

NavSoft's

2017

Nautical Almanac

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Formulae

$$\begin{aligned} \text{Dip} &= 0.971 \times \text{Ht}^{1/2} && \text{Ht in feet} \\ &\text{or} \\ \text{Dip} &= 1.758 \times \text{Ht}^{1/2} && \text{Ht in meters} \\ \text{Refraction} &= 0.96 / \text{Tan(Alt)} && \text{Altitude} > 11^\circ \end{aligned}$$

$$\text{Parallax} = \text{HP} \times \text{Cos(Alt)}$$

$$\text{Cos(Zenith Distance)} = \text{Sin(Lat)} \times \text{Sin(Dec)} + \text{Cos(Lat)} \times \text{Cos(Dec)} \times \text{Cos(LHA)}$$

$$\text{Tan(Azimuth)} = \text{Sin(LHA)} / [\text{Cos(Lat)} \times \text{Tan(Dec)} - \text{Sin(Lat)} \times \text{Cos(LHA)}]$$

ABC Tables

$$A = \text{Cos(Lat)} \times \text{Tan(Dec)}$$

$$B = \text{Sin(Lat)} \times \text{Cos(LHA)}$$

$$C = \text{Sin(LHA)} / \text{Tan(Azimuth)}$$

or

$$\text{Azimuth} = \text{Atan}[C / \text{Sin(LHA)}]$$

Increments

$$\text{Sun} = 15^\circ / \text{hour}$$

$$\text{Moon} = 14^\circ.316666' / \text{hour}$$

$$\text{Aries} = 15^\circ.041666' / \text{hour}$$

Horizontal Parallaxes and Semi-Diameters for 2017

	Sun SD	Venus		Mars		Jupiter SD	Saturn SD
		HP	SD	HP	SD		
Jan 1	16'.3	0'.19	0'.18	0'.09	0'.05	0'.28	0'.11
Jan	16'.3	0'.22	0'.21	0'.08	0'.04	0'.29	0'.11
Feb	16'.2	0'.33	0'.32	0'.08	0'.04	0'.32	0'.12
Mar	16'.1	0'.50	0'.48	0'.07	0'.04	0'.34	0'.12
Apr	15'.9	0'.43	0'.41	0'.06	0'.03	0'.35	0'.13
May	15'.8	0'.27	0'.26	0'.06	0'.03	0'.33	0'.13
Jun	15'.7	0'.18	0'.18	0'.06	0'.03	0'.31	0'.14
Jul	15'.7	0'.14	0'.14	0'.06	0'.03	0'.28	0'.13
Aug	15'.8	0'.12	0'.11	0'.06	0'.03	0'.26	0'.13
Sep	15'.9	0'.10	0'.10	0'.06	0'.03	0'.25	0'.12
Oct	16'.0	0'.09	0'.09	0'.06	0'.03	0'.24	0'.12
Nov	16'.2	0'.09	0'.09	0'.06	0'.03	0'.24	0'.11
Dec	16'.2	0'.09	0'.08	0'.07	0'.04	0'.25	0'.11
Dec 31	16'.3	0'.09	0'.08	0'.07	0'.04	0'.26	0'.11

15th day of each month unless stated

Sun's HP = 0'.15

HP for Jupiter and Saturn < 0'.05

This Almanac was compiled using AstroNav which will print pages for any dates between 9999BC and 9999AD. It also includes data for all visible bodies at less than the cost of a printed Nautical Almanac. Further details and a demonstration version can be found at navsoft.com/astronav.html

Supplementary tables, which do not change from year to year, are available at navsoft.com/downloads.html

2017 January 1, 2, 3 (Sun, Mon, Tue)

GMT	ARIES			VENUS -4.4			MARS +0.9			JUPITER -2.0			SATURN +8.2			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	Dec		GHA	Dec		GHA	Dec		GHA	Dec		GHA	Dec		Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d		HP	Nautical		Civil	1	2
Sunday	00	100° 50.2'	130° 38.5'	13° 41.9' S	119° 24.8'	8° 48.6' S	260° 48.8'	7° 03.6' S	200° 08.3'	21° 52.4' S	Acamar	315° 16.3'	40° 14.6' S	179° 08.2'	22° 59.9' S	147° 06.1'	11.1	15° 20.2' S	6.3	56.1	N 72°	08:23	10:39	-	11:58	11:49	11:41				
	01	115° 52.6'	145° 38.4'	40.8	134° 25.5'	47.8	275° 51.0'	03.7	215° 10.5'	52.4	Achernar	335° 25.0'	57° 09.4' S	194° 07.9'	59.7	161° 36.2'	11.1	13.9	6.3	56.0	N 70°	08:04	09:47	-	11:30	11:31	11:31				
	02	130° 55.1'	160° 38.3'	39.7	149° 26.2'	47.1	290° 53.2'	03.8	230° 12.6'	52.5	Acruz	173° 06.4'	63° 11.2' S	209° 07.6'	59.5	176° 06.3'	11.1	07.6	6.4	66°	68°	07:49	09:16	-	11:09	11:17	11:22				
	03	145° 57.6'	175° 38.2'	38.6	164° 27.0'	46.3	305° 55.5'	03.9	245° 14.8'	52.5	Adhara	255° 10.2'	28° 59.9' S	224° 07.3'	59.3	190° 36.4'	11.1	01.2	6.5	64°	66°	07:37	08:52	10:25	10:52	10:55	11:15				
	04	161° 00.0'	190° 38.1'	37.5	179° 27.7'	45.6	320° 57.7'	04.0	260° 17.0'	52.5	Aldebaran	290° 46.3'	16° 32.4' N	239° 07.1'	59.1	205° 06.5'	11.1	14° 54.7' S	6.7	6.6	62°	60°	07:26	08:33	09:48	10:39	11:06	11:09			
	05	176° 02.5'	205° 38.0'	36.4	194° 28.4'	44.8	335° 59.9'	04.1	275° 19.1'	52.5				254° 06.8'	58.9	219° 36.6'	11.2	48.1	6.6	62°	60°	07:17	08:18	09:22	10:27	10:47	11:04				
	06	191° 05.0'	220° 37.9'	35.3	209° 29.1'	44.1	351° 02.1'	04.1	290° 21.3'	52.5	Alioth	166° 18.7'	55° 51.8' N	269° 06.5'	58.7	234° 06.8'	11.1	41.4	6.7	56.2	N 58°	07:02	07:54	08:45	10:08	10:34	10:55				
	07	206° 07.4'	235° 37.8'	34.2	224° 29.8'	43.3	374° 04.3'	04.2	305° 23.4'	52.6	Alkaid	152° 57.2'	49° 13.6' N	284° 06.2'	58.5	248° 36.9'	11.2	34.7	6.9	56°	56°	06:55	07:44	08:31	10:01	10:28	10:52				
	08	221° 09.9'	250° 37.7'	33.1	239° 30.5'	42.6	391° 06.5'	04.3	320° 25.6'	52.6	Alnair	27° 41.1'	46° 52.9' S	299° 05.9'	58.3	263° 07.1'	11.2	27.9	6.8	54°	54°	06:50	07:35	08:19	09:54	10:23	10:49				
	09	236° 12.4'	265° 37.7'	32.0	254° 31.2'	41.8	36° 08.7'	04.4	335° 27.8'	52.6	Alnilam	275° 43.6'	1° 11.7' S	314° 05.6'	58.1	277° 37.3'	11.2	21.0	7.0	52°	52°	06:44	07:27	08:08	09:48	10:18	10:46				
	10	251° 14.8'	280° 37.6'	30.9	269° 31.9'	41.1	51° 11.0'	04.5	350° 29.9'	52.6	Alphard	217° 53.5'	8° 44.0' S	292° 07.5'	58.2	292° 07.5'	11.2	14.0	7.0	50°	50°	06:39	07:20	07:58	09:42	10:14	10:43				
	11	266° 17.3'	295° 37.5'	29.8	284° 32.7'	40.3	66° 13.2'	04.6	5° 32.1'	52.6				344° 05.0'	57.6	306° 37.7'	11.2	07.0	7.1	56.3	N 45°	06:28	07:05	07:38	09:30	10:05	10:37				
	12	281° 19.7'	310° 37.4'	13° 28.7' S	299° 33.4'	8° 39.6' S	81° 15.4'	7° 04.7' S	20° 34.2'	21° 52.7' S	Alphecca	126° 09.3'	26° 39.5' N	359° 04.7'	22° 57.4' S	321° 07.9'	11.2	13° 59.9' S	7.2	56.3	N 40°	06:18	06:52	07:22	09:20	09:57	10:32				
	13	296° 22.2'	325° 37.3'	27.6	314° 34.1'	38.8	96° 19.6'	04.8	35° 36.4'	52.7	Alpheratz	357° 41.0'	29° 11.1' N	14° 04.4'	57.2	335° 38.1'	11.3	52.7	7.3	35°	35°	06:09	06:40	07:08	09:12	09:51	10:28				
	14	311° 24.7'	340° 37.2'	26.5	329° 34.8'	38.1	111° 19.8'	04.9	50° 38.6'	52.7	Altair	62° 06.2'	8° 55.0' N	29° 04.1'	57.0	350° 04.4'	11.2	45.4	7.4	30°	30°	06:00	06:30	06:56	09:04	09:45	10:24				
	15	326° 27.1'	355° 37.1'	25.4	344° 35.5'	37.3	126° 22.0'	04.9	65° 40.7'	52.7	Antaa	353° 13.5'	42° 13.1' S	44° 03.8'	56.8	4° 38.6'	11.3	38.0	7.4	20°	20°	05:44	06:12	06:36	08:51	09:35	10:18				
	16	341° 29.6'	10° 37.1'	24.3	359° 36.2'	36.6	141° 24.3'	05.0	80° 42.9'	52.7	Antares	112° 23.6'	26° 27.9' S	59° 03.5'	56.6	19° 08.9'	11.3	30.6	7.5	56.4	N 10°	05:28	05:55	06:17	08:40	09:26	10:12				
	17	356° 32.1'	25° 37.0'	23.2	14° 36.9'	35.8	156° 26.5'	05.1	95° 45.0'	52.8				74° 03.2'	56.3	33° 39.2'	11.3	23.1	7.5	56.4	0°	05:12	05:38	06:00	08:29	09:18	10:07				
	18	11° 34.5'	40° 36.9'	22.1	29° 37.6'	35.0	171° 28.7'	05.2	110° 47.2'	52.8	Arcturus	145° 53.7'	19° 05.7' N	89° 02.9'	56.1	48° 09.5'	11.3	15.6	7.7	S 10°	04:53	05:20	05:43	08:18	09:10	10:01					
	19	26° 37.0'	55° 36.8'	21.0	44° 38.4'	34.3	186° 30.9'	05.3	125° 49.3'	52.8	Atria	107° 23.7'	69° 03.1' S	104° 02.6'	55.9	62° 39.8'	11.3	07.9	7.7	20°	20°	04:31	05:00	05:25	08:07	09:01	09:56				
	20	41° 39.5'	70° 36.7'	19.9	59° 39.1'	33.5	140° 51.5'	05.4	140° 51.5'	52.8	Avior	234° 16.3'	59° 33.9' S	119° 02.3'	55.7	77° 10.1'	11.3	00.2	7.8	30°	30°	04:03	04:36	05:03	07:54	08:51	09:49				
	21	56° 41.9'	85° 36.7'	18.8	74° 39.8'	32.8	216° 35.4'	05.5	155° 53.7'	52.8	Bellatrix	278° 29.1'	6° 21.7' N	134° 02.1'	55.5	91° 40.4'	11.4	12° 52.4' S	7.8	56.5	35°	35°	03:45	04:21	04:51	07:46	08:45	09:45			
	22	71° 44.4'	100° 36.6'	17.7	89° 40.5'	32.0	231° 37.6'	05.6	170° 55.8'	52.8	Betelgeuse	270° 58.4'	7° 24.4' N	149° 01.8'	55.2	106° 10.8'	11.3	44.6	7.9	40°	40°	03:22	04:03	04:36	07:37	08:38	09:41				
23	86° 46.9'	115° 36.5'	16.6	104° 41.2'	31.3	246° 39.8'	05.6	185° 58.0'	52.9				164° 01.5'	55.0	120° 41.1'	11.4	36.7	8.0	45°	45°	02:52	03:41	04:18	07:27	08:31	09:36					
Monday	00	101° 49.3'	130° 36.4'	13° 15.4' S	119° 41.9'	8° 30.5' S	261° 42.0'	05.7' S	210° 00.1'	21° 52.9' S	Canopus	263° 54.5'	52° 42.5' S	179° 01.2'	22° 54.8' S	135° 11.5'	11.4	12° 28.7' S	8.1	56.5	S 50°	02:09	03:13	03:57	07:15	08:21	09:30				
	01	116° 51.8'	145° 36.4'	14.5	134° 42.6'	29.8	276° 44.2'	05.8	216° 02.3'	52.9	Capella	280° 30.4'	46° 00.7' N	194° 00.9'	54.6	149° 41.9'	11.3	20.6	8.1	56.6	52°	01:43	02:58	03:46	07:09	08:17	09:27				
	02	131° 54.2'	160° 36.3'	13.3	149° 43.3'	29.0	291° 46.5'	05.9	231° 04.5'	52.9	Deneb	49° 30.2'	45° 20.7' N	209° 00.6'	54.3	164° 12.2'	11.4	12.5	8.2	54°	54°	01:04	02:41	03:34	07:03	08:12	09:24				
	03	146° 56.7'	175° 36.2'	12.2	164° 44.1'	28.3	306° 48.7'	06.0	246° 06.6'	52.9	Denebola	182° 31.2'	14° 28.5' S	224° 00.3'	54.1	178° 42.6'	11.4	04.3	8.2	56°	56°	-	02:20	03:20	04:20	06:56	08:07	09:21			
	04	161° 59.2'	190° 36.1'	11.1	179° 44.8'	27.5	321° 50.9'	06.1	261° 08.8'	53.0	Diphda	348° 53.5'	17° 53.8' S	239° 00.0'	53.9	193° 13.0'	11.5	11° 56.1' S	8.4	58°	58°	-	01:52	03:04	04:06	06:48	08:01	09:17			
	05	177° 01.6'	205° 36.1'	10.0	194° 45.5'	26.8	336° 53.1'	06.2	276° 10.9'	53.0				253° 59.7'	53.6	207° 43.5'	11.4	47.7	8.4	S 60°	-	-	01:10	02:45	03:38	07:54	09:13				
	06	192° 04.1'	220° 36.0'	08.9	209° 46.2'	26.0	351° 55.3'	06.3	291° 13.1'	53.0	Dubhe	193° 48.6'	61° 39.3' N	268° 59.4'	53.4	222° 13.9'	11.4	39.3	8.4	56.7	S 62°	-	-	02:20	06:28	07:47	09:08				
	07	207° 06.6'	235° 35.9'	07.8	224° 46.9'	25.2	6° 57.6'	06.3	306° 15.3'	53.0	El Nath	278° 09.2'	28° 37.1' N	283° 59.1'	53.2	236° 44.3'	11.5	30.9	8.5	56.8											
	08	222° 09.0'	250° 35.9'	06.7	239° 47.6'	24.5	321° 17.4'	06.4	321° 17.4'	53.0	Eltanin	90° 45.6'	51° 29.3' S	298° 58.8'	53.0	251° 14.8'	11.4	22.4	8.6	56.8											
	09	237° 11.5'	265° 35.8'	05.6	254° 48.3'	23.7	37° 02.0'	06.5	336° 19.6'	53.1	Enif	33° 45.0'	9° 57.3' N	313° 58.6'	52.7	265° 45.2'	11.5	13.8	8.6	56.8											
	10	252° 14.0'	280° 35.7'	04.5	269° 49.1'	23.0	52° 04.2'	06.6	351° 21.7'	53.1	Fomalhaut	15° 21.6'	29° 32.1' S	328° 58.3'	52.5	280° 15.7'	11.5	05.2	8.7	56.8											
	11	267° 16.4'	295° 35.7'	03.4	284° 49.8'	22.2	67° 06.4'	06.7	6° 23.9'	53.1				343° 58.0'	52.3	294° 46.2'	11.5	10° 56.5' S	8.8	56.8											
	12	282° 18.9'	310° 35.6'	13° 02.3' S	299° 50.5'	8° 21.5' S	82° 08.7'	7° 06.8' S	21° 26.1'	21° 53.1' S	Gacrux	171° 58.1'	57° 12.2' S	358° 57.7'	22° 52.0' S	309° 16.7'	11.5	10° 47.7' S	8.9	56.8	N 70°	-	14:21	16:05	18:04	19:45	21:27				
	13	297° 21.4'	325° 35.5'	01.2	314° 51.2'	20.7	97° 10.9'	06.9	36° 28.2'	53.1	Gienah	175° 49.8'	17° 38.0' S	13° 57.4'	51.8	323° 47.2'															

2017 January 4, 5, 6 (Wed, Thur, Fri)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	4		5	6				
Wednesday	00	103° 47.6	130° 33.9	12° 22.2 S	120° 16.3	7° 54.2 S	263° 28.8	7° 09.8 S	202° 43.8	21° 53.8 S	Acamar	315° 16.3	40° 14.6 S	178° 47.3	22° 43.1 S	111° 37.3	11.5	4° 57.3 S	10.5	57.6	N 72°	08:19	10:29	-	11:34	11:27	11:20				
	01	118° 50.1	145° 33.9	21.1	135° 17.0	53.4	278° 31.1	09.9	217° 46.0	53.8	Achernar	335° 25.0	57° 09.5 S	193° 47.1	42.8	126° 07.8	11.5	46.8	10.5	57.7	N 70°	08:01	09:42	-	11:30	11:29	11:28				
	02	133° 52.5	160° 33.9	19.9	150° 17.7	52.7	293° 33.3	10.0	232° 48.2	53.8	Acruz	173° 06.4	63° 11.2 S	208° 46.8	42.6	140° 38.3	11.6	36.3	10.6	66°	68°	07:47	09:12	11:27	11:26	11:31	11:35				
	03	148° 55.0	175° 33.8	18.8	165° 18.5	51.9	308° 35.5	10.1	247° 50.3	53.8	Adhara	255° 10.2	28° 59.9 S	223° 46.5	50.3	155° 08.9	11.5	25.7	10.6	64°	64°	07:25	08:31	09:44	11:21	11:33	11:45				
	04	163° 57.5	190° 33.8	17.7	180° 19.2	51.2	323° 37.0	10.2	262° 52.5	53.8	Aldebaran	290° 46.3	16° 32.4 N	238° 46.2	42.0	169° 39.4	11.5	15.1	10.7	62°	62°	07:16	08:16	09:19	11:19	11:34	11:49				
	05	178° 59.9	205° 33.8	16.6	195° 19.9	50.4	338° 40.0	10.2	277° 54.7	53.9											60°	60°	07:08	08:04	08:59	11:17	11:35	11:53			
	06	194° 02.4	220° 33.8	15.5	210° 20.6	49.7	353° 42.2	10.3	292° 56.8	53.9	Alioth	166° 18.7	55° 51.8 N	268° 45.6	41.5	198° 40.4	11.5	3° 53.7 S	10.7	57.8	N 58°	07:01	07:53	08:43	11:16	11:35	11:56				
	07	209° 04.8	235° 33.7	14.3	225° 21.3	48.9	368° 44.5	10.4	307° 59.0	53.9	Alkaid	152° 57.2	49° 13.6 N	283° 45.4	41.2	213° 10.9	11.4	43.0	10.7	56°	56°	06:55	07:43	08:30	11:14	11:36	11:59				
	08	224° 07.3	250° 33.7	13.2	240° 22.1	48.1	383° 46.2	10.5	323° 01.1	53.9	Alnair	27° 41.1	46° 52.9 S	298° 45.1	41.0	227° 41.3	11.5	32.3	10.8	54°	54°	06:49	07:35	08:18	11:13	11:37	12:02				
	09	239° 09.8	265° 33.7	12.1	255° 22.8	47.4	398° 48.9	10.6	338° 03.3	53.9	Alnilam	275° 43.6	1° 11.7 S	313° 44.8	40.7	242° 11.8	11.4	21.5	10.7	52°	52°	06:44	07:27	08:07	11:12	11:37	12:04				
	10	254° 12.2	280° 33.7	11.0	270° 23.5	46.6	413° 51.2	10.6	353° 05.5	53.9	Alphard	217° 53.5	8° 44.0 S	328° 44.5	40.4	256° 42.2	11.5	10.8	10.8	57.9	50°	50°	06:39	07:27	08:07	11:11	11:38	12:06			
	11	269° 14.7	295° 33.7	09.8	285° 24.2	45.9	428° 53.4	10.7	373° 07.6	54.0											45°	45°	06:28	07:05	07:38	11:08	11:39	12:11			
	Thursday	12	284° 17.2	310° 33.6	12° 08.7 S	300° 25.0	7° 45.1 S	483° 55.6	10.8	393° 09.8	54.0	Alphecca	126° 09.2	26° 39.5 N	358° 43.9	22° 39.9 S	285° 43.1	11.4	2° 49.1 S	10.8	57.9	N 40°	06:18	06:52	07:22	11:06	11:40	12:15			
		13	299° 19.6	325° 33.6	07.6	315° 25.7	44.3	428° 57.9	10.9	408° 11.9	54.0	Alpheratz	357° 41.0	29° 11.1 N	13° 43.7	39.6	300° 13.5	11.4	38.3	10.9	35°	35°	06:09	06:41	07:09	11:04	11:41	12:18			
		14	314° 22.1	340° 33.6	06.5	330° 26.4	43.6	453° 00.1	11.0	423° 14.1	54.0	Altair	62° 06.2	8° 54.9 N	28° 43.4	39.4	314° 43.9	11.3	27.4	10.9	58.0	30°	30°	06:01	06:31	06:57	11:03	11:41	12:21		
		15	329° 24.6	355° 33.6	05.3	345° 27.1	42.8	478° 02.4	11.1	498° 02.4	54.0	Antares	353° 13.5	42° 13.2 S	43° 43.1	39.1	329° 14.2	11.4	16.5	10.9	20°	20°	05:45	06:12	06:36	11:00	11:43	12:27			
		16	344° 27.0	370° 33.6	04.2	360° 20.7	42.1	493° 04.6	11.1	513° 04.6	54.1											N 10°	05:30	05:56	06:19	10:58	11:44	12:31			
		17	359° 29.5	385° 33.6	03.1	375° 18.6	41.3	508° 06.8	11.2	528° 06.8	54.1											0°	05:13	05:39	06:02	10:56	11:45	12:36			
		18	14° 31.9	40° 33.5	01.9	30° 29.3	40.5	174° 09.1	11.3	113° 22.8	54.1	Arcturus	145° 53.7	19° 05.6 N	88° 42.3	38.3	12° 45.2	11.3	43.7	11.0	58.1	S 10°	04:55	05:22	05:45	10:53	11:46	12:40			
		19	29° 34.4	55° 33.5	00.8	45° 30.0	39.8	189° 11.3	11.4	128° 24.9	54.1	Atria	107° 23.7	69° 03.1 S	103° 42.0	38.0	27° 15.5	11.3	32.7	11.0	20°	20°	04:33	05:02	05:27	10:51	11:47	12:45			
		20	44° 36.9	70° 33.5	11° 59.7 S	60° 30.7	39.0	204° 13.5	11.5	143° 27.1	54.1	Avior	234° 16.3	59° 33.9 S	118° 41.7	37.7	41° 45.8	11.3	21.7	11.0	30°	30°	04:05	04:38	05:05	10:48	11:49	12:51			
		21	59° 39.3	85° 33.5	58.6	75° 31.4	38.2	219° 15.8	11.5	158° 29.3	54.1	Bellatrix	278° 29.1	6° 21.7 N	133° 41.4	37.4	56° 16.1	11.2	10.7	11.1	35°	35°	03:47	04:24	04:53	10:47	11:50	12:54			
		22	74° 41.8	100° 33.5	57.4	90° 32.2	37.5	234° 18.0	11.6	173° 31.4	54.2	Betelgeuse	270° 58.4	7° 24.4 N	148° 41.1	37.1	70° 46.3	11.2	0° 59.6 S	11.0	58.2	40°	40°	03:25	04:06	04:39	10:45	11:51	12:58		
23		89° 44.3	115° 33.5	56.3	105° 32.9	36.7	249° 20.2	11.7	188° 33.6	54.2											45°	02:56	03:45	04:21	10:43	11:52	13:02				
Friday	00	104° 46.7	130° 33.5	11° 55.2 S	120° 33.6	7° 36.0 S	264° 22.5	7° 11.8 S	203° 35.7	21° 54.2 S	Canopus	263° 54.5	52° 42.5 S	178° 40.6	22° 36.3 S	99° 46.7	11.2	0° 37.6 S	11.1	58.2	S 50°	02:14	03:16	04:00	10:41	11:53	13:07				
	01	119° 49.2	145° 33.5	54.0	135° 34.3	35.2	279° 27.4	11.9	218° 37.9	54.2	Capella	280° 30.4	46° 00.7 N	193° 40.7	36.3	114° 16.8	11.1	26.5	11.1	52°	52°	01:49	03:02	03:50	10:40	11:54	13:09				
	02	134° 51.7	160° 33.5	52.9	150° 35.1	34.4	294° 27.0	11.9	233° 40.1	54.2	Deneb	49° 30.2	45° 20.7 N	208° 40.0	36.0	128° 47.0	11.1	15.4	11.1	58.3	54°	01:13	02:46	03:38	10:38	11:54	13:12				
	03	149° 54.1	175° 33.5	51.8	165° 35.8	33.7	309° 29.2	12.0	248° 42.2	54.2	Denebola	182° 31.1	14° 28.5 N	223° 39.7	35.7	143° 17.1	11.1	04.3	11.1	56°	56°	-	02:25	03:25	04:37	10:37	11:55	13:15			
	04	164° 56.6	190° 33.5	50.6	180° 36.5	32.9	324° 31.4	12.1	263° 44.4	54.3	Diphda	348° 53.5	17° 53.8 S	238° 39.5	35.5	157° 47.2	11.0	0° 06.8 N	11.1	58°	58°	-	01:59	03:09	04:36	10:36	11:56	13:18			
	05	179° 59.1	205° 33.5	49.5	195° 37.2	32.2	339° 33.7	12.2	278° 46.6	54.3											S 60°	-	01:20	02:50	04:34	10:34	11:57	13:22			
	06	195° 01.5	220° 33.5	48.4	210° 37.9	31.4	354° 35.9	12.3	293° 48.7	54.3	Dubhe	193° 48.6	61° 39.3 N	268° 39.2	34.9	186° 47.2	11.0	29.0	11.1	58.4	S 62°	-	-	02:26	10:32	11:58	13:26				
	07	210° 04.0	235° 33.5	47.2	225° 38.7	30.6	369° 38.1	12.3	308° 50.9	54.3	El Nath	278° 09.2	28° 37.1 N	283° 38.6	34.6	201° 17.2	11.0	40.1	11.1												
	08	225° 06.4	250° 33.5	46.1	240° 39.4	29.9	324° 40.4	12.4	323° 53.0	54.3	Eltanin	90° 45.6	51° 29.3 S	298° 38.4	34.3	215° 47.2	11.0	51.2	11.2												
	09	240° 08.9	265° 33.5	45.0	255° 40.1	29.1	339° 42.6	12.5	338° 55.2	54.4	Enif	33° 45.0	9° 57.3 N	313° 38.1	34.0	230° 17.1	11.0	1° 02.4 N	11.1												
	10	255° 11.4	280° 33.5	43.8	270° 40.8	28.3	354° 44.9	12.6	353° 57.4	54.4	Fomalhaut	15° 21.6	29° 32.1 S	328° 37.8	33.7	244° 47.1	10.8	13.5	11.1	58.5											
	11	270° 13.8	295° 33.5	42.7	285° 41.6	27.6	369° 47.1	12.7	38° 59.5	54.4																					
	12	285° 16.3	310° 33.5	11° 41.6 S	300° 42.3	7° 26.8 S	484° 49.3	12.7	404° 12.7	54.4	Gacrux	171° 58.0	57° 12.2 S	358° 37.2	22° 33.2 S	273° 46.8	10.8	1° 35.8 N	11.1	58.5											
	13	300° 18.8	325° 33.5	40.4	315° 43.0	26.1	429° 51.6	12.8	439° 03.9	54.4	Gienah	175° 49.7	17° 38.1 S	13° 37.0	32.9	288° 16.6	10.8	46.9	11.1	68°	68°	12:44	15:00	16:25	23:10	-	00:49				
	14	315° 21.2	340° 33.5	39.3	330° 43.7	25.3	444° 53.8	12.9	454° 06.0	54.4	Hadar	148° 44.5	60° 26.9 S	28° 36.2	32.6	302° 46.4	10.7	58.0	11.2	58.6	66°										

2017 January 7, 8, 9 (Sat, Sun, Mon)

GMT	ARIES			VENUS -4.4			MARS +0.9			JUPITER -2.0			SATURN +8.2			STARS			SUN		MOON					Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	7	8		9					
Saturday	00	106° 45.0	130° 34.2	11° 00.5 S	121° 08.4	6° 59.3 S	266° 10.2	7° 15.5 S	205° 19.6	21° 55.0 S	Acamar	315° 16.4	40° 14.6 S	178° 27.4	22° 22.2 S	75° 13.8	9.1	8° 08.8 N	10.4	59.4	N 72°	08:14	10:18	-	11:13	11:05	10:52					
	01	121° 47.5	145° 34.3	10° 59.4 S	136° 09.1	58.6	281° 12.4	15.6	220° 21.8	55.0	Achernar	335° 25.0	57° 09.5 S	193° 27.1	21.9	89° 41.9	9.1	19.2	10.4	68°	07:57	09:36	-	11:29	11:30	11:36						
	02	136° 49.9	160° 34.3	58.2	151° 09.8	57.8	296° 14.7	15.6	235° 24.0	55.1	Acruz	173° 06.3	63° 11.3 S	208° 26.9	21.6	104° 10.0	9.1	29.6	10.4	66°	07:32	08:45	10:12	11:51	12:06	12:28						
	03	151° 52.4	175° 34.3	57.1	166° 10.6	57.0	311° 16.9	15.7	250° 26.1	55.1	Adhara	255° 10.2	28° 59.9 S	231° 26.6	21.2	118° 38.1	9.0	40.0	10.3	64°	07:22	08:28	09:39	12:00	12:19	12:45						
	04	166° 54.9	190° 34.4	55.9	181° 11.3	56.3	326° 19.2	15.8	265° 28.3	55.1	Aldebaran	290° 46.3	16° 32.4 N	238° 26.3	20.9	133° 06.1	8.9	50.3	10.3	62°	07:14	08:14	09:15	12:07	12:30	13:00						
	05	181° 57.3	205° 34.4	54.8	196° 12.0	55.5	341° 21.4	15.9	280° 30.5	55.1				253° 26.1	20.6	147° 34.0	8.9	9° 00.6 N	10.2	59.5	60°	07:06	08:02	08:57	12:14	12:39	13:12					
	06	196° 59.8	220° 34.5	53.6	211° 12.8	54.7	356° 23.7	15.9	295° 32.6	55.1	Alioth	166° 18.7	55° 51.8 N	268° 25.8	20.3	162° 01.9	8.8	10.8	10.2		N 58°	07:00	07:51	08:41	12:20	12:48	13:23					
	07	212° 02.3	235° 34.5	52.5	226° 13.5	54.0	11° 25.9	16.0	310° 34.8	55.1	Alkaid	152° 57.2	49° 13.5 N	283° 25.5	20.0	176° 29.7	8.8	21.0	10.1		56°	06:54	07:42	08:28	12:25	12:55	13:32					
	08	227° 04.7	250° 34.5	51.3	241° 14.2	53.2	26° 28.0	16.1	325° 37.0	55.2	Alnair	27° 41.1	46° 52.8 S	298° 25.3	19.6	190° 57.5	8.7	31.1	10.1		54°	06:48	07:33	08:16	12:29	13:01	13:41					
	09	242° 07.2	265° 34.6	50.2	256° 14.9	52.4	41° 30.4	16.2	340° 39.1	55.2	Alnilam	275° 43.6	1° 11.7 S	313° 25.0	19.3	205° 25.2	8.6	41.2	10.0	59.6	52°	06:43	07:26	08:06	12:33	13:07	13:48					
	10	257° 09.6	280° 34.6	49.0	271° 15.7	51.7	56° 32.7	16.2	355° 41.3	55.2	Alphard	217° 53.4	8° 44.1 S	328° 24.7	19.0	219° 52.8	8.6	51.2	10.0		50°	06:38	07:19	07:57	12:37	13:13	13:55					
	11	272° 12.1	295° 34.7	47.9	286° 16.4	50.9	71° 34.9	16.3	10° 43.5	55.2				343° 24.5	18.7	234° 20.4	8.5	10° 01.2 N	9.9		45°	06:27	07:04	07:37	12:45	13:24	14:09					
	12	287° 14.6	310° 34.7	10° 46.7 S	301° 17.1	6° 50.1 S	86° 37.2	7° 16.4 S	25° 45.6	21° 55.2 S	Alphecca	126° 09.2	26° 39.5 N	358° 24.2	22° 18.3 S	248° 47.9	8.4	10° 11.1 N	9.8		N 40°	06:18	06:52	07:22	12:52	13:34	14:21					
	13	302° 17.0	325° 34.8	45.6	316° 17.9	49.4	101° 39.4	16.5	40° 47.8	55.2				13° 23.9	18.0	263° 15.3	8.4	20.9	9.9		35°	06:09	06:41	07:09	12:58	13:42	14:31					
	14	317° 19.5	340° 34.8	44.4	331° 18.6	48.6	116° 41.7	16.5	55° 50.0	55.3	Altair	62° 06.2	8° 54.9 N	28° 23.7	17.7	277° 42.7	8.3	30.8	9.7	59.7	30°	06:01	06:31	06:57	13:04	13:50	14:40					
	15	332° 22.0	355° 34.9	43.3	346° 19.3	47.8	131° 44.0	16.6	70° 52.1	55.3	Ankaa	353° 13.5	42° 13.2 S	43° 23.4	17.3	292° 10.0	8.3	40.5	9.7		20°	05:46	06:13	06:37	13:13	14:02	14:56					
	16	347° 24.4	10° 34.9	42.1	1° 20.0	47.1	146° 46.2	16.7	85° 54.3	55.3	Antares	112° 23.6	26° 27.9 S	58° 23.1	17.0	306° 37.3	8.2	50.2	9.6		N 10°	05:31	05:57	06:20	13:21	14:14	15:10					
	17	2° 26.9	25° 35.0	41.0	16° 20.8	46.3	161° 48.5	16.8	100° 56.5	55.3				73° 22.9	16.7	321° 04.5	8.1	59.8	9.6		0°	05:15	05:41	06:03	13:29	14:24	15:22					
	18	17° 29.4	40° 35.1	39.8	31° 21.5	45.5	176° 50.7	16.8	115° 58.6	55.3	Arcturus	145° 53.7	19° 05.6 N	88° 22.6	16.4	335° 31.6	8.1	11° 09.4 N	9.5		S 10°	04:57	05:24	05:47	13:36	14:35	15:35					
	19	32° 31.8	55° 35.1	38.7	46° 22.2	44.8	191° 53.0	16.9	131° 00.8	55.3	Atria	107° 23.7	69° 03.1 S	103° 22.3	16.0	349° 58.7	8.0	18.9	9.5		20°	04:35	05:04	05:29	13:45	14:46	15:49					
	20	47° 34.3	70° 35.2	37.5	61° 23.0	44.0	206° 55.2	17.0	146° 03.0	55.4	Avior	234° 16.3	59° 33.9 S	118° 22.1	15.7	4° 25.7	8.0	28.4	9.3	59.8	30°	04:08	04:41	05:08	13:54	14:59	16:05					
	21	62° 36.8	85° 35.2	36.4	76° 23.7	43.2	221° 57.5	17.1	161° 05.1	55.4	Bellatrix	278° 29.1	6° 21.6 N	133° 21.8	15.4	18° 52.7	7.9	37.7	9.4		35°	03:50	04:26	04:56	14:00	15:07	16:14					
	22	77° 39.2	100° 37.3	35.2	91° 24.4	42.5	236° 59.7	17.1	176° 07.3	55.4	Betelgeuse	270° 58.4	7° 24.4 N	148° 21.5	10.5	33° 19.6	7.8	47.1	9.2		40°	03:29	04:09	04:41	14:06	15:16	16:25					
23	92° 41.7	115° 35.3	34.1	106° 25.2	41.7	252° 02.0	17.2	191° 09.5	55.4				163° 21.3	14.7	47° 46.4	7.7	56.3	9.2		45°	03:00	03:48	04:25	14:13	15:26	16:37						
Sunday	00	107° 44.1	130° 35.4	10° 32.9 S	121° 25.9	6° 40.9 S	267° 04.2	7° 17.3 S	206° 11.6	21° 55.4 S	Canopus	263° 54.5	52° 42.6 S	178° 21.0	22° 14.4 S	62° 13.1	7.7	12° 05.5 N	9.1	59.8	S 50°	02:20	03:21	04:04	14:22	15:38	16:52					
	01	122° 46.6	145° 35.5	31.8	136° 06.2	40.2	282° 06.5	17.3	221° 13.8	55.4	Capella	280° 30.4	46° 00.7 N	193° 20.7	14.0	76° 39.8	7.7	14.6	9.0	59.9	52°	01:56	03:07	03:54	14:27	15:44	17:00					
	02	137° 49.1	160° 35.5	30.6	151° 27.3	39.4	297° 08.8	17.4	236° 16.0	55.5	Deneb	49° 30.2	45° 20.7 N	208° 20.5	13.7	91° 06.5	7.5	23.6	9.0		54°	01:23	02:51	03:42	14:31	15:50	17:08					
	03	152° 51.5	175° 35.6	29.5	166° 28.1	38.6	312° 11.0	17.5	251° 18.1	55.5	Denebola	182° 31.1	14° 28.5 S	223° 20.2	13.3	105° 33.0	7.5	32.6	8.9		56°	-	02:31	03:29	14:36	15:58	17:16					
	04	167° 54.0	190° 35.7	28.3	181° 28.8	37.9	327° 13.3	17.6	266° 20.3	55.5	Diphda	348° 53.5	17° 53.8 S	238° 20.0	13.0	119° 59.5	7.5	41.5	8.8		58°	-	02:06	03:14	14:42	16:06	17:27					
	05	182° 56.5	205° 35.7	27.2	196° 29.5	37.1	342° 15.5	17.6	281° 22.5	55.5				253° 19.7	12.7	134° 26.0	7.3	50.3	8.7		S 60°	-	01:30	02:56	14:48	16:15	17:38					
	06	197° 58.9	220° 35.8	26.0	211° 30.3	36.3	357° 17.8	17.7	296° 24.6	55.5	Dubhe	193° 48.6	61° 39.3 N	268° 19.4	12.3	148° 52.3	7.3	59.0	8.7		S 62°	-	-	02:33	14:56	16:25	17:52					
	07	213° 01.4	235° 35.9	24.8	226° 31.0	35.6	12° 20.0	17.8	311° 26.8	55.5	El Nath	278° 09.2	28° 37.1 N	283° 19.2	12.0	163° 18.6	7.3	13° 07.7 N	8.6	60.0												
	08	228° 03.9	250° 35.9	23.7	241° 31.7	34.8	27° 22.3	17.8	326° 29.0	55.6	Eltanin	90° 45.5	51° 29.3 S	298° 18.9	11.6	177° 44.9	7.1	16.3	8.5													
	09	243° 06.3	265° 36.0	22.5	256° 32.5	34.0	42° 24.6	17.9	341° 31.1	55.6	Enif	33° 45.0	9° 57.3 N	313° 18.6	11.3	192° 11.0	7.2	24.8	8.4													
	10	258° 08.8	280° 36.1	21.4	271° 33.2	33.3	57° 26.8	18.0	356° 33.3	55.6	Fomalhaut	15° 21.6	29° 32.1 S	328° 18.4	11.0	206° 37.2	7.0	33.2	8.4													
	11	273° 11.3	295° 36.1	20.2	286° 33.9	32.5	72° 29.1	18.1	11° 35.5	55.6				343° 18.1	10.6	221° 03.2	7.0	41.6	8.2													
	12	288° 13.7	310° 36.2	10° 19.1 S	301° 34.7	6° 31.7 S	87° 31.3	7° 18.1 S	26° 37.6	21° 55.6 S	Gacrux	171° 58.0	57° 12.2 S	358° 17.9	22° 10.3 S	235° 29.2	6.9	13° 49.8 N	8.2	60.0	N 70°	-	14:39	16:17	02:41	04:33	06:27					
	13	303° 16.2	325° 36.3	17.9	316° 35.4	31.0	102° 33.6	18.2	41° 39.8	55.6	Genah	175° 49.7	17° 38.1 S	13° 17.6	09.9	249° 55.1	6.9	58.0	8.1	60.1	68°	13:06	15:07	16:31	02:30	04:14	05:58					
	14	318° 18.6	340° 36.4	16.8	331° 36.1	30.2	117° 35.9	18.3	56° 42.0	55.7	Hadar	148° 44.5	60° 26.9 S	28° 17.3	09.																	

2017 January 10, 11, 12 (Tue, Wed, Thur)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON				Lat	Twilight		Sunrise	Moonrise						
Tuesday	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	08:09	10:07	-	-	-	12:15						
	01	109° 42.4	130° 39.4	9° 37.3 S	122° 01.1	6° 04.0 S	268° 52.8	7° 20.6 S	207° 55.7	21° 56.2 S	207° 55.7	21° 56.2 S	Acamar	315° 16.4	40° 14.6 S	178° 08.6	21° 57.3 S	34° 26.1	5.0	17° 41.2 N	4.3	60.4	N 70°	07:53	09:28	-	-	11:51	12:35	14:02					
	02	124° 44.9	145° 39.6	36.1	137° 01.8	03.3	283° 55.1	20.7	222° 57.9	56.2	193° 08.4	57.0	Achernar	335° 25.0	57° 09.5 S	193° 08.4	57.0	48° 50.1	5.0	45.5	4.2	68°	07:40	09:01	10:51	12:33	13:24	14:42							
	03	139° 47.4	160° 39.7	34.9	152° 02.5	02.5	298° 57.4	20.8	238° 00.1	56.2	208° 08.1	56.6	Acruz	173° 06.3	63° 11.3 S	208° 08.1	56.6	63° 14.1	4.9	49.7	4.1	66°	07:29	08:41	10:04	13:02	13:56	15:10							
	04	154° 49.8	175° 39.8	33.8	167° 03.5	01.7	313° 59.6	20.8	253° 02.2	56.2	223° 07.9	56.2	Adhara	255° 10.2	29° 00.0 S	223° 07.9	56.2	77° 38.0	4.9	53.8	4.0	64°	07:20	08:25	09:34	13:24	14:19	15:31							
	05	169° 52.3	190° 39.9	32.6	182° 04.0	00.9	329° 01.9	20.9	268° 04.4	56.3	238° 07.6	55.9	Aldebaran	290° 46.3	16° 32.4 N	238° 07.6	55.9	92° 01.9	4.9	57.8	3.8	62°	07:11	08:11	09:11	13:41	14:37	15:48							
	06	184° 54.7	205° 40.0	31.4	197° 04.7	00.2	344° 04.2	21.0	283° 06.6	56.3	253° 07.4	55.5											60°	07:04	07:59	08:53	13:56	14:53	16:02						
	07	199° 57.2	220° 40.1	30.3	212° 05.5	5° 59.4 S	359° 06.4	21.0	298° 08.7	56.3	268° 07.1	55.1	Alioth	166° 18.6	55° 51.8 N	268° 07.1	55.1	120° 49.7	4.8	05.4	3.5		N 58°	06:58	07:49	08:38	14:08	15:06	16:14						
	08	214° 59.7	235° 40.2	29.1	227° 06.2	58.6	41° 08.7	21.1	313° 10.9	56.3	283° 06.9	54.7	Alkaid	152° 57.1	49° 13.5 N	283° 06.9	54.7	135° 13.5	4.8	08.9	3.5	56°	06:52	07:40	08:25	14:19	15:17	16:24							
	09	230° 02.1	250° 40.3	27.9	242° 06.9	57.9	29° 11.0	21.2	328° 13.1	56.3	298° 06.6	53.3	Alnair	27° 41.1	46° 52.8 S	298° 06.6	53.3	149° 37.3	4.7	12.4	3.3	54°	06:47	07:32	08:14	14:29	15:27	16:34							
	10	245° 04.6	265° 40.5	26.8	257° 07.7	57.1	44° 13.3	21.2	343° 15.2	56.3	313° 06.4	54.0	Alnilam	275° 43.6	1° 11.7 S	313° 06.4	54.0	164° 01.0	4.8	15.7	3.2	52°	06:42	07:25	08:04	14:37	15:35	16:42							
	11	260° 07.1	280° 40.6	25.6	272° 08.4	56.3	59° 15.5	21.3	358° 17.4	56.4	328° 06.1	57.4	Alphard	217° 53.4	8° 44.1 S	328° 06.1	57.4	178° 24.8	4.7	18.9	3.1	50°	06:37	07:18	07:55	14:45	15:43	16:49							
	12	275° 09.5	295° 40.7	24.4	287° 09.1	55.6	74° 17.8	21.4	13° 19.6	56.4	343° 05.9	53.2											45°	06:27	07:03	07:37	15:01	16:00	17:05						
	13	290° 12.0	310° 40.8	23.2 S	302° 09.9	5° 54.8 S	89° 20.1	21.5	28° 21.8	21° 56.4 S	358° 05.6	21° 52.8 S	Alphaecca	126° 09.2	26° 39.5 N	358° 05.6	21° 52.8 S	207° 12.2	4.6	18° 25.0 N	3.0	60.4	N 40°	06:18	06:51	07:21	15:15	16:14	17:18						
	14	305° 14.5	325° 40.9	22.1	317° 10.6	54.0	104° 22.3	21.5	43° 23.9	56.4	13° 05.4	52.4	Alpheratz	357° 41.1	29° 11.1 N	13° 05.4	52.4	221° 35.8	4.7	27.8	2.6	63°	06:09	06:41	07:08	15:26	16:26	17:29							
	15	320° 16.9	340° 41.1	20.9	332° 11.4	53.2	119° 24.6	21.6	58° 26.1	56.4	28° 05.1	52.1	Altair	62° 06.2	8° 54.9 N	28° 05.1	52.1	235° 59.5	4.6	30.4	2.6	60°	06:01	06:31	06:57	15:36	16:36	17:38							
	16	335° 19.4	355° 41.2	19.7	347° 12.1	52.5	134° 26.9	21.6	73° 28.3	56.4	43° 04.9	51.7	Antares	353° 13.5	42° 13.1 S	43° 04.9	51.7	250° 23.1	4.6	33.0	2.4	60°	05:47	06:14	06:37	15:53	16:53	17:55							
	17	350° 21.9	10° 41.3	18.6	2° 12.8	51.7	149° 29.2	21.7	88° 30.4	56.4	58° 04.6	51.3											N 10°	05:32	05:58	06:20	16:08	17:09	18:09						
	18	5° 24.3	25° 41.4	17.4	17° 13.6	50.9	164° 31.4	21.7	103° 32.6	56.5	73° 04.4	50.9											0°	05:16	05:42	06:04	16:22	17:23	18:23						
	19	20° 26.8	40° 41.5	16.2	32° 14.3	50.2	179° 33.7	21.8	118° 34.8	56.5	88° 04.1	50.5	Arcturus	145° 53.6	19° 05.6 N	88° 04.1	50.5	293° 33.9	4.6	39.8	2.1	60°	S 10°	04:59	05:25	05:48	16:37	17:38	18:36						
	20	35° 29.2	55° 41.7	15.1	47° 15.0	49.4	194° 36.0	21.9	133° 37.0	56.5	103° 03.9	50.1	Atria	107° 23.6	69° 03.1 S	103° 03.9	50.1	307° 57.5	4.6	41.9	1.9	60°	20°	04:38	05:06	05:31	16:52	17:53	18:51						
	21	50° 31.7	70° 41.8	13.9	62° 15.8	48.6	209° 38.3	21.9	148° 39.1	56.5	118° 03.6	49.8	Avior	234° 16.3	59° 33.9 S	118° 03.6	49.8	322° 21.1	4.5	43.8	1.7	30°	04:11	04:43	05:10	17:09	18:11	19:07							
	22	65° 34.2	85° 41.9	12.7	77° 16.5	47.8	224° 40.5	22.0	163° 41.3	56.5	133° 03.4	49.4	Bellatrix	278° 29.1	6° 21.6 N	133° 03.4	49.4	336° 44.6	4.6	45.5	1.6	35°	03:54	04:29	04:58	17:20	18:21	19:17							
23	80° 36.6	100° 42.1	11.5	92° 17.2	47.1	239° 42.8	22.1	178° 43.5	56.5	148° 03.1	49.0	Betelgeuse	270° 58.4	7° 24.4 N	148° 03.1	49.0	351° 08.2	4.5	47.1	1.5	40°	03:32	04:13	04:45	17:31	18:33	19:28								
	95° 39.1	115° 42.2	10.4	107° 18.0	46.3	254° 45.1	22.1	193° 45.6	56.6	163° 02.9	48.6											45°	03:05	03:52	04:28	17:45	18:47	19:40							
Wednesday	00	110° 41.6	130° 42.3	9° 09.2 S	122° 18.7	5° 45.5 S	269° 47.3	22.2 S	208° 47.8	21° 56.6 S	208° 47.8	21° 56.6 S	Canopus	263° 54.5	52° 42.6 S	178° 02.6	21° 48.2 S	19° 55.3	4.5	18° 49.9 N	1.3	60.3	S 50°	02:26	03:25	04:08	18:02	19:04	19:56						
	01	125° 44.0	145° 42.4	08.0	137° 19.5	44.7	284° 49.6	22.3	223° 50.0	56.6	193° 02.4	47.8	Capella	280° 30.4	46° 00.7 N	193° 02.4	47.8	34° 18.8	4.6	51.2	1.0	52°	02:03	03:12	03:58	18:10	19:12	20:03							
	02	140° 46.5	160° 42.6	06.9	152° 20.2	44.0	299° 51.9	22.3	238° 52.2	56.6	208° 02.2	47.4	Deneb	49° 30.2	45° 20.6 N	208° 02.2	47.4	48° 42.4	4.5	52.2	1.0	54°	01:33	02:56	03:47	18:19	19:20	20:11							
	03	155° 49.0	175° 42.7	05.7	167° 20.9	43.2	314° 54.2	22.4	253° 54.3	56.6	223° 01.9	47.0	Denebola	182° 31.1	14° 28.5 N	223° 01.9	47.0	63° 05.9	4.5	53.2	0.8	56°	00:34	02:38	03:34	18:29	19:30	20:20							
	04	170° 51.4	190° 42.8	04.5	182° 21.7	42.4	329° 56.5	22.5	268° 56.5	56.6	238° 01.7	46.6	Diphda	348° 53.5	17° 53.8 S	238° 01.7	46.6	77° 29.4	4.6	54.0	0.7	58°	-	02:14	03:20	18:40	19:42	20:31							
	05	185° 53.9	205° 43.0	03.3	197° 22.4	41.7	344° 58.7	22.5	283° 58.7	56.6	253° 01.4	46.2											S 60°	-	01:42	03:02	18:53	19:55	20:42						
	06	200° 56.4	220° 43.1	02.2	212° 23.2	40.9	0° 01.0	22.6	299° 00.8	56.6	268° 01.2	45.8	Dubhe	193° 48.5	61° 39.3 N	268° 01.2	45.8	106° 16.6	4.5	55.2	0.4	60.2	S 62°	-	00:37	02:41	19:09	20:10	20:56						
	07	215° 58.8	235° 43.3	01.0	227° 23.9	40.1	15° 03.3	22.7	314° 03.0	56.7	278° 09.2	28° 37.1 N	Elnath	278° 09.2	28° 37.1 N	278° 09.2	28° 37.1 N	283° 00.9	45.5	120° 40.1	4.6	55.6	0.3												
	08	231° 01.3	250° 43.4	8° 59.8 S	242° 24.6	39.3	30° 05.6	22.7	329° 05.2	56.7	298° 00.7	45.1	Eltanin	90° 45.5	51° 29.3 S	298° 00.7	45.1	135° 03.7	4.6	55.9	0.1														
	09	246° 03.7	265° 43.5	58.7	257° 25.4	38.6	45° 07.8	22.8	344° 07.4	56.7	313° 00.4	44.7	Enif	33° 45.0	9° 57.3 N	313° 00.4	44.7	149° 27.3	4.6	56.0	0.0														
	10	261° 06.2	280° 43.7	57.5	272° 26.1	37.8	60° 10.1	22.8	359° 09.5	56.7	328° 00.2	44.3	Fomalhaut	15° 21.6	29° 32.1 S	328° 00.2	44.3	163° 50.9	4.6	56.0	0.1														
	11	276° 08.7	295° 43.8	56.3	287° 26.8	37.0	75° 12.4	22.9	14° 11.7	56.7	343° 00.0	43.9																							
	12	291° 11.1	310° 44.0	8° 55.1 S	30																														

2017 January 13, 14, 15 (Fri, Sat, Sun)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise			
																								Nautical		Civil	13		14	15		
13 Fri day	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	08:02	09:55	-	15:08	17:14	19:08
	112° 39.9	130° 49.7	8° 12.8 S	122° 54.2	5° 08.4 S	271° 36.8	7° 25.2 S	210° 32.1	21° 57.3 S	Acamar	315° 16.4	40° 14.6 S	177° 51.1	21° 28.6 S	351° 12.2	6.2	17° 20.2 N	4.9	59.5	N 70°	07:47	09:20	-	15:49	17:38	19:22						
	127° 42.3	145° 49.9	11.6	137° 55.0	07.6	286° 39.1	25.2	225° 34.3	57.3	Achernar	335° 25.1	57° 09.5 S	192° 50.9	28.2	5° 37.4	6.3	15.3	5.0	59.4	68°	07:35	08:55	10:37	16:17	17:56	19:33						
	142° 44.8	160° 50.1	10.4	152° 55.7	06.9	301° 41.4	25.3	240° 36.5	57.3	Acruz	173° 06.2	63° 11.3 S	207° 50.7	27.8	20° 02.7	6.4	10.3	5.1		66°	07:25	08:36	09:55	16:38	18:10	19:42						
	157° 47.2	175° 50.3	09.2	167° 56.5	06.1	316° 43.7	25.4	255° 38.7	57.4	Adhara	255° 10.2	29° 00.0 S	222° 50.4	27.4	34° 28.1	6.5	05.2	5.2		64°	07:16	08:20	09:27	16:54	18:22	19:49						
	172° 49.7	190° 50.5	08.0	182° 57.2	05.3	331° 46.0	25.4	270° 40.8	57.4	Aldebaran	290° 46.3	16° 32.4 N	237° 50.2	26.9	48° 53.6	6.5	00.0	5.3		62°	07:08	08:07	09:06	17:08	18:32	19:56						
	187° 52.2	205° 50.7	06.9	197° 58.0	04.5	346° 48.3	25.5	285° 43.0	57.4				252° 50.0	26.5	63° 19.1	6.6	16° 54.7 N	5.4	59.3	60°	07:02	07:56	08:49	17:20	18:41	20:06						
	202° 54.6	220° 50.8	05.7	212° 58.7	03.8	1° 50.6	25.5	300° 45.2	57.4	Alioth	166° 18.6	55° 51.8 N	267° 49.7	26.1	77° 44.7	6.7	49.3	5.5		N 58°	06:56	07:46	08:34	17:30	18:48	20:06						
	217° 57.1	235° 51.0	04.5	227° 59.4	03.0	16° 52.9	25.6	315° 47.4	57.4	Alkaid	152° 57.1	49° 13.5 N	282° 49.5	25.6	92° 10.4	6.7	43.8	5.6		56°	06:50	07:37	08:22	17:38	18:55	20:10						
	232° 59.6	250° 51.2	03.3	243° 00.2	02.1	31° 55.9	25.6	330° 49.5	57.4	Alnair	27° 41.1	46° 52.8 S	297° 49.3	25.2	106° 36.1	6.8	38.2	5.8	59.2	54°	06:45	07:30	08:11	17:46	19:01	20:14						
	248° 02.0	265° 51.4	02.1	258° 00.9	01.4	46° 57.4	25.7	345° 51.7	57.4	Alnilam	275° 43.6	1° 11.7 S	312° 49.0	24.8	121° 01.9	6.9	32.4	5.8		52°	06:40	07:23	08:02	17:53	19:06	20:18						
	263° 04.5	280° 51.6	01.0	273° 01.7	00.7	61° 59.7	25.8	0° 53.9	57.4	Alphard	217° 53.4	8° 44.1 S	327° 48.8	24.4	135° 27.8	6.9	26.6	5.9		50°	06:36	07:19	07:53	17:59	19:11	20:21						
	278° 07.0	295° 51.8	7° 59.8 S	288° 02.4	4° 59.9 S	77° 02.0	25.8	15° 56.1	57.5				342° 48.6	23.9	149° 53.7	7.1	20.7	6.0		45°	06:26	07:02	07:35	18:13	19:21	20:28						
	293° 09.4	310° 52.0	7° 58.6 S	303° 03.2	4° 59.1 S	92° 04.3	7° 25.9 S	30° 58.2	21° 57.5 S	Alphecca	126° 09.2	26° 39.5 N	357° 48.4	21° 23.5 S	164° 19.8	7.1	16° 14.7 N	6.1	59.1	N 40°	06:17	06:51	07:20	18:24	19:30	20:34						
	308° 11.9	325° 52.2	57.4	318° 03.9	58.3	107° 06.6	25.9	46° 00.4	57.5		126° 41.1	29° 11.1 N	12° 48.1	23.1	178° 45.9	7.2	08.6	6.2		35°	06:09	06:40	07:08	18:33	19:37	20:39						
	323° 14.3	340° 52.3	56.2	333° 04.6	57.6	122° 08.9	26.0	61° 02.6	57.5	Altair	62° 06.2	8° 54.9 N	27° 47.9	22.6	193° 12.1	7.2	02.4	6.3		30°	06:01	06:31	06:57	18:41	19:43	20:43						
	338° 16.8	355° 52.5	55.0	348° 05.4	56.8	137° 11.2	26.1	76° 04.8	57.5	Ankaa	353° 13.5	42° 13.1 S	42° 47.7	22.2	207° 38.3	7.4	15° 56.1 N	6.4	59.0	20°	05:47	06:14	06:38	18:56	19:55	20:51						
	353° 19.3	10° 52.7	53.9	3° 06.1	56.0	152° 13.5	26.1	91° 06.9	57.5	Antares	112° 23.5	26° 27.9 S	57° 47.4	21.7	222° 04.7	7.4	49.7	6.5		N 10°	05:33	05:59	06:21	19:08	20:04	20:57						
	8° 21.7	25° 52.9	52.7	18° 06.9	55.2	167° 15.8	26.2	180° 09.1	57.5				72° 47.2	21.3	236° 31.1	7.5	43.2	6.6		0°	05:17	05:43	06:05	19:20	20:13	21:04						
	23° 24.2	40° 53.1	51.5	33° 07.6	54.5	182° 18.1	26.2	121° 11.3	57.6	Arcturus	145° 53.6	19° 05.6 N	87° 47.0	20.9	250° 57.6	7.5	36.6	6.7		S 10°	05:00	05:27	05:50	19:31	20:22	21:10						
	38° 26.7	55° 53.3	50.3	48° 08.4	53.7	197° 20.4	26.3	136° 13.5	57.6	Atria	107° 23.6	69° 03.1 S	102° 46.8	20.4	265° 24.1	7.7	29.9	6.7	58.9	20°	04:40	05:09	05:33	19:44	20:32	21:17						
	53° 29.1	70° 53.5	49.1	63° 09.1	52.9	212° 22.7	26.3	151° 15.6	57.6	Avior	234° 16.3	59° 33.9 S	117° 46.6	20.0	279° 50.8	7.7	23.2	6.9		30°	04:14	04:46	05:13	19:58	20:43	21:24						
	68° 31.6	85° 53.7	47.9	78° 09.9	52.1	227° 24.9	26.4	166° 17.8	57.6	Bellatrix	278° 29.1	6° 21.6 N	132° 46.3	19.6	294° 17.5	7.8	16.3	6.9		35°	03:57	04:32	05:01	20:06	20:50	21:28						
83° 34.1	100° 53.9	46.8	93° 10.6	51.4	242° 27.2	26.5	181° 20.0	57.6	Betelgeuse	270° 58.4	7° 24.3 N	147° 46.1	19.1	308° 44.3	7.9	09.4	7.0	58.8	40°	03:36	04:16	04:48	20:15	20:57	21:33							
98° 36.5	115° 54.1	45.6	108° 11.3	50.6	257° 29.5	26.5	196° 22.2	57.6				162° 45.8	18.7	323° 11.2	7.9	02.4	7.1		45°	03:10	03:56	04:32	20:26	21:05	21:39							
14 Sat day	113° 39.0	130° 54.3	7° 44.2 S	123° 12.1	4° 49.8 S	272° 31.8	7° 26.6 S	211° 24.4	21° 57.6 S	Canopus	263° 54.5	52° 42.6 S	177° 45.6	21° 18.2 S	337° 38.1	8.1	14° 55.3 N	7.2	58.8	S 50°	02:32	03:30	04:12	20:39	21:15	21:46						
	128° 41.5	145° 54.5	43.4	138° 12.8	49.0	287° 34.1	26.6	226° 26.5	57.6	Capella	280° 30.4	46° 00.8 N	192° 45.4	17.8	352° 05.2	8.1	48.1	7.3	58.7	52°	02:11	03:17	04:03	20:45	21:20	21:49						
	143° 43.9	160° 54.7	42.0	153° 13.6	48.3	302° 36.4	26.7	241° 28.7	57.7	Deneb	49° 30.2	45° 20.6 N	207° 45.2	17.3	6° 32.3	8.2	40.8	7.3		54°	01:44	03:02	03:52	20:52	21:25	21:52						
	158° 46.4	175° 54.9	40.8	168° 14.3	47.5	317° 38.7	26.7	256° 30.9	57.7	Denebola	182° 31.1	14° 28.5 N	222° 44.9	16.9	20° 59.5	8.3	33.5	7.5		56°	00:58	02:45	03:40	21:00	21:31	21:56						
	173° 48.8	190° 55.1	39.7	183° 15.1	46.7	332° 41.0	26.8	271° 33.1	57.7	Diphda	348° 53.5	17° 53.8 S	237° 44.7	16.5	35° 26.8	8.4	26.0	7.5	58.6	58°	-	02:22	03:26	04:21	21:08	21:37	22:00					
	188° 51.3	205° 55.4	38.5	198° 15.8	45.9	347° 43.3	26.8	286° 35.2	57.7				252° 44.5	16.0	49° 54.2	8.4	18.5	7.5		S 60°	-	01:53	03:09	04:17	21:17	21:44	22:05					
	203° 53.8	220° 55.6	37.3	213° 16.6	45.2	2° 45.6	26.9	301° 37.4	57.7	Dubhe	193° 48.5	61° 39.3 N	267° 44.1	17.6	64° 21.6	8.5	11.0	7.7		S 62°	-	01:03	02:49	04:28	21:28	21:52	22:10					
	218° 56.2	235° 55.8	36.1	228° 17.3	44.4	17° 47.9	27.0	316° 39.6	57.7	Elnath	278° 09.2	28° 37.1 N	282° 44.0	15.1	78° 49.1	8.7	03.3	7.7	58.5													
	233° 58.7	250° 56.0	34.9	243° 18.0	43.6	32° 50.2	27.0	331° 41.8	57.8	Eltanin	90° 45.5	51° 29.3 N	297° 43.8	14.7	93° 16.8	8.6	13° 55.6 N	7.8														
	249° 01.2	265° 56.2	33.7	258° 18.8	42.8	47° 52.5	27.1	346° 43.9	57.8	Enif	33° 45.0	9° 57.3 S	312° 43.6	14.2	107° 44.4	8.8	47.8	7.9														
	264° 03.6	280° 56.4	32.6	273° 19.5	42.1	62° 54.8	27.1	1° 46.1	57.8	Fomalhaut	15° 21.6	29° 32.1 S	327° 43.4	13.8	122° 12.2	8.9	39.9	7.9	58.4													
	279° 06.1	295° 56.6	31.4	288° 20.3	41.3	77° 57.1	27.2	16° 48.3	57.8				342° 43.1	13.3	136° 40.1	8.9	32.0	8.0														
	294° 08.6	310° 56.8	7° 30.2 S	303° 21.0	4° 40.5 S	92° 59.4	7° 27.2 S	31° 50.5	21° 57.8 S	Gacrux	171° 57.9	57° 12.2 S	357° 42.9	21° 12.9 S	151° 08.0	9.0	13° 24.0 N	8.1	58.4	N 70°	-	14:59	16:32	10:32	10:37	10:38						
	309° 11.0	325° 57.0	29.0	318° 21.8	39.7	108° 01.7	27.3	46° 52.7	57.8	Genah	175° 49.7	17° 38.1 S	12° 42.7	12.4	165° 36.0	9.1	15.9	8.1	58.3	68°	13:42	15:24	16:44	10:03	10:17	10:26						
	324° 13.5	340° 57.3	27.8	333° 22.5	39.0	123° 04.0	27.3	61° 54.8	57.8	Hadar	148° 44.4	60°																				

2017 January 16, 17, 18 (Mon, Tue, Wed)

GMT	ARIES			VENUS -4.5			MARS +1.0			JUPITER -2.0			SATURN +0.5			STARS			SUN		MOON				Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	16		17	18				
Monday	00	115° 37.3	131° 05' 2	6° 47.4 S	123° 47.9	4° 12' 5 S	274° 22.3	7° 29' 2 S	213° 08.9	21° 58' 3 S	Acamar	315° 16.4	40° 14.6 S	177° 35.1	20° 56.2 S	312° 45.7	11.8	7° 59.7 N	9.8	57.1	N 72°	07:55	09:42	-	20:54	22:35	24:13				
	01	130° 39.7	146° 05.5	46.2	138° 48.7	11.8	289° 24.6	29.2	228° 11.1	58.3	Achernar	335° 25.1	57° 09.5 S	192° 34.9	55.7	327° 16.5	11.8	49.9	9.7	57.0	N 70°	07:41	09:11	11:37	21:00	22:35	24:07				
	02	145° 42.2	161° 05.7	45.1	153° 49.4	11.0	304° 26.9	29.3	243° 13.3	58.3	Acruz	173° 06.2	63° 11.3 S	207° 34.6	55.2	341° 47.3	11.9	40.2	9.8	66°	68°	07:30	08:48	10:22	21:06	22:35	24:02				
	03	160° 44.7	176° 06.0	43.9	168° 50.7	10.2	319° 29.2	29.3	258° 15.5	58.3	Adhara	255° 10.2	29° 00.0 S	222° 34.4	54.8	356° 18.2	11.9	30.4	9.8	64°	64°	07:20	08:30	09:46	21:10	22:35	23:58				
	04	175° 47.1	191° 06.2	42.7	183° 50.9	09.4	334° 31.5	29.4	273° 17.6	58.4	Aldebaran	290° 46.3	16° 32.4 N	237° 34.2	54.3	10° 49.1	12.0	20.5	9.8	56.9	62°	07:05	08:03	09:00	21:17	22:35	23:52				
	05	190° 49.6	206° 06.5	41.5	198° 51.7	08.7	349° 33.8	29.4	288° 19.8	58.4				252° 34.0	53.8	25° 20.1	12.1	10.7	9.9	60°	60°	06:58	07:52	08:44	21:20	22:35	23:49				
	06	205° 52.1	221° 06.8	40.3	213° 52.4	07.9	4° 36.1	29.5	303° 22.0	58.4	Alioth	166° 18.5	55° 51.8 N	267° 33.8	53.3	39° 51.2	12.1	00.8	9.9	56.8	N 58°	06:53	07:43	08:30	21:22	22:35	23:47				
	07	220° 54.5	236° 07.0	39.1	228° 53.2	07.1	19° 38.4	29.5	318° 24.2	58.4	Alkaid	152° 57.1	49° 13.5 N	282° 33.6	52.9	54° 22.3	12.2	6° 50.9 N	9.9	56.8	56°	06:47	07:34	08:19	21:24	22:35	23:45				
	08	235° 57.0	251° 07.3	37.9	243° 53.9	06.3	34° 40.7	29.6	333° 26.4	58.4	Alkair	27° 41.2	46° 52.8 S	249° 33.4	52.4	68° 53.5	12.2	41.0	9.9	54°	54°	06:43	07:27	08:08	21:26	22:36	23:43				
	09	250° 59.4	266° 07.5	36.7	258° 54.7	05.5	49° 43.0	29.6	348° 28.5	58.4	Alnilam	275° 43.6	1° 11.8 S	312° 33.2	51.9	83° 24.7	12.4	31.1	9.9	52°	52°	06:38	07:20	07:59	21:28	22:36	23:41				
	10	266° 01.9	281° 07.8	35.5	273° 55.4	04.8	64° 45.4	29.6	3° 30.7	58.4	Alphard	217° 53.4	8° 44.1 S	327° 32.9	51.4	97° 56.1	12.3	21.2	10.0	56.7	50°	06:34	07:14	07:51	21:29	22:36	23:40				
	11	281° 04.4	296° 08.1	34.3	288° 56.2	04.0	79° 47.7	29.7	18° 32.9	58.5				342° 32.7	50.9	112° 27.4	12.5	11.2	10.0	45°	45°	06:25	07:01	07:33	21:33	22:36	23:37				
	12	296° 06.8	311° 08.3	6° 33.2 S	303° 56.9	4° 03.2 S	94° 50.0	29.8	33° 35.1	21° 58.5 S	Alphecca	126° 09.2	26° 39.4 N	357° 32.5	20° 50.4 S	126° 58.9	12.5	6° 01.2 N	10.0	56.7	N 40°	06:16	06:49	07:19	21:36	22:36	23:34				
	13	311° 09.3	326° 08.6	32.0	318° 57.7	02.4	109° 52.3	29.8	48° 37.3	58.5	Alpheratz	318° 41.1	29° 11.1 N	12° 32.3	50.0	141° 30.4	12.5	5° 51.2 N	10.0	56.6	35°	06:09	06:40	07:07	21:38	22:36	23:32				
	14	326° 11.8	341° 08.8	30.8	333° 58.4	01.7	124° 54.6	29.9	63° 39.4	58.5	Altair	62° 06.2	8° 54.9 N	27° 32.1	49.5	156° 01.9	12.6	41.2	10.0	30°	30°	06:01	06:31	06:56	21:41	22:36	23:30				
	15	341° 14.2	356° 09.1	29.6	348° 59.2	00.9	139° 56.9	29.9	78° 41.6	58.5	Ankaa	353° 13.5	42° 13.1 S	42° 31.9	49.0	170° 33.5	12.7	31.2	10.0	20°	20°	05:47	06:14	06:38	21:45	22:36	23:26				
	16	356° 16.7	11° 09.4	28.4	3° 59.9	00.1	154° 59.2	30.0	93° 43.8	58.5	Antares	112° 23.5	26° 27.9 S	57° 31.7	48.5	185° 05.2	12.7	21.2	10.1	56.5	N 10°	05:33	05:59	06:22	21:48	22:36	23:23				
	17	11° 19.2	26° 09.7	27.2	19° 00.7	3° 59.3 S	170° 01.5	30.0	108° 46.0	58.5				72° 31.5	48.0	199° 36.9	12.8	11.1	10.1	0°	0°	05:19	05:44	06:07	21:51	22:36	23:20				
	18	26° 21.6	41° 09.9	26.0	34° 01.4	58.5	185° 03.8	30.1	123° 48.2	58.6	Arcturus	145° 53.6	19° 05.6 N	87° 31.3	47.5	214° 08.7	12.8	01.0	10.0	56.4	S 10°	05:02	05:29	05:51	21:54	22:36	23:17				
	19	41° 24.1	56° 10.2	24.8	49° 02.2	57.8	200° 06.2	30.1	138° 50.4	58.6	Atria	107° 23.5	69° 03.1 S	102° 31.1	47.0	228° 40.5	12.9	4° 51.0 N	10.1	56.4	20°	04:42	05:11	05:35	21:58	22:37	23:14				
	20	56° 26.5	71° 10.5	23.6	64° 02.9	57.0	215° 08.5	30.2	153° 52.5	58.6	Avior	234° 16.3	59° 34.0 S	117° 30.9	46.5	243° 12.4	13.0	40.9	10.1	30°	30°	04:17	04:49	05:15	22:02	22:37	23:11				
	21	71° 29.0	86° 10.7	22.4	79° 03.7	56.2	230° 10.8	30.2	168° 54.7	58.6	Bellatrix	278° 29.1	6° 21.6 N	132° 30.7	46.1	257° 44.4	12.9	30.8	10.1	35°	35°	04:00	04:35	05:04	22:04	22:37	23:09				
	22	86° 31.5	101° 11.0	21.3	94° 04.4	55.4	245° 13.1	30.2	183° 56.9	58.6	Betelgeuse	270° 58.4	7° 24.3 N	147° 30.4	45.6	272° 16.3	13.1	20.7	10.1	56.3	40°	03:40	04:20	04:51	22:06	22:37	23:07				
23	101° 33.9	116° 11.3	20.1	109° 05.2	54.7	260° 15.4	30.3	198° 59.1	58.6				162° 30.2	45.1	286° 48.4	13.1	10.6	10.1	45°	45°	03:15	04:00	04:36	22:09	22:37	23:05					
Tuesday	00	116° 36.4	131° 11.6	6° 18.9 S	124° 05.9	3° 53.9 S	275° 17.7	7° 30.3 S	214° 01.3	21° 58.6 S	Canopus	263° 54.5	52° 42.6 S	177° 30.0	20° 44.6 S	301° 20.5	13.1	4° 00.5 N	10.2	56.3	S 50°	02:19	03:35	04:17	22:13	22:38	23:02				
	01	131° 38.9	146° 11.8	17.7	139° 06.7	53.1	290° 20.0	30.4	229° 03.4	58.6	Capella	280° 30.4	46° 00.8 N	192° 29.8	44.1	315° 52.6	13.2	3° 50.3 N	10.1	56.2	52°	02:39	03:23	04:08	22:14	22:38	23:00				
	02	146° 41.3	161° 12.1	16.5	154° 07.4	52.3	305° 22.4	30.4	244° 05.6	58.7	Deneb	49° 30.2	45° 20.6 N	207° 29.6	43.6	330° 24.8	13.3	40.2	10.1	54°	54°	01:54	03:09	03:57	22:16	22:38	22:59				
	03	161° 43.8	176° 12.4	15.3	169° 08.2	51.5	320° 24.7	30.5	259° 07.8	58.7	Denebola	182° 31.0	14° 28.5 N	222° 29.4	43.1	344° 57.1	13.3	30.1	10.2	56°	56°	01:16	02:52	03:46	22:18	22:38	22:57				
	04	176° 46.3	191° 12.7	14.1	184° 08.9	50.8	335° 27.0	30.5	274° 10.0	58.7	Diphda	348° 53.6	17° 53.8 S	237° 29.2	42.6	359° 29.4	13.3	19.9	10.1	56.1	58°	-	02:31	03:33	04:22	22:20	22:38	22:55			
	05	191° 48.7	206° 13.0	12.9	199° 09.7	50.0	350° 29.3	30.6	289° 12.2	58.7				252° 29.0	42.1	14° 01.7	13.4	09.8	10.1	56°	S 60°	-	02:04	03:17	04:11	22:22	22:38	22:53			
	06	206° 51.2	221° 13.2	11.7	214° 10.4	49.2	5° 31.6	30.6	304° 14.4	58.7	Dubhe	193° 48.4	61° 39.3 N	267° 28.8	41.6	28° 34.1	13.4	2° 59.7 N	10.2	56.0	S 62°	-	01:23	02:58	04:25	22:25	22:38	22:51			
	07	221° 53.7	236° 13.5	10.5	229° 11.2	48.4	20° 33.9	30.7	319° 16.5	58.7	El Nath	278° 09.2	28° 37.1 N	282° 28.6	41.1	43° 06.5	13.5	49.5	10.1	56.0											
	08	236° 56.1	251° 13.8	09.3	244° 11.9	47.7	35° 36.2	30.7	334° 18.7	58.7	Eltanin	90° 45.5	51° 29.2 N	297° 28.4	40.6	57° 39.0	13.5	39.4	10.2												
	09	251° 58.6	266° 14.1	08.1	259° 12.7	46.9	50° 38.6	30.8	349° 20.9	58.7	Enif	33° 45.0	9° 57.2 N	312° 28.2	40.1	72° 11.5	13.6	29.2	10.1												
	10	267° 01.0	281° 14.4	07.0	274° 13.4	46.1	65° 40.9	30.8	4° 23.1	58.8	Fomalhaut	15° 21.6	29° 32.1 S	327° 28.0	39.6	86° 44.1	13.6	19.1	10.1	55.9											
	11	282° 03.5	296° 14.7	05.8	289° 14.2	45.3	80° 43.2	30.9	19° 25.3	58.8				342° 27.8	39.1	101° 16.7	13.6	09.0	10.2												
	12	297° 06.0	311° 14.9	6° 04.6 S	304° 14.9	3° 44.5 S	95° 45.5	7° 30.9 S	34° 27.5	21° 58.8 S	Gacrux	171° 57.9	57° 12.2 S	357° 27.6	20° 38.6 S	115° 49.3	13.7	1° 58.8 N	10.1	55.9	N 72°	-	14:39	16:26	10:47	10:40	10:34				
	13	312° 08.4	326° 15.2	03.4	319° 15.7	43.8	110° 47.8	31.0	49° 29.6	58.8	Genah	175° 49.6	17° 38.1 S	12° 27.4	38.1	130° 22.0	13.7	48.7	10.1	68°	68°										

