′	57°24.3′	S 16°09.5′	299°59.8′	N 24°51.7′
22	34°49.4′	153°13.7′	S 20°52.4′	144°13.0′	S 22°25.0′	35°20.5′	S 1°48.3′	72°26.7′	S 16°09.4′	315°03.2′	N 24°51.7′
23	49°51.8′	168°13.5′	S 20°52.9′	159°12.1′	S 22°25.5′	50°23.0′	S 1°48.3′	87°29.0′	S 16°09.4′	330°06.6′	N 24°51.8′
		SD 16.2′ *d* -0.5′		*v* -0.9′ *d* -0.5′		*v* 2.5′ *d* 0.0′		*v* 2.3′ *d* 0.0′		*v* 3.4′ *d* 0.1′	
Mer. pass.		11 h 46 m 59 s		12 h 23 m		19 h 39 m		17 h 11 m		1 h 5 m	

h	Moon					Lunar distance					
	GHA	dec	*v*	*d*	HP	−Jupiter	−Deneb	−Achernar	−Fomalhaut	−Saturn	−Altair
0	168°28.7′	S 25°40.9′	3.1′	-6.4′	60.2′	101°49.0′	86°54.9′	86°51.8′	77°06.1′	62°35.0′	53°55.6′
1	182°50.9′	S 25°47.3′	3.1′	-6.2′	60.2′	101°12.2′	86°39.2′	86°30.6′	76°30.8′	61°58.3′	53°29.3′
2	197°12.9′	S 25°53.5′	3.0′	-6.0′	60.2′	100°35.3′	86°23.6′	86°09.5′	75°55.5′	61°21.7′	53°03.2′
3	211°34.9′	S 25°59.5′	2.9′	-5.8′	60.3′	99°58.5′	86°08.0′	85°48.3′	75°20.2′	60°45.0′	52°37.2′
4	225°56.8′	S 26°05.3′	2.8′	-5.6′	60.3′	99°21.6′	85°52.4′	85°27.2′	74°44.8′	60°08.4′	52°11.3′
5	240°18.6′	S 26°11.0′	2.8′	-5.5′	60.3′	98°44.7′	85°36.8′	85°06.1′	74°09.5′	59°31.7′	51°45.6′
6	254°40.4′	S 26°16.4′	2.7′	-5.3′	60.3′	98°07.8′	85°21.2′	84°45.0′	73°34.2′	58°55.1′	51°20.1′
7	269°02.1′	S 26°21.7′	2.6′	-5.1′	60.3′	97°30.9′	85°05.7′	84°23.9′	72°58.8′	58°18.4′	50°54.7′
8	283°23.7′	S 26°26.8′	2.5′	-4.9′	60.3′	96°54.0′	84°50.1′	84°02.9′	72°23.5′	57°41.7′	50°29.5′
9	297°45.2′	S 26°31.7′	2.5′	-4.7′	60.3′	96°17.1′	84°34.7′	83°41.9′	71°48.2′	57°05.0′	50°04.4′
10	312°06.7′	S 26°36.3′	2.4′	-4.5′	60.3′	95°40.2′	84°19.2′	83°20.9′	71°12.9′	56°28.3′	49°39.6′
11	326°28.1′	S 26°40.8′	2.4′	-4.3′	60.3′	95°03.3′	84°03.8′	82°59.9′	70°37.6′	55°51.6′	49°14.9′
12	340°49.5′	S 26°45.1′	2.3′	-4.1′	60.3′	94°26.4′	83°48.4′	82°38.9′	70°02.3′	55°14.9′	48°50.4′
13	355°10.7′	S 26°49.2′	2.2′	-3.9′	60.3′	93°49.4′	83°33.0′	82°18.0′	69°27.0′	54°38.2′	48°26.1′
14	9°32.0′	S 26°53.1′	2.2′	-3.7′	60.3′	93°12.5′	83°17.7′	81°57.2′	68°51.7′	54°01.5′	48°02.0′
15	23°53.2′	S 26°56.8′	2.1′	-3.5′	60.3′	92°35.5′	83°02.4′	81°36.3′	68°16.4′	53°24.8′	47°38.1′
16	38°14.3′	S 27°00.3′	2.1′	-3.3′	60.3′	91°58.6′	82°47.1′	81°15.5′	67°41.1′	52°48.1′	47°14.4′
17	52°35.4′	S 27°03.6′	2.1′	-3.1′	60.3′	91°21.7′	82°31.9′	80°54.8′	67°05.9′	52°11.3′	46°50.9′
18	66°56.5′	S 27°06.7′	2.0′	-2.9′	60.4′	90°44.7′	82°16.7′	80°34.0′	66°30.6′	51°34.6′	46°27.7′
19	81°17.5′	S 27°09.6′	2.0′	-2.7′	60.4′	90°07.8′	82°01.6′	80°13.4′	65°55.4′	50°57.9′	46°04.6′
20	95°38.5′	S 27°12.3′	2.0′	-2.5′	60.4′	89°30.8′	81°46.5′	79°52.7′	65°20.2′	50°21.2′	45°41.8′
21	109°59.5′	S 27°14.7′	1.9′	-2.3′	60.4′	88°53.9′		79°32.2′	64°45.0′	49°44.5′	45°19.3′
22	124°20.4′	S 27°17.0′	1.9′	-2.1′	60.4′	88°16.9′		79°11.6′	64°09.8′	49°07.8′	44°57.0′
23	138°41.3′	S 27°19.1′	1.9′	-1.9′	60.4′	87°40.0′		78°51.2′	63°34.7′	48°31.1′	44°35.0′
Mer. pass. 13 h 20 m SD 16.4′ phase 2%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.4′	S 11°16.7′	Betelgeuse	+0.5	270°53.7′	N 7°24.7′
Deneb	+1.2	49°27.2′	N 45°21.9′	Acrux	+0.8	173°02.5′	S 63°13.2′	Capella	+0.1	280°24.1′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.3′	N 11°51.4′	Rigel	+0.2	281°05.3′	S 8°10.4′
Vega	+0.0	80°34.8′	N 38°48.4′	Pollux	+1.2	243°19.3′	N 27°58.2′	Aldebaran	+0.9	290°41.3′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.5′	N 5°10.0′	Polaris	+2.0	314°24.0′	N 89°21.7′
Rigil Kent	−0.0	139°43.4′	S 60°55.5′	Adhara	+1.5	255°07.0′	S 28°60.0′	Achernar	+0.5	335°21.1′	S 57°07.4′
Arcturus	−0.1	145°49.9′	N 19°03.9′	Sirius	−1.4	258°27.5′	S 16°44.7′				
Hadar	+0.6	148°39.1′	S 60°28.7′	Canopus	−0.6	263°52.7′	S 52°42.2′				

Saturday 26 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	64°54.3′	183°13.3′	S 20°53.4′	174°11.2′	S 22°26.1′	65°25.5′	S 1°48.3′	102°31.3′	S 16°09.3′	345°10.1′	N 24°51.9′
1	79°56.8′	198°13.1′	S 20°53.8′	189°10.3′	S 22°26.6′	80°27.9′	S 1°48.2′	117°33.6′	S 16°09.3′	0°13.5′	N 24°51.9′
2	94°59.2′	213°12.9′	S 20°54.3′	204°09.4′	S 22°27.1′	95°30.4′	S 1°48.2′	132°36.0′	S 16°09.3′	15°16.9′	N 24°52.0′
3	110°01.7′	228°12.7′	S 20°54.8′	219°08.5′	S 22°27.6′	110°32.8′	S 1°48.2′	147°38.3′	S 16°09.2′	30°20.4′	N 24°52.1′
4	125°04.1′	243°12.5′	S 20°55.3′	234°07.6′	S 22°28.1′	125°35.3′	S 1°48.2′	162°40.6′	S 16°09.2′	45°23.8′	N 24°52.1′
