

Table with columns for Sun, Venus, Mars, Jupiter, Saturn, and Mer. pass. Data includes GHA, Dec, and magnitude for various celestial objects.

Table with columns for Mon, GHA, Dec, and Mer. pass. Data includes GHA, Dec, and magnitude for various celestial objects.

Table with columns for Tue, GHA, Dec, and Mer. pass. Data includes GHA, Dec, and magnitude for various celestial objects.

Table with columns for Stars, SHA, Dec, and Mer. pass. Lists stars like Alpheratz, Ankaa, Schedar, etc.

Table with columns for Stars, SHA, Dec, and Mer. pass. Lists stars like Denebola, Gienah, Acrux, etc.

Table with columns for Stars, SHA, Dec, and Mer. pass. Lists stars like Al Na'ir, Fomalhaut, Scheat, etc.

Table with columns for Stars, SHA, Dec, and Mer. pass. Lists stars like Al Na'ir, Fomalhaut, Scheat, etc.

Table with columns for Sun, Moon, GHA, Dec, and HP. Data includes GHA, Dec, and HP for Sun and Moon.

Table with columns for Mon, GHA, Dec, and HP. Data includes GHA, Dec, and HP for various celestial objects.

Table with columns for Tue, GHA, Dec, and HP. Data includes GHA, Dec, and HP for various celestial objects.

Table with columns for Lat., Twilight, Sunrise, Sunset, and Twilight. Data includes twilight times for various latitudes.

Table with columns for Lat., Moonrise, Moonset, and Twilight. Data includes moonrise and moonset times for various latitudes.

Table with columns for Day, Sun, Mer. Pass, Moon, and Age. Data includes sun and moon data for specific days.

Table with columns for planets (Aries, Venus, Mars, Jupiter, Saturn) and Dec, listing GHA and Dec values for each day.

Table with columns for planets (Thu, GHA, Dec) and Dec, listing GHA and Dec values for each day.

Table with columns for planets (Fri, GHA, Dec) and Dec, listing GHA and Dec values for each day.

Table with columns for Stars (SHA, Dec) and Dec, listing SHA and Dec values for various stars.

Table with columns for Stars (SHA, Dec) and Dec, listing SHA and Dec values for various stars.

Table with columns for Stars (SHA, Dec) and Dec, listing SHA and Dec values for various stars.

Table with columns for Sun and Moon (h, GHA, Dec, SHA, Dec, d, HP) and Dec, listing GHA and Dec values for Sun and Moon.

Table with columns for Sun and Moon (h, GHA, Dec, SHA, Dec, d, HP) and Dec, listing GHA and Dec values for Sun and Moon.

Table with columns for Sun and Moon (h, GHA, Dec, SHA, Dec, d, HP) and Dec, listing GHA and Dec values for Sun and Moon.

Table with columns for Twilight (Naut., Civil, Sunrise, Sunset, Twilight) and Dec, listing twilight times for various latitudes.

Table with columns for Moonrise (Wed, Thu, Fri) and Moonset (Wed, Thu, Fri) and Dec, listing moonrise and moonset times.

Table with columns for Sun (Eqn. of Time, Mer. Pass) and Moon (Mer. Pass, Age) and Dec, listing sun and moon data.

Table with columns for planets: Aries, Venus, Mars, Jupiter, Saturn. Columns include GHA, Dec, and magnitude (m).

Table with columns for planets: Sun, GHA, Dec, and magnitude (m).

Table with columns for planets: Mon, GHA, Dec, and magnitude (m).

Table with columns for Stars: SHA, Dec, and magnitude (m).

Table with columns for Stars: SHA, Dec, and magnitude (m).

Table with columns for Stars: SHA, Dec, and magnitude (m).

Table with columns for Sun and Moon: h, GHA, Dec, ν, Dec, d, HP.

Table with columns for Sun and Moon: Sun, GHA, Dec, ν, Dec, d, HP.

Table with columns for Sun and Moon: Mon, GHA, Dec, ν, Dec, d, HP.

Table with columns for twilight and sunrise/sunset: Lat., Twilight (Naut., Civil), Sunrise, Sunset, Twilight (Civil, Naut.).

Table with columns for moonrise/moonset: Lat., Moonrise (Sun, Mon), Moonset (Sun, Mon).

Table with columns for Day, Sun (Eqn. of Time, Mer. Pass), Moon (Mer. Pass, Age).

Aries			Venus			Mars			Jupiter			Saturn		
Tue	GHA	Dec	GHA	Dec	HP	GHA	Dec	HP	GHA	Dec	HP	GHA	Dec	HP
0	278°04.8	136°00.6	N16°49.5	219°18.6	N20°01.3	155°51.2	N20°35.3	264°08.3	N03°23.1	357°33.5	29°14.1	264°08.3	N03°23.1	
1	293°07.2	151°00.2	48.6	234°19.2	01.7	170°53.1	35.2	279°10.7	23.1	357°33.5	29°14.1	264°08.3	N03°23.1	
2	308°09.7	165°59.9	47.6	249°19.8	02.1	185°55.0	35.1	294°13.1	23.1	357°33.5	29°14.1	264°08.3	N03°23.1	
3	323°12.2	180°59.6	46.6	264°20.4	02.5	200°57.0	35.0	309°15.4	23.2	357°33.5	29°14.1	264°08.3	N03°23.1	
4	338°14.6	195°59.2	45.7	279°21.0	02.9	215°58.9	34.9	324°17.8	23.2	357°33.5	29°14.1	264°08.3	N03°23.1	
5	353°17.1	210°58.9	44.7	294°21.6	03.2	231°00.8	34.7	339°20.1	23.2	357°33.5	29°14.1	264°08.3	N03°23.1	
6	8°19.6	225°58.6	N16°43.8	309°22.3	N20°03.6	246°02.7	N20°34.6	354°22.3	N03°23.3	357°33.5	29°14.1	264°08.3	N03°23.3	
7	23°22.0	240°58.3	42.8	324°22.9	04.0	261°04.6	34.5	9°24.8	23.3	357°33.5	29°14.1	264°08.3	N03°23.3	
8	38°24.5	255°58.0	41.8	339°23.5	04.4	276°06.5	34.4	24°27.2	23.3	357°33.5	29°14.1	264°08.3	N03°23.3	
9	53°26.9	270°57.6	40.9	354°24.1	04.8	291°08.4	34.3	39°29.6	23.4	357°33.5	29°14.1	264°08.3	N03°23.3	
10	68°29.4	285°57.3	39.9	9°24.7	05.2	306°10.3	34.2	54°31.9	23.4	357°33.5	29°14.1	264°08.3	N03°23.3	
11	83°31.9	300°57.0	38.9	24°25.3	05.6	321°12.2	34.1	69°34.3	23.4	357°33.5	29°14.1	264°08.3	N03°23.3	
12	98°34.3	315°56.7	N16°38.0	39°25.9	N20°06.0	336°14.1	N20°34.0	84°36.6	N03°23.5	357°33.5	29°14.1	264°08.3	N03°23.5	
13	113°36.8	330°56.3	37.0	54°26.6	06.4	351°16.0	33.9	99°39.0	23.5	357°33.5	29°14.1	264°08.3	N03°23.5	
14	128°39.3	345°56.0	36.0	69°27.2	06.8	6°17.9	33.7	114°41.4	23.5	357°33.5	29°14.1	264°08.3	N03°23.5	
15	143°41.7	0°55.7	35.1	84°27.8	07.2	21°19.8	33.6	129°43.7	23.5	357°33.5	29°14.1	264°08.3	N03°23.5	
16	158°44.2	15°55.4	34.1	99°28.4	07.6	36°21.7	33.5	144°46.1	23.6	357°33.5	29°14.1	264°08.3	N03°23.5	
17	173°46.7	30°55.1	33.1	114°29.0	08.0	51°23.6	33.4	159°48.4	23.6	357°33.5	29°14.1	264°08.3	N03°23.5	
18	188°49.1	45°54.8	N16°32.2	129°29.6	N20°08.3	66°25.5	N20°33.3	174°50.8	N03°23.6	357°33.5	29°14.1	264°08.3	N03°23.6	
19	203°51.6	60°54.4	31.2	144°30.3	08.7	81°27.4	33.2	189°53.2	23.7	357°33.5	29°14.1	264°08.3	N03°23.6	
20	218°54.1	75°54.1	30.2	159°30.9	09.1	96°29.3	33.1	204°55.5	23.7	357°33.5	29°14.1	264°08.3	N03°23.6	
21	233°56.5	90°53.8	29.3	174°31.5	09.5	111°31.3	33.0	219°57.9	23.7	357°33.5	29°14.1	264°08.3	N03°23.6	
22	248°59.0	105°53.5	28.3	189°32.1	09.9	126°33.2	32.8	235°00.2	23.8	357°33.5	29°14.1	264°08.3	N03°23.6	
23	264°01.4	120°53.2	27.3	204°32.7	10.3	141°35.1	32.7	250°02.6	23.8	357°33.5	29°14.1	264°08.3	N03°23.6	
Mer.pass.	05:27	ν -0.3' d -1.0' m -4.05		ν 0.6' d 0.4' m 1.30		ν 1.9' d -0.1' m -1.81		ν 2.4' d 0.0' m 0.78						