2017 January 19, 20, 21 (Thur, Fri, Sat)

GMT	ARIES			VENUS -4.5			MARS +1.0			JUPITER -2.1			SATURN +0.6			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	Dec	Mag	GHA	Dec	Mag	GHA	Dec	Mag	GHA	Dec	Mag	Name	SHA	Dec	GHA	Dec	Mag	GHA	Dec	Mag	HP	Nautical	Civil		19	20		21		
19 T h u r s d a y	00	118° 34.7'	131° 26.0'	5° 21.6' S	124° 42.0'	3° 16.5' S	277° 09.1'	7° 32.5' S	215° 46.1'	21° 59.2' S	215° 46.1'	21° 59.2' S	Acamar	315° 16.4'	40° 14.6' S	177° 20.5'	20° 20.2' S	279° 45.5'	14.6'	3° 59.1' S	9.6	54.9	N 72°	07:47	09:30	-	00:13	01:50	03:28		
	01	133° 37.1'	146° 26.4'	20.4	139° 42.8'	15.7	292° 11.5'	32.6	230° 48.3'	59.3	292° 11.5'	32.6	230° 48.3'	Achernar	335° 25.1'	57° 09.5' S	192° 20.3'	19.6	294° 19.1'	14.7	4° 08.7' S	9.6	68°	07:34	09:01	11:03	00:07	01:37	03:08		
	02	148° 39.6'	161° 26.7'	19.3	154° 43.5'	14.9	307° 13.8'	32.6	245° 50.5'	59.3	307° 13.8'	32.6	245° 50.5'	Acruz	173° 06.2'	63° 11.3' S	207° 20.1'	19.1	308° 52.8'	14.6	18.3	9.5	66°	07:15	08:23	09:36	-	01:19	02:39		
	03	163° 42.1'	176° 27.0'	18.1	169° 44.3'	14.2	322° 16.1'	32.7	260° 52.7'	59.3	322° 16.1'	32.7	260° 52.7'	Adhara	255° 10.2'	29° 00.0' S	222° 19.9'	18.6	323° 26.4'	14.7	27.8	9.5	64°	07:07	08:10	09:13	-	01:12	02:28		
	04	178° 44.5'	191° 27.3'	16.9	184° 45.0'	13.4	337° 18.4'	32.7	275° 54.8'	59.3	337° 18.4'	32.7	275° 54.8'	Aldebaran	290° 46.3'	16° 32.4' N	237° 19.7'	18.1	338° 00.1'	14.6	37.3	9.5	62°	07:01	07:58	08:54	-	01:06	02:19		
	05	193° 47.0'	206° 27.7'	15.7	199° 45.8'	12.6	352° 20.3'	32.7	290° 57.0'	59.3	352° 20.3'	32.7	290° 57.0'										60°	06:55	07:48	08:39	-	01:01	02:11		
	06	208° 49.5'	221° 28.0'	14.5	214° 46.5'	11.8	7° 23.1'	32.8	305° 59.2'	59.3	7° 23.1'	32.8	305° 59.2'	Alioth	166° 18.5'	55° 51.8' N	267° 19.4'	17.0	7° 07.4'	14.7	56.3	9.5	N 58°	06:49	07:39	08:26	-	00:56	02:04		
	07	223° 51.9'	236° 28.3'	13.3	229° 47.3'	11.1	22° 25.4'	32.8	321° 01.4'	59.3	22° 25.4'	32.8	321° 01.4'	Alkaid	152° 57.0'	49° 13.5' N	282° 19.2'	16.5	21° 41.1'	14.7	5° 05.8' S	9.4	56°	06:44	07:31	08:15	-	00:52	01:59		
	08	238° 54.4'	251° 28.7'	12.1	244° 48.0'	10.3	37° 27.8'	32.9	336° 03.6'	59.3	37° 27.8'	32.9	336° 03.6'	Alnair	27° 41.2'	46° 52.8' S	297° 19.0'	15.9	36° 14.8'	14.7	15.2	9.4	54°	06:40	07:24	08:05	-	00:49	01:53		
	09	253° 56.9'	266° 29.0'	10.9	259° 48.8'	09.5	52° 30.1'	32.9	351° 05.8'	59.4	52° 30.1'	32.9	351° 05.8'	Alnilam	275° 43.6'	1° 11.8' S	312° 18.8'	15.4	50° 48.5'	14.7	24.6	9.3	52°	06:36	07:18	07:56	-	00:45	01:48		
	10	268° 59.3'	281° 29.3'	09.7	274° 49.6'	08.7	67° 32.4'	33.0	6° 08.0'	59.4	67° 32.4'	33.0	6° 08.0'	Alphard	217° 53.4'	8° 44.1' S	327° 18.6'	14.9	65° 22.2'	14.7	33.9	9.4	54.7	50°	06:32	07:12	07:48	-	00:42	01:44	
	11	284° 01.8'	296° 29.7'	08.5	289° 50.3'	07.9	82° 34.8'	33.0	21° 10.2'	59.4	82° 34.8'	33.0	21° 10.2'										45°	06:23	06:59	07:31	-	00:36	01:35		
	12	299° 04.3'	311° 30.0'	5° 07.3' S	304° 51.1'	3° 07.2' S	97° 37.1'	7° 33.0' S	36° 12.3'	21° 59.4' S	97° 37.1'	7° 33.0' S	36° 12.3'	Alphecca	126° 09.1'	26° 39.4' N	357° 18.2'	20° 13.8' S	94° 29.6'	14.7	5° 52.6' S	9.2	N 40°	06:15	06:48	07:18	-	00:31	01:27		
	13	314° 06.7'	326° 30.4'	06.1	319° 51.8'	06.4	112° 39.4'	33.1	51° 14.5'	59.4	112° 39.4'	33.1	51° 14.5'										35°	06:08	06:39	07:06	-	00:26	01:20		
	14	329° 09.2'	341° 30.7'	04.9	334° 52.6'	05.6	127° 41.7'	33.1	66° 16.7'	59.4	127° 41.7'	33.1	66° 16.7'	Altair	62° 06.2'	8° 54.9' N	27° 17.9'	12.8	123° 37.0'	14.7	11.1	9.2	30°	06:01	06:30	06:56	-	00:22	01:14		
	15	344° 11.6'	356° 31.0'	03.7	349° 53.3'	04.8	142° 44.1'	33.2	81° 18.9'	59.4	142° 44.1'	33.2	81° 18.9'	Antaa	353° 13.5'	42° 13.1' S	353° 13.5'	12.2	138° 10.7'	14.7	20.3	9.2	54.6	20°	05:47	06:14	06:38	-	00:15	01:04	
	16	359° 14.1'	11° 31.4'	02.6	4° 54.1'	04.0	157° 46.4'	33.2	96° 21.1'	59.4	157° 46.4'	33.2	96° 21.1'	Antares	112° 23.5'	26° 27.9' S	57° 17.5'	11.7	152° 44.4'	14.8	29.5	9.1	N 10°	05:34	06:00	06:22	-	00:09	00:55		
	17	14° 16.6'	26° 31.7'	01.4	19° 54.8'	03.3	172° 48.7'	33.2	111° 23.3'	59.5	172° 48.7'	33.2	111° 23.3'										0°	05:20	05:45	06:07	-	00:04	00:47		
	18	29° 19.0'	41° 32.1'	00.2	34° 55.6'	02.5	187° 51.1'	33.3	126° 25.5'	59.5	187° 51.1'	33.3	126° 25.5'	Arcturus	145° 53.6'	19° 05.6' N	87° 17.1'	10.6	181° 51.9'	14.7	47.7	9.1	S 10°	05:04	05:30	05:53	23:58	-	00:39		
	19	44° 21.5'	56° 32.4'	4° 59.0' S	49° 56.4'	01.7	202° 53.4'	33.3	141° 27.6'	59.5	49° 56.4'	01.7	202° 53.4'	Atria	107° 23.5'	69° 03.0' S	102° 16.9'	10.1	196° 25.6'	14.7	56.8	9.0	20°	04:44	05:13	05:37	23:52	-	00:30		
	20	59° 24.0'	71° 32.8'	58.8	64° 57.1'	00.9	217° 55.7'	33.4	156° 29.8'	59.5	64° 57.1'	00.9	217° 55.7'	Avior	234° 16.3'	59° 34.0' S	117° 16.7'	29.5	210° 59.3'	14.7	7° 05.8' S	9.0	30°	04:20	04:52	05:18	23:45	-	00:20		
	21	74° 26.4'	86° 33.1'	56.6	79° 57.9'	00.1	232° 58.1'	33.4	171° 32.0'	59.5	79° 57.9'	00.1	232° 58.1'	Bellatrix	278° 29.1'	6° 21.6' N	132° 16.6'	09.0	225° 33.0'	14.8	14.8	9.0	54.5	35°	04:04	04:39	05:07	23:41	-	00:15	
	22	89° 28.9'	101° 33.5'	55.4	94° 58.6'	2° 59.4' S	248° 00.4'	33.5	186° 34.2'	59.5	94° 58.6'	2° 59.4' S	248° 00.4'	Betelgeuse	270° 58.4'	7° 24.3' N	147° 16.4'	08.5	240° 06.8'	14.7	23.8	8.9	40°	03:45	04:23	04:55	23:37	-	00:08		
23	104° 31.4'	116° 33.8'	54.2	109° 59.4'	58.6	263° 02.7'	33.5	201° 36.4'	59.5	109° 59.4'	58.6	263° 02.7'										45°	03:20	04:05	04:40	23:32	-	00:01			
20 F r i d a y	00	119° 33.8'	131° 34.2'	4° 53.0' S	125° 00.1'	2° 57.8' S	278° 05.1'	7° 33.5' S	216° 38.6'	21° 59.5' S	216° 38.6'	21° 59.5' S	Canopus	263° 54.5'	52° 42.6' S	177° 16.0'	20° 07.4' S	269° 14.2'	14.7	7° 41.6' S	8.9	54.5	S 50°	02:46	03:41	04:21	23:26	23:52	24:20		
	01	134° 36.3'	146° 34.5'	51.8	140° 00.9'	57.0	283° 07.4'	33.6	231° 40.8'	59.6	140° 00.9'	57.0	283° 07.4'	Capella	280° 30.4'	46° 00.8' N	192° 15.8'	06.8	283° 47.9'	14.7	50.5	8.8	52°	02:27	03:23	04:13	23:23	23:48	24:15		
	02	149° 38.7'	161° 34.9'	50.6	155° 01.6'	56.2	308° 09.8'	33.6	246° 43.0'	59.6	155° 01.6'	56.2	308° 09.8'	Deneb	49° 30.2'	45° 20.6' N	207° 15.6'	06.3	298° 21.6'	14.7	59.3	8.8	54°	02:04	03:16	04:03	23:20	23:43	24:09		
	03	164° 41.2'	176° 35.2'	49.4	170° 02.4'	55.5	328° 12.1'	33.7	261° 45.2'	59.6	170° 02.4'	55.5	328° 12.1'	Denebola	182° 31.0'	14° 28.5' N	222° 15.5'	05.8	312° 55.3'	14.6	8° 08.1' S	8.7	56°	01:32	03:00	03:52	23:17	23:38	24:03		
	04	179° 43.7'	191° 35.6'	48.2	185° 03.2'	54.7	338° 14.4'	33.7	276° 47.3'	59.6	185° 03.2'	54.7	338° 14.4'	Diphda	348° 53.6'	17° 53.8' S	237° 15.3'	05.2	327° 28.9'	14.7	16.8	8.8	54.4	58°	-	02:40	03:39	04:23	23:13	23:33	23:55
	05	194° 46.1'	206° 35.9'	47.0	200° 03.9'	53.9	353° 16.8'	33.7	291° 49.5'	59.6	200° 03.9'	53.9	353° 16.8'										S 60°	-	02:15	03:24	04:09	23:09	23:27	23:47	
	06	209° 48.6'	221° 36.3'	45.8	215° 04.7'	53.1	8° 19.1'	33.8	306° 51.7'	59.6	215° 04.7'	53.1	8° 19.1'	Dubhe	193° 48.4'	61° 39.3' N	267° 14.9'	04.1	356° 36.3'	14.6	34.2	8.7	S 62°	-	01:40	03:06	03:34	23:04	23:20	23:38	
	07	224° 51.1'	236° 36.7'	44.7	230° 05.4'	52.3	23° 21.4'	33.8	321° 53.9'	59.6	230° 05.4'	52.3	23° 21.4'	Elath	278° 09.2'	28° 37.1' N	282° 14.7'	03.6	11° 09.9'	14.7	42.9	8.6									
	08	239° 53.5'	251° 37.0'	43.5	245° 06.2'	51.6	38° 23.8'	33.8	336° 56.1'	59.6	245° 06.2'	51.6	38° 23.8'	Eltanin	90° 45.5'	51° 29.2' N	297° 14.5'	03.0	25° 43.6'	14.6	51.4	8.5									
	09	254° 56.0'	266° 37.4'	42.3	260° 06.9'	50.8	53° 26.1'	33.9	351° 58.3'	59.6	260° 06.9'	50.8	53° 26.1'	Enif	33° 45.0'	9° 57.2' N	312° 14.4'	02.5	40° 17.2'	14.7	00.0	8.5									
	10	269° 58.5'	281° 37.7'	41.1	275° 07.7'	50.0	68° 28.4'	33.9	7° 00.5'	59.7	275° 07.7'	50.0	68° 28.4'	Fomalhaut	15° 21.6'	29° 32.1' S	327° 14.2'	01.9	54° 50.9'	14.6	9° 08.5' S	8.5									
	1																														

2017 January 22, 23, 24 (Sun, Mon, Tue)

GMT	ARIES			VENUS -4.5			MARS +1.1			JUPITER -2.1			SATURN +0.6			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical		Civil	22		23	24	
Sunday	00	121° 32.1	131° 52.3	3° 55.8 S	125° 36.5	2° 20.4 S	279° 57.5	7° 35.3 S	218° 23.7	22° 00.1 S	218° 23.7	22° 00.1 S	218° 23.7	22° 00.1 S	Acamar	315° 16.4	40° 14.6 S	177° 07.5	19° 40.7 S	247° 55.3	13.8	13° 56.9 S	6.6	54.2	N 72°	07:38	09:17	-	05:11	07:04	-
	01	136° 34.6	146° 52.7	54.6	140° 37.2	19.6	294° 59.8	35.4	233° 25.9	00.1	233° 25.9	00.1	233° 25.9	00.1	Achernar	335° 25.1	57° 09.5 S	192° 07.4	40.1	262° 28.1	13.8	14° 03.5 S	6.5		N 70°	07:27	08:51	10:39	04:39	06:10	07:36
	02	151° 37.0	161° 53.1	53.4	155° 38.0	18.8	310° 02.2	35.4	248° 28.1	00.1	248° 28.1	00.1	248° 28.1	00.1	Acruz	173° 06.1	63° 11.3 S	207° 07.2	39.5	277° 00.9	13.7	10.0	6.4		66°	07:09	08:16	09:27	03:57	05:13	06:23
	03	166° 39.5	176° 53.6	52.2	170° 38.7	18.0	325° 04.5	35.4	263° 30.3	00.1	263° 30.3	00.1	263° 30.3	00.1	Adhara	255° 10.2	29° 00.0 S	222° 07.0	39.0	291° 33.6	13.7	16.4	6.4		64°	07:02	08:03	09:05	03:43	04:54	06:01
	04	181° 42.0	191° 54.0	51.0	185° 39.5	17.3	340° 06.9	35.5	278° 32.5	00.2	278° 32.5	00.2	278° 32.5	00.2	Aldebaran	290° 46.3	16° 32.4 N	237° 06.9	38.4	306° 06.3	13.7	22.8	6.3		62°	06:56	07:52	08:47	03:30	04:39	05:43
	05	196° 44.4	206° 54.0	49.8	200° 40.3	16.5	355° 09.2	35.5	293° 34.7	00.2	293° 34.7	00.2	293° 34.7	00.2				252° 06.7	37.8	320° 39.0	13.6	29.1	6.2		60°	06:51	07:43	08:33	03:20	04:26	05:28
	06	211° 46.9	221° 54.8	48.6	215° 41.0	15.7	10° 11.6	35.5	308° 36.9	00.2	308° 36.9	00.2	308° 36.9	00.2	Alioth	166° 18.5	55° 51.8 N	267° 06.5	37.2	335° 11.6	13.6	35.3	6.2		N 58°	06:46	07:35	08:21	03:11	04:15	05:16
	07	226° 49.3	236° 55.2	47.4	230° 41.8	14.9	25° 13.9	35.6	323° 39.1	00.2	323° 39.1	00.2	323° 39.1	00.2	Alkaid	152° 57.0	49° 13.5 N	282° 06.4	36.7	349° 44.2	13.6	41.5	6.1		56°	06:41	07:27	08:10	03:03	04:06	05:05
	08	241° 51.8	251° 55.6	46.2	245° 42.5	17.1	40° 16.3	35.6	338° 41.3	00.2	338° 41.3	00.2	338° 41.3	00.2	Alnair	27° 41.2	46° 52.8 S	297° 06.2	36.1	4° 16.8	13.5	47.6	6.1		54°	06:37	07:21	08:01	02:56	03:57	04:56
	09	256° 54.3	266° 56.0	45.0	260° 43.3	13.4	55° 18.6	35.6	353° 43.4	00.2	353° 43.4	00.2	353° 43.4	00.2	Alnilam	275° 43.6	1° 11.8 S	312° 06.0	35.5	18° 49.3	13.5	53.7	6.0		52°	06:33	07:15	07:52	02:50	03:50	04:47
	10	271° 56.7	281° 56.4	43.8	275° 44.1	12.6	70° 21.0	35.7	8° 45.6	00.2	8° 45.6	00.2	8° 45.6	00.2	Alphard	217° 53.4	8° 44.1 S	327° 05.9	34.9	33° 21.8	13.5	59.7	5.9		50°	06:29	07:09	07:45	02:44	03:43	04:40
	11	286° 59.2	296° 56.9	42.7	290° 44.8	11.8	85° 23.3	35.7	23° 47.8	00.2	23° 47.8	00.2	23° 47.8	00.2				342° 05.7	34.3	47° 54.3	13.4	15° 05.6 S	5.8		45°	06:21	06:57	07:29	02:32	03:29	04:24
	12	302° 01.7	311° 57.3	3° 41.5 S	305° 45.6	2° 11.0 S	100° 25.7	35.7	38° 50.0	22° 00.2 S	38° 50.0	22° 00.2 S	38° 50.0	22° 00.2 S	Alphecca	126° 09.1	26° 39.4 N	357° 05.6	19° 33.8 S	62° 26.7	13.4	15° 11.4 S	5.8	54.2	N 40°	06:14	06:46	07:16	02:22	03:17	04:10
	13	317° 04.1	326° 57.7	40.3	320° 46.3	10.2	115° 28.0	35.8	53° 52.2	00.3	53° 52.2	00.3	53° 52.2	00.3	Alpheratz	137° 41.1	29° 11.1 N	12° 05.4	33.2	76° 59.1	13.4	17.2	5.8		35°	06:07	06:37	07:04	02:14	03:07	03:59
	14	332° 06.6	341° 58.1	39.1	335° 47.1	09.5	130° 30.4	35.8	68° 54.4	00.3	68° 54.4	00.3	68° 54.4	00.3	Altair	62° 06.2	8° 54.9 N	27° 05.2	32.6	91° 31.5	13.3	23.0	5.6		30°	06:00	06:29	06:55	02:06	02:58	03:49
	15	347° 09.1	356° 58.5	37.9	350° 47.9	08.7	145° 32.7	35.8	83° 56.6	00.3	83° 56.6	00.3	83° 56.6	00.3	Antares	353° 13.6	42° 13.1 S	42° 05.1	32.0	106° 03.8	13.4	28.6	5.6		20°	05:47	06:14	06:37	01:53	02:43	03:33
	16	2° 11.5	11° 59.0	36.7	5° 48.6	07.9	160° 35.1	35.9	98° 58.8	00.3	98° 58.8	00.3	98° 58.8	00.3	Arcturus	112° 23.5	26° 27.9 S	57° 04.9	31.4	120° 36.2	13.2	34.2	5.6		N 10°	05:35	06:00	06:22	01:42	02:29	03:18
	17	17° 14.0	26° 59.4	35.5	20° 49.4	07.1	175° 37.4	35.9	114° 01.0	00.3	114° 01.0	00.3	114° 01.0	00.3				72° 04.7	30.9	135° 08.4	13.3	39.8	5.4		0°	05:21	05:46	06:08	01:31	02:17	03:04
	18	32° 16.5	41° 59.8	34.3	35° 50.1	06.3	190° 39.8	35.9	129° 03.2	00.3	129° 03.2	00.3	129° 03.2	00.3	Atria	145° 53.5	19° 05.6 N	87° 04.6	30.3	149° 40.7	13.2	45.2	5.4		S 10°	05:05	05:32	05:54	01:21	02:05	02:51
	19	47° 18.9	57° 00.2	33.1	50° 50.9	05.6	205° 42.2	36.0	144° 05.4	00.3	144° 05.4	00.3	144° 05.4	00.3	Avior	107° 23.4	69° 03.0 S	102° 04.2	29.7	164° 12.9	13.1	50.6	5.4		20°	04:47	05:15	05:39	01:10	01:52	02:36
	20	62° 21.4	72° 00.7	31.9	65° 51.7	04.8	220° 44.5	36.0	159° 07.6	00.3	159° 07.6	00.3	159° 07.6	00.3	Bellatrix	234° 16.3	59° 34.0 S	117° 04.2	29.1	178° 45.0	13.1	56.0	5.2		30°	04:23	04:54	05:21	00:57	01:37	02:20
	21	77° 23.8	87° 01.1	30.7	80° 52.4	04.0	235° 46.9	36.0	174° 09.8	00.3	174° 09.8	00.3	174° 09.8	00.3	Betelgeuse	278° 29.1	6° 21.6 N	132° 04.1	28.5	193° 17.1	13.1	16° 01.2 S	5.2		35°	04:08	04:42	05:10	00:50	01:28	02:10
	22	92° 26.3	102° 01.5	29.6	95° 53.2	03.2	250° 49.2	36.0	189° 12.0	00.4	189° 12.0	00.4	189° 12.0	00.4				147° 03.9	27.9	207° 49.2	13.1	06.4	5.1		40°	03:49	04:27	04:58	00:42	01:18	01:59
23	107° 28.8	117° 01.9	28.4	110° 53.9	02.4	265° 51.6	36.1	204° 14.2	00.4	204° 14.2	00.4	204° 14.2	00.4				162° 03.8	27.4	222° 21.3	13.0	11.5	5.1		45°	03:25	04:09	04:44	00:32	01:07	01:46	
Monday	00	122° 31.2	132° 02.4	3° 27.2 S	125° 54.7	2° 01.7 S	280° 53.9	7° 36.1 S	219° 16.4	22° 00.4 S	219° 16.4	22° 00.4 S	219° 16.4	22° 00.4 S	Canopus	263° 54.6	52° 42.6 S	177° 03.6	19° 26.8 S	236° 53.3	13.0	16° 16.6 S	5.0	54.2	S 50°	02:53	03:47	04:26	00:20	00:53	01:30
	01	137° 33.7	147° 02.8	26.0	140° 55.5	00.9	295° 56.3	36.1	234° 18.5	00.4	234° 18.5	00.4	234° 18.5	00.4	Capella	280° 30.5	46° 00.8 N	192° 03.4	25.2	251° 25.3	13.0	21.6	4.9		52°	02:36	03:35	04:18	00:15	00:46	01:23
	02	152° 36.2	162° 03.2	24.8	155° 56.2	00.1	310° 58.6	36.2	249° 20.7	00.4	249° 20.7	00.4	249° 20.7	00.4	Deneb	49° 30.2	45° 20.6 N	207° 03.3	25.6	265° 57.3	12.9	26.5	4.8		54°	02:14	03:22	04:09	00:09	00:39	01:15
	03	167° 38.6	177° 03.7	23.6	170° 57.0	1° 59.3 S	321° 01.0	36.2	264° 22.9	00.4	264° 22.9	00.4	264° 22.9	00.4	Denebola	182° 31.0	14° 28.5 N	222° 03.1	25.0	280° 29.2	12.9	31.3	4.8	54.3	56°	01:46	03:07	03:58	00:03	00:31	01:06
	04	182° 41.1	192° 04.1	22.4	185° 57.7	58.5	341° 03.4	36.2	279° 25.1	00.4	279° 25.1	00.4	279° 25.1	00.4	Diphda	348° 53.6	17° 53.8 S	237° 03.0	24.4	295° 01.1	12.8	36.1	4.7		58°	00:57	02:49	03:46	-	00:22	00:55
	05	197° 43.6	207° 04.5	21.2	200° 58.5	57.8	356° 05.7	36.3	294° 27.3	00.4	294° 27.3	00.4	294° 27.3	00.4				252° 02.8	23.8	309° 32.9	12.8	40.8	4.6		S 60°	-	02:26	03:32	-	00:12	00:44
	06	212° 46.0	222° 05.0	20.0	215° 59.3	57.0	11° 08.1	36.3	309° 29.5	00.4	309° 29.5	00.4	309° 29.5	00.4	Dubhe	193° 48.4	61° 39.3 N	267° 02.6	23.2	324° 04.7	12.8	45.4	4.4		S 62°	-	01:55	03:15	-	00:00	00:30
	07	227° 48.5	237° 05.4	18.9	231° 00.0	56.2	26° 10.4	36.3	324° 31.7	00.5	324° 31.7	00.5	324° 31.7	00.5	Elath	278° 09.2	28° 37.1 N	282° 02.5	22.6	338° 36.5	12.7	49.9	4.5								
	08	242° 50.9	252° 05.9	17.7	246° 00.8	55.4	41° 12.8	36.4	339° 33.9	00.5	339° 33.9	00.5	339° 33.9	00.5	Eltanin	90° 45.5	51° 29.2 N	297° 02.3	22.1	353° 08.2	12.7	54.4									

2017 January 25, 26, 27 (Wed, Thur, Fri)

GMT	ARIES			VENUS -4.5			MARS +1.1			JUPITER -2.1			SATURN +0.6			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical		Civil	25		26	27	
25	00	124° 29.5	132° 24.4	2° 30.2 S	126° 31.2	1° 24.2 S	282° 47.3	7° 37.5 S	221° 01.8	22° 00.9 S	236° 04.0	00.9	Acamar	315° 16.4	40° 14.6 S	176° 56.3	18° 57.9 S	213° 48.4	11.4	18° 47.4 S	1.0	54.8	N 72°	07:29	09:04	11:34	-	-	10:36		
	01	139° 32.0	147° 24.9	29.0	141° 32.0	23.4	297° 49.7	37.5	236° 04.0	00.9	37.5	00.0	Achernar	335° 25.2	57° 09.4 S	191° 56.1	57.3	228° 18.8	11.3	48.4	1.0	68°	07:19	08:41	10:19	08:46	09:24	09:38			
	02	154° 34.4	162° 25.4	27.8	156° 32.8	22.7	312° 52.1	37.5	251° 06.2	00.9	37.5	00.0	Acruz	173° 06.1	63° 11.3 S	206° 56.0	56.7	242° 49.1	11.2	49.4	0.9	66°	07:03	08:09	09:16	07:22	08:07	08:38			
	03	169° 36.9	177° 25.9	26.6	171° 35.5	21.9	327° 54.5	37.5	266° 08.4	00.9	37.5	00.0	Adhara	255° 10.2	29° 00.0 S	221° 55.9	56.0	257° 19.3	11.1	50.3	0.8	54.9	64°	06:57	07:57	08:56	06:58	07:44	08:19		
	04	184° 39.4	192° 26.4	25.4	186° 34.3	21.1	342° 56.8	37.6	281° 10.6	00.9	37.6	00.0	Aldebaran	290° 46.4	16° 32.4 N	236° 55.7	55.4	271° 49.6	11.2	51.1	0.7	62°	06:51	07:47	08:40	06:39	07:26	08:03			
	05	199° 41.8	207° 26.9	24.3	201° 35.0	20.3	357° 58.2	37.6	296° 12.8	00.9	37.6	00.0		251° 55.6	54.8	286° 19.8	11.2	51.8	0.6	60°	06:46	07:38	08:27	06:24	07:11	07:50					
	06	214° 44.3	222° 27.4	23.1	216° 35.8	19.5	13° 01.6	37.6	311° 15.0	01.0	37.6	01.0	Alioth	166° 18.4	55° 51.8 N	266° 55.4	54.2	300° 50.0	11.1	52.4	0.5	58°	06:41	07:30	08:15	06:11	06:58	07:38			
	07	229° 46.8	237° 27.9	21.9	231° 36.6	18.8	28° 03.9	37.7	326° 17.2	01.0	37.7	01.0	Alkaid	152° 57.0	49° 13.5 N	281° 55.3	53.6	315° 20.1	11.2	52.9	0.4	56°	06:37	07:23	08:05	05:59	06:47	07:28			
	08	244° 49.2	252° 28.4	20.7	246° 37.3	18.0	43° 06.3	37.7	341° 19.4	01.0	37.7	01.0	Alnair	27° 41.2	46° 52.8 S	296° 55.1	52.9	329° 50.3	11.1	53.3	0.4	54°	06:33	07:17	07:56	05:49	06:38	07:19			
	09	259° 51.7	267° 28.9	19.5	261° 38.1	17.2	58° 08.7	37.7	356° 21.6	01.0	37.7	01.0	Alnilam	275° 43.6	1° 11.8 S	311° 55.0	52.3	344° 20.4	11.1	53.7	0.2	55.0	52°	06:30	07:11	07:49	05:41	06:29	07:12		
	10	274° 54.2	282° 29.4	18.3	276° 38.9	16.4	73° 11.1	37.7	1° 23.8	01.0	37.7	01.0	Alphard	217° 53.4	8° 44.1 S	326° 54.9	51.7	358° 50.5	11.0	53.9	0.1	50°	06:26	07:06	07:41	05:33	06:21	07:04			
	11	289° 56.6	297° 29.9	17.2	291° 39.6	15.6	88° 13.4	37.8	26° 26.0	01.0	37.8	01.0		341° 54.7	51.1	13° 20.5	11.1	54.0	0.1	45°	06:19	06:54	07:26	05:16	06:05	06:49					
	12	304° 59.1	312° 30.4	2° 16.0 S	306° 40.4	1° 14.9 S	103° 15.8	37.8	41° 28.2	22° 01.0 S	37.8	01.0	Alphecca	126° 09.1	26° 39.4 N	356° 54.6	18° 50.4 S	27° 50.6	11.0	54.1	0.1	55.0	N 40°	06:12	06:45	07:14	05:02	05:51	06:37		
	13	320° 01.5	327° 30.9	14.8	321° 41.2	14.1	118° 18.2	37.8	56° 30.4	01.0	37.8	01.0	Alpheratz	357° 41.1	29° 58.8 S	11° 54.0	29.8	42° 20.6	11.0	54.0	0.1	35°	06:05	06:36	07:03	04:50	05:39	06:26			
	14	335° 04.0	342° 31.4	13.6	336° 41.9	13.3	133° 20.6	37.8	71° 32.6	01.0	37.8	01.0	Altair	62° 06.2	8° 54.9 N	26° 54.3	49.2	56° 50.6	10.9	53.9	0.2	55.1	30°	05:59	06:28	06:53	04:40	05:29	06:17		
	15	350° 06.5	357° 31.9	12.4	351° 42.7	12.5	148° 22.9	37.9	86° 34.8	01.0	37.9	01.0	Ankaa	353° 13.6	42° 13.1 S	41° 54.2	48.6	71° 20.5	11.0	53.7	0.4	20°	05:47	06:14	06:37	04:22	05:12	06:00			
	16	5° 08.9	12° 32.4	11.2	6° 43.4	11.7	163° 25.3	37.9	101° 37.0	01.1	37.9	01.1	Antares	112° 23.4	26° 27.9 S	56° 54.0	48.0	85° 50.5	10.9	53.3	0.4	10°	05:35	06:00	06:23	04:07	04:57	05:46			
	17	20° 11.4	27° 32.9	10.1	21° 44.2	11.0	178° 27.7	37.9	116° 39.2	01.1	37.9	01.1		71° 53.9	47.3	100° 20.4	10.9	52.9	0.5	0°	05:22	05:47	06:09	03:53	04:43	05:33					
	18	35° 13.9	42° 33.4	08.9	36° 45.0	10.2	193° 30.1	37.9	131° 41.4	01.1	37.9	01.1	Arcturus	145° 53.5	19° 05.6 N	86° 53.7	46.7	114° 50.3	10.8	52.4	0.6	S 10°	05:07	05:33	05:55	03:39	04:29	05:20			
	19	50° 16.3	57° 53.9	07.7	51° 45.7	09.4	208° 32.4	38.0	146° 43.6	01.1	38.0	01.1	Atria	107° 23.4	69° 03.0 S	101° 53.6	46.1	129° 20.1	10.9	51.8	0.7	20°	04:49	05:17	05:41	03:23	04:13	05:06			
	20	65° 18.8	72° 34.4	06.5	66° 46.5	08.6	223° 34.8	38.0	161° 45.8	01.1	38.0	01.1	Avior	234° 16.3	59° 34.0 S	116° 53.5	45.4	143° 50.0	10.8	51.1	0.8	55.2	30°	04:26	04:57	05:23	03:06	03:56	04:40		
	21	80° 21.3	87° 34.9	05.3	81° 47.3	07.8	238° 37.2	38.0	176° 48.0	01.1	38.0	01.1	Bellatrix	278° 29.1	6° 21.6 N	131° 53.3	44.8	158° 19.8	10.8	50.3	0.9	35°	04:11	04:45	05:13	02:56	03:46	04:40			
	22	95° 23.7	102° 35.4	04.1	96° 48.0	07.1	253° 39.6	38.0	191° 50.2	01.1	38.0	01.1	Betelgeuse	270° 58.4	7° 24.3 N	146° 53.2	44.2	172° 49.6	10.8	49.4	1.0	40°	03:53	04:31	05:02	02:44	03:34	04:29			
23	110° 26.2	117° 36.0	03.0	111° 48.8	06.3	268° 41.9	38.1	206° 52.4	01.1	38.1	01.1		161° 53.1	43.6	187° 19.4	10.8	48.4	1.1	45°	03:31	04:14	04:48	02:31	03:21	04:17						
26	00	125° 28.7	132° 36.5	2° 01.8 S	126° 49.5	1° 05.5 S	283° 44.3	7° 38.1 S	221° 54.6	22° 01.1 S	236° 56.8	01.1	Canopus	263° 54.6	52° 42.6 S	176° 52.9	18° 42.9 S	201° 49.2	10.8	18° 47.3 S	1.2	55.2	S 50°	03:00	03:52	04:32	02:14	03:04	04:01		
	01	140° 31.1	147° 37.0	00.6	141° 50.3	04.7	298° 46.7	38.1	243° 56.8	01.1	38.1	01.1	Capella	280° 30.5	46° 00.8 N	191° 52.8	42.3	216° 19.0	10.7	46.1	1.2	55.3	52°	02:44	03:42	04:24	02:06	02:57	03:54		
	02	155° 33.6	162° 37.5	1° 59.4 S	156° 51.1	03.9	313° 49.1	38.1	251° 59.0	01.2	38.1	01.2	Deneb	49° 30.2	45° 20.6 N	206° 52.7	41.7	230° 48.7	10.7	44.9	1.4	54°	02:24	03:29	04:15	01:58	02:48	03:46			
	03	170° 36.0	177° 38.0	58.2	171° 51.8	03.2	328° 51.4	38.2	267° 01.2	01.2	38.2	01.2	Denebola	182° 31.0	14° 28.5 S	221° 52.5	41.0	245° 18.4	10.7	43.5	1.5	56°	01:59	03:15	04:05	01:48	02:38	03:37			
	04	185° 38.5	192° 38.6	57.1	186° 52.6	02.4	343° 53.8	38.2	282° 03.4	01.2	38.2	01.2	Diphda	348° 53.6	17° 53.8 S	236° 52.4	40.4	259° 48.1	10.7	42.0	1.5	58°	01:21	02:58	03:54	01:37	02:27	03:27			
	05	200° 41.0	207° 39.1	55.9	201° 53.4	01.6	358° 56.2	38.2	297° 05.6	01.2	38.2	01.2		251° 52.2	39.8	274° 17.8	10.7	40.5	1.7	S 60°	-	02:37	03:40	01:24	02:14	03:15					
	06	215° 43.4	222° 39.6	54.7	216° 54.1	00.8	13° 58.6	38.2	312° 07.8	01.2	38.2	01.2	Dubhe	193° 48.3	61° 39.3 N	266° 52.1	39.1	288° 47.5	10.6	38.8	1.8	55.4	S 62°	-	02:10	03:25	01:09	01:59	03:01		
	07	230° 45.9	237° 40.1	53.5	231° 54.9	00.0	29° 01.0	38.2	327° 10.0	01.2	38.2	01.2	Elnath	278° 09.2	28° 37.1 N	281° 52.0	38.5	303° 17.1	10.7	37.0	1.8										
	08	245° 48.4	252° 40.6	52.3	246° 55.7	0° 59.3 S	44° 03.3	38.3	342° 12.2	01.2	38.3	01.2	Eltanin	90° 45.4	51° 29.2 N	296° 51.8	37.9	317° 46.8	10.6	35.2	2.0										
	09	260° 50.8	267° 41.2	51.2	261° 56.4	58.5	59° 05.7	38.3	357° 14.4	01.2	38.3	01.2	Enif	33° 45.0	9° 57.2 N	311° 51.7	37.2	332° 16.4	10.6	33.2	2.0										
	10	275° 53.3	282° 41.7	50.0	276° 57.2	57.7	74° 08.1	38.3	12° 16.6	01.2	38.3	01.2	Fomalhaut	15° 21.6	29° 32.1 S	326° 51.6	36.6	346° 46.0	10.6	31.2	2.1	55.5									
	11	290° 55.8	297° 42.2	48.8	291° 58.0	56.9	89° 10.5	38.3	27° 18.8	01.2	38.3	01.2		341° 51.4	36.0	1° 15.6	10.6	29.1	2.3												
	12	305° 58.2	312° 42.8	1° 47.6 S	306° 58.7	0° 56.1 S	104° 12.9	38.4	42° 21.0	22° 01.3 S	38.4	01.3	Gacrux	171° 57.8	57° 12.2 S	356° 51.3															

2017 January 28, 29, 30 (Sat, Sun, Mon)

GMT	ARIES			VENUS -4.5			MARS +1.1			JUPITER -2.1			SATURN +0.6			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	28		29	30				
Saturday	00	127° 26.9	133° 02.7	1° 05.3 S	127° 26.3	0° 28.1 S	285° 38.8	7° 39.1 S	223° 40.4	22° 01.6 S	Acamar	315° 16.5	40° 14.6 S	176° 46.8	18° 12.0 S	177° 26.5	10.5	16° 03.3 S	5.7	56.3	N 72°	07:19	08:51	10:53	10:16	10:06	09:58				
	01	142° 29.4	148° 03.3	04.1	142° 27.0	27.3	300° 41.2	39.1	238° 42.6	01.6	Achernar	335° 25.2	57° 09.4 S	191° 46.7	11.3	191° 56.0	10.4	15° 57.6 S	5.8		N 70°	07:10	08:30	10:01	09:43	09:45	09:45				
	02	157° 31.9	163° 03.8	03.0	157° 27.8	26.5	315° 43.6	39.1	253° 44.8	01.6	Acruz	173° 06.0	63° 11.3 S	206° 46.6	10.7	206° 25.4	10.5	51.8	5.9		66°	06:56	08:01	09:06	09:00	09:15	09:26				
	03	172° 34.3	178° 04.4	01.0	172° 28.5	25.8	330° 45.9	39.1	268° 47.0	01.6	Adhara	255° 10.2	29° 00.0 S	221° 46.4	10.0	220° 54.9	10.5	45.9	5.9		64°	06:50	07:50	08:48	08:45	09:04	09:19				
	04	187° 36.8	193° 05.0	00.6	187° 29.3	25.0	345° 48.3	39.1	283° 49.2	01.6	Aldebaran	290° 46.4	16° 32.4 N	236° 46.3	09.3	235° 24.4	10.5	40.0	6.1	56.4	62°	06:45	07:40	08:33	08:32	08:54	09:12				
	05	202° 39.3	208° 05.6	0° 59.4 S	202° 30.1	24.2	0° 50.7	39.1	298° 51.4	01.7		0° 50.7		251° 46.2	08.7	249° 53.9	10.6	33.9	6.1		60°	06:47	07:32	08:20	08:21	08:46	09:07				
	06	217° 41.7	223° 06.2	58.3	217° 30.8	23.4	15° 53.1	39.2	313° 53.6	01.7	Alioth	166° 18.4	55° 51.8 N	266° 46.1	08.0	264° 23.5	10.5	27.8	6.2		N 58°	06:37	07:25	08:10	08:11	08:39	09:02				
	07	232° 44.2	238° 06.7	57.1	232° 31.6	22.7	30° 55.5	39.2	328° 55.8	01.7	Alkaid	152° 56.9	49° 13.5 N	281° 46.0	07.4	278° 53.0	10.5	21.6	6.3		56°	06:33	07:18	08:00	08:03	08:32	08:58				
	08	247° 46.6	253° 07.3	55.9	247° 32.4	21.9	45° 57.0	39.2	343° 58.0	01.7	Alnair	27° 41.2	46° 52.8 S	296° 45.8	07.7	293° 22.5	10.5	15.3	6.4	56.5	54°	06:30	07:13	07:52	07:55	08:27	08:54				
	09	262° 49.1	268° 07.9	54.8	262° 33.1	21.1	61° 00.3	39.2	359° 00.2	01.7	Alnilam	275° 43.6	1° 11.8 S	311° 45.7	06.0	307° 52.0	10.6	08.9	6.4		52°	06:26	07:07	07:44	07:49	08:21	08:50				
	10	277° 51.6	283° 08.5	53.6	277° 33.9	20.3	76° 02.7	39.2	14° 02.4	01.7	Alphard	217° 53.3	8° 44.1 S	326° 45.6	05.4	322° 21.6	10.5	02.5	6.6		50°	06:22	07:02	07:38	07:43	08:17	08:47				
	11	292° 54.0	298° 09.1	52.4	292° 34.7	19.5	91° 05.1	39.2	29° 04.6	01.7				341° 45.5	04.7	336° 51.1	10.6	14° 55.9 S	6.6		45°	06:16	06:52	07:23	07:30	08:06	08:40				
	12	307° 56.5	313° 09.7	0° 51.3 S	307° 35.4	0° 18.8 S	106° 07.5	7° 39.3 S	44° 06.9	22° 01.7 S	Alphecca	126° 09.1	26° 39.4 N	356° 45.4	18° 04.0 S	351° 20.7	10.6	14° 49.3 S	6.7	56.5	N 40°	06:10	06:42	07:11	07:19	07:58	08:34				
	13	322° 59.0	328° 10.3	50.1	322° 36.2	18.0	121° 09.9	39.3	59° 09.1	01.7	Alpheratz	357° 41.1	29° 11.1 N	11° 45.3	03.4	5° 50.3	10.5	42.6	6.8	56.6	35°	06:04	06:42	07:11	07:10	07:51	08:29				
	14	338° 01.4	343° 10.9	48.9	337° 37.0	17.2	136° 12.3	39.3	74° 11.3	01.7	Altair	62° 06.2	8° 54.9 N	26° 45.2	02.7	20° 19.8	10.6	35.8	6.9		30°	05:58	06:27	06:52	07:02	07:44	08:25				
	15	353° 03.9	358° 11.5	47.7	352° 37.7	16.4	151° 14.7	39.3	89° 13.5	01.7	Antares	353° 13.6	42° 13.1 S	41° 45.0	02.0	34° 49.4	10.6	28.9	7.0		20°	05:47	06:13	06:36	06:48	07:33	08:17				
	16	8° 06.4	13° 12.1	46.6	7° 38.5	15.7	166° 17.1	39.3	104° 15.7	01.8		112° 23.4	26° 27.9 S	56° 44.9	01.4	49° 19.0	10.6	21.9	7.0		N 10°	05:35	06:01	06:23	06:35	07:23	08:10				
	17	23° 08.8	28° 12.7	45.4	22° 39.3	14.9	181° 19.5	39.3	119° 17.9	01.8				71° 44.8	00.7	63° 48.6	10.6	14.9	7.1	56.7	0°	05:23	05:48	06:10	06:24	07:14	08:04				
	18	38° 11.3	43° 13.3	44.2	37° 40.0	14.1	196° 21.9	39.3	134° 20.1	01.8	Arcturus	145° 53.5	19° 05.6 N	86° 44.7	00.0	78° 18.2	10.7	07.8	7.2		S 10°	05:08	05:34	05:57	06:12	07:05	07:57				
	19	53° 13.8	58° 13.9	43.1	52° 40.8	13.3	211° 24.3	39.4	149° 22.3	01.8	Atria	107° 23.3	69° 03.0 S	101° 44.5	17° 59.4 S	92° 47.9	10.6	00.6	7.3		20°	04:51	05:19	05:42	06:00	06:55	07:51				
	20	68° 16.2	73° 14.5	41.9	67° 41.6	12.5	226° 26.7	39.4	164° 24.5	01.8	Avior	234° 16.3	59° 34.0 S	116° 44.6	58.7	107° 17.5	10.7	13° 53.3 S	7.4		30°	04:29	05:00	05:26	05:46	06:44	07:43				
	21	83° 18.7	88° 15.1	40.7	82° 42.3	11.8	241° 29.1	39.4	179° 26.7	01.8	Bellatrix	278° 29.1	6° 21.6 N	131° 44.4	58.0	121° 47.2	10.6	45.9	7.4		35°	04:15	04:49	05:16	05:37	06:37	07:38				
	22	98° 21.1	103° 15.7	39.6	97° 43.1	11.0	256° 31.5	39.4	194° 28.9	01.8	Betelgeuse	270° 58.4	7° 24.3 N	146° 44.2	57.4	136° 16.8	10.7	38.5	7.5	56.8	40°	03:58	04:35	05:06	05:28	06:30	07:33				
23	113° 23.6	118° 16.3	38.4	112° 43.9	10.2	271° 33.9	39.4	209° 31.1	01.8				161° 44.1	56.7	150° 46.5	10.7	31.0	7.6		45°	03:36	04:19	04:53	05:17	06:21	07:27					
Sunday	00	128° 26.1	133° 16.9	0° 37.2 S	127° 44.6	0° 09.4 S	286° 36.3	7° 39.4 S	224° 33.3	22° 01.8 S	Canopus	263° 54.6	52° 42.7 S	176° 44.0	17° 56.0 S	165° 16.2	10.6	13° 23.4 S	7.6	56.8	S 50°	03:07	03:58	04:37	05:04	06:11	07:20				
	01	143° 28.5	148° 17.5	36.1	142° 45.4	08.7	301° 38.7	39.5	239° 35.6	01.8	Capella	280° 30.5	46° 00.8 N	191° 43.9	55.3	179° 45.8	10.7	15.8	7.8		52°	02:52	03:48	04:29	04:58	06:06	07:17				
	02	158° 31.0	163° 18.1	34.9	157° 46.2	07.9	316° 41.1	39.5	254° 37.8	01.8	Deneb	49° 30.2	45° 20.6 N	206° 43.8	54.7	194° 15.5	10.7	08.0	7.8		54°	02:34	03:37	04:21	04:51	06:00	07:13				
	03	173° 33.5	178° 17.7	33.7	172° 46.9	07.1	331° 43.5	39.5	269° 40.0	01.9	Denebola	182° 31.0	14° 28.5 N	221° 43.7	54.0	208° 45.2	10.8	00.2	7.9	56.9	56°	02:11	03:23	04:12	04:43	05:54	07:09				
	04	188° 35.9	193° 19.3	32.6	187° 47.7	06.3	346° 45.9	39.5	284° 42.2	01.9	Diphda	348° 53.6	17° 53.8 S	236° 43.6	53.3	223° 15.0	10.7	12° 52.3 S	7.9		58°	01:40	03:07	04:01	04:34	05:48	07:04				
	05	203° 38.4	208° 19.9	31.4	202° 48.5	05.5	1° 48.3	39.5	299° 44.4	01.9				251° 43.5	52.6	237° 44.7	10.7	44.4	8.1		S 60°	00:30	02:48	03:49	04:24	05:40	06:59				
	06	218° 40.9	223° 20.5	30.2	217° 49.2	04.8	16° 50.7	39.5	314° 46.6	01.9	Dubhe	193° 48.3	61° 39.3 N	266° 43.4	52.0	252° 14.4	10.8	36.3	8.1		S 62°	-	02:24	03:34	04:13	05:31	06:54				
	07	233° 43.3	238° 21.2	29.1	232° 50.0	04.0	31° 53.1	39.5	329° 48.8	01.9	Elnath	278° 09.2	28° 37.1 N	281° 43.3	51.3	266° 44.2	10.8	28.2	8.2	57.0											
	08	248° 45.8	253° 21.8	27.9	247° 50.8	03.2	46° 55.5	39.5	344° 51.0	01.9	Eltanin	90° 45.4	51° 29.2 N	296° 43.1	50.6	281° 14.0	10.7	20.0	8.2												
	09	263° 48.3	268° 22.4	26.8	262° 51.5	02.4	61° 57.9	39.6	359° 53.2	01.9	Enif	33° 45.0	9° 57.2 N	311° 43.0	49.9	295° 43.7	10.8	11.8	8.3												
	10	278° 50.7	283° 23.0	25.6	277° 52.3	01.7	77° 00.3	39.6	14° 55.4	01.9	Fomalhaut	15° 21.6	29° 32.1 S	326° 42.9	49.3	310° 13.5	10.8	03.5	8.4												
	11	293° 53.2	298° 23.6	24.4	292° 53.1	00.9	92° 02.7	39.6	29° 57.7	01.9				341° 42.8	48.6	324° 43.3	10.8	11° 55.1 S	8.5												
	12	308° 55.6	313° 24.3	0° 23.3 S	307° 53.8	0° 00.1 S	107° 05.1	7° 39.6 S	44° 59.9	22° 01.9 S	Gacrux	171° 57.7	57° 12.3 S	356° 42.7	17° 47.9 S	339° 13.1	10.9	11° 46.6 S	8.5	57.1	N 70°	14:26	15:57	17:17	15:41	17:23	19:06				
	13	323° 58.1	328° 24.9	22.1	322° 54.6	00.7	122° 07.5	39.6	60° 02.1	01.9	Genah	175° 49.6	17° 38.1 S	11° 42.6	47.2	353° 43.0	10.8	38.1	8.6		68°	14:58	16:13	17:25	16:04	17:38	19:15				
	14	339° 00.6	343° 25.5	20.9	337° 55.4	01.5																									

2017 Jan 31, Feb. 1, 2 (Tue, Wed, Thur)

GMT	ARIES			VENUS -4.6			MARS +1.1			JUPITER -2.2			SATURN +0.6			STARS			SUN			MOON			Lat	Twilight		Sunrise	31		Moonrise	
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	31		1	2					
Tuesday	00	130° 24.3	133° 47.6	0° 18.4 N	128° 21.5	0° 27.9 N	288° 31.8	7° 40.0 S	226° 19.5	22° 02.2 S	Acamar	315° 16.5	40° 14.6 S	176° 39.1	17° 23.1 S	141° 12.7	11.1	6° 03.4 S	10.4	57.8	N 72°	07:09	08:37	10:25	09:50	09:44	09:44	09:43				
	01	145° 26.8	148° 48.2	19.6	143° 22.2	28.6	303° 34.2	40.0	241° 21.7	02.3	Achernar	335° 25.2	57° 09.4 S	191° 39.0	22.4	155° 42.8	11.1	5° 53.0 S	10.4	68°	N 70°	07:01	08:19	09:44	09:44	09:44	09:44	09:43				
	02	160° 29.3	163° 48.9	20.7	158° 23.0	29.4	318° 36.6	40.0	256° 23.9	02.3	Acruz	173° 06.0	63° 11.4 S	206° 38.9	21.7	170° 12.9	11.2	42.6	10.5	66°	N 68°	06:49	07:53	08:56	09:35	09:43	09:52	09:52				
	03	175° 31.7	178° 49.6	21.9	173° 23.8	30.2	333° 29.0	40.0	271° 26.1	02.3	Adhara	255° 10.2	29° 00.1 S	221° 38.8	21.0	184° 43.1	11.1	32.1	10.5	64°	N 66°	06:44	07:42	08:39	09:32	09:43	09:43	09:55				
	04	190° 34.2	193° 50.3	23.1	188° 24.5	31.0	348° 41.4	40.0	286° 28.3	02.3	Aldebaran	290° 46.4	16° 32.4 N	236° 38.7	20.3	199° 13.2	11.1	21.6	10.6	62°	N 62°	06:39	07:34	08:25	09:28	09:43	09:43	09:59				
	05	205° 36.7	208° 50.9	24.2	203° 25.3	31.8	3° 43.8	40.0	301° 30.6	02.3		3° 43.8	40.0	251° 38.6	19.6	213° 43.3	11.1	11.0	10.6	57.9	N 60°	06:35	07:23	08:13	09:26	09:43	10:01					
	06	220° 39.1	223° 51.6	25.4	218° 26.1	32.5	18° 46.3	40.0	316° 32.8	02.3	Alioth	166° 18.4	55° 51.8 N	266° 38.6	18.9	228° 13.4	11.1	00.4	10.6		N 58°	06:32	07:19	08:03	09:23	09:43	10:04					
	07	235° 41.6	238° 52.3	26.5	233° 26.9	33.3	33° 48.1	40.0	331° 35.0	02.3	Alkaid	152° 56.9	49° 13.5 N	281° 38.5	18.2	242° 43.5	11.1	4° 49.8 S	10.7	56°	N 56°	06:29	07:13	07:55	09:21	09:43	10:06					
	08	250° 44.1	253° 53.0	27.7	248° 27.6	34.1	48° 51.7	40.1	346° 37.2	02.3	Alnair	27° 41.2	46° 52.8 S	296° 34.8	17.5	257° 13.6	11.2	39.1	10.7	54°	N 54°	06:25	07:08	07:47	09:19	09:43	10:08					
	09	265° 46.5	268° 53.7	28.8	263° 28.4	34.9	63° 53.5	40.1	1° 39.4	02.3	Alnilam	275° 43.6	1° 11.8 S	311° 38.3	16.8	271° 43.8	11.1	28.4	10.7	52°	N 52°	06:22	07:03	07:40	09:17	09:43	10:09					
	10	280° 49.0	283° 54.3	30.0	278° 29.2	35.6	78° 55.9	40.1	16° 41.6	02.3	Alphard	217° 53.3	8° 44.1 S	326° 38.6	15.1	286° 13.9	11.1	17.7	10.7	50°	N 50°	06:20	06:58	07:33	09:16	09:43	10:11					
	11	295° 51.5	298° 55.0	31.1	293° 29.9	36.4	93° 58.3	40.1	31° 43.8	02.3		31° 43.8	40.1	341° 38.1	15.4	300° 44.0	11.1	07.0	10.8	58.0	N 45°	06:13	06:48	07:20	09:12	09:43	10:15					
	12	310° 53.9	313° 55.7	32.3 N	308° 30.7	0° 37.2 N	109° 00.8	7° 40.1 S	46° 46.1	22° 02.3 S	Alphecca	126° 09.0	26° 39.4 N	356° 38.0	17° 14.7 S	315° 14.1	11.1	3° 56.2 S	10.8	58.0	N 40°	06:07	06:40	07:08	09:09	09:43	10:17					
	13	325° 56.4	328° 56.4	33.4	323° 31.5	38.0	124° 03.2	40.1	61° 48.3	02.4	Alpheratz	357° 41.1	29° 11.1 N	11° 37.9	14.0	329° 44.2	11.1	45.4	10.8	35°	N 35°	06:02	06:32	06:59	09:06	09:43	10:20					
	14	340° 58.8	343° 57.1	34.6	338° 32.2	38.7	139° 05.6	40.1	76° 50.5	02.4	Altair	62° 06.2	8° 54.9 N	26° 37.8	13.3	344° 14.3	11.1	34.6	10.9	30°	N 30°	05:57	06:25	06:50	09:04	09:43	10:22					
	15	356° 01.3	358° 57.8	35.7	353° 33.0	39.5	154° 08.0	40.1	91° 52.7	02.4	Antaa	353° 13.6	42° 13.1 S	41° 37.7	12.6	358° 44.4	11.1	23.7	10.8	20°	N 20°	05:46	06:12	06:35	09:00	09:43	10:26					
	16	11° 03.8	13° 58.5	36.9	8° 33.8	40.3	169° 10.4	40.1	106° 54.9	02.4	Antares	112° 23.4	26° 27.9 S	56° 37.7	11.9	13° 14.5	11.1	12.9	10.9	58.1	N 10°	05:35	06:00	06:22	08:57	09:43	10:30					
	17	26° 06.2	28° 59.2	38.0	23° 34.5	41.1	184° 12.8	40.1	121° 57.1	02.4		121° 57.1	40.1	71° 37.6	11.2	27° 44.6	11.1	02.0	10.9		N 0°	05:23	05:48	06:10	08:53	09:43	10:33					
	18	41° 08.7	43° 59.9	39.1	38° 35.3	41.8	199° 15.3	40.1	136° 59.4	02.4	Arcturus	145° 53.5	19° 05.6 N	86° 37.5	10.5	42° 14.7	11.1	2° 51.1 S	11.0		S 10°	05:10	05:36	05:58	08:50	09:43	10:37					
	19	56° 11.2	59° 00.6	40.3	53° 36.1	42.6	214° 17.7	40.1	152° 01.6	02.4	Atria	107° 23.3	69° 03.0 S	101° 37.4	09.8	56° 44.8	11.1	40.1	10.9	20°	N 20°	04:53	05:21	05:44	08:47	09:43	10:40					
	20	71° 13.6	74° 01.3	41.4	68° 36.8	43.4	229° 20.7	40.1	167° 03.8	02.4	Avior	234° 16.3	59° 34.0 S	116° 37.0	10.9	71° 14.9	11.1	29.2	11.0	30°	N 30°	04:42	05:03	05:29	08:43	09:43	10:44					
	21	86° 16.1	89° 02.0	42.6	83° 37.6	44.2	244° 22.5	40.1	182° 06.0	02.4	Bellatrix	278° 29.1	6° 21.6 N	131° 37.2	08.3	85° 44.9	11.1	18.2	11.0	35°	N 35°	04:19	04:52	05:20	08:40	09:43	10:47					
	22	101° 18.6	104° 02.7	43.7	98° 38.4	44.9	259° 24.9	40.1	197° 08.2	02.4	Betelgeuse	270° 58.4	7° 24.3 N	146° 37.1	07.6	100° 15.0	11.0	07.2	11.0	40°	N 40°	04:02	04:39	05:09	08:38	09:43	10:50					
23	116° 21.0	119° 03.4	44.9	113° 39.2	45.7	274° 27.4	40.2	212° 10.4	02.4		212° 10.4	40.2	161° 37.1	06.9	114° 45.0	11.1	1° 56.2 S	11.0	58.2	N 45°	03:42	04:24	04:57	08:35	09:43	10:53						
Wednesday	00	131° 23.5	134° 04.1	0° 46.0 N	128° 39.9	0° 46.5 N	289° 29.8	7° 40.2 S	227° 12.7	22° 02.4 S	Canopus	263° 54.6	52° 42.7 S	176° 37.0	17° 06.2 S	129° 15.1	11.0	1° 45.2 S	11.0	58.2	S 50°	03:14	04:04	04:42	08:31	09:44	10:57					
	01	146° 26.0	149° 04.8	47.2	143° 40.7	47.3	304° 32.2	40.2	242° 14.9	02.5	Capella	280° 30.5	46° 00.8 N	191° 36.9	05.5	143° 45.1	11.0	34.2	11.1	52°	S 52°	03:00	03:54	04:35	08:29	09:44	10:59					
	02	161° 28.4	164° 05.5	48.3	158° 41.5	48.0	319° 34.6	40.2	257° 17.1	02.5	Deneb	49° 30.2	45° 20.5 N	206° 36.8	04.8	158° 15.1	11.1	23.1	11.1	54°	S 54°	02:44	03:44	04:27	08:28	09:44	11:01					
	03	176° 30.9	179° 06.2	49.5	173° 42.2	48.8	334° 37.1	40.2	272° 19.3	02.5	Denebola	182° 30.9	14° 28.5 N	221° 36.7	04.1	172° 45.2	11.0	12.0	11.0	56°	S 56°	02:23	03:31	04:18	08:26	09:44	11:03					
	04	191° 33.3	194° 06.9	50.6	188° 43.0	49.6	349° 39.5	40.2	287° 21.5	02.5	Diphda	348° 53.6	17° 53.8 S	236° 36.6	03.4	187° 15.2	11.0	01.0	11.1	58°	S 58°	01:56	03:17	04:08	08:23	09:44	11:05					
	05	206° 35.8	209° 07.6	51.8	203° 43.8	50.4	4° 41.9	40.2	302° 23.7	02.5		4° 41.9	40.2	251° 36.5	02.7	201° 45.2	10.9	0° 49.9 S	11.1	58.3	S 60°	01:12	02:59	03:57	08:21	09:44	11:08					
	06	221° 38.3	224° 08.3	52.9	218° 44.5	51.1	19° 44.3	40.2	317° 26.0	02.5	Dubhe	193° 48.3	61° 39.3 N	266° 36.5	26.0	216° 15.1	11.0	38.8	11.1		S 62°	-	02:37	03:43	08:18	09:44	11:11					
	07	236° 40.7	239° 09.1	54.0	233° 45.3	51.9	34° 46.7	40.2	332° 28.2	02.5	El Nath	278° 09.2	28° 37.1 N	281° 36.4	01.2	230° 45.1	11.0	27.7	11.1													
	08	251° 43.2	254° 09.8	55.2	248° 46.1	52.7	49° 49.2	40.2	347° 30.4	02.5	Eltanin	90° 45.4	51° 29.2 N	296° 36.3	00.5	245° 15.1	11.0	16.6	11.1													
	09	266° 45.7	269° 10.5	56.3	263° 46.8	53.5	64° 51.6	40.2	2° 32.6	02.5	Enif	33° 45.0	9° 57.2 N	311° 36.2	16° 59.8 S	259° 45.0	10.9	05.5	11.2													
	10	281° 48.1	284° 11.2	57.5	278° 47.6	54.2	79° 54.0	40.2	17° 34.8	02.5	Fomalhaut	15° 21.6	29° 32.1 S	326° 36.1	59.1	274° 14.9	10.9	0° 05.7 N	11.1													
	11	296° 50.6	299° 11.9	58.6	293° 48.4	55.0	94° 56.4	40.2	32° 37.0	02.5		94° 56.4	40.2	341° 36.1	58.4	288° 44.8	10.9	16.8	11.1	58.4	N 72°	14:03	15:51	17:20	20:46	22:37	24:30					
	12	311° 53.1	314° 12.7	0° 59.8 N	308° 49.2	0° 55.8 N	109° 58.9	7° 40.2 S	47° 39.3	22° 02.5 S	Gacrux	171° 57.7	57° 12.3 S	356° 36.0	16° 57.6 S	303° 14.7	10.9	0° 27.9 N	11.1	58.4	N 70°	14:44	16:09	17:28	20:49	22:33	24:19					
	13	326° 55.5	329° 13.4	1° 00.9 N	323° 49.9	56.6	125°																									

2017 February 3, 4, 5 (Fri, Sat, Sun)

GMT	ARIES			VENUS -4.6			MARS +1.1			JUPITER -2.2			SATURN +0.6			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	Dec		GHA	Dec		GHA	Dec		GHA	Dec		GHA	Dec		Name	SHA	Dec	GHA	Dec		GHA	Dec	d		HP	Nautical		Civil	3	4
Friday	00	133° 21' 8"	134° 39' 7"	1° 40' 6" N	129° 16' 9"	1° 23' 6" N	291° 26' 4"	7° 40' 3" S	228° 59' 2"	22° 02' 8" S	244° 01' 4"	02° 8"	Acamar	315° 16' 5"	40° 14' 6" S	176° 33' 3"	16° 31' 5" S	176° 33' 3"	16° 31' 5" S	104° 55' 4"	9° 9'	7° 02' 0" N	10° 5'	58° 9'	N 72°	06:58	08:24	10:02	09:30	09:23	09:13
	01	148° 24' 2"	149° 40' 4"	41' 7"	144° 17' 6"	24' 4"	306° 28' 8"	40° 3"	244° 01' 4"	02° 8"	244° 01' 4"	02° 8"	Achernar	335° 25' 2"	57° 09' 4" S	191° 33' 2"	30° 8"	191° 33' 2"	30° 8"	119° 24' 3"	9° 8'	12° 5'	10° 5'	68°	N 70°	06:51	08:08	09:28	09:43	09:44	09:48
	02	163° 26' 7"	164° 41' 2"	42' 9"	159° 18' 4"	25' 2"	321° 31' 2"	40° 3"	259° 03' 6"	02° 8"	259° 03' 6"	02° 8"	Acruz	173° 06' 0"	63° 01' 4" S	206° 33' 2"	30° 0"	206° 33' 2"	30° 0"	133° 53' 1"	9° 8'	23° 0'	10° 4'	66°	N 66°	06:41	07:44	08:45	10:02	10:15	10:33
	03	178° 29' 2"	179° 42' 0"	44' 0"	174° 19' 2"	26' 0"	336° 33' 7"	40° 3"	274° 05' 8"	02° 8"	274° 05' 8"	02° 8"	Adhara	255° 10' 2"	29° 00' 1" S	221° 33' 1"	29° 3"	221° 33' 1"	29° 3"	148° 21' 9"	9° 8'	33° 4'	10° 4'	64°	N 64°	06:37	07:35	08:30	10:09	10:26	10:48
	04	193° 31' 6"	194° 42' 8"	45' 1"	189° 20' 0"	26' 7"	351° 36' 1"	40° 3"	289° 08' 1"	02° 9"	289° 08' 1"	02° 9"	Aldebaran	290° 46' 4"	16° 32' 4" N	236° 33' 0"	28° 6"	236° 33' 0"	28° 6"	162° 50' 7"	9° 7'	43° 8'	10° 4'	62°	N 62°	06:33	07:27	08:17	10:15	10:36	11:02
	05	208° 34' 1"	209° 43' 6"	46' 2"	204° 20' 7"	27' 5"	6° 38' 5"	40° 3"	304° 10' 3"	02° 9"	304° 10' 3"	02° 9"					251° 33' 0"	27° 8"	177° 19' 4"	9° 7'	54° 2'	10° 3'	60°	N 60°	06:30	07:20	08:06	10:21	10:44	11:13	
	06	223° 36' 5"	224° 44' 4"	47' 4"	219° 21' 5"	28' 3"	21° 41' 0"	40° 3"	319° 12' 5"	02° 9"	319° 12' 5"	02° 9"	Alioth	166° 18' 3"	55° 51' 8" N	266° 32' 9"	27° 1"	266° 32' 9"	27° 1"	191° 48' 1"	9° 7'	8° 04' 5" N	10° 3'		N 58°	06:26	07:14	07:57	10:26	10:51	11:23
	07	238° 39' 0"	239° 45' 1"	48' 5"	234° 22' 3"	29' 1"	36° 43' 4"	40° 3"	334° 14' 7"	02° 9"	334° 14' 7"	02° 9"	Alkaid	152° 56' 9"	49° 13' 5" N	281° 32' 8"	26° 3"	281° 32' 8"	26° 3"	206° 16' 8"	9° 6'	14° 8'	10° 2'	59° 0'	N 56°	06:24	07:08	07:49	10:30	10:58	11:31
	08	253° 41' 5"	254° 45' 9"	49' 6"	249° 23' 0"	29' 8"	51° 45' 9"	40° 3"	349° 17' 0"	02° 9"	349° 17' 0"	02° 9"	Alnair	27° 41' 2"	46° 52' 8" S	296° 32' 8"	17° 0"	296° 32' 8"	17° 0"	220° 45' 4"	9° 5'	25° 0'	10° 2'	59° 0'	N 54°	06:21	07:03	07:41	10:34	11:04	11:39
	09	268° 43' 9"	269° 46' 7"	50' 7"	264° 23' 8"	30' 6"	66° 48' 3"	40° 3"	4° 19' 2"	02° 9"	4° 19' 2"	02° 9"	Alnilam	275° 43' 7"	1° 11' 8" S	311° 32' 7"	24° 9"	311° 32' 7"	24° 9"	235° 13' 9"	9° 6'	35° 2'	10° 1'	52°	N 52°	06:18	06:59	07:35	10:37	11:09	11:46
	10	283° 46' 4"	284° 47' 5"	51' 9"	279° 24' 6"	31' 4"	81° 57' 0"	40° 3"	19° 21' 4"	02° 9"	19° 21' 4"	02° 9"	Alphard	217° 53' 3"	8° 44' 1" S	326° 32' 6"	24° 1"	326° 32' 6"	24° 1"	249° 42' 5"	9° 4'	45° 3'	10° 1'	50°	N 50°	06:16	06:59	07:29	10:41	11:14	11:52
	11	298° 48' 9"	299° 48' 3"	53' 0"	294° 25' 3"	32' 1"	96° 53' 2"	40° 3"	34° 23' 6"	02° 9"	34° 23' 6"	02° 9"					341° 32' 6"	23° 4"	264° 10' 9"	9° 5'	55° 4'	10° 1'	45°	N 45°	06:10	06:45	07:16	10:48	11:24	12:05	
	12	313° 51' 3"	314° 49' 1"	1° 54' 1" N	309° 26' 1"	1° 32' 9" N	111° 55' 6"	40° 3" S	49° 25' 8"	22° 02' 9" S	49° 25' 8"	22° 02' 9" S	Alphecca	126° 09' 0"	26° 39' 4" N	356° 32' 5"	16° 22' 6" S	356° 32' 5"	16° 22' 6" S	278° 39' 4"	9° 4'	9° 05' 5" N	10° 0'	59° 0'	N 40°	06:05	06:37	07:05	10:54	11:33	12:16
	13	328° 53' 8"	329° 49' 9"	55' 2"	324° 26' 9"	33' 7"	126° 58' 1"	40° 3"	64° 28' 1"	02° 9"	64° 28' 1"	02° 9"	Alpheratz	357° 41' 1"	29° 11' 1" N	11° 32' 5"	21° 9"	11° 32' 5"	21° 9"	293° 07' 8"	9° 3'	15° 5'	9° 9'	35°	N 35°	06:00	06:30	06:56	10:59	11:40	12:26
	14	343° 56' 3"	344° 50' 7"	56' 4"	339° 27' 7"	34' 5"	142° 00' 5"	40° 3"	79° 30' 3"	02° 9"	79° 30' 3"	02° 9"	Altair	62° 06' 2"	8° 54' 9" N	26° 32' 4"	21° 2"	26° 32' 4"	21° 2"	307° 36' 1"	9° 3'	25° 4'	9° 9'	30°	N 30°	05:55	06:23	06:48	11:03	11:47	12:34
	15	358° 58' 7"	359° 51' 5"	57' 5"	354° 28' 4"	35' 2"	157° 02' 9"	40° 3"	94° 32' 5"	02° 9"	94° 32' 5"	02° 9"	Ankaa	353° 13' 6"	42° 13' 1" S	41° 32' 3"	20' 4"	41° 32' 3"	20' 4"	322° 04' 4"	9° 3'	35° 3'	9° 9'	20°	N 20°	05:45	06:12	06:34	11:11	11:58	12:49
	16	14° 01' 2"	14° 52' 3"	58' 6"	9° 29' 2"	36' 0"	172° 05' 4"	40° 3"	109° 34' 7"	02° 9"	109° 34' 7"	02° 9"	Antares	112° 23' 4"	26° 27' 9" S	56° 32' 3"	19° 7"	56° 32' 3"	19° 7"	336° 32' 7"	9° 2'	45° 2'	9° 8'	59° 1'	N 10°	05:35	06:00	06:22	11:18	12:09	13:02
	17	29° 03' 7"	29° 53' 1"	59' 7"	24° 30' 0"	36' 8"	187° 07' 8"	40° 3"	124° 37' 0"	02° 9"	124° 37' 0"	02° 9"					71° 32' 3"	18° 9"	351° 00' 9"	9° 2'	55° 0'	9° 7'	59° 1'	N 0°	05:24	05:49	06:10	11:25	12:18	13:14	
	18	44° 06' 1"	44° 53' 9"	2° 00' 8" N	39° 30' 7"	37' 5"	202° 10' 3"	40° 3"	139° 39' 2"	03' 0"	139° 39' 2"	03' 0"	Arcturus	145° 53' 5"	19° 05' 6" N	86° 32' 1"	18° 2"	86° 32' 1"	18° 2"	5° 29' 1"	9° 1'	10° 04' 7" N	9° 7'		S 10°	05:11	05:37	05:59	11:31	12:28	13:26
	19	59° 08' 6"	59° 54' 7"	02' 0"	54° 31' 5"	38' 3"	217° 12' 7"	40° 3"	154° 41' 4"	03' 0"	154° 41' 4"	03' 0"	Atira	107° 23' 2"	69° 03' 0" S	101° 32' 1"	17° 4"	101° 32' 1"	17° 4"	19° 57' 2"	9° 1'	14° 4'	9° 6"	20°	N 20°	04:55	05:23	05:46	11:39	12:38	13:38
	20	74° 11' 0"	74° 55' 5"	03' 1"	69° 32' 3"	39' 1"	232° 15' 1"	40° 3"	169° 43' 6"	03' 0"	169° 43' 6"	03' 0"	Avior	207° 16' 3"	59° 34' 1" S	116° 32' 0"	16° 7"	116° 32' 0"	16° 7"	34° 25' 3"	9° 0'	24° 0'	9° 6"	30°	N 30°	04:35	05:06	05:31	11:47	12:50	13:53
	21	89° 13' 5"	89° 56' 3"	04' 2"	84° 33' 1"	39' 9"	247° 17' 6"	40° 3"	184° 45' 9"	03' 0"	184° 45' 9"	03' 0"	Bellatrix	278° 29' 2"	6° 21' 6" N	131° 32' 0"	15° 9"	131° 32' 0"	15° 9"	48° 53' 3"	9° 0'	33° 6'	9° 5'	35°	N 35°	04:22	04:55	05:23	11:51	12:57	14:02
	22	104° 16' 0"	104° 57' 1"	05' 3"	99° 33' 8"	40' 6"	262° 20' 0"	40° 3"	199° 48' 1"	03' 0"	199° 48' 1"	03' 0"	Betelgeuse	270° 58' 4"	7° 24' 3" N	146° 31' 9"	15° 2"	146° 31' 9"	15° 2"	63° 21' 3"	8° 9'	43' 1"	9° 4'	40°	N 40°	04:07	04:43	05:13	11:57	13:05	14:12
23	119° 18' 4"	119° 57' 9"	06' 4"	114° 34' 6"	41' 4"	277° 22' 5"	40° 3"	214° 50' 3"	03' 0"	214° 50' 3"	03' 0"					161° 31' 8"	14° 5"	77° 49' 2"	8° 9'	52° 5'	9° 4'	45°	N 45°	03:47	04:28	05:01	12:03	13:14	14:23		
Saturday	00	134° 20' 9"	134° 58' 8"	2° 07' 6" N	129° 35' 4"	1° 42' 2" N	292° 27' 9"	7° 40' 3" S	229° 52' 5"	22° 03' 0" S	244° 54' 8"	03' 0"	Canopus	263° 54' 6"	52° 42' 7" S	176° 31' 8"	16° 13' 7" S	176° 31' 8"	16° 13' 7" S	92° 17' 1"	8° 9'	11° 01' 9" N	9° 3'	59° 1'	S 50°	03:22	04:10	04:47	12:11	13:25	14:38
	01	149° 23' 9"	149° 59' 6"	08' 7"	144° 36' 1"	42' 9"	307° 24' 9"	40° 3"	240° 54' 8"	03' 0"	240° 54' 8"	03' 0"	Capella	280° 30' 5"	46° 00' 8" N	191° 31' 7"	13° 0"	191° 31' 7"	13° 0"	106° 45' 0"	8° 8'	11° 2'	9° 3'	52°	N 52°	03:09	04:01	04:41	12:14	13:30	14:44
	02	164° 25' 8"	165° 00' 4"	09' 8"	159° 36' 9"	43' 7"	322° 29' 8"	40° 2"	259° 57' 0"	03' 0"	259° 57' 0"	03' 0"	Deneb	49° 30' 2"	45° 20' 5" N	206° 31' 7"	12° 2"	206° 31' 7"	12° 2"	121° 12' 8"	8° 7'	20° 5'	9° 2'	54°	N 54°	02:53	03:51	04:33	12:18	13:36	14:52
	03	179° 28' 3"	180° 01' 2"	10' 9"	174° 37' 7"	44' 5"	337° 32' 2"	40° 2"	274° 59' 2"	03' 0"	274° 59' 2"	03' 0"	Denebola	182° 30' 9"	14° 28' 5" N	221° 31' 6"	11' 5"	221° 31' 6"	11' 5"	135° 40' 5"	8° 7'	29° 7'	9° 1'	59° 2'	N 59°	02:34	03:39	04:25	12:23	13:42	15:00
	04	194° 30' 8"	195° 02' 0"	12' 0"	189° 38' 5"	45' 3"	352° 34' 7"	40° 2"	290° 01' 4"	03' 0"	290° 01' 4"	03' 0"	Diphda	348° 53' 6"	17° 53' 8" S	236° 31' 6"	10° 7"	236° 31' 6"	10° 7"	150° 08' 2"	8° 7'	38° 8'	9° 1'	58°	N 58°	02:10	03:26	04:16	12:27	13:49	15:09
	05	209° 33' 2"	210° 02' 9"	13' 1"	204° 39' 2"	46' 0"	7° 37' 1"	40° 2"	305° 03' 7"	03' 0"	305° 03' 7"	03' 0"					251° 31' 5"	10° 0"	164° 35' 9"	8° 6'	47° 9"	8° 9"	56°	N 56°	01:36	03:09	04:05	12:33	13:57	15:20	
	06	224° 35' 7"	225° 03' 7"	14' 3"	219° 40' 0"	46' 8"	22° 39' 6"	40° 2"	320° 05' 9"	03' 0"	320° 05' 9"	03' 0"	Dubhe	193° 48' 2"	61° 39' 3" N	266° 31' 4"	05° 2"	266° 31' 4"	05° 2												

2017 February 6, 7, 8 (Mon, Tue, Wed)

GMT	ARIES			VENUS -4.6			MARS +1.2			JUPITER -2.2			SATURN +0.6			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	6		7	8				
Monday	00	136° 19.2	135° 39.8	3° 00.7 N	130° 12.4	2° 19.1 N	294° 22.5	7° 40.0 S	231° 39.5	22° 03.3 S	231° 39.5	22° 03.3 S	Acamar	315° 16.5	40° 14.6 S	176° 29.4	15° 37.3 S	65° 38.6	6.6	16° 59.4 N	5.1	59.4	N 72°	06:46	08:10	09:42	08:52	-	-		
	01	151° 21.6	150° 40.6	01.8	145° 13.2	19.9	309° 25.0	40.0	246° 41.7	03.3	246° 41.7	03.3	Achernar	335° 25.3	57° 09.4 S	191° 29.3	36.5	80° 04.2	6.5	17° 04.5 N	5.0	68°	06:41	07:56	09:12	09:58	10:26	11:32			
	02	166° 24.1	165° 41.5	02.9	160° 14.0	20.7	324° 27.5	40.0	261° 43.9	03.3	261° 43.9	03.3	Acruz	173° 05.9	63° 11.4 S	206° 29.3	35.8	94° 29.7	6.5	09.5	4.9	66°	06:33	07:35	08:34	11:00	11:43	12:46			
	03	181° 26.6	180° 42.4	04.0	175° 14.7	21.4	339° 29.9	39.9	276° 46.2	03.3	276° 46.2	03.3	Adhara	255° 10.3	29° 00.1 S	221° 29.2	25.0	103.0	6.4	14.4	4.7	64°	06:29	07:26	08:20	11:20	12:06	13:09			
	04	196° 29.0	195° 43.3	05.1	190° 15.5	22.2	354° 32.4	39.9	291° 48.4	03.4	291° 48.4	03.4	Aldebaran	290° 46.4	16° 32.4 N	236° 29.2	34.2	123° 20.6	6.5	19.1	4.7	62°	06:26	07:19	08:09	11:37	12:24	13:27			
	05	211° 31.5	210° 44.2	06.2	205° 16.3	23.0	370° 34.8	39.9	306° 50.6	03.4	306° 50.6	03.4				251° 29.2	33.4	137° 46.1	6.3	23.8	4.6	60°	06:23	07:13	07:59	11:50	12:40	13:41			
	06	226° 34.0	225° 45.1	07.3	220° 17.0	23.7	24° 37.3	39.9	321° 52.8	03.4	321° 52.8	03.4	Alioth	166° 18.3	55° 51.8 N	266° 29.1	32.7	152° 11.4	6.4	28.4	4.4	58°	06:21	07:08	07:50	12:02	12:52	13:54			
	07	241° 36.4	240° 46.1	08.3	235° 17.8	24.5	39° 39.8	39.9	336° 55.1	03.4	336° 55.1	03.4	Alkaid	152° 56.9	49° 13.5 N	281° 29.1	31.9	166° 36.8	6.3	32.8	4.3	56°	06:18	07:03	07:43	12:12	13:04	14:05			
	08	256° 38.9	255° 47.0	09.4	250° 18.6	25.3	54° 42.2	39.9	351° 57.3	03.4	351° 57.3	03.4	Alnair	27° 41.2	46° 52.8 S	296° 29.0	31.1	181° 02.1	6.3	37.1	4.2	59.5	06:16	06:58	07:36	12:22	13:13	14:14			
	09	271° 41.4	270° 47.9	10.5	265° 19.4	26.0	69° 44.7	39.9	6° 59.5	03.4	6° 59.5	03.4	Alnilam	275° 43.7	1° 11.8 S	311° 29.0	30.3	195° 27.4	6.2	41.3	4.1	52°	06:14	06:54	07:30	12:30	13:22	14:23			
	10	286° 43.8	285° 48.8	11.6	280° 20.1	26.8	84° 47.1	39.9	22° 01.8	03.4	22° 01.8	03.4	Alphard	326° 29.0	8° 44.2 S	326° 29.0	29.6	209° 52.6	6.3	45.4	4.0	50°	06:12	06:50	07:24	12:37	13:30	14:31			
	11	301° 46.3	300° 49.7	12.7	295° 20.9	27.6	99° 49.6	39.9	37° 04.0	03.4	37° 04.0	03.4				341° 28.9	28.8	224° 17.9	6.1	49.4	3.8	45°	06:07	06:41	07:12	12:53	13:47	14:47			
	12	316° 48.7	315° 50.6	3° 13.8 N	310° 21.7	2° 28.3 N	114° 52.1	7° 39.9 S	52° 06.2	22° 03.4 S	52° 06.2	22° 03.4 S	Alphecca	126° 09.0	26° 39.4 N	356° 28.9	15° 28.0 S	238° 43.0	6.2	17° 53.2 N	3.7	59.5	N 40°	06:02	06:34	07:02	13:05	14:00	15:00		
	13	331° 51.2	330° 51.5	14.9	325° 22.4	29.1	129° 54.5	39.8	67° 08.5	03.4	67° 08.5	03.4	Alpheratz	267° 41.1	29° 11.1 N	11° 28.9	27.2	253° 08.2	5.8	56.9	3.7	35°	05:58	06:27	06:54	13:16	14:12	15:12			
	14	346° 53.7	345° 52.4	16.0	340° 23.2	29.9	144° 57.0	39.8	82° 10.7	03.4	82° 10.7	03.4	Altair	62° 06.1	8° 54.9 N	26° 28.8	26.5	267° 33.3	6.1	18° 00.6 N	3.5	30°	05:53	06:21	06:46	13:26	14:22	15:22			
	15	1° 56.1	0° 53.4	17.1	355° 24.0	30.7	159° 59.5	39.8	97° 12.9	03.4	97° 12.9	03.4	Antaa	353° 13.6	42° 13.1 S	41° 28.8	25.7	281° 58.4	6.1	04.1	3.3	20°	05:44	06:10	06:33	13:43	14:40	15:39			
	16	16° 58.6	15° 54.3	18.2	10° 24.8	31.4	175° 01.9	39.8	112° 15.2	03.4	112° 15.2	03.4	Antares	112° 23.3	26° 27.9 S	56° 28.7	24.9	296° 23.5	6.1	07.4	3.3	N 10°	05:35	06:00	06:22	13:57	14:55	15:54			
	17	32° 01.1	30° 55.2	19.2	25° 25.5	32.2	190° 04.4	39.8	127° 17.4	03.4	127° 17.4	03.4				71° 28.7	24.1	310° 48.6	6.0	10.7	3.1	0°	05:24	05:49	06:11	14:11	15:09	16:08			
	18	47° 03.5	45° 56.1	20.3	40° 26.3	33.0	205° 06.8	39.8	142° 19.6	03.4	142° 19.6	03.4	Arcturus	145° 53.4	19° 05.5 N	86° 28.7	23.4	325° 13.6	6.0	13.8	3.0	S 10°	05:12	05:38	06:00	14:25	15:24	16:22			
	19	62° 06.0	60° 57.0	21.4	55° 27.1	33.7	220° 09.3	39.8	157° 21.9	03.4	157° 21.9	03.4	Atria	107° 23.2	69° 03.0 S	101° 28.6	22.6	339° 38.6	6.0	16.8	2.9	20°	04:57	05:25	05:48	14:39	15:39	16:37			
	20	77° 08.5	75° 58.0	22.5	70° 27.9	34.5	235° 11.8	39.8	172° 24.1	03.5	172° 24.1	03.5	Avior	234° 16.3	59° 34.1 S	116° 28.6	21.8	354° 03.6	5.9	19.7	2.8	30°	04:38	05:08	05:34	14:56	15:57	16:54			
	21	92° 10.9	90° 58.9	23.6	85° 28.6	35.3	250° 14.2	39.8	187° 26.3	03.5	187° 26.3	03.5	Bellatrix	278° 29.2	6° 21.6 N	131° 28.6	21.0	8° 28.5	6.0	22.5	2.7	59.4	35°	04:26	04:59	05:26	15:06	16:07	17:04		
	22	107° 13.4	105° 59.8	24.7	100° 29.4	36.0	265° 16.7	39.7	202° 28.6	03.5	202° 28.6	03.5	Betelgeuse	270° 58.4	7° 24.3 N	146° 28.5	20.2	22° 53.5	5.9	25.2	2.5	40°	04:11	04:47	05:17	15:17	16:19	17:15			
23	122° 15.9	121° 00.8	25.8	115° 30.2	36.8	280° 19.2	39.7	217° 30.8	03.5	217° 30.8	03.5				161° 28.5	19.5	37° 18.4	5.9	27.7	2.4	45°	03:53	04:33	05:06	15:31	16:33	17:29				
Tuesday	00	137° 18.3	136° 01.7	3° 26.8 N	130° 30.9	2° 37.6 N	295° 21.6	7° 39.7 S	232° 33.0	22° 03.5 S	232° 33.0	22° 03.5 S	Canopus	263° 54.6	52° 42.7 S	176° 28.5	15.8	51° 43.3	5.9	18° 30.1 N	2.3	59.4	S 50°	03:29	04:16	04:53	15:47	16:50	17:45		
	01	152° 20.8	151° 02.6	27.9	145° 31.7	38.3	310° 24.1	39.7	240° 35.3	03.5	240° 35.3	03.5	Capella	280° 30.5	46° 00.8 N	191° 28.4	17.9	66° 08.2	5.8	32.4	4.0	52°	03:17	04:07	04:46	15:54	16:58	17:52			
	02	167° 23.2	166° 03.6	29.0	160° 32.5	39.1	325° 26.6	39.7	262° 37.5	03.5	262° 37.5	03.5	Deneb	49° 30.2	45° 20.5 N	206° 28.4	17.1	80° 33.0	5.9	34.5	2.1	54°	03:02	03:58	04:40	16:03	17:07	18:01			
	03	182° 25.7	181° 04.5	30.1	175° 33.9	39.9	340° 29.0	39.7	277° 39.7	03.5	277° 39.7	03.5	Denebola	182° 30.9	14° 28.5 N	221° 28.4	16.3	94° 57.9	5.8	36.6	1.9	56°	02:45	03:47	04:32	16:12	17:17	18:11			
	04	197° 28.2	196° 05.5	31.2	190° 34.0	40.6	355° 31.5	39.7	292° 42.0	03.5	292° 42.0	03.5	Diphda	348° 53.6	17° 53.8 S	236° 28.3	15.6	109° 22.7	5.9	38.5	1.7	58°	02:24	03:35	04:23	16:23	17:28	18:21			
	05	212° 30.6	211° 06.4	32.2	205° 34.8	41.4	10° 34.0	39.7	307° 44.2	03.5	307° 44.2	03.5				251° 28.3	14.8	123° 47.6	5.8	40.2	1.7	S 60°	01:56	03:20	04:13	16:36	17:41	18:34			
	06	227° 33.1	226° 07.3	33.3	220° 35.6	42.2	25° 36.4	39.7	322° 46.4	03.5	322° 46.4	03.5	Dubhe	193° 48.2	61° 39.3 N	266° 28.3	14.0	138° 12.4	5.8	41.9	1.5	58°	01:47	03:02	04:02	16:51	17:57	18:48			
	07	242° 35.6	241° 08.3	34.4	235° 36.4	42.9	40° 38.9	39.6	337° 48.7	03.5	337° 48.7	03.5	Elnath	278° 09.3	28° 37.1 N	281° 28.2	13.2	152° 37.2	5.8	43.4	1.4	54°	01:31	02:50	03:50	17:03	18:08	19:04			
	08	257° 38.0	256° 09.2	35.5	250° 37.1	43.7	55° 41.4	39.6	352° 50.9	03.5	352° 50.9	03.5	Eltanin	90° 45.4	51° 29.1 N	296° 28.2	12.4	167° 02.0	5.7	44.8	1.3	52°	01:17	02:40	03:40	17:15	18:20	19:14			
	09	272° 40.5	271° 10.2	36.6	265° 37.9	44.5	70° 43.8	39.6	7° 53.1	03.5	7° 53.1	03.5	Enif	33° 45.0	9° 57.2 N	311° 28.2	11.6	181° 26.7	5.8	46.1	1.2	S 62°	01:07	03:02	04:02	16:51	17:57	18:48			
	10	287° 43.0	286° 11.1	37.6	280° 38.7	45.2	85° 46.3	39.6	22° 55.4	03.5	22° 55.4	03.5	Fomalhaut	15° 21.6	29° 32.0 S	326° 28.2	10.9	195° 51.5	5.8	47.3	1.0	50°	00:56	02:50	03:50	17:03	18:08	19:04			
	11	302° 45.4	301° 12.1	38.7	295° 39.4	46.0	100° 48.8	39.6	37° 57.6	03.5	37° 57.6	03.5				341° 28.1	10.1	210° 16.3													