5	140°06.6′	258°12.3′	S 20°55.7′	249°06.8′	S 22°28.6′	140°37.7′	S 1°48.2′	177°42.9′	S 16°09.1′	60°27.2′	N 24°52.2′
6	155°09.1′	273°12.1′	S 20°56.2′	264°05.9′	S 22°29.1′	155°40.2′	S 1°48.1′	192°45.3′	S 16°09.1′	75°30.6′	N 24°52.2′
7	170°11.5′	288°12.0′	S 20°56.7′	279°05.0′	S 22°29.6′	170°42.6′	S 1°48.1′	207°47.6′	S 16°09.0′	90°34.1′	N 24°52.3′
8	185°14.0′	303°11.8′	S 20°57.2′	294°04.1′	S 22°30.1′	185°45.1′	S 1°48.1′	222°49.9′	S 16°09.0′	105°37.5′	N 24°52.3′
9	200°16.5′	318°11.6′	S 20°57.6′	309°03.2′	S 22°30.6′	200°47.5′	S 1°48.1′	237°52.3′	S 16°08.9′	120°40.9′	N 24°52.4′
10	215°18.9′	333°11.4′	S 20°58.1′	324°02.3′	S 22°31.1′	215°50.0′	S 1°48.1′	252°54.6′	S 16°08.9′	135°44.4′	N 24°52.5′
11	230°21.4′	348°11.2′	S 20°58.6′	339°01.4′	S 22°31.6′	230°52.4′	S 1°48.1′	267°56.9′	S 16°08.8′	150°47.8′	N 24°52.5′
12	245°23.9′	3°11.0′	S 20°59.0′	354°00.5′	S 22°32.1′	245°54.9′	S 1°48.0′	282°59.2′	S 16°08.8′	165°51.3′	N 24°52.6′
13	260°26.3′	18°10.8′	S 20°59.5′	8°59.6′	S 22°32.6′	260°57.3′	S 1°48.0′	298°01.6′	S 16°08.7′	180°54.7′	N 24°52.6′
14	275°28.8′	33°10.6′	S 20°60.0′	23°58.7′	S 22°33.1′	275°59.8′	S 1°48.0′	313°03.9′	S 16°08.7′	195°58.1′	N 24°52.7′
15	290°31.3′	48°10.4′	S 21°00.5′	38°57.8′	S 22°33.6′	291°02.2′	S 1°48.0′	328°06.2′	S 16°08.6′	211°01.6′	N 24°52.8′
16	305°33.7′	63°10.2′	S 21°00.9′	53°57.0′	S 22°34.1′	306°04.6′	S 1°48.0′	343°08.5′	S 16°08.6′	226°05.0′	N 24°52.8′
17	320°36.2′	78°10.0′	S 21°01.4′	68°56.1′	S 22°34.6′	321°07.1′	S 1°47.9′	358°10.9′	S 16°08.6′	241°08.5′	N 24°52.9′
18	335°38.6′	93°09.8′	S 21°01.8′	83°55.2′	S 22°35.1′	336°09.5′	S 1°47.9′	13°13.2′	S 16°08.5′	256°11.9′	N 24°52.9′
19	350°41.1′	108°09.6′	S 21°02.3′	98°54.3′	S 22°35.6′	351°12.0′	S 1°47.9′	28°15.5′	S 16°08.5′	271°15.3′	N 24°53.0′
20	5°43.6′	123°09.4′	S 21°02.8′	113°53.4′	S 22°36.1′	6°14.4′	S 1°47.9′	43°17.8′	S 16°08.4′	286°18.8′	N 24°53.0′
21	20°46.0′	138°09.2′	S 21°03.2′	128°52.5′	S 22°36.6′	21°16.9′	S 1°47.9′	58°20.1′	S 16°08.4′	301°22.2′	N 24°53.1′
22	35°48.5′	153°09.0′	S 21°03.7′	143°51.6′	S 22°37.0′	36°19.3′	S 1°47.8′	73°22.5′	S 16°08.3′	316°25.7′	N 24°53.1′
23	50°51.0′	168°08.8′	S 21°04.2′	158°50.7′	S 22°37.5′	51°21.8′	S 1°47.8′	88°24.8′	S 16°08.3′	331°29.1′	N 24°53.2′
		SD 16.2′ *d* -0.5′		*v* -0.9′ *d* -0.5′		*v* 2.4′ *d* 0.0′		*v* 2.3′ *d* 0.0′		*v* 3.4′ *d* 0.1′	
Mer. pass.		11 h 47 m 17 s		12 h 24 m		19 h 35 m		17 h 7 m		0 h 59 m	

h	Moon					Lunar distance					
	GHA	dec	*v*	*d*	HP	−Jupiter	−Achernar	−Fomalhaut	−Saturn	−Altair	+Sun
0	153°02.1′	S 27°21.0′	1.9′	-1.7′	60.4′	87°03.0′	78°30.7′	62°59.5′	47°54.4′	44°13.2′	
1	167°23.0′	S 27°22.6′	1.8′	-1.5′	60.4′	86°26.1′	78°10.4′	62°24.4′	47°17.7′	43°51.7′	
2	181°43.8′	S 27°24.1′	1.8′	-1.3′	60.4′	85°49.1′	77°50.1′	61°49.3′	46°41.0′	43°30.4′	
3	196°04.6′	S 27°25.3′	1.8′	-1.0′	60.4′	85°12.2′	77°29.8′	61°14.2′	46°04.3′	43°09.5′	
4	210°25.5′	S 27°26.4′	1.8′	-0.8′	60.4′	84°35.2′	77°09.7′	60°39.2′	45°27.7′	42°48.8′	
5	224°46.3′	S 27°27.2′	1.8′	-0.6′	60.4′	83°58.3′	76°49.5′	60°04.2′	44°51.0′	42°28.5′	
6	239°07.0′	S 27°27.8′	1.8′	-0.4′	60.4′	83°21.4′	76°29.5′	59°29.2′	44°14.3′	42°08.4′	
7	253°27.8′	S 27°28.3′	1.8′	-0.2′	60.4′	82°44.4′	76°09.5′	58°54.2′	43°37.7′	41°48.7′	
8	267°48.6′	S 27°28.5′	1.8′	-0.0′	60.4′	82°07.5′	75°49.6′	58°19.3′	43°01.0′	41°29.3′	
9	282°09.4′	S 27°28.5′	1.8′	0.2′	60.3′	81°30.6′	75°29.8′	57°44.4′	42°24.4′	41°10.2′	
10	296°30.3′	S 27°28.3′	1.8′	0.4′	60.3′	80°53.7′	75°10.0′	57°09.5′	41°47.8′	40°51.4′	
11	310°51.1′	S 27°27.9′	1.8′	0.6′	60.3′	80°16.8′	74°50.4′	56°34.7′	41°11.2′	40°33.0′	
12	325°11.9′	S 27°27.3′	1.9′	0.8′	60.3′	79°39.9′	74°30.8′	55°59.9′	40°34.6′	40°15.0′	
13	339°32.8′	S 27°26.5′	1.9′	1.0′	60.3′	79°03.0′	74°11.3′	55°25.2′	39°58.0′	39°57.3′	
14	353°53.6′	S 27°25.5′	1.9′	1.2′	60.3′	78°26.2′	73°51.9′	54°50.4′	39°21.4′	39°40.0′	
15	8°14.5′	S 27°24.2′	1.9′	1.4′	60.3′	77°49.3′	73°32.5′	54°15.8′	38°44.9′	39°23.1′	
16	22°35.5′	S 27°22.8′	2.0′	1.6′	60.3′	77°12.4′	73°13.3′	53°41.1′	38°08.3′	39°06.5′	
17	36°56.4′	S 27°21.2′	2.0′	1.8′	60.3′	76°35.6′	72°54.1′	53°06.5′	37°31.8′	38°50.4′	
18	51°17.4′	S 27°19.3′	2.0′	2.0′	60.3′	75°58.8′	72°35.1′	52°32.0′	36°55.3′	38°34.6′	
19	65°38.4′	S 27°17.3′	2.1′	2.2′	60.3′	75°21.9′	72°16.1′	51°57.5′	36°18.8′		
20	79°59.5′	S 27°15.0′	2.1′	2.4′	60.3′	74°45.1′	71°57.3′	51°23.1′	35°42.3′		