Wed	GHA	Dec	GHA	Dec	HP	GHA	Dec	HP	GHA	Dec	HP		
0	279°03.9	135°52.9	N16°26.3	219°33.3	N20°10.7	156°37.0	N20°32.6	265°05.0	N03°23.8	357°33.5	29°14.1	264°08.3	N03°23.8
1	294°06.4	150°52.6	25.4	234°34.0	11.1	171°38.9	32.5	280°07.3	23.9	357°33.5	29°14.1	264°08.3	N03°23.8
2	309°08.8	165°52.3	24.4	249°34.6	11.5	186°40.8	32.4	295°09.7	23.9	357°33.5	29°14.1	264°08.3	N03°23.8
3	324°11.3	180°52.0	23.4	264°35.2	11.8	201°42.7	32.3	310°12.0	23.9	357°33.5	29°14.1	264°08.3	N03°23.8
4	339°13.8	195°51.6	22.4	279°35.8	12.2	216°44.6	32.2	325°14.4	24.0	357°33.5	29°14.1	264°08.3	N03°23.8
5	354°16.2	210°51.3	21.5	294°36.4	12.6	231°46.5	32.1	340°16.8	24.0	357°33.5	29°14.1	264°08.3	N03°23.8
6	9°18.7	225°51.0	N16°20.5	309°37.0	N20°13.0	246°48.4	N20°32.0	355°19.1	N03°24.0	357°33.5	29°14.1	264°08.3	N03°24.0
7	24°21.2	240°50.7	19.5	324°37.6	13.4	261°50.3	31.8	10°21.5	24.0	357°33.5	29°14.1	264°08.3	N03°24.0
8	39°23.6	255°50.4	18.5	339°38.3	13.8	276°52.2	31.7	25°23.8	24.1	357°33.5	29°14.1	264°08.3	N03°24.0
9	54°26.1	270°50.1	17.5	354°38.9	14.2	291°54.1	31.6	40°26.2	24.1	357°33.5	29°14.1	264°08.3	N03°24.0
10	69°28.5	285°49.8	16.6	9°39.5	14.5	306°56.0	31.5	55°28.6	24.1	357°33.5	29°14.1	264°08.3	N03°24.0
11	84°31.0	300°49.5	15.6	24°40.1	14.9	321°57.9	31.4	70°30.9	24.2	357°33.5	29°14.1	264°08.3	N03°24.0
12	99°33.5	315°49.2	N16°14.6	39°40.7	N20°15.3	336°59.8	N20°31.3	85°33.3	N03°24.2	357°33.5	29°14.1	264°08.3	N03°24.2
13	114°35.9	330°48.9	13.6	54°41.3	15.7	352°01.7	31.2	100°35.7	24.2	357°33.5	29°14.1	264°08.3	N03°24.2
14	129°38.4	345°48.6	12.7	69°41.9	16.1	7°03.6	31.1	115°38.0	24.3	357°33.5	29°14.1	264°08.3	N03°24.2
15	144°40.9	0°48.3	11.7	84°42.6	16.5	22°05.5	30.9	130°40.4	24.3	357°33.5	29°14.1	264°08.3	N03°24.2
16	159°43.3	15°48.0	10.7	99°43.2	16.8	37°07.4	30.8	145°42.7	24.3	357°33.5	29°14.1	264°08.3	N03°24.2
17	174°45.8	30°47.7	09.7	114°43.8	17.2	52°09.3	30.7	160°45.1	24.4	357°33.5	29°14.1	264°08.3	N03°24.2
18	189°48.3	45°47.4	N16°08.7	129°44.4	N20°17.6	67°11.3	N20°30.6	175°47.5	N03°24.4	357°33.5	29°14.1	264°08.3	N03°24.4
19	204°50.7	60°47.1	07.7	144°45.0	18.0	82°13.2	30.5	190°49.8	24.4	357°33.5	29°14.1	264°08.3	N03°24.4
20	219°53.2	75°46.8	06.7	159°45.6	18.4	97°15.1	30.4	205°52.2	24.4	357°33.5	29°14.1	264°08.3	N03°24.4
21	234°55.7	90°46.5	05.8	174°46.3	18.7	112°17.0	30.3	220°54.6	24.4	357°33.5	29°14.1	264°08.3	N03°24.4
22	249°58.1	105°46.2	04.8	189°46.9	19.1	127°18.9	30.2	235°56.9	24.5	357°33.5	29°14.1	264°08.3	N03°24.4
23	265°00.6	120°45.9	03.8	204°47.5	19.5	142°20.8	30.0	250°59.3	24.5	357°33.5	29°14.1	264°08.3	N03°24.4
Mer.pass.	05:23	ν -0.3' d -1.0' m -4.05		ν 0.6' d 0.4' m 1.30		ν 1.9' d -0.1' m -1.81		ν 2.4' d 0.0' m 0.78					

Thu	GHA	Dec	GHA	Dec	HP	GHA	Dec	HP	GHA	Dec	HP		
0	280°03.0	135°45.6	N16°02.8	219°48.1	N20°19.9	157°22.7	N20°29.9	266°01.6	N03°24.6	357°33.5	29°14.1	264°08.3	N03°24.6
1	295°05.5	150°45.3	01.8	234°48.7	20.3	172°24.6	29.8	281°04.0	24.6	357°33.5	29°14.1	264°08.3	N03°24.6
2	310°08.0	165°45.0	16°00.8	249°49.3	20.6	187°26.5	29.7	296°06.4	24.6	357°33.5	29°14.1	264°08.3	N03°24.6
3	325°10.4	180°44.7	15°59.8	264°49.9	21.0	202°28.4	29.6	311°08.7	24.7	357°33.5	29°14.1	264°08.3	N03°24.6
4	340°12.8	195°44.4	15.8	279°50.6	21.4	217°30.3	29.5	326°11.1	24.7	357°33.5	29°14.1	264°08.3	N03°24.6
5	355°15.4	210°44.2	15.8	294°51.2	21.8	232°32.2	29.4	341°13.5	24.7	357°33.5	29°14.1	264°08.3	N03°24.6
6	10°17.8	225°43.9	N15°56.9	309°51.8	N20°22.2	247°34.1	N20°29.3	356°15.8	N03°24.7	357°33.5	29°14.1	264°08.3	N03°24.7
7	25°20.3	240°43.6	45.9	324°52.4	22.5	262°36.0	29.1	11°18.2	24.8	357°33.5	29°14.1	264°08.3	N03°24.7
8	40°22.8	255°43.3	44.9	339°53.0	22.9	277°37.9	29.0	26°20.6	24.8	357°33.5	29°14.1	264°08.3	N03°24.7
9	55°25.2	270°43.0	43.9	354°53.6	23.3	292°39.8	28.9	41°22.0	24.8	357°33.5	29°14.1	264°08.3	N03°24.7
10	70°27.7	285°42.7	42.9	9°54.2	23.7	307°41.7	28.8	56°25.3	24.9	357°33.5	29°14.1	264°08.3	N03°24.7
11	85°30.2	300°42.4	41.9	24°54.9	24.0	322°43.6	28.7	71°27.7	24.9	357°33.5	29°14.1	264°08.3	N03°24.7
12	100°32.6	315°42.1	N15°42.1	39°55.5	N20°24.4	337°45.5	N20°28.6	86°30.0	N03°24.9	357°33.5	29°14.1	264°08.3	N03°24.9
13	115°35.1	330°41.9	40.9	54°56.1	24.8	352°47.4	28.5	101°32.4	24.9	357°33.5	29°14.1	264°08.3	N03°24.9
14	130°37.5	345°41.6	39.9	69°56.7	25.2	7°49.3	28.4	116°34.8	25.0	357°33.5	29°14.1	264°08.3	N03°24.9
15	145°40.0	0°41.3	38.9	84°57.3	25.5	22°51.2	28.2	131°37.1	25.0	357°33.5	29°14.1	264°08.3	N03°24.9
16	160°42.5	15°41.0	37.9	99°57.9	25.9	37°53.1	28.1	146°39.5	25.0	357°33.5	29°14.1	264°08.3	N03°24.9
17	175°44.9	30°40.7	36.9	114°58.5	26.3	52°55.0	28.0	161°41.9	25.1	357°33.5	29°14.1	264°08.3	N03°24.9
18	190°47.4	45°40.4	N15°44.9	129°59.2	N20°26.7	67°56.9	N20°27.0	176°44.2	N03°25.1	357°33.5	29°14.1	264°08.3	N03°25.1
19	205°49.9	60°40.2	43.9	144°59.8	27.0	82°58.8	27.8	191°46.6	25.1	357°33.5	29°14.1	264°08.3	N03°25.1
20	220°52.3	75°39.9	42.9	160°00.4	27.4	98°00.7	27.7	206°49.0	25.1	357°33.5	29°14.1	264°08.3	N03°25.1
21	235°54.8	90°39.6	41.9	175°01.0	27.8	113°02.6	27.6	221°51.3	25.2	357°33.5	29°14.1	264°08.3	N03°25.1
22	250°												