2017 February 9, 10, 11 (Thur, Fri, Sat)

GMT	ARIES			VENUS -4.6			MARS +1.2			JUPITER -2.2			SATURN +0.6			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	3° 14.3' N	GHA	Dec	7° 39.0' S	GHA	Dec	22° 03.8' S	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil		9	10		11		
g 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	139° 16.6	136° 48.7	4° 18.2' N	131° 08.0	3° 14.3' N	297° 20.3	7° 39.0' S	234° 20.4	22° 03.8' S	Acamar	315° 16.5	40° 14.6' S	176° 27.3	14° 40.7' S	23° 40.6	6.5	17° 58.5' N	3.6	59.0	N 72°	06:34	07:57	09:22	12:14	14:26	16:24					
	154° 19.1	151° 49.7	19.2	146° 08.8	15.0	312° 22.8	39.0	249° 22.6	03.8	Achernar	335° 25.3	57° 09.4' S	191° 27.3	39.9	38° 06.1	6.5	54.9	3.8	59.0	N 70°	06:31	07:44	08:57	13:09	14:57	16:43					
	169° 21.5	166° 50.7	20.3	161° 09.6	15.8	327° 25.3	39.0	264° 24.9	03.8	Acruz	173° 05.9	63° 00.1' S	206° 27.2	39.1	52° 31.6	6.6	51.1	3.8		68°	06:27	07:34	08:38	13:43	15:19	16:57					
	184° 24.0	181° 51.8	20.3	176° 10.4	16.6	342° 27.8	39.0	279° 27.1	03.8	Adhara	255° 10.3	29° 00.1' S	221° 27.2	38.3	66° 57.2	6.6	47.3	4.0		66°	06:24	07:25	08:23	14:07	15:37	17:09					
	199° 26.5	196° 52.8	22.4	191° 11.1	17.3	357° 30.3	39.0	294° 29.3	03.8	Aldebaran	290° 46.4	16° 32.4' N	236° 27.2	37.5	81° 22.8	6.6	43.3	4.1		64°	06:22	07:18	08:11	14:26	15:51	17:18					
	214° 28.9	211° 53.8	23.4	206° 11.9	18.1	12° 32.7	38.9	309° 31.6	03.8				251° 27.2	36.7	95° 48.4	6.7	39.2	4.2		62°	06:19	07:12	08:00	14:41	16:03	17:26					
	229° 31.4	226° 54.9	24.5	221° 12.7	18.8	27° 35.2	38.9	324° 33.8	03.8	Alioth	166° 18.3	55° 51.8' N	266° 27.2	35.9	110° 14.1	6.8	35.0	4.4		60°	06:17	07:06	07:51	14:54	16:13	17:34					
	244° 33.8	241° 55.9	25.5	236° 13.5	19.6	42° 37.7	38.9	339° 36.1	03.8	Alkaid	152° 56.8	49° 13.5' N	281° 27.2	35.1	124° 39.9	6.8	30.6	4.4		58°	06:15	07:01	07:43	15:05	16:21	17:40					
	259° 36.3	256° 56.9	26.6	251° 14.2	20.4	57° 40.2	38.9	354° 38.3	03.8	Alnair	27° 41.2	46° 52.7' S	296° 27.4	34.3	139° 05.7	6.8	26.2	4.6	58.9	54°	06:13	06:57	07:36	15:15	16:29	17:45					
	274° 38.8	271° 58.0	27.6	266° 15.0	21.1	72° 42.7	38.9	9° 40.5	03.8	Alnilam	2175° 43.7	1° 11.8' S	311° 27.1	33.5	153° 31.5	6.9	21.6	4.6		56°	06:11	06:53	07:30	15:23	16:36	17:50					
	289° 41.2	286° 59.0	28.7	281° 15.8	21.9	87° 45.2	38.8	24° 42.8	03.8	Alphard	275° 53.3	8° 44.2' S	326° 27.4	32.7	167° 57.4	7.0	17.0	4.8		52°	06:09	06:49	07:24	15:31	16:42	17:55					
	304° 43.7	302° 00.1	29.7	296° 16.5	22.7	102° 47.6	38.8	39° 45.0	03.8				341° 27.1	31.9	182° 23.4	7.0	12.2	4.8		50°	06:07	06:45	07:19	15:37	16:48	17:59					
	319° 46.2	317° 01.1	4° 30.8' N	311° 17.3	3° 23.4' N	117° 50.1	7° 38.8' S	54° 47.3	22° 03.8' S	Alphecca	126° 09.0	26° 39.4' N	356° 27.1	14° 31.0' S	196° 49.4	7.0	17° 07.4' N	5.0	58.9	45°	06:03	06:38	07:08	15:52	17:00	18:07					
	334° 48.6	332° 02.2	31.8	332° 02.2	24.2	132° 52.6	38.8	69° 49.5	03.8	Alpheratz	125° 41.2	29° 11.1' N	11° 27.1	30.2	211° 15.4	7.1	02.4	5.1		40°	05:59	06:31	06:59	16:04	17:09	18:14					
	349° 51.1	347° 03.2	32.9	341° 18.9	24.9	147° 55.1	38.8	84° 51.7	03.8	Altair	62° 06.1	8° 54.9' N	26° 27.1	29.4	225° 41.5	7.2	16° 57.3' N	5.2	58.8	35°	05:55	06:25	06:51	16:14	17:18	18:21					
	4° 53.6	2° 04.3	33.9	356° 19.6	25.7	162° 57.6	38.8	99° 54.0	03.9	Ankaa	353° 13.6	42° 13.1' S	41° 27.1	28.6	240° 07.7	7.2	52.1	5.3		30°	05:51	06:19	06:44	16:23	17:25	18:26					
	19° 56.0	17° 05.3	35.0	11° 20.4	26.5	178° 00.1	38.7	114° 56.2	03.9	Antares	112° 23.3	26° 27.9' S	56° 27.1	27.8	254° 33.9	7.2	46.8	5.3		20°	05:43	06:09	06:32	16:39	17:38	18:35					
	34° 58.5	32° 06.4	36.0	26° 21.2	27.2	193° 02.6	38.7	129° 58.5	03.9				71° 27.0	27.0	269° 00.1	7.3	41.5	5.5		10°	05:34	05:59	06:21	16:52	17:49	18:44					
	50° 01.0	47° 07.4	37.1	41° 22.0	28.0	208° 05.0	38.7	145° 00.7	03.9	Arcturus	145° 53.4	19° 05.5' N	86° 27.0	26.2	283° 26.4	7.4	36.0	5.6		0°	05:25	05:49	06:11	17:05	17:59	18:51					
	65° 03.4	62° 08.5	38.1	56° 22.7	28.7	223° 07.5	38.7	160° 03.0	03.9	Atria	107° 23.1	69° 03.0' S	101° 27.0	25.4	297° 52.8	7.4	30.4	5.7	58.7	S 10°	05:13	05:39	06:00	17:17	18:10	18:59					
	80° 05.9	77° 09.5	39.2	71° 23.5	29.5	238° 10.0	38.7	175° 05.2	03.9	Avior	234° 16.3	59° 34.1' S	116° 27.0	24.6	312° 19.2	7.5	24.7	5.8		20°	04:59	05:26	05:49	17:31	18:21	19:07					
	95° 08.3	92° 10.6	40.2	86° 24.3	30.3	253° 12.5	38.6	190° 07.4	03.9	Bellatrix	278° 29.2	6° 21.6' N	131° 27.0	23.8	326° 45.7	7.6	18.9	5.9		30°	04:41	05:11	05:36	17:46	18:34	19:17					
	110° 10.8	107° 11.7	41.2	101° 25.1	31.0	268° 15.0	38.6	205° 09.7	03.9	Betelgeuse	270° 58.4	7° 24.3' N	146° 27.0	23.0	341° 12.3	7.6	13.0	6.0		35°	04:30	05:02	05:29	17:55	18:41	19:22					
125° 13.3	122° 12.7	42.3	116° 25.8	31.8	283° 17.5	38.6	220° 11.9	03.9				161° 27.0	22.1	355° 38.9	7.6	07.0	6.0		40°	04:16	04:51	05:20	18:05	18:49	19:28						
140° 15.7	137° 13.8	4° 43.3' N	131° 26.6	3° 32.6' N	298° 20.0	7° 38.6' S	235° 14.2	22° 03.9' S	Canopus	263° 54.6	52° 42.7' S	176° 27.0	14° 21.3' S	100° 05.5	7.7	16° 01.0' N	6.2	58.7	S 50°	03:36	04:22	04:58	18:31	19:10	19:43						
155° 18.2	152° 14.9	44.4	146° 27.4	33.3	313° 22.4	38.6	250° 16.4	03.9	Capella	280° 30.5	46° 00.8' N	191° 27.0	20.5	24° 32.2	7.8	15° 54.8' N	6.3	58.6	52°	03:24	04:14	04:52	18:38	19:16	19:47						
170° 20.7	167° 15.9	45.4	161° 28.1	34.1	328° 24.9	38.5	265° 18.6	03.9	Deneb	49° 30.2	45° 20.5' N	206° 27.0	19.7	38° 59.0	7.9	48.5	6.3		54°	03:11	04:05	04:46	18:46	19:22	19:52						
185° 23.1	182° 17.0	46.4	176° 28.9	34.8	343° 27.4	38.5	280° 20.9	03.9	Denebola	182° 30.9	14° 28.5' N	221° 27.0	18.9	53° 25.9	7.9	42.2	6.5		56°	02:56	03:55	04:39	18:54	19:28	19:56						
200° 25.6	197° 18.1	47.5	191° 29.7	35.6	358° 29.9	38.5	295° 23.1	03.9	Diphda	348° 53.6	17° 53.8' S	236° 26.9	18.1	67° 52.8	7.9	35.7	6.5		58°	02:36	03:43	04:31	19:03	19:36	20:02						
215° 28.1	212° 19.2	48.5	206° 30.5	36.4	13° 32.4	38.5	310° 25.4	03.9				251° 26.9	17.3	82° 19.7	8.1	29.2	6.7	58.5	S 60°	02:12	03:30	04:22	19:14	19:44	20:07						
230° 30.5	227° 20.3	49.6	221° 31.2	37.1	28° 34.9	38.5	325° 27.6	03.9	Dubhe	193° 48.2	61° 39.3' N	266° 26.9	16.5	96° 46.8	8.0	22.5	6.7		S 62°	01:36	03:13	04:11	19:26	19:53	20:14						
245° 33.0	242° 21.3	50.6	236° 32.0	37.9	43° 37.4	38.4	340° 29.9	03.9	Elnath	278° 09.3	28° 37.1' N	281° 26.9	15.6	111° 13.8	8.2	15.8	6.8														
260° 35.5	257° 22.4	51.6	251° 32.8	38.6	58° 39.9	38.4	355° 32.1	03.9	Eltanin	90° 45.3	51° 29.1' N	296° 26.9	14.8	125° 41.0	8.2	09.0	6.9														
275° 37.9	272° 23.5	52.7	266° 33.6	39.4	73° 42.4	38.4	10° 34.4	04.0	Enif	33° 45.0	9° 57.2' N	311° 26.9	14.0	140° 08.2	8.3	02.1	7.0														
290° 40.4	287° 24.6	53.7	281° 34.3	40.2	88° 44.9	38.4	25° 36.6	04.0	Fomalhaut	15° 21.6	29° 32.0' S	326° 26.9	13.2	154° 35.5	8.3	14° 55.1' N	7.0	58.4													
305° 42.8	302° 25.7	54.7	296° 35.1	40.9	103° 47.3	38.3	40° 38.8	04.0				341° 26.9	12.4	169° 02.8	8.4	48.1	7.2														
320° 45.3	317° 26.8	4° 55.8' N	311° 35.9	3° 41.7' N	118° 49.8	7° 38.3' S	55° 41.1	22° 04.0' S	Gacrux	171° 57.6	57° 12.3' S	356° 26.9	14° 11.6' S	183° 30.2	8.5	14° 40.9' N	7.2	58.4	N 72°	15:08	16:33	17:56	09:35	09:19	09:10						
335° 47.8	332° 27.9	56.8	326° 36.7	42.4	133° 52.3	38.3	70° 43.3	04.0	Genah	175° 49.5	17° 38.2' S	11° 26.9	10.7	197° 57.7	8.5	33.7	7.3		N 70°	15:32	16:46	18:00	08:39	08:47	08:50						
350° 50.2	347° 29.0	57.8	341° 37.4	43.2	148° 54.8	38.3	85° 48.6	04.0	Hadar	148° 44.0	60° 27.0' S	26° 26.9	09.9	212° 25.2	8.6	26.4	7.4		68°	15:51	16:56	18:03	08:05	08:24	08:34						
5° 52.7	2° 30.1	58.9	356° 38.2	44.0	163° 57.3	38.3	100° 47.8	04.0	Hamal	327° 58.0	23° 32.5' S	41° 26.9	09.1	226° 52.8	8.7	19.0	7.5	58.3	66°	16:19	17:12	18:08	07:21	07:50	08:11						
20° 55.2	17° 31.2	59.9	11° 39.0	44.7	178° 59.8	38.2	115° 50.1	04.0	Kaus Aust.	83° 40.8	34° 22.3' S	56° 26.9	08.3	241° 20.5	8.7	11.5	7.5		62°	16:29	17:18	18:11	07:05	07:38	08:02						
35° 57.6	32° 32.3	5° 00.9' N	26° 39.8	45.5	194° 02.3	38.2	130° 52.3	04.0				71° 26.9	07.5	255° 48.2	8.8	04.0	7.6		60°	16:38	17:23	18:13	06:52	07:27	07:54						
51° 00.1	47° 33.4	01.9	41° 40.5	46.2	209° 04.																										

2017 February 12, 13, 14 (Sun, Mon, Tue)

GMT	ARIES			VENUS -4.6			MARS +1.2			JUPITER -2.2			SATURN +0.6			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	Dec	Alt	GHA	Dec	Alt	GHA	Dec	Alt	GHA	Dec	Alt	GHA	Dec	Alt	Name	SHA	Dec	GHA	Dec	d	HP	Nautical	Civil		12	13		14		
Sunday	00	142° 14' 0	138° 07' 5	5° 32' 5 N	132° 03' 7	4° 09' 0 N	300° 19' 7	7° 37' 5 S	237° 02' 0	22° 04' 2 S	252° 04' 2	04' 2	Acamar	315° 16' 5	40° 14' 6 S	176° 27' 0	13° 41' 9 S	344° 40' 9	10' 8	9° 37' 8 N	9' 4	57' 4	N 72°	06:22	07:43	09:04	18:15	19:59	21:40		
	01	157° 16' 5	153° 08' 6	33' 5	147° 04' 5	09' 7	315° 22' 2	37' 4	252° 04' 2	04' 2	176° 27' 0	41' 1	359° 10' 7	10' 9	28' 4	9' 5	57' 4	68°	06:17	07:23	08:42	18:25	20:02	21:37							
	02	172° 18' 9	168° 09' 8	34' 5	162° 05' 3	10' 5	330° 24' 7	37' 4	267° 06' 5	04' 2	206° 27' 0	40' 2	13° 40' 6	11' 0	18' 9	9' 5	66°	06:15	07:16	08:12	18:39	20:07	21:32								
	03	187° 21' 4	183° 11' 0	35' 5	177° 06' 1	11' 2	345° 27' 2	37' 4	282° 08' 7	04' 2	221° 27' 0	39' 4	28° 10' 6	11' 0	09' 4	9' 5	64°	06:13	07:09	08:10	18:45	20:09	21:30								
	04	202° 23' 9	198° 12' 1	36' 5	192° 06' 8	12' 0	0° 29' 7	37' 4	297° 10' 9	04' 2	236° 27' 0	38' 6	42° 40' 6	11' 1	8° 59' 8 N	9' 5	62°	06:12	07:04	07:51	18:49	20:10	21:29								
	05	217° 26' 3	213° 13' 3	37' 5	207° 07' 6	12' 8	15° 32' 2	37' 3	313° 13' 2	04' 2	251° 27' 0	37' 7	57° 10' 7	11' 2	50' 3	9' 7	57' 3	60°	06:10	06:59	07:43	18:54	20:12	21:28							
	06	232° 28' 8	228° 14' 5	38' 5	222° 08' 4	13' 5	30° 34' 7	37' 3	327° 15' 4	04' 2	266° 27' 0	36' 9	71° 40' 9	11' 2	40' 6	9' 6		N 58°	06:08	06:54	07:36	18:57	20:13	21:26							
	07	247° 31' 3	243° 15' 7	39' 5	237° 09' 1	14' 3	45° 37' 3	37' 3	342° 17' 7	04' 2	281° 27' 0	36' 1	86° 11' 1	11' 3	31' 0	9' 7	56°	06:07	06:50	07:29	19' 01	20:14	21:25								
	08	262° 33' 7	258° 16' 9	40' 5	252° 09' 9	15' 0	60° 39' 8	37' 3	357° 19' 9	04' 2	296° 27' 0	35' 2	100° 41' 4	11' 3	21' 3	9' 7	57' 2	54°	06:05	06:47	07:24	19' 03	20:15	21:24							
	09	277° 36' 2	273° 18' 0	41' 5	267° 10' 7	15' 8	75° 42' 3	37' 2	372° 22' 2	04' 2	311° 27' 0	34' 4	115° 11' 7	11' 4	11' 6	9' 8	52°	06:04	06:43	07:19	19' 06	20:16	21:24								
	10	292° 38' 7	288° 19' 2	42' 5	282° 11' 5	16' 5	90° 44' 8	37' 2	387° 27' 4	04' 2	326° 27' 0	33' 6	129° 42' 1	11' 4	01' 8	9' 8	50°	06:02	06:40	07:14	19' 09	20:17	21:23								
	11	307° 41' 1	303° 20' 4	43' 5	297° 12' 2	17' 3	105° 47' 3	37' 2	42° 26' 7	04' 2	341° 27' 1	32' 7	144° 12' 5	11' 5	7° 52' 0 N	9' 8	45°	05:59	06:33	07:04	19' 14	20:18	21:21								
	12	322° 43' 6	318° 21' 6	5° 44' 5 N	312° 13' 0	4° 18' 0 N	120° 49' 8	7° 37' 1 S	57° 28' 9	22° 04' 2 S	356° 27' 1	31' 31' 9 S	158° 43' 0	11' 6	7° 42' 2 N	9' 9	57' 1	N 40°	05:56	06:27	06:55	19' 18	20:20	21:20							
	13	337° 46' 0	333° 22' 8	45' 5	327° 13' 8	18' 8	135° 52' 3	37' 1	72° 31' 2	04' 2	372° 27' 1	31' 1	173° 13' 6	11' 6	32' 3	9' 8	35°	05:52	06:22	06:48	19' 22	20:21	21:19								
	14	352° 48' 5	348° 24' 0	46' 5	342° 14' 6	19' 6	150° 54' 8	37' 1	87° 33' 4	04' 2	387° 27' 1	30' 2	187° 44' 2	11' 7	22' 5	9' 9	30°	05:49	06:17	06:41	19' 25	20:22	21:18								
	15	7° 51' 0	3° 25' 2	47' 5	357° 15' 3	20' 3	165° 57' 0	37' 1	102° 35' 7	04' 2	41° 27' 1	29' 4	202° 14' 9	11' 8	12' 6	10' 0	57' 0	20°	05:42	06:08	06:30	19' 31	20:24	21:16							
	16	22° 53' 4	18° 26' 4	48' 5	12° 16' 1	21' 1	180° 59' 8	37' 0	117° 37' 9	04' 2	56° 27' 1	28' 5	216° 45' 7	11' 8	02' 6	9' 9	N 10°	05:34	05:59	06:20	19' 36	20:26	21:14								
	17	37° 55' 9	33° 27' 6	49' 5	27° 16' 9	21' 8	196° 02' 3	37' 0	132° 40' 2	04' 2	71° 27' 1	27' 7	231° 16' 5	11' 8	6° 52' 7 N	10' 0	0°	05:25	05:50	06:11	19' 41	20:27	21:13								
	18	52° 58' 4	48° 28' 8	50' 5	42° 17' 7	22' 6	211° 04' 8	37' 0	147° 42' 5	04' 2	86° 27' 2	26' 9	245° 47' 3	11' 9	42' 7	10' 0	S 10°	05:14	05:40	06:01	19' 45	20:29	21:11								
	19	68° 00' 8	63° 30' 0	51' 5	57° 18' 4	23' 3	226° 07' 3	36' 9	162° 44' 7	04' 2	101° 27' 2	26' 0	260° 18' 2	12' 0	32' 7	10' 0	56' 9	20°	05:01	05:28	05:51	19' 50	20:31	21:10							
	20	83° 03' 3	78° 31' 2	52' 5	72° 19' 2	24' 1	241° 09' 8	36' 9	177° 47' 0	04' 3	116° 27' 2	25' 2	274° 49' 2	12' 0	22' 7	10' 1	30°	04:44	05:14	05:39	19' 56	20:33	21:08								
	21	98° 05' 8	93° 32' 4	53' 5	87° 20' 0	24' 8	256° 12' 3	36' 9	192° 42' 9	04' 3	131° 27' 2	24' 4	289° 20' 2	12' 1	12' 6	10' 0	35°	04:33	05:05	05:32	19' 59	20:34	21:07								
	22	113° 08' 2	108° 33' 6	54' 5	102° 20' 7	25' 6	271° 14' 9	36' 9	207° 51' 5	04' 3	146° 27' 2	23' 5	303° 51' 3	12' 1	02' 6	10' 1	56' 8	40°	04:20	04:55	05:24	20' 03	20:35	21:06							
23	128° 10' 7	123° 34' 9	55' 4	117° 21' 5	26' 3	286° 17' 4	36' 8	222° 53' 7	04' 3	161° 27' 2	22' 7	318° 22' 4	12' 2	5° 52' 5 N	10' 1	45°	40°	04:04	04:43	05:15	20' 07	20:37	21:05								
Monday	00	143° 13' 2	138° 36' 1	5° 56' 4	132° 22' 3	4° 27' 1 N	301° 19' 9	7° 36' 8 S	237° 56' 0	22° 04' 3 S	253° 58' 2	04' 3	Canopus	263° 54' 7	52° 42' 7 S	176° 27' 2	13° 21' 8 S	332° 53' 6	12' 2	5° 42' 4 N	10' 1	56' 8	S 50°	03:43	04:28	05:03	20' 12	20:39	21:03		
	01	158° 15' 6	153° 37' 3	57' 4	147° 23' 1	27' 9	316° 22' 4	36' 8	280° 35' 6	04' 3	191° 27' 3	21' 0	173° 13' 6	12' 3	32' 3	10' 1	52°	03:32	04:20	04:58	20' 15	20:39	21:03								
	02	173° 18' 1	168° 38' 5	58' 4	162° 23' 8	28' 6	331° 24' 9	36' 7	268° 00' 5	04' 3	206° 27' 3	20' 2	1° 56' 1	12' 3	22' 2	10' 2	56' 7	54°	03:20	04:12	04:52	20' 17	20:40	21:02							
	03	188° 20' 5	183° 39' 7	59' 4	177° 24' 6	29' 4	346° 27' 4	36' 7	283° 02' 7	04' 3	221° 27' 3	19' 3	16° 27' 4	12' 4	12' 0	10' 2	56°	03:06	04:03	04:46	20' 20	20:41	21:01								
	04	203° 23' 0	198° 41' 0	6° 00' 4 N	192° 25' 4	30' 1	1° 29' 9	36' 7	298° 05' 0	04' 3	236° 27' 3	18' 5	30° 58' 8	12' 4	01' 8	10' 1	56°	02:48	03:52	04:38	20' 23	20:42	21:00								
	05	218° 25' 5	213° 42' 2	01' 4	207° 26' 2	30' 9	16° 32' 4	36' 7	313° 07' 2	04' 3	251° 27' 3	17' 6	45° 30' 2	12' 5	4° 51' 7 N	10' 2	56' 6	S 60°	02:27	03:40	04:30	20' 27	20:44	20:59							
	06	233° 27' 9	228° 43' 4	02' 4	222° 26' 9	31' 6	31° 34' 9	36' 6	328° 09' 5	04' 3	266° 27' 3	16' 8	60° 01' 7	12' 5	41' 5	10' 2		S 62°	01:57	03:25	04:20	20' 31	20:45	20:58							
	07	248° 30' 4	243° 44' 7	03' 3	237° 27' 7	32' 4	46° 37' 5	36' 6	343° 11' 7	04' 3	281° 27' 4	15' 9	74° 33' 2	12' 6	31' 3	10' 2															
	08	263° 32' 9	258° 45' 9	04' 3	252° 28' 5	33' 1	61° 40' 0	36' 6	358° 14' 0	04' 3	296° 27' 4	15' 1	89° 04' 8	12' 6	21' 1	10' 2															
	09	278° 35' 3	273° 47' 1	05' 3	267° 29' 3	33' 9	76° 42' 5	36' 5	373° 16' 2	04' 3	311° 27' 4	14' 3	103° 36' 5	12' 6	10' 9	10' 3	56' 5														
	10	293° 37' 8	288° 48' 4	06' 3	282° 30' 0	34' 6	91° 45' 0	36' 5	388° 18' 5	04' 3	326° 27' 4	13' 4	118° 08' 1	12' 7	00' 6	10' 2															
	11	308° 40' 3	303° 49' 6	07' 3	297° 30' 8	35' 4	106° 47' 5	36' 5	43° 20' 7	04' 3	341° 27' 4	12' 6	132° 39' 8	12' 8	3° 50' 4 N	10' 3															
	12	323° 42' 7	318° 50' 9	6° 08' 3 N	312° 31' 6	4° 36' 1 N	121° 50' 0	7° 36' 4 S	58° 23' 0	22° 04' 3 S	356° 27' 5	13° 11' 7 S	147° 11' 6	12' 8	3° 40' 1 N	10' 2	56' 4	N 70°	15:47	16:58	18:11	08:51	08:50	08:50							
	13	338° 45' 2	333° 52' 1	09' 2	327° 32' 4	36' 9	136° 52' 5	36' 4	73° 25' 2	04' 3	11° 27' 5	10' 9	161° 43' 4	12' 9	29' 9	10' 3	68°	16:04	17:07	18:13	08:41	08:46	08:50								
	14	353° 47' 6	348° 53' 3	10' 2	342° 33' 1	37' 6	151° 55' 0	36' 4	88° 27' 5	04' 3	26° 27' 0	10' 0	176° 15' 3	12' 9	19' 6	10' 2	66°	16:17	17:14	18:15	08:33	08:42	08:50								
	15	8° 50' 1	3° 54' 6	11' 2	357° 33' 9	38' 4	166° 57' 6	36' 4	103° 29' 8	04' 3	41° 27' 5	09' 2	190° 47' 2	12' 9	09' 4	10' 3	64°	16:29	17:20	18:16	08:26	08:39	08:50								
	16	23° 52' 6	18° 55' 8	12' 2	12° 3																										

2017 February 15, 16, 17 (Wed, Thur, Fri)

GMT	ARIES			VENUS -4.6			MARS +1.2			JUPITER -2.3			SATURN +0.6			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	15		16	17				
15 e d n e s d a y	00	145° 11'.4	139° 37'.1	6° 43'.0 N	132° 59'.4	5° 03'.2 N	303° 20'.7	7° 35'.3 S	239° 44'.2	22° 04'.5 S	Acamar	315° 16'.6	40° 14'.6 S	176° 28'.3	12° 41'.1 S	310° 40'.2	14.0	2° 26'.6 S	9	55.5	N 72°	06:09	07:29	08:47	23:19	-	00:57				
	01	160° 13'.9	154° 38'.4	43'.9	148° 00'.2	03'.9	318° 23'.2	35'.2	254° 46'.5	04'.5	Achernar	335° 25'.3	57° 09'.4 S	191° 28'.4	40'.2	325° 13'.2	14.0	36'.5	10.0	55.4	N 70°	06:08	07:20	08:28	23:09	-	00:40				
	02	175° 16'.4	169° 39'.8	44'.9	163° 01'.0	04'.7	333° 25'.8	35'.2	269° 48'.7	04'.5	Acruz	173° 05'.9	63° 11'.4 S	206° 28'.4	39'.3	339° 46'.2	14.1	46'.5	9'.9	66°	66°	06:06	07:06	08:01	22:55	-	00:17				
	03	190° 18'.8	184° 41'.1	45'.8	178° 01'.7	05'.4	348° 28'.3	35'.2	284° 51'.0	04'.5	Adhara	255° 10'.3	29° 00'.1 S	221° 28'.4	38'.5	354° 19'.3	14.0	56'.4	9'.9	64°	64°	06:05	07:00	07:51	22:50	-	00:08				
	04	205° 21'.3	199° 42'.4	46'.8	193° 02'.5	06'.2	3° 30'.8	35'.1	299° 53'.2	04'.5	Aldebaran	290° 46'.4	16° 32'.4 N	236° 28'.5	37'.6	8° 52'.3	14.1	3° 06'.3 S	9'.8	62°	62°	06:04	06:56	07:42	22:45	24:00	25:13				
	05	220° 23'.7	214° 43'.8	47'.7	208° 03'.3	06'.9	18° 23'.3	35'.1	314° 55'.5	04'.5											60°	06:03	06:51	07:35	22:41	23:53	25:03				
	06	235° 26'.2	229° 45'.1	48'.7	223° 04'.1	07'.7	33° 35'.9	35'.1	329° 57'.8	04'.5	Alioth	166° 18'.2	55° 51'.8 N	266° 28'.5	35'.9	37° 58'.5	14.1	26'.0	9'.8			N 58°	06:02	06:47	07:28	22:38	23:48	24:55			
	07	250° 28'.7	244° 46'.5	49'.6	238° 04'.8	08'.4	48° 38'.4	35'.0	345° 00'.0	04'.5	Alkaid	152° 56'.8	49° 13'.5 N	281° 28'.6	35'.0	52° 31'.6	14.2	35'.8	9'.8	56°	56°	06:01	06:44	07:23	22:35	23:42	24:48				
	08	265° 31'.1	259° 47'.8	50'.6	253° 05'.6	09'.2	63° 40'.9	35'.0	0° 02'.3	04'.5	Alnair	27° 41'.2	46° 52'.7 S	296° 54'.6	34'.2	67° 04'.8	14.1	45'.6	9'.8	54°	54°	06:00	06:41	07:17	22:32	23:38	24:42				
	09	280° 33'.6	274° 49'.2	51'.5	268° 06'.4	09'.9	78° 43'.4	35'.0	15° 04'.5	04'.5	Alnilam	275° 43'.7	1° 11'.8 S	311° 28'.6	33'.3	81° 37'.9	14.2	55'.4	9'.7	52°	52°	05:59	06:38	07:13	22:30	23:34	24:36				
	10	295° 36'.1	289° 50'.5	52'.4	283° 07'.1	10'.7	93° 46'.0	34'.9	30° 06'.8	04'.5	Alphard	217° 53'.3	8° 44'.2 S	326° 28'.7	32'.5	96° 11'.1	14.2	4° 05'.1 S	9'.7	55.2	50°	05:57	06:35	07:08	22:27	23:30	24:31				
	11	310° 38'.5	304° 51'.9	53'.4	298° 07'.9	11'.4	108° 48'.5	34'.9	45° 09'.1	04'.5											45°	05:55	06:29	06:59	22:22	23:22	24:20				
	12	325° 41'.0	319° 53'.2	6° 54'.3 N	313° 08'.7	5° 12'.2 N	123° 51'.0	7° 34'.9 S	60° 11'.3	22° 04'.5 S	Alphecca	126° 08'.9	26° 39'.4 N	356° 28'.7	12° 30'.7 S	125° 17'.5	14.2	4° 24'.5 S	9'.7	55.2	N 40°	05:52	06:24	06:51	22:18	23:15	24:11				
	13	340° 43'.5	334° 54'.6	55'.3	328° 05'.5	12'.9	138° 53'.6	34'.8	75° 13'.6	04'.5											35°	05:49	06:19	06:45	22:15	23:09	24:04				
	14	355° 45'.9	349° 55'.9	56'.2	343° 10'.2	13'.7	153° 56'.1	34'.8	90° 15'.8	04'.5	Altair	62° 06'.1	8° 54'.8 N	26° 28'.8	29.0	154° 23'.9	14.2	43'.8	9'.6	55.1	30°	05:46	06:14	06:39	22:11	23:04	23:57				
	15	10° 48'.4	4° 57'.3	57'.1	358° 11'.0	14.4	168° 58'.6	34'.7	105° 18'.1	04'.5	Ankaa	353° 13'.6	42° 13'.1 S	41° 28'.8	28.1	168° 57'.1	14.3	53'.4	9'.6			20°	05:40	06:06	06:29	22:06	22:56	23:45			
	16	25° 50'.9	19° 58'.6	58'.1	13° 11'.8	15'.1	184° 01'.1	34'.7	120° 20'.4	04'.5	Antares	112° 23'.3	26° 27'.9 S	56° 28'.9	27.3	183° 30'.4	14.2	5° 03'.0 S	9'.5			N 10°	05:33	05:58	06:19	22:01	22:48	23:35			
	17	40° 53'.3	35° 00'.0	59'.0	28° 12'.6	15'.9	199° 03'.7	34'.7	135° 22'.6	04'.5											0°	05:25	05:49	06:11	21:57	22:41	23:25				
	18	55° 55'.8	50° 01'.4	59'.9	43° 13'.3	16'.6	214° 06'.2	34'.6	150° 24'.9	04'.6	Arcturus	145° 53'.4	19° 05'.5 N	86° 28'.9	25.6	212° 36'.9	14.3	22'.1	9'.4			S 10°	05:15	05:40	06:02	21:53	22:34	23:16			
	19	70° 58'.2	65° 02'.7	7° 00'.9 N	58° 14'.1	17.4	229° 08'.7	34'.6	165° 27'.1	04'.6	Atria	107° 23'.0	69° 03'.0 S	101° 29'.0	24.7	227° 10'.2	14.2	31'.5	9'.5	55.0	20°	05:03	05:30	05:52	21:48	22:26	23:06				
	20	86° 00'.7	80° 04'.1	01'.8	73° 14'.9	18'.1	244° 11'.3	34'.6	180° 29'.4	04'.6	Avior	234° 16'.3	59° 34'.1 S	116° 29'.0	23.8	241° 43'.4	14.3	41'.0	9'.4			30°	04:47	05:16	05:41	21:43	22:18	22:54			
	21	101° 03'.2	95° 05'.5	02'.7	88° 15'.6	18'.9	259° 13'.8	34'.5	195° 31'.7	04'.6	Bellatrix	278° 29'.2	6° 21'.6 N	131° 29'.1	23.0	256° 16'.7	14.3	50'.4	9'.4			35°	04:37	05:08	05:35	21:40	22:13	22:48			
	22	116° 05'.6	110° 06'.9	03'.7	103° 16'.4	19'.6	274° 16'.3	34'.5	210° 33'.9	04'.6	Betelgeuse	270° 58'.4	7° 24'.3 N	146° 29'.1	22.1	270° 50'.0	14.3	59'.8	9'.3			40°	04:24	04:59	05:27	21:36	22:07	22:40			
23	131° 08'.1	125° 08'.2	04'.6	118° 17'.2	20'.4	289° 18'.9	34'.5	225° 36'.2	04'.6											45°	04:09	04:47	05:19	21:33	22:01	22:31					
16 T h u r s d a y	00	146° 10'.6	140° 09'.6	7° 05'.5 N	133° 18'.0	5° 21'.1 N	304° 21'.4	7° 34'.4 S	240° 38'.4	22° 04'.6 S	Canopus	263° 54'.7	52° 42'.7 S	176° 29'.2	12° 20'.4 S	299° 56'.6	14.4	6° 18'.5 S	9'.3	54.9	S 50°	03:49	04:33	05:08	21:28	21:53	22:21				
	01	161° 13'.0	155° 11'.0	06'.5	148° 18'.7	21'.9	319° 23'.9	34'.4	255° 40'.7	04'.6	Capella	280° 30'.6	46° 00'.8 N	191° 29'.2	19.5	314° 30'.0	14.3	27'.8	9'.2			52°	03:40	04:26	05:04	21:26	21:50	22:16			
	02	176° 15'.5	170° 12'.4	07.4	163° 19'.5	22'.6	334° 26'.5	34'.3	270° 43'.0	04'.6	Deneb	49° 30'.2	45° 20'.5 N	206° 29'.2	18.6	329° 03'.3	14.3	37'.0	9'.2			54°	03:28	04:19	04:58	21:24	21:46	22:11			
	03	191° 18'.0	185° 13'.8	08'.3	178° 20'.3	23'.4	349° 29'.0	34'.3	285° 45'.2	04'.6	Denebola	182° 30'.9	14° 28'.5 N	221° 29'.3	17.8	343° 36'.6	14.3	48'.2	9'.2			56°	03:15	04:10	04:52	21:21	21:42	22:05			
	04	206° 20'.4	200° 15'.2	09'.2	193° 21'.1	24'.1	4° 31'.5	34'.3	300° 47'.5	04'.6	Diphda	348° 53'.7	17° 53'.8 S	236° 29'.3	16.9	358° 09'.9	14.4	55'.4	9'.1			58°	03:00	04:01	04:46	21:18	21:37	21:58			
	05	221° 22'.9	215° 16'.6	10'.2	208° 21'.8	24'.9	19° 34'.1	34'.2	315° 49'.8	04'.6											S 60°	02:40	03:49	04:38	21:15	21:32	21:51				
	06	236° 25'.3	230° 18'.0	11'.1	223° 22'.6	25'.6	34° 36'.6	34.2	330° 52'.0	04'.6	Dubhe	193° 48'.2	61° 39'.4 N	266° 29'.4	15.2	27° 16'.6	14.4	13'.6	9'.1			S 62°	02:15	03:36	04:29	21:12	21:26	21:43			
	07	251° 27'.8	245° 19'.4	12'.0	238° 23'.4	28'.3	49° 39'.1	34.2	345° 54'.3	04'.6	El Nath	278° 09'.3	28° 37'.1 N	281° 29'.4	14.3	41° 50'.0	14.3	22'.7	9'.0												
	08	266° 30'.3	260° 20'.8	12'.9	253° 24'.1	27'.1	64° 41'.7	34.1	0° 56'.5	04'.6	Eltanin	90° 45'.3	51° 29'.1 N	296° 29'.5	13.4	56° 23'.3	14.3	31'.7	9'.0												
	09	281° 32'.7	275° 22'.2	13'.9	268° 24'.9	27'.8	79° 44'.2	34.1	15° 58'.8	04'.6	Enif	33° 45'.0	9° 57'.2 N	311° 29'.5	12.5	70° 56'.6	14.4	40'.7	9'.0												
	10	296° 35'.2	290° 23'.6	14'.8	283° 25'.7	28'.6	94° 46'.7	34.0	31° 01'.1	04'.6	Fomalhaut	15° 21'.6	29° 32'.0 S	326° 29'.6	11.7	85° 30'.0	14.3	49'.7	8'.9												
	11	311° 37'.7	305° 25'.0	15'.7	298° 26'.5	29'.3	109° 49'.3	34.0	46° 03'.3	04'.6											54.7										
	12	326° 40'.1	320° 26'.4	7° 16'.6 N	313° 27'.2	5° 30'.1 N	124° 51'.8	7° 34'.0 S	61° 05'.6	22° 04'.6 S	Gacrux	171° 57'.6	57° 12'.3 S	356° 29'.6	12° 09'.9 S	114° 36'.7	14.3	8° 07'.5 S	8'.8	54.7	N 70°	16:02	17:10	18:22	08:49	08:48	08:48				
	13	341° 42'.6	335° 27'.8	17'.5	328° 28'.0	30'.8	139° 54'.3	33'.9	76° 07'.9	04'.6	Gienah	175° 49'.5	17° 38'.2 S	11° 29'.7	09.1	129° 10'.0	14.3	16'.3	8'.8			68°	16:16	17:17	18:23	08:53	08:57	09:02			
	14	356° 45'.1	350° 29'.2	18'.4	343° 28'.8	31'.6	154° 56'.9	33'.9	91° 10'.1	04'.6	Hadar	148° 44'.0	60° 27'.0 S	26° 29'.7	08.2	143° 43'.3	14.4	25'.1	8'.7			66°	16:28	17:							

2017 February 18, 19, 20 (Sat, Sun, Mon)

GMT	ARIES			VENUS -4.6			MARS +1.2			JUPITER -2.3			SATURN +0.6			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	18		19	20				
Saturday	00	148° 08.8	141° 18.9	7° 49.0 N	133° 55.0	5° 56.8 N	306° 23.3	7° 32.5 S	242° 27.2	22° 04.8 S	Acamar	315° 16.6	40° 14.6 S	176° 31.3	11° 38.4 S	278° 31.6	13.9	12° 56.1 S	7.1	54.3	N 72°	05:56	07:15	08:30	02:38	04:25	06:37				
	01	163° 11.3	156° 20.4	49.9	148° 55.8	57.6	321° 25.8	32.4	257° 29.4	04.8	Achernar	335° 25.3	57° 09.4 S	191° 31.4	37.5	293° 04.5	13.9	13° 03.2 S	7.0		N 70°	05:56	07:07	08:13	02:12	03:43	05:11				
	02	178° 13.8	171° 21.9	50.8	163° 56.6	58.3	336° 28.4	32.4	272° 31.7	04.8	Acruz	173° 05.8	63° 11.4 S	206° 31.4	36.6	307° 37.4	13.9	10.2	6.9		N 68°	05:56	06:56	07:50	01:36	02:53	04:06				
	03	193° 16.2	186° 23.4	51.7	178° 57.4	59.0	351° 30.9	32.4	287° 34.0	04.8	Adhara	255° 10.3	29° 00.1 S	221° 31.5	35.7	322° 10.3	13.8	17.1	6.9		64°	05:56	06:56	07:41	01:23	02:36	03:45				
	04	208° 18.7	201° 24.9	52.5	193° 58.1	59.8	6° 33.5	32.3	302° 36.2	04.8	Aldebaran	290° 46.4	16° 32.4 N	236° 31.5	34.8	336° 43.1	13.9	24.0	6.8		62°	05:56	06:47	07:33	01:13	02:23	03:28				
	05	223° 21.2	216° 26.4	53.4	208° 58.9	6° 00.5 N	21° 36.0	32.3	317° 38.5	04.8		21° 36.0	32.3	251° 31.6	34.0	351° 16.0	13.8	30.8	6.8		60°	05:55	06:44	07:27	01:03	02:11	03:15				
	06	238° 23.6	231° 28.0	54.3	223° 59.7	01.3	36° 38.6	32.2	332° 40.8	04.8	Alioth	166° 18.2	55° 51.8 N	266° 31.6	33.1	5° 48.8	13.8	37.6	6.7		N 58°	05:55	06:40	07:21	00:55	02:01	03:03				
	07	253° 26.1	246° 29.5	55.2	239° 00.4	02.0	55° 41.1	32.2	347° 43.1	04.8	Alkaid	152° 56.7	49° 13.5 N	281° 31.7	32.2	20° 21.6	13.8	44.3	6.6		56°	05:54	06:37	07:16	00:48	01:52	02:53				
	08	268° 28.6	261° 31.0	56.0	254° 01.2	02.7	61° 43.7	32.1	2° 45.3	04.8	Alnair	27° 41.1	46° 52.7 S	296° 31.4	31.3	34° 54.4	13.7	50.9	6.6		54°	05:54	06:35	07:11	00:42	01:44	02:44				
	09	283° 31.0	276° 32.5	56.9	269° 02.0	03.5	81° 46.2	32.1	17° 47.6	04.8	Alnilam	275° 43.7	1° 11.8 S	311° 31.8	30.4	49° 27.1	13.7	57.5	6.5	54.2	52°	05:53	06:32	07:07	00:36	01:37	02:35				
	10	298° 33.5	291° 34.1	57.8	284° 02.8	04.2	96° 48.8	32.1	32° 49.9	04.8	Alphard	217° 53.3	8° 44.2 S	326° 31.9	29.5	63° 59.8	13.7	14° 04.0 S	6.5		50°	05:52	06:30	07:03	00:31	01:31	02:28				
	11	313° 35.9	306° 35.6	58.7	299° 03.5	05.0	111° 51.3	32.0	47° 52.1	04.8		341° 31.9	28.7	341° 31.9	28.7	78° 32.5	13.7	10.5	6.4		45°	05:50	06:25	06:55	00:20	01:17	02:13				
	12	328° 38.4	321° 37.1	7° 59.5 N	314° 04.3	6° 05.7 N	126° 53.9	7° 32.0 S	62° 54.4	22° 04.8 S	Alphecca	126° 08.9	26° 39.4 N	356° 32.0	11° 27.8 S	93° 05.2	13.7	14° 16.9 S	6.3	54.2	N 40°	05:48	06:20	06:48	00:11	01:06	02:00				
	13	343° 40.9	336° 38.7	8° 00.4 N	329° 05.1	06.4	141° 56.4	31.9	77° 56.7	04.8	Alpheratz	357° 41.2	29° 11.0 N	11° 32.0	26.9	107° 37.9	13.6	23.2	6.3		35°	05:46	06:16	06:41	00:04	00:57	01:49				
	14	358° 43.3	351° 40.2	01.3	344° 05.8	07.2	156° 59.0	31.9	92° 58.9	04.8	Altair	62° 06.1	8° 54.8 N	26° 32.1	26.0	122° 10.5	13.6	29.5	6.2		30°	05:44	06:12	06:36	-	00:49	01:40				
	15	13° 45.8	6° 41.7	02.1	359° 06.6	07.9	172° 01.5	31.8	108° 01.2	04.8	Antares	353° 13.7	42° 13.1 S	41° 32.1	25.1	136° 43.1	13.6	35.7	6.1		20°	05:38	06:04	06:27	-	00:34	01:24				
	16	28° 48.3	21° 43.3	03.0	14° 07.4	08.7	187° 04.1	31.8	123° 03.5	04.8		112° 23.2	26° 27.9 S	56° 32.2	24.2	151° 15.7	13.5	41.8	6.1		N 10°	05:32	05:57	06:18	-	00:22	01:10				
	17	43° 50.7	36° 44.8	03.9	29° 08.2	09.4	202° 06.6	31.7	138° 05.8	04.8		71° 32.2	23.3	71° 32.2	23.3	165° 48.2	13.5	47.9	6.0		0°	05:25	05:49	06:10	-	00:10	00:57				
	18	58° 53.2	51° 46.4	04.7	44° 08.9	10.1	217° 09.2	31.7	153° 08.0	04.8	Arcturus	145° 53.3	19° 05.5 N	86° 32.3	22.4	180° 20.7	13.5	53.9	6.0		S 10°	05:16	05:41	06:02	23:59	-	00:44				
	19	73° 55.7	66° 47.9	05.6	59° 09.7	10.9	232° 11.7	31.7	168° 10.3	04.8	Avia	107° 22.9	69° 03.0 S	101° 32.4	21.6	194° 53.2	13.5	59.9	5.9		20°	05:05	05:31	05:54	23:47	-	00:30				
	20	88° 58.1	81° 49.5	06.5	74° 10.5	11.6	247° 14.3	31.6	183° 12.6	04.8	Avior	234° 16.4	59° 34.2 S	116° 32.4	20.7	209° 25.7	13.4	15° 05.8 S	5.8		30°	04:50	05:19	05:44	23:33	-	00:14				
	21	104° 00.6	96° 51.0	07.3	89° 11.2	12.4	262° 16.8	31.6	198° 14.8	04.8	Bellatrix	278° 29.2	6° 21.6 N	131° 32.5	19.8	223° 58.1	13.5	11.6	5.8		35°	04:40	05:11	05:38	23:24	-	00:04				
	22	119° 03.0	111° 52.6	08.2	104° 12.0	13.1	277° 19.4	31.5	213° 17.1	04.8	Betelgeuse	270° 58.4	7° 24.3 N	146° 32.5	17.1	238° 30.6	13.3	17.4	5.6		40°	04:29	05:03	05:31	23:15	23:54	24:37				
23	134° 05.5	126° 54.2	09.0	119° 12.8	13.8	292° 21.9	31.5	228° 19.4	04.8		161° 32.6	18.0	161° 32.6	18.0	253° 02.9	13.4	23.0	5.7		45°	04:14	04:52	05:23	23:05	23:42	24:24					
Sunday	00	149° 08.0	141° 55.7	8° 09.9 N	134° 13.6	6° 14.6 N	307° 24.5	7° 31.4 S	243° 21.7	22° 04.8 S	Canopus	263° 54.7	52° 42.7 S	176° 32.7	11° 17.1 S	267° 35.3	13.3	15° 28.7 S	5.5	54.2	S 50°	03:56	04:39	05:14	22:52	23:27	24:07				
	01	164° 10.4	156° 57.3	10.8	149° 14.3	15.3	322° 27.0	31.4	258° 23.9	04.8	Capella	280° 30.6	46° 00.8 N	191° 32.7	16.2	282° 07.6	13.3	34.2	5.5		52°	03:47	04:33	05:09	22:46	23:20	24:00				
	02	179° 12.9	171° 58.9	11.6	164° 15.1	16.0	337° 29.6	31.3	273° 26.2	04.8	Deneb	49° 30.2	45° 20.5 N	206° 32.8	15.3	296° 39.9	13.3	39.7	5.4		54°	03:36	04:26	05:04	22:39	23:12	23:51				
	03	194° 15.4	187° 00.4	12.5	179° 15.9	18.8	352° 32.1	31.3	288° 28.5	04.8	Denebola	182° 30.9	14° 28.5 N	221° 32.8	14.4	311° 12.2	13.3	45.1	5.4		56°	03:24	04:18	04:59	22:32	23:03	23:42				
	04	209° 17.8	202° 02.0	13.3	194° 16.6	17.5	7° 34.7	31.2	303° 30.7	04.8	Diphda	348° 53.7	17° 53.8 S	236° 32.9	13.5	325° 44.5	13.2	50.5	5.2		58°	03:10	04:09	04:53	22:23	22:54	23:31				
	05	224° 20.3	217° 03.6	14.2	209° 17.4	18.3	22° 37.3	31.2	318° 33.0	04.8		251° 33.0	12.7	251° 33.0	12.7	340° 16.7	13.2	55.7	5.2		S 60°	02:53	03:58	04:46	22:14	22:42	23:18				
	06	239° 22.8	232° 05.2	15.0	224° 18.2	19.0	37° 39.8	31.1	333° 35.3	04.8	Dubhe	193° 48.1	61° 39.4 N	266° 33.0	11.8	354° 48.9	13.1	16° 00.9 S	5.2		S 62°	02:31	03:46	04:38	22:03	22:29	23:04				
	07	254° 25.2	247° 06.8	15.9	239° 19.0	19.7	52° 42.4	31.1	348° 37.6	04.9	Elath	278° 09.3	28° 37.1 N	281° 33.1	10.9	9° 21.0	13.1	06.1	5.0												
	08	269° 27.7	262° 08.3	16.7	254° 19.7	20.5	67° 44.9	31.0	3° 39.8	04.9	Eltanin	90° 45.2	51° 29.1 N	296° 33.1	10.0	23° 53.1	13.1	11.1	5.0												
	09	284° 30.2	277° 09.9	17.6	269° 20.5	21.2	82° 47.5	31.0	18° 42.1	04.9	Enif	33° 45.0	9° 57.2 N	311° 33.2	09.1	38° 25.2	13.1	16.1	5.0												
	10	299° 32.6	292° 11.5	18.4	284° 21.3	21.9	97° 50.0	31.0	33° 44.4	04.9	Fomalhaut	15° 21.6	29° 32.0 S	326° 33.3	08.2	52° 57.3	13.0	21.1	4.8	54.3											
	11	314° 35.1	307° 13.1	19.3	299° 22.0	22.7	112° 52.6	30.9	48° 46.7	04.9		341° 33.3	07.3	341° 33.3	07.3	67° 29.3	13.1	25.9	4.8												
	12	329° 37.5	322° 14.7	8° 20.1 N	314° 22.8	6° 23.4 N	127° 55.2	7° 30.9 S	63° 48.9	22° 04.9 S	Gacrux	171° 57.5	57° 12.4 S	356° 33.4	11° 06.4 S	82° 01.4	12.9	16° 30.7 S	4.7	54.3	N 70°	16:16	17:22	18:33	08:48	08:51	08:59				
	13	344° 40.0	337° 16.3	21.0	329° 23.6	24.2	142° 57.7	30.8	78° 51.2	04.9	Gienah	175° 49.4	17° 38.2 S	11° 33.4	05.5	96° 33.3	13.0	35.4	4.6		68°	16:28	17:28	18:33	09:09	09:20	09:38				
	14	359° 42.5	352° 17.9	21.8																											

2017 February 21, 22, 23 (Tue, Wed, Thur)

GMT	ARIES			VENUS -4.6			MARS +1.3			JUPITER -2.3			SATURN +0.6			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	21		22	23				
Tuesday	00	151° 06.3	143° 14.1	8° 49.8 N	134° 50.5	6° 49.8 N	309° 27.4	7° 29.1 S	245° 10.9	22° 05.0 S	245° 10.9	22° 05.0 S	Acamar	315° 16.6	40° 14.6 S	176° 35.8	10° 34.0 S	244° 52.4	11.9	18° 31.2 S	1.8	54.6	N 72°	05:43	07:01	08:13	-	-	09:13		
	01	166° 08.7	158° 15.8	50.6	149° 51.3	50.6	324° 30.0	29.0	260° 13.2	05.0	260° 13.2	05.0	Achernar	335° 25.4	57° 09.4 S	191° 35.9	33.1	259° 23.3	11.8	33.0	1.8	68°	05:44	06:55	07:59	06:30	07:22	07:45			
	02	181° 11.2	173° 17.5	51.4	164° 52.1	51.3	339° 32.6	29.0	275° 15.4	05.0	275° 15.4	05.0	Acruz	173° 05.8	63° 11.5 S	206° 35.9	32.2	273° 54.1	11.7	34.8	1.6	66°	05:46	06:45	07:39	05:09	06:01	06:38			
	03	196° 13.6	188° 19.2	52.2	179° 52.1	52.0	354° 35.1	28.9	299° 17.1	05.0	299° 17.1	05.0	Adhara	255° 10.3	29° 00.1 S	221° 36.0	31.3	288° 24.8	11.8	36.4	1.6	54.7	06:47	06:45	07:31	04:46	05:37	06:17			
	04	211° 16.1	203° 20.9	53.0	194° 53.6	52.8	9° 37.7	28.9	305° 20.0	05.0	305° 20.0	05.0	Aldebaran	290° 46.5	16° 32.4 N	236° 36.1	30.4	302° 55.6	11.7	38.0	1.5	62°	05:47	06:38	07:24	04:28	05:19	06:00			
	05	226° 18.6	218° 22.6	53.8	209° 54.4	53.5	24° 40.3	28.8	320° 22.3	05.0	320° 22.3	05.0				251° 36.2	29.5	317° 26.3	11.7	39.5	1.4	60°	05:47	06:36	07:18	04:13	05:03	05:46			
	06	241° 21.0	233° 24.3	54.6	224° 55.2	54.2	39° 42.8	28.8	335° 24.6	05.0	335° 24.6	05.0	Alioth	166° 18.2	55° 51.8 N	266° 36.2	28.6	331° 57.0	11.6	40.9	1.3		N 58°	05:48	06:33	07:13	04:00	04:50	05:34		
	07	256° 23.5	248° 26.1	55.4	239° 55.9	55.0	45° 45.4	28.7	350° 26.8	05.0	350° 26.8	05.0	Alkaid	152° 56.7	49° 13.5 N	281° 36.3	27.7	346° 27.6	11.6	42.2	1.2	56°	05:47	06:31	07:08	03:49	04:39	05:23			
	08	271° 26.0	263° 27.8	56.2	254° 56.7	55.7	69° 48.0	28.7	5° 29.1	05.0	5° 29.1	05.0	Alnair	27° 41.1	46° 52.7 S	296° 36.4	26.8	0° 58.2	11.6	43.4	1.1	54°	05:47	06:28	07:04	03:39	04:29	05:14			
	09	286° 28.4	278° 29.5	57.0	269° 57.5	56.4	84° 50.5	28.6	20° 31.4	05.0	20° 31.4	05.0	Alnilam	275° 43.7	1° 11.8 S	311° 36.5	25.9	15° 28.8	11.6	44.5	1.0	54.8	52°	05:47	06:26	07:01	03:30	04:21	05:06		
	10	301° 30.9	293° 31.2	57.8	284° 58.2	57.2	99° 53.1	28.6	33° 37.7	05.0	33° 37.7	05.0	Alphard	217° 53.3	8° 44.2 S	326° 36.5	25.0	29° 59.4	11.5	45.5	1.0	50°	05:47	06:24	06:57	03:22	04:13	04:58			
	11	316° 33.4	308° 33.0	58.5	299° 59.0	57.9	114° 55.7	28.5	50° 36.0	05.0	50° 36.0	05.0				341° 36.6	24.1	44° 29.9	11.5	46.5	0.8	45°	05:46	06:20	06:50	03:06	03:56	04:42			
	12	331° 35.8	323° 34.7	59.3 N	314° 59.8	6° 58.6 N	129° 58.3	27° 28.5 S	65° 38.2	22° 05.0 S	65° 38.2	22° 05.0 S	Alphecca	126° 08.9	26° 39.4 N	356° 36.7	10° 23.2 S	59° 00.4	11.5	48° 47.3 S	0.8	54.8	N 40°	05:45	06:16	06:43	02:52	03:42	04:29		
	13	346° 38.3	338° 36.4	9° 00.1 N	330° 59.5	59.4	145° 00.8	28.4	80° 40.5	05.0	80° 40.5	05.0	Alpheratz	330° 41.2	29° 11.0 N	11° 36.8	30.9	11.4	48.1	0.7	53°	05:43	06:16	06:38	02:41	03:30	04:18				
	14	1° 40.8	353° 38.2	00.9	345° 01.3	7° 00.1 N	160° 03.4	28.4	95° 42.8	05.0	95° 42.8	05.0	Altair	62° 06.1	8° 54.8 N	26° 36.8	21.3	88° 01.3	11.5	48.8	0.6	30°	05:41	06:09	06:33	02:31	03:20	04:08			
	15	16° 43.2	8° 39.9	01.7	0° 02.1	00.8	175° 06.0	28.3	110° 45.1	05.0	110° 45.1	05.0	Antares	353° 13.7	42° 13.1 S	41° 36.9	20.4	102° 31.8	11.3	49.4	0.5	54.9	20°	05:37	06:02	06:25	02:13	03:03	03:52		
	16	31° 45.7	23° 41.7	02.5	15° 02.8	01.5	190° 08.5	28.3	125° 47.4	05.0	125° 47.4	05.0				56° 37.0	19.5	117° 02.1	11.4	49.9	0.4	N 10°	05:31	05:56	06:17	01:58	02:47	03:37			
	17	46° 48.1	38° 43.4	03.3	30° 03.6	02.3	205° 11.1	28.2	140° 49.6	05.0	140° 49.6	05.0				71° 37.1	18.6	131° 32.5	11.3	50.3	0.3	0°	05:25	05:49	06:10	01:44	02:33	03:23			
	18	61° 50.6	53° 45.2	04.0	45° 04.4	03.0	220° 13.7	28.2	155° 51.9	05.0	155° 51.9	05.0	Arcturus	145° 53.3	19° 05.5 N	86° 37.1	17.7	146° 02.8	11.3	50.6	0.2	S 10°	05:17	05:41	06:03	01:30	02:19	03:10			
	19	76° 53.1	68° 46.9	04.8	60° 05.2	03.7	235° 16.3	28.1	170° 54.2	05.0	170° 54.2	05.0	Atria	107° 22.9	69° 03.0 S	101° 37.2	16.8	160° 33.1	11.3	50.8	0.1	20°	05:06	05:32	05:55	01:15	02:04	02:55			
	20	91° 55.5	83° 48.7	05.6	75° 05.9	04.5	250° 18.8	28.1	185° 56.5	05.0	185° 56.5	05.0	Avior	234° 16.4	59° 34.2 S	116° 37.3	15.9	175° 03.4	11.3	50.9	0.0	55.0	30°	04:52	05:21	05:46	00:58	01:46	02:38		
	21	106° 58.0	98° 50.4	06.4	90° 06.7	05.2	265° 21.4	28.0	200° 58.8	05.0	200° 58.8	05.0	Bellatrix	278° 29.2	6° 21.6 N	131° 37.4	15.0	189° 33.7	11.2	50.9	0.0	35°	04:43	05:14	05:41	00:48	01:36	02:28			
	22	122° 00.5	113° 52.2	07.2	105° 07.5	05.9	280° 24.0	27.9	216° 01.0	05.0	216° 01.0	05.0	Betelgeuse	270° 58.4	7° 24.3 N	146° 37.5	14.1	204° 03.9	11.2	50.9	0.2	40°	04:33	05:06	05:35	00:37	01:25	02:17			
23	137° 02.9	128° 54.0	07.9	120° 08.2	06.6	295° 26.6	27.9	231° 03.3	05.0	231° 03.3	05.0				161° 37.5	13.2	218° 34.1	11.2	50.7	0.2	45°	04:19	04:57	05:27	00:24	01:11	02:04				
Wednesday	00	152° 05.4	143° 55.7	9° 08.5 N	135° 09.0	7° 07.4 N	310° 29.1	7° 27.8 S	246° 05.6	22° 05.0 S	246° 05.6	22° 05.0 S	Canopus	263° 54.7	52° 42.7 S	176° 37.6	10° 12.2 S	233° 04.3	11.1	18° 50.5 S	0.3	55.0	S 50°	04:02	04:45	05:19	00:07	00:54	01:48		
	01	167° 07.9	158° 57.5	09.7	158° 57.8	08.1	325° 31.7	27.8	261° 07.9	05.0	261° 07.9	05.0	Capella	280° 30.6	46° 00.8 N	191° 37.7	11.3	247° 34.4	11.2	50.2	0.5	55.1	52°	03:54	04:59	05:15	-	00:46	01:41		
	02	182° 10.3	173° 59.3	10.3	165° 10.5	08.8	340° 34.3	27.7	276° 10.2	05.0	276° 10.2	05.0	Deneb	49° 30.2	45° 20.4 N	206° 37.8	10.4	262° 04.6	11.1	49.7	0.5	54°	03:44	04:32	05:11	-	00:38	01:32			
	03	197° 12.8	189° 01.1	11.0	180° 11.3	09.6	355° 36.9	27.7	291° 12.5	05.0	291° 12.5	05.0	Denebola	182° 30.8	14° 28.5 N	221° 37.8	09.5	276° 34.7	11.0	49.2	0.6	56°	03:33	04:25	05:06	-	00:28	01:23			
	04	212° 15.3	204° 02.8	11.8	195° 12.1	10.3	10° 39.4	27.6	306° 14.7	05.0	306° 14.7	05.0	Diphda	348° 53.7	17° 53.8 S	236° 37.9	08.6	291° 04.7	11.1	48.6	0.7	58°	03:20	04:17	05:00	-	00:17	01:12			
	05	227° 17.7	219° 04.6	12.6	210° 12.8	11.0	25° 42.0	27.6	321° 17.0	05.0	321° 17.0	05.0				251° 38.0	07.7	305° 34.8	11.0	47.9	0.8	55.2	S 60°	03:05	04:08	04:54	-	00:04	01:00		
	06	242° 20.2	234° 06.4	13.3	225° 13.6	11.7	40° 44.6	27.5	336° 19.3	05.0	336° 19.3	05.0	Dubhe	193° 48.1	61° 39.4 N	266° 38.1	06.8	320° 04.8	11.0	47.1	0.9	58°	S 62°	02:46	03:57	04:47	23:49	-	00:45		
	07	257° 22.6	249° 08.2	14.1	240° 14.4	12.5	55° 47.2	27.5	351° 21.6	05.1	351° 21.6	05.1	Elnath	278° 09.3	28° 37.1 N	281° 38.2	05.9	334° 34.8	11.0	46.2	1.0										
	08	272° 25.1	264° 10.0	14.9	255° 15.2	13.2	70° 49.7	27.4	6° 23.9	05.1	6° 23.9	05.1	Eltanin	90° 45.2	51° 29.1 N	296° 38.2	04.9	349° 04.8	11.0	45.2	1.1										
	09	287° 27.6	279° 11.8	15.6	270° 15.9	13.9	85° 52.3	27.3	21° 26.2	05.1	21° 26.2	05.1	Enif	33° 45.0	9° 57.2 N	311° 38.3	04.0	3° 34.8	10.9	44.1	1.2										
	10	302° 30.0	294° 13.6	16.4	285° 16.7	14.7	100° 54.9	27.3	36° 28.4	05.1	36° 28.4	05.1	Fomalhaut	15° 21.6	29° 32.0 S	326° 38.4	03.1	18° 34.7	10.9	42.9	1.3	55.3									
	11	317° 32.5	309° 15.4	17.1	300° 17.5	15.4	115° 57.5	27.2	51° 30.7	05.1	51° 30.7	05.1				341° 38.5	02.2	32° 34.6	10.9	41.6	1.3										
	12	332° 35.0	324° 17.2	17.9	315° 18.																										

2017 February 24, 25, 26 (Fri, Sat, Sun)

GMT	ARIES			VENUS -4.6			MARS +1.3			JUPITER -2.3			SATURN +0.5			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec		GHA	Dec		GHA	Dec		Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil		24	25		26		
Friday	00	154° 03.7	145° 24.2	9° 44.4 N	135° 45.9	7° 42.2 N	312° 33.1	7° 25.1 S	247° 55.3	22° 05.1 S	315° 16.6	40° 14.6 S	176° 41.7	9° 28.2 S	208° 49.7	10.4	16° 47.4 S	4.9	56.3	N 72°	05:29	06:46	07:57	08:35	08:22	08:13					
	01	169° 06.1	160° 26.1	45.1	150° 46.6	42.9	327° 35.7	25.1	262° 57.6	05.1	335° 25.4	57° 09.4 S	191° 41.8	27.3	223° 19.1	10.4	42.5	5.0	56.3	N 70°	05:32	06:42	07:45	07:53	07:56	07:57					
	02	184° 08.6	175° 28.0	45.8	165° 47.4	43.6	342° 38.3	25.0	277° 59.9	05.1	173° 05.8	63° 11.5 S	206° 41.9	26.4	237° 48.5	10.3	37.5	5.1	66°	68°	05:36	06:35	07:27	07:03	07:21	07:34					
	03	199° 11.1	190° 29.9	45.5	180° 48.2	44.4	357° 40.9	24.9	293° 02.2	05.2	255° 10.3	29° 00.1 S	221° 42.0	25.4	252° 17.8	10.4	32.4	5.1	64°	64°	05:37	06:32	07:21	06:43	07:08	07:25					
	04	214° 13.5	205° 31.9	47.2	195° 48.9	45.1	12° 43.5	24.9	308° 04.5	05.2	229° 16.0	27° 46.0	236° 42.1	24.5	266° 47.2	10.3	27.3	5.3	56.4	62°	62°	05:39	06:30	07:15	06:32	06:57	07:18				
	05	229° 16.0	220° 33.8	47.9	210° 49.7	45.8	23° 06.8	24.8	323° 06.8	05.2	244° 18.5	235° 35.7	251° 42.1	23.6	281° 16.5	10.4	22.0	5.3	60°	60°	05:39	06:27	07:10	06:20	06:48	07:11					
	06	244° 18.5	235° 35.7	48.6	225° 50.5	46.5	42° 48.6	24.8	338° 09.1	05.2	259° 20.9	250° 37.7	266° 42.2	22.7	295° 45.9	10.3	16.7	5.5	56°	56°	05:40	06:25	07:05	06:10	06:40	07:05					
	07	259° 20.9	265° 37.7	49.3	240° 51.2	47.2	57° 51.2	24.7	353° 11.4	05.2	274° 23.4	265° 39.6	281° 42.3	21.7	310° 15.2	10.4	11.2	5.5	56°	56°	05:41	06:23	07:01	06:01	06:32	07.00					
	08	274° 23.4	265° 39.6	50.0	255° 52.0	48.0	8° 13.7	24.6	8° 13.7	05.2	289° 25.9	280° 41.6	296° 42.4	20.8	324° 44.6	10.3	05.7	5.7	56.5	54°	54°	05:41	06:22	06:57	05:52	06:26	06:55				
	09	289° 25.9	280° 41.6	50.7	270° 52.8	48.7	87° 56.4	24.6	23° 16.0	05.2	304° 28.3	295° 43.5	311° 42.5	19.9	339° 13.9	10.3	00.0	5.7	52°	52°	05:41	06:20	06:54	05:45	06:20	06:51					
	10	304° 28.3	295° 43.5	51.4	285° 53.5	49.4	102° 59.0	24.5	38° 18.3	05.2	319° 30.8	310° 45.5	326° 42.6	19.0	353° 43.2	10.3	15° 54.3 S	5.8	50°	50°	05:41	06:19	06:51	05:39	06:15	06:46					
	11	319° 30.8	310° 45.5	52.1	300° 54.3	50.1	118° 01.6	24.5	53° 20.5	05.2	334° 33.2	325° 51.2	341° 42.7	18.0	8° 12.5	10.4	48.5	5.9	56.6	45°	45°	05:41	06:15	06:45	05:25	06:03	06:39				
	12	334° 33.2	325° 47.4	9° 52.8 N	315° 55.1	7° 50.8 N	133° 04.2	7° 24.4 S	68° 22.8	22° 05.2 S	349° 35.7	340° 49.4	356° 42.8	9° 17.1 S	22° 41.9	10.3	15° 42.6 S	6.0	56.6	N 40°	05:40	06:12	06:39	05:13	05:54	06:32					
	13	349° 35.7	340° 49.4	53.5	330° 55.8	51.6	148° 06.8	24.3	83° 25.1	05.2	364° 41.7	351° 51.2	371° 42.9	16.2	37° 11.2	10.3	36.6	6.0	35°	35°	05:39	06:02	06:34	05:03	05:46	06:26					
	14	4° 38.2	355° 51.3	54.2	345° 56.6	52.3	163° 09.4	24.3	98° 27.4	05.2	4° 38.2	355° 51.3	26° 43.0	15.3	51° 40.5	10.3	30.6	6.2	30°	30°	05:38	06:06	06:30	04:54	05:38	06:21					
	15	19° 40.6	10° 53.3	54.9	0° 57.4	53.0	178° 12.0	24.2	113° 29.7	05.2	19° 40.6	10° 53.3	41° 43.1	14.3	66° 09.8	10.3	24.4	6.2	56.7	20°	20°	05:35	06:00	06:23	04:39	05:26	06.11				
	16	34° 43.1	25° 53.3	55.6	15° 58.1	53.7	193° 14.6	24.2	128° 32.0	05.2	34° 43.1	25° 53.3	56° 43.2	13.4	80° 39.1	10.3	18.1	6.3	56°	56°	05:30	05:55	06:16	04:26	05:15	06.03					
	17	49° 45.6	40° 57.2	56.3	30° 58.9	54.4	208° 17.2	24.1	143° 34.3	05.2	64° 48.0	55° 59.2	71° 43.3	12.5	95° 08.4	10.3	11.8	6.4	0°	0°	05:24	05:49	06:10	04:14	05:05	05.56					
	18	64° 48.0	55° 59.2	57.0	45° 59.7	55.2	223° 19.7	24.0	158° 36.6	05.2	79° 50.5	71° 01.2	86° 43.4	11.5	109° 37.7	10.3	05.4	6.6	56.8	S 10°	05:17	05:42	06:03	04:01	04:54	05.48					
	19	79° 50.5	71° 01.2	57.6	61° 00.4	55.9	238° 22.3	24.0	173° 38.9	05.2	94° 53.0	86° 03.2	101° 43.5	10.6	124° 07.0	10.3	14° 58.8 S	6.6	20°	20°	05:08	05:34	05:56	03:48	04:43	05.40					
	20	94° 53.0	86° 03.2	58.3	76° 01.2	56.6	253° 24.9	23.9	188° 41.2	05.2	109° 55.4	101° 05.1	116° 43.0	9.7	138° 36.3	10.3	5.2	6.7	30°	30°	04:55	05:24	05:48	03:33	04:31	05.30					
	21	109° 55.4	101° 05.1	59.0	91° 02.0	57.3	268° 27.5	23.9	203° 43.5	05.2	124° 57.9	116° 01.2	131° 43.7	08.8	153° 05.6	10.3	45.5	6.7	35°	35°	04:47	05:17	05:43	03:24	04:24	05.25					
	22	124° 57.9	116° 07.1	59.7	106° 02.7	58.0	283° 30.1	23.8	218° 45.8	05.2	140° 57.5	124° 57.9	146° 43.8	07.8	167° 34.9	10.3	38.8	6.9	56.9	40°	40°	04:37	05:10	05:38	03:14	04:15	05.19				
23	140° 00.3	131° 09.1	10° 00.4 N	121° 03.5	58.8	298° 32.7	23.7	233° 48.1	05.2	155° 58.5	140° 00.3	161° 43.8	06.9	182° 04.2	10.3	31.9	6.9	45°	45°	04:24	05:01	05:32	03:03	04:05	05.12						
Saturday	00	155° 02.8	146° 11.1	10° 01.0 N	136° 04.3	7° 59.5 N	313° 35.3	7° 23.7 S	248° 50.3	22° 05.2 S	155° 02.8	146° 11.1	176° 43.9	9° 06.0 S	196° 33.5	10.3	14° 25.0 S	7.1	56.9	S 50°	04:01	04:50	05:24	02:48	03:54	05.03					
	01	170° 05.3	161° 13.1	01.7	151° 05.0	8° 00.2 N	328° 37.9	23.6	263° 52.6	05.2	170° 05.3	161° 13.1	191° 44.0	05.0	211° 02.8	10.3	17.9	7.1	52°	52°	04:01	04:45	05:21	02:42	03:48	04.59					
	02	185° 07.7	176° 15.1	02.4	166° 05.8	00.9	343° 40.5	23.5	278° 54.9	05.2	185° 07.7	176° 15.1	206° 44.1	04.1	225° 32.1	10.3	10.8	7.2	57.0	54°	54°	03:52	04:39	05:17	02:34	03:42	04.55				
	03	200° 10.2	191° 17.1	03.1	181° 06.6	01.6	358° 43.1	23.5	293° 57.2	05.2	200° 10.2	191° 17.1	221° 44.2	03.2	240° 01.4	10.2	03.6	7.3	56°	56°	03:42	04:32	05:12	02:26	03:35	04.50					
	04	215° 12.7	206° 19.1	03.7	196° 07.3	02.3	13° 45.7	23.4	308° 59.5	05.2	215° 12.7	206° 19.1	236° 44.3	02.2	254° 30.6	10.3	13° 56.3 S	7.3	58°	58°	03:30	04:25	05:08	02:16	03:28	04.44					
	05	230° 15.1	221° 21.1	04.4	211° 08.1	03.1	28° 48.3	23.4	324° 01.8	05.2	230° 15.1	221° 21.1	251° 44.4	01.3	268° 59.9	10.3	49.0	7.5	57.1	S 60°	03:16	04:16	05:02	02:06	03:19	04.38					
	06	245° 17.6	236° 23.1	05.1	226° 08.9	03.8	43° 50.9	23.3	339° 04.1	05.2	245° 17.6	236° 23.1	266° 44.5	00.4	283° 29.2	10.3	41.5	7.5	57°	S 62°	02:59	04:07	04:56	01:53	03:09	04.31					
	07	260° 20.1	251° 25.1	05.7	241° 09.6	04.5	58° 53.5	23.2	354° 06.4	05.2	260° 20.1	251° 25.1	281° 44.6	8° 59.5 S	297° 58.5	10.3	34.0	7.6	57°	S 62°	02:59	04:07	04:56	01:53	03:09	04.31					
	08	275° 22.5	266° 27.2	06.4	256° 10.4	05.2	73° 56.1	23.2	369° 08.7	05.2	275° 22.5	266° 27.2	296° 44.7	58.5	312° 27.8	10.3	26.4	7.7	57°	S 62°	02:59	04:07	04:56	01:53	03:09	04.31					
	09	290° 25.0	281° 29.2	07.1	271° 11.2	05.9	88° 58.7	23.1	24° 11.0	05.2	290° 25.0	281° 29.2	311° 44.8	57.6	326° 57.1	10.3	18.7	7.8	57.2	S 62°	02:59	04:07	04:56	01:53	03:09	04.31					
	10	305° 27.5	296° 31.2	07.7	286° 11.9	06.7	104° 01.3	23.0	39° 13.3	05.2	305° 27.5	296° 31.2	326° 44.9	56.7	341° 26.4	10.3	10.9	7.8	57°	S 62°	02:59	04:07	04:56	01:53	03:09	04.31					
	11	320° 29.9	311° 33.2	08.4	301° 12.7	07.4	119° 03.9	23.0	54° 15.6	05.2	320° 29.9	311° 33.2	341° 45.0	55.7	355° 55.7	10.3	03.1	8.0	57°	S 62°	02:59	04:07	04:56	01:53	03:09	04.31					
	12	335° 32.4	326° 35.3	10° 09.1 N	316° 13.5	8° 08.1 N	134° 06.5	7° 22.9 S	69° 17.9	22° 05.2 S	335° 32.4	326° 35.3	356° 45.1	8° 54.8 S	10° 25.0	10.3	12° 55.1 S	8.0	57.3	N 72°	16:31	17:42	19:00	12:28	14:27	16:22					
	13	350° 34.8	341° 37.3	09.7	331° 14.2	08.8	149° 09.1	22.9	84° 20.2	05.2	350° 34.8	341° 37.3	11° 45.2	53.9	24°																