21	94°20.6′	S 27°12.6′	2.2′	2.7′	60.3′	74°08.3′	71°38.5′	50°48.7′	35°05.9′		40°15.1′
22	108°41.8′	S 27°09.9′	2.2′	2.9′	60.3′	73°31.5′	71°19.9′	50°14.3′	34°29.5′		40°49.4′
23	123°03.0′	S 27°07.1′	2.3′	3.1′	60.3′	72°54.8′	71°01.3′	49°40.0′	33°53.0′		41°23.7′
Mer. pass. 14 h 26 m SD 16.5′ phase 6%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.4′	S 11°16.7′	Betelgeuse	+0.5	270°53.7′	N 7°24.7′
Deneb	+1.2	49°27.2′	N 45°21.9′	Acrux	+0.8	173°02.5′	S 63°13.2′	Capella	+0.1	280°24.0′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.3′	N 11°51.4′	Rigel	+0.2	281°05.2′	S 8°10.5′
Vega	+0.0	80°34.8′	N 38°48.4′	Pollux	+1.2	243°19.2′	N 27°58.2′	Aldebaran	+0.9	290°41.3′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.5′	N 5°10.0′	Polaris	+2.0	314°23.9′	N 89°21.7′
Rigil Kent	−0.0	139°43.4′	S 60°55.5′	Adhara	+1.5	255°07.0′	S 28°60.0′	Achernar	+0.5	335°21.1′	S 57°07.5′
Arcturus	−0.1	145°49.9′	N 19°03.8′	Sirius	−1.4	258°27.5′	S 16°44.7′				
Hadar	+0.6	148°39.1′	S 60°28.7′	Canopus	−0.6	263°52.7′	S 52°42.3′				

Sunday 27 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	65°53.4′	183°08.6′	S 21°04.6′	173°49.8′	S 22°38.0′	66°24.2′	S 1°47.8′	103°27.1′	S 16°08.2′	346°32.6′	N 24°53.3′
1	80°55.9′	198°08.4′	S 21°05.1′	188°48.9′	S 22°38.5′	81°26.7′	S 1°47.8′	118°29.4′	S 16°08.2′	1°36.0′	N 24°53.3′
2	95°58.4′	213°08.2′	S 21°05.5′	203°48.0′	S 22°39.0′	96°29.1′	S 1°47.7′	133°31.8′	S 16°08.1′	16°39.5′	N 24°53.4′
3	111°00.8′	228°07.9′	S 21°06.0′	218°47.1′	S 22°39.5′	111°31.5′	S 1°47.7′	148°34.1′	S 16°08.1′	31°42.9′	N 24°53.4′
4	126°03.3′	243°07.7′	S 21°06.5′	233°46.2′	S 22°39.9′	126°34.0′	S 1°47.7′	163°36.4′	S 16°08.0′	46°46.4′	N 24°53.5′
5	141°05.8′	258°07.5′	S 21°06.9′	248°45.3′	S 22°40.4′	141°36.4′	S 1°47.7′	178°38.7′	S 16°08.0′	61°49.8′	N 24°53.5′
6	156°08.2′	273°07.3′	S 21°07.4′	263°44.4′	S 22°40.9′	156°38.9′	S 1°47.7′	193°41.1′	S 16°07.9′	76°53.3′	N 24°53.6′
7	171°10.7′	288°07.1′	S 21°07.8′	278°43.5′	S 22°41.4′	171°41.3′	S 1°47.6′	208°43.4′	S 16°07.9′	91°56.7′	N 24°53.6′
8	186°13.1′	303°06.9′	S 21°08.3′	293°42.6′	S 22°41.9′	186°43.8′	S 1°47.6′	223°45.7′	S 16°07.8′	107°00.2′	N 24°53.7′
9	201°15.6′	318°06.7′	S 21°08.7′	308°41.7′	S 22°42.3′	201°46.2′	S 1°47.6′	238°48.0′	S 16°07.8′	122°03.6′	N 24°53.7′
10	216°18.1′	333°06.5′	S 21°09.2′	323°40.8′	S 22°42.8′	216°48.6′	S 1°47.6′	253°50.3′	S 16°07.7′	137°07.1′	N 24°53.8′
11	231°20.5′	348°06.3′	S 21°09.7′	338°39.9′	S 22°43.3′	231°51.1′	S 1°47.5′	268°52.7′	S 16°07.7′	152°10.5′	N 24°53.9′
12	246°23.0′	3°06.1′	S 21°10.1′	353°39.0′	S 22°43.8′	246°53.5′	S 1°47.5′	283°55.0′	S 16°07.7′	167°14.0′	N 24°53.9′
13	261°25.5′	18°05.9′	S 21°10.6′	8°38.1′	S 22°44.2′	261°56.0′	S 1°47.5′	298°57.3′	S 16°07.6′	182°17.5′	N 24°54.0′
14	276°27.9′	33°05.7′	S 21°11.0′	23°37.2′	S 22°44.7′	276°58.4′	S 1°47.5′	313°59.6′	S 16°07.6′	197°20.9′	N 24°54.0′
15	291°30.4′	48°05.5′	S 21°11.5′	38°36.3′	S 22°45.2′	292°00.8′	S 1°47.5′	329°02.0′	S 16°07.5′	212°24.4′	N 24°54.1′
16	306°32.9′	63°05.3′	S 21°11.9′	53°35.4′	S 22°45.6′	307°03.3′	S 1°47.4′	344°04.3′	S 16°07.5′	227°27.8′	N 24°54.1′
17	321°35.3′	78°05.1′	S 21°12.4′	68°34.5′	S 22°46.1′	322°05.7′	S 1°47.4′	359°06.6′	S 16°07.4′	242°31.3′	N 24°54.2′
18	336°37.8′	93°04.9′	S 21°12.8′	83°33.6′	S 22°46.6′	337°08.2′	S 1°47.4′	14°08.9′	S 16°07.4′	257°34.8′	N 24°54.2′
19	351°40.3′	108°04.7′	S 21°13.3′	98°32.7′	S 22°47.0′	352°10.6′	S 1°47.4′	29°11.2′	S 16°07.3′	272°38.2′	N 24°54.3′
20	6°42.7′	123°04.4′	S 21°13.7′	113°31.8′	S 22°47.5′	7°13.0′	S 1°47.3′	44°13.6′	S 16°07.3′	287°41.7′	N 24°54.3′
21	21°45.2′	138°04.2′	S 21°14.2′	128°30.9′	S 22°47.9′	22°15.5′	S 1°47.3′	59°15.9′	S 16°07.2′	302°45.1′	N 24°54.4′
22	36°47.6′	153°04.0′	S 21°14.6′	143°30.0′	S 22°48.4′	37°17.9′	S 1°47.3′	74°18.2′	S 16°07.2′	317°48.6′	N 24°54.4′
23	51°50.1′	168°03.8′	S 21°15.0′	158°29.1′	S 22°48.9′	52°20.4′	S 1°47.3′	89°20.5′	S 16°07.1′	332°52.1′	N 24°54.5′
		SD 16.2′ *d* -0.5′		*v* -0.9′ *d* -0.5′		*v* 2.4′ *d* 0.0′		*v* 2.3′ *d* 0.0′		*v* 3.5′ *d* 0.1′	
Mer. pass.		11 h 47 m 37 s		12 h 25 m		19 h 31 m		17 h 4 m		0 h 54 m	

h	Moon					Lunar distance				
	GHA	dec	*v*	*d*	HP	−Jupiter	−Achernar	−Fomalhaut	−Saturn	+Sun
0	137°24.2′	S 27°04.0′	2.3′	3.2′	60.3′	72°18.0′	70°42.9′	49°05.8′	33°16.7′	41°57.9′
1	151°45.5′	S 27°00.8′	2.4′	3.4′	60.2′	71°41.3′	70°24.5′	48°31.6′	32°40.3′	42°32.2′