	Aries			Venus			Mars			Jupiter			Saturn		
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	281°02.2	135°38.8	N15°38.9	220°02.8	N20°28.9	158°08.4	N20°27.2	266°58.4	N03°25.3						
1	296°04.7	150°38.5	37.9	235°03.4	29.3	173°10.3	27.1	282°00.8	25.3						
2	311°07.1	165°38.2	21.3	250°04.1	29.6	188°12.2	27.0	297°03.2	25.3						
3	326°09.6	180°37.9	.. 35.9	265°04.7	.. 30.0	203°14.1	.. 26.9	312°05.5	.. 25.3						
4	341°12.0	195°37.7	34.9	280°05.3	30.4	218°16.0	26.8	327°07.9	25.4						
5	356°14.5	210°37.4	33.9	295°05.9	30.8	233°17.9	26.7	342°10.3	25.4						
6	11°17.0	225°37.1	N15°32.9	310°06.5	N20°31.1	248°19.8	N20°26.5	357°12.6	N03°25.4						
7	26°19.4	240°36.8	31.9	325°07.1	31.5	263°21.7	26.4	12°15.0	25.4						
8	41°21.9	255°36.6	30.8	340°07.7	31.9	278°23.6	26.3	27°17.4	25.5						
9	56°24.4	270°36.3	.. 29.8	355°08.4	.. 32.2	293°25.5	.. 26.2	42°19.7	.. 25.5						
10	71°26.8	285°36.0	28.8	10°09.0	32.6	308°27.4	26.1	57°22.1	25.5						
11	86°29.3	300°35.8	27.8	25°09.6	33.0	323°29.3	26.0	72°24.5	25.6						
12	101°31.8	315°35.5	N15°26.8	40°10.2	N20°33.0	338°31.2	N20°25.9	87°26.9	N03°25.6						
13	116°34.2	330°35.2	25.8	55°10.8	33.7	353°33.1	25.7	102°29.2	25.6						
14	131°36.7	345°35.0	24.8	70°11.4	34.1	8°35.0	25.6	117°31.6	25.6						
15	146°39.1	0°34.7	.. 23.8	85°12.0	.. 34.4	23°36.9	.. 25.5	132°34.0	.. 25.7						
16	161°41.6	15°34.4	25.7	100°12.6	34.8	38°38.8	25.4	147°36.3	25.7						
17	176°44.1	30°34.2	21.7	115°13.3	35.2	53°40.7	25.3	162°38.7	25.7						
18	191°46.5	45°33.9	N15°20.7	130°13.9	N20°35.6	68°42.6	N20°25.2	177°41.1	N03°25.7						
19	206°49.0	60°33.6	19.7	145°14.5	35.9	83°44.5	25.1	192°43.4	25.8						
20	221°51.5	75°33.4	18.7	160°15.1	36.3	98°46.4	24.9	207°45.8	25.8						
21	236°53.9	90°33.1	.. 17.7	175°15.7	.. 36.6	113°48.3	.. 24.8	222°48.2	.. 25.8						
22	251°56.8	105°32.8	17.6	190°16.3	37.0	128°50.2	24.7	237°50.6	25.9						
23	266°58.9	120°32.6	15.7	205°16.9	37.3	143°52.1	24.6	252°52.9	25.9						
Mer.pass. 05:15	$\nu-0.3' d-1.0' m-4.07$			$\nu 0.6' d 0.4' m 1.30$			$\nu 1.9' d-0.1' m-1.81$			$\nu 2.4' d 0.0' m 0.77$					

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec			
0	282°01.3	135°32.3	N15°14.6	220°17.6	N20°37.7	158°54.0	N20°24.5	267°55.3	N03°25.9			
1	297°03.8	150°32.1	13.6	235°18.2	38.1	173°55.9	24.4	282°57.7	25.9			
2	312°06.3	165°31.8	12.6	250°18.8	38.4	188°57.8	24.3	298°00.0	26.0			
3	327°08.7	180°31.5	.. 11.6	265°19.4	.. 38.0	203°59.7	.. 24.1	313°02.4	.. 26.0			
4	342°11.2	195°31.3	10.6	280°20.0	39.2	219°01.6	24.0	328°04.8	26.0			
5	357°13.6	210°31.0	09.5	295°20.6	39.5	234°03.5	23.9	343°07.2	26.0			
6	12°16.1	225°30.8	N15°08.5	310°21.2	N20°39.9	249°05.4	N20°23.8	358°09.5	N03°26.1			
7	27°18.6	240°30.5	07.1	325°21.8	40.2	264°07.3	23.7	13°11.9	26.1			
8	42°21.0	255°30.3	06.5	340°22.5	40.6	279°09.2	23.6	28°14.3	26.1			
9	57°23.5	270°30.0	.. 05.5	355°23.1	.. 41.0	294°11.1	.. 23.4	43°16.7	.. 26.1			
10	72°26.0	285°29.7	04.4	10°23.7	41.3	309°13.0	23.2	58°19.0	26.2			
11	87°28.4	300°29.5	03.4	25°24.3	41.7	324°14.9	23.2	73°21.4	26.2			
12	102°30.9	315°29.2	N15°02.4	40°24.9	N20°42.0	339°16.8	N20°23.1	88°23.8	N03°26.2			
13	117°33.4	330°29.0	01.4	55°25.5	42.0	354°18.7	23.0	103°26.1	26.2			
14	132°35.8	345°28.7	15°00.3	70°26.1	42.8	9°20.6	22.9	118°28.5	26.3			
15	147°38.3	0°28.5	14°59.3	85°26.7	.. 43.1	24°22.5	.. 22.8	133°30.9	.. 26.3			
16	162°40.8	15°28.2	58.3	100°27.4	43.5	39°24.4	22.6	148°33.3	26.3			
17	177°43.2	30°28.0	57.3	115°28.0	43.8	54°26.3	22.5	163°35.6	26.3			
18	192°45.7	45°27.7	N14°56.2	130°28.6	N20°44.2	69°28.2	N20°22.4	178°38.0	N03°26.4			
19	207°48.1	60°27.5	55.2	145°29.2	44.5	84°30.1	22.3	193°40.4	26.4			
20	222°50.6	75°27.3	54.2	160°29.8	44.9	99°32.0	22.2	208°42.8	26.4			
21	237°53.1	90°27.0	.. 53.1	175°30.4	.. 45.3	114°33.9	.. 22.1	223°45.1	.. 26.4			
22	252°55.5	105°26.8	52.1	190°31.0	45.6	129°35.8	22.0	238°47.5	26.5			
23	267°58.0	120°26.5	51.1	205°31.6	46.0	144°37.7	21.8	253°49.9	26.5			
Mer.pass. 05:11	$\nu-0.3' d-1.0' m-4.07$			$\nu 0.6' d 0.4' m 1.30$			$\nu 1.9' d-0.1' m-1.81$			$\nu 2.4' d 0.0' m 0.76$		