2017 Feb 27, 28, Mar. 1 (Mon, Tue, Wed)

GMT	ARIES			VENUS -4.6			MARS +1.3			JUPITER -2.3			SATURN +0.5			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise	
	GHA	Dec		GHA	Dec		GHA	Dec		GHA	Dec		GHA	Dec		Name	SHA	Dec	GHA	Dec	GHA	Dec	v	Dec		d	HP		Nautical	Civil
Monday	00	157° 01'.1	147° 50'.6	10° 31'.8 N	136° 41'.0	8° 33'.8 N	315° 40'.3	7° 20'.6 S	250° 40'.6	22° 05'.3 S	Acamar	315° 16'.6	40° 14'.6 S	176° 48'.9	8° 21'.1 S	172° 01'.2	10.3	7° 23'.5 S	10.3	58'.2	N 72°	05:14	06:32	07:41	08:06	07:59	07:52			
	01	172° 03'.6	162° 52'.8	32.4	151° 41'.8	34.5	330° 42'.9	20.5	265° 42'.9	05.3	Achernar	335° 25'.4	57° 09'.4 S	191° 49'.0	20.1	186° 30'.5	10.4	13.2	10.3	68°	N 70°	05:19	06:29	07:31	07:57	07:57	07:56			
	02	187° 06'.0	177° 54'.9	33.0	166° 42'.5	35.2	345° 45'.5	20.4	280° 45'.2	05.3	Acruz	173° 05'.8	63° 11'.5 S	206° 49'.1	19.2	200° 59'.9	10.4	02.9	10.4	66°	66°	05:25	06:24	07:16	07:44	07:53	08:02			
	03	202° 08'.5	192° 57'.1	33.6	181° 43'.3	35.9	35° 48'.1	20.4	295° 47'.5	05.3	Adhara	255° 10'.3	29° 00'.1 S	215° 49'.2	18.3	215° 29.3	10.3	6° 52'.5 S	10.5	58'.3	64°	58°	05:28	06:22	07:10	07:39	07:52	08:04		
	04	217° 10'.9	207° 59'.3	34.2	196° 44.0	36.6	15° 50'.7	20.3	310° 49.8	05.3	Aldebaran	290° 46'.5	16° 32'.4 N	236° 49.3	17.3	229° 58'.6	10.4	42.0	10.5	62°	62°	05:30	06:21	07:05	07:35	07:50	08:06			
	05	232° 13'.4	223° 01'.4	34.8	211° 44.8	37.3	30° 53'.3	20.2	325° 52'.1	05.3				251° 49'.4	16.4	244° 28'.0	10.3	31.5	10.5	60°	60°	05:31	06:19	07:01	07:31	07:49	08:08			
	06	247° 15'.9	238° 03'.6	35.4	226° 45'.6	38.0	45° 55'.9	20.2	340° 54'.4	05.3	Alioth	166° 18'.1	55° 51'.9 N	266° 49'.5	15.4	258° 57'.3	10.4	21.0	10.6		N 58°	05:32	06:18	06:57	07:28	07:48	08:09			
	07	262° 18'.3	253° 05'.8	36.0	241° 46'.3	38.8	60° 58'.5	20.1	355° 56'.7	05.3	Alkaid	152° 56'.7	49° 13'.5 N	281° 49'.7	14.5	273° 26'.7	10.3	10.4	10.6	58'.4	56°	56°	05:33	06:16	06:54	07:25	07:48	08:11		
	08	277° 20'.8	268° 08'.0	36.6	256° 47'.1	39.5	76° 01'.2	20.0	10° 59'.0	05.3	Alnair	27° 41'.1	46° 52'.7 S	296° 49'.8	13.6	287° 56'.0	10.4	5° 59'.8 S	10.7	54°	54°	05:34	06:15	06:51	07:22	07:47	08:12			
	09	292° 23'.3	283° 10'.2	37.2	271° 47.9	40.2	91° 03'.8	20.0	26° 01'.3	05.3	Alnilam	275° 43'.7	1° 11'.8 S	311° 49.9	12.6	302° 25'.4	10.3	49.1	10.7	52°	52°	05:35	06:14	06:48	07:19	07:46	08:13			
	10	307° 25'.7	298° 12'.4	37.8	286° 48'.6	40.9	106° 06'.4	19.9	41° 03'.6	05.3	Alphard	217° 53'.3	8° 44'.2 S	326° 50'.0	11.7	316° 54'.7	10.4	38.4	10.7	50°	50°	05:35	06:13	06:45	07:17	07:46	08:14			
	11	322° 28'.2	313° 14'.5	38.3	301° 49.4	41.6	121° 09'.0	19.8	56° 05'.9	05.3				341° 50'.1	10.7	331° 24'.1	10.3	27.7	10.8	45°	45°	05:36	06:10	06:39	07:12	07:44	08:16			
	12	337° 30'.7	328° 16'.7	39.9 N	316° 50.2	42.3 N	136° 11'.6	7° 19'.8 S	71° 08'.2	22° 05'.3 S	Alphecca	126° 08'.8	26° 39'.3 N	356° 50.2	8° 09'.8 S	345° 53'.4	10.3	5° 16'.9 S	10.8	58'.5	N 40°	05:36	06:08	06:35	07:08	07:43	08:18			
	13	352° 33'.1	343° 18'.9	39.5	331° 50.9	43.0	151° 14'.2	19.7	86° 10'.5	05.3				11° 50'.3	08.8	0° 22'.7	10.4	06.1	10.9	35°	35°	05:36	06:05	06:31	07:04	07:42	08:20			
	14	7° 35'.6	358° 21'.1	40.1	346° 51.7	43.7	166° 16'.8	19.6	101° 12'.8	05.3	Altair	62° 06'.0	8° 54'.8 N	26° 50'.4	07.9	14° 52'.1	10.3	4° 55'.2 S	10.9	30°	30°	05:35	06:03	06:27	07:01	07:41	08:21			
	15	22° 38'.0	13° 23'.3	40.7	1° 52'.4	44.4	181° 19'.5	19.6	116° 15'.2	05.3	Ankaa	353° 13'.7	42° 13'.0 S	41° 50'.5	07.0	29° 21'.4	10.3	44.3	10.9	20°	20°	05:33	05:58	06:20	06:56	07:40	08:24			
	16	37° 40'.5	28° 25'.5	41.3	16° 53'.2	45.1	196° 22'.1	19.5	131° 17'.5	05.3	Antares	112° 23'.2	26° 28'.0 S	56° 50'.7	06.0	43° 50'.7	10.3	33.4	10.9	N 10°	N 10°	05:29	05:54	06:15	06:51	07:38	08:26			
	17	52° 43'.0	43° 27'.8	41.8	31° 54'.0	45.8	211° 24'.7	19.4	146° 19'.8	05.3				71° 50'.8	05.1	58° 20'.0	10.3	22.5	11.0	58'.6	0°	05:24	05:48	06:09	06:46	07:37	08:29			
	18	67° 45'.4	58° 30'.0	42.4	46° 54'.7	46.6	226° 27'.3	19.4	161° 22'.1	05.3	Arcturus	145° 53'.3	19° 05'.5 N	86° 50'.9	04.1	72° 49'.3	10.3	11.5	11.0	S 10°	S 10°	05:18	05:42	06:04	06:42	07:36	08:31			
	19	82° 47'.9	73° 32'.2	43.0	61° 55'.5	47.3	241° 29'.9	19.3	176° 24'.4	05.3	Atria	107° 22'.8	69° 03'.0 S	101° 51'.0	03.2	87° 18'.6	10.3	30.5	11.1	20°	20°	05:09	05:35	05:57	06:37	07:35	08:33			
	20	97° 50'.4	88° 34'.4	43.6	76° 56'.3	48.0	256° 32'.5	19.2	191° 26'.7	05.3	Avior	234° 16'.4	59° 34'.2 S	116° 51'.1	02.2	101° 47.9	10.3	3° 49'.4 N	11.0	30°	30°	04:57	05:26	05:50	06:31	07:33	08:36			
	21	112° 52'.8	103° 36'.6	44.1	91° 57.0	48.7	271° 35'.1	19.1	206° 29'.0	05.3	Bellatrix	278° 29'.2	6° 21'.6 N	131° 51'.2	01.3	116° 17'.2	10.3	38.4	11.1	35°	35°	04:50	05:20	05:46	06:28	07:33	08:38			
	22	127° 55'.3	118° 38'.9	44.7	106° 57'.8	49.4	286° 37'.8	19.1	221° 31'.3	05.3	Betelgeuse	270° 58'.5	7° 24'.3 N	146° 51'.3	00.4	130° 46'.5	10.3	27.3	11.2	58'.7	40°	04:41	05:14	05:41	06:25	07:32	08:40			
23	142° 57'.8	133° 41'.1	45.3	121° 58'.5	50.1	301° 40'.4	19.0	236° 33'.6	05.3				161° 51'.4	7° 59'.4 S	145° 15'.8	10.3	16.1	11.1	45°	45°	04:29	05:06	05:36	06:20	07:31	08:42				
Tuesday	00	158° 00'.2	148° 43'.3	10° 45'.8 N	136° 59'.3	8° 50'.8 N	316° 43'.0	7° 18'.9 S	251° 35'.9	22° 05'.3 S	Canopus	263° 54'.8	52° 42'.8 S	176° 51'.6	7° 58'.5 S	159° 45'.1	10.2	3° 05'.0 S	11.2	58'.7	S 50°	04:15	04:56	05:29	06:15	07:29	08:44			
	01	173° 02'.7	163° 45'.6	46.4	152° 00'.1	51.5	331° 45'.6	18.9	266° 38'.2	05.3	Capella	280° 30'.6	46° 00'.8 N	191° 51'.7	57.5	174° 14'.3	10.3	2° 53'.8 S	11.2	52°	52°	04:08	04:51	05:26	06:13	07:29	08:45			
	02	188° 05'.2	178° 47'.8	46.9	167° 00'.8	52.2	346° 48'.2	18.8	281° 40'.5	05.3	Deneb	49° 30'.1	45° 20'.4 N	206° 51'.8	56.6	188° 43'.6	10.2	42.6	11.2	54°	54°	04:00	04:46	05:23	06:10	07:28	08:47			
	03	203° 07'.6	193° 50'.1	47.5	182° 01'.6	52.9	1° 50'.8	18.7	296° 42'.8	05.3	Denebola	182° 30'.8	14° 28'.5 N	221° 51.9	55.6	203° 12.8	10.3	31.4	11.1	58'.8	56°	03:50	04:40	05:19	06:08	07:27	08:48			
	04	218° 10'.1	208° 52'.3	48.1	197° 02.4	53.6	16° 53'.5	18.7	311° 45'.1	05.3	Diphda	348° 53'.7	17° 53'.8 S	236° 52.0	54.7	217° 42'.1	10.2	20.2	11.3	58°	58°	03:40	04:33	05:15	06:04	07:27	08:50			
	05	233° 12'.5	223° 54'.6	48.6	212° 03'.1	54.3	31° 56'.1	18.6	326° 47'.4	05.3				251° 52'.1	53.7	232° 11'.3	10.2	08.9	11.3	S 60°	S 60°	03:27	04:25	05:10	06:01	07:26	08:52			
	06	248° 15'.0	238° 56'.8	49.2	227° 03'.9	55.0	46° 57'.1	18.5	341° 49.7	05.3	Dubhe	193° 48'.1	61° 39'.4 N	266° 52'.3	52.8	246° 40'.5	10.2	1° 57'.6 S	11.3	S 62°	S 62°	03:12	04:16	05:05	05:57	07:25	08:54			
	07	263° 17'.5	253° 59'.1	49.7	242° 04'.6	55.7	62° 01'.3	18.4	356° 52'.0	05.3	Elath	278° 09'.4	28° 37'.1 N	281° 52.4	51.8	261° 09'.7	10.2	46.3	11.3											
	08	278° 19'.9	269° 01'.4	50.3	257° 05'.4	56.5	77° 03'.9	18.4	11° 54'.3	05.3	Eltanin	90° 45'.2	51° 29'.1 N	296° 52.5	50.9	275° 38'.9	10.2	35.0	11.3	58'.9	58'.9	03:07	04:01	04:50	05:41	06:54	08:11			
	09	293° 22'.4	284° 03'.6	50.8	272° 06'.2	57.2	92° 06'.6	18.3	26° 56'.6	05.3	Enif	33° 45'.0	9° 57'.2 N	311° 52'.6	49.9	290° 08'.1	10.2	23.7	11.3											
	10	308° 24'.9	299° 05'.9	51.4	287° 06'.9	57.9	107° 09'.2	18.2	41° 58'.9	05.3	Fomalhaut	15° 21'.6	29° 32'.0 S	326° 52.7	49.0	304° 37'.3	10.1	12.4	11.4											
	11	323° 27'.3	314° 08'.2	51.9	302° 07.7	58.6	122° 11'.8	18.2	57° 01'.3	05.3				341° 52'.8	48.1	319° 06'.4	10.2	01.0	11.4											
	12	338° 29'.8	329° 10'.5	52.5 N	317° 08'.5	59.3 N	137° 14'.4	7° 18'.1 S	72° 03'.6	22° 05'.3 S	Gacrux	171° 57'.5	57° 12'.4 S	356° 53.0	7° 47'.1 S	333° 35'.6	10.1	0° 49'.7 S	11.4	58'.9	N 70°	16:56	17:58	19:09	18:22	20:09	21:56			
	13	353° 32'.3	344° 12'.7	53.0	332° 09'.2	60.0 N	152° 17'.0	18.0	87° 05'.9	05.3	Genah	175° 49'.4	17° 38'.3 S	11° 53'.1	46.2	348° 04'.7														

2017 March 2, 3, 4 (Thur, Fri, Sat)

GMT	ARIES			VENUS -4.6			MARS +1.3			JUPITER -2.3			SATURN +0.5			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	d	HP	Nautical	Civil		2	3		4		
Thurs day	00	159° 58.5	150° 34.9	11° 10.9 N	137° 35.9	9° 24.6 N	318° 48.9	7° 15.5 S	253° 26.7	22° 05.4 S	Acamar	315° 16.7	40° 14.6 S	176° 57.3	7° 12.9 S	134° 53.4	9.4	5° 56.8 N	10.9	59.3	N 72°	04:59	06:17	07:25	07:46	07:38	07:29				
	01	175° 01.0	165° 37.3	11.4	152° 36.9	25.3	333° 51.5	15.4	268° 29.0	05.4	Achernar	335° 25.4	57° 09.4 S	191° 57.4	11.9	149° 21.8	9.4	6° 07.7 N	10.9		N 70°	05:05	06:16	07:17	07:56	07:57	07:59				
	02	190° 03.4	180° 39.7	11.9	167° 37.4	26.0	348° 54.2	15.3	283° 31.3	05.4	Acruz	173° 05.7	63° 11.5 S	206° 57.6	11.0	163° 50.2	9.3	18.6	10.9		68°	05:10	06:14	07:10	08:04	08:11	08:22				
	03	205° 05.9	195° 42.1	12.3	182° 38.1	26.7	3° 56.8	15.3	298° 33.6	05.4	Adhara	255° 10.3	29° 00.1 S	221° 57.7	10.0	178° 18.5	9.4	29.5	10.9		66°	05:14	06:13	07:05	08:11	08:23	08:39				
	04	220° 08.4	210° 44.6	12.8	197° 38.9	27.4	18° 59.4	15.2	313° 36.0	05.4	Aldebaran	290° 46.5	16° 32.4 N	236° 57.8	09.0	192° 46.9	9.2	40.3	10.8		64°	05:18	06:12	07:00	08:17	08:33	08:54				
	05	235° 10.8	225° 47.0	13.3	212° 39.7	28.1	34° 02.1	15.1	328° 38.3	05.4				251° 57.9	08.1	207° 15.1	9.3	51.1	10.8		62°	05:20	06:11	06:56	08:23	08:42	09:06				
	06	250° 13.3	240° 49.4	13.7	227° 40.4	28.8	49° 04.7	15.0	343° 40.6	05.4	Alioth	166° 18.1	55° 51.9 N	266° 58.1	07.1	221° 43.4	9.2	7° 01.9 N	10.7		60°	05:23	06:11	06:52	08:27	08:49	09:16				
	07	265° 15.7	255° 51.9	14.2	242° 41.2	29.5	64° 07.3	15.0	358° 42.9	05.4	Alkaid	152° 56.6	49° 13.5 N	281° 58.2	06.2	236° 11.6	9.2	12.6	10.7	59.4	58°	05:26	06:09	06:46	08:35	09:02	09:33				
	08	280° 18.2	270° 54.3	14.7	257° 41.9	30.2	79° 09.9	14.9	13° 45.2	05.4	Alnair	257° 41.1	46° 52.7 S	296° 58.3	05.2	230° 39.8	9.2	23.3	10.6		56°	05:27	06:08	06:44	08:38	09:07	09:40				
	09	295° 20.7	285° 56.7	15.1	272° 42.7	30.8	94° 12.6	14.8	28° 47.5	05.4	Alnilam	275° 43.8	1° 11.8 S	311° 58.4	04.3	265° 08.0	9.1	33.9	10.6		52°	05:28	06:07	06:41	08:41	09:12	09:47				
	10	310° 23.1	300° 59.2	15.6	287° 43.5	31.5	109° 15.2	14.7	43° 49.8	05.4	Alphard	217° 53.3	8° 44.2 S	326° 58.6	03.3	279° 36.1	9.1	44.5	10.6		50°	05:29	06:07	06:39	08:44	09:16	09:53				
	11	325° 25.6	316° 01.6	16.1	302° 44.2	32.2	124° 17.8	14.7	58° 52.2	05.4				341° 58.7	02.4	294° 04.2	9.1	55.1	10.5		45°	05:31	06:05	06:34	08:50	09:25	10:05				
	12	340° 28.1	331° 04.1	11° 16.5 N	317° 45.0	9° 32.9 N	139° 20.5	7° 14.6 S	73° 54.5	22° 05.4 S	Alphecca	126° 08.8	26° 39.3 N	356° 58.8	7° 01.4 S	308° 32.3	9.1	8° 05.6 N	10.4	59.4	N 40°	05:32	06:03	06:30	08:55	09:33	10:16				
	13	355° 30.5	346° 06.6	17.0	332° 45.7	33.6	156° 23.1	14.5	88° 56.8	05.4	Alpheratz	337° 41.2	29° 11.0 N	11° 59.0	00.4	323° 00.4	9.0	16.0	10.4		35°	05:32	06:01	06:27	08:59	09:40	10:25				
	14	10° 33.0	1° 09.0	17.4	347° 46.5	34.3	169° 25.7	14.4	103° 59.1	05.4	Altair	62° 06.0	8° 54.8 N	26° 59.1	6° 59.5 S	337° 28.4	8.9	26.4	10.4		30°	05:32	06:00	06:24	09:03	09:46	10:32				
	15	25° 35.5	16° 11.5	17.9	2° 47.3	35.0	184° 28.4	14.4	119° 01.4	05.4	Antares	353° 13.7	42° 13.0 S	41° 59.2	58.5	351° 56.3	9.0	36.8	10.3		20°	05:31	05:56	06:18	09:09	09:56	10:46				
	16	40° 37.9	31° 13.9	18.3	17° 48.0	35.7	199° 31.0	14.3	134° 03.7	05.4				56° 59.3	57.6	6° 24.3	8.9	47.1	10.2		N 10°	05:28	05:52	06:13	09:15	10:06	10:58				
	17	55° 40.4	46° 16.4	18.8	32° 48.8	36.4	214° 33.6	14.2	149° 06.0	05.4				71° 59.5	56.6	20° 52.2	8.9	57.3	10.2		0°	05:24	05:48	06:09	09:21	10:14	11:09				
	18	70° 42.9	61° 18.9	19.2	47° 49.5	37.1	229° 36.3	14.1	164° 08.4	05.4	Arcturus	145° 53.3	19° 05.5 N	86° 59.6	55.7	35° 20.1	8.8	9° 07.5 N	10.1		S 10°	05:18	05:43	06:04	09:26	10:23	11:21				
	19	85° 45.3	76° 21.4	19.7	62° 50.3	37.8	244° 38.9	14.0	179° 10.7	05.4	Atria	107° 22.7	69° 03.0 S	101° 59.7	54.7	49° 47.9	8.8	17.6	10.1		20°	05:10	05:36	05:58	09:33	10:33	11:33				
	20	100° 47.8	91° 23.9	20.1	77° 51.1	38.5	259° 41.5	14.0	194° 13.0	05.4	Avior	234° 16.4	59° 34.2 S	116° 59.9	53.7	64° 15.7	8.8	27.7	10.1		30°	05:00	05:28	05:52	09:39	10:43	11:47				
	21	115° 50.2	106° 26.3	20.6	92° 51.8	39.2	274° 44.2	13.9	209° 15.3	05.4	Bellatrix	278° 29.3	6° 21.6 N	132° 00.0	52.8	78° 43.5	8.7	37.8	9.9		35°	04:53	05:23	05:49	09:43	10:50	11:55				
	22	130° 52.7	121° 28.8	21.0	107° 52.6	39.9	289° 46.8	13.8	224° 17.6	05.4	Betelgeuse	270° 58.5	7° 24.3 N	147° 00.1	51.8	93° 11.2	8.7	47.7	9.9		40°	04:44	05:17	05:45	09:48	10:57	12:05				
23	145° 55.2	136° 31.3	21.4	122° 53.3	40.6	304° 49.5	13.7	239° 19.9	05.4				162° 00.3	50.9	107° 38.9	8.7	57.6	9.9		45°	04:34	05:10	05:40	09:53	11:05	12:16					
Fri day	00	160° 57.6	151° 33.8	11° 21.9 N	137° 54.1	9° 41.3 N	319° 52.1	7° 13.7 S	254° 22.3	22° 05.4 S	Canopus	263° 54.8	52° 42.8 S	177° 00.4	6° 49.9 S	122° 06.6	8.7	10° 07.5 N	9.8	59.4	S 50°	04:21	05:01	05:34	10:00	11:15	12:29				
	01	176° 00.1	166° 36.3	22.3	152° 54.9	42.0	334° 54.7	13.6	269° 24.6	05.4	Capella	280° 30.7	46° 00.8 N	192° 00.5	49.0	136° 34.3	8.6	17.3	9.7		52°	04:14	04:57	05:32	10:03	11:20	12:35				
	02	191° 02.6	181° 38.8	22.7	167° 55.6	42.7	349° 57.4	13.5	284° 26.9	05.4	Deneb	49° 30.1	45° 20.4 N	207° 00.6	48.0	151° 01.9	8.5	27.0	9.7		54°	04:07	04:52	05:29	10:06	11:25	12:42				
	03	206° 05.0	196° 41.3	23.2	182° 56.4	43.4	5° 00.0	13.4	299° 29.2	05.4	Denebola	182° 56.4	14° 28.5 N	222° 00.8	47.0	165° 29.4	8.6	36.7	9.6		56°	03:58	04:47	05:25	10:10	11:31	12:50				
	04	221° 07.5	211° 43.9	23.6	197° 57.1	44.1	20° 02.6	13.4	314° 31.5	05.4	Diphda	348° 53.7	17° 53.8 S	237° 00.9	46.1	179° 57.0	8.5	46.3	9.5		58°	03:49	04:41	05:22	10:14	11:37	12:58				
	05	236° 10.0	226° 46.4	24.0	212° 57.9	44.8	35° 05.3	13.3	329° 38.9	05.4				252° 01.0	45.1	194° 24.5	8.4	58.8	9.5		S 60°	03:37	04:34	05:18	10:18	11:45	13:08				
	06	251° 12.4	241° 48.9	24.4	227° 58.7	45.5	50° 07.9	13.2	344° 36.2	05.4	Dubhe	193° 48.1	61° 39.4 N	267° 01.2	44.2	208° 51.9	8.4	11° 05.3 N	9.4		S 62°	03:24	04:26	05:13	10:24	11:53	13:20				
	07	266° 14.9	256° 51.4	24.9	242° 59.4	46.2	65° 10.5	13.1	359° 38.5	05.4	Elnath	278° 09.4	28° 37.1 N	282° 01.3	43.2	223° 19.3	8.4	14.7	9.3												
	08	281° 17.3	271° 54.0	25.3	258° 00.2	46.9	80° 13.2	13.0	14° 40.8	05.4	Eltanin	90° 45.1	51° 29.1 N	297° 01.4	42.2	237° 46.7	8.4	24.0	9.3												
	09	296° 19.8	286° 56.5	25.7	273° 00.9	47.5	95° 15.8	13.0	29° 43.1	05.4	Enif	33° 45.0	9° 57.2 N	312° 01.6	41.3	252° 14.1	8.3	33.3	9.2												
	10	311° 22.3	301° 59.0	26.1	288° 01.7	48.2	110° 18.5	12.9	44° 45.4	05.4	Fomalhaut	15° 21.6	29° 32.0 S	327° 01.7	40.3	266° 41.4	8.3	42.5	9.1												
	11	326° 24.7	317° 01.6	26.5	303° 02.4	48.9	125° 21.1	12.8	59° 47.8	05.4				342° 01.8	39.4	281° 08.7	8.2	51.6	9.1												
	12	341° 27.2	332° 04.1	11° 26.9 N	318° 03.2	9° 49.6 N	140° 23.7	7° 12.7 S	74° 50.1	22° 05.4 S	Gacrux	171° 57.5	57° 12.4 S	357° 02.0	6° 38.4 S	295° 35.9	8.2	12° 00.7 N	8.9	59.4	N 70°	17:00	18:09	19:28	-	00:03	02:06				
	13	356° 29.7	347° 06.7	27.3	333° 04.0	50.3	155° 26.4	12.7	89° 52.4	05.4	Genah	175° 49.4	17° 38.3 S	12° 02.1	37.4	310° 03.1	8.2	09.6	8.9		68°	17:15	18:11	19:21	23:46	-	01:37				
	14	11° 32.1	2° 09.2	27.7	348° 04.7	51.0	170° 29.0	12.6	104° 54.7	05.4	Hadar	148																			

2017 March 5, 6, 7 (Sun, Mon, Tue)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	5		6	7				
Sunday	00	162° 55.9	153° 38.2	11° 44.3 N	138° 30.5	10° 14.5 N	321° 58.9	7° 09.9 S	256° 13.7	22° 05.4 S	Acamar	315° 16.7	40° 14.6 S	177° 06.9	6° 03.7 S	95° 33.5	7.0	16° 29.2 N	5.7	59.3	N 72°	04:43	06:02	07:10	07:14	-	-				
	01	177° 58.4	168° 40.9	40.7	153° 31.2	15.2	337° 01.6	09.8	271° 16.0	05.4	Achernar	335° 25.4	57° 09.3 S	192° 07.0	02.8	109° 59.5	7.0	34.9	5.5		N 70°	04:51	06:02	07:03	08:07	08:27	09:17				
	02	193° 00.8	183° 43.6	41.1	168° 32.0	15.8	352° 04.2	09.7	286° 18.7	05.4	Acruz	173° 05.7	63° 11.5 S	207° 07.2	01.8	124° 25.5	6.9	40.4	5.3		68°	04:58	06:02	06:58	08:39	09:11	10:05				
	03	208° 03.3	198° 46.3	41.4	183° 32.0	16.5	7° 06.9	09.6	301° 20.6	05.4	Adhara	255° 10.4	29° 00.1 S	222° 07.3	00.8	138° 51.4	7.0	45.9	5.5		66°	05:03	06:02	06:53	09:03	09:40	10:35				
	04	223° 05.8	213° 49.0	41.7	198° 33.5	17.2	22° 09.5	09.5	316° 22.9	05.4	Aldebaran	290° 46.5	16° 32.4 N	237° 07.4	5° 59.9 S	153° 17.4	6.9	51.2	5.3	59.2	62°	05:11	06:02	06:46	09:38	10:20	11:16				
	05	238° 08.2	228° 51.7	42.0	213° 34.3	17.9	33° 12.2	09.5	337° 25.3	05.4				252° 07.6	58.9	167° 43.3	6.9	56.5	5.0		60°	05:14	06:02	06:43	09:51	10:35	11:32				
	06	253° 10.7	243° 54.4	42.4	228° 35.0	18.6	52° 14.8	09.4	346° 27.6	05.4	Alioth	166° 18.1	55° 51.9 N	267° 07.7	57.9	182° 09.2	6.8	17° 01.6 N	5.0		N 58°	05:16	06:02	06:41	10:02	10:48	11:44				
	07	268° 13.2	258° 57.1	42.7	243° 35.8	19.3	67° 17.5	09.3	1° 29.9	05.4	Alkaid	152° 56.6	49° 13.5 N	282° 07.9	57.0	196° 35.0	6.9	06.6	4.9		56°	05:18	06:01	06:38	10:12	10:59	11:55				
	08	283° 15.0	273° 59.8	43.0	258° 36.5	20.0	82° 21.1	09.2	16° 32.3	05.4	Alnair	16° 32.3	56.0	21° 01.0	00.9	6.8	11.5	4.8		54°	05:20	06:01	06:36	10:20	11:08	12:05					
	09	298° 18.1	289° 02.5	43.3	273° 37.3	20.6	97° 22.8	09.1	31° 34.6	05.4	Alnilam	217° 43.8	1° 11.8 S	312° 08.1	55.0	225° 26.7	6.8	16.3	4.7		52°	05:22	06:01	06:34	10:28	11:17	12:14				
	10	313° 20.6	304° 05.2	43.6	288° 38.0	21.3	112° 25.4	09.0	36° 36.9	05.4	Alphard	275° 53.3	8° 44.2 S	327° 08.3	54.1	239° 52.5	6.7	21.0	4.5		50°	05:23	06:00	06:33	10:35	11:25	12:22				
	11	328° 23.0	319° 07.9	44.0	303° 38.8	22.0	127° 28.1	09.0	61° 39.2	05.4				342° 08.4	53.1	254° 18.2	6.8	25.5	4.5		45°	05:26	06:00	06:29	10:50	11:41	12:38				
	12	343° 25.5	334° 10.7	11° 44.3 N	318° 39.5	10° 22.7 N	142° 30.7	7° 08.9 S	76° 41.6	22° 05.4 S	Alphecca	126° 08.8	26° 39.3 N	357° 08.6	5° 52.1 S	268° 44.0	6.7	17° 30.0 N	4.3	59.2	N 40°	05:27	05:59	06:26	11:03	11:55	12:52				
	13	358° 27.9	349° 13.4	44.6	333° 40.3	23.4	157° 33.4	08.8	91° 43.9	05.4	Alpheratz	357° 41.2	29° 11.0 N	12° 08.7	51.2	283° 09.7	6.7	34.3	4.2		35°	05:28	05:58	06:23	11:13	12:06	13:03				
	14	13° 30.4	4° 16.1	44.9	348° 41.1	24.1	172° 36.0	08.7	106° 46.2	05.4	Altair	62° 06.0	8° 54.8 N	27° 08.9	50.2	297° 35.4	6.7	38.5	4.1		30°	05:29	05:56	06:20	11:23	12:16	13:14				
	15	28° 32.9	19° 18.9	45.2	3° 41.8	24.7	187° 38.7	08.6	121° 48.5	05.4	Ankaa	353° 13.7	42° 13.0 S	42° 09.0	49.2	312° 01.1	6.7	42.6	4.0		20°	05:28	05:54	06:16	11:39	12:34	13:31				
	16	43° 35.3	34° 21.6	45.5	18° 42.6	25.4	202° 41.3	08.5	136° 50.9	05.4	Antares	112° 23.1	26° 28.0 S	57° 09.1	48.3	326° 26.8	6.7	46.6	3.9		N 10°	05:26	05:51	06:12	11:53	12:49	13:46				
	17	58° 37.8	49° 24.4	45.8	33° 43.3	26.1	217° 44.0	08.5	151° 53.2	05.4				72° 09.3	47.3	340° 52.5	6.6	50.5	3.8	59.1	0°	05:23	05:47	06:08	12:06	13:03	14:00				
	18	73° 40.3	64° 27.1	46.1	48° 44.1	26.8	232° 46.6	08.4	166° 55.5	05.4	Arcturus	145° 53.2	19° 05.5 N	87° 09.4	46.3	355° 18.1	6.6	54.3	3.6		S 10°	05:18	05:43	06:04	12:19	13:17	14:15				
	19	88° 42.7	79° 29.9	46.4	63° 44.8	27.5	247° 49.3	08.3	181° 57.8	05.4	Atria	107° 22.6	69° 03.0 S	102° 09.6	45.4	9° 43.7	6.7	57.9	3.5		20°	05:11	05:37	06:00	12:33	13:33	14:30				
	20	103° 45.2	94° 32.6	46.7	78° 45.6	28.2	262° 51.9	08.2	197° 00.2	05.4	Avior	234° 16.4	59° 34.2 S	117° 09.7	44.4	24° 09.4	6.6	18° 01.4 N	3.5		30°	05:02	05:30	05:54	12:50	13:50	14:47				
	21	118° 47.7	109° 35.4	47.0	93° 46.3	28.8	277° 54.6	08.1	212° 02.5	05.4	Bellatrix	278° 29.3	6° 21.6 N	132° 09.9	43.4	38° 35.0	6.5	04.9	3.2		35°	04:56	05:26	05:51	12:59	14:01	14:57				
	22	133° 50.1	124° 38.1	47.3	108° 47.1	29.5	292° 57.2	08.0	227° 04.8	05.4	Betelgeuse	270° 58.5	7° 24.3 N	147° 10.0	42.4	53° 00.5	6.6	08.1	3.2		40°	04:48	05:21	05:48	13:10	14:12	15:09				
23	148° 52.6	139° 40.9	47.6	123° 47.9	30.2	307° 59.9	08.0	242° 07.2	05.4				162° 10.1	41.5	67° 26.1	6.6	11.3	3.1		45°	04:39	05:14	05:44	13:23	14:26	15:23					
Monday	00	163° 55.1	154° 43.7	11° 47.9 N	138° 48.6	10° 30.9 N	323° 02.5	7° 07.9 S	257° 09.5	22° 05.4 S	Canopus	263° 54.8	52° 42.8 S	177° 10.3	5° 40.5 S	81° 51.7	6.5	18° 14.4 N	2.9	59.1	S 50°	04:26	05:06	05:39	13:39	14:43	15:39				
	01	178° 57.5	169° 46.5	47.1	153° 49.4	31.6	338° 05.2	07.8	272° 11.8	05.4	Capella	280° 30.7	46° 00.8 N	192° 10.4	39.5	96° 17.2	6.6	17.3	2.8		52°	04:20	05:02	05:37	13:46	14:51	15:47				
	02	194° 00.0	184° 49.2	48.4	168° 50.1	32.3	353° 07.9	07.7	287° 14.1	05.4	Deneb	49° 30.1	45° 20.4 N	207° 10.6	38.6	110° 42.8	6.5	20.1	2.7		54°	04:14	04:58	05:35	13:54	15:00	15:56				
	03	209° 02.4	199° 52.0	48.7	183° 50.9	32.9	8° 10.5	07.6	302° 16.5	05.4	Denebola	182° 30.7	14° 28.5 N	222° 10.7	37.6	125° 08.3	6.6	22.8	2.6		56°	04:06	04:53	05:32	14:04	15:10	16:06				
	04	224° 04.9	214° 54.8	49.0	198° 51.6	33.6	23° 13.2	07.5	317° 18.8	05.4	Diphda	348° 53.7	17° 53.8 S	237° 10.9	36.6	139° 33.9	6.5	25.4	2.5	59.0	58°	03:57	04:48	05:29	14:14	15:21	16:17				
	05	239° 07.4	229° 57.6	49.3	213° 52.4	34.3	38° 15.8	07.4	332° 21.1	05.4				252° 11.0	35.7	153° 59.4	6.5	27.9	2.3		S 60°	03:47	04:42	05:25	14:26	15:34	16:30				
	06	254° 09.8	245° 00.4	49.5	228° 53.1	35.0	53° 18.5	07.5	347° 23.5	05.4	Dubhe	193° 48.1	61° 39.4 N	267° 11.2	34.7	168° 24.9	6.5	30.2	2.2		S 62°	03:35	04:35	05:22	14:40	15:50	16:45				
	07	269° 12.3	260° 03.2	49.8	243° 53.9	35.7	68° 21.1	07.3	2° 25.8	05.4	Elnath	278° 09.4	28° 37.1 N	282° 11.3	33.7	182° 50.4	6.5	32.4	2.1												
	08	284° 14.8	275° 06.0	50.1	258° 54.7	36.3	83° 23.8	07.2	17° 28.1	05.4	Eltanin	90° 45.1	51° 29.1 N	297° 11.5	32.8	197° 15.9	6.5	34.5	2.0												
	09	299° 17.2	290° 08.8	50.3	273° 55.4	37.0	98° 26.4	07.1	32° 30.5	05.4	Enif	33° 44.9	9° 57.2 N	312° 11.6	31.8	111° 41.4	6.6	36.5	1.9												
	10	314° 19.7	305° 11.6	50.6	288° 56.2	37.7	113° 29.1	07.0	47° 32.8	05.4	Fomalhaut	15° 21.6	29° 32.0 S	327° 11.8	30.8	226° 07.0	6.5	38.4	1.7												
	11	329° 22.2	320° 14.4	50.9	303° 56.9	38.4	128° 31.8	07.0	62° 35.1	05.4				342° 11.9	29.8	240° 32.5	6.5	40.1	1.6												
	12	344° 24.6	335° 17.3	11° 51.1 N	318° 57.7	10° 39.1 N	143° 34.4	7° 06.9 S	77° 37.4	22° 05.4 S	Gacrux	171° 57.5	57° 12.4 S	357° 12.0	5° 28.9 S	254° 58.0	6.5	18° 41.7 N	1.5	59.0	N 70°	17:21	18:22	19:34	03:27	05:06	06:15				
	13	359° 27.1	350° 20.1	51.4	333° 58.4	39.7	158° 37.1	06.8	92° 39.8	05.4	Genah	175° 49.4	17° 38.3 S	12° 12.2	27.9	269° 23.5	6.5	43.2	1.4	58.9	68°	17:26	18:22	19:27	02:55	04:22	05:28				
	14	14° 29.5	5° 22.9	51.6	348° 59.2	40.4	173° 39.7	06.7	107° 42.1	05.4	Hadar	148° 43.8	60° 27.1 S	27° 12.3	26																

2017 March 8, 9, 10 (Wed, Thur, Fri)

GMT	ARIES			VENUS -4.5			MARS +1.4			JUPITER -2.4			SATURN +0.5			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec		GHA	Dec		GHA	Dec		GHA	Dec		Name	SHA	Dec	GHA	Dec		GHA	v	Dec		d	HP		Nautical	Civil	8
Wednesday	00	165° 53.3	157° 01.3	11° 58.9 N	139° 24.8	11° 03.4 N	325° 10.2	7° 03.8 S	259° 01.5	22° 05.4 S	259° 01.5	22° 05.4 S	Acamar	315° 16.7	40° 14.6 S	177° 17.5	4° 53.8 S	54° 24.2	7.1	18° 19.6 N	2.7	58.5	N 72°	04:27	05:47	06:54	09:29	11:49	13:49		
	01	180° 55.8	172° 04.2	59.1	154° 25.5	04.1	340° 12.9	03.7	274° 03.8	05.4	340° 12.9	03.7	Achernar	335° 25.4	57° 09.3 S	192° 17.6	52.9	68° 50.3	7.3	16.9	3.0	68°	04:37	05:49	06:49	10:44	12:27	14:11			
	02	195° 58.3	187° 07.2	59.3	169° 26.3	04.8	355° 15.6	03.6	289° 06.1	05.4	355° 15.6	03.6	Acruz	173° 05.7	63° 11.6 S	207° 17.8	51.9	83° 16.6	7.2	13.9	3.0	66°	04:51	05:51	06:42	11:48	13:13	14:43			
	03	211° 00.7	202° 10.2	59.5	184° 27.1	05.4	385° 10.1	03.5	304° 08.5	05.4	385° 10.1	03.5	Adhara	255° 10.4	29° 00.2 S	222° 17.9	50.9	97° 42.8	7.3	10.9	3.1	64°	04:57	05:52	06:39	12:09	13:29	14:54			
	04	226° 03.2	217° 13.2	59.6	199° 27.8	06.1	415° 07.9	03.4	319° 10.8	05.4	415° 07.9	03.4	Aldebaran	290° 46.5	16° 32.4 N	237° 18.1	49.9	112° 09.1	7.3	07.8	3.2	58.4	62°	05:01	05:53	06:37	12:25	13:42	15:04		
	05	241° 05.7	232° 16.1	59.8	214° 28.6	06.8	440° 23.6	03.3	334° 13.1	05.4	440° 23.6	03.3				252° 28.2	49.0	126° 35.4	7.3	04.6	3.4	60°	05:05	05:53	06:34	12:39	13:54	15:12			
	06	256° 08.1	247° 19.1	59.9	229° 29.3	07.5	465° 26.2	03.2	349° 15.5	05.4	465° 26.2	03.2	Alioth	166° 18.1	55° 51.9 N	267° 18.4	48.0	141° 01.7	7.4	01.2	3.4	58.2	N 58°	05:08	05:53	06:32	12:51	14:03	15:19		
	07	271° 10.6	262° 22.1	12° 00.1 N	244° 30.1	08.1	70° 28.9	03.1	4° 17.8	05.4	70° 28.9	03.1	Alkaid	152° 56.6	49° 13.5 N	282° 18.5	47.0	155° 28.1	7.5	17° 57.8 N	3.6	56°	05:11	05:54	06:31	13:01	14:12	15:26			
	08	286° 13.0	277° 25.1	00.3	259° 30.8	08.8	85° 31.3	03.0	19° 20.2	05.4	85° 31.3	03.0	Alnair	27° 41.1	46° 52.6 S	297° 18.7	46.0	169° 54.6	7.4	54.2	3.7	54°	05:13	05:54	06:29	13:10	14:19	15:32			
	09	301° 15.5	292° 28.1	00.4	274° 31.6	09.5	100° 34.2	03.0	34° 22.5	05.4	100° 34.2	03.0	Alnilam	275° 43.8	1° 11.8 S	312° 18.8	45.1	184° 21.0	7.6	50.5	3.8	52°	05:15	05:54	06:28	13:18	14:26	15:37			
	10	316° 18.0	307° 31.1	00.6	289° 32.3	10.1	115° 36.9	02.9	49° 24.8	05.4	115° 36.9	02.9	Alphard	217° 53.3	8° 44.2 S	327° 19.0	44.1	198° 47.6	7.5	46.7	3.9	50°	05:17	05:54	06:26	13:25	14:32	15:41			
	11	331° 20.4	322° 34.1	00.7	304° 33.1	10.8	130° 39.6	02.8	64° 27.2	05.4	130° 39.6	02.8				342° 19.1	43.1	213° 14.1	7.6	42.8	4.0	58.3	45°	05:20	05:54	06:23	13:40	14:45	15:51		
	Thursday	12	346° 22.9	337° 37.1	12° 00.9 N	319° 33.8	11° 11.5 N	145° 42.2	7° 02.7 S	79° 29.5	22° 05.4 S	79° 29.5	22° 05.4 S	Alphecca	126° 08.7	26° 39.3 S	357° 19.3	4° 42.1 S	227° 40.7	7.7	17° 38.8 N	4.1	58.3	N 40°	05:23	05:54	06:21	13:53	14:56	16:00	
		13	1° 25.4	352° 40.1	01.0	334° 34.6	12.2	160° 44.9	02.6	94° 31.8	05.4	160° 44.9	02.6	Alpheratz	357° 41.2	29° 11.0 N	12° 19.5	41.2	242° 07.4	7.6	34.7	4.2	35°	05:24	05:54	06:19	14:04	15:05	16:07		
		14	16° 27.8	7° 43.1	01.2	349° 35.3	12.8	175° 47.6	02.5	109° 34.2	05.4	175° 47.6	02.5	Alkair	62° 06.0	8° 54.8 N	27° 19.6	40.2	256° 34.0	7.8	30.5	4.3	30°	05:25	05:53	06:17	14:13	15:13	16:13		
		15	31° 30.3	22° 46.1	01.3	4° 36.1	13.5	190° 50.3	02.4	124° 36.5	05.4	190° 50.3	02.4	Antares	42° 29.8	39.2	271° 00.8	7.7	26.2	4.4	20°	05:26	05:51	06:13	14:19	15:27	16:24				
		16	46° 32.8	37° 49.1	01.4	19° 36.8	14.2	205° 52.9	02.3	139° 38.9	05.4	205° 52.9	02.3				57° 19.9	38.2	285° 27.5	7.9	21.8	4.6	10°	05:25	05:49	06:10	14:43	15:39	16:34		
		17	61° 35.2	52° 52.1	01.6	34° 37.6	14.8	220° 55.6	02.2	154° 41.2	05.4	220° 55.6	02.2				72° 20.1	37.3	299° 54.4	7.8	17.2	4.6	0°	05:22	05:46	06:07	14:56	15:51	16:42		
		18	76° 37.7	67° 55.2	01.7	49° 38.3	15.5	235° 58.3	02.2	169° 43.5	05.4	235° 58.3	02.2	Arcturus	145° 53.2	19° 05.5 N	87° 20.2	36.3	314° 21.2	7.9	12.6	4.7	58.2	S 10°	05:18	05:43	06:04	15:10	16:02	16:51	
		19	91° 40.1	82° 58.2	01.8	64° 39.1	16.2	251° 00.9	02.1	184° 45.9	05.4	251° 00.9	02.1	Atria	107° 22.6	69° 03.0 S	102° 20.4	35.3	328° 48.1	8.0	07.9	4.8	20°	05:13	05:38	06:01	15:24	16:14	17:01		
		20	106° 42.6	98° 01.2	02.0	79° 39.8	16.9	266° 03.6	02.0	199° 48.2	05.4	266° 03.6	02.0	Avior	234° 16.5	59° 34.2 S	117° 20.6	34.3	343° 15.1	8.0	03.1	5.0	30°	05:04	05:32	05:56	15:40	16:28	17:11		
		21	121° 45.1	113° 04.3	02.1	94° 40.6	17.5	281° 06.3	01.9	214° 50.6	05.4	281° 06.3	01.9	Bellatrix	278° 29.3	6° 21.6 N	132° 20.7	33.4	357° 42.1	8.1	16° 58.1 N	5.0	35°	04:59	05:29	05:54	15:49	16:36	17:18		
		22	136° 47.5	128° 07.3	02.2	109° 41.3	18.2	296° 08.9	01.8	229° 52.9	05.4	296° 08.9	01.8	Betelgeuse	270° 58.5	7° 24.3 N	147° 20.9	32.4	12° 09.2	8.1	53.1	5.1	40°	04:52	05:24	05:51	16:00	16:45	17:25		
23		151° 50.0	143° 10.3	02.3	124° 42.1	18.9	311° 11.6	01.7	244° 55.2	05.4	311° 11.6	01.7				162° 21.0	31.4	26° 36.3	8.1	48.0	5.3	45°	04:43	05:18	05:48	16:12	16:55	17:33			
Friday	00	166° 52.5	158° 13.4	12° 02.5 N	139° 42.8	11° 19.5 N	326° 14.3	7° 01.6 S	259° 57.6	22° 05.4 S	259° 57.6	22° 05.4 S	Canopus	263° 54.9	52° 42.8 S	177° 21.2	4° 30.4 S	41° 03.4	8.2	16° 42.7 N	5.3	58.1	S 50°	04:32	05:11	05:44	16:27	17:08	17:42		
	01	181° 54.9	173° 16.4	02.6	154° 43.6	20.2	341° 17.0	01.5	274° 59.4	05.4	341° 17.0	01.5	Capella	280° 30.7	46° 00.8 N	192° 21.4	59.4	55° 30.6	8.3	37.7	6.4	54°	04:27	05:08	05:42	16:35	17:14	17:47			
	02	196° 57.4	188° 19.5	02.7	169° 44.3	20.9	356° 19.6	01.4	290° 02.3	05.4	356° 19.6	01.4	Deneb	49° 30.1	45° 20.4 N	207° 21.5	28.5	69° 57.9	8.3	32.0	5.6	54°	04:21	05:04	05:40	16:42	17:20	17:52			
	03	211° 59.9	203° 22.6	02.8	184° 45.1	21.5	381° 22.3	01.3	305° 04.6	05.4	381° 22.3	01.3	Denebola	182° 35.1	14° 28.5 N	222° 21.7	27.5	84° 25.2	8.3	28.5	5.5	56°	04:14	05:00	05:38	16:51	17:28	17:57			
	04	227° 02.3	218° 25.6	02.9	199° 45.8	22.2	416° 25.0	01.3	320° 06.9	05.4	416° 25.0	01.3	Diphda	348° 53.7	17° 53.8 S	237° 21.8	26.5	98° 52.5	8.5	20.9	5.7	58°	04:06	04:55	05:36	17:01	17:36	18:04			
	05	242° 04.8	233° 28.7	03.0	214° 46.6	22.9	441° 27.6	01.2	335° 09.3	05.4	441° 27.6	01.2				252° 22.0	29.5	113° 20.4	8.4	15.2	5.8	S 60°	03:57	04:50	05:33	17:13	17:45	18:10			
	06	257° 07.3	248° 31.8	03.1	229° 47.3	23.5	466° 30.3	01.1	350° 11.6	05.4	466° 30.3	01.1	Dubhe	193° 48.1	61° 39.4 N	127° 22.1	24.6	127° 47.4	8.5	09.4	5.9	58.0	S 62°	03:46	04:44	05:30	17:26	17:56	18:18		
	07	272° 09.7	263° 34.8	03.2	244° 48.1	24.2	481° 33.0	01.0	5° 14.0	05.4	481° 33.0	01.0	Elath	278° 09.4	28° 37.1 N	282° 22.3	23.6	142° 14.9	8.6	03.5	6.0	61°									
	08	287° 12.2	278° 37.9	03.3	259° 48.8	24.9	506° 35.7	00.9	20° 16.3	05.4	506° 35.7	00.9	Eltanin	90° 45.1	51° 29.1 N	297° 22.4	22.6	156° 42.5	8.6	15° 57.5 N	6.1	60°									
	09	302° 14.6	293° 41.0	03.4	274° 49.6	25.5	531° 38.3	00.8	35° 18.7	05.4	531° 38.3	00.8	Enif	33° 44.9	9° 57.1 N	312° 22.6	21.6	171° 10.1	8.7	51.4	6.2	62°									
	10	317° 17.1	308° 44.1	03.5	289° 50.3	26.2	556° 41.0	00.7	50° 21.0	05.4	556° 41.0	00.7	Fomalhaut	15° 21.6	29° 32.0 S	327° 22.8	20.6	185° 37.8	8.7	45.2	6.2	62°									
	11	332° 19.6	323° 47.2	03.6	304° 51.1	26.9	581° 23.3	00.6	65° 23.3	05.4	581° 23.3	00.6				342° 22.9	19.7	200° 05.5	8.8	39.0	6.3	57.9	N 72°	17:							

2017 March 20, 21, 22 (Mon, Tue, Wed)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	20		21	22	
Monday	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	03:13	04:44	05:52	-	-	-		
	01	177° 43.0	173° 31'.2	11° 04'.4 N	142° 58'.6	14° 08'.7 N	338° 06'.9	6° 35'.1 S	270° 21'.6	22° 05'.2 S	Acamar	315° 16'.8	40° 14'.6 S	178° 07'.0	0° 10'.3 S	275° 49'.0	12'.3	18° 16'.6 S	2.5	54'.3	N 70°	03:34	04:52	05:54	04:13	05:18	05:51				
	02	192° 45.4	188° 35'.0	03'.9	157° 59'.3	09'.3	353° 09'.6	35'.0	285° 24'.0	05'.2	Achernar	335° 25'.5	57° 09'.3 S	193° 07'.1	09'.4	290° 20'.3	12'.3	19'.1	2.5	68°	03:49	04:59	05:55	03:27	04:26	05:06					
	03	207° 47.9	203° 38'.8	03'.3	173° 00'.0	09'.9	8° 12'.4	34'.9	300° 26'.4	05'.2	Acruz	173° 05'.7	63° 11'.6 S	208° 07'.3	08'.4	304° 51'.6	12'.3	21'.6	2.3	66°	04:01	05:05	05:56	02:57	03:53	04:36					
	04	222° 50.4	218° 42'.6	02'.7	188° 00'.0	10'.5	23° 15'.1	34'.8	315° 28'.8	05'.2	Adhara	255° 10'.4	29° 00'.2 S	223° 07'.5	07'.4	319° 22'.9	12'.2	3'.9	2.3	54'.4	04:11	05:09	05:57	02:35	03:30	04:13					
	05	237° 52.8	233° 46'.4	02'.2	203° 01'.5	11'.1	38° 17'.8	34'.7	330° 31'.2	05'.2	Aldebaran	290° 46'.6	16° 32'.4 N	238° 07'.7	06'.4	333° 54'.1	12'.2	26'.2	2.2	62°	04:20	05:13	05:58	02:17	03:11	03:56					
	06	252° 55.3	248° 50'.2	01'.6	218° 02'.2	11'.7	53° 20'.5	34'.5	345° 33'.6	05'.2				253° 07'.9	05'.4	348° 25'.3	12'.2	28'.4	2.1	60°	04:27	05:17	05:58	02:02	02:55	03:41					
	07	267° 57.8	263° 54'.0	01'.1	233° 03'.0	12'.3	68° 23'.3	34'.4	0° 36'.0	05'.2	Alioth	166° 18'.0	55° 51'.9 N	268° 08'.1	04'.4	2° 56'.5	12'.2	30'.5	2.0		N 58°	04:33	05:20	05:59	01:49	02:42	03:28				
	08	283° 00'.2	278° 57'.8	00'.5	248° 03'.7	12'.9	83° 26'.0	34'.3	15° 38'.3	05'.2	Alkaid	152° 56'.5	49° 13'.6 N	283° 08'.2	03'.4	17° 27'.7	12'.1	32'.5	1.9	56°	04:38	05:22	05:59	01:38	02:31	03:17					
	09	298° 02'.7	294° 01'.6	10° 59'.9 N	263° 04'.4	13'.5	98° 20'.7	34'.2	27° 41'.0	05'.2	Alnair	30° 40'.7	46° 52'.6 S	298° 08'.4	02'.4	31° 58'.1	12'.2	34'.4	1.9	54°	04:43	05:24	06:00	01:29	02:21	03:07					
	10	313° 05'.2	309° 05'.4	59'.3	278° 05'.1	14'.1	113° 31'.4	34'.1	45° 43'.1	05'.2	Alnilam	275° 43'.8	1° 11'.8 S	313° 08'.6	01'.5	46° 29'.9	12'.1	36'.3	1.7	52°	04:47	05:26	06:00	01:20	02:12	02:59					
	11	328° 07'.6	324° 09'.2	58'.8	293° 05'.9	14'.8	128° 34'.2	34'.0	60° 45'.5	05'.2	Alphard	217° 53'.4	8° 44'.2 S	328° 08'.8	00'.5	61° 01'.0	12'.1	38'.0	1.7	50°	04:50	05:28	06:00	01:13	02:04	02:51					
	12	343° 10'.1	339° 13'.0	58'.2	308° 06'.6	15'.4	143° 36'.9	33'.9	75° 47'.9	05'.2				343° 09'.0	0° 00'.5 N	75° 32'.1	12'.0	39'.7	1.6	45°	04:58	05:32	06:01	00:56	01:47	02:35					
	13	358° 12'.6	354° 16'.8	10° 57'.6 N	323° 07'.3	14° 16'.0 N	158° 39'.6	6° 33'.8 S	90° 50'.3	22° 05'.2 S	Alphecca	126° 08'.7	26° 39'.4 N	358° 09'.2	0° 01'.5 N	90° 03'.1	12'.1	18° 41'.3 S	1.5	54'.5	N 40°	05:03	05:35	06:02	00:43	01:33	02:21				
	14	13° 15'.0	9° 20'.6	57'.0	338° 08'.1	16'.6	173° 42'.4	33'.7	105° 52'.7	05'.2	Alpheratz	338° 08'.1	29° 11'.0 N	13° 09'.4	02'.5	104° 34'.2	12'.0	42'.8	1.4	35°	05:07	05:37	06:02	00:32	01:22	02:10					
	15	28° 17'.5	24° 24'.4	56'.4	353° 08'.8	17'.2	188° 45'.1	33'.6	120° 55'.1	05'.2	Alkair	62° 05'.9	8° 54'.8 N	28° 09'.5	03'.5	119° 05'.2	11'.9	44'.2	1.3	30°	05:11	05:39	06:03	00:22	01:11	02:00					
	16	43° 19'.9	39° 28'.2	55'.8	8° 09'.5	17'.8	203° 47'.8	33'.4	135° 57'.5	05'.2	Antaa	353° 13'.7	42° 13'.0 S	43° 09'.7	04'.5	133° 36'.1	12'.0	45'.5	1.2	20°	05:16	05:41	06:03	00:05	00:54	01:42					
	17	58° 22'.4	54° 32'.0	55'.2	23° 10'.3	18'.4	218° 50'.5	33'.3	150° 59'.9	05'.2	Antares	112° 23'.0	26° 28'.0 S	58° 09'.9	05'.5	148° 07'.1	11'.9	46'.7	1.2	10°	05:18	05:43	06:04	-	00:39	01:27					
	18	73° 24'.9	69° 35'.8	54'.7	38° 11'.0	19'.0	233° 53'.3	33'.2	166° 02'.2	05'.2				73° 10'.1	06'.4	162° 38'.0	11'.9	47'.9	1.0	0°	05:19	05:43	06:04	-	00:24	01:13					
	19	88° 27'.3	84° 39'.7	54'.1	53° 11'.7	19'.6	248° 56'.0	33'.1	181° 04'.6	05'.2	Arcturus	145° 53'.2	19° 05'.5 N	88° 10'.3	07'.4	177° 08'.9	11'.9	48'.9	1.0	S 10°	05:19	05:43	06:04	-	00:10	00:59					
	20	103° 29'.8	99° 43'.5	53'.5	68° 12'.4	20'.2	263° 58'.7	33'.0	196° 07'.0	05'.2	Atria	107° 22'.4	69° 03'.0 S	103° 10'.5	08'.4	191° 39'.8	11'.9	49'.9	0.9	54'.6	20°	05:17	05:42	06:04	23:55	-	00:44				
	21	118° 32'.3	114° 37'.3	52'.9	83° 13'.2	20'.8	279° 01'.4	32'.9	211° 09'.4	05'.2	Avior	234° 16'.6	59° 34'.3 S	118° 10'.7	09'.4	206° 10'.7	11'.8	50'.8	0.8	30°	05:12	05:40	06:04	23:37	-	00:27					
	22	133° 34'.7	129° 51'.1	52'.3	98° 13'.9	21'.4	294° 04'.2	32'.8	226° 11'.8	05'.2	Bellatrix	278° 29'.3	6° 21'.6 N	133° 10'.8	10'.4	220° 41'.5	11'.8	51'.6	0.7	35°	05:09	05:39	06:04	23:27	-	00:17					
23	148° 37'.2	144° 54'.9	51'.7	113° 14'.6	22'.0	309° 06'.9	32'.7	241° 14'.2	05'.2	Betelgeuse	270° 58'.6	7° 24'.3 N	148° 11'.0	11'.4	235° 12'.3	11'.8	52'.3	0.6	40°	05:05	05:37	06:04	23:15	-	00:05						
24	163° 39'.7	159° 58'.7	51'.0	128° 15'.4	22'.6	324° 09'.6	32'.6	256° 16'.6	05'.2				163° 11'.2	12'.4	249° 43'.1	11'.8	52'.9	0.6	45°	05:00	05:34	06:04	23:02	23:52	24:47						
Tuesday	00	178° 42'.1	175° 02'.6	10° 50'.4 N	143° 16'.1	14° 23'.3 N	339° 12'.4	6° 32'.5 S	271° 19'.0	22° 05'.2 S	Canopus	263° 55'.0	52° 42'.8 S	178° 11'.4	0° 13'.4 N	264° 13'.9	11'.7	18° 53'.5 S	0.4	54'.6	S 50°	04:53	05:31	06:04	22:45	23:35	24:32				
	01	193° 44'.6	190° 06'.4	48'.8	158° 16'.1	23'.9	354° 15'.1	32'.3	280° 21'.4	05'.2	Capella	280° 30'.8	46° 00'.8 N	193° 11'.6	14'.3	278° 44'.6	11'.7	53'.9	0.3	54°	04:50	05:30	06:03	22:37	23:27	24:25					
	02	208° 47.0	205° 10'.2	49'.2	173° 17'.5	24'.5	9° 17'.8	32'.2	301° 23'.8	05'.2	Deneb	49° 30'.0	45° 20'.3 N	208° 11'.8	15'.3	293° 15'.3	11'.7	54'.2	0.2	54'.7	04:46	05:28	06:03	22:29	23:19	24:17					
	03	223° 49.5	220° 14'.0	48'.6	188° 18'.3	25'.1	24° 20'.5	32'.1	316° 26'.2	05'.2	Denebola	182° 30'.8	14° 28'.5 N	223° 12'.0	16'.3	307° 46'.0	11'.7	54'.5	0.3	56°	04:42	05:26	06:03	22:19	23:09	24:08					
	04	238° 52.0	235° 17'.8	48'.0	203° 19'.0	25'.7	39° 23'.3	32'.0	331° 28'.5	05'.2	Diphda	348° 53'.7	17° 53'.8 S	238° 12'.1	17'.3	322° 16'.7	11'.7	54'.7	0.1	58°	04:37	05:24	06:03	22:08	22:58	23:58					
	05	253° 54.4	250° 21'.7	47'.4	218° 19'.7	26'.3	54° 26'.0	31'.9	346° 30'.9	05'.2				253° 12'.3	18'.3	336° 47'.4	11'.6	54'.8	0.1	S 60°	04:31	05:21	06:03	21:55	22:45	23:46					
	06	268° 56.9	265° 25'.5	46'.7	233° 20'.5	26'.9	69° 28'.7	31'.8	1° 33'.3	05'.1	Dubhe	193° 48'.1	61° 39'.5 N	268° 12'.5	19'.3	351° 18'.0	11'.6	54'.7	0.1	54'.8	S 62°	04:25	05:18	06:02	21:40	22:30	23:32				
	07	283° 59.4	280° 29'.3	46'.1	248° 21'.2	27'.5	84° 31'.5	31'.7	16° 35'.7	05'.1	Elnath	278° 09'.5	28° 37'.1 N	283° 12'.7	20'.3	5° 48'.6	11'.6	54'.6	0.1												
	08	299° 01'.8	295° 33'.2	45'.5	263° 21'.9	28'.1	99° 34'.2	31'.6	31° 38'.1	05'.1	Eltanin	90° 45'.0	51° 29'.0 N	298° 12'.9	21'.3	20° 19'.2	11'.6	54'.5	0.3												
	09	314° 04'.3	310° 37'.0	44'.9	278° 22'.6	28'.7	114° 36'.9	31'.5	46° 40'.5	05'.1	Enif	33° 44'.9	9° 57'.1 N	313° 13'.1	22'.2	34° 49'.8	11'.5	54'.2	0.4												
	10	329° 06'.8	325° 40'.8	44'.2	293° 23'.4	29'.3	129° 39'.6	31'.3	61° 42'.9	05'.1	Fomalhaut	15° 21'.6	29° 31'.9 S	328° 13'.3	23'.2	49° 20'.3	11'.6	53'.8	0.5												
	11	344° 09'.2	340° 44'.6	43'.6	308° 24'.1	29'.9	144° 42'.4	31'.2	76° 45'.3	05'.1				343° 13'.4	24'.2	63° 50'.9	11'.5	53'.3	0.5												
	12	359° 11'.7	355° 48'.5	10° 43'.0 N	323° 24'.8	14° 30'.5 N	159° 45'.1	6° 31'.1 S	91° 47'.7	22° 05'.1 S	Gacrux	171° 57'.4	57° 12'.5 S	358° 13'.6	0° 25'.2 N	78° 21'.4	11'.5	18° 52'.8 S	0.7	54'.8	N 70°	18:23	19:24	20:45	07:19	07:54	09:03				
	13	14° 14'.2	10° 52'.3	42'.3	338° 25'.6	31'.1	174° 47'.8	31'.0	106° 50'.1	05'.1	Gienah	175° 49'.3	17° 38'.3 S	13° 13'.8	26'.2	92° 51'.9	11'.4	52'.1	0.7	54'.9	68°	18:21	19:17	20:29	08:05	08:46	09:48				
	14	29° 16'.6	25° 56'.1	41'.7	353° 26'.3	31'.7	189° 50'.6	30'.9	121° 52'.5	05'.1</																					

2017 March 23, 24, 25 (Thur, Fri, Sat)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise			
																										Nautical	Civil		23	24	25	
23 Thurs day	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	02:52	04:27	05:37	06:59	06:40	06:29
	180° 40.4	178° 06.7	10° 18.8 N	143° 51.0	14° 52.0 N	341° 23.5	6° 27.1 S	273° 14.0	22° 05.1 S	Acamar	315° 16.8	40° 14.5 S	178° 20.4	1° 00.7 N	240° 28.1	10.9	17° 31.1 S	4.0	55.7	N 70°	03:16	04:38	05:40	06:03	06:08	06:09	03:16	04:38	05:40	06:03	06:08	06:09
	195° 42.9	193° 10.6	18.0	158° 51.7	52.6	356° 26.2	27.0	288° 16.4	05.1	Achernar	335° 25.5	57° 09.3 S	193° 20.5	01.7	254° 58.0	10.9	27.1	4.0	55.8	68°	03:33	04:46	05:42	05:50	05:54	05:54	03:33	04:46	05:42	05:50	05:54	05:54
	210° 45.3	208° 14.4	17.3	173° 52.4	53.2	11° 28.9	26.8	303° 18.8	05.1	Acruz	173° 05.7	63° 11.6 S	208° 20.7	02.7	269° 27.9	10.9	23.1	4.2	66°	03:48	04:53	05:45	05:06	05:26	05:41	03:48	04:53	05:45	05:06	05:26	05:41	
	225° 47.8	223° 18.3	16.6	188° 53.1	53.8	26° 31.7	26.7	318° 21.2	05.1	Adhara	255° 10.5	29° 00.2 S	223° 20.9	03.7	283° 57.8	10.9	18.9	4.3	64°	03:59	04:58	05:46	04:47	05:11	05:30	03:59	04:58	05:46	04:47	05:11	05:30	
	240° 50.3	238° 22.1	15.9	203° 53.9	54.4	41° 34.4	26.6	333° 23.6	05.1	Aldebaran	290° 46.6	16° 32.4 N	238° 21.1	04.7	298° 27.7	10.9	14.6	4.3	62°	04:09	05:03	05:48	04:31	04:59	05:21	04:09	05:03	05:48	04:31	04:59	05:21	
	255° 52.7	253° 26.0	15.2	218° 54.6	55.0	56° 37.2	26.5	348° 26.0	05.1				253° 21.3	05.7	312° 57.6	10.8	10.3	4.5	55.9	60°	04:17	05:07	05:49	04:18	04:48	05:13	04:17	05:07	05:49	04:18	04:48	
	270° 55.2	268° 29.8	14.5	233° 55.3	55.6	71° 39.9	26.4	3° 28.4	05.1	Alioth	166° 18.0	55° 52.0 N	268° 21.5	06.6	327° 27.4	10.9	05.8	4.5		N 58°	04:23	05:11	05:50	04:06	04:39	05:06	04:23	05:11	05:50	04:06	04:39	05:06
	285° 57.6	283° 33.7	13.7	248° 56.0	56.2	86° 42.6	26.3	18° 30.8	05.1	Alkaid	152° 56.5	49° 13.6 N	283° 21.7	07.6	341° 57.3	10.8	01.3	4.7	56°	04:29	05:14	05:51	03:57	04:30	04:59	04:29	05:14	05:51	03:57	04:30	04:59	
	301° 00.1	298° 37.5	13.0	263° 56.8	56.8	101° 45.4	26.2	33° 33.2	05.1	Alnair	27° 41.0	46° 52.6 S	298° 21.9	08.6	356° 27.1	10.8	16° 56.6 S	4.7	56.0	54°	04:35	05:17	05:52	03:48	04:23	04:54	04:35	05:17	05:52	03:48	04:23	04:54
	316° 02.6	313° 41.4	12.3	278° 57.5	57.4	116° 48.1	26.0	48° 35.6	05.1	Alnilam	275° 43.8	1° 11.8 S	313° 22.0	09.6	10° 56.9	10.8	51.9	4.8	52°	04:39	05:19	05:53	03:40	04:16	04:49	04:39	05:19	05:53	03:40	04:16	04:49	
	331° 05.0	328° 45.2	11.6	293° 58.2	58.0	131° 50.8	25.9	63° 38.0	05.1	Alphard	217° 53.4	8° 44.2 S	328° 22.2	10.6	25° 26.7	10.8	47.1	4.9	50°	04:43	05:22	05:54	03:33	04:11	04:44	04:43	05:22	05:54	03:33	04:11	04:44	
	346° 07.5	343° 49.1	10.8	308° 58.9	58.6	146° 53.6	25.8	78° 40.4	05.1				343° 22.4	11.6	39° 56.5	10.8	42.2	5.0	56.1	45°	04:52	05:26	05:56	03:18	03:58	04:34	04:52	05:26	05:56	03:18	03:58	04:34
	1° 10.0	358° 59.7	10° 10.1 N	323° 59.7	14° 59.1 N	161° 56.3	6° 25.7 S	93° 42.8	22° 05.1 S	Alphecca	126° 08.7	26° 39.4 N	358° 22.6	1° 12.5 N	54° 26.3	10.8	16° 37.2 S	5.1	56.1	N 40°	04:58	05:30	05:57	03:06	03:47	04:26	04:58	05:30	05:57	03:06	03:47	04:26
	16° 12.4	13° 56.8	09.4	339° 00.4	59.7	176° 59.0	25.6	108° 45.2	05.1				13° 22.8	35.1	32° 11.1	10.8	32.1	5.2	35°	05:03	05:35	05:58	02:55	03:38	04:19	05:03	05:35	05:58	02:55	03:38	04:19	
	31° 14.9	29° 00.6	08.6	354° 01.1	15° 00.3 N	192° 01.8	25.5	123° 47.6	05.1	Altair	62° 05.9	8° 54.8 N	28° 23.0	14.5	83° 25.9	10.7	26.9	5.3	30°	05:07	05:35	05:59	02:46	03:30	04:13	05:07	05:35	05:59	02:46	03:30	04:13	
	46° 17.4	44° 04.4	07.9	9° 01.8	00.9	207° 00.5	25.4	138° 50.0	05.1	Ankaa	353° 13.7	42° 12.9 S	43° 23.2	15.5	97° 55.6	10.8	21.6	5.4	56.2	20°	05:13	05:39	06:01	02:30	03:16	04:02	05:13	05:39	06:01	02:30	03:16	04:02
	61° 19.8	59° 08.3	07.2	24° 02.5	01.5	222° 07.3	25.3	153° 52.4	05.1	Antares	112° 23.0	26° 28.0 S	58° 23.4	16.5	112° 25.4	10.7	16.2	5.4	N 10°	05:16	05:41	06:02	02:16	03:04	03:52	05:16	05:41	06:02	02:16	03:04	03:52	
	76° 22.3	74° 12.1	06.4	39° 03.3	02.1	237° 10.0	25.1	168° 54.8	05.1				73° 23.5	17.5	126° 55.1	10.8	10.8	5.6	0°	05:18	05:42	06:03	02:03	02:53	03:43	05:18	05:42	06:03	02:03	02:53	03:43	
	91° 24.8	89° 16.0	05.7	54° 04.0	02.7	252° 12.7	25.0	88° 57.2	05.0	Arcturus	145° 53.2	19° 05.5 N	88° 23.7	18.5	141° 24.9	10.7	05.2	5.6	56.3	S 10°	05:19	05:43	06:04	01:50	02:41	03:34	05:19	05:43	06:04	01:50	02:41	03:34
	106° 27.2	104° 19.8	05.0	69° 04.7	03.3	267° 15.5	24.9	198° 59.6	05.0	Atira	107° 22.3	69° 03.0 S	103° 23.9	19.4	155° 54.6	10.7	15° 59.6 S	5.8	20°	05:17	05:43	06:05	01:36	02:29	03:25	05:17	05:43	06:05	01:36	02:29	03:25	
	121° 29.7	119° 23.7	04.2	84° 05.4	03.9	282° 18.2	24.8	214° 02.0	05.0	Avior	234° 16.6	59° 34.3 S	118° 24.1	02.0	170° 24.3	10.7	53.8	5.8	30°	05:14	05:42	06:06	01:20	02:15	03:14	05:14	05:42	06:06	01:20	02:15	03:14	
	136° 32.1	134° 27.5	03.5	99° 06.2	04.5	297° 20.9	24.7	229° 04.4	05.0	Bellatrix	278° 29.4	6° 21.6 N	133° 24.3	21.4	184° 54.0	10.7	48.0	5.9	56.4	35°	05:12	05:41	06:06	01:10	02:07	03:07	05:12	05:41	06:06	01:10	02:07	03:07
151° 34.6	149° 31.4	02.7	114° 06.9	05.0	312° 23.7	24.6	244° 06.8	05.0	Betelgeuse	270° 58.6	7° 24.3 N	148° 24.5	22.4	199° 23.7	10.7	42.1	6.0	40°	05:08	05:40	06:07	01:00	01:58	03:00	05:08	05:40	06:07	01:00	01:58	03:00		
166° 37.1	164° 35.2	02.0	129° 07.6	05.6	327° 26.4	24.5	259° 09.3	05.0				163° 24.7	23.4	213° 53.4	10.7	36.1	6.1	45°	05:04	05:38	06:08	00:47	01:47	02:52	05:04	05:38	06:08	00:47	01:47	02:52		
24 Fri day	181° 39.5	179° 39.1	10° 01.2 N	144° 08.3	15° 06.2 N	342° 29.2	6° 24.3 S	274° 11.7	22° 05.0 S	Canopus	263° 55.0	52° 42.8 S	178° 24.9	1° 24.4 N	228° 23.1	10.6	15° 30.0 S	6.1	56.5	S 50°	04:58	05:36	06:08	00:32	01:34	02:41	04:58	05:36	06:08	00:32	01:34	02:41
	196° 42.0	194° 42.9	00.5	159° 09.1	06.8	357° 31.9	24.2	289° 14.1	05.0	Capella	280° 30.8	46° 00.8 N	193° 25.0	25.3	242° 52.8	10.7	23.9	6.3	52°	04:55	05:35	06:09	00:25	01:28	02:37	04:55	05:35	06:09	00:25	01:28	02:37	
	211° 44.5	209° 46.8	9° 59.7 N	174° 09.8	07.4	127° 34.6	24.1	304° 16.5	05.0	Deneb	49° 30.0	45° 20.3 N	208° 25.2	26.3	257° 22.4	10.7	17.6	6.3	54°	04:52	05:34	06:09	00:17	01:21	02:31	04:52	05:34	06:09	00:17	01:21	02:31	
	226° 46.9	224° 50.6	59.0	189° 10.5	08.0	297° 37.4	24.0	319° 18.9	05.0	Denebola	182° 30.8	14° 28.5 N	223° 25.4	27.3	271° 52.1	10.6	11.3	6.5	56.6	56°	04:48	05:32	06:09	00:08	01:14	02:26	04:48	05:32	06:09	00:08	01:14	02:26
	241° 49.4	239° 54.5	58.2	204° 11.2	08.6	42° 40.1	23.9	334° 21.3	05.0	Diphda	348° 53.7	17° 53.8 S	238° 25.6	28.3	286° 21.7	10.7	04.8	6.5	58°	04:44	05:30	06:10	-	01:05	02:19	04:44	05:30	06:10	-	01:05	02:19	
	256° 51.9	254° 58.3	57.4	219° 11.9	09.2	57° 42.9	23.8	349° 23.7	05.0				253° 25.8	29.3	300° 51.4	10.6	14° 58.3 S	6.6	S 60°	04:39	05:29	06:10	-	00:55	02:12	04:39	05:29	06:10	-	00:55	02:12	
	271° 54.3	270° 02.1	56.7	234° 12.7	09.7	72° 45.6	23.6	4° 26.1	05.0	Dubhe	193° 48.1	61° 39.5 N	268° 26.8	30.3	315° 21.0	10.6	51.7	6.7	56.7	S 62°	04:33	05:26	06:11	-	00:44	02:03	04:33	05:26	06:11	-	00:44	02:03
	286° 56.8	285° 06.0	55.9	249° 13.4	10.3	87° 48.3	23.5	19° 28.5	05.0	Elath	278° 09.5	28° 37.1 N	283° 26.2	31.3	329° 50.6																	

2017 March 26, 27, 28 (Sun, Mon, Tue)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	26		27	28	
S u n d a y	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	02:27	04:10	05:21	06:21	06:14	06:07	
	183° 37.8	182° 43.1	9° 23.3 N	144° 42.9	15° 34.2 N	344° 40.8	6° 18.8 S	276° 07.3	22° 04.9 S	Acamar	315° 16.8	40° 14.5 S	178° 33.9	2° 11.5 N	203° 58.5	10.3	9° 01.9 S	9.9	58.1	N 70°	02:56	04:23	05:26	06:09	06:09	06:09	06:08	06:08	06:08		
	198° 40.3	197° 46.9	22.5	159° 43.6	34.7	359° 43.5	18.7	291° 09.7	04.9	Achernar	335° 25.5	57° 09.2 S	193° 34.1	12.5	218° 27.8	10.3	8° 52.0 S	9.9	58.2	68°	03:17	04:33	05:30	06:00	06:00	06:05	06:09	06:06	06:09		
	213° 42.7	212° 50.8	21.7	174° 44.3	35.3	14° 46.2	18.6	306° 12.1	04.9	Acruz	173° 05.7	63° 11.7 S	208° 34.3	13.5	232° 57.1	10.2	42.1	10.0	66°	64°	03:33	04:41	05:33	05:52	06:01	06:01	06:10	06:10	06:10		
	228° 45.2	227° 54.6	20.8	189° 45.0	35.9	29° 49.0	18.4	321° 14.5	04.9	Adhara	255° 10.5	29° 00.2 S	223° 34.4	14.5	247° 26.3	10.3	32.1	10.1	66°	64°	03:47	04:41	05:36	05:45	05:58	06:10	06:10	06:10	06:10		
	243° 47.7	242° 58.4	20.0	204° 45.8	36.5	44° 51.7	18.3	336° 17.0	04.9	Aldebaran	290° 46.6	16° 32.4 N	238° 34.6	15.5	261° 55.6	10.2	22.0	10.1	58.3	62°	03:57	04:53	05:38	05:39	05:55	06:11	06:11	06:11	06:11		
	258° 50.1	258° 02.2	19.2	219° 46.5	37.0	59° 54.5	18.2	351° 19.4	04.9				253° 34.8	16.4	276° 24.8	10.2	11.9	10.1	60°	60°	04:06	04:58	05:40	05:34	05:53	06:11	06:11	06:11	06:11		
	273° 52.6	273° 06.0	18.3	234° 47.2	37.6	74° 57.2	18.1	6° 21.8	04.9	Alioth	166° 18.0	55° 52.0 N	268° 35.0	17.4	290° 54.0	10.2	01.8	10.3		N 58°	04:14	05:02	05:42	05:29	05:51	06:12	06:12	06:12	06:12		
	288° 55.1	288° 09.8	17.5	249° 47.9	38.2	90° 00.0	18.0	21° 24.2	04.9	Alkaid	152° 56.5	49° 13.6 N	283° 35.2	18.4	305° 23.2	10.2	7° 51.5 S	10.2	58.4	56°	04:21	05:06	05:43	05:25	05:49	06:12	06:12	06:12	06:12		
	303° 57.5	303° 13.6	16.7	264° 48.6	38.8	105° 02.7	17.9	36° 26.6	04.9	Alnair	27° 41.0	46° 52.6 S	298° 35.4	19.4	319° 52.4	10.2	41.3	10.4	54°	54°	04:27	05:09	05:45	05:21	05:47	06:12	06:12	06:12	06:12		
	319° 00.0	318° 17.4	15.8	279° 49.3	39.3	120° 05.5	17.7	51° 29.0	04.9	Alnilam	275° 43.9	1° 11.8 S	313° 35.6	20.4	334° 21.6	10.2	30.9	10.3	52°	52°	04:32	05:12	05:46	05:18	05:46	06:13	06:13	06:13	06:13		
	334° 02.5	333° 21.2	15.0	294° 50.1	39.9	135° 00.2	17.6	36° 31.5	04.9	Alphard	338° 35.8	21.4	348° 50.8	10.1	20.6	10.5	58.5	50°	50°	04:36	05:15	05:47	05:15	05:44	06:13	06:13	06:13	06:13			
	349° 04.9	348° 25.0	14.2	309° 50.8	40.5	150° 10.9	17.5	81° 33.9	04.9				343° 35.9	22.3	3° 19.9	10.2	10.1	10.5	45°	45°	04:46	05:20	05:50	05:08	05:41	06:14	06:14	06:14	06:14		
	4° 07.4	3° 28.8	9° 13.3 N	324° 51.5	15° 41.0 N	165° 13.7	6° 17.4 S	96° 36.3	22° 04.9 S	Alphecca	126° 08.6	26° 39.4 N	358° 36.1	2° 23.3 N	17° 49.1	10.1	6° 59.6 S	10.5	58.5	N 40°	04:53	05:25	05:52	05:03	05:39	06:14	06:14	06:14	06:14		
	13° 19° 09.8	18° 32.6	12.5	339° 52.2	41.6	180° 16.4	17.3	111° 38.7	04.9				337° 41.2	29.1	130° 10.9 N	10.6	58.6	35°	35°	04:59	05:28	05:54	04:58	05:36	06:15	06:15	06:15	06:15	06:15		
	14° 34° 12.3	33° 36.5	11.6	354° 52.9	42.2	195° 19.2	17.2	126° 41.1	04.9	Altair	62° 05.9	8° 54.8 N	28° 36.5	25.3	46° 47.3	10.1	38.5	10.7	30°	30°	05:03	05:31	05:55	04:54	05:35	06:15	06:15	06:15	06:15		
	15° 49° 14.8	48° 40.3	10.8	9° 53.6	42.8	210° 21.9	17.0	141° 43.5	04.9	Ankaa	353° 13.7	42° 12.9 S	43° 36.7	43.3	61° 16.4	10.1	27.8	10.6	20°	20°	05:10	05:36	05:58	04:47	05:31	06:16	06:16	06:16	06:16		
	16° 64° 17.2	63° 44.1	09.9	24° 54.4	43.3	225° 24.7	16.9	156° 46.0	04.9	Antares	112° 23.0	26° 28.0 S	58° 36.9	27.2	75° 45.5	10.1	17.2	10.8	N 10°	10°	05:15	05:39	06:00	04:40	05:28	06:17	06:17	06:17			
	17° 79° 19.7	78° 47.8	09.1	39° 55.1	43.9	240° 27.4	16.8	171° 48.4	04.9				73° 37.1	28.2	90° 14.6	10.0	06.4	10.8	58.7	0°	05:17	05:41	06:02	04:34	05:25	06:17	06:17	06:17			
	18° 94° 22.2	93° 51.6	08.3	54° 55.8	44.5	255° 30.2	16.7	186° 50.8	04.9	Arcturus	145° 53.1	19° 05.5 N	88° 37.3	29.2	104° 43.6	10.1	5° 55.6 S	10.8		S 10°	05:19	05:43	06:04	04:28	05:23	06:18	06:18	06:18	06:18		
	19° 109° 24.6	108° 55.4	07.4	69° 56.5	45.1	270° 32.9	16.6	201° 53.2	04.9	Atria	107° 22.3	69° 03.1 S	103° 37.4	30.2	119° 12.7	10.0	44.8	10.9	20°	20°	05:18	05:44	06:06	04:21	05:20	06:19	06:19	06:19			
	20° 124° 27.1	123° 59.2	06.6	84° 57.2	45.6	285° 37.6	16.5	216° 55.6	04.9	Avior	234° 16.6	59° 34.3 S	118° 37.6	31.2	133° 41.7	10.0	33.9	10.9	58.3	30°	30°	05:16	05:44	06:08	04:14	05:16	06:20	06:20			
	21° 139° 29.6	139° 03.0	05.7	99° 57.9	46.2	300° 38.4	16.3	231° 58.0	04.9	Bellatrix	278° 29.4	6° 21.6 N	133° 37.8	32.1	148° 10.7	10.0	23.0	11.0	35°	35°	05:14	05:44	06:09	04:10	05:14	06:20	06:20				
22° 154° 32.0	154° 06.8	04.9	114° 58.7	46.8	315° 41.2	16.2	247° 00.5	04.9	Betelgeuse	270° 58.6	7° 24.3 N	148° 38.0	33.1	162° 39.7	10.0	12.0	11.0	40°	40°	05:12	05:43	06:10	04:05	05:12	06:21	06:21					
23° 169° 34.5	169° 10.6	04.0	129° 59.4	47.3	330° 43.9	16.1	262° 02.9	04.9				163° 38.2	34.1	177° 08.7	10.0	01.0	11.0	58.9	45°	05:08	05:42	06:11	03:59	05:09	06:22	06:22					
M o n d a y	184° 36.9	184° 14.4	9° 03.2 N	145° 00.1	15° 47.9 N	345° 46.7	6° 16.0 S	277° 05.3	22° 04.9 S	Canopus	263° 55.0	52° 42.8 S	178° 38.4	2° 35.1 N	191° 37.7	9.9	4° 50.0 S	11.1	58.9	S 50°	05:03	05:41	06:13	03:52	05:06	06:23	06:23	06:23			
	199° 39.4	199° 18.2	02.3	160° 00.8	48.5	0° 49.4	15.9	292° 07.7	04.9	Capella	280° 30.8	46° 00.8 N	193° 38.6	36.0	206° 06.6	9.9	38.9	11.1	52°	52°	05:01	05:40	06:14	03:49	05:05	06:23	06:23				
	214° 41.9	214° 22.0	01.4	175° 01.5	49.0	15° 52.1	15.7	307° 10.1	04.9	Deneb	49° 30.0	45° 20.3 N	208° 38.8	37.0	220° 35.5	9.9	27.8	11.2	59.0	54°	04:58	05:39	06:14	03:46	05:04	06:24	06:24				
	229° 44.3	229° 25.8	00.6	190° 02.2	49.6	30° 54.9	15.6	322° 12.5	04.9	Denebola	182° 30.8	14° 28.5 N	223° 39.0	38.0	235° 04.4	9.9	16.6	11.2	56°	56°	04:55	05:38	06:15	03:42	05:02	06:24	06:24				
	244° 46.8	244° 29.5	8° 59.7 N	205° 03.0	50.2	45° 57.6	15.5	337° 15.0	04.9	Diphda	348° 53.7	17° 53.8 S	238° 39.1	39.0	249° 33.3	9.9	05.4	11.2	58°	58°	04:51	05:37	06:16	03:38	05:00	06:25	06:25				
	259° 49.3	259° 33.3	58.9	220° 03.7	50.7	61° 00.4	15.4	352° 17.4	04.9				253° 39.3	40.0	264° 02.2	9.9	3° 54.2 S	11.3		S 60°	04:47	05:36	06:17	03:33	04:58	06:25	06:25				
	274° 51.7	274° 37.1	58.0	235° 04.4	51.3	76° 03.1	15.3	7° 19.8	04.9	Dubhe	193° 48.1	61° 39.5 N	268° 39.5	40.9	278° 31.1	9.8	42.9	11.3	59.1	S 62°	04:42	05:34	06:18	03:27	04:55	06:26	06:26				
	289° 54.2	289° 40.9	57.2	250° 05.1	51.9	91° 05.9	15.2	22° 22.2	04.9	Elath	278° 09.5	28° 37.1 N	283° 39.7	41.9	292° 59.9	9.8	31.6	11.3													
	304° 56.7	304° 44.7	56.3	265° 05.8	52.5	106° 08.6	15.0	37° 24.6	04.9	Eltanin	90° 44.9	51° 29.0 N	298° 39.9	42.9	307° 28.7	9.8	20.3	11.3													
	319° 59.1	319° 48.4	55.4	280° 06.5	53.0	121° 11.4	14.9	52° 27.1	04.9	Enif	33° 44.9	9° 57.1 N	313° 40.1	43.9	321° 57.5	9.8	09.0	11.4	59.2												
	335° 01.6	334° 52.2	54.6	295° 07.2	53.6	136° 14.1	14.8	67° 29.5	04.9	Fomalhaut	15° 21.6	29° 31.9 S	328° 40.3	44.9	336° 26.3	9.7	2° 57.6 S	11.4													
	350° 04.1	349° 56.0	53.7	310° 08.0	54.2	151° 16.9	14.7	82° 31.9	04.9																						