2	166°06.9′	S 26°57.3′	2.4′	3.6′	60.2′	71°04.5′	70°06.3′	47°57.5′	32°04.0′	43°06.4′
3	180°28.3′	S 26°53.7′	2.5′	3.8′	60.2′	70°27.8′	69°48.2′	47°23.5′	31°27.6′	43°40.6′
4	194°49.8′	S 26°49.8′	2.5′	4.0′	60.2′	69°51.1′	69°30.2′	46°49.5′	30°51.3′	44°14.8′
5	209°11.4′	S 26°45.8′	2.6′	4.2′	60.2′	69°14.4′	69°12.4′	46°15.6′	30°15.1′	44°49.0′
6	223°33.0′	S 26°41.6′	2.7′	4.4′	60.2′	68°37.8′	68°54.6′	45°41.8′	29°38.9′	45°23.2′
7	237°54.7′	S 26°37.2′	2.8′	4.6′	60.2′	68°01.1′	68°37.0′	45°08.0′	29°02.6′	45°57.3′
8	252°16.4′	S 26°32.5′	2.8′	4.8′	60.2′	67°24.5′	68°19.5′	44°34.3′	28°26.5′	46°31.5′
9	266°38.3′	S 26°27.7′	2.9′	5.0′	60.2′	66°47.9′	68°02.2′	44°00.7′	27°50.3′	47°05.6′
10	281°00.2′	S 26°22.8′	3.0′	5.2′	60.2′	66°11.3′	67°44.9′	43°27.2′	27°14.2′	47°39.7′
11	295°22.1′	S 26°17.6′	3.1′	5.4′	60.1′	65°34.7′	67°27.8′	42°53.7′	26°38.1′	48°13.8′
12	309°44.2′	S 26°12.2′	3.2′	5.6′	60.1′	64°58.2′	67°10.9′	42°20.4′	26°02.1′	48°47.9′
13	324°06.4′	S 26°06.7′	3.2′	5.7′	60.1′	64°21.6′	66°54.0′	41°47.1′	25°26.1′	49°21.9′
14	338°28.6′	S 26°00.9′	3.3′	5.9′	60.1′	63°45.1′	66°37.4′	41°14.0′	24°50.1′	49°55.9′
15	352°50.9′	S 25°55.0′	3.4′	6.1′	60.1′	63°08.6′	66°20.8′	40°40.9′	24°14.2′	50°30.0′
16	7°13.4′	S 25°48.9′	3.5′	6.3′	60.1′	62°32.1′	66°04.4′	40°07.9′	23°38.4′	51°04.0′
17	21°35.9′	S 25°42.6′	3.6′	6.5′	60.1′	61°55.7′	65°48.2′	39°35.0′	23°02.5′	51°37.9′
18	35°58.5′	S 25°36.2′	3.7′	6.6′	60.0′	61°19.2′	65°32.1′	39°02.3′	22°26.7′	52°11.9′
19	50°21.2′	S 25°29.5′	3.8′	6.8′	60.0′	60°42.8′	65°16.1′	38°29.6′	21°51.0′	52°45.8′
20	64°44.0′	S 25°22.7′	3.9′	7.0′	60.0′	60°06.4′	65°00.3′	37°57.1′	21°15.3′	53°19.7′
21	79°06.9′	S 25°15.8′	4.0′	7.1′	60.0′	59°30.0′	64°44.7′	37°24.7′	20°39.7′	53°53.6′
22	93°29.8′	S 25°08.6′	4.1′	7.3′	60.0′	58°53.7′	64°29.2′	36°52.4′	20°04.2′	54°27.5′
23	107°52.9′	S 25°01.3′	4.2′	7.5′	60.0′	58°17.4′	64°13.9′	36°20.3′	19°28.7′	55°01.4′
Mer. pass. 15 h 30 m SD 16.4′ phase 13%										

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.4′	S 11°16.7′	Betelgeuse	+0.5	270°53.7′	N 7°24.7′
Deneb	+1.2	49°27.2′	N 45°21.9′	Acrux	+0.8	173°02.4′	S 63°13.2′	Capella	+0.1	280°24.0′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.3′	N 11°51.4′	Rigel	+0.2	281°05.2′	S 8°10.5′
Vega	+0.0	80°34.8′	N 38°48.4′	Pollux	+1.2	243°19.2′	N 27°58.2′	Aldebaran	+0.9	290°41.3′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.5′	N 5°10.0′	Polaris	+2.0	314°23.9′	N 89°21.7′
Rigil Kent	−0.0	139°43.4′	S 60°55.5′	Adhara	+1.5	255°07.0′	S 28°60.0′	Achernar	+0.5	335°21.1′	S 57°07.5′
Arcturus	−0.1	145°49.8′	N 19°03.8′	Sirius	−1.4	258°27.5′	S 16°44.7′				
Hadar	+0.6	148°39.1′	S 60°28.7′	Canopus	−0.6	263°52.7′	S 52°42.3′				

Monday 28 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	66°52.6′	183°03.6′	S 21°15.5′	173°28.2′	S 22°49.3′	67°22.8′	S 1°47.2′	104°22.8′	S 16°07.1′	347°55.5′	N 24°54.5′
1	81°55.0′	198°03.4′	S 21°15.9′	188°27.3′	S 22°49.8′	82°25.2′	S 1°47.2′	119°25.2′	S 16°07.0′	2°59.0′	N 24°54.6′
2	96°57.5′	213°03.2′	S 21°16.4′	203°26.4′	S 22°50.2′	97°27.7′	S 1°47.2′	134°27.5′	S 16°07.0′	18°02.5′	N 24°54.6′
3	111°60.0′	228°03.0′	S 21°16.8′	218°25.5′	S 22°50.7′	112°30.1′	S 1°47.2′	149°29.8′	S 16°06.9′	33°05.9′	N 24°54.7′
4	127°02.4′	243°02.8′	S 21°17.3′	233°24.5′	S 22°51.1′	127°32.5′	S 1°47.1′	164°32.1′	S 16°06.9′	48°09.4′	N 24°54.7′
5	142°04.9′	258°02.6′	S 21°17.7′	248°23.6′	S 22°51.6′	142°35.0′	S 1°47.1′	179°34.4′	S 16°06.8′	63°12.9′	N 24°54.8′
6	157°07.4′	273°02.3′	S 21°18.1′	263°22.7′	S 22°52.0′	157°37.4′	S 1°47.1′	194°36.8′	S 16°06.8′	78°16.4′	N 24°54.8′
7	172°09.8′	288°02.1′	S 21°18.6′	278°21.8′	S 22°52.5′	172°39.8′	S 1°47.1′	209°39.1′	S 16°06.7′	93°19.8′	N 24°54.9′
8	187°12.3′	303°01.9′	S 21°19.0′	293°20.9′	S 22°52.9′	187°42.3′	S 1°47.0′	224°41.4′	S 16°06.7′	108°23.3′	N 24°54.9′
9	202°14.8′	318°01.7′	S 21°19.5′	308°20.0′	S 22°53.4′	202°44.7′	S 1°47.0′	239°43.7′	S 16°06.6′	123°26.8′	N 24°55.0′
10	217°17.2′	333°01.5′	S 21°19.9′	323°19.1′	S 22°53.8′	217°47.1′	S 1°47.0′	254°46.0′	S 16°06.6′	138°30.2′	N 24°55.0′
11	232°19.7′	348°01.3′	S 21°20.3′	338°18.2′	S 22°54.3′	232°49.6′	S 1°47.0′	269°48.3′	S 16°06.5′	153°33.7′	N 24°55.1′
12	247°22.1′	3°01.1′	S 21°20.8′	353°17.3′	S 22°54.7′	247°52.0′	S 1°46.9′	284°50.7′	S 16°06.5′	168°37.2′	N 24°55.1′