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec			
0	283°00.5	135°26.3	N14°50.0	220°32.3	N20°46.3	159°39.7	N20°21.7	268°52.3	N03°26.5			
1	298°02.9	150°26.0	49.0	235°32.9	46.7	174°41.6	21.6	283°54.6	26.5			
2	313°05.4	165°25.8	48.0	250°33.5	47.0	189°43.5	21.5	298°57.0	26.6			
3	328°07.9	180°25.5	.. 47.0	265°34.1	.. 47.4	204°45.4	.. 21.4	313°59.4	.. 26.6			
4	343°10.3	195°25.3	45.9	280°34.7	47.7	219°47.3	21.3	329°01.8	26.6			
5	358°12.8	210°25.1	44.9	295°35.3	48.1	234°49.2	21.1	344°04.1	26.6			
6	13°15.2	225°24.8	N14°43.8	310°35.9	N20°48.4	249°51.1	N20°21.0	359°06.5	N03°26.7			
7	28°17.7	240°24.6	42.8	325°36.5	48.8	264°53.0	20.9	14°08.9	26.7			
8	43°20.2	255°24.3	41.8	340°37.1	49.1	279°54.9	20.8	29°11.3	26.7			
9	58°22.6	270°24.1	.. 40.7	355°37.8	.. 49.5	294°56.8	.. 20.7	44°13.6	.. 26.7			
10	73°25.1	285°23.9	39.7	10°38.4	49.9	309°58.7	20.6	59°16.0	26.8			
11	88°27.6	300°23.6	38.7	25°39.0	50.2	325°00.6	20.4	74°18.4	26.8			
12	103°30.0	315°23.4	N14°37.6	40°39.6	N20°50.6	340°02.5	N20°20.3	89°20.8	N03°26.8			
13	118°32.5	330°23.2	36.6	55°40.2	50.9	355°04.4	20.2	104°23.2	26.8			
14	133°35.0	345°22.9	35.6	70°40.8	51.3	10°06.3	20.1	119°25.5	26.9			
15	148°37.4	0°22.7	.. 34.5	85°41.4	.. 51.6	25°08.2	.. 20.0	134°27.9	.. 26.9			
16	163°39.9	15°22.5	33.5	100°42.0	52.0	40°10.1	19.9	149°30.3	26.9			
17	178°42.4	30°22.2	32.4	115°42.7	52.3	55°12.0	19.8	164°32.7	26.9			
18	193°44.8	45°22.0	N14°31.4	130°43.3	N20°52.6	70°13.9	N20°19.6	179°35.0	N03°27.0			
19	208°47.3	60°21.8	30.3	145°43.9	53.0	85°15.8	19.5	194°37.4	27.0			
20	223°49.7	75°21.5	29.3	160°44.5	53.3	100°17.7	19.4	209°39.8	27.0			
21	238°52.2	90°21.3	.. 28.3	175°45.1	.. 53.7	115°19.6	.. 19.3	224°42.2	.. 27.0			
22	253°54.7	105°21.1	27.2	190°45.7	54.0	130°21.5	19.2	239°44.6	27.1			
23	268°57.1	120°20.9	26.2	205°46.3	54.4	145°23.4	19.1	254°46.9	27.1			
Mer.pass. 05:07	$\nu-0.2' d-1.0' m-4.07$			$\nu 0.6' d 0.4' m 1.30$			$\nu 1.9' d-0.1' m-1.80$			$\nu 2.4' d 0.0' m 0.76$		

Stars	SHA	Dec
Alpheratz	357°33.4	29°14.1
Ankaa	343°09.5	-42°09.4
Schedar	359°25.6	56°40.7
Diphda	348°14.1	-17°50.3
Achernar	385°46.1	57°05.8
Hamal	327°49.9	23°35.2
Polaris	313°40.9	89°22.8
Acamar	315°11.1	-40°11.6
Menkar	314°05.0	4°11.7
Mirfak	308°26.8	49°57.1
Aldebaran	290°38.5	16°33.7
Rigel	281°03.0	-8°10.2
Capella	280°20.5	46°10.4
Bellatrix	278°21.9	6°22.4
Elnath	278°00.7	28°37.7
Anilam	275°36.8	-1°11.1
Betelgeuse	270°51.1	-7°24.7
Canopus	263°52.4	-52°42.5
Sirius	258°25.5	-16°45.1
Adhara	255°05.3	-29°00.5
Procyon	244°49.9	5°09.4
Pollux	243°16.2	27°57.8
Avior	234°14.8	-59°35.8
Suhail	222°45.8	-43°32.5
Miaplacidus	221°38.8	-69°49.7
Alphard	217°46.8	-86°46.5
Regulus	207°33.3	11°50.3
Dubhe	193°39.8	61°36.7
Denebola	182°23.8	14°25.5
Genah	175°42.4	-17°41.5
Acrux	172°58.8	-63°15.1
Gacrux	171°50.3	-57°16.0
Alloth	1	

Aries			Venus			Mars			Jupiter			Saturn		
Mon	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	283°59.6	135°20.6	N14°25.1	220°46.9	N20°54.7	160°25.3	N20°18.9	269°49.3	N03°27.1	1	193°49.3	42.3		
1	299°02.1	150°20.4	24.1	235°47.5	55.1	175°27.2	18.8	284°51.7	27.1	2	208°49.2	41.8		
2	314°04.5	165°20.2	23.0	250°48.2	55.4	190°29.1	18.7	299°54.1	27.1	3	223°49.1	41.6		
3	329°07.0	180°20.0	22.0	265°48.8	55.8	205°31.0	18.6	314°56.4	27.2	4	238°49.0	41.3		
4	344°09.5	195°19.7	27.2	280°49.4	56.1	220°32.9	18.5	329°58.8	27.2	5	253°48.9	41.1		
5	359°11.9	210°19.5	19.9	295°50.0	56.5	235°34.8	18.4	345°01.2	27.2	6	268°48.8	N22°40.8		
6	14°14.4	225°19.3	N14°12.6	310°50.6	N20°56.8	250°36.7	N20°18.2	0°03.6	N03°27.2	7	283°47.6	42.3		
7	29°16.9	240°19.1	17.8	325°52.1	57.1	265°38.6	18.1	15°06.0	27.3	8	298°48.6	40.3		
8	44°19.3	255°18.8	16.8	340°51.8	57.5	280°40.5	18.0	30°08.3	27.3	9	313°48.5	40.1		
9	59°21.8	270°18.6	15.7	355°52.4	57.8	295°42.4	17.9	45°10.7	27.3	10	328°48.4	39.8		
10	74°24.2	285°18.4	14.7	10°53.0	58.2	310°44.3	17.8	60°13.1	27.3	11	343°48.3	39.6		
11	89°26.7	300°18.2	13.6	25°53.7	58.5	325°46.2	17.7	75°15.5	27.4	12	358°48.2	N22°39.3		
12	104°29.2	315°18.0	N14°12.6	40°54.3	N20°58.9	340°48.1	N20°17.5	90°17.9	N03°27.4	13	373°47.6	38.3		
13	119°31.6	330°17.7	11.5	55°54.9	59.2	355°50.0	17.4	105°20.2	27.4	14	388°47.4	37.2		
14	134°34.1	345°17.5	10.5	70°55.5	59.5	10°51.9	17.3	120°22.6	27.4	15	403°47.2	36.0		
15	149°36.6	0°17.3	09.4	85°56.1	20°59.9	25°53.8	17.2	135°25.0	27.4	16	418°47.1	34.7		
16	164°39.0	15°17.1	08.3	100°57.0	21°02.2	40°55.7	17.1	150°27.4	27.5	17	433°47.0	33.4		
17	179°41.5	30°16.9	07.3	115°57.3	00.6	55°57.6	17.0	165°29.8	27.5	18	448°47.0	32.1		
18	194°44.0	45°16.7	N14°06.2	130°57.9	N21°00.9	70°59.5	N20°16.8	180°32.2	N03°27.5	19	463°47.0	30.8		
19	209°46.4	60°16.5	05.2	145°58.5	01.2	86°01.4	16.7	195°34.5	27.5	20	478°47.0	29.5		
20	224°48.9	75°16.2	04.1	160°59.2	01.6	101°03.3	16.6	210°36.9	27.6	21	493°47.0	28.2		
21	239°51.3	90°16.0	03.1	175°59.8	01.9	116°05.2	16.5	225°39.3	27.6	22	508°47.0	26.9		
22	254°53.8	105°15.8	02.0	191°00.4	02.3	131°07.1	16.4	240°41.7	27.6	23	523°47.0	25.6		
23	269°56.3	120°15.6	01.0	206°01.0	02.6	146°09.0	16.3	255°44.1	27.6					
Mer.pass.	05:03	ν -0.2' d -1.0' m -4.08		ν 0.6' d 0.3' m 1.30		ν 1.9' d -0.1' m -1.80		ν 2.4' d 0.0' m 0.75						