2017 March 29, 30, 31 (Wed, Thur, Fri)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	29		30	31				
29 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	186° 35'.2	187° 14'.4	8° 21'.1 N	145° 34'.3	16° 14'.9 N	347° 58'.6	6° 10'.3 S	279° 01'.6	22° 04'.8 S	Acamar	315° 16'.8	40° 14'.5 S	178° 47'.4	3° 22'.0 N	166° 21'.2	8.7	4° 24'.7 N	11'.5	60.0	N 72°	01:59	03:53	05:06	06:00	05:52	05:43					
	201° 37'.7	202° 18'.1	20.2	160° 35'.0	15.5	3° 01'.4	10.2	294° 04'.0	04.8	Achernar	335° 25'.5	57° 09'.2 S	193° 47'.6	22.9	180° 48'.9	8.7	36.2	11.6	68°	N 70°	02:35	04:07	05:12	06:07	06:07	06:09					
	216° 40'.2	217° 21'.8	19.3	175° 35'.8	16.1	18° 04'.1	10.1	309° 06'.4	04.8	Acruz	173° 05'.7	63° 11'.7 S	208° 47'.8	23.9	195° 16'.6	8.7	47.8	11.5	66°	N 68°	03:00	04:19	05:17	06:14	06:20	06:28					
	231° 42'.6	232° 25'.5	18.4	190° 36'.5	16.6	33° 06'.9	09.9	324° 08'.9	04.8	Adhara	255° 10'.5	29° 00'.2 S	223° 48'.4	24.9	209° 44'.3	8.6	59.3	11.4	64°	N 64°	03:19	04:28	05:21	06:19	06:30	06:44					
	246° 45'.1	247° 29'.2	17.5	205° 37'.2	17.2	48° 09'.6	09.8	339° 11'.3	04.8	Aldebaran	290° 46'.6	16° 32'.4 N	238° 48'.1	25.8	224° 11'.9	8.5	5° 10'.7 N	11.5	60.1	N 62°	03:46	04:43	05:28	06:27	06:45	07:08					
	261° 47'.5	262° 32'.9	16.6	220° 37'.9	17.7	63° 12'.4	09.7	354° 13'.7	04.8				253° 43'.8	26.8	238° 39'.4	8.6	22.2	11.4	60°	N 60°	03:56	04:48	05:31	06:30	06:52	07:18					
	276° 50'.0	277° 36'.6	15.7	235° 38'.6	18.3	78° 15'.1	09.6	9° 16'.2	04.8	Alioth	166° 18'.0	55° 52'.0 N	268° 48'.5	27.8	253° 07'.0	8.5	33.6	11.4	60°	N 58°	04:04	04:53	05:33	06:33	06:57	07:26					
	291° 52'.5	292° 40'.3	14.8	250° 39'.3	18.8	93° 17'.9	09.5	24° 18'.6	04.8	Alkaid	152° 56'.5	49° 13'.6 N	283° 48'.7	28.7	267° 34'.5	8.4	45.0	11.4	56°	N 56°	04:12	04:58	05:36	06:36	07:02	07:33					
	306° 54'.9	307° 44'.0	13.9	265° 40'.0	19.4	108° 21'.0	09.4	39° 21'.0	04.8	Alnair	27° 41'.0	46° 52'.6 S	298° 48'.9	29.7	282° 01'.9	8.5	56.4	11.3	54°	N 54°	04:18	05:02	05:38	06:39	07:07	07:40					
	321° 57'.4	322° 47.7	13.0	280° 40.7	20.0	123° 23.4	09.2	54° 23.4	04.8	Alnilam	275° 43.9	1° 11.8 S	313° 49.1	30.7	296° 29.4	8.4	6° 07.7 N	11.3	52°	N 52°	04:24	05:05	05:39	06:41	07:11	07:45					
	336° 59.9	337° 51.4	12.1	295° 41.4	20.5	138° 26.2	09.1	69° 25.9	04.8	Alphard	217° 53.4	8° 44.2 S	328° 49.3	31.7	310° 56.8	8.3	19.0	11.2	50°	N 50°	04:29	05:08	05:41	06:43	07:15	07:51					
	352° 02.3	352° 55.0	11.2	310° 42.1	21.1	153° 28.9	09.0	84° 28.3	04.8				343° 49.5	32.7	325° 24.1	8.3	30.2	11.3	45°	N 45°	04:40	05:15	05:44	06:47	07:23	08:02					
	7° 04.8	7° 58.7	8° 10.3 N	325° 42.9	16° 21.6 N	168° 31.7	6° 08.9 S	99° 30.7	22° 04.8 S	Alphecca	126° 08.6	26° 39.4 N	358° 49.6	3° 33.6 N	339° 51.4	8.3	6° 41.5 N	11.1	60.1	N 40°	04:48	05:20	05:47	06:51	07:30	08:12					
	22° 07.3	23° 02.4	09.4	340° 43.6	22.2	183° 34.4	08.8	114° 33.2	04.8				13° 49.8	34.6	354° 18.7	8.3	52.6	11.2	60.2	N 35°	04:54	05:20	05:47	06:54	07:36	08:20					
	37° 09.7	38° 06.1	08.5	355° 44.3	22.7	198° 37.2	08.6	129° 35.6	04.8	Altair	62° 05.9	8° 54.8 N	28° 50.0	35.6	8° 46.0	8.2	7° 03.8 N	11.1	30°	N 30°	05:00	05:28	05:52	06:57	07:41	08:28					
	52° 12.2	53° 09.8	07.6	10° 45.0	23.3	213° 39.9	08.5	144° 38.0	04.8	Ankaa	353° 13.7	42° 12.9 S	43° 50.2	36.6	23° 13.2	8.1	14.9	11.0	20°	N 20°	05:07	05:33	05:55	07:02	07:50	08:40					
	67° 14.6	68° 13.4	06.7	25° 45.7	23.8	228° 42.7	08.4	159° 40.4	04.8	Antares	112° 22.9	26° 28.0 S	58° 50.4	37.5	37° 40.3	8.2	25.9	11.1	10°	N 10°	05:13	05:37	05:58	07:07	07:58	08:51					
	82° 17.1	83° 17.1	05.8	40° 46.4	24.4	243° 45.4	08.3	174° 42.9	04.8				73° 50.6	38.5	52° 07.5	8.1	37.0	10.9	0°	N 0°	05:16	05:40	06:01	07:11	08:06	09:02					
	97° 19.6	98° 20.8	04.9	55° 47.1	24.9	258° 48.2	08.2	189° 45.3	04.8	Arcturus	145° 53.1	19° 05.5 N	88° 50.8	39.5	66° 34.6	8.0	47.9	11.0	10°	S 10°	05:18	05:43	06:04	07:15	08:13	09:13					
	112° 22.0	113° 24.4	04.0	70° 47.8	25.5	273° 50.9	08.0	204° 47.7	04.8	Atira	107° 22.2	69° 03.1 S	103° 51.0	40.4	81° 01.6	8.0	58.9	10.8	20°	S 20°	05:19	05:45	06:07	07:20	08:21	09:24					
	127° 24.5	128° 28.1	03.1	85° 48.5	26.0	288° 53.7	07.9	219° 50.2	04.8	Avior	234° 16.7	59° 34.3 S	118° 51.1	41.4	95° 28.6	8.0	8° 09.7 N	10.9	30°	S 30°	05:18	05:46	06:10	07:25	08:31	09:37					
	142° 27.0	143° 31.8	02.2	100° 49.2	26.6	303° 56.4	07.8	234° 52.6	04.8	Bellatrix	278° 29.4	6° 21.6 N	133° 51.3	42.4	109° 55.6	8.0	20.6	10.7	35°	S 35°	05:17	05:46	06:11	07:28	08:36	09:45					
	157° 29.4	158° 35.4	01.3	115° 49.9	27.1	318° 59.2	07.7	249° 55.0	04.8	Betelgeuse	270° 58.6	7° 24.3 N	148° 51.5	43.4	124° 22.6	7.9	31.3	10.8	40°	S 40°	05:15	05:46	06:13	07:31	08:43	09:53					
172° 31.9	173° 39.1	00.4	130° 50.7	27.7	334° 02.0	07.6	264° 57.5	04.7				163° 51.7	44.3	138° 49.5	7.8	42.1	10.6	45°	S 45°	05:12	05:46	06:15	07:35	08:50	10:03						
187° 34.4	188° 42.7	7° 59.4 N	145° 51.4	16° 28.2 N	349° 04.7	6° 07.4 S	279° 59.9	22° 04.7 S	Canopus	263° 55.1	52° 42.8 S	178° 51.9	3° 45.3 N	153° 16.3	7.9	8° 52.7 N	10.6	60.2	S 50°	05:08	05:45	06:18	07:40	08:59	10:16						
202° 36.8	203° 46.4	58.5	160° 52.1	28.8	4° 07.5	07.3	295° 02.3	04.7	Capella	280° 30.8	46° 00.8 N	193° 52.1	46.3	167° 43.2	7.8	9° 03.3 N	10.6	60.2	S 52°	05:05	05:46	06:19	07:43	09:03	10:22						
217° 39.3	218° 50.0	57.6	175° 52.8	29.3	19° 10.2	07.2	310° 04.8	04.7	Deneb	49° 29.9	45° 20.3 N	208° 52.3	47.2	182° 10.0	7.7	13.9	10.5	54°	S 54°	05:04	05:45	06:20	07:45	09:07	10:28						
232° 41.8	233° 53.7	56.7	190° 53.5	29.9	33° 13.0	07.1	325° 07.2	04.7	Denebola	182° 30.8	14° 28.5 N	223° 52.4	48.2	196° 36.7	7.7	24.4	10.5	56°	S 56°	05:01	05:44	06:21	07:48	09:12	10:35						
247° 44.2	248° 57.3	55.8	205° 54.2	30.4	49° 15.7	07.0	340° 09.6	04.7	Diphda	348° 53.7	17° 53.7 S	238° 52.6	49.2	211° 03.4	7.7	34.9	10.3	60.3	S 58°	04:58	05:44	06:23	07:51	09:18	10:43						
262° 46.7	264° 01.0	54.9	220° 54.9	31.0	64° 18.5	06.8	355° 12.1	04.7				253° 52.8	50.2	225° 30.1	7.6	45.2	10.4	60°	S 60°	04:54	05:43	06:25	07:54	09:24	10:52						
277° 49.1	279° 04.6	54.0	235° 55.6	31.5	79° 21.2	06.7	10° 14.5	04.7	Dubhe	193° 48.1	61° 39.5 N	268° 53.0	51.1	239° 56.7	7.6	55.6	10.2	60°	S 62°	04:50	05:42	06:26	07:58	09:31	11:03						
292° 51.6	294° 08.2	53.1	250° 56.3	32.1	94° 24.0	06.6	25° 16.9	04.7	Elnath	278° 09.5	28° 37.1 N	283° 53.2	52.1	254° 23.3	7.6	10° 05.8 N	10.2	60°	S 62°	04:50	05:42	06:26	07:58	09:31	11:03						
307° 54.1	309° 11.9	52.2	265° 57.0	32.6	109° 26.7	06.5	40° 19.4	04.7	Eltanin	90° 44.9	51° 29.0 N	298° 53.4	53.1	268° 49.9	7.5	16.0	10.1	60°	S 62°	04:50	05:42	06:26	07:58	09:31	11:03						
322° 56.5	324° 15.5	51.3	280° 57.7	33.2	124° 29.5	06.4	55° 21.8	04.7	Enif	33° 44.8	9° 57.1 N	313° 53.6	54.0	283° 16.4	7.5	26.1	10.1	60°	S 62°	04:50	05:42	06:26	07:58	09:31	11:03						
337° 59.0	339° 19.1	50.3	295° 58.5	33.7	139° 32.2	06.2	70° 24.2	04.7	Fomalhaut	15° 21.5	29° 31.9 S	328° 53.8	55.0	297° 42.9	7.5	36.2	10.0	60°	S 62°	04:50	05:42	06:26	07:58	09:31	11:03						
353° 01.5	354° 22.8	49.4	310° 59.2	34.3	154° 35.0	06.1	85° 26.7	04.7				343° 53.8	56.0	312° 09.4	7.4	46.2	9.9	60°	S 62°	04:50	05:42	06:26	07:58	09:31	11:03						
8° 03.9	9° 26.4	7° 48.5 N	325° 59.9	16° 34.8 N	169° 37.8	6° 06.0 S	100° 29.1	22° 04.7 S	Gacrux	171° 57.4	57° 12.6 S	358° 54.1	3° 57.0 N	326° 35.8	7.3	10° 56.1 N	9.9	60.3	N 72°	19:06	20:20	22:19	21:27	23:33	25:47						
23° 06.4	24° 30.0	47.6	341° 00.6	35.4	184° 40.5	05.9	115° 31.5	04.7	Gienah	175° 49.3	17° 38.3 S	13° 54.3	57.9	341° 02.1	7.4	11° 06.0 N	9.7	60°	N 70°	18:59	20:05	21:39	21:14	23:09	25:04						

2017 April 1, 2, 3 (Sat, Sun, Mon)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	1		2	3				
Saturday	00	189° 32' 6"	191° 35' 2"	7° 15' 6" N	146° 25' 3"	16° 54' 4" N	351° 17' 0"	6° 01' 7" S	281° 56' 8"	22° 04' 6" S	Acamar	315° 16' 8"	40° 14' 5" S	179° 00' 8"	4° 31' 8" N	126° 03' 3"	6' 2"	15° 56' 9" N	6' 5"	60' 0"	N 72°	01:23	03:34	04:50	05:30	-	-				
	01	204° 35' 1"	206° 38' 7"	14' 6"	161° 26' 0"	54' 9"	6° 19' 7"	01' 6"	296° 59' 3"	04' 6"	Achernar	335° 25' 5"	57° 09' 2" S	194° 01' 0"	32' 7"	140° 28' 5"	6' 2"	16° 03' 4" N	6' 4"	68°	N 70°	02:12	03:51	04:58	06:14	06:27	07:06				
	02	219° 37' 6"	221° 42' 2"	13' 7"	176° 26' 7"	55' 4"	21° 22' 5"	01' 4"	312° 01' 7"	04' 6"	Acruz	173° 05' 6"	63° 11' 7" S	209° 01' 2"	33' 7"	154° 53' 7"	6' 2"	09' 8"	6' 4"	66°	N 68°	02:42	04:05	05:04	06:43	07:09	07:56				
	03	234° 40' 0"	236° 45' 7"	12' 8"	191° 27' 4"	56' 0"	13° 25' 3"	01' 3"	327° 04' 2"	04' 6"	Adhara	255° 10' 5"	29° 00' 2" S	224° 01' 4"	34' 7"	169° 18' 9"	6' 1"	16' 2"	6' 2"	64°	N 66°	03:03	04:16	05:10	07:05	07:38	08:28				
	04	249° 42' 5"	251° 49' 3"	11' 9"	206° 28' 1"	56' 5"	51° 28' 0"	01' 2"	342° 06' 6"	04' 6"	Aldebaran	290° 46' 6"	16° 32' 4" N	239° 01' 6"	35' 6"	183° 44' 0"	6' 1"	22' 4"	6' 0"	62°	N 64°	03:20	04:25	05:14	07:23	08:00	08:51				
	05	264° 45' 0"	266° 52' 8"	11' 0"	221° 28' 8"	57' 1"	66° 30' 8"	01' 1"	357° 09' 0"	04' 6"				254° 01' 7"	36' 6"	198° 09' 1"	6' 2"	28' 4"	6' 0"	60°	N 62°	03:34	04:32	05:18	07:38	08:17	09:10				
	06	279° 47' 4"	281° 56' 3"	10' 1"	236° 29' 5"	57' 6"	81° 33' 5"	00' 9"	12° 11' 5"	04' 6"	Alioth	166° 18' 0"	55° 52' 0" N	269° 01' 9"	37' 6"	212° 34' 3"	6' 0"	34' 4"	5' 9"	59' 9"	N 58°	03:55	04:45	05:25	08:01	08:44	09:38				
	07	294° 49' 9"	296° 59' 8"	09' 2"	251° 30' 2"	58' 1"	96° 36' 3"	00' 8"	27° 13' 9"	04' 6"	Alkaid	152° 56' 5"	49° 13' 6" N	284° 02' 1"	38' 5"	226° 59' 3"	6' 1"	40' 3"	5' 7"	56°	N 56°	04:03	04:50	05:28	08:10	08:55	09:49				
	08	309° 52' 3"	312° 03' 3"	08' 1"	266° 30' 9"	58' 7"	111° 39' 0"	00' 7"	42° 16' 4"	04' 6"	Alnair	27° 40' 9"	46° 52' 5" S	299° 02' 3"	45' 5"	241° 24' 4"	6' 1"	46' 0"	5' 7"	54°	N 54°	04:10	04:56	05:30	08:18	09:04	09:59				
	09	324° 54' 8"	327° 06' 8"	07' 3"	281° 31' 6"	59' 2"	126° 41' 8"	00' 6"	57° 18' 8"	04' 6"	Alnilam	275° 43' 9"	1° 11' 8" S	314° 02' 5"	40' 5"	255° 49' 5"	6' 0"	51' 7"	5' 5"	52°	N 52°	04:16	04:58	05:32	08:26	09:13	10:08				
	10	339° 57' 3"	342° 10' 3"	06' 4"	296° 32' 3"	59' 7"	141° 44' 6"	00' 5"	72° 21' 3"	04' 6"	Alphard	217° 53' 4"	8° 44' 2" S	329° 02' 7"	41' 4"	270° 14' 5"	6' 0"	57' 2"	5' 4"	50°	N 50°	04:22	05:02	05:34	08:32	09:21	10:16				
	11	354° 59' 7"	357° 13' 8"	05' 5"	311° 33' 0"	17° 00' 3" N	156° 47' 3"	00' 3"	87° 23' 7"	04' 6"				344° 02' 9"	42' 4"	284° 39' 5"	6' 1"	17° 02' 6" N	5' 2"	45°	N 45°	04:34	05:09	05:39	08:47	09:37	10:33				
	12	10° 02' 2"	12° 17' 3"	7° 04' 6" N	326° 33' 7"	17° 00' 8" N	171° 50' 1"	6° 00' 2" S	102° 26' 1"	22° 04' 6" S	Alphecca	126° 08' 6"	26° 39' 4" N	359° 03' 0"	4° 43' 4" N	299° 04' 6"	6' 0"	17° 07' 8" N	5' 2"	59' 9"	N 40°	04:43	05:15	05:42	08:59	09:50	10:47				
	13	25° 04' 7"	27° 20' 8"	03' 6"	341° 34' 4"	01' 3"	186° 52' 8"	00' 1"	117° 28' 6"	04' 6"	Alpheratz	357° 41' 2"	29° 10' 9" N	14° 03' 2"	44' 3"	313° 29' 6"	5' 9"	13' 0"	5' 1"	35°	N 35°	04:50	05:20	05:45	09:09	10:02	10:58				
	14	40° 07' 1"	42° 24' 3"	02' 7"	356° 35' 1"	01' 9"	201° 55' 6"	00' 0"	132° 31' 3"	04' 6"	Altair	62° 05' 8"	8° 54' 8" N	29° 03' 4"	45' 3"	327° 54' 5"	6' 0"	18' 1"	4' 9"	59' 8"	N 30°	04:56	05:24	05:48	09:18	10:12	11:09				
	15	55° 09' 6"	57° 27' 7"	01' 8"	11° 35' 8"	02' 4"	216° 58' 3"	5° 59' 9" S	147° 33' 5"	04' 6"	Ankaa	353° 13' 7"	42° 12' 9" S	44° 03' 6"	46' 2"	342° 19' 5"	6' 0"	23' 0"	4' 8"	30°	N 30°	05:05	05:31	05:53	09:33	10:29	11:26				
	16	70° 12' 1"	72° 31' 2"	00' 9"	26° 36' 5"	02' 9"	232° 01' 1"	59' 7"	162° 35' 9"	04' 6"	Antares	112° 22' 9"	26° 28' 0" S	59° 03' 8"	47' 2"	356° 44' 5"	5' 9"	27' 8"	4' 7"	10°	N 10°	05:11	05:36	05:57	09:47	10:44	11:42				
	17	85° 14' 5"	87° 34' 7"	00' 0"	41° 37' 2"	03' 5"	247° 03' 9"	59' 6"	177° 38' 4"	04' 6"				74° 04' 0"	48' 2"	11° 09' 4"	6' 0"	32' 5"	4' 5"	0°	N 0°	05:15	05:39	06:00	10:00	10:58	11:56				
	18	100° 17' 0"	102° 38' 2"	6° 59' 1" N	56° 37' 9"	04' 0"	262° 06' 6"	59' 5"	192° 40' 8"	04' 6"	Arcturus	145° 53' 1"	19° 05' 6" N	89° 04' 1"	49' 1"	25° 34' 4"	5' 9"	37' 0"	4' 5"	5°	S 10°	05:18	05:43	06:04	10:13	11:12	12:10				
	19	115° 19' 5"	117° 41' 7"	58' 2"	71° 38' 6"	04' 5"	277° 09' 4"	59' 4"	207° 43' 2"	04' 6"	Atria	107° 22' 1"	69° 03' 1" S	104° 04' 3"	50' 1"	39° 59' 3"	5' 9"	41' 5"	4' 3"	20°	S 20°	05:20	05:45	06:07	10:26	11:27	12:26				
	20	130° 21' 9"	132° 45' 1"	57' 2"	86° 39' 3"	05' 1"	292° 13' 1"	59' 3"	222° 45' 7"	04' 6"	Avior	234° 16' 7"	59° 34' 3" S	119° 04' 5"	51' 1"	54° 24' 2"	6' 0"	45' 8"	4' 2"	59' 7"	N 59°	05:20	05:47	06:11	10:42	11:45	12:44				
	21	145° 24' 4"	147° 48' 6"	56' 3"	101° 40' 1"	05' 6"	307° 14' 9"	59' 1"	237° 48' 1"	04' 6"	Bellatrix	278° 29' 4"	6° 21' 6" N	134° 04' 7"	52' 0"	68° 49' 2"	5' 9"	50' 0"	4' 1"	35°	N 35°	05:19	05:48	06:14	10:51	11:55	12:54				
	22	160° 26' 8"	162° 52' 1"	55' 4"	116° 40' 8"	06' 1"	322° 17' 7"	59' 0"	252° 50' 6"	04' 6"	Betelgeuse	270° 58' 6"	7° 24' 3" N	149° 04' 9"	53' 0"	83° 14' 1"	5' 9"	54' 1"	4' 0"	40°	N 40°	05:18	05:49	06:16	11:02	12:07	13:06				
23	175° 29' 3"	177° 55' 5"	54' 5"	131° 41' 5"	06' 7"	337° 20' 4"	58' 9"	267° 53' 0"	04' 6"				164° 05' 1"	53' 9"	97° 39' 0"	5' 9"	58' 1"	3' 8"	45°	N 45°	05:16	05:50	06:19	11:14	12:20	13:20					
Sunday	00	190° 31' 8"	192° 59' 0"	6° 53' 6" N	146° 42' 2"	17° 07' 2" N	352° 23' 2"	5° 58' 8" S	282° 55' 5"	22° 04' 6" S	Canopus	263° 55' 1"	52° 42' 8" S	179° 05' 3"	4° 54' 9" N	112° 03' 9"	5' 9"	18° 01' 9" N	3' 7"	59' 7"	S 50°	05:13	05:50	06:22	11:30	12:37	13:37				
	01	205° 34' 2"	208° 02' 4"	52' 7"	161° 42' 9"	07' 7"	7° 25' 9"	58' 5"	297° 57' 9"	04' 6"	Capella	280° 30' 9"	46° 00' 8" N	194° 05' 5"	59' 6"	126° 28' 8"	5' 9"	05' 6"	3' 6"	50°	S 50°	05:11	05:50	06:24	11:37	12:45	13:45				
	02	220° 36' 7"	223° 05' 9"	51' 8"	176° 43' 6"	08' 3"	22° 28' 7"	58' 5"	313° 00' 4"	04' 6"	Deneb	49° 29' 9"	45° 20' 3" N	209° 05' 6"	56' 8"	140° 53' 7"	5' 9"	09' 2"	3' 5"	59' 6"	N 54°	05:09	05:50	06:26	11:45	12:54	13:54				
	03	235° 39' 2"	238° 09' 3"	50' 8"	191° 44' 3"	08' 8"	31° 31' 5"	58' 4"	328° 02' 8"	04' 6"	Denebola	182° 30' 8"	14° 28' 5" N	224° 05' 8"	57' 8"	155° 18' 6"	5' 9"	12' 7"	3' 3"	56°	N 56°	05:07	05:50	06:27	11:53	13:04	14:04				
	04	250° 41' 6"	253° 12' 8"	49' 9"	206° 45' 0"	09' 3"	52° 34' 2"	58' 3"	343° 05' 3"	04' 6"	Diphda	348° 53' 7"	17° 53' 7" S	239° 06' 0"	58' 7"	169° 43' 5"	5' 9"	16' 0"	3' 2"	58°	N 58°	05:05	05:50	06:30	12:04	13:15	14:15				
	05	265° 44' 1"	268° 16' 2"	49' 0"	221° 45' 7"	09' 8"	67° 37' 0"	58' 2"	358° 07' 7"	04' 6"				254° 06' 2"	59' 7"	184° 08' 4"	6' 0"	19' 2"	3' 1"	56°	S 60°	05:02	05:50	06:32	12:15	13:28	14:28				
	06	280° 46' 6"	283° 19' 6"	48' 1"	236° 46' 4"	10' 4"	82° 39' 7"	58' 0"	13° 10' 1"	04' 6"	Dubhe	193° 48' 1"	61° 39' 5" N	269° 06' 4"	5° 00' 7" N	198° 33' 4"	5' 9"	22' 3"	3' 0"	59' 5"	S 62°	04:59	05:50	06:34	12:29	13:44	14:44				
	07	295° 49' 0"	298° 23' 1"	47' 2"	251° 47' 1"	10' 9"	97° 42' 5"	57' 9"	28° 12' 6"	04' 6"	Elath	278° 09' 5"	28° 37' 1" N	284° 06' 5"	01' 6"	212° 58' 3"	5' 9"	25' 3"	2' 8"	59' 5"	N 59°	05:01	05:48	06:24	12:39	13:56	14:56				
	08	310° 51' 5"	313° 26' 5"	46' 3"	266° 47' 8"	11' 4"	112° 45' 2"	57' 8"	43° 15' 0"	04' 6"	Eltanin	90° 44' 8"	51° 29' 1" N	299° 06' 7"	02' 6"	227° 23' 2"	5' 9"	28' 1"	2' 7"	59°	N 59°	05:00	05:47	06:23	12:50	14:07	15:07				
	09	325° 54' 0"	328° 29' 9"	45' 4"	281° 48' 5"	12' 0"	127° 48' 0"	57' 7"	58° 17' 5"	04' 6"	Enif	33° 44' 8"	9° 57' 1" N	314° 06' 9"	03' 6"	241° 48' 1"	5' 9"	30' 8"	2' 6"	59°	N 59°	05:00	05:47	06:23	12:50	14:07	15:07				
	10	340° 56' 4"	343° 33' 4"	44' 5"	296° 49' 2"	12' 5"	142° 50' 8"	57' 6"	73° 19' 9"	04' 6"	Fomalhaut	15° 21' 5"	29° 31' 9" S	329° 07' 1"	04' 5"	256° 13' 0"	6' 0"	33' 4"	2' 5"	59°	N 59°	05:00	05:47	06:23	12:50	14:07	15:07				
	11	355° 58' 9"	358° 36' 8"	43' 5"	311° 49' 9"	13' 0"	157° 53' 5"	57' 4"	88°																						

2017 April 4, 5, 6 (Tue, Wed, Thur)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical		Civil	4		5	6	
Tuesday	00	192° 30.1'	195° 41.1'	6° 10.2' N	147° 15.8'	17° 32.4' N	354° 35.7'	5° 53.0' S	284° 53.1'	22° 04.5' S	Acamar	315° 16.8'	40° 14.5' S	179° 14.0'	5° 40.9' N	84° 15.6'	7.0	18° 39.8' N	2.2	58.7	N 72°	-	03:15	04:34	-	09:19	11:22				
	01	207° 32.5'	210° 44.4'	09.3	162° 16.5'	32.9	9° 38.4'	52.8	299° 55.5'	04.5	Achernar	335° 25.5'	57° 09.2' S	194° 14.2'	41.8	98° 41.6'	7.0	37.6	2.3	58.6	N 70°	01:44	03:35	04:44	08:25	10:05	11:49				
	02	222° 35.0'	225° 47.7'	08.4	177° 17.2'	33.4	24° 41.2'	52.7	314° 58.0'	04.5	Acruz	173° 05.6'	63° 11.7' S	209° 14.4'	42.8	113° 07.6'	7.1	35.3	2.4	66°	68°	02:21	03:50	04:52	09:07	10:35	12:09				
	03	237° 37.4'	240° 50.9'	07.5	192° 17.9'	33.9	29° 43.9'	52.6	330° 00.4'	04.5	Adhara	255° 10.5'	29° 00.2' S	224° 14.6'	43.7	127° 33.7'	7.1	32.9	2.6	64°	66°	02:47	04:03	05:08	09:36	10:58	12:25				
	04	252° 39.9'	255° 54.2'	06.6	207° 18.5'	34.4	54° 46.7'	52.5	345° 02.9'	04.4	Aldebaran	290° 46.6'	16° 32.4' N	239° 14.8'	44.7	141° 59.8'	7.1	30.3	2.6	62°	64°	03:06	04:13	05:48	09:58	11:15	12:38				
	05	267° 42.4'	270° 57.5'	05.7	222° 19.2'	35.0	69° 49.5'	52.3	0° 05.3'	04.4				254° 14.9'	45.6	156° 25.9'	7.2	27.7	2.8	58.5	58°	03:22	04:22	05:09	10:15	11:30	12:49				
	06	282° 44.8'	286° 00.8'	04.8	237° 19.9'	35.5	84° 52.2'	52.2	15° 07.8'	04.4	Alioth	166° 18.0'	55° 52.0' N	269° 15.1'	46.6	170° 52.1'	7.3	24.9	2.8	58°	60°	03:45	04:36	05:17	10:42	11:52	13:07				
	07	297° 47.3'	301° 04.1'	03.9	252° 20.6'	36.0	99° 55.0'	52.1	30° 10.2'	04.4	Alkaid	152° 56.5'	49° 13.6' N	284° 15.3'	47.5	185° 18.4'	7.3	22.1	3.0	56°	58°	03:54	04:41	05:20	10:52	12:01	13:14				
	08	312° 49.8'	316° 07.3'	03.0	267° 21.3'	36.5	114° 57.7'	52.0	45° 12.7'	04.4	Alnair	27° 40.9'	46° 52.5' S	299° 15.5'	48.5	199° 44.7'	7.4	19.1	3.1	54°	56°	04:02	04:46	05:23	11:02	12:10	13:20				
	09	327° 52.2'	331° 10.6'	02.1	282° 22.0'	37.0	130° 00.5'	51.9	60° 15.1'	04.4	Alnilam	275° 43.9'	1° 11.8' S	314° 15.7'	49.4	214° 11.1'	7.4	16.0	3.2	58.4	60°	04:09	04:51	05:26	11:10	12:17	13:26				
	10	342° 54.7'	346° 13.9'	01.3	297° 22.7'	37.5	145° 03.3'	51.7	75° 17.6'	04.4	Alphard	217° 53.4'	8° 44.3' S	329° 15.9'	50.4	228° 37.5'	7.4	12.8	3.3	58°	60°	04:15	04:55	05:28	11:17	12:23	13:31				
	11	357° 57.2'	1° 17.1'	00.4	312° 23.4'	38.0	160° 06.0'	51.6	90° 20.1'	04.4				344° 16.0'	51.4	243° 03.9'	7.5	09.5	3.5	45°	47°	04:28	05:03	05:33	11:33	12:37	13:42				
	12	12° 59.6'	16° 20.4'	5° 59.5' N	327° 24.1'	17° 38.6' N	175° 08.8'	5° 51.5' S	105° 22.5'	22° 04.4' S	Alphecca	126° 08.6'	26° 39.4' N	359° 16.2'	5° 52.3' N	257° 30.4'	7.6	18° 06.0' N	3.5	58.4	N 40°	04:38	05:10	05:38	11:47	12:49	13:52				
	13	28° 02.1'	31° 23.6'	58.6	342° 24.8'	39.1	190° 11.5'	51.4	120° 25.0'	04.4	Alpheratz	357° 41.2'	29° 10.9' N	14° 16.4'	53.3'	271° 57.0'	7.6	02.5	3.6	35°	37°	04:46	05:16	05:41	11:58	12:59	13:59				
	14	43° 04.6'	46° 26.9'	57.7	357° 25.5'	39.6	205° 14.3'	51.3	135° 27.4'	04.4	Alkair	62° 05.8'	8° 54.8' N	29° 16.6'	54.2	286° 23.6'	7.7	17° 58.9' N	3.8	58.3	30°	04:52	05:20	05:45	12:07	13:07	14:06				
	15	58° 07.0'	61° 30.1'	56.8	12° 26.2	40.1	220° 17.1'	51.1	150° 29.9'	04.4	Antaa	353° 13.7'	42° 12.9' S	44° 16.6'	55.2	300° 50.3'	7.7	55.1	3.9	20°	22°	05:02	05:28	05:50	12:24	13:22	14:18				
	16	73° 09.5'	76° 33.4'	56.0	27° 26.9'	40.6	235° 19.8'	51.0	165° 32.3'	04.4	Antares	112° 22.9'	26° 28.0' S	59° 16.9'	56.1	315° 17.0'	7.8	51.2	3.9	10°	12°	05:09	05:34	05:55	12:39	13:35	14:29				
	17	88° 11.9'	91° 36.6'	55.1	42° 27.6'	41.1	250° 22.6'	50.9	180° 34.8'	04.4				74° 17.1'	57.1	329° 43.8'	7.8	47.3	4.1	0°	0°	05:14	05:39	05:59	12:53	13:47	14:39				
	18	103° 14.4'	106° 39.8'	54.2	57° 28.3'	41.6	265° 25.4'	50.8	195° 37.3'	04.4	Arcturus	145° 53.1'	19° 05.6' N	89° 17.3'	58.0	344° 10.6'	7.9	43.2	4.1	58.2	S 10°	05:18	05:43	06:04	13:06	13:59	14:48				
	19	118° 16.9'	121° 43.1'	53.3	72° 29.0'	42.1	280° 28.1'	50.6	210° 39.7'	04.4	Atria	107° 22.1'	69° 03.1' S	104° 17.5'	59.0	358° 37.5'	7.9	39.1	4.3	20°	22°	05:20	05:46	06:08	13:21	14:12	14:59				
	20	133° 19.3'	136° 46.3'	52.4	87° 29.7'	42.7	295° 30.9'	50.5	225° 42.2'	04.4	Avior	234° 16.7'	59° 34.3' S	119° 17.7'	59.9	13° 04.4'	8.0	34.8	4.4	30°	32°	05:21	05:49	06:13	13:38	14:26	15:11				
	21	148° 21.8'	151° 49.5'	51.6	102° 30.4'	43.2	310° 33.6'	50.4	240° 44.6'	04.4	Bellatrix	278° 29.4'	6° 21.6' N	134° 17.8'	6° 00.9' N	27° 31.4'	8.1	30.4	4.5	35°	37°	05:21	05:51	06:16	13:47	14:35	15:17				
	22	163° 24.3'	166° 52.7'	50.7	117° 31.1'	43.7	325° 36.4'	50.3	255° 47.1'	04.4	Betelgeuse	270° 58.6'	7° 24.3' N	149° 18.0'	01.8	41° 58.5'	8.1	25.9	4.5	58.1	40°	05:21	05:52	06:19	13:58	14:45	15:25				
23	178° 26.7'	181° 55.9'	49.8	132° 31.8'	44.2	340° 39.2'	50.2	270° 49.6'	04.4				164° 18.2'	02.8	56° 25.6'	8.1	21.4	4.7	45°	47°	05:19	05:53	06:23	14:11	14:56	15:34					
Wednesday	00	193° 29.2'	196° 59.1'	5° 48.9' N	147° 32.5'	17° 44.7' N	355° 41.9'	5° 50.0' S	285° 52.0'	22° 04.4' S	Canopus	263° 55.1'	52° 42.8' S	179° 18.4'	6° 03.7' N	70° 52.7'	8.3	17° 16.9' N	4.8	58.1	S 50°	05:17	05:55	06:27	14:27	15:09	15:45				
	01	208° 31.7'	212° 02.4'	48.1	162° 33.2'	45.2	10° 44.7'	49.9	300° 54.5'	04.4	Capella	280° 30.9'	46° 00.8' N	194° 18.6'	40.0	80.2	8.2	11° 18.9' N	4.9	58.1	52°	05:16	05:55	06:29	14:35	15:16	15:50				
	02	223° 34.1'	227° 05.6'	47.2	177° 33.9'	45.7	25° 47.5'	49.8	315° 56.9'	04.4	Deneb	49° 29.9'	45° 20.3' N	209° 18.7'	05.6	99° 47.2'	8.4	07.0	4.9	58.0	54°	05:15	05:56	06:31	14:43	15:23	15:55				
	03	238° 36.6'	242° 08.8'	46.3	192° 34.6'	48.2	40° 50.2'	49.7	330° 59.4'	04.4	Denebola	182° 30.8'	14° 28.5' N	224° 18.9'	06.6	114° 14.6'	8.4	02.1	5.1	51°	53°	05:13	05:56	06:34	14:52	15:31	16:02				
	04	253° 39.1'	257° 12.0'	45.4	207° 35.3'	46.7	55° 53.0'	49.5	346° 01.8'	04.4	Diphda	348° 53.7'	17° 53.7' S	239° 19.1'	07.5	128° 42.0'	8.4	16° 57.0' N	5.2	58°	56°	05:11	05:57	06:36	15:03	15:40	16:08				
	05	268° 41.5'	272° 15.2'	44.6	222° 36.0'	47.3	70° 55.7'	49.4	1° 04.3'	04.4				254° 19.3'	08.5	143° 09.4'	8.5	51.8	5.2	60°	S 60°	05:09	05:57	06:39	15:15	15:50	16:16				
	06	283° 44.0'	287° 18.3'	43.7	237° 36.7'	47.8	85° 58.5'	49.3	16° 06.8'	04.4	Dubhe	193° 48.1'	61° 39.6' N	269° 19.5'	09.4	157° 36.9'	8.6	46.6	5.4	57.9	S 62°	05:06	05:58	06:42	15:29	16:01	16:25				
	07	298° 46.4'	302° 21.5'	42.8	252° 37.3'	48.3	101° 01.3'	49.2	31° 09.2'	04.4	Elnath	278° 09.5'	28° 37.1' N	284° 19.6'	10.3	172° 04.5'	8.6	41.2	5.4	56°	58°	05:07	05:59	06:43	15:40	16:12	16:36				
	08	313° 48.9'	317° 24.7'	42.0	267° 38.0'	48.8	116° 04.0'	49.1	46° 11.7'	04.4	Eltanin	90° 44.8'	51° 29.1' N	299° 19.8'	11.3	186° 32.1'	8.7	35.8	5.6	54°	56°	05:08	05:59	06:44	15:51	16:23	16:47				
	09	328° 51.4'	332° 27.9'	41.1	282° 38.7'	49.3	131° 06.8'	48.9	61° 14.1'	04.4	Enif	33° 44.8'	9° 57.1' N	314° 20.0'	12.2	200° 59.8'	8.8	30.2	5.6	52°	54°	05:09	05:57	06:42	16:02	16:34	16:58				
	10	343° 53.8'	347° 31.1'	40.2	297° 39.4'	49.8	146° 09.5'	48.8	76° 16.6'	04.4	Fomalhaut	15° 21.5'	29° 31.9' S	329° 20.2'	13.2	215° 27.6'	8.8	24.6	5.7	50°	52°	05:10	05:58	06:43	16:13	16:45	17:09				
	11	358° 56.3'	2° 34.2'	39.4	312° 40.1'	50.3	161° 12.3'	48.7	91° 19.1'	04.4				344° 20.4'	14.1	229° 55.4'	8.9	18.9	5.8	48°	50°	05:11	05:59	06:44	16:24	16:56	17:20				
	12	13° 58.8'	17° 37.4'	5° 38.5' N	327° 40.8'	17° 50.8' N	176° 15.1'	5° 48.6' S	106° 21.5'	22° 04.4' S	Gacrux	171° 57.4'	57° 12.6' S	359° 20.5'	6° 15.1' N	244° 23.3'	8.9	16° 13.1' N	5.9	57.8	N 72°	19:35	20:56	-	-	05:57	05:43				
	13	29° 01.2'	32° 40.6'	37.6	342° 41.5'	51.3	191° 17.8'	48.5																							

2017 April 7, 8, 9 (Fri, Sat, Sun)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON					Lat	Twilight		Sunrise	Moonrise		
	GHA	Dec		GHA	Dec		GHA	Dec		GHA	Dec		GHA	Dec		Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP		Nautical	Civil		7	8	9
Friday	00	195° 27.5	199° 29.0	5° 08.0 N	148° 05.8	18° 08.9 N	357° 54.5	5° 44.2 S	287° 50.2	22° 04.3 S	Acamar	315° 16.8	40° 14.5 S	179° 26.9	6° 49.1 N	45° 47.0	11.1	11° 51.8 N	8.5	57.0	N 72°	-	02:54	04:18	13:15	15:01	16:43					
	01	210° 29.9	214° 32.0	07.2	163° 06.5	09.4	12° 57.3	44.1	302° 52.7	04.3	Achernar	335° 25.5	57° 09.2 S	194° 27.1	50.0	60° 17.1	11.1	43.3	8.5	68°	01:07	03:18	04:29	13:31	15:09	16:45						
	02	225° 32.4	229° 35.0	06.3	178° 07.2	09.9	28° 00.0	44.0	317° 55.2	04.3	Acruz	173° 05.7	63° 11.7 S	209° 27.3	50.9	74° 47.2	11.2	34.8	8.6	56.9	66°	02:29	03:50	04:47	13:54	15:22	16:48					
	03	240° 34.9	244° 38.0	05.5	193° 07.8	10.4	43° 02.8	43.8	332° 57.6	04.3	Adhara	255° 10.5	29° 00.2 S	224° 27.5	57.9	89° 17.4	11.3	26.2	8.7	64°	02:51	04:02	04:53	14:03	15:27	16:49						
	04	255° 37.3	259° 41.0	04.7	208° 08.5	10.9	58° 05.6	43.7	348° 00.1	04.3	Aldebaran	290° 46.7	16° 32.4 N	239° 27.6	52.8	103° 47.7	11.3	17.5	8.7	62°	03:09	04:11	04:59	14:10	15:31	16:50						
	05	270° 39.8	274° 44.1	03.9	223° 09.2	11.4	73° 08.3	43.6	3° 02.6	04.3				254° 27.8	53.7	118° 18.0	11.3	08.8	8.7	60°	03:23	04:20	05:04	14:17	15:34	16:51						
	06	285° 42.3	289° 47.1	03.0	238° 09.9	11.9	88° 11.1	43.5	18° 05.0	04.3	Alioth	166° 18.0	55° 52.0 N	269° 28.0	54.7	132° 48.3	11.5	00.1	8.8		N 58°	03:35	04:27	05:08	14:22	15:37	16:51					
	07	300° 44.7	304° 50.1	02.2	253° 10.6	12.4	103° 13.9	43.3	33° 07.5	04.3	Alkaid	152° 56.5	49° 13.6 N	284° 28.2	55.6	147° 18.8	11.4	10° 51.3 N	8.9	56.8	56°	03:45	04:33	05:12	14:27	15:40	16:52					
	08	315° 47.2	319° 53.1	01.4	268° 11.3	12.9	118° 16.3	43.2	48° 10.0	04.3	Alnair	27° 40.9	46° 52.5 S	299° 24.8	56.6	161° 49.2	11.5	42.4	8.9	54°	03:53	04:40	05:16	14:32	15:43	16:53						
	09	330° 49.6	334° 56.1	00.6	283° 12.0	13.3	133° 19.4	43.1	63° 12.5	04.3	Alnilam	275° 43.9	1° 11.8 S	314° 28.5	57.5	176° 19.7	11.6	33.5	8.9	52°	04:01	04:44	05:19	14:36	15:45	16:53						
	10	345° 52.1	349° 59.1	4° 59.8 N	298° 12.7	13.8	148° 22.1	43.0	78° 14.9	04.2	Alphard	217° 53.4	8° 44.3 S	329° 28.7	58.4	190° 50.3	11.7	24.6	9.0	50°	04:08	04:44	05:22	14:39	15:47	16:54						
	11	0° 54.6	5° 02.0	59.0	313° 13.4	14.3	163° 24.9	42.9	93° 17.4	04.2				344° 28.9	59.4	205° 21.0	11.6	15.6	9.1	56.7	45°	04:22	04:58	05:28	14:47	15:52	16:55					
	12	15° 57.0	20° 05.0	4° 58.1 N	328° 14.1	18° 14.8 N	178° 27.7	5° 42.7 S	108° 19.9	22° 04.2 S	Alphecca	126° 08.6	26° 39.4 N	359° 29.0	7° 00.3 N	219° 51.6	11.8	10° 06.5 N	9.0	56.7	N 40°	04:32	05:05	05:33	14:54	15:55	16:56					
	13	30° 59.5	35° 08.0	57.3	343° 14.8	15.3	193° 30.4	42.6	123° 22.3	04.2				14° 29.2	29.2	357° 41.2	11.7	9° 57.5 N	9.2		35°	04:41	05:13	05:37	15:00	15:59	16:56					
	14	46° 02.0	50° 11.0	56.5	358° 15.4	15.8	208° 33.2	42.5	138° 24.8	04.2	Altair	62° 05.8	8° 54.8 N	29° 29.4	02.2	248° 53.1	11.9	48.3	9.1	30°	04:48	05:17	05:41	15:05	16:02	16:57						
	15	61° 04.4	65° 14.0	55.7	37° 16.1	16.3	223° 36.0	42.4	153° 27.3	04.2	Ankaa	353° 13.7	42° 12.9 S	44° 29.6	03.1	263° 24.0	11.9	39.2	9.3	20°	04:59	05:25	05:48	15:13	16:06	16:58						
	16	76° 06.9	80° 16.9	54.9	28° 16.8	16.8	238° 38.7	42.3	168° 29.7	04.2	Antares	112° 22.9	26° 28.0 S	59° 29.7	04.1	277° 54.9	11.9	29.9	9.2	56.6	N 10°	05:07	05:32	05:53	15:21	16:11	16:59					
	17	91° 09.4	95° 19.9	51.1	43° 17.5	17.3	253° 41.5	42.1	183° 32.2	04.2				74° 29.9	05.0	292° 25.8	12.0	20.7	9.3	0°	05:13	05:38	05:59	15:28	16:15	17:01						
	18	106° 11.8	110° 22.9	53.3	58° 18.2	17.8	268° 44.2	42.0	198° 34.7	04.2	Arcturus	145° 53.1	19° 05.6 N	89° 30.1	05.9	306° 56.8	12.0	11.4	9.3		S 10°	05:18	05:42	06:04	15:35	16:19	17:02					
	19	121° 14.3	125° 25.8	52.5	73° 18.9	18.3	283° 47.0	41.9	213° 37.2	04.2	Avia	107° 22.0	69° 03.1 S	104° 30.3	06.9	321° 27.8	12.1	02.1	9.4	20°	05:21	05:47	06:09	15:42	16:23	17:03						
	20	136° 16.8	140° 28.8	51.7	88° 19.6	18.8	298° 49.8	41.8	228° 39.6	04.2	Atria	284° 16.8	59° 34.3 S	119° 30.4	07.8	335° 58.9	12.1	8° 52.7 N	9.4	56.5	30°	05:23	05:47	06:15	15:51	16:28	17:04					
	21	151° 19.2	155° 31.7	50.9	103° 20.3	19.3	313° 52.5	41.6	243° 42.1	04.2	Bellatrix	278° 29.4	6° 21.6 N	134° 30.6	08.7	350° 30.0	12.2	43.3	9.5	35°	05:24	05:53	06:18	15:56	16:31	17:05						
	22	166° 21.7	170° 34.7	50.1	118° 21.0	19.7	328° 55.3	41.5	258° 44.6	04.2	Betelgeuse	270° 58.6	7° 24.3 N	149° 30.8	09.7	5° 01.2	12.2	33.8	9.5	40°	05:24	05:55	06:22	16:01	16:34	17:05						
23	181° 24.1	185° 37.6	49.3	133° 21.6	20.2	343° 58.1	41.4	273° 47.0	04.2				164° 31.0	10.6	19° 32.4	12.3	24.3	9.5	45°	05:23	05:57	06:26	16:08	16:38	17:06							
Saturday	00	196° 26.6	200° 40.6	4° 48.5 N	148° 22.3	18° 20.7 N	359° 00.8	5° 41.3 S	288° 49.5	22° 04.2 S	Canopus	263° 55.1	52° 42.8 S	179° 31.1	7° 11.5 N	34° 03.7	12.3	8° 14.3 N	9.5	56.5	S 50°	05:22	05:59	06:32	16:15	16:43	17:08					
	01	211° 29.1	215° 43.5	47.7	163° 03.0	21.2	14° 03.6	41.2	303° 52.0	04.2	Capella	280° 30.9	46° 00.8 N	194° 35.1	12.5	48° 30.5	12.4	05.8	9.6	56.4	52°	05:21	06:00	06:34	16:19	16:45	17:08					
	02	226° 31.5	230° 46.4	46.9	178° 23.7	21.7	29° 06.3	41.0	318° 54.5	04.2	Deneb	49° 29.9	45° 20.3 N	209° 31.5	13.4	63° 06.4	12.4	7° 55.7 N	9.6	54°	05:20	06:01	06:37	16:23	16:47	17:09						
	03	241° 34.0	245° 49.3	46.1	193° 24.4	22.2	44° 09.1	40.9	333° 56.9	04.2	Denebola	182° 30.8	14° 28.5 N	224° 31.6	14.4	77° 37.8	12.4	46.1	9.7	56°	05:19	06:02	06:40	16:27	16:49	17:09						
	04	256° 36.5	260° 52.3	45.3	208° 25.1	22.7	59° 11.9	40.8	348° 59.4	04.2	Diphda	348° 53.7	17° 53.7 S	239° 31.8	15.3	92° 09.2	12.5	36.4	9.7	58°	05:18	06:03	06:43	16:32	16:52	17:10						
	05	271° 38.9	275° 55.2	44.5	223° 25.8	23.2	74° 14.6	40.7	4° 01.9	04.2				254° 32.0	16.2	106° 40.7	12.5	26.7	9.7	S 60°	05:16	06:04	06:46	16:37	16:55	17:11						
	06	286° 41.4	290° 58.1	43.7	238° 26.5	23.7	89° 17.4	40.6	6° 04.3	04.2	Dubhe	193° 48.1	61° 39.6 N	269° 32.2	17.2	121° 12.2	12.6	17.0	9.7	56.3	S 62°	05:14	06:06	06:50	16:43	16:58	17:12					
	07	301° 43.9	306° 01.0	42.9	253° 27.2	24.2	104° 20.2	40.4	34° 06.8	04.2	Elnath	278° 09.6	28° 37.1 N	284° 32.3	18.1	135° 43.8	12.6	07.3	9.8													
	08	316° 46.3	321° 03.9	42.1	268° 27.8	24.6	119° 22.9	40.3	49° 09.3	04.2	Eltanin	90° 44.8	51° 29.1 N	299° 32.5	19.0	150° 15.4	12.7	6° 57.5 N	9.8													
	09	331° 48.8	336° 06.8	41.3	283° 28.5	25.1	134° 25.7	40.2	64° 11.8	04.2	Enif	33° 44.8	9° 57.1 N	314° 32.7	20.0	164° 47.1	12.7	47.7	9.8													
	10	346° 51.2	351° 09.7	40.5	298° 29.2	25.6	149° 28.4	40.1	79° 14.2	04.2	Fomalhaut	15° 21.5	29° 31.9 S	329° 32.9	20.9	179° 18.8	12.8	37.9	9.8													
	11	1° 53.7	6° 12.6	39.7	313° 29.9	26.1	164° 31.2	39.9	94° 16.7	04.2				344° 33.0	21.8	193° 50.6	12.7	28.1	9.9	56.2	N 72°	19:49	21:15	-	05:34	05:26	05:19					
	12	16° 56.2	21° 15.5	4° 39.0 N	328° 30.6	18° 26.6 N	179° 34.0	5° 39.8 S	109° 19.2	22° 04.2 S	Gacrux	171° 57.4	57° 12.6 S	359° 33.2	7° 22.8 N	208° 22.3	12.9	6° 18.2 N	9.9	56.2	N 70°	19:37	20:50	23:13	05:16	05:16	05:15					
	13	31° 58.6	36° 18.4	38.2	343° 31.3	27.1	194° 36.7	39.7	124° 21.7	04.2	Gienah	175° 49.3	17° 38.3 S	14° 33.4	23.7	222° 54.2	12.8	08.3	9.9	68°	19:27	20:31	22:12	05:02	05:07	05:11						
	14	47° 01.1	51° 21.3	37.4	358° 32.0	27.6	209° 39.5	39.6	139° 24.1	04.2	Hadar	148° 43.5	60° 27.2 S	29° 33.6	24.6																	

2017 April 13, 14, 15 (Thur, Fri, Sat)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	13		14	15	
Thurs day	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	-	02:06	03:44	23:27	-	01:19		
	01	201° 22.3	206° 04.5	3° 22.8 N	149° 44.4	19° 17.3 N	4° 32.3	5° 26.8 S	293° 47.5	22° 03.9 S	315° 16.8	40° 14.5 S	Acamar	315° 16.8	40° 14.5 S	179° 51.2	9° 02.1 N	339° 32.5	13.9	11° 05.2 S	8.0	54.4	N 70°	-	02:40	04:00	22:57	-	00:30		
	02	216° 24.8	221° 06.9	22.2	164° 45.1	17.8	19° 35.0	26.7	308° 50.0	03.9	335° 25.5	57° 09.1 S	Achernar	335° 25.5	57° 09.1 S	194° 51.3	03.0	354° 05.4	13.9	13.2	8.1		68°	00:54	03:04	04:13	22:35	23:58	25:16		
	03	231° 27.2	236° 09.4	21.6	179° 45.8	18.2	34° 37.8	26.6	323° 52.5	03.9	173° 05.7	63° 11.8 S	Acruz	173° 05.7	63° 11.8 S	209° 51.5	03.9	8° 38.3	13.9	21.3	7.9		66°	01:48	03:23	04:23	22:18	23:36	24:47		
	04	246° 29.7	251° 11.9	21.0	194° 46.4	18.7	49° 40.5	26.4	338° 55.0	03.9	255° 10.6	29° 00.2 S	Adhara	255° 10.6	29° 00.2 S	224° 51.7	04.8	3° 11.2	14.0	29.2	7.9		64°	02:19	03:38	04:32	22:04	23:18	24:25		
	05	261° 32.1	266° 14.3	20.4	209° 47.1	19.1	64° 43.3	26.3	353° 57.4	03.9	290° 46.7	16° 32.4 N	Aldebaran	290° 46.7	16° 32.4 N	239° 51.8	05.7	37° 14.2	13.8	37.1	7.9		62°	02:42	03:50	04:40	21:53	23:03	24:08		
	06	276° 34.6	281° 16.8	19.8	224° 47.8	19.6	79° 46.1	26.2	8° 59.9	03.9						254° 52.0	06.6	52° 17.0	13.9	45.0	7.8		60°	03:00	04:00	04:46	21:43	22:50	23:53		
	07	291° 37.1	296° 19.2	19.2	239° 48.5	20.0	94° 48.8	26.1	24° 02.4	03.9	166° 18.0	55° 52.1 N	Alioth	166° 18.0	55° 52.1 N	269° 52.1	07.5	66° 49.9	13.9	52.8	7.7		58°	03:14	04:09	04:52	21:34	22:40	23:41		
	08	306° 39.5	311° 21.6	18.5	254° 49.2	20.5	109° 51.6	26.0	39° 04.9	03.9	152° 56.5	49° 13.7 N	Alkaid	152° 56.5	49° 13.7 N	284° 52.3	08.4	81° 22.8	13.8	12° 00.5 S	7.7	54.3	56°	03:26	04:17	04:57	21:27	22:30	23:30		
	09	321° 42.0	326° 24.1	17.9	269° 49.8	21.0	124° 54.3	25.8	54° 07.4	03.9	27° 40.9	46° 52.5 S	Alnair	27° 40.9	46° 52.5 S	299° 52.4	09.3	95° 55.6	13.8	08.2	7.7		54°	03:36	04:24	05:01	21:20	22:22	23:21		
	10	336° 44.5	341° 26.5	17.3	284° 50.5	21.4	139° 57.1	25.7	69° 09.9	03.8	275° 43.9	1° 11.8 S	Alnilam	275° 43.9	1° 11.8 S	314° 52.6	10.2	110° 28.4	13.9	15.9	7.6		52°	03:45	04:30	05:05	21:14	22:15	23:13		
	11	351° 46.9	356° 28.9	16.7	299° 51.2	21.9	154° 59.9	25.6	84° 12.4	03.8	217° 53.4	8° 44.3 S	Alphard	217° 53.4	8° 44.3 S	329° 52.8	11.1	125° 01.3	13.7	23.5	7.5		50°	03:53	04:35	05:09	21:09	22:08	23:05		
	12	6° 49.4	11° 31.3	16.1	314° 51.9	22.3	170° 02.6	25.5	99° 14.9	03.8						344° 52.9	12.0	139° 34.0	13.8	31° 0	7.5		45°	04:10	04:46	05:17	20:57	21:54	22:49		
	13	21° 51.9	26° 33.8	3° 15.5 N	329° 52.5	19° 22.8 N	185° 05.4	5° 25.4 S	114° 17.4	22° 03.8 S	126° 08.5	26° 39.4 N	Alphecca	126° 08.5	26° 39.4 N	359° 53.1	9° 12.9 N	154° 06.8	13.8	12° 38.5 S	7.4		40°	04:22	04:56	05:24	20:47	21:42	22:36		
	14	36° 54.3	41° 36.2	14.9	344° 53.2	23.2	200° 08.1	25.2	129° 19.9	03.8	43° 53.7	41.1	29° 10.9 N	43° 53.7	41.1	29° 10.9 N	14° 53.2	13.8	168° 39.6	13.7	45.9	7.3		35°	04:32	05:03	05:29	20:39	21:33	22:25	
	15	51° 56.8	56° 38.6	14.3	359° 53.9	23.7	215° 10.9	25.1	144° 22.4	03.8	62° 05.7	8° 54.8 N	Altair	62° 05.7	8° 54.8 N	29° 53.4	14.7	183° 12.3	13.8	53.2	7.3		30°	04:41	05:10	05:34	20:32	21:24	22:15		
	16	66° 59.3	71° 41.0	13.7	14° 54.6	24.1	230° 13.7	25.0	159° 24.9	03.8	353° 13.7	42° 12.8 S	Antaa	353° 13.7	42° 12.8 S	44° 55.9	15.7	197° 45.1	13.7	13° 00.5 S	7.3		20°	04:54	05:20	05:43	20:19	21:09	21:59		
	17	82° 01.7	86° 43.4	13.2	29° 55.3	24.5	245° 16.4	24.9	174° 27.4	03.8	112° 22.8	26° 28.0 S	Antares	112° 22.8	26° 28.0 S	59° 53.7	16.6	212° 17.8	13.7	07.8	7.1		10°	05:04	05:29	05:50	20:09	20:56	21:44		
	18	97° 04.2	101° 45.8	12.6	44° 55.9	25.0	260° 19.2	24.8	189° 29.9	03.8						74° 53.9	17.5	226° 50.5	13.6	14.9	7.2		0°	05:12	05:36	05:57	19:58	20:44	21:30		
	19	112° 06.6	116° 48.2	12.0	59° 56.6	25.4	275° 21.9	24.7	204° 32.4	03.8	145° 53.1	19° 05.6 N	Arcturus	145° 53.1	19° 05.6 N	89° 54.0	18.4	241° 23.1	13.7	22.1	7.0	54.2	S 10°	05:18	05:42	06:04	19:48	20:32	21:17		
	20	127° 09.1	131° 50.6	11.4	74° 57.3	25.9	290° 24.7	24.5	219° 34.9	03.8	107° 22.0	69° 03.1 S	Atria	107° 22.0	69° 03.1 S	104° 54.2	19.3	255° 55.8	13.6	29.1	7.0		20°	05:23	05:48	06:11	19:38	20:19	21:03		
	21	142° 11.6	146° 53.0	10.8	89° 58.0	26.3	305° 27.5	24.4	234° 37.4	03.8	234° 16.8	59° 34.3 S	Avior	234° 16.8	59° 34.3 S	119° 54.3	20.2	270° 28.4	13.6	36.1	6.9		30°	05:26	05:54	06:19	19:26	20:05	20:46		
	22	157° 14.0	161° 55.3	10.2	104° 58.6	26.8	320° 30.2	24.3	249° 39.9	03.8	278° 29.4	6° 21.6 N	Bellatrix	278° 29.4	6° 21.6 N	134° 54.5	21.1	285° 01.0	13.6	43.0	6.9		35°	05:28	05:57	06:23	19:19	19:56	20:37		
23	172° 16.5	176° 57.7	09.6	119° 59.3	27.2	335° 33.0	24.2	264° 42.4	03.8	270° 58.7	7° 24.3 N	Betelgeuse	270° 58.7	7° 24.3 N	149° 54.6	22.0	299° 33.6	13.6	49.9	6.8		40°	05:29	06:01	06:28	19:11	19:46	20:26			
	187° 19.0	192° 00.1	09.1	135° 00.0	27.7	350° 35.7	24.1	279° 44.9	03.8						164° 54.8	22.9	314° 06.2	13.6	56.7	6.8		45°	05:30	06:04	06:34	19:01	19:35	20:13			
Fri day	00	202° 21.4	207° 02.5	3° 08.5 N	150° 00.7	19° 28.1 N	5° 38.5	5° 23.9 S	294° 47.4	22° 03.8 S	263° 55.2	52° 42.8 S	Canopus	263° 55.2	52° 42.8 S	179° 55.0	9° 23.8 N	328° 38.8	13.5	14° 03.5 S	6.7	54.2	S 50°	05:31	06:08	06:41	18:50	19:22	19:57		
	01	217° 23.9	222° 04.8	07.9	165° 01.3	28.6	20° 41.3	23.8	309° 49.9	03.8	280° 30.9	46° 00.8 N	Capella	280° 30.9	46° 00.8 N	194° 55.1	24.7	343° 11.3	13.6	10.2	6.6		52°	05:31	06:10	06:44	18:45	19:15	19:50		
	02	232° 26.4	237° 07.2	07.3	180° 02.0	29.0	35° 44.0	23.7	324° 52.4	03.8	49° 29.8	45° 20.3 N	Deneb	49° 29.8	45° 20.3 N	209° 55.3	25.6	357° 43.9	13.5	16.8	6.5		54°	05:31	06:12	06:48	18:39	19:08	19:42		
	03	247° 28.8	252° 09.6	06.8	195° 02.7	29.5	50° 46.8	23.6	339° 54.9	03.8	182° 30.8	14° 28.5 S	Denebola	182° 30.8	14° 28.5 S	224° 55.4	26.5	12° 16.4	13.5	23.3	6.5		56°	05:31	06:14	06:52	18:33	19:01	19:33		
	04	262° 31.3	267° 11.9	06.2	210° 03.4	29.9	65° 49.5	23.5	354° 57.4	03.8	348° 53.7	17° 53.7 S	Diphda	348° 53.7	17° 53.7 S	239° 55.6	27.4	26° 48.9	13.4	29.8	6.5		58°	05:30	06:16	06:56	18:26	18:52	19:23		
	05	277° 33.8	282° 14.3	05.6	225° 04.0	30.4	80° 52.3	23.3	9° 59.9	03.8						254° 55.7	28.3	41° 21.3	13.5	36.3	6.3		S 60°	05:30	06:18	07:01	18:18	18:42	19:11		
	06	292° 36.2	297° 16.6	05.0	240° 04.7	30.8	95° 55.1	23.2	25° 02.4	03.8	193° 48.2	61° 39.6 N	Dubhe	193° 48.2	61° 39.6 N	269° 55.9	29.2	55° 53.8	13.4	42.6	6.3		S 62°	05:29	06:21	07:06	18:09	18:30	18:58		
	07	307° 38.7	312° 19.0	04.5	255° 05.4	31.2	110° 57.8	23.1	40° 04.9	03.8	278° 09.6	28° 37.1 N	El Nath	278° 09.6	28° 37.1 N	284° 56.0	30.1	70° 26.2	13.4	48.9	6.2										
	08	322° 41.1	327° 21.3	03.9	270° 06.1	31.7	126° 00.6	23.0	55° 07.4	03.8	90° 44.7	51° 29.1 N	Eltanin	90° 44.7	51° 29.1 N	299° 56.2	31.0	84° 58.6	13.4	55.1	6.2										
	09	337° 43.6	342° 23.6	03.4	285° 06.8	32.1	141° 03.3	22.9	70° 09.9	03.8	33° 44.8	9° 57.1 N	Enif	33° 44.8	9° 57.1 N	314° 56.4	31.9	99° 31.0	13.4	15° 01.3 S	6.1	54.1									
	10	352° 46.1	357° 26.0	02.8	300° 07.4	32.6	156° 06.1	22.7	85° 12.4	03.8	15° 21.5	29° 31.8 S	Fomalhaut	15° 21.5	29° 31.8 S	329° 56.5	32.7														

2017 April 16, 17, 18 (Sun, Mon, Tue)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	16		17	18				
Sunday	00	204° 19.7	208° 51.8	2° 42.8 N	150° 33.0	19° 49.2 N	7° 50.9	5° 18.3 S	296° 47.5	22° 03.7 S	Acamar	315° 16.8	40° 14.4 S	180° 02.3	10° 06.6 N	306° 17.8	12.5	18° 05.1 S	3.2	54.1	N 72°	-	01:36	03:27	-	-	-				
	01	219° 22.2	223° 54.0	42.3	165° 33.7	49.6	22° 53.7	18.1	311° 50.0	03.7	Achernar	335° 25.5	57° 09.1 S	195° 02.4	07.5	320° 49.3	12.6	08.3	3.1		N 70°	-	02:19	03:45	01:59	03:16	04:00				
	02	234° 24.6	238° 56.2	41.8	180° 34.4	50.0	37° 56.4	18.0	326° 52.5	03.7	Acruz	173° 05.7	63° 11.8 S	210° 02.6	08.4	335° 20.9	12.5	11.4	3.0		66°	01:22	03:09	04:12	00:47	01:48	02:36				
	03	249° 27.1	253° 58.4	41.3	195° 35.1	50.5	54° 58.2	17.9	341° 55.0	03.7	Adhara	255° 10.6	29° 00.2 S	225° 02.7	09.3	349° 52.4	12.5	14.4	2.9		64°	02:01	03:25	04:22	00:25	01:24	02:12				
	04	264° 29.6	269° 00.6	40.8	210° 35.7	50.9	68° 01.9	17.8	356° 57.5	03.7	Aldebaran	290° 46.7	16° 32.4 N	240° 02.9	10.2	4° 23.9	12.4	17.3	2.8		62°	02:27	03:39	04:30	00:08	01:05	01:53				
	05	279° 32.0	284° 02.7	40.3	225° 36.4	51.3	83° 04.7	17.7	12° 00.0	03.6				255° 03.0	11.1	18° 55.3	12.5	20.1	2.8		60°	02:47	03:50	04:37	-	00:49	01:38				
	06	294° 34.5	299° 04.9	39.8	240° 37.1	51.8	98° 07.4	17.6	27° 02.5	03.6	Alioth	166° 18.0	55° 52.1 N	270° 03.2	12.0	33° 26.8	12.4	22.9	2.6		N 58°	03:03	04:00	04:44	-	00:36	01:24				
	07	309° 37.0	314° 07.1	39.4	255° 37.7	52.2	113° 10.2	17.4	42° 05.1	03.6	Alkaid	152° 56.5	49° 13.7 N	285° 03.3	12.8	47° 58.2	12.5	25.5	2.6		56°	03:16	04:09	04:49	-	00:25	01:13				
	08	324° 39.4	329° 09.2	38.9	270° 38.4	52.6	128° 12.9	17.3	57° 07.6	03.6	Alnair	27° 40.8	46° 52.5 S	300° 03.4	13.7	62° 29.7	12.4	28.1	2.5		54°	03:28	04:16	04:54	-	00:15	01:03				
	09	339° 41.9	344° 11.4	38.4	285° 39.1	53.0	143° 15.7	17.2	72° 10.1	03.6	Alnilam	275° 43.9	1° 11.8 S	315° 03.6	14.6	77° 01.1	12.3	30.6	2.5		52°	03:37	04:23	04:59	-	00:06	00:54				
	10	354° 44.3	359° 13.5	37.9	300° 39.8	53.5	158° 18.5	17.1	87° 12.6	03.6	Alphard	217° 53.4	8° 44.3 S	330° 03.7	15.5	91° 32.4	12.4	33.1	2.3		50°	03:46	04:29	05:03	23:58	-	00:46				
	11	9° 46.8	14° 15.7	37.5	315° 40.4	53.9	173° 21.2	17.0	102° 15.1	03.6				345° 03.9	16.4	106° 03.8	12.3	35.4	2.2	54.2	45°	04:04	04:41	05:12	23:41	-	00:29				
	12	24° 49.3	29° 17.8	2° 37.0 N	330° 41.1	19° 54.3 N	188° 24.0	5° 16.9 S	117° 17.6	22° 03.6 S	Alphecca	126° 08.5	26° 39.4 N	0° 04.0	10° 17.3 N	120° 35.1	12.4	18° 37.6 S	2.2	54.2	N 40°	04:17	04:51	05:19	23:27	-	00:15				
	13	39° 51.7	44° 20.0	36.5	345° 41.8	54.8	203° 26.7	16.7	132° 20.1	03.6				15° 04.2	20.1	135° 06.5	12.3	39.8	2.1		35°	04:28	04:59	05:25	23:15	-	00:04				
	14	54° 54.2	59° 22.1	36.0	0° 42.4	55.2	218° 29.5	16.6	147° 22.6	03.6	Altair	62° 05.7	8° 54.8 N	30° 04.3	19.0	149° 37.8	12.3	41.9	2.0		30°	04:37	05:06	05:31	23:05	23:53	24:40				
	15	69° 56.7	74° 24.3	35.6	15° 43.1	55.6	233° 32.2	16.5	162° 25.1	03.6	Ankaa	353° 13.6	42° 12.8 S	45° 04.5	19.9	164° 09.1	12.2	43.9	1.9		20°	04:51	05:18	05:40	22:47	23:36	24:23				
	16	84° 59.1	89° 26.4	35.1	30° 43.8	56.0	248° 35.0	16.4	177° 27.6	03.6	Antares	112° 22.8	26° 28.0 S	60° 04.6	20.8	178° 40.3	12.3	45.8	1.8		N 10°	05:02	05:27	05:49	22:32	23:20	24:08				
	17	100° 01.6	104° 28.5	34.6	45° 44.4	56.5	263° 37.7	16.3	192° 30.1	03.6				75° 04.8	21.7	193° 11.6	12.2	47.6	1.7		0°	05:11	05:35	05:56	22:18	23:06	23:54				
	18	115° 04.1	119° 30.6	34.2	60° 45.1	56.9	278° 40.5	16.2	207° 32.7	03.6	Arcturus	145° 53.1	19° 05.6 N	90° 04.9	22.6	207° 42.8	12.2	49.3	1.7		S 10°	05:18	05:42	06:04	22:03	22:51	23:41				
	19	130° 06.5	134° 32.8	33.7	75° 45.8	57.3	293° 43.3	16.0	222° 35.2	03.6	Atria	107° 21.9	69° 03.1 S	105° 05.1	23.4	222° 14.0	12.2	51.0	1.6		20°	05:23	05:49	06:12	21:48	22:36	23:26				
	20	145° 09.0	149° 34.9	33.3	90° 46.5	57.7	308° 46.0	15.9	237° 37.7	03.6	Avior	234° 16.8	59° 34.3 S	120° 05.2	24.3	236° 45.2	12.2	52.6	1.4		30°	05:28	05:56	06:20	21:31	22:18	23:09				
	21	160° 11.5	164° 37.0	32.8	105° 47.1	58.2	323° 48.8	15.8	252° 40.2	03.6	Bellatrix	278° 29.5	6° 21.6 N	135° 05.3	25.2	251° 16.4	12.2	54.0	1.4		35°	05:30	06:00	06:25	21:21	22:08	22:59				
	22	175° 13.9	179° 39.1	32.4	120° 47.8	58.6	338° 51.5	15.7	267° 42.7	03.6	Betelgeuse	270° 58.7	7° 24.3 N	150° 05.5	28.1	265° 47.6	12.1	55.4	1.3		40°	05:32	06:04	06:31	21:09	21:56	22:48				
23	190° 16.4	194° 41.2	31.9	135° 48.5	59.0	353° 54.3	15.6	282° 45.2	03.6				165° 05.6	27.0	280° 18.7	12.2	56.7	1.2		45°	05:34	06:08	06:38	20:55	21:43	22:35					
Monday	00	205° 18.8	209° 43.3	2° 31.5 N	150° 49.1	19° 59.4 N	8° 57.0	5° 15.5 S	297° 47.7	22° 03.6 S	Canopus	263° 55.2	52° 42.8 S	180° 05.8	10° 27.8 N	294° 49.9	12.1	18° 57.9 S	1.2	54.3	S 50°	05:35	06:13	06:46	20:39	21:26	22:19				
	01	220° 21.3	224° 45.4	31.0	165° 49.8	59.9	23° 59.8	15.3	312° 50.2	03.6	Capella	280° 30.9	46° 00.8 N	195° 05.9	28.7	300° 10.0	12.1	59.1	1.0		52°	05:35	06:15	06:49	20:31	21:18	22:11				
	02	235° 23.8	239° 47.5	30.6	180° 50.5	20° 00.3 N	39° 02.5	15.2	327° 57.7	03.6	Deneb	49° 29.8	45° 20.3 N	210° 06.1	29.6	323° 52.1	12.1	19° 00.1 S	1.0		54°	05:36	06:17	06:53	20:22	21:09	22:03				
	03	250° 26.2	254° 49.6	30.1	195° 51.2	00.7	54° 05.3	15.1	342° 55.3	03.6	Denebola	182° 30.8	14° 28.5 N	225° 06.2	30.5	338° 23.2	12.0	01.1	0.8		56°	05:36	06:19	06:57	20:12	20:59	21:53				
	04	265° 28.7	269° 51.7	29.7	210° 51.8	01.1	69° 08.1	15.0	357° 57.8	03.6	Diphda	348° 53.7	17° 53.7 S	240° 06.4	31.4	352° 54.2	12.1	01.9	0.8		58°	05:36	06:22	07:02	20:01	20:48	21:43				
	05	280° 31.2	284° 53.8	29.2	225° 52.5	01.5	84° 10.8	14.9	13° 00.3	03.6				255° 06.5	32.2	7° 25.3	12.0	02.7	0.7		S 60°	05:36	06:25	07:08	19:48	20:35	21:30				
	06	295° 33.6	299° 55.9	28.8	240° 53.2	02.0	99° 13.6	14.8	28° 02.8	03.6	Dubhe	193° 48.2	61° 39.6 N	270° 06.6	33.1	21° 56.3	12.0	03.4	0.6		S 62°	05:37	06:28	07:14	19:33	20:19	21:16				
	07	310° 36.1	314° 57.9	28.4	255° 53.8	02.4	114° 16.3	14.6	43° 05.3	03.6	Elnath	278° 09.6	28° 37.1 N	285° 06.8	34.0	36° 27.3	12.0	04.0	0.5												
	08	325° 38.6	330° 00.0	27.9	270° 54.5	02.8	129° 19.1	14.5	58° 07.8	03.6	Eltanin	90° 44.7	51° 29.1 N	300° 06.9	34.9	50° 58.3	12.0	04.5	0.4												
	09	340° 41.0	345° 02.1	27.5	285° 55.2	03.2	144° 21.8	14.4	73° 10.3	03.6	Enif	33° 44.7	9° 57.2 N	315° 07.1	35.7	65° 29.3	12.0	04.9	0.4	54.4											
	10	355° 43.5	0° 04.1	27.0	300° 55.8	03.6	159° 24.6	14.3	88° 12.8	03.6	Fomalhaut	15° 21.5	29° 31.8 S	330° 07.2	36.6	80° 00.3	12.0	05.3	0.2												
	11	10° 46.0	15° 06.2	26.6	315° 56.5	04.1	174° 27.3	14.2	103° 15.4	03.6				345° 07.4	37.5	94° 31.3	12.9	05.5	0.2												
	12	25° 48.4	30° 08.3	2° 26.2 N	330° 57.2	20° 04.5 N	189° 30.1	5° 14.1 S	118° 17.9	22° 03.6 S	Gacrux	171° 57.4	57° 12.7 S	0° 07.5	10° 38.4 N	109° 02.2	12.0	19° 05.7 S	0.0	54.4	N 72°	20:37	22:34	-	-	-	-				
	13	40° 50.9	45° 10.3	25.8	345° 57.8	04.9	204° 32.8	13.9	133° 20.4	03.6	Gienah	175° 49.3	17° 38.4 S	15° 07.6	39.3	123° 33.2	11.9	05.7	0.0		N 70°	20:17	21:46	-	05:19	05:42	06:37				
	14	55° 53.3	60° 12.4	25.3	0° 58.5	05.3	219° 35.6	13.8	148° 22.9	03.5	Hadar	148° 43.5	60° 27.3 S	30° 07.8	40.1	138° 04.1	11.9	05.7	0.1		68°	20:02									