13	262°24.6′	18°00.9′	S 21°21.2′	8°16.4′	S 22°55.1′	262°54.4′	S 1°46.9′	299°53.0′	S 16°06.4′	183°40.7′	N 24°55.2′
14	277°27.1′	33°00.6′	S 21°21.6′	23°15.5′	S 22°55.6′	277°56.9′	S 1°46.9′	314°55.3′	S 16°06.4′	198°44.1′	N 24°55.2′
15	292°29.5′	48°00.4′	S 21°22.1′	38°14.5′	S 22°56.0′	292°59.3′	S 1°46.9′	329°57.6′	S 16°06.3′	213°47.6′	N 24°55.2′
16	307°32.0′	63°00.2′	S 21°22.5′	53°13.6′	S 22°56.5′	308°01.7′	S 1°46.8′	344°59.9′	S 16°06.3′	228°51.1′	N 24°55.3′
17	322°34.5′	78°00.0′	S 21°22.9′	68°12.7′	S 22°56.9′	323°04.2′	S 1°46.8′	0°02.2′	S 16°06.2′	243°54.6′	N 24°55.3′
18	337°36.9′	92°59.8′	S 21°23.4′	83°11.8′	S 22°57.3′	338°06.6′	S 1°46.8′	15°04.6′	S 16°06.2′	258°58.1′	N 24°55.4′
19	352°39.4′	107°59.6′	S 21°23.8′	98°10.9′	S 22°57.8′	353°09.0′	S 1°46.7′	30°06.9′	S 16°06.1′	274°01.5′	N 24°55.4′
20	7°41.9′	122°59.4′	S 21°24.2′	113°10.0′	S 22°58.2′	8°11.5′	S 1°46.7′	45°09.2′	S 16°06.1′	289°05.0′	N 24°55.5′
21	22°44.3′	137°59.1′	S 21°24.7′	128°09.1′	S 22°58.6′	23°13.9′	S 1°46.7′	60°11.5′	S 16°06.0′	304°08.5′	N 24°55.5′
22	37°46.8′	152°58.9′	S 21°25.1′	143°08.2′	S 22°59.1′	38°16.3′	S 1°46.7′	75°13.8′	S 16°06.0′	319°12.0′	N 24°55.6′
23	52°49.2′	167°58.7′	S 21°25.5′	158°07.2′	S 22°59.5′	53°18.7′	S 1°46.6′	90°16.1′	S 16°05.9′	334°15.5′	N 24°55.6′
		SD 16.2′ *d* -0.4′		*v* -0.9′ *d* -0.4′		*v* 2.4′ *d* 0.0′		*v* 2.3′ *d* 0.0′		*v* 3.5′ *d* 0.0′	
Mer. pass.		11 h 47 m 57 s		12 h 27 m		19 h 27 m		17 h 0 m		0 h 48 m	

h	Moon					Lunar distance					
	GHA	dec	*v*	*d*	HP	−Aldebaran	−Rigel	−Jupiter	−Fomalhaut	−Saturn	+Sun
0	122°16.1′	S 24°53.8′	4.3′	7.7′	59.9′			57°41.0′	35°48.3′	18°53.2′	55°35.2′
1	136°39.4′	S 24°46.1′	4.4′	7.8′	59.9′			57°04.8′	35°16.4′	18°17.9′	56°09.0′
2	151°02.8′	S 24°38.3′	4.5′	8.0′	59.9′			56°28.5′	34°44.7′	17°42.6′	56°42.8′
3	165°26.4′	S 24°30.3′	4.6′	8.1′	59.9′			55°52.3′	34°13.1′	17°07.4′	57°16.5′
4	179°50.0′	S 24°22.2′	4.7′	8.3′	59.9′			55°16.1′	33°41.7′	16°32.3′	57°50.3′
5	194°13.7′	S 24°13.9′	4.8′	8.5′	59.9′			54°39.9′	33°10.4′	15°57.3′	58°24.0′
6	208°37.6′	S 24°05.4′	5.0′	8.6′	59.8′			54°03.7′	32°39.4′	15°22.4′	58°57.7′
7	223°01.5′	S 23°56.8′	5.1′	8.8′	59.8′			53°27.6′	32°08.5′	14°47.6′	59°31.4′
8	237°25.6′	S 23°48.1′	5.2′	8.9′	59.8′			52°51.5′	31°37.8′	14°12.9′	60°05.0′
9	251°49.8′	S 23°39.1′	5.3′	9.1′	59.8′			52°15.4′	31°07.3′	13°38.4′	60°38.6′
10	266°14.1′	S 23°30.1′	5.4′	9.2′	59.8′			51°39.3′	30°37.0′	13°04.1′	61°12.2′
11	280°38.5′	S 23°20.9′	5.5′	9.4′	59.8′		119°34.0′	51°03.3′	30°06.9′	12°29.9′	61°45.8′
12	295°03.0′	S 23°11.5′	5.6′	9.5′	59.7′		119°06.3′	50°27.3′	29°37.0′	11°55.9′	62°19.3′
13	309°27.6′	S 23°02.0′	5.8′	9.7′	59.7′		118°38.5′	49°51.3′	29°07.4′	11°22.1′	62°52.8′
14	323°52.4′	S 22°52.3′	5.9′	9.8′	59.7′	119°37.1′	118°10.6′	49°15.4′	28°38.0′	10°48.6′	63°26.3′
15	338°17.3′	S 22°42.5′	6.0′	9.9′	59.7′	119°01.5′	117°42.7′	48°39.5′	28°08.9′	10°15.4′	63°59.8′
16	352°42.3′	S 22°32.6′	6.1′	10.1′	59.7′	118°26.0′	117°14.8′	48°03.6′	27°40.0′	9°42.5′	64°33.2′
17	7°07.4′	S 22°22.5′	6.2′	10.2′	59.6′	117°50.4′	116°46.7′	47°27.7′	27°11.5′	9°10.0′	65°06.6′
18	21°32.6′	S 22°12.3′	6.3′	10.3′	59.6′	117°14.9′	116°18.7′	46°51.9′	26°43.2′	8°37.9′	65°40.0′
19	35°57.9′	S 22°02.0′	6.5′	10.5′	59.6′	116°39.5′	115°50.5′	46°16.1′	26°15.2′	8°06.4′	66°13.4′
20	50°23.4′	S 21°51.5′	6.6′	10.6′	59.6′	116°04.0′	115°22.4′	45°40.3′	25°47.6′	7°35.5′	66°46.7′
21	64°49.0′	S 21°40.9′	6.7′	10.7′	59.5′	115°28.6′	114°54.2′	45°04.5′	25°20.3′		67°20.0′
22	79°14.7′	S 21°30.2′	6.8′	10.8′	59.5′	114°53.1′	114°25.9′	44°28.8′	24°53.3′		67°53.3′
23	93°40.5′	S 21°19.4′	6.9′	11.0′	59.5′	114°17.8′	113°57.6′	43°53.1′	24°26.8′		68°26.5′
Mer. pass. 16 h 30 m SD 16.3′ phase 22%											

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.4′	S 11°16.7′	Betelgeuse	+0.5	270°53.7′	N 7°24.7′
Deneb	+1.2	49°27.2′	N 45°21.9′	Acrux	+0.8	173°02.4′	S 63°13.2′	Capella	+0.1	280°24.0′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.3′	N 11°51.4′	Rigel	+0.2	281°05.2′	S 8°10.5′
Vega	+0.0	80°34.8′	N 38°48.4′	Pollux	+1.2	243°19.2′	N 27°58.2′	Aldebaran	+0.9	290°41.3′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.5′	N 5°10.0′	Polaris	+2.0	314°24.0′	N 89°21.7′
Rigil Kent	−0.0	139°43.3′	S 60°55.5′	Adhara	+1.5	255°06.9′	S 29°00.0′	Achernar	+0.5	335°21.1′	S 57°07.5′
Arcturus	−0.1	145°49.8′	N 19°03.8′	Sirius	−1.4	258°27.5′	S 16°44.7′				