Tue	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	284°58.7	135°15.4	N13°59.9	221°01.6	N21°02.9	161°10.9	N20°16.1	270°46.4
1	300°01.2	150°15.2	58.8	236°02.2	03.3	176°12.8	16.0	285°48.8
2	315°03.7	165°15.0	57.8	251°02.8	03.6	191°14.7	15.9	300°51.2
3	330°06.1	180°14.8	56.6	266°03.4	04.0	206°16.6	15.8	315°53.6
4	345°08.6	195°14.6	55.7	281°04.0	04.3	221°18.5	15.7	330°56.0
5	0°11.1	210°14.4	54.6	296°04.7	04.6	236°20.4	15.5	345°58.4
6	15°13.5	225°14.1	N13°53.5	311°05.3	N21°05.0	251°22.3	N20°15.4	1°00.7
7	30°16.0	240°13.9	52.5	326°05.9	05.3	266°24.2	15.3	16°03.1
8	45°18.5	255°13.7	51.4	341°06.5	05.6	281°26.1	15.2	31°05.5
9	60°20.9	270°13.5	50.4	356°07.1	05.0	296°28.0	15.1	46°07.9
10	75°23.4	285°13.3	49.3	11°07.7	06.3	311°29.9	15.0	61°10.3
11	90°25.8	300°13.1	48.2	26°08.3	06.6	326°31.8	14.8	76°12.7
12	105°28.3	315°12.9	N13°47.2	41°08.9	N21°07.0	341°33.7	N20°14.7	91°15.0
13	120°30.8	330°12.7	46.1	56°09.5	07.3	356°35.6	14.6	106°17.4
14	135°33.2	345°12.5	45.0	71°10.2	07.6	11°37.5	14.5	121°19.8
15	150°35.7	0°12.3	44.0	86°10.8	08.0	26°39.4	14.4	136°22.2
16	165°38.2	15°12.1	42.9	101°11.4	08.3	41°41.2	14.3	151°24.6
17	180°40.6	30°11.9	41.8	116°12.0	08.6	56°43.1	14.1	166°27.0
18	195°43.1	45°11.7	N13°40.8	131°12.6	N21°09.0	71°45.0	N20°14.0	181°29.4
19	210°45.6	60°11.5	40.9	146°13.2	09.3	86°46.9	13.9	196°31.7
20	225°48.0	75°11.3	38.6	161°13.8	09.6	101°48.8	13.8	211°34.1
21	240°50.5	90°11.1	37.6	176°14.4	10.0	116°50.7	13.7	226°36.5
22	255°53.0	105°10.9	36.5	191°15.0	10.3	131°52.6	13.5	241°38.9
23	270°55.4	120°10.7	35.4	206°15.6	10.6	146°54.5	13.4	256°41.3
Mer.pass.	04:59	ν -0.2' d -1.1' m -4.08		ν 0.6' d 0.3' m 1.30		ν 1.9' d -0.1' m -1.80		ν 2.4' d 0.0' m 0.75

Wed	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	285°57.9	135°10.5	N13°34.4	221°16.3	N21°10.9	161°56.4	N20°13.3	271°43.7
1	301°00.3	150°10.4	33.3	236°16.9	11.3	176°58.3	13.2	286°46.1
2	316°02.8	165°10.2	32.2	251°17.5	11.6	192°00.2	13.1	301°48.4
3	331°05.3	180°10.0	31.2	266°18.1	11.9	207°02.1	13.0	316°50.8
4	346°07.7	195°09.8	30.1	281°18.7	12.3	222°04.0	12.8	331°53.2
5	1°10.2	210°09.6	29.0	296°19.3	12.6	237°05.9	12.7	346°55.6
6	16°12.7	225°09.4	N13°27.9	311°19.9	N21°12.9	252°07.8	N20°12.6	1°58.0
7	31°15.1	240°09.2	26.9	326°20.5	13.2	267°09.7	12.5	17°00.4
8	46°17.6	255°09.0	25.8	341°21.1	13.6	282°11.6	12.4	32°02.8
9	61°20.1	270°08.8	24.7	356°21.7	13.9	297°13.5	12.3	47°05.2
10	76°22.5	285°08.6	23.6	11°22.4	14.2	312°15.4	12.1	62°07.5
11	91°25.0	300°08.5	22.6	26°23.0	14.5	327°17.3	12.0	77°09.9
12	106°27.4	315°08.3	N13°21.5	41°23.6	N21°14.9	342°19.2	N20°11.9	92°12.3
13	121°29.9	330°08.1	20.8	56°24.2	15.2	357°21.1	11.8	107°14.7
14	136°32.4	345°07.9	19.3	71°24.8	15.5	12°23.0	11.7	122°16.1
15	151°34.8	0°07.7	18.3	86°25.4	15.8	27°24.9	11.5	137°19.5
16	166°37.3	15°07.5	17.2	101°26.0	16.2	42°26.8	11.4	152°21.9
17	181°39.8	30°07.4	16.1	116°26.6	16.5	57°28.7	11.3	167°24.3
18	196°42.2	45°07.2	N13°15.0	131°27.2	N21°16.8	72°30.6	N20°11.2	182°26.6
19	211°44.7	60°07.0	13.9	146°27.9	17.1	87°32.5	11.1	197°29.0
20	226°47.2	75°06.8	12.9	161°28.5	17.5	102°34.4	10.9	212°31.4
21	241°49.6	90°06.6	11.8	176°29.1	17.8	117°36.3	10.8	227°33.8
22	256°52.1	105°06.5	10.7	191°29.7	18.1	132°38.2	10.7	242°36.2
23	271°54.6	120°06.3	09.6	206°30.3	18.4	147°40.1	10.6	257°38.6
Mer.pass.	04:55	ν -0.2' d -1.1' m -4.09		ν 0.6' d 0.3' m 1.30		ν 1.9' d -0.1' m -1.80		ν 2.4' d 0.0' m 0.75

Stars	SHA	Dec
Alpheratz	357°33.4	29°14.1
Ankaa	343°05.9	-42°09.4
Schedar	359°29.6	-56°40.8
Diphda	348°46.0	-17°50.3
Achernar	335°19.4	-57°05.8
Hamal	327°49.7	23°35.2
Polaris	313°39.7	89°22.3
Acamar	315°11.1	-40°11.6
Menkar	314°05.0	4°11.7
Mirfak	308°26.8	49°57.1
Aldebaran	290°38.5	16°33.7
Rigel	281°03.0	-8°10.2
Capella	280°20.5	46°01.4
Bellatrix	278°21.9	6°22.4
Elnath	278°00.7	28°37.7
Anilam	275°36.8	-1°11.1
Betelgeuse	270°51.1	7°24.7
Canopus	263°52.4	-52°42.5
Sirius	258°25.5	-16°45.1
Adhara	255°03.3	-29°00.4
Procyon	244°49.9	5°09.4
Pollux	243°16.2	27°57.8
Avior	234°14.9	-59°35.7
Suhail	228°45.8	-43°32.5
Miaplacidus	221°46.8	-69°49.7
Alphard	217°38.8	-8°46.4
Regulus	207°33.4	11°50.3
Dubhe	193°39.8	61°36.7
Denebola	182°23.8	14°25.5
Gienah	175°42.4	-17°41.5
Acruz	172°58.8	-63°15.1
Gacrux	171°50.3	-57°16.0
Alioth	166°11.9	-55°49.2
Spica	158°20.9	-13°18.1
Alkaid	152°50.9	49°31.1
Hadar	148°34.0	-60°30.3
Menkent	147°56.0	-36°30.2
Arcturus	145°46.7	19°02.7
Rigel Kent.	139°38.3	-60°57.0
Kochab	137°19.2	74°03.0
Zubay'ubi	136°54.5	-16°09.2
Alphecca	126°02.4	26°37.6
Antares	112°14.0	-26°35.6
Atria	107°06.6	-69°04.6
Sabik	102°01.0	-15°45.5
Shaula	96°08.3	-37°07.4
Rasalhague	95°57.1	12°32.5
Eltanin	90°41.1	51°29.2
Kaus Aust.	83°30.5	-34°22.3
Vega	80°32.0	38°48.5
Nunki	75°45.8	-26°15.8
Altair	61°58.4	8°56.3
Peacock	53°03.2	-56°38.8
Deneb	49°24.5	45°22.4
Enif	33°37.3	9°59.8
Al Na'ir	27°31.0	-46°49.7
Fomalhaut	15°13.0	-29°28.7
Scheat	13°43.8	28°13.5
Markab	13°28.5	15°20.9

Jul 06 Mon	SHA	Mer.pass.
Venus	211°21.0	14:59
Mars	296°47.3	09:16
Jupiter	236°25.7	13:17
Saturn	345°49.7	06:00