2017 April 19, 20, 21 (Wed, Thur, Fri)

GMT	ARIES			VENUS -4.5			MARS +1.6			JUPITER -2.4			SATURN +0.3			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	19		20	21				
19 e d n e s d a y	00	207° 17.1	211° 20.1	2° 11.9 N	151° 21.2	20° 19.4 N	11° 09.2	5° 09.9 S	299° 48.5	22° 03.4 S	Acamar	315° 16.8	40° 14.4 S	180° 12.5	11° 09.7 N	271° 28.7	11.6	18° 11.4 S	3.2	55.0	N 72°	-	00:53	03:08	05:50	05:03	04:49				
	01	222° 19.6	226° 22.0	11.6	166° 21.9	19.8	26° 11.9	09.8	314° 51.0	03.4	Achernar	335° 25.5	57° 09.1 S	195° 12.6	10.6	285° 59.3	11.5	08° 2	3.3	55.1	N 70°	-	01:56	03:30	04:17	04:22	04:24				
	02	237° 22.1	241° 23.9	11.2	181° 22.5	20.2	41° 14.7	09.7	329° 53.5	03.4	Acruz	173° 05.7	63° 11.8 S	210° 12.8	11.4	300° 29.8	11.6	04.9	3.3	66°	00:46	02:54	04:00	03:10	03:32	03:48					
	03	252° 24.5	256° 25.9	10.8	196° 23.2	20.6	56° 17.4	09.6	344° 56.0	03.4	Adhara	255° 10.6	29° 00.2 S	225° 12.9	12.3	315° 00.4	11.5	01.6	3.5	64°	01:41	03:13	04:11	02:48	03:15	03:36					
	04	267° 27.0	271° 27.8	10.5	211° 23.9	21.0	71° 20.2	09.5	359° 58.5	03.4	Aldebaran	290° 46.7	16° 32.4 N	240° 13.0	13.2	329° 30.9	11.6	17° 58.1 S	3.5	5	62°	02:12	03:28	04:20	02:31	03:01	03:25				
	05	282° 29.4	286° 29.7	10.1	226° 24.5	21.4	86° 22.9	09.3	15° 01.1	03.4				255° 13.2	14.0	344° 01.5	11.5	54.6	3.7	55.2	60°	02:35	03:41	04:29	02:17	02:49	03:15				
	06	297° 31.9	301° 31.6	09.8	241° 25.2	21.8	101° 25.7	09.2	30° 03.6	03.4	Alioth	166° 18.0	55° 52.1 N	270° 13.3	14.9	358° 32.0	11.5	50.9	3.7		N 58°	02:52	03:51	04:36	02:05	02:39	03:07				
	07	312° 34.4	316° 33.5	09.4	256° 25.9	22.2	116° 28.4	09.1	45° 06.1	03.4	Alkaid	152° 56.4	49° 13.7 N	285° 13.4	15.8	13° 02.5	11.6	47.2	3.8		56°	03:07	04:00	04:42	01:55	02:30	03:00				
	08	327° 36.8	331° 35.4	09.1	271° 23.6	22.6	131° 31.2	09.0	60° 08.6	03.4	Alnair	27° 40.8	46° 52.5 S	300° 13.6	16.6	27° 33.1	11.5	43.4	3.9		54°	03:19	04:09	04:47	01:45	02:22	02:53				
	09	342° 39.3	346° 37.3	08.7	286° 27.2	23.0	146° 33.9	08.9	75° 11.1	03.4	Alnilam	275° 44.0	1° 11.8 S	315° 13.7	17.5	42° 03.6	11.5	39.5	4.0	55.3	52°	03:30	04:16	04:52	01:37	02:14	02:47				
	10	357° 41.8	1° 39.2	08.4	301° 27.9	23.5	161° 32.7	08.8	90° 13.7	03.4	Alphard	217° 53.4	8° 44.3 S	330° 13.8	18.3	56° 34.1	11.5	35.5	4.1		50°	03:39	04:22	04:57	01:29	02:08	02:42				
	11	12° 44.2	16° 41.1	08.0	316° 28.5	23.9	176° 39.4	08.7	105° 16.2	03.4				345° 14.0	19.2	71° 04.6	11.5	31.4	4.2		45°	03:58	04:36	05:07	01:14	01:54	02:31				
	12	27° 46.7	31° 43.0	07.4	331° 29.2	20° 24.3 N	191° 42.2	5° 08.5 S	120° 18.7	22° 03.4 S	Alphecca	126° 08.5	26° 39.4 N	0° 14.1	11° 20.1 N	85° 35.1	11.4	17° 27.2 S	4.2	55.3	N 40°	04:12	04:46	05:15	01:00	01:42	02:21				
	13	42° 49.2	46° 44.9	07.7	346° 29.9	24.7	206° 44.9	08.4	135° 21.2	03.4				15° 14.2	20.9	100° 05.5	11.5	23.0	4.4	55.4	35°	04:24	04:55	05:22	00:49	01:32	02:13				
	14	57° 51.6	61° 46.8	07.0	1° 30.5	25.1	221° 47.7	08.3	150° 23.8	03.4	Altair	62° 05.7	8° 54.8 N	30° 14.4	21.8	114° 36.0	11.5	18.6	4.4		30°	04:34	05:03	05:28	00:40	01:24	02:06				
	15	72° 54.1	76° 48.7	06.7	16° 31.2	25.5	236° 50.4	08.2	165° 26.3	03.4	Ankaa	353° 13.6	42° 12.8 S	45° 14.5	22.7	129° 06.5	11.5	14.2	4.5		20°	04:49	05:16	05:38	00:23	01:09	01:53				
	16	87° 56.6	91° 50.6	06.3	31° 31.8	25.9	251° 53.2	08.1	180° 28.8	03.4	Antares	112° 22.8	26° 28.0 S	60° 14.6	23.5	143° 37.0	11.4	09.7	4.6		N 10°	05:01	05:26	05:47	00:08	00:55	01:43				
	17	102° 59.0	106° 52.5	06.0	46° 32.5	26.3	266° 55.9	08.0	195° 31.3	03.4				75° 14.8	24.4	158° 07.4	11.5	05.1	4.7	55.5	0°	05:10	05:34	05:56	-	00:43	01:32				
	18	118° 01.5	121° 54.3	05.7	61° 33.2	26.7	281° 58.7	07.9	210° 33.8	03.4	Arcturus	145° 53.1	19° 05.6 N	90° 14.9	25.2	172° 37.9	11.5	00.4	4.8		S 10°	05:18	05:42	06:04	-	00:31	01:22				
	19	133° 03.9	136° 56.2	05.3	76° 33.8	27.1	297° 01.4	07.7	225° 36.4	03.4	Atria	107° 21.9	69° 03.1 S	105° 15.0	26.1	187° 08.4	11.4	16° 55.6 S	4.9		20°	05:24	05:50	06:12	-	00:18	01:11				
	20	148° 06.4	151° 58.1	05.0	91° 34.5	27.5	312° 04.2	07.6	240° 38.9	03.4	Avior	234° 16.9	59° 34.3 S	120° 15.2	28.9	201° 38.8	11.4	50.7	5.0	55.6	30°	05:30	05:58	06:22	-	00:03	00:58				
	21	163° 08.9	166° 59.9	04.7	106° 35.2	27.9	327° 06.9	07.5	255° 41.4	03.4	Bellatrix	278° 29.5	6° 21.6 N	135° 15.3	27.8	216° 09.2	11.5	45.7	5.0		35°	05:32	06:02	06:28	23:54	-	00:51				
	22	178° 11.3	182° 01.8	04.0	121° 35.8	28.3	342° 09.7	07.4	270° 43.9	03.4	Betelgeuse	270° 58.7	7° 24.3 N	150° 15.4	43.7	230° 39.7	11.4	40.7	5.2		40°	05:35	06:06	06:34	23:44	-	00:43				
23	193° 13.8	197° 03.6	04.0	136° 36.5	28.7	357° 12.4	07.3	285° 46.5	03.4				165° 15.6	29.5	245° 10.1	11.4	35.5	5.2		45°	05:37	06:11	06:41	23:32	-	00:33					
20 T h u r s d a y	00	208° 16.3	212° 05.5	2° 03.7 N	151° 37.2	20° 29.1 N	12° 15.2	5° 07.2 S	300° 49.0	22° 03.4 S	Canopus	263° 55.2	52° 42.8 S	180° 15.7	11° 30.4 N	259° 40.5	11.5	16° 30.3 S	5.3	55.7	S 50°	05:39	06:17	06:50	23:18	-	00:21				
	01	223° 18.7	227° 07.4	03.4	166° 37.8	29.5	27° 17.9	07.1	315° 51.5	03.4	Capella	280° 30.9	46° 00.8 N	195° 15.8	31.2	274° 11.0	11.4	25.0	5.4	50.4	52°	05:40	06:19	06:54	23:11	-	00:16				
	02	238° 21.2	242° 09.2	03.1	181° 38.5	29.9	42° 20.7	07.0	330° 54.0	03.4	Deneb	49° 29.7	45° 20.3 N	210° 16.0	32.1	288° 41.4	11.4	19.6	5.5		54°	05:41	06:22	06:59	23:03	-	00:10				
	03	253° 23.7	257° 11.0	02.8	196° 39.2	30.3	57° 23.4	06.8	345° 56.6	03.4	Denebola	182° 30.8	14° 28.5 N	225° 16.1	32.9	303° 11.8	11.4	14.1	5.6	55.8	56°	05:42	06:25	07:03	22:55	-	00:03				
	04	268° 26.1	272° 12.9	02.5	211° 39.8	30.7	72° 26.2	06.7	0° 59.1	03.4	Diphda	348° 53.6	17° 53.7 S	240° 16.2	33.8	317° 42.2	11.4	08.5	5.7		58°	05:42	06:28	07:09	22:46	23:56	25:11				
	05	283° 28.6	287° 14.7	02.1	226° 40.5	31.1	87° 28.9	06.6	16° 01.6	03.4				255° 16.4	34.7	332° 12.6	11.4	02.8	5.7		S 60°	05:43	06:32	07:15	22:35	23:47	25:05				
	06	298° 31.0	302° 16.7	01.8	241° 41.1	31.5	102° 31.7	06.5	31° 04.1	03.4	Dubhe	193° 48.2	61° 39.6 N	270° 16.5	35.5	346° 43.0	11.4	15° 57.1 S	5.8	55.9	S 62°	05:44	06:35	07:22	22:22	23:37	24:57				
	07	313° 33.5	317° 18.4	01.5	256° 41.8	31.9	117° 34.4	06.4	46° 06.7	03.4	El Nath	278° 09.6	28° 37.1 N	285° 16.6	36.4	1° 13.4	11.3	51.3	6.0												
	08	328° 36.0	332° 20.2	01.2	271° 42.5	32.3	132° 37.2	06.3	61° 09.2	03.3	Eltanin	90° 44.7	51° 29.1 N	300° 16.7	37.2	15° 43.7	11.4	45.3	6.0												
	09	343° 38.4	347° 22.0	00.9	286° 43.1	32.7	147° 39.9	06.2	76° 11.7	03.3	Enif	31° 44.7	9° 57.2 N	315° 16.9	38.1	30° 14.1	11.4	39.3	6.1		56.0										
	10	358° 40.9	2° 23.9	00.6	301° 43.8	33.1	162° 42.7	06.0	91° 14.2	03.3	Fomalhaut	15° 21.4	29° 31.8 S	330° 17.0	38.9	44° 44.5	11.3	33.2	6.1												
	11	13° 43.4	17° 25.7	00.3	316° 44.5	33.5	177° 45.4	05.9	106° 16.8	03.3				345° 17.1	39.8	59° 14.8	11.4	27.1	6.3												
	12	28° 45.8	32° 27.5	2° 00.0 N	331° 45.1	20° 33.9 N	192° 48.2	5° 05.8 S	121° 19.3	22° 03.3 S	Gacrux	171° 57.4	57° 12.7 S	0° 17.3	11° 40.6 N	73° 45.2	11.4	15° 20.8 S	6.3	56.0	N 70°	20:31	22:09	-	08:02	09:38	11:19				
	13	43° 48.3	47° 29.3	1° 59.7 N	346° 45.8	34.3	207° 50.9	05.7	136° 21.8	03.3	Genah	175° 49.3	17° 38.4 S	15° 17.4	41.5	88° 15.6	11.3	14.5	6.5	56.1	68°	20:14	21:32	-	08:41	10:05	11:37				
	14	58° 50.8	62° 31.1	59.4	1° 46.4	34.7	222° 53.7	05.6	151° 24.3																						

2017 April 22, 23, 24 (Sat, Sun, Mon)

GMT	ARIES			VENUS -4.5			MARS +1.6			JUPITER -2.4			SATURN +0.3			STARS			SUN		MOON				Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	22		23	24				
22 S a t u r d a y	00	210° 14.5'	213° 30.7'	1° 50.4' N	152° 08.9'	20° 47.9' N	14° 27.0'	5° 01.8' S	302° 50.3'	22° 03.2' S	Acamar	315° 16.8'	40° 14.4' S	180° 21.8'	12° 11.1' N	235° 53.2'	11.0'	10° 42.2' S	9.1	57.3	N 72°	-	-	02:49	04:39	04:31	04:23				
	01	225° 17.0'	228° 32.4'	50.1'	167° 09.6'	48.3'	50.1'	29° 29.8'	01.7'	317° 52.9'	03.2'	Achernar	335° 25.5'	57° 09.1' S	195° 21.9'	12.0'	250° 23.2'	11.0'	33.1'	9.2	57.4	N 70°	-	01:28	03:14	04:23	04:22	04:21			
	02	240° 19.5'	243° 34.1'	49.9'	182° 10.3'	48.7'	44.3'	32.5'	01.6'	332° 55.4'	03.2'	Acruz	173° 05.7'	63° 11.8' S	210° 22.0'	12.8'	264° 53.2'	11.0'	23.9'	9.3	66°	-	02:39	03:48	04:00	04:09	04:18				
	03	255° 21.9'	258° 35.8'	49.7'	197° 10.9'	49.1'	59.3'	35.3'	01.5'	347° 57.9'	03.2'	Adhara	255° 10.6'	29° 00.1' S	225° 22.1'	13.7'	279° 23.2'	11.0'	14.6'	9.3	64°	01:17	02:39	04:01	03:51	04:04	04:16				
	04	270° 24.4'	273° 37.5'	49.4'	212° 11.6'	49.5'	74° 38.0'	01.4'	3° 00.5'	303.2'	03.2'	Aldebaran	290° 46.7'	16° 32.4' N	240° 22.3'	14.5'	293° 53.2'	11.0'	05.3'	9.4	57.5	62°	01:55	03:17	04:11	03:44	04:00	04:15			
	05	285° 26.9'	288° 39.1'	49.2'	227° 12.2'	49.9'	89° 40.7'	01.2'	18° 03.0'	303.2'	03.2'					255° 22.4'	15.3'	208° 23.2'	11.0'	9° 55.9' S	9.4	60°	02:21	03:31	04:20	03:37	03:56	04:14			
	06	300° 29.3'	303° 40.8'	49.0'	242° 12.9'	50.2'	104° 43.5'	01.1'	33° 05.5'	303.2'	03.2'	Alioth	166° 18.0'	55° 52.1' N	270° 22.5'	16.2'	322° 53.2'	10.9'	46.5'	9.5	57.6	N 58°	02:41	03:42	04:28	03:31	03:53	04:13			
	07	315° 31.8'	318° 42.5'	48.8'	257° 13.5'	50.6'	139° 46.2'	01.0'	48° 08.1'	303.2'	03.2'	Alkaid	152° 56.4'	49° 13.7' N	285° 22.6'	17.0'	337° 23.1'	11.0'	37.0'	9.6	56°	02:57	03:52	04:35	03:26	03:50	04:13				
	08	330° 34.3'	333° 44.2'	48.5'	272° 14.2'	51.0'	114° 49.0'	00.9'	63° 10.6'	303.2'	03.2'	Alnair	27° 40.8'	46° 52.5' S	300° 24.7'	17.9'	351° 53.1'	10.9'	27.4'	9.7	54°	03:10	04:01	04:41	03:21	03:47	04:12				
	09	345° 36.7'	348° 45.8'	48.3'	287° 14.9'	51.4'	149° 51.7'	00.8'	78° 13.1'	303.2'	03.2'	Alnilam	275° 44.0'	1° 11.8' S	315° 22.9'	18.7'	6° 23.0'	10.9'	17.7'	9.7	57.7	52°	03:22	04:09	04:46	03:17	03:45	04:11			
	10	0° 39.2'	3° 47.5'	48.1'	302° 15.5'	51.8'	164° 54.5'	00.7'	93° 15.7'	303.2'	03.2'	Alphard	217° 53.5'	8° 44.2' S	330° 23.2'	19.5'	20° 52.9'	10.9'	08.0'	9.7	50°	03:32	04:16	04:51	03:13	03:42	04:11				
	11	15° 41.6'	18° 49.2'	47.9'	317° 16.2'	52.1'	179° 57.2'	00.6'	108° 18.2'	303.2'	03.2'					345° 23.1'	20.4'	35° 22.8'	10.8'	8° 58.3' S	9.9	57.8	45°	03:52	04:30	05:02	03:05	03:37	04:09		
	12	30° 44.1'	33° 50.8'	1° 47.7' N	332° 16.8'	20° 52.5' N	194° 59.9'	5° 00.5' S	123° 20.7'	22° 03.2' S		Alphaacca	126° 08.5'	26° 39.4' N	0° 23.2'	12° 21.2' N	49° 52.6'	10.9'	8° 48.4' S	9.9	57.8	N 40°	04:07	04:42	05:11	02:58	03:33	04:08			
	13	45° 46.6'	48° 52.5'	47.5'	347° 17.5'	52.9'	210° 02.7'	00.4'	138° 23.3'	303.2'	03.2'	Alpheratz	209° 41.1'	29° 10.9' N	15° 23.3'	22.0'	64° 22.5'	10.8'	38.5'	9.9	35°	04:20	04:52	05:18	02:52	03:30	04:07				
	14	60° 49.0'	63° 54.2'	47.2'	2° 18.2'	53.3'	225° 05.4'	00.2'	153° 25.8'	303.2'	03.2'	Altair	62° 05.7'	8° 54.8' N	30° 23.5'	22.9'	78° 52.3'	10.8'	28.6'	10.0	57.9	30°	04:30	05:00	05:25	02:47	03:27	04:07			
	15	75° 51.5'	78° 55.8'	47.0'	17° 18.8'	53.7'	240° 08.2'	00.1'	168° 28.3'	303.2'	03.2'	Ankaa	353° 13.6'	42° 12.8' S	45° 23.6'	23.7'	93° 21.1'	10.8'	18.6'	10.1	20°	04:47	05:13	05:36	02:37	03:21	04:05				
	16	90° 54.0'	93° 57.5'	46.8'	32° 19.5'	54.0'	255° 10.9'	00.0'	183° 30.9'	303.2'	03.2'	Antares	112° 22.8'	26° 28.0' S	60° 23.7'	24.5'	107° 51.9'	10.8'	08.5'	10.2	58.0	N 10°	04:59	05:24	05:46	02:29	03:16	04:04			
	17	105° 56.4'	108° 59.1'	46.6'	47° 20.1'	54.4'	270° 13.7'	4° 59.9' S	198° 33.4'	303.2'	03.2'					75° 23.8'	25.4'	122° 21.7'	10.8'	7° 58.3' S	10.1	0°	05:09	05:34	05:55	02:22	03:12	04:03			
	18	120° 58.9'	124° 00.8'	46.4'	62° 20.8'	54.8'	285° 16.4'	59.8'	213° 36.0'	303.2'	03.2'	Arcturus	145° 53.1'	19° 05.6' N	90° 23.9'	26.2'	136° 51.5'	10.7'	48.2'	10.3	S 10°	05:18	05:42	06:04	02:14	03:07	04:02				
	19	136° 01.4'	139° 02.4'	46.2'	77° 21.5'	55.2'	300° 19.1'	59.7'	228° 38.5'	303.2'	03.2'	Atria	107° 21.8'	69° 03.1' S	105° 24.0'	27.1'	151° 21.2'	10.7'	37.9'	10.3	58.1	20°	05:25	05:51	06:13	02:06	03:02	04:01			
	20	151° 03.8'	154° 04.1'	46.0'	92° 22.1'	55.6'	315° 21.9'	59.6'	243° 41.0'	303.2'	03.2'	Avior	234° 16.9'	59° 34.3' S	120° 24.2'	27.9'	165° 50.9'	10.7'	27.6'	10.4	30°	05:31	06:00	06:24	01:57	02:57	03:59				
	21	166° 06.3'	169° 05.7'	45.8'	107° 22.8'	55.9'	330° 24.6'	59.5'	258° 43.6'	303.2'	03.2'	Bellatrix	278° 29.5'	6° 21.6' N	135° 24.3'	28.7'	180° 20.6'	10.7'	17.2'	10.4	58.2	35°	05:35	06:04	06:30	01:51	02:54	03:58			
	22	181° 08.8'	184° 07.3'	45.6'	122° 23.4'	56.3'	345° 27.4'	59.4'	273° 46.1'	303.2'	03.2'	Betelgeuse	270° 58.7'	7° 24.3' N	150° 24.4'	29.6'	194° 50.3'	10.7'	06.8'	10.4	40°	05:38	06:09	06:37	01:45	02:50	03:58				
23	196° 11.2'	199° 09.0'	45.4'	137° 24.1'	56.7'	0° 30.1'	59.3'	288° 48.6'	303.2'	03.2'					165° 24.5'	30.4'	209° 20.0'	10.6'	6° 56.4' S	10.5	45°	05:40	06:15	06:45	01:38	02:46	03:57				
23 S u n d a y	00	211° 13.7'	214° 10.6'	1° 45.2' N	152° 24.7'	20° 57.1' N	15° 32.8'	4° 59.2' S	303° 51.2'	22° 03.1' S	Canopus	263° 55.3'	52° 42.8' S	180° 24.6'	12° 31.2' N	223° 49.6'	10.6'	6° 45.9' S	10.6	58.3	S 50°	05:43	06:21	06:55	01:29	02:41	03:55				
	01	226° 16.1'	229° 12.2'	45.0'	167° 25.4'	57.4'	30° 35.6'	59.0'	30° 51.8'	303.2'	03.2'	Capella	280° 31.0'	46° 00.8' N	195° 24.7'	32.1'	238° 19.2'	10.6'	35.3'	10.6	58.2	50°	05:45	06:24	06:59	01:25	02:39	03:55			
	02	241° 18.6'	244° 13.8'	44.8'	182° 26.1'	57.8'	45° 38.3'	58.9'	333° 56.2'	303.1'	03.1'	Deneb	49° 29.7'	45° 20.3' N	210° 24.9'	32.9'	252° 48.8'	10.6'	24.7'	10.7	54°	05:46	06:27	07:04	01:21	02:36	03:54				
	03	256° 21.1'	259° 14.4'	44.6'	197° 26.1'	58.2'	60° 41.1'	58.8'	348° 58.8'	303.1'	03.1'	Denebola	182° 30.8'	14° 28.5' N	225° 25.0'	33.7'	267° 18.4'	10.5'	14.0'	10.7	58.4	56°	05:47	06:31	07:09	01:16	02:33	03:54			
	04	271° 23.5'	274° 17.1'	44.5'	212° 27.4'	58.6'	75° 43.8'	58.7'	4° 01.3'	303.1'	03.1'	Diphda	348° 53.6'	17° 53.7' S	240° 25.1'	34.5'	281° 47.9'	10.5'	03.3'	10.8	58.5	58°	05:48	06:34	07:15	01:11	02:30	03:53			
	05	286° 26.0'	289° 18.7'	44.3'	227° 28.0'	58.9'	90° 46.6'	58.6'	19° 03.9'	303.1'	03.1'					255° 25.2'	35.4'	296° 17.4'	10.5'	5° 52.5' S	10.8	S 60°	05:49	06:38	07:22	01:05	02:26	03:52			
	06	301° 28.5'	304° 20.3'	44.1'	242° 28.7'	59.3'	105° 49.3'	58.5'	34° 06.4'	303.1'	03.1'	Dubhe	193° 48.2'	61° 39.6' N	270° 25.3'	36.2'	310° 46.9'	10.5'	41.7'	10.9	58.6	S 62°	05:51	06:43	07:30	00:57	02:22	03:51			
	07	316° 30.9'	319° 21.9'	43.9'	257° 29.3'	59.7'	120° 52.0'	58.4'	49° 08.9'	303.1'	03.1'	Elnath	278° 09.6'	28° 37.1' N	285° 25.4'	37.0'	325° 16.4'	10.4'	30.8'	10.9											
	08	331° 33.4'	334° 23.5'	43.7'	272° 30.0'	21° 00.1' N	135° 54.8'	58.3'	64° 11.5'	303.1'	03.1'	Eltanin	90° 44.6'	51° 29.1' N	300° 25.6'	37.9'	339° 45.8'	10.4'	19.9'	10.9	58.6										
	09	346° 35.9'	349° 25.1'	43.5'	287° 30.7'	60.4'	150° 57.5'	58.2'	79° 14.0'	303.1'	03.1'	Enif	33° 44.7'	9° 57.2' N	315° 25.7'	38.7'	354° 15.2'	10.4'	09.0'	11.0											
	10	1° 38.3'	4° 26.7'	43.4'	302° 31.3'	60.8'	166° 00.3'	58.1'	94° 16.5'	303.1'	03.1'	Fomalhaut	15° 21.4'	29° 31.8' S	330° 25.8'	39.5'	8° 44.6'	10.4'	4° 58.0' S	11.1	58.7										
	11	16° 40.8'	19° 28.3'	43.2'	317° 32.0'	61.2'	181° 03.0'	57.9'	109° 19.1'	303.1'	03.1'					345° 25.9'	40.4'	23° 14.0'	10.3	46.9'	11.1										
	12	31° 43.2'	34° 29.9'	1° 43.0' N	332° 32.6'	21° 01.6' N	196° 05.7'	4° 57.8' S	124° 21.6'	22° 03.1' S		Gacrux	171° 57.4'	57° 12.7' S	0° 26.0'	12° 41.2' N	37° 43.3'	10.3'	4° 35.8' S	11.1	58.7	N 70°	20:46	22:38	-						

2017 April 25, 26, 27 (Tue, Wed, Thur)

GMT	ARIES			VENUS -4.5			MARS +1.6			JUPITER -2.4			SATURN +0.3			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise				
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	25		26	27						
Tuesday	00	213° 12.0	215° 25.3	1° 37.8 N	152° 56.2	21° 14.8 N	17° 44.3	4° 54.0 S	305° 53.1	22° 03.0 S	305° 53.1	22° 03.0 S	Acamar	315° 16.8	40° 14.4 S	180° 30.0	13° 10.8 N	198° 56.5	9.0	2° 22.1 N	11.9	60.0	N 72°	-	-	02:29	04:16	04:08	03:59				
	01	228° 14.4	230° 26.8	37.7	167° 56.9	15.1	32° 47.0	53.9	320° 55.7	03.0	167° 56.9	15.1	32° 47.0	53.9	320° 55.7	03.0	195° 30.1	11.6	213° 24.5	8.9	34.0	11.9	60°	-	00:50	02:58	04:20	04:19	04:19				
	02	243° 16.9	245° 28.3	37.6	182° 57.5	15.5	47° 49.7	53.7	335° 58.2	03.0	182° 57.5	15.5	47° 49.7	53.7	335° 58.2	03.0	210° 30.2	12.4	227° 52.4	8.9	45.9	11.8	66°	-	02:23	03:37	04:26	04:36	04:48				
	03	258° 19.3	260° 29.8	37.5	197° 58.2	15.9	62° 52.5	53.6	351° 00.8	03.0	197° 58.2	15.9	62° 52.5	53.6	351° 00.8	03.0	225° 30.0	13.2	242° 20.3	8.8	57.7	11.9	60.1	64°	00:43	02:47	03:50	04:29	04:42	04:59			
	04	273° 21.8	275° 31.2	37.4	212° 58.9	16.2	77° 55.2	53.5	6° 03.3	03.0	212° 58.9	16.2	77° 55.2	53.5	6° 03.3	03.0	240° 30.4	14.0	256° 48.1	8.7	3° 09.6 N	11.8	62°	01:37	03:06	04:02	04:31	04:48	05:08				
	05	288° 24.3	290° 32.7	37.3	227° 59.5	16.6	92° 58.0	53.4	21° 05.8	03.0	227° 59.5	16.6	92° 58.0	53.4	21° 05.8	03.0	255° 30.5	14.8	271° 15.8	8.7	21.4	11.8	60°	02:07	03:21	04:11	04:33	04:53	05:16				
	06	303° 26.7	305° 34.2	37.2	243° 00.2	16.9	108° 00.7	53.3	36° 08.4	03.0	243° 00.2	16.9	108° 00.7	53.3	36° 08.4	03.0	270° 30.6	15.7	285° 43.5	8.7	33.2	11.9	60.2	N 58°	02:30	03:34	04:20	04:34	04:57	05:23			
	07	318° 29.2	320° 35.7	37.1	258° 00.8	17.3	123° 03.4	53.2	51° 10.9	03.0	258° 00.8	17.3	123° 03.4	53.2	51° 10.9	03.0	285° 30.7	16.5	300° 11.2	8.6	45.1	11.8	56°	02:47	03:44	04:27	04:36	05:01	05:29				
	08	333° 31.7	335° 37.1	37.0	273° 01.5	17.6	138° 06.2	53.1	66° 13.5	03.0	273° 01.5	17.6	138° 06.2	53.1	66° 13.5	03.0	300° 30.8	17.3	314° 38.8	8.6	56.9	11.8	54°	03:02	03:54	04:34	04:37	05:04	05:35				
	09	348° 34.1	350° 38.6	36.9	288° 02.1	18.0	153° 08.9	53.0	81° 16.0	03.0	288° 02.1	18.0	153° 08.9	53.0	81° 16.0	03.0	315° 31.0	18.1	329° 06.4	8.5	4° 08.7 N	11.8	52°	03:14	04:02	04:40	04:38	05:07	05:40				
	10	3° 36.6	5° 40.1	36.8	303° 02.8	18.4	168° 11.6	52.9	96° 18.6	03.0	3° 36.6	5° 40.1	36.8	303° 02.8	18.4	168° 11.6	52.9	303° 31.1	18.9	343° 33.9	8.5	20.5	11.7	60.3	50°	03:25	04:10	04:45	04:40	05:10	05:45		
	11	18° 39.1	20° 41.5	36.7	318° 03.4	18.7	183° 14.4	52.8	111° 21.1	03.0	18° 39.1	20° 41.5	36.7	318° 03.4	18.7	183° 14.4	52.8	345° 31.2	19.7	358° 01.4	8.4	32.2	11.8	45°	03:46	04:25	04:57	04:42	05:17	05:55			
	12	33° 41.5	35° 43.0	36.6 N	333° 04.1	21° 19.1 N	198° 17.1	4° 52.7 S	126° 23.7	22° 03.0 S	33° 41.5	35° 43.0	36.6 N	333° 04.1	21° 19.1 N	198° 17.1	4° 52.7 S	126° 23.7	22° 03.0 S	8.4	44.0 N	11.7	60.3	N 40°	04:03	04:38	05:06	04:44	05:22	06:03			
	13	48° 44.0	50° 44.4	36.5	348° 04.7	19.4	213° 19.8	52.6	141° 26.2	03.0	48° 44.0	50° 44.4	36.5	348° 04.7	19.4	213° 19.8	52.6	15° 31.4	21.3	26° 56.2	8.3	55.7	11.7	35°	04:16	04:48	05:15	04:46	05:27	06:10			
	14	63° 46.4	65° 45.9	36.4	3° 05.4	19.8	243° 22.6	52.5	156° 28.8	03.0	63° 46.4	65° 45.9	36.4	3° 05.4	19.8	243° 22.6	52.5	30° 31.5	22.1	41° 23.5	8.3	5° 07.4 N	11.7	60.4	30°	04:27	04:57	05:22	04:48	05:31	06:17		
	15	78° 48.9	80° 47.3	36.3	18° 06.0	20.1	228° 25.3	52.4	171° 31.3	02.9	78° 48.9	80° 47.3	36.3	18° 06.0	20.1	228° 25.3	52.4	45° 31.6	23.0	55° 50.8	8.2	19.1	11.7	20°	04:44	05:11	05:34	04:50	05:38	06:28			
	16	93° 51.4	95° 48.8	36.2	33° 06.7	20.5	258° 28.0	52.3	186° 33.9	02.9	93° 51.4	95° 48.8	36.2	33° 06.7	20.5	258° 28.0	52.3	60° 31.7	23.8	70° 18.0	8.1	30.8	11.6	N 10°	04:58	05:23	05:45	04:53	05:44	06:38			
	17	108° 53.8	110° 50.2	36.1	48° 07.3	20.9	273° 30.8	52.2	201° 36.4	02.9	108° 53.8	110° 50.2	36.1	48° 07.3	20.9	273° 30.8	52.2	75° 31.8	24.6	84° 45.1	8.1	42.4	11.6	0°	05:08	05:33	05:54	04:55	05:50	06:47			
	18	123° 56.3	125° 51.7	36.1	63° 08.0	21.2	288° 33.5	52.1	216° 39.0	02.9	123° 56.3	125° 51.7	36.1	63° 08.0	21.2	288° 33.5	52.1	90° 31.9	25.4	99° 12.2	8.1	54.0	11.6	60.5	S 10°	05:18	05:43	06:04	04:58	05:56	06:56		
	19	138° 58.8	140° 53.1	36.0	78° 08.6	21.6	303° 36.2	51.9	231° 41.5	02.9	138° 58.8	140° 53.1	36.0	78° 08.6	21.6	303° 36.2	51.9	105° 32.0	26.2	113° 39.3	8.0	6° 05.6 N	11.6	20°	05:26	05:52	06:14	05:01	06:03	07:06			
	20	154° 01.2	155° 54.5	35.9	93° 09.3	21.9	318° 38.9	51.8	246° 44.1	02.9	154° 01.2	155° 54.5	35.9	93° 09.3	21.9	318° 38.9	51.8	120° 32.1	27.0	128° 06.3	8.0	17.2	11.6	30°	05:33	06:01	06:26	05:04	06:10	07:18			
	21	169° 03.7	170° 56.0	35.8	108° 10.0	22.3	333° 41.7	51.7	261° 46.6	02.9	169° 03.7	170° 56.0	35.8	108° 10.0	22.3	333° 41.7	51.7	135° 32.2	27.8	142° 33.3	7.9	28.7	11.5	35°	05:37	06:06	06:33	05:05	06:14	07:25			
	22	184° 06.2	185° 57.4	35.7	123° 10.6	22.6	348° 44.4	51.6	276° 49.1	02.9	184° 06.2	185° 57.4	35.7	123° 10.6	22.6	348° 44.4	51.6	150° 32.3	28.6	157° 00.2	7.8	40.2	11.5	60.6	40°	05:40	06:12	06:40	05:07	06:19	07:32		
23	199° 08.6	200° 58.8	35.7	138° 11.3	23.0	3° 47.1	51.5	291° 51.7	02.9	199° 08.6	200° 58.8	35.7	138° 11.3	23.0	3° 47.1	51.5	165° 32.4	29.4	171° 27.0	7.8	51.7	11.4	45°	05:44	06:18	06:49	05:10	06:25	07:41				
Wednesday	00	214° 11.1	216° 00.3	1° 35.6 N	153° 11.9	21° 23.3 N	18° 49.9	4° 51.4 S	306° 54.2	22° 02.9 S	214° 11.1	216° 00.3	1° 35.6 N	153° 11.9	21° 23.3 N	18° 49.9	4° 51.4 S	306° 54.2	22° 02.9 S	180° 32.5	13° 30.2 N	185° 53.8	7.7	7° 03.1 N	11.4	60.6	S 50°	05:48	06:26	06:59	05:13	06:32	07:52
	01	229° 13.6	231° 01.7	35.5	168° 12.6	23.7	33° 52.6	51.3	321° 56.8	02.9	229° 13.6	231° 01.7	35.5	168° 12.6	23.7	33° 52.6	51.3	195° 32.6	11.0	200° 20.5	7.7	14.5	11.4	52°	05:49	06:29	07:04	05:14	06:35	07:57			
	02	244° 16.0	246° 03.1	35.4	183° 13.2	24.0	48° 55.3	51.2	336° 59.3	02.9	244° 16.0	246° 03.1	35.4	183° 13.2	24.0	48° 55.3	51.2	210° 32.7	31.8	214° 47.2	7.6	25.9	11.3	54°	05:51	06:32	07:09	05:15	06:39	08:03			
	03	259° 18.5	261° 04.5	35.4	198° 13.9	24.4	63° 58.1	51.1	352° 01.9	02.9	259° 18.5	261° 04.5	35.4	198° 13.9	24.4	63° 58.1	51.1	225° 32.8	32.6	229° 13.8	7.6	37.2	11.3	60.7	56°	05:52	06:36	07:15	05:17	06:43	08:09		
	04	274° 20.9	276° 05.9	35.3	213° 14.5	24.7	79° 00.8	51.0	7° 04.4	02.9	274° 20.9	276° 05.9	35.3	213° 14.5	24.7	79° 00.8	51.0	240° 32.9	33.4	243° 40.4	7.5	48.5	11.2	58°	05:54	06:40	07:22	05:19	06:47	08:16			
	05	289° 23.4	291° 07.4	35.2	228° 15.2	25.1	94° 03.5	50.9	22° 07.0	02.9	289° 23.4	291° 07.4	35.2	228° 15.2	25.1	94° 03.5	50.9	255° 33.0	34.2	258° 06.9	7.5	59.7	11.2	S 60°	05:56	06:45	07:29	05:21	06:52	08:24			
	06	304° 25.9	306° 08.8	35.2	243° 15.8	25.4	109° 06.3	50.8	30° 09.5	02.9	304° 25.9	306° 08.8	35.2	243° 15.8	25.4	109° 06.3	50.8	270° 33.1	35.0	272° 33.4	7.4	8° 10.9 N	11.1	S 62°	05:58	06:50	07:38	05:23	06:58	08:33			
	07	319° 28.3	321° 10.2	35.1	258° 16.5	25.8	124° 09.0	50.7	52° 12.1	02.9	319° 28.3	321° 10.2	35.1	258° 16.5	25.8	124° 09.0	50.7	285° 33.2	35.9	286° 59.8	7.4	22.0	11.1										
	08	334° 30.8	336° 11.6	35.0	273° 17.1	26.1	139° 11.7	50.6	67° 14.6	02.9	334° 30.8	336° 11.6	35.0	273° 17.1	26.1	139° 11.7	50.6	300° 33.3	36.7	301° 26.2	7.3	33.1	11.0	60.8									
	09																																

2017 April 28, 29, 30 (Fri, Sat, Sun)

GMT	ARIES			VENUS -4.5			MARS +1.6			JUPITER -2.4			SATURN +0.3			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical		Civil	28		29	30	
28	00	216° 09'.4	217° 05'.7	1° 33'.8 N	153° 43'.1	21° 39'.9 N	21° 00'.8	4° 46'.5 S	308° 56'.8	22° 02'.8 S	Acamar	315° 16'.8	40° 14'.4 S	180° 37.1	14° 08'.5 N	158° 16'.8	5.3	15° 00'.0 N	7.8	61.0	N 72°	-	-	02:07	03:46	03:16	-				
	01	231° 11'.8	232° 07'.0	33'.8	168° 43'.8	40'.2	36° 03'.5	46'.4	323° 59'.3	02'.8	Achernar	335° 25'.5	57° 09'.0 S	195° 37.2	09'.2	172° 41'.1	5.3	07'.8	7.8	68°	N 70°	-	-	02:42	04:21	04:28	04:53				
	02	246° 14'.3	247° 08'.3	33'.8	183° 44'.4	40'.6	51° 06'.3	46'.3	339° 01'.9	02'.8	Acruz	173° 05'.7	63° 11'.8 S	210° 37.3	10.0	187° 05'.4	5.2	15'.6	7.6	66°	N 68°	-	01:25	03:06	04:46	05:06	05:44				
	03	261° 16'.8	262° 09'.6	33'.9	198° 45'.1	40'.9	66° 09'.0	46'.2	354° 04'.5	02'.8	Adhara	255° 10'.7	29° 00'.1 S	225° 37.4	10.8	201° 29'.6	5.1	23'.2	7.5	64°	N 64°	-	02:06	03:25	05:05	05:33	06:16				
	04	276° 19'.2	277° 10'.9	33'.9	213° 45'.7	41'.2	81° 11'.7	46'.1	9° 07'.0	02'.7	Aldebaran	290° 46'.7	16° 32'.4 N	240° 37.5	11.6	215° 53'.7	5.2	30.7	7.4	62°	N 62°	01:15	02:54	03:52	05:34	06:10	06:59				
	05	291° 21'.7	292° 12'.2	33'.9	228° 46'.4	41'.6	96° 14'.4	46'.0	24° 09'.6	02'.7				255° 37.6	12.4	230° 17'.9	5.1	38.1	7.3	60°	N 60°	01:52	03:11	04:03	05:45	06:24	07:14				
	06	306° 24'.2	307° 13'.5	33'.9	243° 47.0	41'.9	111° 17'.2	45'.9	39° 12'.1	02'.7	Alioth	166° 18'.0	55° 52'.1 N	270° 37.7	13'.2	244° 42'.0	5.0	45.4	7.2	58°	N 58°	02:18	03:25	04:12	05:55	06:36	07:27				
	07	321° 26'.6	322° 14.7	33'.9	258° 47.7	42'.2	126° 19'.9	45'.8	54° 14'.7	02'.7	Alkaid	152° 56'.4	49° 13'.7 N	285° 37.8	14.0	259° 06'.0	5.1	52.6	7.0	56°	N 56°	02:37	03:37	04:20	06:04	06:46	07:39				
	08	336° 29'.1	337° 16'.0	33'.9	273° 48'.3	42'.6	141° 22'.6	45'.6	69° 17'.2	02'.7	Alnair	27° 40'.7	46° 52'.4 S	300° 37.4	14.7	273° 30'.1	5.0	59.6	7.0	54°	N 54°	02:53	03:47	04:28	06:11	06:56	07:49				
	09	351° 31'.5	352° 17.3	33'.9	288° 49.0	42'.9	156° 25'.3	45'.5	84° 19'.8	02'.7	Alnilam	275° 44.0	1° 11'.8 S	315° 37.9	15.5	287° 54'.1	4.9	16° 06'.6 N	6.8	52°	N 52°	03:06	03:56	04:34	06:18	07:04	07:58				
	10	6° 34'.0	7° 18'.6	33'.9	303° 49'.6	43'.4	171° 28'.1	45'.4	99° 22'.4	02'.7	Alphard	217° 53'.5	8° 44'.2 S	330° 38.0	16.3	302° 18'.0	5.0	13'.4	6.7	60.9	S 60°	50°	03:18	04:04	04:40	06:25	07:11	08:06			
	11	21° 36'.5	22° 19.9	33'.9	318° 50.3	43'.6	186° 30'.8	45'.3	114° 24'.9	02'.7				345° 38.1	17.1	316° 42'.0	4.9	20.1	6.6	45°	N 45°	03:40	04:20	04:52	06:38	07:27	08:23				
	12	36° 38'.9	37° 21.1	1° 34'.0 N	333° 50.9	21° 43'.9 N	201° 33'.5	4° 45'.2 S	129° 27'.5	22° 02'.7 S	Alphecca	126° 08'.5	26° 39'.5 N	0° 38'.2	14° 17'.9 N	331° 05'.9	4.8	16° 26'.7 N	6.5	60.9	N 40°	03:58	04:33	05:03	06:49	07:40	08:37				
	13	51° 41'.4	52° 22.4	34.0	348° 51.6	44'.2	216° 36'.2	45'.1	144° 30'.0	02'.7	Alpheratz	349° 41.1	29° 10'.9 N	15° 38'.3	18.6	345° 29'.7	4.9	33.2	6.3	35°	N 35°	04:12	04:44	05:11	06:58	07:51	08:49				
	14	66° 43'.9	67° 23.7	34.0	3° 52'.2	44'.6	231° 38'.9	45.0	159° 32'.6	02'.7	Altair	62° 05'.6	8° 54'.8 N	30° 38'.4	19.4	359° 53'.6	4.8	39.5	6.2	30°	N 30°	04:24	04:54	05:19	07:07	08:01	08:59				
	15	81° 46'.3	82° 25.0	34.0	18° 52'.9	44'.9	246° 41'.7	44'.9	174° 35'.1	02'.7	Antares	353° 13'.6	42° 12'.8 S	45° 38'.5	20.2	14° 17'.4	4.8	45.7	6.1	20°	N 20°	04:42	05:09	05:32	07:21	08:18	09:17				
	16	96° 48'.8	97° 26'.2	34.1	33° 53'.5	45'.2	261° 44'.4	44'.8	189° 37'.7	02'.7				60° 38'.6	21.0	28° 41'.2	4.8	51.8	6.0	10°	N 10°	04:56	05:22	05:43	07:34	08:33	09:32				
	17	111° 51'.3	112° 27'.5	34.1	48° 54'.2	45'.6	276° 47'.1	44'.7	204° 40'.3	02'.7				75° 38'.6	21.8	43° 05'.0	4.7	57.8	5.9	0°	N 0°	05:08	05:33	05:54	07:46	08:47	09:47				
	18	126° 53'.7	127° 28'.7	34.1	63° 54'.8	45'.9	291° 49'.8	44'.6	219° 42'.8	02'.7	Arcturus	145° 53'.1	19° 05'.6 N	90° 38.7	22.6	57° 28'.7	4.8	17° 03'.7 N	5.7	60.8	S 10°	05:18	05:43	06:04	07:58	09:01	10:02				
	19	141° 56'.2	142° 30.0	34.1	78° 55'.5	46'.2	306° 52'.5	44'.5	234° 45'.4	02'.7	Atria	107° 21'.7	69° 03'.2 S	105° 38.8	23.3	71° 52'.5	4.7	09.4	5.6	20°	N 20°	05:26	05:53	06:15	08:11	09:15	10:17				
	20	156° 58'.6	157° 31.3	34.2	93° 56'.1	46'.5	321° 55'.3	44.4	249° 47'.9	02'.7	Avior	234° 17.0	59° 34'.3 S	120° 38.9	24.1	86° 16'.2	4.7	15.0	5.5	30°	N 30°	05:35	06:03	06:28	08:26	09:33	10:36				
	21	172° 01'.1	172° 32'.5	34.2	108° 56'.8	46.9	336° 58'.0	44.3	264° 50'.5	02'.7	Bellatrix	278° 29'.5	6° 21'.6 N	135° 39.0	24.9	100° 39'.9	4.6	20.5	5.4	35°	N 35°	05:39	06:09	06:35	08:35	09:43	10:46				
	22	187° 03'.6	187° 33'.8	34.2	123° 57'.4	47'.2	352° 00'.7	44.2	279° 53'.1	02'.7	Betelgeuse	270° 58'.7	7° 24'.3 N	150° 39.1	25.7	115° 03'.5	4.7	25.9	5.2	40°	N 40°	05:43	06:15	06:43	08:45	09:54	10:58				
23	202° 06'.0	202° 35'.0	34.3	138° 58'.1	47'.5	7° 03'.4	44.1	294° 55'.6	02'.7				165° 39'.2	26.4	129° 27'.2	4.6	31.1	5.1	45°	N 45°	05:47	06:22	06:52	08:56	10:08	11:12					
29	00	217° 08'.5	217° 36'.3	1° 34'.3 N	153° 58'.7	21° 47'.9 N	22° 06'.2	4° 44'.0 S	309° 58'.2	22° 02'.7 S	Canopus	263° 55'.3	52° 42'.7 S	180° 39.2	14° 27'.2 N	143° 50'.8	4.7	17° 36'.2 N	4.9	60.8	S 50°	05:52	06:30	07:04	09:11	10:24	11:30				
	01	232° 11'.0	232° 37.5	34.4	168° 59'.3	48'.1	327° 08'.9	43'.9	325° 00'.7	02'.7	Capella	280° 31.0	46° 00'.8 N	195° 39.3	28.0	158° 14'.5	4.6	41.1	4.9	60.8	S 52°	05:53	06:33	07:09	09:17	10:32	11:38				
	02	247° 13'.4	247° 38'.8	34.4	184° 00'.0	48'.5	52° 11'.6	43.8	340° 03'.3	02'.7	Deneb	49° 29'.7	45° 20'.3 N	210° 39.4	28.8	172° 38'.1	4.6	46.0	4.7	60.7	S 54°	05:55	06:37	07:15	09:25	10:41	11:47				
	03	262° 15'.9	262° 40.0	34.4	199° 00'.6	48'.8	67° 14'.3	43.7	355° 05'.9	02'.7	Denebola	182° 30'.8	14° 28'.5 N	225° 39'.5	29.6	187° 01'.7	4.6	50.7	4.6	56°	N 56°	05:57	06:41	07:21	09:33	10:50	11:57				
	04	277° 18'.4	277° 41'.2	34.5	214° 01'.3	49'.2	82° 17'.0	43.6	10° 08'.4	02'.7	Diphda	348° 53'.6	17° 53'.6 S	240° 39.6	30.3	201° 25'.3	4.6	55.3	4.4	58°	N 58°	06:00	06:46	07:28	09:42	11:02	12:09				
	05	292° 20'.8	292° 42'.5	34.5	229° 01'.9	49'.5	97° 19'.8	43'.5	25° 11'.0	02'.7				255° 39.7	31.1	215° 48'.9	4.6	59.7	4.3	60°	N 60°	06:02	06:51	07:37	09:53	11:14	12:23				
	06	307° 23'.3	307° 43'.7	34.6	244° 02'.6	49'.8	112° 22'.5	43'.4	40° 13'.6	02'.7	Dubhe	193° 48'.3	61° 39'.6 N	270° 39.8	31.9	230° 12'.5	4.5	18° 04'.0 N	4.2	60.6	N 52°	06:04	06:57	07:46	10:06	11:30	12:39				
	07	322° 25'.8	322° 44.9	34.6	259° 03'.2	50'.2	127° 25'.2	43.3	55° 16'.1	02'.7	El Nath	278° 09'.6	28° 37'.1 N	285° 39.8	32.7	244° 36'.0	4.6	08.2	4.1	60.6	N 60°	06:04	06:57	07:46	10:06	11:30	12:39				
	08	337° 28'.2	337° 46'.2	34.7	274° 03'.9	50'.5	142° 27'.9	43.2	70° 18'.7	02'.7	Eltanin	90° 44'.6	51° 29'.1 N	300° 39.9	33.4	258° 59'.6	4.6	12.3	3.9	60.6	N 60°	06:04	06:57	07:46	10:06	11:30	12:39				
	09	352° 30'.7	352° 47.4	34.7	289° 04'.5	50.8	157° 30'.6	43.1	85° 21'.2	02'.7	Enif	33° 44.7	9° 57'.2 N	315° 40.0	34.2	273° 23'.2	4.6	16.2	3.8	60.6	N 60°	06:04	06:57	07:46	10:06	11:30	12:39				
	10	7° 33'.1	7° 48'.6	34.8	304° 05'.2	51.1	172° 33'.3	43.0	100° 23'.8	02'.6	Fomalhaut	15° 21'.4	29° 31'.8 S	330° 40.1	35.0	287° 46'.8	4.5	20.0	3.6	60.6	N 60°	06:04	06:57	07:46	10:06	11:30	12:39				
	11	22° 35'.6	22° 49.8	34.8	319° 05'.8	51'.5	187° 36'.1	42.9	115° 26'.4	02'.6				345° 40'.2	35.7	302° 10'.3	4.6	23.6	3.5	60.6	N 60°	06:04	06:57	07:46	10:06	11:30	12:39				
	12	37° 38'.1	37° 51.1	1° 34'.9 N	334° 06'.5	21° 51'.8 N	202° 38'.8	4° 42'.9 S	130° 28'.9	22° 02'.6 S	Gacrux	171° 57'.4	57° 12'.7 S	0° 40'.3	14° 36'.5 N	316° 33'.9	4.6	18° 27'.1 N	3.4	60.6	N 70°	21:17	-	-	-	00:25	02:08				
	13	52° 40'.5	52° 52'.3	34.9	349° 07'.1	52.1	217° 41'.5	42.8	145° 31'.5	02'.6	Gienah	175° 49'.3	1																		

2017 May 1, 2, 3 (Mon, Tue, Wed)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	1		2	3				
Monday	00	219° 06.8	218° 33.5	1° 37.8 N	154° 29.7	22° 03.2 N	24° 16.5	4° 39.3 S	312° 01.3	22° 02.5 S	Acamar	315° 16.8	40° 14.4 S	180° 43.1	15° 04.0 N	114° 55.1	5.6	19° 04.0 N	1.4	59.6	N 72°	-	-	01:42	-	06:37	08:54				
	01	234° 09.3	233° 34.6	37.9	169° 30.3	03.5	39° 19.2	39.2	327° 03.9	02.5	Achernar	335° 25.5	57° 09.0 S	195° 43.2	04.8	129° 19.7	5.7	02.6	1.6	68°	-	-	02:24	05:59	07:40	09:27					
	02	249° 11.7	248° 35.7	38.0	184° 31.0	03.9	54° 22.0	39.2	342° 06.4	02.5	Acruz	173° 05.7	63° 11.8 S	210° 43.3	05.6	143° 44.4	5.7	01.0	1.6	66°	-	-	01:48	03:13	07:20	08:40	10:09				
	03	264° 14.2	263° 36.9	38.1	199° 31.6	04.2	69° 24.7	39.1	357° 09.0	02.5	Adhara	255° 10.7	29° 00.1 S	225° 43.3	06.3	158° 09.1	5.7	18° 59.4 N	1.8	59.5	64°	-	-	02:20	03:30	07:43	09:00	10:23			
	04	279° 16.6	278° 38.0	38.3	214° 32.3	04.5	84° 27.4	39.0	12° 11.6	02.5	Aldebaran	290° 46.7	16° 32.4 N	240° 43.4	07.1	172° 33.8	5.8	57.6	2.0	62°	00:47	02:43	03:43	08:02	09:16	10:36					
	05	294° 19.1	293° 39.1	38.4	229° 32.9	04.8	99° 24.1	38.9	27° 14.1	02.5				255° 43.5	07.8	186° 58.6	5.9	55.6	2.0	60°	01:36	03:01	03:55	08:17	09:29	10:46					
	06	309° 21.6	308° 40.3	38.5	244° 33.6	05.1	114° 32.8	38.8	42° 16.7	02.5	Alioth	166° 18.0	55° 52.1 N	270° 43.6	08.6	201° 23.5	5.9	53.6	2.2	59.4	N 58°	02:05	03:16	04:05	08:30	09:40	10:55				
	07	324° 24.0	323° 41.4	38.6	259° 34.2	05.4	129° 35.5	38.7	57° 19.3	02.5	Alkaid	152° 56.4	49° 13.8 N	285° 43.6	09.3	215° 48.4	6.0	51.4	2.3	56°	02:27	03:29	04:14	08:41	09:50	11:03					
	08	339° 26.5	338° 42.5	38.7	274° 34.9	05.7	144° 37.8	38.6	72° 21.8	02.5	Alnair	27° 40.7	46° 52.4 S	300° 43.7	10.1	230° 13.4	6.0	49.1	2.4	54°	02:44	03:40	04:21	08:51	09:59	11:10					
	09	354° 29.0	353° 43.6	38.8	289° 35.5	06.0	159° 40.9	38.5	87° 24.4	02.5	Alnilam	275° 44.0	1° 11.8 S	315° 43.8	10.8	244° 38.4	6.1	46.7	2.5	59.3	52°	02:58	03:49	04:28	08:59	10:07	11:16				
	10	9° 31.4	8° 44.7	39.0	304° 36.1	06.3	174° 43.6	38.4	102° 27.0	02.5	Alphard	217° 53.5	8° 44.2 S	330° 43.9	11.6	259° 03.5	6.2	44.2	2.7	59.0	50°	03:11	03:58	04:34	09:07	10:14	11:22				
	11	24° 33.9	23° 45.9	39.1	319° 36.8	06.6	189° 46.3	38.3	117° 29.5	02.5				345° 43.9	12.3	273° 28.7	6.2	41.5	2.8	45°	03:35	04:15	04:48	09:24	10:29	11:34					
	12	39° 36.4	38° 47.0	1° 39.2 N	334° 37.4	22° 07.0 N	204° 49.1	4° 38.2 S	132° 32.1	22° 02.5 S	Alphecca	126° 08.5	26° 39.5 N	0° 44.0	15° 13.1 N	287° 53.9	6.3	18° 38.7 N	2.9	59.3	N 40°	03:54	04:29	04:59	09:38	10:41	11:45				
	13	54° 38.8	53° 48.1	39.3	349° 38.1	07.3	219° 51.8	38.1	147° 34.7	02.5	Alpheratz	349° 41.0	29° 10.9 N	15° 44.1	13.8	302° 19.2	6.3	35.8	3.0	59.2	35°	04:08	04:41	05:08	09:49	10:51	11:53				
	14	69° 41.3	68° 49.2	39.5	4° 38.7	07.6	234° 54.5	38.0	162° 37.3	02.5	Altair	62° 05.6	8° 54.9 N	30° 44.1	14.6	316° 44.5	6.4	32.8	3.1	30°	04:21	04:51	05:16	09:59	11:00	12:01					
	15	84° 43.7	83° 50.3	39.6	19° 39.4	07.9	249° 57.2	37.9	177° 39.8	02.5	Antares	353° 13.6	42° 12.8 S	45° 44.2	15.3	331° 09.9	6.5	29.7	3.3	20°	04:40	05:07	05:30	10:17	11:16	12:14					
	16	99° 46.2	98° 51.4	39.7	34° 40.0	08.2	264° 59.9	37.8	192° 42.4	02.5				60° 44.3	16.1	345° 35.4	6.6	26.4	3.3	59.1	N 10°	04:55	05:20	05:42	10:32	11:30	12:25				
	17	114° 48.7	113° 52.5	39.8	49° 40.7	08.5	280° 02.6	37.7	207° 45.0	02.5				75° 44.4	16.8	0° 01.0	6.6	23.1	3.5	59.0	0°	05:07	05:32	05:54	10:46	11:43	12:36				
	18	129° 51.1	128° 53.6	40.0	64° 41.3	08.8	295° 05.3	37.6	222° 47.5	02.5	Arcturus	145° 53.1	19° 05.6 N	90° 44.4	17.6	14° 26.6	6.6	19.6	3.6	59.0	S 10°	05:18	05:43	06:05	11:00	11:55	12:47				
	19	144° 53.6	143° 54.7	40.1	79° 41.9	09.1	310° 08.0	37.5	237° 50.1	02.5	Atria	107° 21.7	69° 03.2 S	105° 44.5	18.3	28° 52.2	6.8	16.0	3.7	59.0	20°	05:27	05:54	06:16	11:16	12:09	12:58				
	20	159° 56.1	158° 55.8	40.2	94° 42.6	09.4	325° 07.7	37.4	252° 52.7	02.5	Avior	234° 17.0	59° 34.3 S	120° 44.6	19.1	43° 18.0	6.8	12.3	3.8	30°	05:36	06:05	06:30	11:33	12:25	13:11					
	21	174° 58.5	173° 56.9	40.4	109° 43.2	09.7	340° 13.4	37.3	267° 55.3	02.4	Bellatrix	278° 29.5	6° 21.6 N	135° 44.6	19.8	57° 43.8	6.9	08.5	3.9	35°	05:41	06:11	06:37	11:43	12:34	13:18					
	22	190° 01.0	188° 58.0	40.5	124° 43.9	10.0	355° 16.1	37.3	282° 57.8	02.4	Betelgeuse	270° 58.7	7° 24.3 N	150° 44.7	20.6	72° 09.7	6.9	04.6	4.1	58.9	40°	05:46	06:18	06:46	11:55	12:44	13:27				
23	205° 03.5	203° 59.1	40.7	139° 44.5	10.3	10° 18.9	37.2	298° 00.4	02.4				165° 44.8	21.3	86° 35.6	7.0	00.5	4.1	45°	05:50	06:25	06:56	12:09	12:56	13:37						
Tuesday	00	220° 05.9	219° 00.2	1° 40.8 N	154° 45.2	22° 10.6 N	25° 21.6	4° 37.1 S	313° 03.0	22° 02.4 S	Canopus	263° 55.3	52° 42.7 S	180° 44.9	15° 22.1 N	101° 01.6	7.1	17° 56.4 N	4.3	58.9	S 50°	05:56	06:34	07:08	12:25	13:11	13:49				
	01	235° 08.4	234° 01.3	40.9	169° 45.8	10.9	40° 24.3	37.0	328° 05.5	02.4	Capella	280° 31.0	46° 00.8 N	195° 44.9	15.8	115° 27.7	7.2	5.2	4.1	58.8	52°	05:58	06:38	07:14	12:33	13:18	13:54				
	02	250° 10.9	249° 02.4	41.1	184° 46.4	11.2	55° 27.0	36.9	343° 08.1	02.4	Deneb	49° 29.6	45° 20.3 N	210° 45.0	23.6	129° 53.9	7.2	47.8	4.5	54°	06:00	06:42	07:20	12:42	13:25	14:00					
	03	265° 13.3	264° 03.4	41.2	199° 47.1	11.5	70° 29.7	36.8	358° 10.7	02.4	Denebola	182° 30.8	14° 28.5 N	225° 45.1	24.3	144° 20.1	7.3	43.3	4.6	56°	06:02	06:47	07:27	12:51	13:34	14:07					
	04	280° 15.8	279° 04.5	41.4	214° 47.7	11.8	85° 32.4	36.7	13° 13.3	02.4	Diphda	348° 53.6	17° 53.6 S	240° 45.1	25.1	158° 46.4	7.4	38.7	4.6	58.7	58°	06:05	06:52	07:35	13:03	13:43	14:15				
	05	295° 18.2	294° 05.6	41.5	229° 48.4	12.1	100° 35.1	36.6	28° 18.5	02.4				255° 45.2	25.8	173° 12.8	7.4	34.1	4.8	58.0	S 60°	06:08	06:58	07:44	13:15	13:54	14:23				
	06	310° 20.7	309° 06.7	41.7	244° 49.0	12.4	115° 37.8	36.5	43° 18.4	02.4	Dubhe	193° 48.3	61° 39.7 N	270° 45.3	26.5	187° 39.2	7.5	29.3	3.9	58.0	S 62°	06:11	07:04	07:54	13:30	14:07	14:33				
	07	325° 23.2	324° 07.7	41.8	259° 49.7	12.7	130° 40.5	36.4	58° 21.0	02.4	Elath	278° 09.6	28° 37.1 N	285° 45.3	27.3	202° 05.7	7.6	24.4	5.0	58.6											
	08	340° 25.6	339° 08.8	42.0	274° 50.3	13.0	145° 43.2	36.3	73° 23.5	02.4	Eltanin	90° 44.6	51° 29.1 N	300° 45.4	28.0	216° 32.3	7.7	19.4	5.1	58.0											
	09	355° 28.1	354° 09.9	42.1	289° 50.9	13.3	160° 45.9	36.2	88° 26.1	02.4	Enif	33° 44.6	9° 57.2 N	315° 45.5	28.8	230° 59.0	7.7	14.3	5.1	58.0											
	10	10° 30.6	9° 11.0	42.3	304° 51.6	13.6	175° 48.6	36.1	103° 28.7	02.4	Fomalhaut	15° 21.3	29° 31.8 S	330° 45.5	29.5	245° 25.7	7.9	09.2	5.3	58.5											
	11	25° 33.0	24° 12.0	42.4	319° 52.2	13.9	190° 51.3	36.0	118° 31.3	02.4				345° 45.6	30.3	259° 52.6	7.9	03.9	5.4												
	12	40° 35.5	39° 13.1	1° 42.6 N	334° 52.9	22° 14.2 N	205° 54.0	4° 35.9 S	133° 33.8	22° 02.4 S	Gacrux	171° 57.4	57° 12.7 S	0° 45.7	15° 31.0 N	274° 19.5	7.9	16° 58.5 N	5.5	58.5	N 72°	22:19	-	-	-	04:28	04:04				
	13	55° 38.0	54° 14.2	42.7	349° 53.5	14.5	220° 56.7	35.9	148° 36.4	02.4	Gienah	175° 49.3	17° 38.4 S	15° 45.7	31.7	288° 46.4	8.1	53.0	5.6	58.4	68°	21:05	23:15	-	03:06	03:25	03:30				
	14	70° 40.4	69° 15.2	42.9	4° 54.2	14.8	235° 59.4	35.8	163° 39.0	02.4	Hadar	148° 43.4	60° 27.3 S	30° 45.5	32.5	303° 13.5	8.1	47.4	5.6												

2017 May 7, 8, 9 (Sun, Mon, Tue)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON				Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	7		8	9				
Sunday	00	225° 01'6"	220° 56'9"	2° 07'1" N	156° 02'0"	22° 44'5" N	30° 45'1"	4° 26'4" S	318° 12'7"	22° 02'0" S	Acamar	315° 16'8"	40° 14'3" S	180° 51'6"	16° 48'3" N	41° 15'3"	14.1	1° 19'2" N	10'2"	55.4	N 72°	-	-	00:19	16:02	17:41	19:21				
	01	240° 04'1"	235° 57'7"	07.4	171° 02'6"	44:8	45° 47'7"	26:3	333° 15'3"	02:0	Achernar	335° 25'5"	57° 09'0" S	195° 51'6"	49:0	55° 48'4"	14.1	09:0	10:2	68°	-	-	01:45	16:00	17:32	19:05					
	02	255° 06'5"	250° 58'6"	07.7	186° 03'3"	45:1	60° 50'4"	26:3	348° 17'9"	02:0	Acruz	173° 05'7"	63° 11'9" S	210° 51'7"	49:7	70° 21'5"	14.1	0° 58'8" N	10:2	66°	-	01:02	02:49	15:57	17:20	18:42					
	03	270° 09'0"	265° 59'5"	08:0	201° 03'9"	45:3	75° 53'0"	26:2	3° 20'5"	02:0	Adhara	255° 10'7"	50° 20'1" S	225° 51'7"	50:4	84° 5'6"	14.2	48:6	10:2	64°	-	01:50	03:09	15:56	17:15	18:34					
	04	285° 11'5"	281° 00'3"	08:3	216° 04'5"	45:6	90° 55'8"	26:1	18° 23'1"	02:0	Aldebaran	290° 46'7"	16° 32'4" N	240° 51'7"	51:1	99° 27'8"	14.2	38:4	10:2	62°	-	02:19	03:26	15:55	17:11	18:26					
	05	300° 13'9"	296° 01'2"	08:6	231° 05'2"	45:9	105° 58'5"	26:0	33° 25'6"	02:0				255° 51'8"	51:8	114° 01'0"	14.2	28:2	10:2	55.3	60°	00:55	02:41	03:39	15:54	17:07	18:20				
	06	315° 16'4"	311° 02'0"	08:9	246° 05'8"	46:1	121° 01'1"	25:9	48° 28'2"	02:0	Alioth	166° 18'0"	55° 52'2" N	270° 51'8"	52:4	128° 34'2"	14.2	18:0	10:2		N 58°	01:38	02:59	03:51	15:53	17:04	18:15				
	07	330° 18'9"	326° 02'9"	09:2	261° 06'5"	46:4	136° 03'8"	25:8	63° 30'8"	02:0	Alkaid	152° 56'5"	49° 13'8" N	285° 51'9"	53:1	143° 07'4"	14.3	07:8	10:1		56°	02:06	03:14	04:01	15:52	17:01	18:10				
	08	345° 21'3"	341° 03'7"	09:5	276° 07'1"	46:6	151° 06'5"	25:8	78° 33'0"	02:0	Alnair	257° 40'6"	46° 52'4" S	300° 51'9"	53:8	157° 40'7"	14.2	0° 02'3" S	10:2		54°	02:26	03:26	04:10	15:52	16:59	18:15				
	09	0° 23'8"	356° 04'6"	09:8	291° 07'7"	46:9	166° 09'2"	25:7	93° 36'0"	02:0	Alnilam	275° 44'0"	1° 11'8" S	315° 51'9"	54:5	172° 13'9"	14.3	12:5	10:2		52°	02:43	03:37	04:17	15:51	16:57	18:01				
	10	15° 26'3"	11° 05'4"	10:1	306° 08'4"	47:1	181° 11'9"	25:6	108° 38'6"	02:0	Alphard	217° 53'5"	8° 44'2" S	330° 52'0"	55:2	186° 47'2"	14.3	22:7	10:2		50°	02:57	03:46	04:24	15:50	16:55	17:58				
	11	30° 28'7"	26° 06'3"	10:4	321° 09'0"	47:4	196° 14'6"	25:5	123° 41'2"	02:0				345° 52'0"	55:9	201° 20'5"	14.3	32:9	10:1	55:2	45°	03:25	04:06	04:39	15:49	16:50	17:50				
	12	45° 31'2"	41° 07'1"	2° 10'7" N	336° 09'6"	22° 47'7" N	211° 17'2"	4° 25'4" S	138° 43'8"	22° 02'0" S	Alphecca	126° 08'5"	26° 39'5" N	0° 52'1"	16° 56'6" N	215° 53'8"	14.3	0° 43'0" S	10:2	55:2	N 40°	03:45	04:22	04:52	15:48	16:46	17:44				
	13	60° 33'7"	56° 08'0"	11:0	351° 10'3"	47:9	226° 19'9"	25:4	153° 46'4"	02:0		357° 41'0"	29° 10'9" N	15° 52'1"	57:2	230° 27'1"	14.3	53:2	10:1		35°	04:01	03:35	05:02	15:47	16:43	17:38				
	14	75° 36'1"	71° 08'8"	11:4	6° 10'9"	48:2	241° 22'6"	25:3	168° 49'0"	02:0	Altair	62° 05'6"	8° 54'9" N	30° 52'1"	57:9	245° 00'4"	14.4	1° 03'3" S	10:1		30°	04:15	04:46	05:11	15:47	16:40	17:33				
	15	90° 38'6"	86° 09'7"	11:7	21° 11'5"	48:4	256° 25'3"	25:2	183° 51'6"	02:0	Ankaa	353° 13'5"	42° 12'7" S	45° 52'2"	58:6	259° 33'8"	14.4	13:4	10:1		20°	04:36	05:04	05:27	15:45	16:35	17:25				
	16	105° 41'0"	101° 10'5"	12:0	36° 12'2"	48:7	271° 28'0"	25:1	198° 54'1"	02:0	Antares	112° 22'7"	26° 28'0" S	60° 52'2"	59:3	274° 07'2"	14.3	23:5	10:2	55:1	N 10°	04:53	05:18	05:40	15:44	16:31	17:18				
	17	120° 43'5"	116° 11'3"	12:3	51° 12'8"	48:9	286° 30'6"	25:0	213° 56'7"	02:0				75° 52'2"	00:0	288° 40'5"	14.4	33:7	10:0		0°	05:06	05:31	05:53	15:43	16:27	17:11				
	18	135° 46'0"	131° 12'2"	12:6	66° 13'5"	49:2	301° 33'3"	24:9	228° 59'3"	02:0	Arcturus	145° 53'1"	19° 05'6" N	90° 52'3"	17° 00'7" N	303° 13'9"	14.4	43:7	10:1		S 10°	05:18	05:43	06:05	15:42	16:23	17:04				
	19	150° 48'4"	146° 13'0"	12:9	81° 14'1"	49:5	316° 36'0"	24:9	244° 01'9"	02:0	Atria	107° 21'6"	69° 03'2" S	105° 52'3"	01:3	317° 47'3"	14.5	53:8	10:1		20°	05:29	05:56	06:19	15:41	16:19	16:57				
	20	165° 50'9"	161° 13'8"	13:2	96° 14'7"	49:7	331° 38'7"	24:8	259° 04'5"	01:9	Avior	234° 17'1"	59° 34'3" S	120° 52'4"	02:0	332° 20'8"	14.4	23° 03'9" S	10:0		30°	05:40	06:08	06:33	15:40	16:14	16:49				
	21	180° 53'4"	176° 14'7"	13:6	111° 15'4"	50:0	346° 41'4"	24:7	274° 07'1"	01:9	Bellatrix	278° 29'5"	6° 21'6" N	135° 52'4"	02:7	346° 54'2"	14.4	13:9	10:1	55:0	35°	05:45	06:15	06:42	15:40	16:12	16:44				
	22	195° 55'8"	191° 15'5"	13:9	126° 16'0"	50:2	1° 44'0"	24:6	289° 09'7"	01:9	Betelgeuse	270° 58'7"	7° 24'3" N	150° 52'4"	03:4	1° 27'6"	14.5	24:0	10:0		40°	05:51	06:23	06:52	15:39	16:09	16:39				
23	210° 58'3"	206° 16'3"	14:2	141° 16'6"	50:5	16° 46'7"	24:5	304° 12'3"	01:9				165° 52'5"	04:1	16° 01'1"	14.4	34:0	10:0		45°	05:57	06:32	07:03	15:38	16:05	16:33					
Monday	00	226° 00'8"	221° 17'1"	2° 14'5" N	156° 17'3"	22° 50'7" N	31° 49'4"	4° 24'5" S	319° 14'9"	22° 01'9" S	Canopus	263° 55'4"	52° 42'7" S	180° 52'5"	17° 04'7" N	30° 34'5"	14.5	2° 44'0" S	10:0	55:0	S 50°	06:03	06:42	07:17	15:37	16:01	16:26				
	01	241° 03'2"	236° 18'0"	14:8	171° 17'9"	51:0	46° 52'1"	24:4	334° 17'5"	01:9	Capella	280° 31'0"	46° 00'7" N	195° 52'4"	05:4	50° 08'0"	14.4	54:0	10:0		52°	06:06	06:47	07:23	15:37	15:59	16:22				
	02	256° 05'7"	251° 18'8"	15:2	186° 18'6"	51:2	61° 54'7"	24:3	349° 20'1"	01:9	Deneb	49° 29'6"	45° 20'3" N	210° 52'6"	06:1	59° 41'4"	14.5	3° 04'0" S	9:9		54°	06:09	06:52	07:31	15:36	15:57	16:19				
	03	271° 08'1"	266° 19'6"	15:5	201° 19'2"	51:5	76° 57'4"	24:2	4° 22'7"	01:9	Denebola	182° 30'8"	14° 28'5" N	225° 52'6"	06:8	74° 14'9"	14.5	13:9	10:0	54:9	56°	06:12	06:57	07:39	15:36	15:55	16:15				
	04	286° 10'6"	281° 20'4"	15:8	216° 19'8"	51:7	92° 00'1"	24:1	19° 25'3"	01:9	Diphda	348° 53'6"	17° 53'6" S	240° 52'6"	07:5	88° 48'4"	14.5	23:9	9:9		58°	06:16	07:03	07:47	15:35	15:52	16:10				
	05	301° 13'1"	296° 21'3"	16:1	231° 20'5"	52:0	107° 02'8"	24:1	34° 27'9"	01:9				255° 52'7"	08:1	103° 21'9"	14:5	33:8	9:9		S 60°	06:19	07:10	07:58	15:34	15:49	16:05				
	06	316° 15'5"	311° 22'1"	16:5	246° 21'1"	52:2	122° 05'5"	24:0	49° 30'5"	01:9	Dubhe	193° 48'4"	61° 39'7" N	270° 52'7"	08:8	117° 55'4"	14.4	43:7	9:8		S 62°	06:23	07:18	08:10	15:34	15:46	15:59				
	07	331° 18'0"	326° 22'9"	16:8	261° 21'7"	52:5	137° 08'1"	23:9	64° 33'0"	01:9	El Nath	278° 09'6"	28° 37'1" N	285° 52'7"	09:5	132° 28'8"	14:5	53:5	9:9												
	08	346° 20'5"	341° 23'7"	17:1	276° 22'4"	52:7	152° 10'8"	23:8	79° 35'6"	01:9	Eltanin	90° 44'5"	51° 29'2" N	300° 52'8"	10:2	147° 02'3"	14:5	4° 03'4" S	9:8												
	09	1° 22'9"	356° 24'5"	17:5	291° 23'0"	53:0	167° 13'5"	23:7	94° 38'2"	01:9	Enif	33° 44'6"	9° 57'2" N	315° 52'8"	10:8	161° 35'8"	14:6	13:2	9:8												
	10	16° 25'4"	11° 25'3"	17:8	306° 23'6"	53:2	182° 16'2"	23:7	109° 40'8"	01:9	Fomalhaut	15° 21'3"	29° 31'8" S	330° 52'8"	11:5	176° 09'4"	14:5	23:0	9:8	54:8											
	11	31° 27'9"	26° 26'1"	18:1	321° 24'3"	53:5	197° 18'8"	23:6	124° 43'4"	01:9				345° 52'9"	12:2	190° 42'9"	14:5	32:8	9:8												
	12	46° 30'3"	41° 26'9"	2° 18'5" N	336° 24'9"	22° 53'7" N	212° 21'5"	4° 23'5" S	139° 46'0"	22° 01'9" S	Gacrux	171° 57'4"	57° 12'8" S	0° 52'9"	17° 12'8" N	205° 16'4"	14:5	4° 42'6" S	9:7	54:8	N 70°	-	-	-	03:28	03:26	03:24				
	13	61° 32'8"	56° 27'7"	18:8	351° 25'6"	54:0	227° 24'2"	23:4	154° 48'6"	01:9	Genah	175° 49'4"	17° 38'4" S	15° 52'9"	13:5	219° 49'9"	14:5	52:3	9:7		68°	21:34	-	-	03:27	03:30	03:33				
	14	76° 35'3"	71° 28'5"	19:1	6° 26'2"	54:2	242° 26'9"	23:3	169°																						

2017 May 10, 11, 12 (Wed, Thur, Fri)

GMT	ARIES			VENUS -4.5			MARS +1.6			JUPITER -2.4			SATURN +0.2			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	10		11	12				
Wednesday	00	227° 59' 0	221° 54' 9	2° 31' 2 N	156° 47' 8	23° 02' 5 N	33° 57' 7	4° 20' 7 S	321° 19' 5	22° 01' 8 S	321° 19' 5	22° 01' 8 S	Acamar	315° 16' 8	40° 14' 3 S	180° 53' 9	17° 36' 7 N	9° 19' 2	14' 2	10° 13' 1 S	8' 4	54' 3	N 72°	-	-	-	21:04	22:54	-		
	01	243° 01' 5	236° 55' 7	31' 6	171° 48' 4	02' 7	49° 00' 4	20' 6	336° 22' 1	01' 8	336° 22' 1	01' 8	Achernar	335° 25' 5	57° 09' 0 S	195° 54' 0	37' 4	23° 52' 4	14' 2	21' 5	8' 4	68°	-	-	01:22	20:38	22:12	23:45			
	02	258° 04' 0	251° 56' 4	32' 0	186° 49' 1	02' 9	64° 03' 0	20' 5	351° 24' 7	01' 8	351° 24' 7	01' 8	Acruz	173° 05' 8	63° 11' 9 S	210° 54' 0	38' 0	38° 25' 6	14' 2	29' 9	8' 4	66°	-	00:21	02:37	20:04	21:23	22:38			
	03	273° 06' 4	266° 57' 2	32' 4	201° 49' 7	03' 2	79° 05' 7	20' 5	6° 27' 3	01' 7	255° 10' 7	29' 0	Adhara	255° 10' 7	29' 0	210° 54' 0	38' 0	52° 58' 14	14' 2	38' 3	8' 3	64°	-	01:33	03:00	19:51	21:06	22:17			
	04	288° 08' 9	281° 57' 9	32' 7	216° 50' 3	03' 4	94° 08' 4	20' 4	21° 29' 9	01' 7	21° 29' 9	01' 7	Aldebaran	290° 46' 7	16° 32' 4 N	240° 54' 0	39' 3	67° 31' 9	14' 2	46' 6	8' 2	62°	-	02:07	03:17	19:40	20:52	22:00			
	05	303° 11' 4	296° 58' 6	33' 1	231° 51' 0	03' 6	109° 11' 0	20' 3	36° 32' 5	01' 7	109° 11' 0	20' 3				255° 54' 1	40' 0	82° 05' 1	14' 1	54' 9	8' 3	60°	00:18	02:32	03:32	19:31	20:41	21:46			
	06	318° 13' 8	311° 59' 4	33' 5	246° 51' 6	03' 9	124° 13' 7	20' 2	51° 35' 1	01' 7	51° 35' 1	01' 7	Alioth	166° 18' 0	55° 52' 2 N	270° 54' 1	40' 6	96° 38' 2	14' 1	11° 03' 1 S	8' 1		N 58°	01:23	02:51	03:44	19:24	20:31	21:34		
	07	333° 16' 3	327° 00' 1	33' 9	261° 52' 2	04' 1	139° 16' 4	20' 2	66° 37' 7	01' 7	66° 37' 7	01' 7	Alkaid	152° 56' 5	49° 13' 8 N	285° 54' 1	41' 3	111° 11' 3	14' 1	11' 2	8' 2	56°	01:55	03:06	03:55	19:17	20:22	21:24			
	08	348° 18' 7	342° 00' 9	34' 3	276° 52' 9	04' 3	154° 13' 0	20' 1	81° 40' 3	01' 7	81° 40' 3	01' 7	Alnair	27° 40' 6	46° 52' 4 S	300° 54' 1	41' 9	125° 44' 4	14' 1	19' 4	8' 0	54°	02:18	03:20	04:04	19:11	20:14	21:14			
	09	3° 21' 2	357° 01' 6	34' 7	291° 53' 5	04' 6	169° 21' 7	20' 0	96° 42' 9	01' 7	96° 42' 9	01' 7	Alnilam	275° 44' 0	1° 11' 8 S	315° 54' 2	42' 6	140° 17' 5	14' 0	27' 4	8' 0	52°	02:36	03:31	04:12	19:05	20:07	21:06			
	10	18° 23' 7	12° 02' 3	35' 0	306° 54' 1	04' 8	184° 24' 4	19' 9	111° 45' 5	01' 7	111° 45' 5	01' 7	Alphard	217° 53' 5	8° 44' 2 S	330° 54' 2	43' 2	154° 50' 5	14' 1	35' 4	8' 0	54' 2	50°	02:51	03:41	04:20	19:00	20:01	20:59		
	11	33° 26' 1	27° 03' 1	35' 4	321° 54' 8	05' 0	199° 27' 0	19' 9	126° 48' 1	01' 7	126° 48' 1	01' 7				345° 54' 2	43' 9	169° 23' 6	14' 0	43' 4	7' 9	45°	03:20	04:02	04:36	18:49	19:47	20:43			
	12	48° 28' 6	42° 03' 8	2° 35' 8 N	336° 55' 4	23° 05' 3 N	214° 29' 7	4° 19' 8 S	141° 50' 7	22° 01' 7 S	141° 50' 7	22° 01' 7 S	Alphecca	126° 08' 5	26° 39' 5 S	0° 54' 2	17° 44' 5 N	183° 56' 6	14' 0	11° 51' 3 S	7' 9	54' 2	N 40°	03:41	04:18	04:49	18:40	19:36	20:31		
	13	63° 31' 1	57° 04' 5	36' 2	351° 56' 0	05' 5	229° 32' 4	19' 7	156° 53' 3	01' 7	156° 53' 3	01' 7	Alpheratz	352° 41' 0	29° 10' 9 N	15° 54' 2	45' 2	198° 29' 6	14' 0	59' 2	7' 8	30°	03:58	04:32	05:00	18:33	19:27	20:20			
	14	78° 33' 5	72° 05' 3	36' 6	6° 56' 7	05' 7	244° 35' 0	19' 6	171° 55' 9	01' 7	171° 55' 9	01' 7	Altair	62° 05' 6	8° 54' 9 N	30° 54' 3	45' 8	213° 02' 6	13' 9	12° 07' 0 S	7' 7	30°	04:12	04:43	05:09	18:26	19:19	20:10			
	15	93° 36' 0	87° 06' 0	37' 0	21° 57' 3	06' 0	259° 37' 7	19' 6	186° 58' 5	01' 7	186° 58' 5	01' 7	Ankaa	353° 13' 5	42° 12' 7 S	45° 54' 3	45' 8	227° 35' 5	13' 9	14' 7	7' 7	20°	04:34	05:02	05:26	18:15	19:04	19:54			
	16	108° 38' 5	102° 06' 7	37' 4	36° 58' 0	06' 2	274° 40' 3	19' 5	202° 01' 1	01' 7	202° 01' 1	01' 7	Antares	112° 22' 7	26° 28' 0 S	60° 54' 3	47' 1	242° 08' 4	14' 0	22' 4	7' 7	N 10°	04:52	05:18	05:40	18:05	18:52	19:40			
	17	123° 40' 9	117° 07' 4	37' 8	51° 58' 6	06' 4	289° 43' 0	19' 4	217° 03' 7	01' 7	217° 03' 7	01' 7				75° 54' 3	47' 8	256° 41' 4	13' 9	30' 1	7' 6	0°	05:06	05:31	05:53	17:55	18:40	19:27			
	18	138° 43' 4	132° 08' 2	38' 1	66° 59' 2	06' 7	304° 45' 7	19' 3	232° 06' 3	01' 7	232° 06' 3	01' 7	Arcturus	145° 53' 1	19° 05' 6 N	90° 54' 3	48' 4	271° 14' 3	13' 8	37' 7	7' 5	S 10°	05:18	05:44	06:06	17:46	18:29	19:13			
	19	153° 45' 8	147° 08' 9	38' 5	81° 59' 9	06' 9	319° 48' 3	19' 3	243° 08' 9	01' 7	243° 08' 9	01' 7	Atria	107° 21' 6	69° 03' 2 S	105° 54' 4	49' 1	285° 47' 1	13' 9	45' 2	7' 5	20°	05:30	05:57	06:20	17:36	18:17	18:59			
	20	168° 48' 3	162° 09' 6	38' 9	97° 00' 5	07' 1	334° 51' 0	19' 2	262° 11' 5	01' 7	262° 11' 5	01' 7	Avior	234° 17' 1	59° 34' 3 S	120° 54' 4	49' 7	300° 20' 0	13' 8	52' 7	7' 4	30°	05:41	06:10	06:35	17:25	18:03	18:43			
	21	183° 50' 8	177° 10' 3	39' 3	112° 01' 1	07' 3	349° 53' 7	19' 1	277° 14' 1	01' 7	277° 14' 1	01' 7	Bellatrix	278° 29' 5	6° 21' 6 N	135° 54' 4	50' 4	314° 52' 8	13' 8	13° 00' 1 S	7' 3	35°	05:47	06:18	06:44	17:18	17:55	18:34			
	22	198° 53' 2	192° 11' 0	39' 7	127° 01' 8	07' 6	4° 56' 3	19' 0	292° 16' 7	01' 7	292° 16' 7	01' 7	Betelgeuse	270° 58' 7	7° 24' 3 N	150° 54' 4	51' 0	329° 25' 6	13' 8	07' 4	7' 3	40°	05:53	06:26	06:55	17:11	17:46	18:24			
23	213° 55' 7	207° 11' 8	40' 1	142° 02' 4	07' 8	19° 59' 0	19' 0	307° 19' 3	01' 7	307° 19' 3	01' 7				165° 54' 4	51' 6	343° 58' 4	13' 8	14' 7	7' 3	54' 1	45°	06:00	06:35	07:07	17:03	17:35	18:11			
Thursday	00	228° 58' 2	222° 12' 5	2° 40' 5 N	157° 03' 0	23° 08' 0 N	35° 01' 6	4° 18' 9 S	322° 22' 0	22° 01' 7 S	322° 22' 0	22° 01' 7 S	Canopus	263° 55' 4	52° 42' 7 S	180° 54' 5	17° 52' 3 N	358° 31' 2	13' 8	13° 22' 0 S	7' 2	54' 1	S 50°	06:07	06:46	07:21	16:52	17:22	17:56		
	01	244° 00' 6	237° 13' 2	40' 9	172° 03' 7	08' 3	50° 04' 3	18' 8	337° 24' 6	01' 7	337° 24' 6	01' 7	Capella	280° 31' 0	46° 00' 7 N	195° 54' 5	52' 9	13° 04' 0	13' 7	29' 2	7' 1	52°	06:10	06:51	07:28	16:48	17:16	17:49			
	02	259° 03' 1	252° 13' 9	41' 3	187° 04' 3	08' 5	65° 07' 0	18' 7	352° 27' 2	01' 7	352° 27' 2	01' 7	Deneb	49° 29' 6	45° 20' 4 N	210° 54' 5	53' 6	27° 36' 7	13' 7	36' 3	7' 1	54°	06:13	06:56	07:36	16:43	17:10	17:41			
	03	274° 05' 6	267° 14' 6	41' 7	202° 04' 9	08' 9	80° 09' 6	18' 7	7° 29' 8	01' 7	7° 29' 8	01' 7	Denebola	182° 30' 8	14° 28' 5 N	225° 54' 5	54' 2	42° 09' 4	13' 7	43' 4	7' 0	56°	06:17	07:02	07:44	16:37	17:02	17:33			
	04	289° 08' 0	282° 15' 3	42' 1	217° 05' 6	08' 9	95° 12' 3	18' 6	22° 32' 4	01' 7	22° 32' 4	01' 7	Diphda	348° 53' 6	17° 53' 6 S	240° 54' 5	54' 8	56° 42' 1	13' 6	50' 4	6' 9	58°	06:21	07:09	07:54	16:30	16:54	17:23			
	05	304° 10' 5	297° 16' 0	42' 5	232° 06' 2	09' 2	110° 15' 0	18' 5	37° 35' 0	01' 7	37° 35' 0	01' 7				255° 54' 5	55' 5	71° 14' 7	13' 7	57' 3	6' 9	S 60°	06:25	07:16	08:05	16:23	16:45	17:12			
	06	319° 13' 0	312° 16' 7	42' 9	247° 06' 8	09' 4	125° 17' 6	18' 5	52° 37' 6	01' 7	52° 37' 6	01' 7	Dubhe	193° 48' 4	61° 39' 7 N	270° 54' 6	56' 1	85° 47' 4	13' 6	14° 04' 2 S	6' 8	S 10°	06:29	07:25	08:17	16:15	16:34	16:58			
	07	334° 15' 4	327° 17' 4	43' 3	262° 07' 5	09' 6	140° 20' 3	18' 4	67° 40' 2	01' 6	67° 40' 2	01' 6	Elnath	278° 09' 6	28° 37' 1 N	285° 54' 6	56' 8	100° 20' 0	13' 6	11' 0	6' 8	S 62°	06:29	07:25	08:17	16:15	16:34	16:58			
	08	349° 17' 9	342° 18' 1	43' 8	277° 08' 1	09' 8	155° 22' 9	18' 3	82° 42' 8	01' 6	82° 42' 8	01' 6	Eltanin	90° 44' 5	51° 29' 2 N	300° 54' 6	57' 4	114° 52' 6	13' 5	17' 8	6' 7	54°	06:30	07:16	08:01	16:15	16:34	16:58			
	09	4° 20' 3	357° 18' 8	44' 2	292° 08' 1	10' 1	170° 25' 6	18' 2	97° 45' 4	01' 6	97° 45' 4	01' 6	Enif	33° 44' 6	9° 57' 2 N	315° 54' 6	58' 0														