Hadar	+0.6	148°39.1′	S 60°28.7′	Canopus	−0.6	263°52.7′	S 52°42.3′				

Tuesday 29 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	67°51.7′	182°58.5′	S 21°26.0′	173°06.3′	S 22°59.9′	68°21.2′	S 1°46.6′	105°18.5′	S 16°05.9′	349°18.9′	N 24°55.7′
1	82°54.2′	197°58.3′	S 21°26.4′	188°05.4′	S 23°00.3′	83°23.6′	S 1°46.6′	120°20.8′	S 16°05.8′	4°22.4′	N 24°55.7′
2	97°56.6′	212°58.1′	S 21°26.8′	203°04.5′	S 23°00.8′	98°26.0′	S 1°46.5′	135°23.1′	S 16°05.8′	19°25.9′	N 24°55.7′
3	112°59.1′	227°57.8′	S 21°27.2′	218°03.6′	S 23°01.2′	113°28.5′	S 1°46.5′	150°25.4′	S 16°05.7′	34°29.4′	N 24°55.8′
4	128°01.6′	242°57.6′	S 21°27.7′	233°02.7′	S 23°01.6′	128°30.9′	S 1°46.5′	165°27.7′	S 16°05.7′	49°32.9′	N 24°55.8′
5	143°04.0′	257°57.4′	S 21°28.1′	248°01.8′	S 23°02.0′	143°33.3′	S 1°46.5′	180°30.0′	S 16°05.6′	64°36.4′	N 24°55.9′
6	158°06.5′	272°57.2′	S 21°28.5′	263°00.8′	S 23°02.5′	158°35.7′	S 1°46.4′	195°32.4′	S 16°05.6′	79°39.8′	N 24°55.9′
7	173°09.0′	287°57.0′	S 21°28.9′	277°59.9′	S 23°02.9′	173°38.2′	S 1°46.4′	210°34.7′	S 16°05.5′	94°43.3′	N 24°56.0′
8	188°11.4′	302°56.7′	S 21°29.4′	292°59.0′	S 23°03.3′	188°40.6′	S 1°46.4′	225°37.0′	S 16°05.5′	109°46.8′	N 24°56.0′
9	203°13.9′	317°56.5′	S 21°29.8′	307°58.1′	S 23°03.7′	203°43.0′	S 1°46.3′	240°39.3′	S 16°05.4′	124°50.3′	N 24°56.0′
10	218°16.4′	332°56.3′	S 21°30.2′	322°57.2′	S 23°04.1′	218°45.4′	S 1°46.3′	255°41.6′	S 16°05.4′	139°53.8′	N 24°56.1′
11	233°18.8′	347°56.1′	S 21°30.6′	337°56.3′	S 23°04.6′	233°47.9′	S 1°46.3′	270°43.9′	S 16°05.3′	154°57.3′	N 24°56.1′
12	248°21.3′	2°55.9′	S 21°31.0′	352°55.3′	S 23°05.0′	248°50.3′	S 1°46.3′	285°46.2′	S 16°05.3′	170°00.8′	N 24°56.2′
13	263°23.7′	17°55.6′	S 21°31.5′	7°54.4′	S 23°05.4′	263°52.7′	S 1°46.2′	300°48.6′	S 16°05.2′	185°04.3′	N 24°56.2′
14	278°26.2′	32°55.4′	S 21°31.9′	22°53.5′	S 23°05.8′	278°55.1′	S 1°46.2′	315°50.9′	S 16°05.2′	200°07.8′	N 24°56.3′
15	293°28.7′	47°55.2′	S 21°32.3′	37°52.6′	S 23°06.2′	293°57.6′	S 1°46.2′	330°53.2′	S 16°05.1′	215°11.3′	N 24°56.3′
16	308°31.1′	62°55.0′	S 21°32.7′	52°51.7′	S 23°06.6′	308°60.0′	S 1°46.1′	345°55.5′	S 16°05.1′	230°14.7′	N 24°56.3′
17	323°33.6′	77°54.8′	S 21°33.1′	67°50.7′	S 23°07.0′	324°02.4′	S 1°46.1′	0°57.8′	S 16°05.0′	245°18.2′	N 24°56.4′
18	338°36.1′	92°54.5′	S 21°33.5′	82°49.8′	S 23°07.4′	339°04.8′	S 1°46.1′	16°00.1′	S 16°05.0′	260°21.7′	N 24°56.4′
19	353°38.5′	107°54.3′	S 21°33.9′	97°48.9′	S 23°07.8′	354°07.3′	S 1°46.0′	31°02.4′	S 16°04.9′	275°25.2′	N 24°56.5′
20	8°41.0′	122°54.1′	S 21°34.4′	112°48.0′	S 23°08.2′	9°09.7′	S 1°46.0′	46°04.8′	S 16°04.9′	290°28.7′	N 24°56.5′
21	23°43.5′	137°53.9′	S 21°34.8′	127°47.1′	S 23°08.6′	24°12.1′	S 1°46.0′	61°07.1′	S 16°04.8′	305°32.2′	N 24°56.5′
22	38°45.9′	152°53.7′	S 21°35.2′	142°46.1′	S 23°09.0′	39°14.5′	S 1°45.9′	76°09.4′	S 16°04.8′	320°35.7′	N 24°56.6′
23	53°48.4′	167°53.4′	S 21°35.6′	157°45.2′	S 23°09.4′	54°16.9′	S 1°45.9′	91°11.7′	S 16°04.7′	335°39.2′	N 24°56.6′
		SD 16.2′ *d* -0.4′		*v* -0.9′ *d* -0.4′		*v* 2.4′ *d* 0.0′		*v* 2.3′ *d* 0.1′		*v* 3.5′ *d* 0.0′	
Mer. pass.		11 h 48 m 18 s		12 h 28 m		19 h 23 m		16 h 56 m		0 h 43 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Betelgeuse	−Sirius	−Rigel	−Jupiter	−Fomalhaut	−Saturn	+Altair	+Sun
0	108°06.5′	S 21°08.4′	7.1′	11.1′	59.5′			113°29.2′	43°17.4′	24°00.6′			68°59.7′
1	122°32.5′	S 20°57.3′	7.2′	11.2′	59.5′			113°00.9′	42°41.8′	23°34.8′			69°32.9′
2	136°58.7′	S 20°46.1′	7.3′	11.3′	59.4′			112°32.4′	42°06.2′	23°09.5′			70°06.1′
3	151°25.0′	S 20°34.8′	7.4′	11.4′	59.4′			112°04.0′	41°30.6′	22°44.6′			70°39.2′
4	165°51.4′	S 20°23.3′	7.5′	11.6′	59.4′			111°35.5′	40°55.1′	22°20.3′			71°12.3′
5	180°18.0′	S 20°11.8′	7.7′	11.7′	59.4′			111°07.0′	40°19.6′	21°56.4′			71°45.4′
6	194°44.6′	S 20°00.1′	7.8′	11.8′	59.4′			110°38.4′	39°44.1′	21°33.0′			72°18.5′
7	209°11.4′	S 19°48.3′	7.9′	11.9′	59.3′			110°09.9′	39°08.6′	21°10.3′		38°28.6′	72°51.5′
8	223°38.3′	S 19°36.4′	8.0′	12.0′	59.3′			109°41.3′	38°33.2′	20°48.1′		38°43.7′	73°24.5′
9	238°05.3′	S 19°24.4′	8.1′	12.1′	59.3′			109°12.7′	37°57.8′	20°26.5′		38°59.0′	73°57.5′
10	252°32.4′	S 19°12.3′	8.2′	12.2′	59.3′			108°44.0′	37°22.4′	20°05.5′		39°14.8′	74°30.4′
11	266°59.6′	S 19°00.1′	8.4′	12.3′	59.2′			108°15.4′	36°47.1′	19°45.3′		39°30.8′	75°03.3′