Jul 07 Tue	SHA	Mer.pass.
Venus	210°16.7	14:59
Mars	296°02.9	09:16
Jupiter	236°12.1	13:14
Saturn	345°47.7	05:56

Jul 08 Wed	SHA	Mer.pass.
Venus	209°12.7	14:59
Mars	295°18.4	09:15
Jupiter	235°58.6	13:11
Saturn	345°45.8	05:52

Horizontal parallax	Venus	Mars
Venus	0.1	
Mars</		

Aries			Venus			Mars			Jupiter			Saturn		
Thu	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	286°57.0	135°06.1	N13°08.5	221°30.9	N21°18.7	162°42.0	N20°10.5	272°41.0	N03°28.6					
1	301°59.5	150°05.9	07.5	236°31.5	19.1	177°43.9	10.3	287°43.4	28.6					
2	317°01.9	165°05.7	28.6	251°32.1	19.4	192°45.8	10.2	302°45.8	28.6					
3	332°04.4	180°05.6	.. 05.3	266°32.7	.. 19.7	207°47.7	.. 10.1	317°48.2	.. 28.7					
4	347°06.9	195°05.4	04.2	281°33.3	20.0	222°49.6	10.0	332°50.5	28.7					
5	2°09.3	210°05.2	03.1	296°33.9	20.3	237°51.5	09.9	347°52.9	28.7					
6	17°11.8	225°05.0	N13°02.0	311°34.6	N21°20.7	252°53.4	N20°09.7	2°55.3	N03°28.7					
7	32°14.3	240°04.9	13°00.9	326°35.2	21.0	267°55.3	09.6	17°57.7	28.7					
8	47°16.7	255°04.7	12°59.9	341°35.8	21.3	282°57.2	09.5	33°00.1	28.7					
9	62°19.2	270°04.5	.. 58.8	356°36.4	.. 21.6	297°59.1	.. 09.4	48°02.5	.. 28.8					
10	77°21.7	285°04.4	57.7	11°37.0	21.9	313°01.0	09.3	63°04.9	28.8					
11	92°24.1	300°04.2	56.6	26°37.6	22.3	328°02.9	09.1	78°07.3	28.8					
12	107°26.6	315°04.0	N12°55.5	41°38.2	N21°12.2	343°04.8	N20°09.0	93°09.7	N03°28.8					
13	122°29.1	330°03.8	54.4	56°38.8	22.9	358°06.7	08.9	108°12.1	28.8					
14	137°31.5	345°03.7	53.3	71°39.4	23.2	13°08.6	08.8	123°14.5	28.9					
15	152°34.0	0°03.5	.. 52.3	86°40.0	.. 23.5	28°10.5	.. 08.7	138°16.9	.. 28.9					
16	167°36.4	15°03.3	51.2	101°40.7	23.8	43°12.4	28.9	153°19.2	28.9					
17	182°38.9	30°03.2	50.1	116°41.3	24.1	58°14.3	08.4	168°21.6	28.9					
18	197°41.4	45°03.0	N12°49.0	131°41.9	N21°24.5	73°16.2	N20°08.3	183°24.0	N03°28.9					
19	212°43.8	60°02.8	47.9	146°42.5	24.8	88°18.1	08.2	198°26.4	28.9					
20	227°46.3	75°02.7	46.8	161°43.1	25.1	103°20.0	08.1	213°28.8	29.0					
21	242°48.8	90°02.5	.. 45.7	176°43.7	.. 25.4	118°21.9	.. 07.9	228°31.2	.. 29.0					
22	257°51.2	105°02.4	44.6	191°44.3	25.7	133°23.7	07.8	243°33.6	29.0					
23	272°53.7	120°02.2	43.5	206°44.9	26.0	148°25.6	07.7	258°36.0	29.0					
Mer.pass.	04:51	ν-0.2' d -1.1' m -4.10		ν 0.6' d 0.3' m 1.30		ν 1.9' d -0.1' m -1.80		ν 2.4' d 0.0' m 0.74						

Fri	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	287°56.2	135°02.0	N12°42.4	221°45.5	N21°26.3	163°27.5	N20°07.6	273°38.4
1	302°58.6	150°01.9	41.3	236°46.1	26.7	178°29.4	07.5	288°40.8
2	318°01.1	165°01.7	40.2	251°46.8	27.0	193°31.3	07.3	303°43.2
3	333°03.5	180°01.6	.. 39.1	266°47.4	.. 27.3	208°33.2	.. 07.2	318°45.6
4	348°06.0	195°01.4	38.0	281°48.0	27.6	223°35.1	07.1	333°48.0
5	3°08.5	210°01.2	37.0	296°48.6	27.9	238°37.0	07.0	348°50.4
6	18°10.9	225°01.1	N12°35.9	311°49.2	N21°28.2	253°38.9	N20°06.9	3°52.8
7	33°13.4	240°00.9	34.8	326°49.8	28.5	268°40.8	06.7	18°55.2
8	48°15.9	255°00.8	33.7	341°50.4	28.8	283°42.7	06.6	33°57.5
9	63°18.3	270°00.6	.. 32.6	356°51.0	.. 29.1	298°44.6	.. 06.5	48°59.9
10	78°20.8	285°00.5	31.5	11°51.6	29.4	313°46.5	06.4	64°02.3
11	93°23.3	300°00.3	30.4	26°52.2	29.8	328°48.4	06.3	79°04.7
12	108°25.7	315°00.1	N12°29.3	41°52.8	N21°30.1	343°50.3	N20°06.1	94°07.1
13	123°28.2	330°00.0	28.2	56°53.5	30.4	358°52.2	06.0	109°09.5
14	138°30.7	345°00.8	27.1	71°54.1	30.7	13°54.1	05.9	124°11.9
15	153°33.1	359°59.7	.. 26.0	86°54.7	.. 31.0	28°56.0	.. 05.8	139°14.3
16	168°35.6	14°59.5	24.9	101°55.3	31.3	43°57.9	05.7	154°16.7
17	183°38.0	29°59.4	23.8	116°55.9	31.6	58°59.8	05.5	169°19.1
18	198°40.5	44°59.2	N12°22.7	131°56.5	N21°31.9	74°01.7	N20°05.4	184°21.5
19	213°43.0	59°59.1	21.6	146°57.1	32.2	89°03.6	05.3	199°23.9
20	228°45.4	74°58.9	20.5	161°57.7	32.5	104°05.5	05.2	214°26.3
21	243°47.9	89°58.8	.. 19.4	176°58.3	.. 32.8	119°07.4	.. 05.1	229°28.7
22	258°50.4	104°58.6	18.3	191°58.9	33.1	134°09.3	04.9	244°31.1
23	273°52.8	119°58.5	17.2	206°59.6	33.4	149°11.2	04.8	259°33.5
Mer.pass.	04:47	ν-0.2' d -1.1' m -4.10		ν 0.6' d 0.3' m 1.30		ν 1.9' d -0.1' m -1.80		ν 2.4' d 0.0' m 0.74

Sat	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	288°55.3	134°58.4	N12°16.0	222°00.2	N21°33.7	164°13.1	N20°04.7	274°35.9
1	303°57.8	149°58.2	14.9	237°00.8	34.0	179°15.0	04.6	289°38.3
2	319°00.2	164°58.1	.. 13.8	252°01.4	.. 34.3	194°16.9	.. 04.5	304°40.7
3	334°02.7	179°57.9	.. 12.7	267°02.0	.. 34.6	209°18.8	.. 04.3	319°43.1
4	349°05.2	194°57.8	11.6	282°02.6	34.9	224°20.7	04.2	334°45.5
5	4°07.6	209°57.6	10.5	297°03.2	35.2	239°22.6	04.1	349°47.9
6	19°10.1	224°57.5	N12°09.4	312°03.8	N21°35.5	254°24.5	N20°04.0	4°50.3
7	34°12.5	239°57.4	08.3	327°04.4	35.9	269°26.3	03.8	19°52.7
8	49°15.0	254°57.2	07.2	342°05.0	36.2	284°28.2	03.7	34°55.1
9	64°17.5	269°57.1	.. 06.1	357°05.6	.. 36.5	299°30.1	.. 03.6	49°57.5
10	79°19.9	284°56.9	05.0	12°06.3	36.8	314°32.0	03.5	64°59.9
11	94°22.4	299°56.8	03.9	27°06.9	37.1	329°33.9	03.4	80°02.3
12	109°24.0	314°56.7	N12°02.8	42°07.5	N21°37.4	344°35.8	N20°03.2	95°04.7
13	124°27.3	329°56.5	01.7	57°08.1	37.7	359°37.7	03.1	110°07.1
14	139°29.8	344°56.4	00.5	72°08.7	38.0	14°39.6	03.0	125°09.5
15	154°32.3	359°56.2	11°59.4	87°09.3	.. 38.2	29°41.5	.. 02.9	140°11.9
16	169°34.7	14°56.1	58.3	102°09.9	38.5	44°43.4	02.8	155°14.3
17	184°37.2	29°56.0	57.2	117°10.5	38.8	59°45.3	02.6	170°16.7
18	199°39.7	44°55.8	N11°56.1	132°11.1	N21°39.1	74°47.2	N20°02.5	185°19.1
19	214°42.1	59°55.7	55.0	147°11.7	39.4	89°49.1	02.4	200°21.5
20	229°44.6	74°55.6	53.9	162°12.3	39.7	104°51.0	02.3	215°23.9
21	244°47.0	89°55.4	.. 52.8	177°13.0	.. 40.0	119°52.9	.. 02.1	230°26.3
22	259°49.5	104°55.3	51.6	192°13.6	40.3	134°54.8	02.0	245°28.7
23	274°52.0	119°55.2	50.5	207°14.2	40.6	149°56.7	01.9	260°31.1
Mer.pass.	04:44	ν-0.1' d -1.1' m -4.11		ν 0.6' d 0.3' m 1.30		ν 1.9' d -0.1' m -1.80		ν 2.4' d 0.0' m 0.73