2017 May 13, 14, 15 (Sat, Sun, Mon)

GMT	ARIES			VENUS -4.5			MARS +1.6			JUPITER -2.4			SATURN +0.2			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	13		14	15				
13 S a t u r d a y	00	230° 56'.4	222° 45'.2	3° 00'.8 N	157° 33'.4	23° 18'.5 N	37° 09'.2	4° 15'.5 S	324° 27'.0	22° 01'.5 S	Acamar	315° 16'.8	40° 14'.3 S	180° 55'.0	18° 22'.5 N	336° 17'.1	12.7	17° 51'.2 S	3	7	54.0	N 72°	-	-	-	-	-	-			
	01	245° 58'.9	237° 45'.8	01'.3	172° 34'.1	18'.7	52° 11'.8	15'.4	339° 29'.7	01'.5	Achernar	335° 25'.4	57° 09'.0 S	195° 55'.0	23'.1	350° 48'.8	12.6	54'.9	3'.8	68°	-	-	00:52	-	01:12	-	01:12	02:11			
	02	261° 01'.4	252° 46'.4	01'.7	187° 34'.7	19'.0	67° 14'.5	15'.3	354° 32'.3	01'.5	Acruz	173° 05'.8	63° 11'.9 S	210° 55'.1	23'.7	5° 20'.4	12.6	58'.7	3'.6	66°	-	-	02:26	23:44	-	-	00:37				
	03	276° 03'.8	267° 47'.1	02'.2	202° 35'.3	19'.2	82° 17'.1	15'.3	37° 34'.9	01'.5	Adhara	255° 10'.7	29° 00'.1 S	225° 55'.1	24.3	19° 52'.0	12.6	18° 02'.3 S	3'.5	64°	-	01:14	02:50	23:20	-	-	00:12				
	04	291° 06'.3	282° 47.7	02'.6	217° 36.0	19.4	97° 19'.8	15.2	24° 37'.5	01'.5	Aldebaran	290° 46.7	16° 32'.4 N	240° 55'.1	24.9	34° 23'.6	12.6	05.8	3'.5	62°	-	01:55	03:09	23:01	23:52	24:34					
	05	306° 08'.8	297° 48.4	03'.1	232° 36.6	19.6	112° 22'.4	15.1	39° 40'.1	01'.5				255° 55'.1	25.6	48° 52'.2	12.5	09.3	3'.4	60°	-	02:22	03:24	22:45	23:36	24:19					
	06	321° 11'.2	312° 49'.0	03'.5	247° 37.2	19.8	127° 25'.1	15.1	54° 42'.7	01'.5	Alioth	166° 18'.1	55° 52'.2 N	270° 55'.1	26.2	63° 26'.7	12.6	12.7	3'.3	58°	01:06	02:43	03:38	22:32	23:23	24:06					
	07	336° 13.7	327° 49.7	04'.0	262° 37.9	20.0	142° 27'.7	15.0	69° 45'.3	01'.5	Alkaid	152° 56'.5	49° 13'.8 N	285° 55'.1	26.8	77° 58'.3	12.5	16.0	3'.2	56°	01:44	02:59	03:49	22:20	23:11	23:55					
	08	351° 16'.2	342° 50'.3	04'.0	277° 38.5	20.2	157° 30'.4	14.9	84° 47'.9	01'.5	Alnair	27° 40'.6	46° 52'.4 S	300° 55'.1	27.4	92° 13'.5	12.5	19.2	3'.2	54°	02:09	03:13	03:59	22:10	23:01	23:45					
	09	6° 18'.6	357° 50'.9	04'.9	292° 39.1	20.4	172° 33'.0	14.9	99° 50'.5	01'.5	Alnilam	275° 44.0	1° 11'.8 S	315° 55'.1	28.0	107° 01'.3	12.4	22.4	3'.0	52°	02:28	03:26	04:08	22:02	22:52	23:36					
	10	21° 21'.1	12° 51'.6	05'.4	307° 39.8	20.6	187° 35'.7	14.8	114° 53'.1	01'.5	Alphard	217° 53'.5	8° 44'.2 S	330° 55'.1	28.6	121° 32'.7	12.5	25.4	3'.0	50°	02:44	03:36	04:15	21:54	22:44	23:29					
	11	36° 23'.6	27° 52'.2	05'.8	322° 40.4	20.8	202° 38'.3	14.7	129° 55'.8	01'.5				345° 55'.1	29.2	136° 04'.2	12.4	28.4	2'.9	45°	03:15	03:58	04:32	21:37	22:26	23:12					
	12	51° 26'.0	42° 52'.8	3° 06'.3 N	337° 41'.0	23° 21'.0 N	217° 40'.9	14.7	144° 58'.4	22° 01'.4 S	Alphecca	126° 08'.4	26° 39'.5 N	0° 55'.1	18° 29'.8 N	150° 35'.6	12.4	18° 31'.3 S	2'.8	54.0	N 40°	03:37	04:15	04:46	21:23	22:12	22:58				
	13	66° 28'.5	57° 53'.5	06'.7	352° 41.7	21.2	232° 43'.6	14.6	160° 01.0	01'.4				15° 55'.1	30.4	165° 07.0	12.4	34.1	2'.1	35°	03:55	04:29	04:57	21:11	22:00	22:47					
	14	81° 30'.9	72° 54'.1	07'.2	7° 42'.3	21.4	247° 46'.2	14.5	175° 03'.6	01'.4	Altair	62° 05'.5	8° 54'.9 N	30° 55'.1	31.1	179° 38'.4	12.4	36.8	2'.6	30°	04:10	04:41	05:07	21:01	21:50	22:37					
	15	96° 33'.4	87° 54.7	07'.6	22° 42.9	21.6	262° 48.9	14.5	190° 06.2	01'.4	Antares	353° 13'.5	42° 12.7 S	45° 55'.1	31.7	194° 09.8	12.4	39.4	2'.6	20°	04:33	05:01	05:24	20:43	21:32	22:19					
	16	111° 35'.9	102° 55'.3	08'.1	37° 43'.6	21.9	277° 51'.5	14.4	205° 08.8	01'.4				60° 55'.1	32.3	208° 41'.2	12.3	42.0	2'.4	10°	04:51	05:17	05:39	20:28	21:16	22:04					
	17	126° 38'.3	117° 56'.0	08'.6	52° 44.2	22.1	292° 54.2	14.3	220° 11.4	01'.4				75° 55'.1	32.9	223° 12.5	12.4	44.4	2'.4	0°	05:06	05:31	05:53	20:14	21:01	21:50					
	18	141° 40'.8	132° 56'.6	09'.0	67° 44.8	22.3	307° 56'.8	14.3	235° 14.0	01'.4	Arcturus	145° 53'.1	19° 05'.7 N	90° 55'.1	33.5	237° 43'.9	12.3	46.8	2'.3	S 10°	05:19	05:44	06:06	19:59	20:47	21:35					
	19	156° 43'.3	147° 57.2	09'.5	82° 45.4	22.5	322° 59'.5	14.2	250° 16.6	01'.4	Atria	107° 21'.6	69° 03'.2 S	105° 55'.1	34.1	252° 15'.2	12.3	49.1	2'.2	20°	05:31	05:58	06:21	19:44	20:31	21:20					
	20	171° 45'.7	162° 57.8	10'.0	97° 46.1	22.7	338° 02'.1	14.1	265° 19.3	01'.4	Avior	234° 17.1	59° 34'.3 S	120° 55'.1	34.7	266° 46.5	12.3	51.3	2'.1	30°	05:43	06:12	06:37	19:27	20:13	21:03					
	21	186° 48.2	177° 58'.5	10'.4	112° 46.7	22.9	353° 04'.8	14.1	280° 21.9	01'.4	Bellatrix	278° 29'.5	6° 21'.6 N	135° 55'.1	35.3	281° 17.7	12.3	53.4	2'.1	35°	05:49	06:20	06:47	19:17	20:03	20:52					
	22	201° 50'.7	192° 59.1	10'.9	127° 47.3	23.1	8° 07'.4	14.0	295° 24.5	01'.4	Betelgeuse	270° 58'.8	7° 24'.3 N	150° 55'.1	35.9	295° 49.0	12.2	55.5	1'.9	40°	05:56	06:28	06:58	19:05	19:51	20:41					
23	216° 53'.1	207° 59.7	11'.4	142° 48.0	23.3	23° 10'.1	13.9	310° 27.1	01'.4				165° 55'.1	36.5	310° 20'.2	12.3	57.4	1'.9	45°	06:03	06:38	07:10	18:52	19:37	20:27						
14 S u n d a y	00	231° 55'.6	223° 00'.3	3° 11'.8 N	157° 48'.6	23° 23'.5 N	38° 12'.7	4° 13'.9 S	325° 29'.7	22° 01'.4 S	Canopus	263° 55'.4	52° 42'.7 S	180° 55'.1	18° 37'.1 N	324° 51'.5	12.2	18° 59.3 S	1'.8	54.1	S 50°	06:10	06:50	07:25	18:35	19:20	20:10				
	01	246° 58'.1	238° 00.9	12'.3	173° 49.2	23.7	53° 15'.3	13.8	342° 32.3	01'.4	Capella	280° 31.0	46° 00'.7 N	195° 55'.1	37.7	339° 22.7	12.2	19° 01'.1 S	1'.7	52°	06:14	06:57	07:33	18:27	19:12	20:03					
	02	262° 00'.5	253° 01'.6	12'.8	187° 49.9	23.9	68° 18'.0	13.7	355° 34.9	01'.4	Deneb	49° 29'.5	45° 20'.4 N	210° 55'.1	38.3	353° 53.9	12.2	02.8	1'.6	54°	06:17	07:01	07:41	18:19	19:03	19:54					
	03	277° 03'.0	268° 02.2	13.2	202° 50.5	24.1	83° 20'.6	13.7	182° 30.8	01'.4	Denebola	182° 30.8	14° 28'.5 N	225° 55'.1	38.9	8° 25'.1	12.2	04.4	1'.5	56°	06:21	07:07	07:50	18:09	18:53	19:44					
	04	292° 05'.4	283° 02.8	13'.7	217° 51.1	24.3	98° 23'.3	13.6	25° 40'.2	01'.4	Diphda	348° 53'.5	17° 53'.6 S	240° 55'.1	39.5	22° 56'.3	12.1	05.9	1'.4	58°	06:26	07:14	08:00	17:58	18:41	19:33					
	05	307° 07.9	298° 03'.4	14.2	232° 51.8	24.5	113° 25'.9	13.5	40° 42'.8	01'.4				255° 55'.1	40.1	37° 27'.4	12.2	07.3	1'.4	S 60°	06:30	07:22	08:11	17:45	18:28	19:20					
	06	322° 10'.4	313° 04'.0	14'.7	247° 52.4	24.7	128° 28'.6	13.5	55° 45.4	01'.4	Dubhe	193° 48'.4	61° 39'.7 N	270° 55'.1	40.7	51° 58'.6	12.1	08.7	1'.2	S 62°	06:35	07:31	08:25	17:30	18:12	19:04					
	07	337° 12'.8	328° 04'.6	15'.1	262° 53.0	24.9	143° 31'.2	13.4	70° 48.0	01'.4	Elnath	278° 09'.6	28° 37'.1 N	285° 55'.1	41.3	66° 29'.7	12.1	09.9	1'.2												
	08	352° 15'.3	343° 05'.2	15'.6	277° 53.7	25.1	158° 33'.9	13.3	85° 50'.6	01'.4	Eltanin	90° 44'.5	51° 29'.2 N	300° 55'.1	41.9	81° 00'.8	12.1	11.1	1'.1												
	09	7° 17'.8	358° 05'.8	16'.1	292° 54.3	25.3	173° 36'.5	13.3	100° 53.2	01'.4	Enif	33° 44'.5	9° 57'.2 N	315° 55'.1	42.5	95° 31.9	12.1	12.2	0.9												
	10	22° 20'.2	13° 06'.4	16'.6	307° 54.9	25.5	188° 39'.1	13.2	115° 55'.8	01'.4	Fomalhaut	15° 21'.3	29° 31'.7 S	330° 55'.1	43.1	110° 03'.0	12.1	13.1	0.9												
	11	37° 22'.7	28° 07'.0	17.0	322° 55.6	25.7	203° 41'.8	13.1	130° 58.4	01'.4				345° 55'.1	43.7	124° 34'.1	12.1	14.0	0.9												
	12	52° 25'.2	43° 07'.6	3° 17'.5 N	337° 56'.2	23° 25'.9 N	218° 44'.4	4° 13'.1 S	146° 01'.1	22° 01'.4 S	Gacrux	171° 57'.5	57° 12'.8 S	0° 55'.1	18° 44'.3 N	139° 05'.2	12.1	19° 14.9 S	0'.7	54.1	N 70°	23:14	-	-	03:24	03:36	04:16				
	13	67° 27'.6	58° 08'.2	18'.0	352° 56.8	26.1	233° 47'.1	13.0	161° 03'.7	01'.4	Genah	175° 49'.4	17° 38'.4 S	15° 55'.1	44.9	153° 36'.3	12.0	15.6	0.6	68°	22:06	-	-	04:05	04:31	05:16					
	14	82° 30'.1	73° 08'.8	18'.5	7° 57'.5	26.3	248° 49'.7	13.0	176° 06.3	01'.4	Hadar	148° 43.4	60° 27'.4 S	30° 55'.1	45.5	168° 07.3	12.0	16.2	0.6	66°	21:30	-	-	04:33	05:04	05:50					
	15	97° 32'.5	88° 09'.4	19.0	22° 58.1	26.5	263°																								

2017 May 16, 17, 18 (Tue, Wed, Thur)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	16		17	18	
Tuesday	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	-	-	-	-	03:34	03:12
	01	233° 53.9	223° 28.5	3° 35.3 N	158° 18.9	23° 32.7 N	40° 19.4	4° 10.8 S	327° 35.2	22° 01.2 S	342° 37.8	01.2	Acamar	315° 16.8	40° 14.3 S	180° 54.8	19° 05.4 N	301° 38.8	11.8	18° 44.4 S	2.5	54.6	N 70°	-	-	-	-	02:33	02:39	02:40	
	02	248° 56.3	238° 29.0	35.9	173° 19.6	32.9	55° 22.0	10.8	335° 25.4	07.0	342° 37.8	01.2	Achernar	335° 25.4	57° 08.9 S	195° 54.8	06.0	316° 09.6	11.9	41.9	2.6	68°	-	-	01:35	01:46	02:05	02:17			
	03	263° 58.8	253° 29.6	36.4	188° 20.2	33.1	70° 24.6	10.7	173° 05.8	01.2	357° 40.5	01.2	Acruz	173° 05.8	63° 11.9 S	210° 54.8	06.6	330° 40.5	11.9	39.3	2.7	66°	-	-	02:14	01:15	01:41	01:58			
	04	279° 01.3	268° 30.1	36.9	203° 20.8	33.3	85° 27.3	10.6	255° 10.7	01.2	12° 43.1	01.2	Adhara	255° 10.7	29° 00.1 S	225° 54.8	07.2	345° 11.4	11.8	36.6	2.8	64°	-	00:51	02:40	00:52	01:22	01:43			
	05	294° 03.7	283° 30.7	37.4	218° 21.5	33.5	100° 29.9	10.6	27° 45.7	01.2	42° 47.3	01.2	Aldebaran	290° 46.7	16° 32.4 N	240° 54.8	07.8	359° 42.2	11.9	33.8	2.8	62°	-	01:42	03:01	00:34	01:06	01:31			
	06	309° 06.2	298° 31.2	37.9	233° 22.1	33.7	115° 32.5	10.5	42° 48.3	01.2	115° 32.5	10.5	Alioth	166° 18.1	55° 52.2 N	255° 54.8	08.3	14° 13.1	11.9	31.0	3.0	60°	-	02:12	03:17	00:19	00:53	01:20			
	07	324° 08.7	313° 31.8	38.4	248° 22.7	33.8	130° 35.2	10.5	57° 50.9	01.2	72° 53.6	01.2	Alkaid	166° 18.1	55° 52.2 N	270° 54.8	08.9	28° 44.0	11.8	28.0	3.0	54.7	N 58°	00:46	02:35	03:31	00:06	00:42	01:11		
	08	339° 11.1	328° 32.3	38.9	263° 23.3	34.0	145° 37.8	10.4	72° 53.6	01.2	145° 37.8	10.4	Alkaid	152° 56.5	49° 13.8 N	285° 54.7	09.5	43° 14.8	11.9	25.0	3.2	56°	01:32	02:53	03:43	-	00:32	01:03			
	09	354° 13.6	343° 32.9	39.5	278° 24.0	34.2	160° 45.4	10.3	87° 56.2	01.2	160° 45.4	10.3	Alnair	27° 40.5	46° 52.4 S	300° 54.7	10.0	57° 45.7	11.8	21.8	3.2	54°	02:00	03:08	03:54	-	00:23	01:06			
	10	369° 16.0	358° 33.4	40.0	293° 24.6	34.4	175° 43.1	10.3	102° 58.8	01.2	175° 43.1	10.3	Alnilam	275° 44.0	1° 11.7 S	315° 54.7	10.6	72° 16.5	11.9	18.6	3.3	52°	02:21	03:20	04:03	-	00:15	00:49			
	11	384° 18.5	373° 34.0	40.5	308° 25.2	34.6	190° 45.7	10.2	118° 01.4	01.2	190° 45.7	10.2	Alphard	217° 53.5	8° 44.2 S	330° 54.7	11.2	86° 47.4	11.9	15.3	3.4	50°	02:38	03:31	04:11	-	00:08	00:43			
	12	399° 21.0	388° 34.5	41.0	323° 25.9	34.8	205° 48.3	10.2	133° 04.0	01.2	205° 48.3	10.2	Alphecca	126° 08.4	26° 39.5 N	345° 54.7	11.8	101° 18.3	11.9	11.9	3.5	45°	03:10	03:54	04:29	23:53	-	00:31			
	13	54° 23.4	43° 35.1	3° 41.5 N	338° 26.5	23° 34.9 N	220° 51.0	4° 10.1 S	148° 06.6	22° 01.2 S	220° 51.0	4° 10.1 S	Alphecca	126° 08.4	26° 39.5 N	0° 54.7	19° 12.3 N	115° 49.2	11.8	18° 08.4 S	3.5	54.8	N 40°	03:34	04:12	04:43	23:41	-	00:20		
	14	69° 25.9	58° 35.6	42.1	353° 27.1	35.1	235° 53.6	10.0	163° 09.3	01.2	353° 27.1	35.1	Alpheratz	156° 40.9	29° 10.9 N	15° 54.7	12.9	304° 20.0	11.9	04.9	3.7	35°	03:52	04:27	04:55	23:30	-	00:11			
	15	84° 28.4	73° 36.1	42.6	8° 27.8	35.3	265° 56.2	10.0	178° 11.9	01.2	8° 27.8	35.3	Altair	62° 05.5	8° 54.9 N	30° 54.6	13.5	144° 50.9	11.9	01.2	3.7	30°	04:08	04:39	05:05	23:21	-	00:03			
	16	99° 30.8	88° 36.7	43.1	23° 28.4	35.5	250° 58.8	09.9	193° 14.5	01.2	250° 58.8	09.9	Ankaa	353° 13.5	42° 12.7 S	45° 54.6	14.0	159° 21.8	11.8	17° 57.5 S	3.9	30°	04:31	04:59	05:23	23:05	23:49	24:32			
	17	114° 33.3	103° 37.2	43.6	38° 29.0	35.6	281° 01.5	09.9	208° 17.1	01.2	38° 29.0	35.6	Antares	112° 22.7	26° 28.0 S	60° 54.6	14.6	173° 52.6	11.9	53.6	3.9	54.9	N 10°	04:50	05:16	05:39	22:51	23:37	24:23		
	18	129° 35.8	118° 37.8	44.1	53° 29.7	35.8	296° 04.1	09.8	223° 19.7	01.2	53° 29.7	35.8	Arcturus	145° 53.0	19° 05.7 N	75° 54.6	15.2	188° 23.5	11.9	49.7	4.0	54.9	0°	05:05	05:31	05:53	22:38	23:26	24:14		
	19	144° 38.2	133° 38.3	44.7	68° 30.3	36.0	311° 06.7	09.8	238° 22.4	01.2	68° 30.3	36.0	Atria	145° 53.0	19° 05.7 N	90° 54.6	15.7	202° 54.4	11.9	45.7	4.1	50°	05:19	05:45	06:07	22:25	23:15	24:05			
	20	159° 40.7	148° 38.8	45.2	83° 30.9	36.2	326° 09.4	09.7	253° 25.0	01.1	83° 30.9	36.2	Avior	107° 21.5	69° 03.2 S	105° 54.6	16.3	217° 25.3	11.9	41.6	4.2	20°	05:32	05:59	06:22	22:11	23:02	23:55			
	21	174° 43.1	163° 39.4	45.7	98° 31.6	36.4	341° 12.0	09.6	268° 27.6	01.1	98° 31.6	36.4	Bellatrix	268° 27.6	61° 34.3 S	120° 54.6	16.9	231° 56.2	11.9	37.4	4.2	30°	05:45	06:14	06:39	21:55	22:49	23:44			
	22	189° 45.6	178° 39.9	46.2	113° 32.2	36.5	356° 14.6	09.6	283° 30.2	01.1	113° 32.2	36.5	Betelgeuse	278° 29.5	6° 21.6 N	135° 54.5	17.4	246° 27.1	11.9	33.2	4.4	35°	05:51	06:22	06:49	21:45	22:41	23:38			
23	204° 48.1	193° 40.4	46.8	128° 32.8	36.7	11° 17.2	09.5	298° 32.8	01.1	11° 17.2	09.5	Betelgeuse	270° 58.8	7° 24.3 N	150° 54.5	18.0	260° 58.0	11.9	28.8	4.4	55.0	40°	05:58	06:31	07:00	21:34	22:31	23:31			
	219° 50.5	208° 41.0	47.3	143° 33.4	36.9	26° 19.9	09.5	313° 35.5	01.1	26° 19.9	09.5	Betelgeuse	270° 58.8	7° 24.3 N	165° 54.5	18.6	275° 28.9	11.8	24.4	4.6	45°	06:06	06:41	07:13	21:22	22:21	23:22				
Wednesday	00	234° 53.0	223° 41.5	3° 47.8 N	158° 34.1	23° 37.1 N	41° 22.5	4° 09.4 S	328° 38.1	22° 01.1 S	41° 22.5	4° 09.4 S	Canopus	263° 55.4	52° 42.7 S	180° 54.5	19° 19.1 N	289° 59.7	11.9	17° 19.8 S	4.6	55.0	S 50°	06:14	06:54	07:30	21:07	22:07	23:12		
	01	249° 55.5	238° 42.0	48.4	173° 34.7	37.2	56° 25.1	09.3	343° 40.7	01.1	173° 34.7	37.2	Capella	280° 31.0	46° 00.7 N	195° 54.6	19.7	304° 30.6	12.0	15.2	4.7	50°	06:18	06:59	07:37	20:59	22:01	23:08			
	02	264° 57.9	253° 42.6	48.9	188° 35.3	37.4	71° 27.7	09.3	358° 43.3	01.1	188° 35.3	37.4	Deneb	49° 29.5	45° 20.4 N	210° 54.4	20.3	319° 01.6	11.9	10.5	4.8	55.1	54°	06:21	07:05	07:45	20:51	21:55	23:02		
	03	280° 00.4	268° 43.1	49.4	203° 36.0	37.6	86° 30.4	09.2	381° 28.6	01.1	203° 36.0	37.6	Denebola	182° 30.9	14° 28.6 N	225° 54.4	20.8	333° 32.5	11.9	05.7	4.8	58°	06:26	07:12	07:55	20:42	21:47	22:57			
	04	295° 02.9	283° 43.6	50.0	218° 36.6	37.8	101° 33.0	09.2	28° 48.6	01.1	218° 36.6	37.8	Diphda	348° 53.5	17° 53.6 S	240° 54.4	21.4	348° 03.4	11.9	00.9	5.0	58°	06:30	07:19	08:06	20:32	21:39	22:50			
	05	310° 05.3	298° 44.1	50.5	233° 37.2	37.9	116° 35.6	09.1	43° 51.2	01.1	233° 37.2	37.9	Diphda	348° 53.5	17° 53.6 S	255° 54.4	21.9	2° 34.3	11.9	16° 55.9 S	5.0	50°	06:35	07:28	08:18	20:21	21:29	22:43			
	06	325° 07.8	313° 44.6	51.0	248° 37.9	38.1	131° 38.3	09.1	58° 53.8	01.1	248° 37.9	38.1	Dubhe	193° 48.4	61° 39.7 N	270° 54.4	22.5	17° 05.2	11.9	50.9	5.1	50°	06:41	07:37	08:32	20:07	21:18	22:34			
	07	340° 10.3	328° 45.2	51.6	263° 38.5	38.3	146° 40.9	09.0	73° 56.4	01.1	263° 38.5	38.3	Elath	278° 09.6	28° 37.1 N	285° 54.4	23.1	31° 36.1	11.9	45.8	5.2	55.2	S 62°	06:41	07:37	08:32	20:07	21:18	22:34		
	08	355° 12.7	343° 45.7	52.1	278° 39.1	38.5	161° 43.5	08.9	88° 59.1	01.1	278° 39.1	38.5	Eltanin	90° 44.5	51° 29.2 N	300° 54.3	23.6	46° 07.0	12.0	40.6	5.3	50°	06:41	07:37	08:32	20:07	21:18	22:34			
	09	10° 15.2	358° 46.2	52.6	293° 39.8	38.6	176° 46.1	08.9	104° 01.7	01.1	293° 39.8	38.6	Enif	33° 44.5	9° 57.2 N	315° 54.3	24.2	60° 38.0	11.9	35.3	5.4	50°	06:41	07:37	08:32	20:07	21:18	22:34			
	10	25° 17.6	13° 46.7	53.2	308° 40.4	38.8	191° 48.8	08.8	119° 04.3	01.1	308° 40.4	38.8	Fomalhaut	15° 21.2	29° 31.7 S	330° 54.3	24.7	75° 0													

2017 May 19, 20, 21 (Fri, Sat, Sun)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	19		20	21	
19	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	HP	N 72°	-	-	-	02:59	02:50	02:41	
	01	236° 51'.3	224° 05'.6	4° 14'.2 N	159° 04'.3	23° 45'.1 N	43° 28'.3	4° 06'.7 S	330° 44'.0	22° 00'.9 S	330° 44'.0	22° 00'.9 S	Acamar	315° 16'.8	40° 14'.3 S	180° 53'.3	19° 45'.5 N	266° 45'.4	12'.0	12° 07'.1 S	8'.3	56'.3	N 70°	-	-	-	02:39	02:38	02:36		
	02	251° 53'.7	239° 06'.1	14'.7	174° 05'.0	45'.2	58° 30'.9	06'.7	345° 46'.6	00'.9	345° 46'.6	00'.9	Achernar	335° 25'.4	57° 08'.9 S	195° 53'.3	46'.0	281° 16'.4	11'.9	11° 58'.8 S	8'.5	56'.4	N 68°	-	-	01:15	02:23	02:28			
	03	266° 56'.2	254° 06'.5	15'.3	189° 05'.6	45'.4	73° 33'.5	06'.6	0° 49'.3	00'.9	0° 49'.3	00'.9	Acruz	173° 05'.8	63° 11'.9 S	210° 53'.3	46'.6	295° 47'.3	12'.0	50'.3	8'.5	66°.°	-	-	02:01	02:11	02:20				
	04	281° 58'.7	269° 07'.0	15'.9	204° 06'.2	45'.6	88° 34'.5	06'.6	15° 51'.9	00'.9	15° 51'.9	00'.9	Adhara	255° 10'.7	29° 00'.1 S	225° 52'.2	47'.1	310° 18'.3	11'.9	41'.8	8'.5	64°.°	-	00:08	02:31	02:00	02:13	02:25			
	05	297° 01'.1	284° 07'.5	16'.4	219° 06'.9	45'.7	103° 38'.8	06'.5	30° 54'.5	00'.9	30° 54'.5	00'.9	Aldebaran	290° 46'.7	16° 32'.4 N	240° 53'.2	47'.7	324° 49'.2	11'.9	33'.3	8'.7	56'.5	N 62°	-	01:28	02:53	01:51	02:07	02:22		
	06	312° 03'.6	299° 08'.0	17'.0	234° 07'.5	45'.9	118° 41'.4	06'.5	45° 57'.1	00'.9	45° 57'.1	00'.9				255° 53'.2	48'.2	339° 20'.1	11'.9	24'.6	8'.7	60°.°	-	02:03	03:11	01:43	02:02	02:20			
	07	327° 06'.1	314° 08'.4	17'.6	249° 08'.1	46'.0	133° 44'.0	06'.4	60° 59'.8	00'.9	60° 59'.8	00'.9	Alioth	166° 18'.1	55° 52'.2 N	270° 53'.2	48'.7	353° 51'.0	11'.9	15'.9	8'.8	58'.6	N 58°	00:07	02:27	03:26	01:36	01:57	02:17		
	08	342° 08'.5	329° 08'.9	18'.2	264° 08'.8	46'.2	148° 46'.6	06'.4	76° 02'.4	00'.9	76° 02'.4	00'.9	Alkaid	152° 56'.5	49° 13'.8 N	285° 53'.1	49'.3	8° 21'.9	11'.9	07'.1	8'.8	56'.6	N 56°	01:20	02:46	03:38	01:30	01:53	02:15		
	09	357° 11'.0	344° 09'.4	18'.7	279° 09'.4	46'.3	163° 49'.2	06'.3	91° 05'.0	00'.9	91° 05'.0	00'.9	Alnair	27° 40'.5	46° 52'.4 S	300° 53'.1	49'.8	22° 52'.8	11'.9	10° 58'.3 S	8'.9	54°.°	01:51	03:02	03:49	01:24	01:50	02:14			
	10	12° 13'.5	359° 09'.8	19'.3	294° 10'.0	46'.5	178° 51'.8	06'.3	106° 07'.7	00'.9	106° 07'.7	00'.9	Alnilam	275° 44'.0	1° 11'.7 S	315° 53'.1	50'.3	37° 23'.7	11'.9	49'.4	9'.0	52°.°	02:14	03:15	03:59	01:19	01:46	02:11			
	11	27° 15'.9	14° 10'.3	19'.9	309° 10'.6	46'.7	193° 54'.4	06'.3	121° 10'.3	00'.9	121° 10'.3	00'.9	Alphard	217° 53'.6	8° 44'.2 S	330° 53'.0	50'.8	51° 54'.6	11'.9	40'.4	9'.0	56'.7	N 50°	02:32	03:27	04:07	01:15	01:43	02:12		
	12	42° 18'.4	29° 10'.8	20'.4	324° 11'.3	46'.8	208° 57'.0	06'.2	136° 12'.9	00'.9	136° 12'.9	00'.9				345° 53'.0	51'.4	66° 25'.5	11'.9	31'.4	9'.1	45°.°	03:06	03:51	04:26	01:05	01:37	02:08			
	13	57° 20'.9	44° 11'.2	4° 21'.0 N	339° 11'.9	23° 47'.0 N	223° 52'.3	4° 06'.1 S	151° 15'.5	22° 00'.9 S	151° 15'.5	22° 00'.9 S	Alphecca	126° 08'.4	26° 39'.5 S	0° 53'.0	19° 51'.9 N	80° 56'.4	11'.8	10° 22'.3 S	9'.1	56'.8	N 40°	03:31	04:09	04:40	00:56	01:31	02:05		
	14	72° 23'.3	59° 11'.7	21'.6	354° 12'.5	47'.1	239° 02'.3	06'.1	166° 18'.2	00'.9	166° 18'.2	00'.9				357° 40'.9	29° 10'.9 N	95° 27'.2	11'.9	13'.2	9'.2	35°.°	03:50	04:24	04:53	00:49	01:26	02:03			
	15	87° 25'.8	74° 12'.1	22'.2	9° 13'.2	47'.3	254° 04'.9	06'.0	181° 20'.8	00'.9	181° 20'.8	00'.9	Altair	62° 05'.5	8° 54'.9 N	30° 52'.9	53'.0	109° 58'.1	11'.8	04'.0	9'.3	30°.°	04:05	04:37	05:04	00:43	01:22	02:01			
	16	102° 28'.2	89° 12'.6	22'.8	24° 13'.8	47'.4	269° 07'.5	06'.0	196° 23'.4	00'.9	196° 23'.4	00'.9	Ankaa	353° 13'.4	42° 12'.7 S	45° 52'.9	53'.5	124° 28'.9	11'.9	9° 54'.7 S	9'.4	56'.9	N 20°	04:30	04:58	05:22	00:32	01:15	01:57		
	17	117° 30'.7	104° 13'.1	23'.3	39° 14'.4	47'.6	284° 10'.1	05'.9	211° 26'.0	00'.9	211° 26'.0	00'.9	Antares	112° 22'.7	26° 28'.0 S	60° 52'.8	54'.0	138° 59'.8	11'.8	45'.3	9'.4	57°.°	N 10°	04:49	05:16	05:38	00:23	01:08	01:54		
	18	132° 33'.2	119° 13'.5	23'.9	54° 15'.1	47'.7	299° 12'.7	05'.9	226° 28'.7	00'.9	226° 28'.7	00'.9				75° 52'.8	54'.5	153° 30'.6	11'.8	35'.9	9'.4	0°.°	05:05	05:31	05:53	00:14	01:02	01:51			
	19	147° 35'.6	134° 14'.0	24'.5	69° 15'.7	47'.9	314° 15'.3	05'.8	241° 31'.3	00'.9	241° 31'.3	00'.9	Arcturus	145° 53'.1	19° 05'.7 N	90° 52'.8	55'.1	168° 01'.4	11'.8	26'.5	9'.6	57'.0	S 10°	05:20	05:45	06:08	00:05	00:56	01:48		
	20	162° 38'.1	149° 14'.4	25'.1	84° 16'.3	48'.0	329° 17'.9	05'.8	256° 33'.9	00'.9	256° 33'.9	00'.9	Atira	107° 21'.5	69° 03'.2 S	105° 52'.7	55'.6	182° 32'.2	11'.8	16'.9	9'.5	20°.°	05:33	06:00	06:23	-	00:50	01:45			
	21	177° 40'.6	164° 14'.9	25'.6	99° 16'.9	48'.2	344° 20'.5	05'.7	271° 36'.6	00'.9	271° 36'.6	00'.9	Avia	234° 17'.2	59° 34'.3 S	120° 52'.7	56'.1	197° 03'.0	11'.7	07'.4	9'.7	30°.°	05:46	06:15	06:41	-	00:42	01:42			
	22	192° 43'.0	179° 15'.3	26'.2	114° 17'.6	48'.3	359° 23'.1	05'.7	286° 39'.2	00'.9	286° 39'.2	00'.9	Bellatrix	278° 29'.5	6° 21'.6 N	135° 52'.7	56'.6	211° 33'.7	11'.8	8° 57'.7 S	9'.7	57'.1	S 35°	05:53	06:24	06:51	-	00:38	01:40		
23	207° 45'.5	194° 15'.8	26'.8	129° 18'.2	48'.5	14° 20'.7	05'.6	301° 41'.8	00'.9	301° 41'.8	00'.9	Betelgeuse	270° 58'.8	7° 24'.4 N	150° 52'.6	57'.2	226° 04'.5	11'.7	48'.0	9'.7	40°.°	06:00	06:33	07:03	-	00:33	01:37				
	222° 48'.0	209° 16'.2	27'.4	144° 18'.8	48'.6	29° 28'.4	05'.6	316° 44'.4	00'.9	316° 44'.4	00'.9				165° 52'.6	57'.7	240° 35'.2	11'.7	38'.3	9'.8	57'.2	N 45°	06:08	06:44	07:17	-	00:27	01:35			
20	00	237° 50'.4	224° 16'.7	4° 28'.0 N	159° 19'.5	23° 48'.8 N	44° 31'.0	4° 05'.5 S	331° 47'.1	22° 00'.9 S	331° 47'.1	22° 00'.9 S	Canopus	263° 55'.4	52° 42'.7 S	180° 52'.6	19° 58'.2 N	255° 05'.9	11'.7	8° 28'.5 S	9'.9	57'.2	S 50°	06:17	06:57	07:33	-	00:20	01:32		
	01	252° 52'.9	239° 17'.2	28'.6	174° 20'.1	48'.9	59° 33'.6	05'.5	346° 49'.7	00'.8	346° 49'.7	00'.8	Capella	260° 31'.0	46° 00'.7 N	195° 52'.6	49'.7	269° 36'.6	11'.7	18'.6	9'.9	52°.°	06:21	07:03	07:41	-	00:17	01:30			
	02	267° 55'.4	254° 17'.6	29'.1	189° 20'.7	49'.1	74° 36'.2	05'.4	1° 52'.3	00'.8	1° 52'.3	00'.8	Deneb	49° 29'.5	45° 20'.4 N	210° 52'.5	59'.2	284° 07'.3	11'.7	08'.7	10'.0	57'.3	N 54°	06:25	07:09	07:50	-	00:14	01:29		
	03	282° 57'.8	269° 18'.0	29'.7	204° 21'.4	49'.2	89° 38'.8	05'.4	16° 55'.0	00'.8	16° 55'.0	00'.8	Denebola	182° 30'.9	14° 28'.6 N	225° 52'.4	59'.8	298° 38'.0	11'.7	7° 58'.7 S	10'.0	56°.°	06:30	07:16	08:00	-	00:10	01:27			
	04	298° 00'.3	284° 18'.5	30'.3	219° 22'.0	49'.4	104° 41'.4	05'.3	31° 57'.6	00'.8	31° 57'.6	00'.8	Diphda	348° 53'.5	17° 53'.6 S	240° 52'.4	20° 00'.3 N	313° 08'.7	11'.6	48'.7	10'.1	58°.°	06:35	07:24	08:11	-	00:06	01:25			
	05	313° 02'.7	299° 18'.9	30'.9	234° 22'.6	49'.5	119° 44'.0	05'.3	47° 00'.2	00'.8	47° 00'.2	00'.8				255° 52'.4	00'.8	327° 39'.3	11'.6	38'.6	10'.2	57'.4	S 60°	06:40	07:33	08:24	-	00:01	01:23		
	06	328° 05'.2	314° 19'.4	31'.5	249° 23'.2	49'.7	134° 46'.6	05'.2	62° 02'.8	00'.8	62° 02'.8	00'.8	Dubhe	193° 48'.5	61° 39'.7 N	270° 52'.3	01'.3	342° 09'.9	11'.6	28'.4	10'.4	57°.°	S 62°	06:46	07:43	08:40	23:55	-	01:20		
	07	343° 07'.7	329° 19'.8	32'.1	264° 23'.9	49'.8	149° 49'.2	05'.2	77° 05'.5	00'.8	77° 05'.5	00'.8	Elnath	278° 09'.6	28° 37'.1 N	285° 52'.3	01'.8	356° 40'.5	11'.6	18'.3	10'.3	57'.5	N 70°	-	-	-	10:28	12:10	13:54		
	08	358° 10'.1	344° 20'.3	32'.7	279° 24'.5	50'.1	164° 51'.8	05'.1	92° 08'.1	00'.8	92° 08'.1	00'.8	Eltanin	90° 44'.4	51° 29'.2 N	300° 52'.3	02'.4	11° 11'.1	11'.6	08'.0	10'.3	57°.°	N 68°	22:44	-	-	10:42	12:18	13:57		
	09	13° 12'.6	359° 20'.7	33'.3	294° 25'.1	50'.1	179° 54'.4	05'.1	107° 10'.7	00'.8	107° 10'.7	00'.8	Enif	33° 44'.5	9° 57'.2 N	315° 52'.2	02'.9	25° 41'.7	11'.5	6° 57'.7 S	10'.3	57°.°	N 66°	21:55	-	-	10:54	12:24	13:58		
	10	28° 15'.1	14° 21'.2	33'.8	309° 25'.8	50'.3	194° 57'.0	05'.0	122° 13'.4	00'.8	122° 13'.4	00'.8	Fomalhaut	15° 21'.2	29° 31'.7 S	330° 52'.2	03'.4	40° 12'.2	11'.6	47'.4	10'.4	57'.6	N 64°	21:24							

2017 May 22, 23, 24 (Mon, Tue, Wed)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	22		23	24	
Monday	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	-	-	-	02:33	02:25	02:16		
	01	239° 48.7	224° 37.2	4° 56.8 N	159° 49.7	23° 55.6 N	46° 35.9	4° 03.2 S	333° 53.4	22° 00.7 S	Acamar	315° 16.8	40° 14.3 S	180° 50.6	20° 22.6 N	231° 11.1	10.2	0° 14.8 N	11.7	59.1	N 70°	-	-	-	-	02:34	02:32	02:31			
	02	254° 51.2	239° 37.6	57.4	174° 50.3	55.7	61° 38.5	03.2	348° 56.0	00.7	Achernar	335° 25.4	57° 08.9 S	195° 50.5	23.1	245° 40.3	10.2	26.5	11.6	68°	-	-	-	-	00:52	02:35	02:38	02:43			
	03	269° 53.6	254° 38.0	58.0	189° 51.0	55.8	76° 41.1	03.2	3° 58.6	00.7	Acruz	173° 05.8	63° 11.9 S	210° 50.5	23.5	260° 09.5	10.1	38.1	11.7	59.2	64°	-	-	-	01:49	02:35	02:43	02:53			
	04	284° 56.1	269° 38.4	58.6	204° 51.6	56.0	91° 43.6	03.1	19° 01.3	00.6	Adhara	255° 10.7	29° 00.1 S	225° 50.4	24.0	274° 38.6	10.1	49.8	11.7	66°	-	-	-	-	02:22	02:36	02:48	03:02			
	05	299° 58.6	284° 38.8	59.2	219° 52.2	56.1	106° 46.2	03.1	34° 03.9	00.6	Aldebaran	290° 46.7	16° 32.4 N	240° 50.4	24.5	289° 07.7	10.0	1° 01.5 N	11.7	62°	-	-	01:14	02:46	02:36	02:51	03:09				
	06	315° 01.0	299° 39.2	59.8	234° 52.9	56.2	121° 48.8	03.0	49° 06.5	00.6				250° 50.3	25.0	303° 36.7	10.0	13.2	11.7	59.3	60°	-	01:53	03:05	02:37	02:55	03:15				
	07	330° 03.5	314° 39.6	5° 00.5 N	249° 53.5	56.3	136° 51.4	03.0	64° 09.2	00.6	Alioth	166° 18.1	55° 52.2 N	270° 50.3	25.5	318° 05.7	9.9	24.9	11.7	58°	-	-	02:20	03:20	02:37	02:58	03:21				
	08	345° 05.9	329° 40.0	01.1	264° 54.1	56.5	151° 54.0	02.9	79° 11.8	00.6	Alkaid	152° 56.5	49° 13.8 N	285° 50.2	26.0	332° 34.6	9.9	36.6	11.7	56°	01:07	02:40	03:34	02:37	03:00	03:26					
	09	0° 08.4	344° 40.3	01.7	279° 54.7	56.6	166° 56.6	02.9	94° 14.4	00.6	Alnair	27° 40.5	46° 52.4 S	300° 50.2	26.5	347° 03.5	9.8	48.3	11.8	59.4	54°	01:43	02:57	03:45	02:38	03:03	03:30				
	10	15° 10.9	359° 40.7	02.3	294° 55.4	56.7	181° 59.2	02.9	109° 17.1	00.6	Alnilam	275° 44.0	1° 11.7 S	315° 50.1	27.0	1° 32.3	9.8	2° 00.1 N	11.7	52°	02:08	03:11	03:55	02:38	03:05	03:35					
	11	30° 13.3	14° 41.1	02.9	309° 56.0	56.9	197° 01.8	02.8	124° 19.7	00.6	Alphard	217° 53.6	8° 44.2 S	330° 50.1	27.5	16° 01.1	9.7	11.8	11.7	59.5	50°	02:27	03:23	04:04	02:38	03:07	03:38				
	12	45° 15.8	29° 41.5	03.6	324° 56.6	57.0	212° 04.4	02.8	139° 22.3	00.6				345° 50.0	27.9	30° 29.8	9.6	23.5	11.7	45°	03:02	03:48	04:23	02:38	03:11	03:46					
	13	60° 18.3	44° 41.9	5° 04.2 N	339° 57.3	23° 57.1 N	227° 07.0	4° 02.7 S	154° 25.0	22° 00.6 S	Alphecca	126° 08.4	26° 39.5 N	0° 50.0	20° 28.4 N	44° 58.4	9.6	2° 35.2 N	11.8	59.5	N 40°	03:28	04:07	04:38	02:39	03:15	03:53				
	14	75° 20.7	59° 42.3	04.8	354° 57.3	57.2	242° 09.6	2.7	169° 27.6	00.6	Alpheratz	357° 40.9	29° 10.9 N	15° 49.9	28.9	59° 27.0	9.6	47.0	11.7	59.6	35°	03:48	04:23	04:51	02:39	03:18	03:59				
	15	90° 23.2	74° 42.7	05.4	9° 58.5	57.4	257° 12.2	02.6	184° 30.2	00.6	Altair	62° 05.5	8° 54.9 N	30° 49.9	29.4	73° 55.6	9.5	58.7	11.8	30°	04:04	04:36	05:02	02:40	03:20	04:04					
	16	105° 25.7	89° 43.1	06.1	24° 59.1	57.5	272° 14.8	02.6	199° 32.9	00.6	Ankaa	353° 13.4	42° 12.7 S	45° 49.8	29.9	88° 24.1	9.4	3° 10.5 N	11.7	20°	04:29	04:57	05:21	02:40	03:25	04:13					
	17	120° 28.1	104° 43.5	06.7	39° 59.8	57.6	287° 17.4	02.6	214° 35.5	00.6	Antares	112° 22.6	26° 28.0 S	60° 49.8	30.4	102° 52.5	9.4	22.2	11.7	59.7	N 10°	04:49	05:15	05:38	02:41	03:30	04:21				
	18	135° 30.6	119° 43.9	07.3	55° 00.4	57.8	302° 19.9	02.5	229° 38.2	00.6				75° 49.7	30.9	117° 20.9	9.3	33.9	11.7	0°	05:05	05:31	05:53	02:41	03:34	04:29					
	19	150° 33.1	134° 44.2	07.9	70° 01.0	57.9	317° 22.5	02.5	244° 40.8	00.6	Arcturus	145° 53.1	19° 05.7 N	90° 49.7	31.3	131° 49.2	9.3	45.6	11.7	59.8	S 10°	05:20	05:46	06:08	02:42	03:38	04:37				
	20	165° 35.5	149° 44.6	08.6	85° 01.7	58.0	332° 25.1	02.4	259° 43.4	00.6	Atria	107° 21.5	69° 03.3 S	105° 49.6	31.8	146° 17.5	9.2	57.3	11.7	20°	05:34	06:01	06:24	02:43	03:42	04:45					
	21	180° 38.0	164° 45.0	09.2	100° 02.3	58.1	347° 27.7	02.4	274° 46.1	00.6	Avior	234° 17.2	59° 34.3 S	120° 49.6	32.3	160° 45.7	9.1	4° 09.0 N	11.7	30°	05:48	06:17	06:43	02:43	03:47	04:54					
	22	195° 40.4	179° 45.4	09.8	115° 02.9	58.3	2° 30.3	02.3	289° 48.7	00.6	Bellatrix	278° 29.5	6° 21.7 N	135° 49.5	32.8	175° 13.8	9.1	20.7	11.7	59.9	35°	05:55	06:26	06:53	02:44	03:50	05:00				
23	210° 42.9	194° 45.8	10.4	130° 03.6	58.4	17° 32.9	02.3	304° 51.3	00.6	Betelgeuse	270° 58.8	7° 24.4 N	150° 49.5	33.3	189° 41.9	9.0	32.4	11.7	40°	06:03	06:36	07:05	02:44	03:54	05:06						
24	225° 45.4	209° 46.2	11.1	145° 04.2	58.5	32° 35.5	02.3	319° 54.0	00.6				165° 49.4	33.7	204° 09.9	9.0	44.1	11.7	45°	06:11	06:47	07:20	02:45	03:58	05:13						
Tuesday	00	240° 47.8	224° 46.5	5° 11.7 N	160° 04.8	23° 58.6 N	47° 38.1	4° 02.2 S	334° 56.6	22° 00.6 S	Canopus	263° 55.4	52° 42.7 S	180° 49.4	20° 34.2 N	218° 37.9	8.8	4° 55.8 N	11.6	60.0	S 50°	06:20	07:01	07:37	02:46	04:03	05:22				
	01	255° 50.3	239° 46.9	12.3	175° 05.4	58.8	62° 40.7	02.2	349° 59.2	00.6	Capella	280° 31.0	46° 00.7 N	195° 49.9	34.7	233° 07.7	8.9	5° 07.4 N	11.6	52°	06:24	07:07	07:45	02:46	04:05	05:26					
	02	270° 52.8	254° 47.3	13.0	190° 06.1	58.9	77° 43.3	02.1	5° 01.9	00.6	Deneb	49° 29.4	45° 20.4 N	210° 49.3	35.2	247° 33.6	8.7	19.0	11.6	54°	06:29	07:13	07:55	02:46	04:07	05:31					
	03	285° 55.2	269° 47.7	13.6	205° 06.7	59.0	92° 45.8	02.1	20° 04.5	00.6	Denebola	182° 30.9	14° 28.6 N	225° 49.2	35.6	262° 01.3	8.8	30.6	11.6	60.1	56°	06:34	07:21	08:05	02:47	04:10	05:36				
	04	300° 57.7	284° 48.1	14.2	220° 07.3	59.1	107° 48.4	02.1	35° 07.1	00.5	Diphda	348° 53.5	17° 53.6 S	240° 49.2	36.1	276° 29.1	8.6	42.2	11.6	58°	06:39	07:29	08:17	02:47	04:13	05:41					
	05	316° 00.2	299° 48.4	14.9	235° 08.0	59.2	122° 51.0	02.0	50° 09.8	00.5				255° 49.1	36.6	290° 56.7	8.6	53.8	11.5	S 60°	06:45	07:38	08:30	02:48	04:16	05:47					
	06	331° 02.6	314° 48.8	15.5	250° 08.6	59.4	137° 53.6	02.0	65° 12.4	00.5	Dubhe	193° 48.5	61° 39.7 N	270° 49.0	37.1	305° 24.3	8.5	6° 05.3 N	11.6	60.2	S 62°	06:51	07:49	08:47	02:48	04:20	05:55				
	07	346° 05.1	329° 49.2	16.1	265° 09.2	59.5	152° 56.2	01.9	80° 15.1	00.5	Elnath	278° 09.7	28° 37.1 N	285° 49.9	37.6	319° 51.8	8.4	16.9	11.5												
	08	1° 07.5	344° 49.5	16.8	280° 09.9	59.6	167° 58.8	01.9	95° 17.7	00.5	Eltanin	90° 44.4	51° 29.2 N	300° 48.9	38.0	334° 19.2	8.4	28.4	11.4	60.3											
	09	16° 10.0	359° 49.9	17.4	295° 10.5	59.7	183° 01.4	01.8	110° 20.3	00.5	Enif	33° 44.5	9° 57.2 N	315° 48.9	38.5	348° 46.6	8.3	39.8	11.5												
	10	31° 12.5	14° 50.3	18.0	310° 11.1	59.8	198° 03.9	01.8	125° 20.0	00.5	Fomalhaut	15° 21.2	29° 31.7 S	330° 48.8	39.0	3° 13.9	8.2	51.3	11.4												
	11	46° 14.9	29° 50.7	18.7	325° 11.7	24° 00.0 N	213° 06.5	01.8	140° 25.6	00.5				345° 48.8	39.4	7° 02.7 N	8.2	7° 02.7 N	11.4												
	12	61° 17.4	44° 51.0	5° 19.3 N	340° 12.4	24° 00.1 N	228° 09.1	4° 01.7 S	155° 28.2	22° 00.5 S	Gacrux	171° 57.5	57° 12.8 S	0° 48.7	20° 39.9 N	32° 08.3	8.1	7° 14.1 N	11.3	60.4	N 72°	-	-	-	15:47	17:49	19:59				
	13	76° 19.9	59° 51.4	19.9	355° 13.0	00.2	243° 11.7	01.7	170° 30.9	00.5	Genah	175° 49.4	17° 38.4 S	15° 48.7	40.4	46° 35.4	8.1	25.4	11.3	68°	23:10	-	-	15:43	17:36	19:35					
	14	91° 22.3	74° 5																												

2017 May 25, 26, 27 (Thur, Fri, Sat)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise						
25 T h u r s d a y	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	HP	N 72°	-	-	-	02:05	01:46	-					
	242° 46.1	225° 03.7	5° 42.6 N	160° 35.1	24° 04.1 N	49° 42.0	4° 00.4 S	337° 03.2	22° 00.4 S	337° 03.2	22° 00.4 S	Acamar	315° 16.8	40° 14.2 S	180° 46.6	20° 56.5 N	191° 39.8	5.6	13° 29.9 N	9.1	61.2	N 70°	-	-	-	02:31	02:34	02:45							
	01	257° 48.6	240° 04.1	43.2	175° 35.7	04.3	64° 44.6	00.3	352° 05.9	00.4	352° 05.9	00.4	Achernar	335° 25.4	57° 08.9 S	195° 46.5	56.9	206° 04.4	5.5	39.0	9.0	68°	-	-	-	00:13	02:51	03:05	03:32						
	02	272° 51.0	255° 04.4	43.9	190° 36.3	04.4	79° 47.2	00.3	7° 08.5	00.4	79° 47.2	00.3	Acruz	173° 05.8	63° 11.9 S	210° 46.5	57.4	220° 28.9	5.4	48.0	9.0	66°	-	-	-	01:37	03:07	03:28	04:02						
	03	287° 53.5	270° 04.7	44.6	205° 37.0	04.5	94° 49.7	00.3	22° 11.2	00.4	94° 49.7	00.3	Adhara	255° 10.7	29° 00.1 S	225° 46.4	57.8	234° 53.3	5.4	57.0	8.0	64°	-	-	-	02:13	03:20	03:46	04:25						
	04	302° 56.0	285° 05.1	45.2	220° 37.6	04.6	109° 52.3	00.2	37° 13.8	00.3	109° 52.3	00.2	Aldebaran	290° 46.7	16° 32.4 N	240° 46.3	58.3	249° 17.7	5.3	14° 05.8 N	8.8	61.3	62°	-	00:58	02:39	03:31	04:02	04:44						
	05	317° 58.4	300° 05.4	45.9	235° 38.2	04.7	124° 54.9	00.2	52° 16.4	00.3	124° 54.9	00.2				255° 46.3	58.7	263° 42.0	5.3	14.6	8.6	60°	-	-	-	01:44	02:59	03:41	04:14	04:59					
	06	333° 00.9	315° 05.7	46.5	250° 38.8	04.8	139° 57.5	00.2	67° 19.1	00.3	139° 57.5	00.2	Alioth	166° 18.1	55° 52.2 N	270° 46.2	59.2	278° 06.3	5.2	23.2	8.6	58°	-	-	02:13	03:15	03:49	04:25	05:12						
	07	348° 03.4	330° 06.0	47.2	265° 39.5	04.9	155° 00.0	00.1	82° 21.7	00.3	155° 00.0	00.1	Alkaid	152° 56.5	49° 13.9 N	285° 46.1	59.6	292° 30.5	5.1	31.8	8.5	56°	00:52	02:34	03:29	03:57	04:35	05:23							
	08	3° 05.8	345° 06.4	47.8	280° 40.1	05.0	170° 02.6	00.1	97° 24.4	00.3	170° 02.6	00.1	Alnair	27° 40.5	46° 52.4 S	300° 46.1	21° 00.0 N	306° 54.6	5.0	40.3	8.3	54°	01:34	02:52	03:41	04:03	04:43	05:33							
	09	18° 08.3	0° 06.7	48.5	295° 40.7	05.1	185° 05.2	00.0	112° 27.0	00.3	185° 05.2	00.0	Alnilam	275° 44.0	1° 11.7 S	315° 46.0	00.5	321° 18.6	5.0	48.6	8.3	52°	02:01	03:07	03:52	04:09	04:51	05:42							
	10	33° 10.8	15° 07.0	49.2	310° 41.4	05.2	200° 07.8	00.0	127° 29.6	00.3	200° 07.8	00.0	Alphard	217° 53.6	8° 44.2 S	330° 45.9	00.9	335° 42.6	5.0	56.9	8.1	50°	02:22	03:29	04:10	04:15	04:58	05:50							
	11	48° 13.2	30° 07.4	49.8	325° 42.0	05.3	215° 10.3	00.0	142° 32.3	00.3	215° 10.3	00.0				345° 45.9	01.4	350° 06.6	4.9	15° 05.0 N	8.0	45°	02:59	03:45	04:20	04:26	05:13	06:07							
	12	63° 15.7	45° 07.7	5° 50.5 N	340° 42.6	24° 05.4 N	230° 12.9	3° 59.9 S	157° 34.9	22° 00.3 S	230° 12.9	3° 59.9 S	Alphecca	126° 08.4	26° 39.6 N	0° 45.8	21° 01.8 N	4° 30.5	4.8	15° 13.0 N	8.0	61.3	N 40°	03:25	04:05	04:36	04:36	05:25	06:20						
	13	78° 18.1	60° 08.0	51.2	355° 43.3	05.5	245° 15.5	59.9	172° 37.6	00.3	245° 15.5	59.9	Alpheratz	357° 40.9	29° 10.9 N	15° 45.7	02.2	18° 54.3	4.7	21.0	7.8	35°	03:45	04:21	04:50	04:45	05:36	06:32							
	14	93° 20.6	75° 08.3	51.8	10° 43.9	05.6	260° 18.1	59.9	187° 40.2	00.3	260° 18.1	59.9	Altair	62° 05.4	8° 54.9 S	30° 45.7	02.7	33° 18.0	4.7	28.8	7.7	30°	04:02	04:34	05:01	04:52	05:45	06:42							
	15	108° 23.1	90° 08.7	52.5	25° 44.5	05.7	275° 20.6	59.8	202° 42.8	00.3	275° 20.6	59.8	Ankaa	353° 13.4	42° 12.6 N	45° 45.6	03.1	47° 41.7	4.7	36.5	7.6	61.4	20°	04:28	04:57	05:21	05:05	06:01	07:00						
	16	123° 25.5	105° 09.0	53.1	40° 45.2	05.8	290° 23.2	59.8	217° 45.5	00.3	290° 23.2	59.8	Antares	112° 22.6	26° 28.0 S	60° 45.5	03.6	62° 05.4	4.6	44.1	7.5	50°	04:48	05:15	05:38	05:16	06:15	07:16							
	17	138° 28.0	120° 09.3	53.8	55° 45.8	05.9	305° 25.8	59.8	232° 48.1	00.3	305° 25.8	59.8				75° 45.5	04.0	76° 29.0	4.5	51.6	7.4	0°	05:05	05:31	05:53	05:27	06:28	07:30							
	18	153° 30.5	135° 09.6	54.5	70° 46.4	06.0	320° 28.3	59.7	247° 50.8	00.3	320° 28.3	59.7	Arcturus	145° 53.1	19° 05.7 N	90° 45.4	04.4	90° 52.5	4.5	59.0	7.2	S 10°	05:21	05:47	06:09	05:38	06:41	07:45							
	19	168° 32.9	150° 10.0	55.1	85° 47.0	06.1	335° 30.9	59.7	262° 53.4	00.3	335° 30.9	59.7	Atria	107° 21.5	69° 03.3 S	105° 45.3	04.9	105° 16.0	4.4	16° 06.2 N	7.2	20°	05:35	06:02	06:26	05:49	06:55	08:00							
	20	183° 35.4	165° 10.3	55.8	100° 47.7	06.2	350° 33.5	59.7	275° 56.1	00.3	350° 33.5	59.7	Avior	234° 17.2	59° 34.3 S	120° 45.3	05.3	119° 39.4	4.4	13.4	7.0	30°	05:49	06:19	06:44	06:03	07:11	08:18							
	21	198° 37.9	180° 10.6	56.5	115° 48.3	06.3	5° 36.1	59.6	292° 58.7	00.3	5° 36.1	59.6	Bellatrix	278° 29.5	6° 21.7 N	135° 45.2	05.8	134° 02.8	4.4	20.4	6.9	35°	05:57	06:28	06:55	06:10	07:21	08:29							
22	213° 40.3	195° 10.9	57.1	130° 48.9	06.4	20° 38.6	59.6	308° 01.3	00.3	20° 38.6	59.6	Betelgeuse	270° 58.8	7° 24.4 N	150° 45.1	06.2	148° 26.2	4.2	27.3	6.8	40°	06:05	06:38	07:08	06:19	07:32	08:41								
23	228° 42.8	210° 11.2	57.8	145° 49.6	06.5	35° 41.2	59.6	323° 04.0	00.3	35° 41.2	59.6				165° 45.1	06.6	162° 49.4	4.3	34.1	6.7	45°	06:14	06:50	07:23	06:30	07:42	08:55								
26 F r i d a y	243° 45.3	225° 11.5	5° 58.5 N	160° 50.2	24° 06.6 N	50° 43.8	3° 59.5 S	338° 06.6	22° 00.3 S	50° 43.8	3° 59.5 S	Canopus	263° 55.5	52° 42.6 S	180° 45.0	21° 07.1 N	177° 12.7	4.2	16° 40.8 N	6.5	61.4	S 50°	06:23	07:04	07:41	06:42	08:00	09:13							
	01	258° 47.7	240° 11.9	59.1	175° 50.8	06.7	65° 46.3	59.5	353° 09.3	00.3	65° 46.3	59.5	Capella	280° 31.0	46° 00.7 N	195° 44.9	07.5	191° 35.9	4.1	47.3	6.4	52°	06:28	07:10	07:49	06:48	08:08	09:21							
	02	273° 50.2	255° 12.2	59.8	190° 51.5	06.8	80° 48.9	59.5	8° 11.9	00.3	80° 48.9	59.5	Deneb	49° 29.4	45° 20.4 N	210° 44.9	07.9	205° 59.0	4.1	53.7	6.3	54°	06:32	07:17	07:59	06:55	08:16	09:30							
	03	288° 52.6	270° 12.5	6° 00.5 N	205° 52.1	06.9	95° 51.5	59.4	23° 14.6	00.3	95° 51.5	59.4	Denebola	182° 30.9	14° 28.6 N	225° 44.8	08.4	220° 22.1	4.1	17° 00.0 N	6.2	56°	06:37	07:25	08:10	07:02	08:25	09:40							
	04	303° 55.1	285° 12.8	01.2	220° 52.7	07.0	110° 54.0	59.4	38° 17.2	00.2	110° 54.0	59.4	Diphda	348° 53.5	17° 53.5 S	240° 44.7	08.8	234° 45.2	4.0	06.2	6.0	58°	06:43	07:33	08:22	07:10	08:36	09:52							
	05	318° 57.6	300° 13.1	01.8	235° 53.4	07.1	125° 56.6	59.4	53° 19.8	00.2	125° 56.6	59.4				255° 44.6	09.2	249° 08.2	4.0	12.2	5.9	S 60°	06:49	07:43	08:36	07:19	08:48	10:06							
	06	334° 00.0	315° 13.4	02.5	250° 54.0	07.2	140° 59.2	59.3	68° 22.5	00.2	140° 59.2	59.3	Dubhe	193° 48.5	61° 39.7 N	270° 44.6	09.6	263° 31.2	3.9	18.1	5.8	S 62°	06:56	07:54	08:53	07:30	09:02	10:22							
	07	349° 02.5	330° 13.7	03.2	265° 54.6	07.3	156° 01.7	59.3	83° 25.1	00.2	156° 01.7	59.3	Elath	278° 09.6	28° 37.1 N	285° 44.5	10.1	277° 54.1	3.9	23.9	5.7														
	08	4° 05.0	345° 14.0	03.8	280° 55.2	07.4	171° 04.3	59.3	98° 27.8	00.2	171° 04.3	59.3	Eltanin	90° 44.4	51° 29.3 S	300° 44.4	10.5	292° 17.0	3.9	29.6	5.5														
	09	19° 07.4	0° 14.3	04.5	295° 55.9	07.5	186° 06.9	59.2	113° 30.4	00.2	186° 06.9	59.2	Enif	33° 44.5	9° 57.2 N	315° 44.4	10.9	360° 39.9	3.8	35.1	5.4														
	10	34° 09.9	15° 14.7	05.2	310° 56.5	07.6	201° 09.4	59.2	128° 33.1	00.2	201° 09.4	59.2	Fomalhaut	15° 21.2	29° 31.7 S	330° 44.3	11.4	321° 02.7	3.9	40.5	5.3														
	11	49° 12.4	30° 15.0	05.9	325° 57.1	07.6	216° 12.0	59.2	143° 35.7																										

2017 May 28, 29, 30 (Sun, Mon, Tue)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	28		29	30				
Sunday	28 00	245° 43.5	225° 25.7	6° 31.1' N	161° 20.5	24° 10.9' N	52° 46.7	3° 58.1' S	340° 13.5	22° 00.1' S	355° 16.2	00.1	Acamar	315° 16.8	40° 14.2' S	180° 41.5	21° 27.1' N	147° 22.6	3.9	19° 21.8' N	0.2	60.8	N 72°	-	-	-	-	-	06:11		
	01	260° 46.0	240° 26.0	31.8	176° 21.1	10.9	67° 49.3	58.1	355° 16.2	00.1	355° 16.2	00.1	Achernar	335° 25.3	57° 08.9' S	195° 41.4	27.5	161° 45.5	3.9	21.6	0.2	68°	-	-	-	-	03:28	05:02	06:54		
	02	275° 48.5	255° 26.3	32.5	191° 21.8	11.0	82° 51.9	58.1	10° 18.8	00.1	10° 18.8	00.1	Acruz	173° 05.9	63° 11.9' S	210° 41.3	27.9	176° 08.4	4.0	21.4	0.4	60.7	66°	-	-	01:24	04:58	06:14	07:44		
	03	290° 50.9	270° 26.6	33.2	206° 22.4	11.1	97° 54.4	58.0	25° 21.5	00.0	25° 21.5	00.0	Adhara	255° 10.8	29° 00.1' S	225° 41.2	28.3	190° 31.4	4.0	21.0	0.6	64°	-	-	02:05	05:22	06:36	08:01			
	04	305° 53.4	285° 26.8	33.9	221° 23.0	11.2	112° 57.0	58.0	40° 24.1	00.0	40° 24.1	00.0	Aldebaran	290° 46.7	16° 32.4' N	240° 41.2	28.7	204° 54.4	4.0	20.4	0.7	62°	-	00:38	02:33	05:42	06:54	08:15			
	05	320° 55.9	300° 27.1	34.6	236° 23.7	11.3	127° 59.5	58.0	55° 26.8	00.0	55° 26.8	00.0				255° 41.1	29.1	219° 17.4	4.1	19.7	0.7	60°	-	01:35	02:54	05:57	07:08	08:27			
	06	335° 58.3	315° 27.4	35.3	251° 24.3	11.3	143° 02.1	57.9	70° 29.4	00.0	70° 29.4	00.0	Alioth	166° 18.1	55° 52.2' N	270° 41.0	29.5	233° 40.5	4.1	18.9	1.0	60.6	N 58°	-	02:06	03:11	06:11	07:21	08:37		
	07	351° 00.8	330° 27.6	36.0	266° 24.9	11.4	158° 04.6	57.9	85° 32.1	00.0	85° 32.1	00.0	Alkaid	152° 56.5	49° 13.9' N	285° 40.9	29.9	248° 03.6	4.2	17.9	1.1	56°	00:34	02:29	03:25	06:23	07:31	08:46			
	08	6° 03.2	345° 27.9	36.6	281° 25.6	11.5	173° 07.2	57.9	100° 34.7	00.0	100° 34.7	00.0	Alnair	27° 40.4	46° 52.3' S	300° 40.9	30.3	262° 26.8	4.2	16.8	1.2	54°	01:26	02:47	03:38	06:33	07:41	08:54			
	09	21° 05.7	0° 28.2	37.3	296° 26.2	11.6	188° 09.7	57.9	115° 37.4	00.0	115° 37.4	00.0	Alnilam	275° 44.0	1° 11.7' S	315° 40.7	30.7	276° 50.0	4.3	15.6	1.4	60.5	52°	01:55	03:03	03:49	06:42	07:49	09:01		
	10	36° 08.2	15° 28.5	38.0	311° 26.8	11.6	203° 12.3	57.8	130° 40.0	00.0	130° 40.0	00.0	Alphard	217° 53.6	8° 44.2' S	330° 40.7	31.1	291° 13.3	4.3	14.2	1.5	50°	02:17	03:16	03:58	06:50	07:57	09:07			
	11	51° 10.6	30° 28.7	38.7	326° 27.5	11.7	218° 14.8	57.8	145° 42.7	00.0	145° 42.7	00.0				345° 40.6	31.5	305° 36.6	4.4	12.7	1.7	45°	02:56	03:42	04:18	07:07	08:13	09:21			
	12	66° 13.1	45° 29.0	39.4	341° 28.1	24° 11.8' N	233° 17.4	57.8	160° 45.3	22° 00.0' S	160° 45.3	22° 00.0' S	Alphecca	126° 08.4	26° 39.6' N	0° 40.5	21° 31.9' N	320° 00.0	4.4	19° 11.0' N	1.8	60.5	N 40°	03:23	04:03	04:35	07:21	08:26	09:32		
	13	81° 15.6	60° 29.3	40.1	356° 28.7	11.9	248° 19.9	57.8	175° 48.0	00.0	175° 48.0	00.0	Alpheratz	263° 40.9	29° 10.9' N	15° 40.4	32.3	334° 23.4	4.5	09.2	1.9	60.4	35°	03:44	04:19	04:48	07:33	08:37	09:42		
	14	96° 18.0	75° 25.9	40.8	11° 29.4	11.9	263° 22.5	57.7	190° 50.6	00.0	190° 50.6	00.0	Altair	62° 05.4	8° 54.9' N	30° 40.4	32.7	348° 46.9	4.5	07.3	2.1	30°	04:01	04:33	05:00	07:44	08:47	09:50			
	15	111° 20.5	90° 29.8	41.5	26° 30.0	12.0	278° 25.0	57.7	205° 53.2	00.0	205° 53.2	00.0	Antaa	353° 13.4	42° 12.6' S	45° 40.3	33.1	3° 10.4	4.6	05.2	2.2	20°	04:27	04:56	05:20	08:02	09:04	10:05			
	16	126° 23.0	105° 30.0	42.2	41° 30.6	12.1	293° 27.6	57.7	220° 55.9	00.0	220° 55.9	00.0	Antares	112° 22.6	26° 28.1' S	60° 40.2	33.5	17° 34.0	4.7	03.0	2.3	60.3	N 10°	04:48	05:15	05:38	08:18	09:19	10:17		
	17	141° 25.4	120° 30.3	42.9	56° 31.2	12.2	308° 30.1	57.7	235° 58.5	00.0	235° 58.5	00.0				75° 40.1	33.9	31° 57.7	4.7	00.7	2.5	0°	05:06	05:32	05:54	08:32	09:32	10:29			
	18	156° 27.9	135° 30.6	43.6	71° 31.9	12.2	323° 32.7	57.6	251° 01.2	00.0	251° 01.2	00.0	Arcturus	145° 53.1	19° 05.7' N	90° 40.0	34.3	46° 21.4	4.8	18° 58.2' N	2.6	50°	S 10°	05:21	05:47	06:10	08:47	09:46	10:41		
	19	171° 30.4	150° 30.8	44.3	86° 32.5	12.3	333° 35.2	57.6	266° 03.8	00.0	266° 03.8	00.0	Atria	107° 21.4	69° 03.3' S	105° 39.9	34.7	60° 45.2	4.8	55.6	2.7	60.2	20°	05:36	06:03	06:27	09:03	10:01	10:53		
	20	186° 32.8	165° 31.1	45.0	101° 33.1	12.4	358° 37.8	57.6	281° 06.5	00.0	281° 06.5	00.0	Avior	234° 17.2	59° 34.3' S	120° 39.9	35.1	75° 09.0	4.9	52.9	2.8	30°	05:51	06:20	06:46	09:21	10:17	11:07			
	21	201° 35.3	180° 31.3	45.7	116° 33.8	12.5	8° 40.3	57.6	296° 09.1	00.0	296° 09.1	00.0	Bellatrix	278° 29.5	6° 21.7' N	135° 39.8	35.5	89° 32.9	5.0	50.1	3.0	35°	05:59	06:30	06:57	09:31	10:27	11:16			
	22	216° 37.7	195° 31.6	46.4	131° 34.4	12.5	23° 42.9	57.5	311° 11.8	00.0	311° 11.8	00.0	Betelgeuse	270° 58.8	7° 24.4' N	150° 39.7	35.8	103° 56.9	5.0	47.1	3.1	60.1	40°	06:07	06:40	07:10	09:44	10:38	11:25		
23	231° 40.2	210° 31.9	47.1	146° 35.0	12.6	38° 45.4	57.5	326° 14.4	00.0	326° 14.4	00.0				165° 39.6	36.2	118° 20.9	5.2	44.0	3.3	45°	06:16	06:52	07:25	09:58	10:51	11:36				
Monday	29 00	246° 42.7	225° 32.1	6° 47.8' N	161° 35.7	24° 12.7' N	53° 48.0	3° 57.5' S	341° 17.1	22° 00.0' S	356° 19.7	00.0	Canopus	263° 55.5	52° 42.6' S	180° 39.5	21° 36.6' N	132° 45.1	5.1	18° 40.7' N	3.3	60.1	S 50°	06:26	07:07	07:44	10:15	11:07	11:49		
	01	261° 45.1	240° 32.4	48.5	176° 36.3	12.8	68° 50.5	57.5	356° 19.7	00.0	356° 19.7	00.0	Capella	280° 31.0	46° 00.7' N	159° 39.5	37.0	147° 09.2	5.3	37.4	3.5	60.0	52°	06:31	07:13	07:53	10:23	11:15	11:56		
	02	276° 47.6	255° 32.6	49.2	191° 36.9	12.8	83° 53.1	57.4	11° 22.4	00.0	11° 22.4	00.0	Deneb	49° 29.4	45° 20.4' N	210° 39.4	37.4	161° 33.5	5.3	33.9	3.6	54°	06:36	07:21	08:03	10:33	11:23	12:02			
	03	291° 50.1	270° 32.9	49.9	206° 37.6	12.9	98° 55.6	57.4	26° 25.0	21° 59.0' S	26° 25.0	21° 59.0' S	Denebola	182° 30.9	14° 28.6' N	225° 39.3	37.8	175° 57.8	5.4	30.3	3.7	56°	06:41	07:29	08:14	10:43	11:32	12:10			
	04	306° 52.5	285° 33.1	50.6	221° 38.2	13.0	113° 58.2	57.4	41° 27.7	59.9	41° 27.7	59.9	Diphda	348° 53.4	17° 53.5' S	240° 39.2	38.2	190° 22.2	5.5	26.6	3.9	59.9	58°	06:47	07:38	08:27	10:55	11:43	12:19		
	05	321° 55.0	300° 33.4	51.3	236° 38.8	13.0	129° 00.7	57.4	56° 30.3	59.9	56° 30.3	59.9				255° 39.1	38.6	204° 46.7	5.5	22.7	4.0	S 60°	06:53	07:48	08:42	11:08	11:55	12:28			
	06	336° 57.5	315° 33.7	52.0	251° 39.5	13.1	144° 03.3	57.4	71° 33.0	59.9	71° 33.0	59.9	Dubhe	193° 48.5	61° 39.7' N	270° 39.0	38.9	219° 11.2	5.6	18.7	4.0	50°	S 62°	07:00	07:59	09:00	11:24	12:09	12:39		
	07	351° 59.9	330° 33.9	52.7	266° 40.1	13.2	159° 05.8	57.3	86° 35.6	59.9	86° 35.6	59.9	Elath	278° 09.6	28° 37.1' N	285° 39.0	39.3	233° 35.8	5.7	14.7	4.3	59.8									
	08	7° 02.4	345° 34.2	53.4	281° 40.7	13.2	174° 08.4	57.3	101° 38.3	59.9	101° 38.3	59.9	Eltanin	90° 44.4	51° 29.3' S	300° 38.9	39.7	248° 00.5	5.8	10.4	4.3	50°									
	09	22° 04.9	0° 34.4	54.1	296° 41.4	13.3	189° 10.9	57.3	116° 40.9	59.9	116° 40.9	59.9	Enif	33° 44.4	9° 57.2' N	315° 38.8	40.1	262° 25.3	5.9	06.1	4.4	44°									
	10	37° 07.3	15° 34.7	54.8	311° 42.0	13.4	204° 13.5	57.3	131° 43.6	59.9	131° 43.6	59.9	Fomalhaut	15° 21.1	29° 31.7' S	330° 38.7	40.5	276° 50.2	5.9	01.7	4.6	59.7									
	11	52° 09.8	30° 34.9	55.5	326° 42.6	13.4	219° 16.0	57.2	146° 46.2	59.9	146° 46.2	59.9				345° 38.6	40.8	291° 15.1	6.0	17° 57.1' N	4.6										