12	281°27.0′	S 18°47.8′	8.5′	12.4′	59.2′			107°46.7′	36°11.8′	19°25.8′		39°47.2′	75°36.2′
13	295°54.5′	S 18°35.4′	8.6′	12.5′	59.2′			107°18.0′	35°36.5′	19°07.0′		40°04.0′	76°09.0′
14	310°22.1′	S 18°22.9′	8.7′	12.6′	59.2′			106°49.3′	35°01.3′			40°21.0′	76°41.8′
15	324°49.7′	S 18°10.3′	8.8′	12.7′	59.1′			106°20.6′	34°26.1′			40°38.4′	77°14.6′
16	339°17.6′	S 17°57.6′	8.9′	12.8′	59.1′			105°51.9′	33°50.9′			40°56.0′	77°47.4′
17	353°45.5′	S 17°44.8′	9.0′	12.9′	59.1′			105°23.1′	33°15.8′			41°14.0′	78°20.1′
18	8°13.5′	S 17°32.0′	9.1′	13.0′	59.1′	119°33.8′		104°54.4′	32°40.7′		7°35.0′	41°32.3′	78°52.8′
19	22°41.7′	S 17°19.0′	9.3′	13.0′	59.0′	119°01.3′		104°25.6′	32°05.6′		8°05.3′	41°50.8′	79°25.5′
20	37°09.9′	S 17°06.0′	9.4′	13.1′	59.0′	118°28.8′		103°56.8′	31°30.6′		8°36.2′	42°09.6′	79°58.1′
21	51°38.3′	S 16°52.8′	9.5′	13.2′	59.0′	117°56.4′	119°54.6′	103°28.1′	30°55.6′		9°07.5′	42°28.7′	80°30.7′
22	66°06.7′	S 16°39.6′	9.6′	13.3′	59.0′	117°23.9′	119°33.6′	102°59.3′	30°20.6′		9°39.2′	42°48.0′	81°03.3′
23	80°35.3′	S 16°26.3′	9.7′	13.4′	58.9′	116°51.4′	119°12.6′	102°30.5′	29°45.7′		10°11.2′	43°07.6′	81°35.9′
Mer. pass. 17 h 26 m SD 16.2′ phase 32%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.4′	S 11°16.7′	Betelgeuse	+0.5	270°53.7′	N 7°24.7′
Deneb	+1.2	49°27.2′	N 45°21.9′	Acrux	+0.8	173°02.4′	S 63°13.2′	Capella	+0.1	280°24.0′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.3′	N 11°51.4′	Rigel	+0.2	281°05.2′	S 8°10.5′
Vega	+0.0	80°34.8′	N 38°48.4′	Pollux	+1.2	243°19.2′	N 27°58.2′	Aldebaran	+0.9	290°41.3′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.4′	N 5°10.0′	Polaris	+2.0	314°24.1′	N 89°21.7′
Rigil Kent	−0.0	139°43.3′	S 60°55.5′	Adhara	+1.5	255°06.9′	S 29°00.0′	Achernar	+0.5	335°21.1′	S 57°07.5′
Arcturus	−0.1	145°49.8′	N 19°03.8′	Sirius	−1.4	258°27.5′	S 16°44.7′				
Hadar	+0.6	148°39.1′	S 60°28.7′	Canopus	−0.6	263°52.7′	S 52°42.3′				

Wednesday 30 November 2022 UT1

h	Aries	Sun		Venus		Jupiter		Saturn		Mars	
	GHA	GHA	dec	GHA	dec	GHA	dec	GHA	dec	GHA	dec
0	68°50.9′	182°53.2′	S 21°36.0′	172°44.3′	S 23°09.8′	69°19.4′	S 1°45.9′	106°14.0′	S 16°04.7′	350°42.7′	N 24°56.7′
1	83°53.3′	197°53.0′	S 21°36.4′	187°43.4′	S 23°10.2′	84°21.8′	S 1°45.9′	121°16.3′	S 16°04.6′	5°46.2′	N 24°56.7′
2	98°55.8′	212°52.8′	S 21°36.8′	202°42.4′	S 23°10.6′	99°24.2′	S 1°45.8′	136°18.6′	S 16°04.6′	20°49.7′	N 24°56.7′
3	113°58.2′	227°52.5′	S 21°37.2′	217°41.5′	S 23°11.0′	114°26.6′	S 1°45.8′	151°20.9′	S 16°04.5′	35°53.2′	N 24°56.8′
4	129°00.7′	242°52.3′	S 21°37.6′	232°40.6′	S 23°11.4′	129°29.0′	S 1°45.8′	166°23.3′	S 16°04.5′	50°56.7′	N 24°56.8′
5	144°03.2′	257°52.1′	S 21°38.1′	247°39.7′	S 23°11.8′	144°31.5′	S 1°45.7′	181°25.6′	S 16°04.4′	66°00.2′	N 24°56.8′
6	159°05.6′	272°51.9′	S 21°38.5′	262°38.7′	S 23°12.2′	159°33.9′	S 1°45.7′	196°27.9′	S 16°04.4′	81°03.7′	N 24°56.9′
7	174°08.1′	287°51.6′	S 21°38.9′	277°37.8′	S 23°12.6′	174°36.3′	S 1°45.7′	211°30.2′	S 16°04.3′	96°07.2′	N 24°56.9′
8	189°10.6′	302°51.4′	S 21°39.3′	292°36.9′	S 23°13.0′	189°38.7′	S 1°45.6′	226°32.5′	S 16°04.3′	111°10.7′	N 24°57.0′
9	204°13.0′	317°51.2′	S 21°39.7′	307°36.0′	S 23°13.4′	204°41.1′	S 1°45.6′	241°34.8′	S 16°04.2′	126°14.2′	N 24°57.0′
10	219°15.5′	332°51.0′	S 21°40.1′	322°35.0′	S 23°13.8′	219°43.5′	S 1°45.6′	256°37.1′	S 16°04.2′	141°17.7′	N 24°57.0′
11	234°18.0′	347°50.7′	S 21°40.5′	337°34.1′	S 23°14.2′	234°46.0′	S 1°45.5′	271°39.4′	S 16°04.1′	156°21.2′	N 24°57.1′
12	249°20.4′	2°50.5′	S 21°40.9′	352°33.2′	S 23°14.5′	249°48.4′	S 1°45.5′	286°41.7′	S 16°04.1′	171°24.7′	N 24°57.1′
13	264°22.9′	17°50.3′	S 21°41.3′	7°32.3′	S 23°14.9′	264°50.8′	S 1°45.5′	301°44.1′	S 16°04.0′	186°28.2′	N 24°57.1′
14	279°25.4′	32°50.0′	S 21°41.7′	22°31.3′	S 23°15.3′	279°53.2′	S 1°45.4′	316°46.4′	S 16°04.0′	201°31.7′	N 24°57.2′
15	294°27.8′	47°49.8′	S 21°42.1′	37°30.4′	S 23°15.7′	294°55.6′	S 1°45.4′	331°48.7′	S 16°03.9′	216°35.2′	N 24°57.2′
16	309°30.3′	62°49.6′	S 21°42.5′	52°29.5′	S 23°16.1′	309°58.0′	S 1°45.4′	346°51.0′	S 16°03.9′	231°38.7′	N 24°57.2′
17	324°32.7′	77°49.4′	S 21°42.9′	67°28.6′	S 23°16.4′	325°00.5′	S 1°45.3′	1°53.3′	S 16°03.8′	246°42.2′	N 24°57.3′
18	339°35.2′	92°49.1′	S 21°43.3′	82°27.6′	S 23°16.8′	340°02.9′	S 1°45.3′	16°55.6′	S 16°03.8′	261°45.7′	N 24°57.3′