Stars	SHA	Dec
Alpheratz	357°33.4	29°14.1
Ankaa	353°05.8	-42°09.4
Schedar	349°29.5	56°40.8
Diphda	348°46.0	-17°50.3
Achernar	335°19.4	-57°05.8
Hamal	327°49.9	23°35.2
Polaris	313°38.1	89°22.2
Acamar	315°11.0	-40°11.6
Menkar	314°05.0	4°11.7
Mirfak	308°26.8	49°57.1
Aldebaran	290°38.5	16°33.7
Rigel	281°03.0	-8°10.2
Capella	280°20.5	46°01.4
Bellatrix	278°21.8	6°22.4
Elmath	278°00.6	28°37.7
Alnilam	275°36.8	-1°11.0
Betelgeuse	270°51.1	-7°24.7
Canopus	263°52.4	-52°42.5
Sirius	255°25.5	-16°45.1
Adhara	258°05.3	-29°00.4
Procyon	244°49.9	5°09.4
Pollux	243°16.2	27°57.7
Sailor	234°14.9	-59°35.7
Avior	222°45.8	-43°32.5
Miaplacidus	221°38.9	-69°49.7
Alphard	217°46.8	-8°46.4
Regulus	207°33.4	11°50.3
Dubhe	193°39.9	61°36.7
Denebola	182°23.8	14°25.5
Gienah	175°42.4	-17°41.5
Acrux	172°58.8	-63°15.1
Gacrux	171°50.3	57°16.0
Alpica	166°11.9	55°49.2
Pipha	158°21.0	-11°18.1
Alhaid	152°50.9	49°31.1
Hadar	148°34.0	-60°30.3
Menkent	147°56.0	-36°30.2
Arcturus	145°46.7	19°02.7
Rigel Kent	139°38.3	-60°57.0
Kochab	137°19.3	74°03.0
Zubay'ubi	136°54.5	-16°09.2
Alphecca	126°02.5	26°37.6
Antares	112°14.0	-26°29.5
Atria	107°06.6	-69°04.6
Sabik	102°01.0	-15°45.5
Shaula	96°08.3	-37°07.4
Rasalhague	95°57.1	12°32.5
Eltanin	90°41.1	51°29.2
Kaus Aust.	83°30.5	-34°22.3
Vega	80°32.0	38°48.5
Nunki	75°45.8	-26°15.8
Altair	61°58.4	8°56.4
Peacock	53°03.2	-56°38.8
Deneb	49°24.5	45°22.4
Enif	33°37.3	9°59.8
Al Na'ir	27°31.0	-46°49.7
Fomalhaut	15°12.9	-29°28.7
Scheat	13°43.8	28°13.5
Markab	13°28.5	15°20.9

Jul 09 Thu	SHA	Mer.pass
Venus	208°09.1	15:00
Mars	294°39.9	09:14
Jupiter	235°45.0	13:08
Saturn	345°44.0	05:48

Jul 10 Fri	SHA	Mer.pass
Venus	207°05.9	15:00
Mars	293°49.4	09:13
Jupiter	235°31.4	13:05
Saturn	345°42.2	05:45

Jul 11 Sat	SHA	Mer.pass
Venus	206°03.1	15:00
Mars	293°04.9	09:12
Jupiter	235°17.8	13:01
Saturn	345°40.6	05:41

Horizontal parallax	
Venus:	0.2
Mars:	0.1

h	Sun			Moon			
Thu	GHA	Dec	GHA	ν	Dec	d	HP
0	178°42.2	N22°22.7	258°43.4	9.9'	N16°25.3	13.6'	58.8'

Aries			Venus			Mars			Jupiter			Saturn		
Sun	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	289°54.4	134°55.1	N11°49.4	222°14.8	N21°40.9	164°58.6	N20°01.8	275°33.5	29°29.8	03°29.8	03°29.8	03°29.8		
1	304°56.9	149°54.9	48.3	237°15.4	41.2	180°00.5	01.7	290°35.9	29.8	29.8	29.8	29.8		
2	319°59.4	164°54.8	47.2	252°16.0	41.5	195°02.4	01.5	305°38.3	29.8	29.8	29.8	29.8		
3	335°01.8	179°54.7	46.1	267°16.6	41.8	210°04.3	01.4	320°40.7	29.8	29.8	29.8	29.8		
4	350°04.3	194°54.5	44.9	282°17.2	42.1	225°06.2	01.3	335°43.1	29.8	29.8	29.8	29.8		
5	5°06.8	209°54.4	43.8	297°17.8	42.4	240°08.1	01.2	350°45.5	29.8	29.8	29.8	29.8		
6	20°09.2	224°54.4	N11°42.7	312°18.4	N21°42.7	255°10.0	N20°01.0	5°47.9	N03°29.8	N03°29.8	N03°29.8	N03°29.8		
7	35°11.7	239°54.2	41.6	327°19.1	43.0	270°11.9	00.9	20°50.3	29.8	29.8	29.8	29.8		
8	50°14.2	254°54.0	40.5	342°19.7	43.3	285°13.8	00.8	35°52.7	29.9	29.9	29.9	29.9		
9	65°16.6	269°53.9	39.4	357°20.3	43.6	300°15.6	00.7	50°55.1	29.9	29.9	29.9	29.9		
10	80°19.1	284°53.8	38.2	372°20.9	43.9	315°17.5	00.6	65°57.5	29.9	29.9	29.9	29.9		
11	95°21.5	299°53.7	37.1	387°21.5	44.1	330°19.4	00.4	80°59.9	29.9	29.9	29.9	29.9		
12	110°24.0	314°53.5	N11°36.0	402°22.1	N21°44.4	345°21.3	N20°00.3	96°02.3	N03°29.9	N03°29.9	N03°29.9	N03°29.9		
13	125°26.5	329°53.4	34.9	417°22.7	44.7	0°23.2	00.2	111°04.7	29.9	29.9	29.9	29.9		
14	140°28.9	344°53.3	33.8	432°23.3	45.0	15°25.1	20°00.1	126°07.1	29.9	29.9	29.9	29.9		
15	155°31.4	359°53.2	32.6	447°23.9	45.3	30°27.0	19°59.9	141°09.5	30.0	30.0	30.0	30.0		
16	170°33.9	14°53.1	31.5	102°24.5	45.6	45°28.9	59.8	156°11.9	30.0	30.0	30.0	30.0		
17	185°36.3	29°52.9	30.4	117°25.1	45.9	60°30.8	59.7	171°14.3	30.0	30.0	30.0	30.0		
18	200°38.8	44°52.8	N11°29.3	132°25.8	N21°46.2	75°32.7	N19°59.6	186°16.7	N03°30.0	N03°30.0	N03°30.0	N03°30.0		
19	215°41.3	59°52.7	28.1	147°26.4	46.5	90°34.6	59.5	201°19.1	30.0	30.0	30.0	30.0		
20	230°43.7	74°52.6	27.0	162°27.0	46.7	105°36.5	59.3	216°21.5	30.0	30.0	30.0	30.0		
21	245°46.2	89°52.5	25.9	177°27.6	47.0	120°38.4	59.2	231°23.9	30.0	30.0	30.0	30.0		
22	260°48.7	104°52.4	24.8	192°28.2	47.3	135°40.3	59.1	246°26.4	30.0	30.0	30.0	30.0		
23	275°51.1	119°52.2	23.7	207°28.8	47.6	150°42.2	59.0	261°28.8	30.0	30.0	30.0	30.0		
Mer.pass.	04:40	ν -0.1° d -1.1' m -4.11		ν 0.6° d 0.3' m 1.31		ν 1.9° d -0.1' m -1.80		ν 2.4° d 0.0' m 0.73						

Mon	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	290°53.6	134°52.1	N11°22.5	222°29.4	N21°47.9	165°44.1	N19°58.8	276°31.2
1	305°56.0	149°52.0	21.4	237°30.0	48.2	180°46.0	58.7	291°33.6
2	320°58.5	164°51.9	20.3	252°30.6	48.5	195°47.9	58.6	306°36.0
3	335°01.0	179°51.8	19.2	267°31.2	48.8	210°49.8	58.5	321°38.4
4	350°03.4	194°51.7	18.0	282°31.8	49.0	225°51.7	58.4	336°40.8
5	6°05.9	209°51.6	16.9	297°32.5	49.3	240°53.6	58.2	351°43.2
6	21°08.4	224°51.5	N11°15.8	312°33.1	N21°49.6	255°55.5	N19°58.1	6°45.6
7	36°10.8	239°51.3	14.6	327°33.7	49.9	270°57.4	58.0	21°48.0
8	51°13.3	254°51.2	13.5	342°34.3	50.2	285°59.3	57.9	36°50.4
9	66°15.8	269°51.1	12.4	357°34.9	50.5	301°01.1	57.7	51°52.8
10	81°18.2	284°51.0	11.3	372°35.5	50.7	316°03.0	57.6	66°55.2
11	96°20.7	299°50.9	10.1	387°36.1	51.0	331°04.9	57.5	81°57.6
12	111°23.2	314°50.8	N11°09.0	402°36.7	N21°51.3	346°06.8	N19°57.4	97°00.0
13	126°25.6	329°50.7	8.7	417°37.3	51.6	0°8.7	57.2	112°02.4
14	141°28.1	344°50.6	06.7	432°37.9	51.9	16°10.6	57.1	127°04.9
15	156°30.5	359°50.5	05.6	447°38.5	52.2	31°12.5	57.0	142°07.3
16	171°33.0	14°50.4	04.5	102°39.2	52.4	46°14.4	56.9	157°09.7
17	186°35.5	29°50.3	03.3	117°39.8	52.7	61°16.3	56.8	172°12.1
18	201°37.9	44°50.2	N11°02.2	132°40.0	N21°53.0	76°18.2	N19°56.6	187°14.5
19	216°40.4	59°50.1	10.1	147°41.1	53.3	91°20.1	56.5	202°16.9
20	231°42.9	74°50.0	10°59.9	162°41.6	53.6	106°22.0	56.4	217°19.3
21	246°45.3	89°49.9	9.8	177°42.2	53.8	121°23.9	56.3	232°21.7
22	261°47.8	104°49.8	8.7	192°42.8	54.1	136°25.8	56.1	247°24.1
23	276°50.3	119°49.7	7.5	207°43.4	54.4	151°27.7	56.0	262°26.5
Mer.pass.	04:36	ν -0.1° d -1.1' m -4.12		ν 0.6° d 0.3' m 1.31		ν 1.9° d -0.1' m -1.79		ν 2.4° d 0.0' m 0.72

Tue	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	291°52.7	134°49.6	N10°55.4	222°44.0	N21°54.7	166°29.6	N19°55.9	277°28.9
1	306°55.2	149°49.5	54.3	237°44.6	54.9	181°31.5	55.8	292°31.3
2	321°57.7	164°49.4	53.1	252°45.3	55.2	196°33.4	55.6	307°33.8
3	337°00.1	179°49.3	52.0	267°45.9	55.5	211°35.3	55.5	322°36.2
4	352°02.6	194°49.2	50.9	282°46.5	55.8	226°37.2	55.4	337°38.6
5	7°05.0	209°49.1	49.7	297°47.1	56.1	241°39.1	55.3	352°41.0
6	22°07.5	224°49.0	N10°48.6	312°47.7	N21°56.3	256°40.9	N19°55.1	7°43.4
7	37°10.0	239°48.9	47.5	327°48.3	56.6	271°42.8	55.0	22°45.8
8	52°12.4	254°48.8	46.3	342°48.9	56.9	286°44.7	54.9	37°48.2
9	67°14.9	269°48.7	45.2	357°49.5	57.2	301°46.6	54.8	52°50.6
10	82°17.4	284°48.6	44.0	372°50.1	57.4	316°48.5	54.7	67°53.0
11	97°19.8	299°48.5	42.9	387°50.7	57.7	331°50.4	54.5	82°55.4
12	112°22.3	314°48.4	N10°41.8	402°51.3	N21°58.0	346°52.3	N19°54.4	97°57.9
13	127°24.8	329°48.4	40.6	417°52.0	58.3	0°54.2	54.3	113°00.3
14	142°27.2	344°48.3	39.5	432°52.6	58.5	16°56.1	54.2	128°02.7
15	157°29.7	359°48.2	38.4	447°53.2	58.8	31°58.0	54.0	143°05.1
16	172°32.2	14°48.1	37.2	102°53.8	59.1	46°59.9	53.9	158°07.5
17	187°34.6	29°48.0	36.1	117°54.4	59.3	62°01.8	53.8	173°09.9
18	202°37.1	44°47.9	N10°34.9	132°55.0	N21°59.6	77°03.7	N19°53.7	188°05.3
19	217°39.5	59°47.8	33.8	147°55.6	21°59.9	92°05.6	53.5	203°14.7
20	232°42.0	74°47.7	32.6	162°56.2	22°00.2	107°07.5	53.4	218°17.2
21	247°44.5	89°47.7	31.5	177°56.8	22°00.4	122°09.4	53.3	233°19.6
22	262°46.9	104°47.6	30.4	192°57.4	00.7	137°11.3	53.2	248°22.0
23	277°49.4	119°47.5	29.2	207°58.1	01.0	152°13.2	53.0	263°24.4
Mer.pass.	04:32	ν -0.1° d -1.1' m -4.13		ν 0.6° d 0.3' m 1.31		ν 1.9° d -0.1' m -1.79		ν 2.4° d 0.0' m 0.72

Stars	SHA	Dec
Alpheratz	357°33.4	29°14.2
Ankaa	343°05.5	-42°09.4
Shedar	359°29.5	-56°40.8
Diphda	348°46.0	-17°50.3
Achernar	335°19.3	-57°05.8
Hamal	327°49.8	-23°35.2
Polaris	313°36.3	89°22.2
Acamar	315°11.0	-40°11.6
Menkar	314°05.0	4°11.7
Mirafak	308°26.7	49°57.1
Aldebaran	290°38.4	16°33.7
Rigel	281°02.9	-8°10.2
Capella	280°20.4	46°01.4
Bellatrix	278°21.8	6°22.5
Elnath	278°00.6	28°37.7
Amilam	275°36.8	-1°11.0
Betelgeuse	270°51.0	7°24.7
Canopus	263°52.4	-52°42.5
Sirius	258°25.5	-16°45.1
Ahara	255°05.3	-29°00.4
Procyon	244°49.9	5°09.4
Pollux	243°16.1	27°57.7
Avior	234°14.9	-59°35.7
Suhail	227°45.8	-43°32.5
Miaplacidus	221°48.9	-69°49.7
Alphard	217°36.8	-8°46.4
Regulus	207°33.4	11°50.3
Dubhe	193°39.9	61°36.7
Denebola	182°23.8	14°25.5
Gienah	175°44.2	-17°41.5
Acrux	172°58.8	-63°15.1
Gacrux	171°50.4	-57°16.0
Alioth	166°11.9	-59°49.2
Spica	158°21.0	-13°58.1
Alkaid	152°50.9	49°31.1
Hadar	148°34.1	-60°30.3
Menkent	147°56.0	-36°30.2
Arcturus	145°46.7	19°02.8
Rigel Kent.	139°38.3	-60°57.0
Kochab	137°19.4	74°03.0
Zubay'ubi	136°54.5	-16°09.2
Alphecca	126°02.5	-26°37.6
Antares	112°14.0	-26°29.5
Atria	107°06.6	-69°04.6
Sabik	102°01.0	-15°45.5
Shaula	96°08.3	-37°07.4
Rasalhague	95	