19	354°37.7′	107°48.9′	S 21°43.7′	97°26.7′	S 23°17.2′	355°05.3′	S 1°45.3′	31°57.9′	S 16°03.7′	276°49.3′	N 24°57.3′
20	9°40.1′	122°48.7′	S 21°44.1′	112°25.8′	S 23°17.6′	10°07.7′	S 1°45.2′	47°00.2′	S 16°03.7′	291°52.8′	N 24°57.4′
21	24°42.6′	137°48.4′	S 21°44.5′	127°24.8′	S 23°18.0′	25°10.1′	S 1°45.2′	62°02.5′	S 16°03.6′	306°56.3′	N 24°57.4′
22	39°45.1′	152°48.2′	S 21°44.9′	142°23.9′	S 23°18.3′	40°12.5′	S 1°45.2′	77°04.8′	S 16°03.6′	321°59.8′	N 24°57.4′
23	54°47.5′	167°48.0′	S 21°45.3′	157°23.0′	S 23°18.7′	55°14.9′	S 1°45.1′	92°07.2′	S 16°03.5′	337°03.3′	N 24°57.5′
		SD 16.2′ *d* -0.4′		*v* -0.9′ *d* -0.4′		*v* 2.4′ *d* 0.0′		*v* 2.3′ *d* 0.1′		*v* 3.5′ *d* 0.0′	
Mer. pass.		11 h 48 m 39 s		12 h 30 m		19 h 20 m		16 h 52 m		0 h 37 m	

h	Moon					Lunar distance							
	GHA	dec	*v*	*d*	HP	−Sirius	−Rigel	−Aldebaran	−Jupiter	−Fomalhaut	+Saturn	+Altair	+Sun
0	95°04.0′	S 16°13.0′	9.8′	13.4′	58.9′	118°51.4′	102°01.7′	99°41.3′	29°10.8′		10°43.5′	43°27.4′	82°08.4′
1	109°32.8′	S 15°59.5′	9.9′	13.5′	58.9′	118°30.1′	101°33.0′	99°06.6′	28°35.9′		11°16.1′	43°47.5′	82°40.9′
2	124°01.7′	S 15°46.0′	10.0′	13.6′	58.9′	118°08.7′	101°04.2′	98°31.9′	28°01.1′		11°48.8′	44°07.8′	83°13.3′
3	138°30.7′	S 15°32.4′	10.1′	13.7′	58.8′	117°47.1′	100°35.4′	97°57.3′	27°26.3′		12°21.7′	44°28.3′	83°45.7′
4	152°59.8′	S 15°18.7′	10.2′	13.7′	58.8′	117°25.5′	100°06.6′	97°22.6′	26°51.5′		12°54.7′	44°49.1′	84°18.1′
5	167°29.0′	S 15°05.0′	10.3′	13.8′	58.8′	117°03.8′	99°37.9′	96°48.1′	26°16.8′		13°27.9′	45°10.0′	84°50.5′
6	181°58.3′	S 14°51.2′	10.4′	13.9′	58.8′	116°42.1′	99°09.1′	96°13.5′	25°42.1′		14°01.1′	45°31.2′	85°22.9′
7	196°27.7′	S 14°37.3′	10.5′	13.9′	58.8′	116°20.2′	98°40.3′	95°39.0′	25°07.4′		14°34.5′	45°52.5′	85°55.2′
8	210°57.2′	S 14°23.3′	10.6′	14.0′	58.7′	115°58.2′	98°11.6′	95°04.5′	24°32.8′		15°07.9′	46°14.1′	86°27.4′
9	225°26.8′	S 14°09.3′	10.7′	14.1′	58.7′	115°36.2′	97°42.9′	94°30.0′	23°58.2′		15°41.3′	46°35.8′	86°59.7′
10	239°56.5′	S 13°55.3′	10.8′	14.1′	58.7′	115°14.0′	97°14.1′	93°55.6′	23°23.6′		16°14.8′	46°57.8′	87°31.9′
11	254°26.2′	S 13°41.1′	10.9′	14.2′	58.7′	114°51.8′	96°45.4′	93°21.1′	22°49.1′		16°48.4′	47°19.9′	88°04.1′
12	268°56.1′	S 13°27.0′	11.0′	14.2′	58.6′	114°29.5′	96°16.7′	92°46.8′	22°14.7′		17°22.0′	47°42.1′	88°36.3′
13	283°26.1′	S 13°12.7′	11.1′	14.3′	58.6′	114°07.2′	95°48.0′	92°12.4′	21°40.2′		17°55.6′	48°04.6′	89°08.4′
14	297°56.2′	S 12°58.4′	11.2′	14.4′	58.6′	113°44.7′	95°19.3′	91°38.1′	21°05.8′		18°29.3′	48°27.2′	89°40.5′
15	312°26.3′	S 12°44.1′	11.2′	14.4′	58.5′	113°22.2′	94°50.7′	91°03.8′	20°31.5′		19°02.9′	48°49.9′	90°12.5′
16	326°56.6′	S 12°29.7′	11.3′	14.5′	58.5′	112°59.6′	94°22.0′	90°29.5′	19°57.2′		19°36.6′	49°12.9′	90°44.6′
17	341°26.9′	S 12°15.2′	11.4′	14.5′	58.5′	112°37.0′	93°53.4′	89°55.3′	19°22.9′		20°10.3′	49°35.9′	91°16.6′
18	355°57.3′	S 12°00.7′	11.5′	14.6′	58.5′	112°14.3′	93°24.7′	89°21.1′	18°48.7′		20°44.0′	49°59.1′	91°48.6′
19	10°27.8′	S 11°46.1′	11.6′	14.6′	58.4′	111°51.5′	92°56.1′	88°46.9′	18°14.5′		21°17.7′	50°22.5′	92°20.5′
20	24°58.4′	S 11°31.5′	11.7′	14.6′	58.4′	111°28.7′	92°27.6′	88°12.7′	17°40.4′		21°51.4′	50°45.9′	92°52.4′
21	39°29.1′	S 11°16.9′	11.7′	14.7′	58.4′	111°05.9′	91°59.0′	87°38.6′	17°06.3′		22°25.1′	51°09.6′	93°24.3′
22	53°59.8′	S 11°02.2′	11.8′	14.7′	58.4′	110°42.9′	91°30.5′	87°04.5′	16°32.3′	18°29.6′	22°58.8′	51°33.3′	93°56.2′
23	68°30.6′	S 10°47.4′	11.9′	14.8′	58.3′	110°19.9′	91°01.9′	86°30.5′	15°58.3′	18°46.2′	23°32.5′	51°57.1′	94°28.0′
Mer. pass. 18 h 17 m SD 16.1′ phase 43%													

Star	mag	SHA	dec	Star	mag	SHA	dec	Star	mag	SHA	dec
Fomalhaut	+1.2	15°16.4′	S 29°30.2′	Spica	+1.0	158°24.4′	S 11°16.7′	Betelgeuse	+0.5	270°53.7′	N 7°24.7′
Deneb	+1.2	49°27.2′	N 45°21.9′	Acrux	+0.8	173°02.4′	S 63°13.2′	Capella	+0.1	280°24.0′	N 46°01.2′
Altair	+0.8	62°01.9′	N 8°55.8′	Regulus	+1.4	207°36.3′	N 11°51.4′	Rigel	+0.2	281°05.2′	S 8°10.5′
Vega	+0.0	80°34.8′	N 38°48.4′	Pollux	+1.2	243°19.2′	N 27°58.2′	Aldebaran	+0.9	290°41.3′	N 16°33.3′
Antares	+1.1	112°18.4′	S 26°28.9′	Procyon	+0.4	244°52.4′	N 5°10.0′	Polaris	+2.0	314°24.2′	N 89°21.7′
Rigil Kent	−0.0	139°43.3′	S 60°55.5′	Adhara	+1.5	255°06.9′	S 29°00.0′	Achernar	+0.5	335°21.1′	S 57°07.5′
Arcturus	−0.1	145°49.8′	N 19°03.8′	Sirius	−1.4	258°27.5′	S 16°44.7′				
Hadar	+0.6	148°39.0′	S 60°28.7′	Canopus	−0.6	263°52.7′	S 52°42.3′				