2017 May 31, Jun. 1, 2 (Wed, Thur, Fri)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise				
31	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	-	-	-	08:20	10:14	12:00				
	01	248° 41' 0	225° 43' 6	7° 21' 9 N	162° 06' 1	24° 15' 7 N	55° 50' 0	3° 56' 5 S	343° 24' 3	21° 59' 8 S	Acamar	315° 16' 8	40° 14' 2 S	180° 35' 4	21° 54' 5 N	105° 37' 5	9' 3	13° 58' 6 N	8' 0	58' 3	N 70°	-	-	-	08:44	10:28	12:07						
	02	263° 43' 4	240° 43' 8	22' 6	177° 06' 7	15' 8	70° 52' 5	66' 5	358° 26' 9	59' 8	Achernar	335° 25' 3	57° 08' 9 S	195° 35' 3	54' 8	120° 05' 8	9' 3	50' 6	8' 1	68°	-	-	-	09:02	10:39	12:12							
	03	278° 45' 9	255° 44' 0	23' 3	192° 07' 3	15' 8	85° 55' 1	56' 4	13° 29' 6	59' 7	Acruz	173° 05' 9	63° 11' 0 S	210° 35' 2	55' 2	134° 34' 1	9' 4	42' 5	8' 2	58' 2	66°	-	-	01:12	09:17	10:48	12:17						
	04	293° 48' 3	270° 44' 2	24' 0	207° 08' 0	15' 9	100° 57' 6	56' 4	28° 32' 2	59' 7	Adhara	255° 10' 8	29° 00' 0 S	255° 35' 1	55' 5	149° 02' 5	9' 4	34' 3	8' 2	64°	-	-	01:58	09:29	10:56	12:20							
	05	308° 50' 8	285° 44' 4	24' 7	222° 08' 6	15' 9	116° 00' 1	56' 4	43° 34' 9	59' 7	Aldebaran	290° 46' 7	16° 32' 4 N	240° 35' 0	55' 9	163° 30' 9	9' 6	26' 1	8' 4	62°	-	-	02:27	09:39	11:02	12:23							
	06	323° 53' 3	300° 44' 6	25' 5	237° 09' 3	16' 0	131° 02' 7	56' 4	58° 37' 5	59' 7				255° 34' 9	56' 2	177° 59' 5	9' 6	17' 7	8' 3	58' 1	60°	-	01:26	02:49	09:48	11:08	12:26						
	07	338° 55' 7	315° 44' 9	26' 2	252° 09' 9	16' 0	146° 05' 2	56' 4	73° 40' 2	59' 7	Alioth	166° 18' 2	55° 52' 2 N	270° 34' 8	56' 6	192° 28' 1	9' 8	09' 4	8' 4	58' 0	N 58°	-	02:00	03:07	09:56	11:13	12:29						
	08	353° 58' 2	330° 45' 1	26' 9	267° 10' 5	16' 1	161° 07' 7	56' 4	88° 42' 8	59' 7	Alkaid	152° 56' 5	49° 13' 9 N	285° 34' 7	56' 9	206° 56' 9	9' 8	01' 0	8' 5	58' 0	56°	-	02:24	03:22	10:02	11:18	12:31						
	09	9° 00' 7	345° 45' 3	27' 6	282° 11' 2	16' 1	176° 10' 3	56' 3	103° 45' 5	59' 7	Alnair	27° 40' 4	46° 52' 3 S	300° 34' 6	57' 3	221° 25' 7	9' 9	12° 52' 5 N	8' 6	54°	01:18	02:44	03:35	10:08	11:21	12:33							
	10	24° 03' 1	0° 45' 5	28' 3	297° 11' 8	16' 2	191° 12' 8	56' 3	118° 48' 1	59' 7	Alnilam	275° 44' 0	1° 11' 7 S	315° 34' 5	57' 6	235° 54' 6	9' 9	43' 9	8' 6	52°	01:50	02:59	03:46	10:14	11:25	12:35							
	11	39° 05' 6	15° 45' 7	29' 1	312° 12' 4	16' 2	206° 15' 3	56' 3	133° 50' 8	59' 7	Alphard	217° 53' 6	8° 44' 2 S	330° 34' 4	58' 0	250° 23' 5	10' 1	35' 3	8' 6	57' 9	50°	02:13	03:13	03:56	10:18	11:28	12:36						
	12	54° 08' 1	30° 45' 9	29' 8	327° 13' 1	16' 3	221° 17' 9	56' 3	148° 53' 4	59' 7				345° 34' 3	58' 3	264° 52' 6	10' 2	26° 7' 9 N	8' 7	45°	02:53	03:40	04:17	10:29	11:35	12:40							
	13	69° 10' 5	45° 46' 1	7° 30' 5 N	342° 13' 7	24° 16' 3 N	236° 20' 4	3° 56' 3 S	163° 56' 1	21° 59' 7 S	Alphecca	126° 08' 4	26° 39' 6 N	0° 34' 3	21° 58' 7 N	279° 21' 8	10' 2	12° 17' 9 N	8' 8	57' 8	N 40°	03:21	04:01	04:33	10:38	11:41	12:43						
	14	84° 13' 0	60° 46' 3	31' 2	357° 14' 3	16' 4	251° 22' 9	56' 3	178° 58' 7	59' 7				15° 34' 2	59' 0	293° 51' 0	10' 3	09' 2	8' 9	35°	03:42	04:18	04:47	10:45	11:46	12:45							
	15	99° 15' 5	75° 46' 6	31' 9	12° 15' 0	16' 4	266° 25' 4	56' 2	194° 01' 4	59' 7	Altair	62° 05' 4	8° 54' 9 N	30° 34' 1	59' 4	308° 20' 3	10' 4	00' 3	8' 9	30°	04:00	04:32	04:59	10:52	11:51	12:47							
	16	114° 17' 9	90° 46' 8	32' 7	27° 15' 6	16' 5	281° 28' 0	56' 2	209° 04' 0	59' 7	Antares	353° 13' 3	42° 12' 6 S	45° 34' 0	59' 7	322° 49' 7	10' 4	11° 51' 4 N	8' 9	57' 2	20°	04:27	04:56	05:20	11:03	11:58	12:51						
	17	129° 20' 4	105° 47' 0	33' 4	42° 16' 2	16' 5	296° 30' 5	56' 2	224° 06' 7	59' 7				60° 33' 9	22° 00' 1 N	337° 19' 1	10' 6	42' 5	9' 0	N 10°	04:48	05:15	05:38	11:13	12:05	12:55							
	18	144° 22' 8	120° 47' 2	34' 1	57° 16' 9	16' 6	311° 33' 0	56' 2	239° 09' 3	59' 7				75° 33' 8	00' 4	351° 48' 7	10' 6	33' 5	9' 0	0°	05:06	05:32	05:54	11:22	12:11	12:58							
	19	159° 25' 3	135° 47' 4	34' 8	72° 17' 5	16' 6	326° 35' 6	56' 2	254° 12' 0	59' 7	Arcturus	145° 53' 1	19° 05' 7 N	90° 33' 7	12' 0	8° 18' 3	10' 7	24' 5	9' 1	57' 6	S 10°	05:22	05:48	06:11	11:31	12:18	13:01						
	20	174° 27' 8	150° 47' 6	35' 6	87° 18' 1	16' 7	341° 38' 1	56' 2	269° 14' 6	59' 7	Atria	107° 21' 4	69° 03' 3 S	105° 33' 6	01' 1	20° 48' 0	10' 8	15' 4	9' 1	20°	05:37	06:04	06:28	11:41	12:24	13:05							
	21	189° 30' 2	165° 47' 8	36' 3	102° 18' 8	16' 7	356° 40' 6	56' 1	284° 17' 3	59' 7	Avior	234° 17' 3	59° 34' 3 S	120° 33' 5	01' 4	35° 17' 8	10' 9	06' 3	9' 2	57' 5	30°	05:52	06:22	06:48	11:52	12:32	13:08						
	22	204° 32' 7	180° 48' 0	37' 0	117° 19' 4	16' 8	11° 43' 2	56' 1	299° 19' 9	59' 7	Bellatrix	278° 29' 5	6° 21' 7 N	135° 33' 4	01' 8	49° 47' 7	10' 9	10° 57' 1 N	9' 2	35°	06:00	06:31	06:59	11:58	12:36	13:11							
23	219° 35' 2	195° 48' 2	37' 7	132° 20' 0	16' 8	26° 45' 7	56' 1	314° 22' 6	59' 7	Betelgeuse	270° 58' 8	7° 24' 4 N	150° 33' 3	02' 1	64° 17' 6	11' 0	47' 9	9' 3	40°	06:09	06:42	07:12	12:06	12:41	13:13								
	234° 37' 6	210° 48' 4	38' 5	147° 20' 7	16' 9	41° 48' 2	56' 1	329° 25' 2	59' 7				165° 33' 2	02' 5	78° 47' 6	11' 1	38' 6	9' 3	57' 4	45°	06:18	06:55	07:28	12:14	12:47	13:16							
1	00	249° 40' 1	225° 48' 6	7° 39' 2 N	162° 21' 3	24° 16' 9 N	56° 50' 7	3° 56' 1 S	344° 27' 9	21° 59' 7 S	Canopus	263° 55' 5	52° 42' 6 S	180° 33' 1	22° 02' 8 N	93° 17' 7	11' 1	10° 29' 3 N	9' 3	57' 4	S 50°	06:29	07:10	07:47	12:24	12:54	13:20						
	01	264° 42' 6	240° 48' 8	39' 9	177° 21' 9	16' 9	57° 53' 3	56' 1	359° 30' 6	59' 6	Capella	280° 31' 0	46° 00' 7 N	195° 33' 0	03' 2	107° 47' 8	11' 3	20' 0	9' 4	52°	06:33	07:16	07:56	12:29	12:57	13:21							
	02	279° 45' 0	255° 49' 0	40' 6	192° 22' 6	17' 0	86° 55' 8	56' 1	14° 33' 2	59' 6	Deneb	49° 29' 4	45° 20' 4 N	210° 32' 9	03' 5	122° 18' 1	11' 3	10' 6	9' 5	57' 3	54°	06:39	07:24	08:06	12:34	13:00	13:23						
	03	294° 47' 5	270° 49' 2	41' 4	207° 23' 2	17' 0	101° 58' 3	56' 0	29° 35' 9	59' 6	Denebola	182° 30' 9	14° 28' 6 N	225° 32' 8	03' 8	136° 48' 4	11' 4	01' 1	9' 4	56°	06:44	07:32	08:18	12:40	13:04	13:25							
	04	309° 49' 9	285° 49' 4	42' 1	222° 23' 9	17' 1	117° 00' 8	56' 0	44° 38' 5	59' 6	Diphda	348° 53' 4	17° 53' 5 S	240° 32' 7	04' 2	151° 18' 8	11' 4	9° 51' 7 N	9' 6	58°	06:50	07:41	08:31	12:46	13:08	13:27							
	05	324° 52' 4	300° 49' 6	42' 8	237° 24' 5	17' 1	132° 03' 4	56' 0	59° 41' 2	59' 6				255° 32' 6	04' 5	165° 49' 2	11' 5	42' 1	9' 5	57' 2	S 60°	06:57	07:52	08:47	12:53	13:13	13:29						
	06	339° 54' 9	315° 49' 8	43' 5	252° 25' 1	17' 2	147° 05' 9	56' 0	74° 43' 8	59' 6	Dubhe	193° 48' 6	61° 39' 7 N	270° 32' 5	04' 8	180° 19' 7	11' 6	32' 6	9' 6	57' 1	S 62°	07:04	08:04	09:05	13:01	13:18	13:32						
	07	354° 57' 3	330° 50' 0	44' 3	267° 25' 8	17' 2	162° 08' 4	56' 0	89° 46' 5	59' 6	Elnath	278° 09' 6	28° 37' 1 N	285° 32' 5	05' 2	194° 50' 3	11' 7	23' 0	9' 6	57' 1													
	08	9° 59' 8	345° 50' 2	45' 0	282° 26' 4	17' 3	177° 11' 0	56' 0	104° 49' 1	59' 6	Eltanin	90° 44' 4	51° 29' 3 S	300° 32' 4	05' 5	203° 21' 0	11' 7	13' 4	9' 7														
	09	25° 02' 3	0° 50' 4	45' 7	297° 27' 0	17' 3	192° 13' 5	56' 0	119° 51' 8	59' 6	Enif	33° 44' 4	9° 57' 3 N	315° 32' 3	05' 8	223° 51' 7	11' 8	03' 7	9' 7														
	10	40° 04' 7	15° 50' 6	46' 5	312° 27' 7	17' 3	207° 16' 0	55' 9	134° 54' 4	59' 6	Fomalhaut	15° 21' 1	29° 31' 7 S	330° 32' 2	06' 2	238° 22' 5	11' 9	8° 54' 0 N	9' 7	57' 0													
	11	55° 07' 2	30° 50' 8	47' 2	327° 28' 3	17' 4	222° 18' 5	55' 9	149° 57' 1	59' 6				345° 32' 1	06' 5	252° 53' 4	11' 9	44' 3	9' 7														
	12	70° 09' 7	45° 51' 0	7° 47' 9 N	342° 28' 9	24° 17' 4 N	237° 21' 1																										

2017 June 3, 4, 5 (Sat, Sun, Mon)

GMT	ARIES			VENUS -4.3			MARS +1.7			JUPITER -2.2			SATURN +0.1			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	v	Dec	d	HP	Nautical	Civil		3	4		5		
Saturday	00	251° 38'.4	225° 57'.4	8° 14'.4 N	162° 51'.9	24° 18'.7 N	58° 51'.7	3° 55'.5 S	346° 35'.3	21° 59'.4 S	Acamar	315° 16'.7	40° 14'.2 S	180° 28'.4	22° 18'.4 N	70° 35'.4	13'.8	2° 29'.9 N	10'.3	55'.8	N 72°	-	-	-	13:42	15:21	17:00				
	01	266° 40'.8	240° 57'.6	15'.1	177° 52'.5	18'.7	73° 54'.3	55'.5	1° 37'.9	59'.4	Achernar	335° 25'.3	57° 08'.8 S	195° 28'.3	18'.7	85° 08'.2	13'.9	19'.6	10'.3	68°	N 70°	-	-	-	13:42	15:15	16:47				
	02	281° 43'.3	255° 57'.8	15'.8	192° 53'.1	18'.7	88° 56'.8	55'.5	16° 40'.6	59'.4	Acruz	173° 05'.9	63° 11'.0 S	210° 28'.2	19'.0	99° 41'.1	13'.9	99'.3	10'.3	66°	N 68°	-	-	00:58	13:42	15:06	16:28				
	03	296° 45'.8	270° 57'.9	16'.6	207° 53'.8	18'.8	103° 59'.1	55'.5	31° 43'.3	59'.4	Adhara	255° 10'.8	29° 00'.0 S	255° 28'.1	19'.3	114° 14'.0	13'.9	1° 59'.0 N	10'.4	55'.7	64°	N 66°	-	-	01:51	13:42	15:02	16:21			
	04	311° 48'.2	285° 58'.1	17'.3	222° 54'.4	18'.8	119° 01'.8	55'.5	46° 45'.9	59'.4	Aldebaran	290° 46'.7	16° 32'.4 N	240° 28'.0	19'.6	128° 46'.9	14'.0	48'.6	10'.3	62°	N 62°	-	-	02:22	13:42	14:59	16:15				
	05	326° 50'.7	300° 58'.3	18'.1	237° 55'.1	18'.8	134° 04'.3	55'.5	61° 48'.6	59'.4				255° 27'.9	19'.9	143° 19'.9	14'.0	38'.3	10'.3	60°	N 60°	-	01:17	02:45	13:42	14:56	16:09				
	06	341° 53'.2	315° 58'.4	18'.8	252° 55'.7	18'.8	149° 06'.8	55'.4	76° 51'.2	59'.4	Alioth	166° 18'.2	55° 52'.2 N	270° 27'.7	20'.2	157° 52'.9	14'.0	28'.0	10'.3	55'.6	N 58°	-	01:55	03:04	13:42	14:54	16:04				
	07	356° 55'.6	330° 58'.6	19'.5	267° 56'.3	18'.9	164° 09'.3	55'.4	91° 53'.9	59'.4	Alkaid	152° 56'.5	49° 13'.9 N	285° 27'.6	20'.5	172° 25'.9	14'.0	17'.7	10'.3	56°	N 56°	-	02:20	03:19	13:42	14:52	16:00				
	08	11° 58'.1	345° 58'.7	20'.3	282° 57'.0	18'.9	179° 11'.8	55'.4	106° 56'.5	59'.4	Alnair	27° 40'.4	46° 52'.3 S	300° 27'.4	20'.8	186° 58'.9	14'.1	07'.4	10'.3	54°	N 54°	01:10	02:40	03:32	13:42	14:50	15:57				
	09	27° 00'.5	0° 58'.9	21'.0	297° 57'.6	18'.9	194° 14'.4	55'.4	121° 59'.2	59'.4	Alnilam	275° 44'.0	1° 11'.7 S	315° 27'.4	21'.1	201° 32'.0	14'.1	0° 57'.1 N	10'.3	52°	N 52°	01:45	02:57	03:44	13:42	14:48	15:53				
	10	42° 03'.0	15° 59'.1	21'.8	312° 58'.2	18'.9	209° 16'.9	55'.4	137° 01'.8	59'.4	Alphard	217° 53'.6	8° 44'.2 S	330° 27'.3	21'.4	216° 05'.1	14'.2	46'.8	10'.3	50°	N 50°	02:09	03:57	04:54	13:42	14:47	15:50				
	11	57° 05'.5	30° 59'.2	22'.5	327° 58'.9	19'.0	224° 19'.4	55'.4	152° 04'.5	59'.4				345° 27'.2	21'.7	230° 38'.3	14'.2	36'.5	10'.3	55'.5	N 45°	02:50	03:38	04:15	13:42	14:43	15:44				
	12	72° 07'.9	45° 59'.4	8° 23'.3 N	342° 59'.5	24° 19'.0 N	239° 21'.9	3° 55'.4 S	167° 07'.2	21° 59'.4 S	Alphecca	126° 08'.4	26° 39'.6 N	0° 27'.1	22° 22'.0 N	245° 11'.5	14'.1	0° 26'.2 N	10'.3	55'.5	N 40°	03:19	04:00	04:32	13:42	14:41	15:38				
	13	87° 10'.4	60° 59'.5	24'.0	358° 00'.2	19'.0	254° 24'.4	55'.4	182° 09'.8	59'.4	Alpheratz	357° 40'.8	29° 10'.9 N	15° 27'.0	22'.3	259° 44'.6	14'.3	15'.9	10'.2	35°	N 35°	03:41	04:17	04:46	13:42	14:38	15:33				
	14	102° 12'.9	75° 59'.7	24'.7	13° 00'.8	19'.0	269° 26'.9	55'.4	197° 12'.5	59'.4	Altair	62° 05'.4	8° 54'.9 S	30° 26'.9	22'.6	274° 17'.9	14'.2	05'.7	10'.3	30°	N 30°	03:59	04:32	04:59	13:42	14:36	15:29				
	15	117° 15'.3	90° 59'.8	25'.5	28° 01'.4	19'.1	284° 29'.4	55'.4	212° 15'.1	59'.4	Ankaa	353° 13'.3	42° 12'.6 N	45° 26'.8	22'.9	288° 51'.1	14'.3	0° 04'.6 S	10'.3	55'.4	N 20°	04:27	04:55	05:20	13:43	14:33	15:22				
	16	132° 17'.8	106° 00'.0	26'.2	43° 02'.1	19'.1	299° 31'.9	55'.4	227° 17'.8	59'.4	Antares	112° 22'.6	26° 28'.1 S	60° 26'.7	23'.2	303° 24'.4	14'.3	14'.9	10'.2	2	N 10°	04:48	05:15	05:38	13:43	14:29	15:16				
	17	147° 20'.3	121° 00'.2	27'.0	58° 02'.7	19'.1	314° 34'.4	55'.4	242° 20'.4	59'.4				75° 26'.6	23'.5	317° 57'.7	14'.3	25'.1	10'.2	0°	N 0°	05:06	05:32	05:55	13:43	14:26	15:10				
	18	162° 22'.7	136° 00'.3	27'.7	73° 03'.4	19'.1	329° 36'.9	55'.3	257° 23'.1	59'.4	Arcturus	145° 53'.1	19° 05'.7 N	90° 26'.5	23'.8	332° 31'.0	14'.3	35'.3	10'.3	5	S 10°	05:23	05:49	06:11	13:43	14:24	15:04				
	19	177° 25'.2	151° 00'.5	28'.5	88° 04'.0	19'.1	344° 39'.5	55'.3	272° 25'.7	59'.4	Atira	107° 21'.4	69° 03'.3 S	105° 26'.4	24'.1	347° 00'.3	14'.4	45'.6	10'.2	55'.3	N 20°	05:38	06:05	06:29	13:43	14:20	14:58				
	20	192° 27'.7	166° 00'.6	29'.2	103° 04'.6	19'.2	359° 28'.4	55'.3	287° 28'.4	59'.4	Avior	234° 17'.3	59° 34'.3 S	120° 26'.4	24'.4	1° 37'.7	14'.4	55'.8	10'.2	5	N 30°	05:53	06:23	06:49	13:43	14:17	14:51				
	21	207° 30'.1	181° 00'.8	29'.9	118° 05'.3	19'.2	14° 44'.5	55'.3	302° 31'.1	59'.4	Bellatrix	278° 29'.5	6° 21'.7 N	135° 26'.2	24'.7	16° 11'.1	14'.4	1° 06'.0 S	10'.2	35°	N 35°	06:02	06:33	07:01	13:43	14:15	14:47				
	22	222° 32'.6	196° 00'.9	30'.7	133° 05'.9	19'.2	29° 47'.0	55'.3	317° 33'.7	59'.3	Betelgeuse	270° 58'.8	7° 24'.4 N	150° 26'.1	25'.0	30° 44'.5	14'.4	16'.2	10'.2	40°	N 40°	06:10	06:44	07:15	13:43	14:13	14:43				
23	237° 35'.0	211° 01'.1	31'.4	148° 06'.5	19'.2	44° 49'.5	55'.3	332° 36'.4	59'.3				165° 26'.0	25'.2	45° 17'.9	14'.4	26'.4	10'.1	55'.2	N 45°	06:20	06:57	07:30	13:43	14:10	14:37					
Sunday	00	252° 37'.5	226° 01'.2	8° 32'.2 N	163° 07'.2	24° 19'.2 N	59° 52'.0	3° 55'.3 S	347° 39'.0	21° 59'.3 S	Canopus	263° 55'.5	52° 42'.6 S	180° 25'.9	22° 25'.5 N	59° 51'.3	14'.5	1° 36'.5 S	10'.2	55'.2	S 50°	06:31	07:12	07:50	13:44	14:07	14:31				
	01	267° 40'.8	241° 01'.4	32'.9	178° 07'.8	19'.3	74° 54'.5	55'.3	2° 41'.7	59'.3	Capella	280° 31'.0	46° 00'.7 N	195° 25'.8	25'.8	74° 24'.8	14'.5	46'.7	10'.1	52°	S 52°	06:36	07:19	07:59	13:44	14:06	14:28				
	02	282° 42'.4	256° 01'.5	33'.7	193° 08'.5	19'.3	89° 57'.0	55'.3	17° 44'.3	59'.3	Deneb	49° 29'.3	45° 20'.4 N	210° 25'.6	26'.1	88° 58'.3	14'.4	56'.8	10'.1	54°	S 54°	06:41	07:27	08:10	13:44	14:04	14:25				
	03	297° 44'.9	271° 01'.7	34'.4	208° 09'.1	19'.3	104° 59'.5	55'.3	32° 47'.0	59'.3	Denebola	182° 30'.9	14° 28'.6 N	225° 25'.5	26'.4	103° 31'.7	14'.5	2° 06'.9 S	10'.1	55'.1	S 55°	06:47	07:35	08:22	13:44	14:03	14:22				
	04	312° 47'.4	286° 01'.8	35'.2	223° 09'.7	19'.3	120° 02'.0	55'.3	47° 49'.7	59'.3	Diphda	348° 53'.4	17° 53'.5 S	240° 25'.4	26'.7	118° 05'.2	14'.6	17'.0	10'.1	58°	S 58°	06:53	07:45	08:35	13:44	14:01	14:18				
	05	327° 49'.8	301° 02'.0	35'.9	238° 10'.4	19'.3	135° 04'.5	55'.3	62° 52'.3	59'.3				255° 25'.3	27'.0	132° 38'.8	14'.5	27'.1	10'.1	60°	S 60°	07:00	07:56	08:51	13:44	13:59	14:14				
	06	342° 52'.3	316° 02'.1	36'.7	253° 11'.0	19'.4	150° 07'.0	55'.3	77° 55'.0	59'.3	Dubhe	193° 48'.6	61° 39'.7 N	270° 25'.2	27'.3	147° 12'.3	14'.5	37'.2	10'.1	55'.0	S 62°	07:08	08:08	09:11	13:44	13:56	14:09				
	07	357° 54'.8	331° 02'.2	37'.4	268° 11'.7	19'.4	165° 09'.5	55'.3	92° 57'.6	59'.3	El Nath	278° 09'.6	28° 37'.1 N	285° 25'.1	27'.6	161° 45'.8	14'.6	47'.2	10'.1												
	08	12° 57'.2	346° 02'.4	38'.2	283° 12'.3	19'.4	180° 12'.0	55'.3	108° 00'.3	59'.3	Eltanin	90° 44'.4	51° 29'.3 S	300° 25'.0	27'.8	176° 19'.4	14'.5	57'.3	10'.1												
	09	27° 59'.7	1° 02'.5	38'.9	298° 12'.9	19'.4	195° 14'.5	55'.3	123° 02'.9	59'.3	Enif	33° 44'.4	9° 57'.3 N	315° 24'.9	28'.1	190° 52'.9	14'.6	3° 07'.3 S	10'.0												
	10	43° 02'.1	16° 02'.7	39'.6	313° 13'.6	19'.4	210° 17'.1	55'.3	138° 05'.6	59'.3	Fomalhaut	15° 21'.1	29° 31'.7 S	330° 24'.8	28'.4	205° 26'.5	14'.6	17'.3	9'.9												
	11	58° 04'.6	31° 02'.8	40'.4	328° 14'.2	19'.4	225° 19'.6	55'.2	153° 08'.2	59'.3				345° 24'.8	28'.7	220° 00'.1	14'.6	27'.2	10'.0												
	12	73° 07'.1	46° 03'.0	8° 41'.1 N	343° 14'.9	24° 19'.5 N	240° 22'.1	3° 55'.2 S	168° 10'.9	21° 59'.3 S	Gacrux	171° 57'.6	57° 12'.8 S	0° 24'.6	22° 29'.0 N	234° 33'.7	14'.6	3° 37'.2 S	9'.9	55'.0	N 70°	-	-	-	01:44	01:42	01:39				
	13	88° 09'.5	61° 03'.1	41'.9	358° 15'.5	19'.5	255° 24'.6	55'.2	183° 13'.6	59'.3	Genah	175° 49'.4	17° 38'.4 S	15° 24'.5	29'.3	249° 07'.3	14'.6	47'.1	9'.9	54'.9	N 68°	-	-	-	01:41	01:44	01:46				
	14	103° 12'.0	7																												

2017 June 6, 7, 8 (Tue, Wed, Thur)

GMT	ARIES			VENUS		MARS		JUPITER		SATURN		STARS			SUN		MOON				Lat	Twilight		Sunrise	Moonrise			
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d		HP	Nautical		Civil	6	7	8
Tuesday	00	254° 35.8	226° 07.5	9° 08.2 N	163° 37.9	24° 19.8 N	61° 52.0	3° 55.1 S	349° 46.6	21° 59.1 S	Acamar	315° 16.7	40° 14.2 S	180° 20.6	22° 38.7 N	38° 43.6	14.4	9° 16.6 S	8.8	54.4	N 72°	-	-	-	18:41	20:29	22:35	
	01	269° 38.2	241° 07.7	09.0	178° 38.6	19.8	76° 54.5	55.1	4° 49.2	59.1	Achernar	335° 25.3	57° 08.8 S	195° 20.5	39.0	53° 17.0	14.5	25.4	8.7	68°	N 70°	-	-	-	18:20	19:54	21:28	
	02	284° 40.7	256° 07.8	09.7	193° 39.2	19.8	91° 57.0	55.1	19° 51.9	59.1	Acruz	173° 05.9	63° 11.9 S	210° 20.4	39.2	67° 50.5	14.5	34.1	8.7	54.3	66°	-	-	00:44	17:49	19:10	20:27	
	03	299° 43.2	271° 07.9	10.5	208° 39.8	19.8	106° 59.5	55.1	34° 54.6	59.1	Adhara	255° 10.8	29° 00.0 S	225° 20.3	49.5	82° 24.0	14.4	42.8	8.7	64°	64°	-	-	01:44	17:38	18:54	20:07	
	04	314° 45.6	286° 08.0	11.2	223° 40.5	19.8	122° 02.0	55.1	49° 57.2	59.1	Aldebaran	290° 46.7	16° 32.4 N	240° 20.1	39.7	96° 57.4	14.4	51.5	8.6	62°	62°	-	-	02:18	17:29	18:42	19:51	
	05	329° 48.1	301° 08.1	12.0	238° 41.1	19.8	137° 04.5	55.1	64° 59.9	59.1				255° 20.0	40.0	111° 30.8	14.4	10° 00.1 S	8.5	60°	60°	-	01:09	02:42	17:21	18:31	19:38	
	06	344° 50.6	316° 08.2	12.7	253° 41.8	19.8	152° 07.0	55.1	80° 02.5	59.1	Alioth	166° 18.2	55° 52.3 N	270° 19.9	40.3	126° 04.2	14.4	08.6	8.6	56°	N 58°	-	01:50	03:01	17:14	18:22	19:26	
	07	359° 53.0	331° 08.3	13.5	268° 42.4	19.8	167° 09.4	55.1	95° 05.2	59.1	Alkaid	152° 56.5	49° 13.9 N	285° 19.8	40.5	140° 37.6	14.4	17.2	8.4	54°	54°	-	02:17	03:17	17:08	18:13	19:17	
	08	14° 55.5	346° 08.4	14.2	283° 43.1	19.8	182° 11.9	55.1	110° 07.8	59.1	Alnair	182° 11.9	46° 52.3 S	300° 19.7	40.8	155° 11.0	14.3	25.6	8.4	56°	56°	01:03	02:37	03:30	17:02	18:06	19:08	
	09	29° 58.0	1° 08.5	15.0	298° 43.7	19.8	197° 14.4	55.1	125° 10.5	59.1	Alnilam	275° 44.0	1° 11.7 S	315° 19.6	41.0	169° 44.3	14.4	34.0	8.4	52°	52°	01:41	02:54	03:42	16:57	18:00	19:00	
	10	45° 00.4	16° 08.7	15.8	313° 44.3	19.8	212° 16.9	55.1	140° 13.2	59.1	Alphard	217° 53.6	8° 44.2 S	330° 19.5	41.3	184° 17.7	14.3	42.4	8.3	50°	50°	02:06	03:03	03:52	16:53	17:54	18:53	
	11	60° 02.9	31° 08.8	16.5	328° 45.0	19.8	227° 19.4	55.2	155° 15.8	59.1				345° 19.4	41.5	198° 51.0	14.3	50.7	8.3	54.2	45°	45°	02:48	03:37	04:14	16:43	17:41	18:38
	12	75° 05.4	46° 08.9	19° 17.3 N	343° 45.6	24° 19.8 N	242° 21.9	3° 55.2 S	170° 18.5	21° 59.1 S	Alphecca	126° 08.4	26° 39.6 N	0° 19.2	22° 41.8 N	213° 24.3	14.3	10° 59.0 S	8.2	54.2	N 40°	40°	03:18	03:59	04:31	16:35	17:31	18:26
	13	90° 07.8	61° 09.0	18.0	358° 46.3	19.8	257° 24.4	55.2	185° 21.1	59.1				15° 19.1	42.0	227° 57.6	14.3	11° 07.2 S	8.2	56°	56°	03:40	04:16	04:46	16:28	17:22	18:15	
	14	105° 10.3	76° 09.1	18.8	13° 46.9	19.8	272° 26.9	55.2	200° 23.8	59.1	Altair	62° 05.4	8° 56.0 N	30° 19.0	42.3	242° 30.9	14.2	15.4	8.2	30°	30°	03:58	04:31	04:58	16:22	17:14	18:06	
	15	120° 12.7	91° 09.2	19.5	28° 47.6	19.8	287° 29.4	55.2	215° 26.5	59.1	Antaa	353° 13.3	42° 12.6 S	45° 18.9	42.5	257° 04.1	14.2	23.6	8.0	20°	20°	04:26	04:55	05:20	16:11	17:01	17:50	
	16	135° 15.2	106° 09.3	20.3	43° 48.2	19.8	302° 31.9	55.2	230° 29.1	59.1	Antares	112° 22.6	26° 28.1 S	60° 18.8	42.8	271° 37.3	14.2	31.6	8.1	10°	N 10°	04:48	05:15	05:38	16:02	16:49	17:37	
	17	150° 17.7	121° 09.4	21.1	58° 48.8	19.8	317° 34.3	55.2	245° 31.8	59.1				75° 18.7	43.0	286° 10.5	14.2	39.7	7.9	0°	0°	05:07	05:33	05:55	15:54	16:38	17:24	
	18	165° 20.1	136° 09.5	21.8	73° 49.5	19.8	332° 36.8	55.2	260° 34.4	59.0	Arcturus	145° 53.1	19° 05.7 N	90° 18.5	43.3	300° 43.7	14.2	47.6	8.0	50°	S 10°	05:23	05:49	06:12	15:45	16:28	17:11	
	19	180° 22.6	151° 09.6	22.6	88° 50.1	19.8	347° 39.3	55.2	275° 37.1	59.0	Atria	107° 21.4	69° 03.3 S	105° 18.4	43.5	315° 16.9	14.1	55.6	7.9	20°	20°	05:39	06:06	06:30	15:36	16:16	16:58	
	20	195° 25.1	166° 09.7	23.3	103° 50.8	19.8	2° 41.8	55.2	290° 39.8	59.0	Avior	234° 17.3	59° 34.3 S	120° 18.3	43.7	329° 50.0	14.2	12° 03.5 S	7.8	30°	30°	05:55	06:24	06:51	15:26	16:03	16:42	
	21	210° 27.5	181° 09.8	24.1	118° 51.4	19.8	17° 44.3	55.2	305° 42.4	59.0	Bellatrix	278° 29.5	6° 21.7 N	135° 18.2	44.0	344° 23.2	14.1	11.3	7.7	35°	35°	06:03	06:35	07:03	15:20	15:55	16:33	
	22	225° 30.0	196° 09.9	24.8	133° 52.1	19.8	32° 46.8	55.2	320° 45.1	59.0	Betelgeuse	270° 58.7	7° 24.4 N	150° 18.1	44.2	358° 56.3	14.1	19.0	7.8	54.1	40°	40°	06:12	06:46	07:16	15:14	15:47	16:23
23	240° 32.5	211° 10.0	25.6	148° 52.7	19.7	47° 49.3	55.2	335° 47.7	59.0				165° 18.0	44.5	13° 29.4	14.0	26.8	7.6	45°	45°	06:22	06:59	07:33	15:06	15:37	16:11		
Wednesday	00	255° 34.9	226° 10.1	9° 26.4 N	163° 53.3	24° 19.7 N	62° 51.8	3° 55.2 S	350° 50.4	21° 59.0 S	Canopus	263° 55.5	52° 42.6 S	180° 17.9	22° 44.7 N	28° 02.4	14.1	12° 34.4 S	7.6	54.1	S 50°	50°	06:33	07:14	07:53	14:57	15:25	15:57
	01	270° 37.4	241° 10.2	27.1	178° 54.0	19.7	77° 54.2	55.2	5° 53.1	59.0	Capella	280° 31.0	46° 00.7 N	195° 17.7	45.0	32° 35.5	14.0	42.0	7.6	52°	52°	06:38	07:22	08:02	14:52	15:19	15:50	
	02	285° 39.9	256° 10.3	27.9	193° 54.6	19.7	92° 56.7	55.2	20° 55.7	59.0	Deneb	49° 29.3	45° 20.4 N	210° 17.6	45.2	57° 08.5	14.0	49.6	7.5	54°	54°	06:44	07:29	08:13	14:48	15:13	15:43	
	03	300° 42.3	271° 10.4	28.6	208° 55.3	19.7	107° 59.2	55.2	35° 58.4	59.0	Denebola	182° 30.9	14° 28.6 N	225° 17.5	45.4	71° 41.5	13.9	57.1	7.4	56°	56°	06:49	07:38	08:25	14:43	15:06	15:35	
	04	315° 44.8	286° 10.5	29.4	223° 55.9	19.7	123° 01.7	55.2	51° 01.0	59.0	Diphda	348° 53.4	17° 53.5 S	240° 17.4	45.7	86° 14.4	14.0	13° 04.5 S	7.4	58°	58°	06:56	07:48	08:39	14:37	14:59	15:25	
	05	330° 47.2	301° 10.6	30.2	238° 56.6	19.7	138° 04.2	55.2	66° 03.7	59.0				255° 17.3	45.9	100° 47.4	13.9	11.9	7.3	60°	S 60°	07:03	07:59	08:55	14:30	14:50	15:15	
	06	345° 49.7	316° 10.7	30.9	253° 57.2	19.7	153° 06.7	55.2	81° 06.4	59.0	Dubhe	193° 48.6	61° 39.7 N	270° 17.2	46.2	115° 20.3	13.9	19.2	7.3	50°	S 62°	07:11	08:12	09:15	14:23	14:40	15:02	
	07	0° 52.2	331° 10.8	31.7	268° 57.8	19.7	168° 09.2	55.2	96° 09.0	59.0	El Nath	278° 09.6	28° 37.1 N	285° 17.0	46.4	129° 53.2	13.8	28.5	7.2	52°								
	08	15° 54.6	346° 10.9	32.4	283° 58.5	19.7	183° 11.6	55.2	111° 11.7	59.0	Eltanin	90° 44.4	51° 29.3 S	300° 16.9	46.6	144° 26.0	13.9	33.7	7.2	50°								
	09	30° 57.1	1° 10.9	33.2	298° 59.1	19.7	198° 14.1	55.2	126° 14.3	59.0	Enif	33° 44.4	9° 57.3 N	315° 16.8	46.9	158° 58.9	13.8	40.9	7.0	50°								
	10	45° 59.6	16° 11.0	34.0	313° 59.8	19.7	213° 16.6	55.2	141° 17.0	59.0	Fomalhaut	15° 21.1	29° 31.7 S	330° 16.7	47.1	173° 31.7	13.8	47.9	7.1	50°								
	11	61° 02.0	31° 11.1	34.7	329° 00.4	19.7	228° 19.1	55.2	156° 19.6	59.0				345° 16.6	47.3	188° 04.5	13.8	55.0	6.9	50°								
	12	76° 04.5	46° 11.2	35.5 N	344° 01.1	24° 19.6 N	243° 21.6	3° 55.2 S	171° 22.3	21° 59.0 S	Gacrux	171° 57.6	57° 12.8 S	0° 16.5	22° 47.6 N	202° 37.3	13.7	14° 01.9 S	7.0	54.1	N 72°	-	-	-	01:22	01:12	00:58	
	13	91° 07.0	61° 11.3	36.2	359° 01.7	19.6	258° 24.1	55.2	186° 25.0	59.0	Gienah	175° 49.4	17° 38.4 S	15° 16.3	47.8	217° 10.0	13.7	08.9	6.8	54.0	N 70°	-	-	-	01:37	01:35	01:34	
	14	106° 09.4	76° 11.4	37.0	14° 02.4	19.6	273° 26.5																					

2017 June 9, 10, 11 (Fri, Sat, Sun)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON				Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	9		10	11				
Friday	00	257° 33'.2	226° 14'.0	10° 02'.9 N	164° 24'.3	24° 19'.0 N	64° 50'.8	3° 55'.4 S	352° 58'.1	21° 58'.8 S	Acamar	315° 16'.7	40° 14'.2 S	180° 12'.2	22° 55'.5 N	5° 59'.4	12.8	17° 28'.4 S	4.4	54.0	N 72°	-	-	-	-	-	-				
	01	272° 35'.7	241° 14'.1	03.7	179° 24'.9	19.0	79° 53'.2	55.4	8° 00'.7	58.8	Achernar	335° 25'.2	57° 08'.8 S	195° 12'.0	55.7	20° 31'.2	12.7	32.8	4.3	68°	-	-	-	23:01	-	-	24:48				
	02	287° 38'.1	256° 14'.1	04.5	194° 25'.6	19.0	94° 55'.7	55.5	23° 03'.4	58.8	Acruz	173° 06'.0	63° 12'.0 S	210° 11'.9	55.9	35° 02'.9	12.8	37.1	4.2	66°	-	-	00:27	21:37	22:36	23:20					
	03	302° 40'.6	271° 14'.2	05.2	209° 26'.2	19.0	109° 58'.2	55.5	38° 06'.1	58.8	Adhara	255° 10'.8	29° 00'.0 S	225° 11'.8	56.1	49° 34'.7	12.7	41.3	4.2	64°	-	-	01:39	21:14	22:11	22:55					
	04	317° 43'.1	286° 14'.2	06.0	224° 26'.9	18.9	125° 00'.7	55.5	53° 08'.7	58.8	Aldebaran	290° 46'.6	16° 32'.4 N	240° 11'.7	56.3	64° 06'.4	12.7	45.5	4.0	62°	-	-	02:14	20:55	21:51	22:36					
	05	332° 45'.5	301° 14'.3	06.8	239° 27'.5	18.9	140° 03'.1	55.5	68° 11'.4	58.8				255° 11'.6	56.5	78° 38'.1	12.6	49.5	4.0	60°	-	01:02	02:39	20:40	21:35	22:20					
	06	347° 48'.0	316° 14'.4	07.5	254° 28'.2	18.9	155° 05'.6	55.5	83° 14'.0	58.8	Alioth	166° 18'.2	55° 52'.3 N	270° 11'.4	56.8	93° 09'.7	12.7	53.5	3.9	58°	-	01:46	02:59	20:27	21:21	22:07					
	07	2° 50'.5	331° 14'.4	08.3	269° 28'.8	18.9	170° 08'.1	55.5	98° 16'.7	58.8	Alkaid	152° 56'.6	49° 13'.9 N	285° 11'.3	57.0	107° 41'.4	12.6	57.4	3.9	56°	-	02:14	03:15	20:16	21:09	21:56					
	08	17° 52'.9	346° 14'.5	09.1	284° 29'.5	18.8	185° 10'.5	55.5	113° 19'.4	58.8	Alnair	27° 40'.3	46° 52'.3 S	300° 11'.2	57.2	122° 13'.0	12.6	18° 01'.3 S	3.7	54°	00:57	02:35	03:29	20:06	20:59	21:45					
	09	32° 55'.4	1° 14'.6	09.8	299° 30'.1	18.8	200° 13'.0	55.5	128° 22'.0	58.8	Alnilam	275° 44'.0	1° 11'.7 S	315° 11'.1	57.4	136° 44'.6	12.5	05.0	3.7	52°	01:37	02:52	03:41	19:57	20:50	21:36					
	10	47° 57'.8	16° 14'.6	10.6	314° 30'.8	18.8	215° 15'.5	55.5	143° 24'.7	58.8	Alphard	217° 53'.6	8° 44'.2 S	330° 11'.0	57.6	151° 16'.1	12.6	08.7	3.6	50°	02:03	03:07	03:51	19:49	20:41	21:28					
	11	63° 00'.3	31° 14'.7	11.4	329° 31'.4	18.8	230° 17'.9	55.5	158° 27'.3	58.8				345° 10'.8	57.8	165° 47'.7	12.5	12.3	3.5	45°	02:47	03:36	04:13	19:33	20:24	21:11					
	12	78° 02'.8	46° 14'.7	10° 12'.1 N	344° 32'.1	24° 18'.7 N	245° 20'.4	3° 55'.5 S	173° 30'.0	21° 58'.8 S	Alphecca	126° 08'.4	26° 39'.6 N	0° 10'.7	22° 58'.0 N	180° 19'.2	12.5	18° 15'.8 S	3.4	54.0	N 40°	03:17	03:58	04:31	19:19	20:10	20:57				
	13	93° 05'.2	61° 14'.8	12.9	359° 32'.7	18.7	260° 22'.9	55.6	188° 32'.7	58.7				15° 10'.6	58.2	194° 50'.7	12.5	19.2	3.4	35°	03:40	04:16	04:46	19:07	19:58	20:45					
	14	108° 07'.7	76° 14'.8	13.7	14° 33'.4	18.7	275° 25'.4	55.6	203° 35'.3	58.7	Altair	62° 05'.4	8° 15'.0 N	30° 10'.5	58.4	209° 22'.2	12.4	22.6	3.2	30°	03:58	04:31	04:58	18:57	19:47	20:35					
	15	123° 10'.2	91° 14'.9	14.4	29° 34'.0	18.7	290° 27'.8	55.6	218° 38'.0	58.7	Ankaa	353° 13'.3	42° 12'.6 S	45° 10'.3	58.6	223° 53'.6	12.4	25.8	3.2	20°	04:26	04:55	05:20	18:40	19:29	20:17					
	16	138° 12'.6	106° 14'.9	15.2	44° 34'.6	18.6	305° 30'.3	55.6	233° 40'.7	58.7	Antares	112° 22'.6	26° 28'.1 S	60° 10'.2	58.8	238° 25'.0	12.5	29.0	3.1	10°	04:49	05:16	05:39	18:25	19:13	20:01					
	17	153° 15'.1	121° 15'.0	16.0	59° 35'.3	18.6	320° 32'.8	55.6	248° 43'.3	58.7				75° 10'.1	59.0	252° 56'.5	12.3	32.1	3.0	0°	05:07	05:33	05:56	18:11	18:59	19:47					
	18	168° 17'.6	136° 15'.1	16.7	74° 35'.9	18.6	335° 35'.2	55.6	263° 46.0	58.7	Arcturus	145° 53'.1	19° 05'.7 N	90° 10'.0	59.1	267° 27.8	12.4	35.1	2.9	S 10°	05:24	05:50	06:13	17:57	18:44	19:32					
	19	183° 20'.0	151° 15'.1	17.5	89° 36'.6	18.5	350° 37'.7	55.6	278° 48'.6	58.7	Atria	107° 21'.4	69° 03'.3 S	105° 09'.8	59.3	281° 59'.2	12.3	38.0	2.9	20°	05:40	06:07	06:31	17:42	18:28	19:17					
	20	198° 22'.5	166° 15'.2	18.3	104° 37'.2	18.5	5° 40'.2	55.6	293° 51'.3	58.7	Avior	234° 17'.3	59° 34'.3 S	120° 09'.7	59.5	296° 30.5	12.4	40.9	2.7	30°	05:56	06:26	06:52	17:25	18:10	18:59					
	21	213° 24'.9	181° 15'.2	19.0	119° 37'.9	18.5	20° 42'.6	55.6	308° 54.0	58.7	Bellatrix	278° 29'.5	6° 21'.7 N	135° 09'.6	59.7	311° 01'.9	12.3	43.6	2.7	35°	06:04	06:36	07:04	17:15	18:00	18:48					
	22	228° 27'.4	196° 15'.3	19.8	134° 38'.5	18.5	35° 45'.1	55.7	323° 56'.6	58.7	Betelgeuse	270° 58'.7	7° 24'.4 N	150° 09'.5	59.9	325° 33'.2	12.3	46.3	2.6	40°	06:14	06:48	07:18	17:03	17:48	18:36					
23	243° 29'.9	211° 15'.3	20.6	149° 39'.2	18.4	50° 47'.6	55.7	338° 59'.3	58.7				165° 09'.4	23° 00'.1 N	340° 04'.5	12.2	48.9	2.5	45°	06:24	07:01	07:34	16:50	17:34	18:22						
Saturday	00	258° 32'.3	226° 15'.4	10° 21'.3 N	164° 39'.8	24° 18'.4 N	65° 50'.0	3° 55'.7 S	354° 01'.9	21° 58'.7 S	Canopus	263° 55'.5	52° 42'.6 S	180° 09'.2	23° 00'.3 N	354° 35'.7	12.3	18° 51'.4 S	2.4	54.0	S 50°	06:35	07:16	07:55	16:34	17:17	18:05				
	01	273° 34'.8	241° 15'.4	22.1	179° 24'.9	18.4	80° 52'.5	55.7	9° 04'.6	58.7	Capella	280° 31'.0	46° 00'.7 N	195° 09'.1	50.8	9° 07.0	12.2	53.8	2.3	52°	06:40	07:24	08:04	16:26	17:09	17:57					
	02	288° 37'.3	256° 15'.4	22.9	194° 41'.1	18.3	95° 55'.0	55.7	24° 07'.3	58.7	Deneb	49° 29'.3	45° 20'.5 N	210° 09'.0	00.7	23° 38'.2	12.2	56.1	2.3	54°	06:46	07:32	08:15	16:18	17:00	17:48					
	03	303° 39'.7	271° 15'.5	23.6	209° 41'.8	18.3	110° 57'.4	55.7	39° 09'.9	58.7	Denebola	182° 30'.9	14° 28'.6 N	225° 08'.9	00.9	38° 09'.4	12.2	58.4	2.1	56°	06:52	07:41	08:28	16:08	16:49	17:38					
	04	318° 42'.2	286° 15'.5	24.4	224° 42'.4	18.3	125° 59'.9	55.7	54° 12'.6	58.7	Diphda	348° 53'.4	17° 53'.5 S	240° 08'.7	01.1	52° 40'.6	12.1	19° 00'.5 S	2.1	58°	06:58	07:51	08:42	15:58	16:38	17:27					
	05	333° 44'.7	301° 15'.6	25.2	239° 43'.1	18.2	141° 02'.4	55.7	69° 15'.2	58.7				255° 08'.6	01.3	67° 11'.7	12.2	02.6	2.0	S 60°	07:06	08:02	08:59	15:45	16:24	17:13					
	06	348° 47'.1	316° 15'.6	25.9	254° 43'.7	18.2	156° 04'.8	55.7	84° 17.9	58.7	Dubhe	193° 48'.6	61° 39'.7 N	270° 08'.5	01.4	81° 42'.9	12.1	04.6	1.6	S 62°	07:14	08:15	09:19	15:31	16:09	16:57					
	07	3° 49'.6	331° 15'.7	26.7	269° 44'.4	18.2	171° 07'.3	55.8	99° 20'.6	58.7	Elmath	278° 09'.6	28° 37'.1 N	285° 08'.4	01.6	96° 14'.0	12.1	06.5	1.8												
	08	18° 52'.1	346° 15'.7	27.5	284° 45.0	18.1	186° 09'.7	55.8	114° 23'.2	58.7	Eltanin	90° 44'.4	51° 29'.3 S	300° 08'.2	01.8	110° 45.1	12.1	08.3	1.7												
	09	33° 54'.5	1° 15'.8	28.2	299° 45.7	18.1	201° 12'.2	55.8	129° 25.9	58.7	Enif	33° 44'.3	9° 57'.3 N	315° 08'.1	02.0	125° 16.2	12.1	10.0	1.6												
	10	48° 57'.0	16° 15'.8	29.0	314° 46'.3	18.1	216° 14'.7	55.8	144° 28'.6	58.7	Fomalhaut	15° 21'.0	29° 31'.6 S	330° 08'.0	02.2	139° 47.3	12.1	11.6	1.6	54.1											
	11	63° 59'.4	31° 15'.8	29.8	329° 47'.0	18.0	231° 17'.1	55.8	159° 31'.2	58.7				345° 07'.9	02.4	154° 18'.4	12.1	13.2	1.4												
	12	79° 01'.9	46° 15'.9	10° 30'.5 N	344° 47'.6	24° 18'.0 N	246° 19'.6	3° 55'.8 S	174° 33'.9	21° 58'.6 S	Gacrux	171° 57'.6	57° 12'.8 S	0° 07.7	23° 02'.6 N	168° 49'.5	12.0	19° 14'.6 S	1.4	54.1	N 72°	-	-	-	00:27	-	-				
	13	94° 04'.4	61° 15'.9	31.3	359° 48'.3	17.9	261° 22'.1	55.8	189° 36'.5	58.6	Genah	175° 49'.4	17° 38'.4 S	15° 07.6	02.7	183° 20'.5	12.0	16.0	1.3												
	14	109° 06'.8	76° 16'.0	32.1	14° 48'.9	17.9	276° 24'.5	55.8	204° 39'.2	58.6	Hadar	148° 43'.5	60° 27'.5 S	30° 07.5	02.9	197° 51'.5	12.0	17.3	1.1	68°	23:39	-	-	02:11	02:32	03:09					
	15	124° 09'.3	91° 16'.0	32.8	29° 49'.6	17.9	291° 27'.0	55.9	219° 41'.9	58.6	Hamal	327° 57'.9	23° 32'.4 N	45° 07.4	03.1	212° 2															

2017 June 12, 13, 14 (Mon, Tue, Wed)

GMT	ARIES			VENUS		MARS		JUPITER		SATURN		STARS			SUN		MOON				Lat	Twilight		Sunrise	Moonrise					
	GHA	Dec		GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d		HP	Nautical		Civil	12	13	14		
Monday	00	260° 30' 6"	226° 16' 9"	10° 58' 2" N	165° 11' 0"	24° 16' 5" N	67° 48' 0"	3° 56' 4" S	356° 09' 7"	21° 58' 5" S	356° 09' 7"	21° 58' 5" S	Acamar	315° 16' 7"	40° 14' 1" S	180° 03' 2"	23° 08' 7" N	331° 20' 8"	11' 8"	19° 06' 9" S	1' 9"	54' 4"	N 72°	-	-	-	-	02:19	01:35	
	01	275° 33' 1"	241° 16' 9"	59' 0"	180° 11' 7"	16' 4"	82° 50' 5"	56' 4"	11° 12' 4"	58' 5"	11° 12' 4"	58' 5"	Achernar	335° 25' 2"	57° 08' 8" S	195° 03' 1"	08' 8"	345° 51' 6"	11' 8"	05' 0"	2' 0"		N 70°	-	-	-	00:48	00:55	00:57	
	02	290° 35' 5"	256° 16' 9"	59' 7"	195° 12' 3"	16' 4"	97° 52' 9"	56' 4"	26° 15' 0"	58' 5"	26° 15' 0"	58' 5"	Acruz	173° 06' 0"	63° 12' 0" S	210° 02' 9"	09' 0"	0° 22' 4"	11' 8"	03' 0"	2' 1"		68°	-	-	-	-	23:49	-	00:09
	03	305° 38' 0"	271° 16' 9"	11° 00' 5" N	210° 13' 0"	16' 3"	112° 55' 4"	56' 4"	41° 17' 7"	58' 5"	41° 17' 7"	58' 5"	Adhara	255° 10' 8"	29° 00' 0" S	14° 53' 2"	11' 8"	00' 9"	2' 1"				64°	-	-	01:35	23:28	23:52	24:10	
	04	320° 40' 5"	286° 17' 0"	01' 3"	225° 13' 6"	16' 3"	127° 57' 8"	56' 4"	56° 20' 4"	58' 5"	56° 20' 4"	58' 5"	Aldebaran	290° 46' 6"	16° 32' 4" N	240° 02' 7"	09' 3"	29° 24' 0"	11' 8"	18° 58' 8" S	2' 3"		62°	-	-	02:11	23:11	23:38	23:59	
	05	335° 42' 9"	301° 17' 0"	02' 0"	240° 14' 3"	16' 2"	143° 00' 3"	56' 4"	71° 23' 0"	58' 5"	71° 23' 0"	58' 5"				255° 02' 5"	09' 5"	43° 54' 8"	11' 8"	56' 5"	2' 3"		60°	-	00:56	02:37	22:57	23:27	23:50	
	06	350° 45' 4"	316° 17' 0"	02' 8"	255° 14' 9"	16' 2"	158° 02' 8"	56' 5"	86° 25' 7"	58' 5"	86° 25' 7"	58' 5"	Alioth	166° 18' 2"	55° 52' 3" N	270° 02' 4"	09' 6"	58° 25' 6"	11' 8"	54' 2"	2' 5"	54' 5"	N 58°	-	01:43	02:57	22:45	23:17	23:42	
	07	5° 47' 9"	331° 17' 0"	03' 6"	270° 15' 6"	16' 1"	173° 05' 2"	56' 5"	101° 28' 3"	58' 5"	101° 28' 3"	58' 5"	Alkaid	152° 56' 6"	49° 13' 9" N	285° 02' 3"	09' 8"	72° 56' 4"	11' 8"	51' 7"	2' 5"		56°	-	02:12	03:14	22:35	23:08	23:35	
	08	20° 50' 3"	346° 17' 0"	04' 3"	285° 16' 3"	16' 1"	188° 07' 6"	56' 5"	116° 31' 0"	58' 5"	116° 31' 0"	58' 5"	Alnair	27° 40' 3"	46° 52' 3" S	300° 02' 0"	09' 9"	87° 27' 2"	11' 8"	49' 2"	2' 6"		54°	00:51	02:34	03:28	22:26	23:00	23:29	
	09	35° 52' 8"	1° 17' 0"	05' 1"	300° 16' 9"	16' 0"	203° 10' 1"	56' 5"	131° 33' 7"	58' 4"	131° 33' 7"	58' 4"	Alnilam	275° 44' 0"	1° 11' 7" S	315° 02' 0"	10' 1"	101° 58' 0"	11' 8"	46' 6"	2' 7"		52°	01:34	02:51	03:40	22:17	22:53	23:24	
	10	50° 55' 3"	16° 17' 0"	05' 9"	315° 17' 6"	16' 0"	218° 12' 5"	56' 5"	146° 36' 3"	58' 4"	146° 36' 3"	58' 4"	Alphard	217° 53' 6"	8° 44' 2" S	330° 01' 9"	10' 2"	116° 28' 8"	11' 8"	43' 9"	2' 8"		50°	02:01	03:05	03:50	22:10	22:46	23:18	
	11	65° 57' 7"	31° 17' 0"	06' 6"	330° 18' 2"	15' 9"	233° 15' 0"	56' 6"	161° 39' 0"	58' 4"	161° 39' 0"	58' 4"				345° 01' 8"	10' 4"	130° 59' 6"	11' 8"	41' 1"	2' 9"		45°	02:46	03:35	04:13	21:54	22:33	23:07	
	12	81° 00' 2"	46° 17' 0"	11° 07' 4" N	345° 18' 9"	24° 15' 9" N	248° 17' 4"	3° 56' 6" S	176° 41' 7"	21° 58' 4" S	176° 41' 7"	21° 58' 4" S	Alphecca	126° 08' 4"	26° 39' 6" N	0° 01' 6"	23° 10' 5" N	145° 30' 4"	11' 8"	18° 38' 2" S	3' 0"	54' 5"	N 40°	03:16	03:58	04:31	21:41	22:21	22:58	
	13	96° 02' 7"	61° 17' 0"	08' 2"	40° 19' 5"	15' 8"	263° 19' 9"	56' 6"	191° 44' 3"	58' 4"	191° 44' 3"	58' 4"	Alpheratz	357° 40' 7"	29° 11' 0" N	15° 01' 5"	10' 7"	160° 01' 2"	11' 9"	35' 2"	3' 0"		35°	03:39	04:16	04:45	21:30	22:11	22:50	
	14	111° 05' 1"	76° 17' 0"	08' 9"	15° 20' 2"	15' 8"	278° 22' 3"	56' 6"	206° 47' 0"	58' 4"	206° 47' 0"	58' 4"	Altair	62° 05' 3"	8° 55' 0" N	30° 01' 4"	10' 8"	174° 32' 1"	11' 8"	32' 2"	3' 2"	54' 6"	30°	03:58	04:31	04:58	21:20	22:03	22:43	
	15	126° 07' 6"	91° 17' 0"	09' 7"	30° 20' 8"	15' 7"	293° 24' 8"	56' 6"	221° 49' 6"	58' 4"	221° 49' 6"	58' 4"	Antaa	353° 13' 2"	42° 12' 6" S	45° 03' 1"	11' 0"	189° 02' 9"	11' 8"	29' 0"	3' 2"		20°	04:27	04:56	05:20	21:03	21:48	22:31	
	16	141° 10' 0"	106° 17' 1"	10' 5"	45° 21' 5"	15' 7"	308° 27' 2"	56' 6"	236° 52' 3"	58' 4"	236° 52' 3"	58' 4"	Antares	112° 22' 6"	26° 28' 1" S	60° 01' 1"	11' 1"	203° 33' 7"	11' 9"	25' 8"	3' 3"		N 10°	04:49	05:16	05:39	20:49	21:35	22:21	
	17	156° 12' 5"	121° 17' 1"	11' 3"	60° 22' 1"	15' 6"	323° 29' 7"	56' 7"	251° 55' 0"	58' 4"	251° 55' 0"	58' 4"				75° 01' 0"	11' 3"	218° 04' 6"	11' 8"	22' 5"	3' 4"		0°	05:08	05:34	05:56	20:35	21:23	22:11	
	18	171° 15' 0"	136° 17' 1"	12' 0"	75° 22' 8"	15' 5"	338° 32' 1"	56' 7"	266° 57' 6"	58' 4"	266° 57' 6"	58' 4"	Arcturus	145° 53' 1"	19° 05' 7" N	90° 00' 9"	11' 4"	232° 35' 4"	11' 9"	19' 1"	3' 6"		S 10°	05:25	05:51	06:14	20:21	21:11	22:01	
	19	186° 17' 4"	151° 17' 1"	12' 8"	90° 23' 4"	15' 5"	353° 34' 6"	56' 7"	282° 00' 3"	58' 4"	282° 00' 3"	58' 4"	Avior	107° 21' 4"	69° 03' 3" S	105° 00' 7"	11' 5"	247° 06' 3"	11' 8"	15' 5"	3' 5"		20°	05:41	06:08	06:32	20:07	20:58	21:50	
	20	201° 19' 9"	166° 17' 1"	13' 6"	105° 24' 1"	15' 4"	8° 37' 0"	56' 7"	297° 03' 0"	58' 4"	8° 37' 0"	58' 4"	Atria	234° 17' 3"	59° 34' 2" S	120° 00' 6"	11' 7"	261° 31' 7"	11' 9"	12' 0"	3' 7"		30°	05:57	06:27	06:53	19:50	20:43	21:38	
	21	216° 22' 4"	181° 17' 1"	14' 3"	120° 24' 7"	15' 4"	23° 39' 5"	56' 7"	312° 05' 6"	58' 4"	312° 05' 6"	58' 4"	Bellatrix	278° 29' 5"	6° 21' 7" N	135° 00' 5"	11' 8"	276° 08' 0"	11' 9"	08' 3"	3' 8"	54' 7"	35°	06:06	06:37	07:05	19:40	20:34	21:31	
	22	231° 24' 8"	196° 17' 1"	15' 1"	135° 25' 4"	15' 3"	38° 41' 9"	56' 8"	327° 08' 3"	58' 4"	327° 08' 3"	58' 4"	Betelgeuse	270° 58' 7"	7° 24' 4" N	150° 04' 2"	12' 0"	290° 38' 9"	11' 9"	04' 5"	3' 8"		40°	06:15	06:49	07:19	19:29	20:25	21:23	
23	246° 27' 3"	211° 17' 1"	15' 9"	150° 26' 0"	15' 3"	53° 44' 4"	56' 8"	342° 10' 9"	58' 4"	342° 10' 9"	58' 4"				165° 00' 2"	12' 1"	305° 09' 8"	11' 9"	00' 7"	4' 0"		45°	06:25	07:02	07:36	19:16	20:13	21:13		
Tuesday	00	261° 29' 8"	226° 17' 1"	11° 16' 6" N	165° 26' 7"	24° 15' 2" N	68° 46' 8"	3° 56' 8" S	357° 13' 6"	21° 58' 4" S	357° 13' 6"	21° 58' 4" S	Canopus	263° 55' 5"	52° 42' 5" S	180° 00' 1"	23° 12' 3" N	319° 40' 7"	11' 9"	17° 56' 7" S	4' 0"	54' 7"	S 50°	06:37	07:18	07:57	19:00	19:59	21:02	
	01	276° 32' 2"	241° 17' 1"	17' 4"	180° 27' 4"	15' 2"	83° 49' 3"	56' 8"	12° 16' 3"	58' 4"	12° 16' 3"	58' 4"	Capella	280° 30' 9"	46° 00' 7" N	195° 00' 0"	12' 4"	334° 11' 6"	11' 9"	52' 7"	4' 1"		52°	06:42	07:26	08:06	18:52	19:52	20:57	
	02	291° 34' 7"	256° 17' 1"	18' 2"	195° 28' 0"	15' 1"	98° 51' 7"	56' 8"	27° 18' 9"	58' 4"	27° 18' 9"	58' 4"	Deneb	49° 29' 3"	45° 20' 5" N	209° 59' 8"	12' 5"	348° 42' 5"	11' 9"	48' 6"	4' 2"		54°	06:48	07:34	08:17	18:44	19:45	20:51	
	03	306° 37' 2"	271° 17' 1"	18' 9"	210° 28' 7"	15' 0"	113° 54' 1"	56' 9"	42° 21' 6"	58' 4"	42° 21' 6"	58' 4"	Denebola	182° 30' 9"	14° 28' 6" N	224° 59' 7"	12' 7"	3° 13' 4"	11' 9"	44' 4"	4' 3"	54' 8"	56°	06:54	07:43	08:30	18:34	19:37	20:44	
	04	321° 39' 6"	286° 17' 1"	19' 7"	225° 29' 3"	15' 0"	128° 58' 6"	56' 9"	57° 24' 3"	58' 4"	57° 24' 3"	58' 4"	Diphda	348° 53' 3"	17° 53' 5" S	239° 59' 6"	12' 8"	17° 44' 3"	11' 9"	40' 1"	4' 4"		58°	07:00	07:53	08:40	18:24	19:28	20:37	
	05	336° 42' 1"	301° 17' 1"	20' 5"	240° 30' 0"	14' 9"	143° 59' 0"	56' 9"	72° 26' 9"	58' 4"	72° 26' 9"	58' 4"				254° 59' 4"	12' 9"	32° 15' 2"	12' 0"	35' 7"	4' 4"		S 60°	07:08	08:04	09:02	18:11	19:17	20:29	
	06	351° 44' 5"	316° 17' 1"	21' 3"	255° 30' 6"	14' 9"	159° 01' 5"	56' 9"	87° 29' 6"	58' 4"	87° 29' 6"	58' 4"	Dubhe	193° 48' 7"	61° 39' 7" N	269° 59' 3"	13' 1"	46° 46' 2"	11' 9"	31' 3"	4' 6"		S 62°	07:16	08:18	09:23	17:57	19:05	20:19	
	07	6° 47' 0"	331° 17' 1"	22' 0"	270° 31' 3"	14' 8"	174° 03' 9"	57' 0"	102° 32' 2"	58' 3"	102° 32' 2"	58' 3"	Elnath	278° 09' 6"	28° 37' 1" N	284° 59' 2"	13' 2"	61° 17' 1"	12' 0"	28' 7"	4' 6"									
	08	21° 49' 5"	346° 17' 1"	22' 8"	285° 31' 9"	14' 7"	189° 06' 4"	57' 0"	117° 34' 9"	58' 3"	117° 34' 9"	58' 3"	Eltanin	90° 44' 4"	51° 29' 3" S	299° 59' 1"	13' 4"	75° 48' 1"	12' 0"	22' 1"	4' 7"									
	09	36° 51' 9"	1° 17' 1"	23' 6"	300° 32' 6"	14' 7"	204° 08' 8"	57' 0"	132° 37' 6"	58' 3"	132° 37' 6"	58' 3"	Enif	33° 44' 3"	9° 5															

2017 June 15, 16, 17 (Thur, Fri, Sat)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																										Nautical	Civil		15	16	17
Thurs day	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	-	-	-	01:20	01:09	01:00		
	01	263° 28.0	226° 16.3	11° 53.5' N	165° 58.2	24° 12.1' N	70° 43.8	3° 57.9' S	359° 21.4	21° 58.2' S	Acamar	315° 16.7	40° 14.1' S	179° 53.8	23° 18.2' N	296° 34.9	12.3	13° 11.5' S	7.8	55.7	N 70°	-	-	-	00:56	00:54	00:52				
	02	278° 30.5	241° 16.3	54.3	180° 58.8	12.0	85° 46.3	57.9	14° 24.1	58.2	Achernar	335° 25.2	57° 08.8' S	194° 53.7	18.3	311° 06.2	12.4	03.7	7.9	68°	N 68°	-	-	-	00:37	00:42	00:45				
	03	293° 33.0	256° 16.2	55.1	195° 59.5	11.9	100° 48.7	58.0	29° 26.7	58.2	Acruz	173° 06.0	63° 12.0' S	209° 53.5	18.4	325° 37.6	12.4	12° 55.8' S	7.9	66°	N 66°	-	-	-	00:22	00:32	00:40				
	04	308° 35.4	271° 16.2	55.8	211° 00.2	11.9	115° 51.1	58.0	44° 29.4	58.2	Adhara	255° 10.8	29° 00.0' S	224° 53.4	18.5	340° 09.0	12.3	47.9	8.0	55.8	N 64°	-	-	01:32	00:10	00:25					
	05	323° 37.9	286° 16.2	56.6	226° 00.8	11.8	130° 53.6	58.0	59° 32.1	58.2	Aldebaran	290° 46.6	16° 32.4' N	239° 53.3	18.6	354° 40.3	12.4	39.9	8.1	62°	N 62°	-	-	02:10	-	00:16					
	06	338° 40.4	301° 16.1	57.4	241° 01.5	11.7	145° 56.0	58.0	74° 34.7	58.1										60°	N 60°	-	00:52	02:36	-	00:10	00:27				
	07	353° 42.8	316° 16.1	58.1	256° 02.1	11.6	160° 58.4	58.1	89° 37.4	58.1	Alioth	166° 18.2	55° 52.3' N	269° 53.0	18.8	23° 43.1	12.4	23.7	8.2	58.0	N 58°	-	01:41	02:56	-	00:04	00:24				
	08	3° 45.3	331° 16.1	58.9	271° 02.8	11.6	176° 00.8	58.1	104° 40.1	58.1	Alkaid	152° 56.6	49° 13.9' N	284° 52.9	18.9	38° 14.5	12.4	15.5	8.2	55.9	N 56°	-	02:11	03:13	23:59	-	00:21				
	09	23° 47.8	346° 16.0	59.7	286° 03.4	11.5	191° 03.3	58.1	119° 42.7	58.1	Alnair	27° 40.2	46° 52.3' S	299° 57.4	19.0	52° 45.9	12.4	07.3	8.4	54°	N 54°	00:47	02:33	03:27	23:55	-	00:19				
	10	38° 50.2	1° 16.0	12° 00.4' N	301° 04.1	11.4	206° 05.7	58.1	134° 45.4	58.1	Alnilam	275° 44.0	1° 11.7' S	314° 52.6	19.1	67° 17.3	12.4	11° 58.9' S	8.4	52°	N 52°	01:33	02:51	03:39	23:51	-	00:16				
	11	53° 52.7	16° 15.9	01.2	311° 08.4	11.3	221° 08.1	58.2	149° 48.1	58.1	Alphard	217° 53.6	8° 44.2' S	329° 52.5	19.2	81° 48.7	12.5	50.5	8.4	50°	N 50°	02:00	03:06	03:50	23:47	-	00:14				
	12	68° 55.1	31° 15.9	02.0	331° 05.4	11.3	236° 10.6	58.2	164° 50.7	58.1										45°	N 45°	02:46	03:35	04:13	23:39	-	00:10				
	13	83° 57.6	46° 15.9	12° 02.7' N	346° 06.1	24° 11.2' N	251° 13.0	3° 58.2' S	179° 53.4	21° 58.1' S	Alphecca	126° 08.4	26° 39.6' N	359° 52.2	23° 19.4' N	110° 51.6	12.4	42.1	8.6	56.0	N 40°	03:16	03:58	04:31	23:33	-	00:06				
	14	99° 00.1	61° 15.8	03.5	1° 06.7	11.1	266° 15.4	58.3	194° 56.0	58.1	Alpheratz	357° 40.7	29° 11.0' N	14° 52.1	19.5	125° 23.0	12.4	25.0	8.6	35°	N 35°	03:39	04:16	04:46	23:27	-	00:02				
	15	114° 02.5	76° 15.8	04.3	16° 07.4	11.0	281° 17.8	58.3	209° 58.7	58.1	Altair	62° 05.3	8° 55.0' N	29° 51.9	19.6	139° 54.4	12.4	16.4	8.7	30°	N 30°	03:58	04:31	04:59	23:22	23:59	24:37				
	16	129° 05.0	91° 15.7	05.0	31° 08.1	10.9	296° 20.3	58.3	225° 01.4	58.1	Antaa	353° 13.2	42° 12.6' S	44° 51.8	19.7	154° 25.8	12.5	07.7	8.8	56.1	N 20°	04:27	04:56	05:21	23:13	23:54	24:35				
	17	144° 07.5	106° 15.7	05.8	46° 08.7	10.9	311° 22.7	58.3	240° 04.0	58.1	Antares	112° 22.6	26° 28.1' S	59° 51.7	19.8	168° 57.3	12.4	10° 58.9' S	8.8	58.0	N 10°	04:49	05:16	05:40	23:05	23:50	24:34				
	18	159° 09.9	121° 15.7	06.6	61° 09.4	10.8	326° 25.1	58.4	255° 06.7	58.1										0°	N 0°	05:08	05:35	05:57	22:58	23:45	24:33				
	19	174° 12.4	136° 15.6	07.3	76° 10.0	10.7	341° 27.6	58.4	270° 09.4	58.1	Arcturus	145° 53.1	19° 05.7' N	89° 51.4	20.0	198° 00.1	12.5	41.2	9.0	56.2	S 10°	05:25	05:52	06:14	22:51	23:41	24:32				
	20	189° 14.9	151° 15.6	08.1	91° 10.7	10.6	356° 30.0	58.4	285° 12.0	58.1	Atria	107° 21.4	69° 03.4' S	104° 51.2	20.1	212° 31.6	12.4	32.2	9.0	20°	N 20°	05:41	06:09	06:33	22:43	23:36	24:31				
	21	204° 17.3	166° 15.5	08.9	106° 11.4	10.6	11° 32.4	58.4	300° 14.7	58.1	Avior	234° 17.4	59° 34.2' S	119° 51.1	20.2	227° 03.0	12.4	23.2	9.0	30°	N 30°	05:58	06:28	06:54	22:34	23:31	24:30				
	22	219° 19.8	181° 15.5	09.6	121° 12.0	10.5	26° 34.8	58.5	315° 17.3	58.1	Bellatrix	278° 29.5	6° 21.7' N	134° 51.0	20.3	241° 34.4	12.5	14.2	9.1	35°	N 35°	06:07	06:38	07:06	22:29	23:28	24:29				
23	234° 22.3	196° 15.4	10.4	136° 12.7	10.4	41° 37.3	58.5	330° 20.0	58.1	Betelgeuse	270° 58.7	7° 24.4' N	149° 50.8	20.3	256° 05.9	12.4	05.1	9.2	56.3	N 40°	06:16	06:50	07:21	22:23	23:25	24:29					
	249° 24.7	211° 15.4	11.2	151° 13.3	10.3	56° 39.7	58.5	345° 22.7	58.1										45°	N 45°	06:26	07:04	07:37	22:16	23:21	24:28					
Fri day	00	264° 27.2	226° 15.3	12° 11.9' N	166° 14.0	24° 10.2' N	71° 42.1	3° 58.6' S	0° 25.3	21° 58.1' S	Canopus	263° 55.5	52° 42.5' S	179° 50.6	23° 20.5' N	285° 08.7	12.5	9° 46.7' S	9.3	56.3	S 50°	06:38	07:20	07:58	22:08	23:16	24:27				
	01	279° 29.6	241° 15.3	12.7	181° 14.7	10.1	86° 44.5	58.6	15° 28.0	58.1	Capella	280° 30.9	46° 00.7' N	194° 50.4	20.6	299° 40.2	12.4	37.4	9.4	56.4	S 52°	06:43	07:27	08:08	22:04	23:14	24:26				
	02	294° 32.1	256° 15.2	13.5	196° 15.3	10.1	101° 47.0	58.6	30° 30.7	58.1	Deneb	49° 29.3	45° 20.5' N	209° 50.3	20.7	314° 11.6	12.4	28.0	9.4	54°	N 54°	06:49	07:35	08:19	22:00	23:11	24:26				
	03	309° 34.6	271° 15.2	14.2	211° 16.0	10.0	116° 49.4	58.6	45° 33.3	58.0	Denebola	182° 30.9	14° 28.6' N	224° 50.0	20.9	328° 43.0	12.4	18.6	9.4	56°	N 56°	06:55	07:44	08:32	21:55	23:09	24:25				
	04	324° 37.0	286° 15.1	15.0	226° 16.6	09.9	131° 51.8	58.7	60° 36.0	58.0	Diphda	348° 53.3	17° 53.5' S	239° 50.0	20.9	343° 14.4	12.5	09.2	9.5	58°	N 58°	07:02	07:54	08:46	21:50	23:06	24:24				
	05	339° 39.5	301° 15.1	15.8	241° 17.3	09.8	146° 54.2	58.7	75° 38.6	58.0										56.5	S 60°	07:09	08:06	09:04	21:44	23:03	24:24				
	06	354° 42.0	316° 15.0	16.5	256° 18.0	09.7	161° 56.6	58.7	90° 41.3	58.0	Dubhe	193° 48.7	61° 39.7' N	269° 49.8	21.0	12° 17.3	12.4	50.1	9.6	56.6	S 62°	07:18	08:20	09:25	21:37	22:59	24:23				
	07	9° 44.4	331° 15.0	17.3	271° 18.6	09.6	176° 59.1	58.8	105° 44.0	58.0	Elath	278° 09.6	28° 37.1' N	284° 49.6	21.1	26° 48.7	12.4	40.5	9.7	56.6	N 56°										
	08	24° 46.9	346° 14.9	18.0	286° 19.3	09.6	192° 01.5	58.8	120° 46.6	58.0	Eltanin	90° 44.3	51° 29.4' N	299° 49.5	21.2	41° 20.1	12.4	30.8	9.7	56.6	N 56°										
	09	39° 49.4	1° 14.9	18.8	301° 19.9	09.5	207° 03.9	58.8	135° 49.3	58.0	Enif	33° 44.3	9° 57.3' N	314° 49.4	21.3	55° 51.5	12.3	21.1	9.7	56.6	N 56°										
	10	54° 51.8	16° 14.8	19.6	316° 20.6	09.4	222° 06.3	58.9	150° 52.0	58.0	Fomalhaut	15° 21.0	29° 31.6' S	329° 49.2	21.4	70° 22.8	12.4	11.4	9.8	56.7	N 56°										
	11	69° 54.3	31° 14.8	20.3	331° 21.3	09.3	237° 08.8	58.9	165° 54.6	58.0											56.7	N 56°									
	12	84° 56.7	46° 14.7	12° 21.1' N	346° 21.9	24° 09.2' N	252° 11.2	3° 58.9' S	180° 57.3	21° 58.0' S	Gacrux	171° 57.6	57° 12.8' S	359° 49.0	23° 21.5' N	99° 25.6	12.4	7° 51.7' S	9.9	56.7	N 56°										
	13	99° 59.2	61° 14.7	21.9	1° 22.6	09.1	267° 13.6	58.9	196° 00.0	58.0	Genah	175° 49.5	17° 38.4' S	14° 48.8	21.6	113° 57.0	12.3	41.8	10.0	56.8	N 68°	-	-	-	08:03	09:43	11:23				
	14	115° 01.7	76° 14.6	22.6	16° 23.2	09.1	282° 16.0	58.9	211°																						

2017 June 18, 19, 20 (Sun, Mon, Tue)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical		Civil	18		19	20	
Sunday	00	266° 25.5	226° 12.3	12° 48.6 N	166° 45.8	24° 05.9 N	73° 38.2	4° 00.1 S	2° 33.2	21° 57.9 S	Acamar	315° 16.7	40° 14.1 S	179° 44.1	23° 24.0 N	262° 03.9	11.6	1° 29.6 S	11.2	57.9	N 72°	-	-	-	00:52	00:43	00:35				
	01	281° 27.9	241° 12.2	49.3	181° 46.4	05.8	88° 40.6	00.1	17° 35.8	57.8	Achernar	335° 25.1	57° 08.8 S	194° 44.0	24.0	276° 34.5	11.6	18.4	11.2	68°	-	-	-	00:50	00:48	00:46					
	02	296° 30.4	256° 12.1	50.1	196° 47.1	05.7	103° 43.0	00.1	32° 38.5	57.8	Acruz	173° 06.0	63° 12.0 S	209° 43.8	24.1	291° 05.1	11.5	07.2	11.3	58.0	66°	-	-	-	00:47	00:54	01:02				
	03	311° 32.8	271° 12.0	50.8	211° 47.8	05.6	118° 45.4	00.2	47° 41.1	57.8	Adhara	255° 10.8	29° 00.0 S	224° 43.7	24.1	305° 35.6	11.5	0° 55.9 S	11.2	64°	-	-	01:31	00:46	00:56	01:08					
	04	326° 35.3	286° 12.0	51.6	226° 48.4	05.5	133° 47.8	00.2	62° 43.8	57.8	Aldebaran	290° 46.6	16° 32.4 N	239° 43.5	24.2	320° 06.1	11.4	44.7	11.3	58.1	62°	-	-	02:09	00:45	00:58	01:14				
	05	341° 37.8	301° 11.9	52.4	241° 49.1	05.4	148° 50.2	00.2	77° 46.5	57.8				253° 43.4	24.2	334° 36.5	11.4	33.4	11.3	60°	-	00:49	02:36	00:44	01:00	01:19					
	06	356° 40.2	316° 11.8	53.1	256° 49.8	05.3	163° 52.6	00.3	92° 49.1	57.8	Alioth	166° 18.3	55° 52.3 N	269° 43.3	24.3	349° 06.9	11.4	22.1	11.3	58.2	N 58°	-	01:40	02:56	00:43	01:02	01:23				
	07	1° 42.7	331° 11.7	53.9	271° 50.4	05.2	178° 55.0	00.3	107° 51.8	57.8	Alkaid	152° 56.6	49° 13.9 N	284° 43.1	24.3	3° 37.3	11.3	10.8	11.3	58.2	56°	-	02:10	03:13	00:42	01:03	01:27				
	08	26° 45.2	346° 11.6	54.6	286° 51.1	05.1	193° 57.4	00.4	122° 54.5	57.8	Alnair	270° 40.2	46° 52.3 S	299° 43.0	24.4	8° 07.6	11.3	0° 00.5 N	11.3	54°	00:45	02:36	03:27	00:42	01:05	01:30					
	09	41° 47.6	1° 11.5	55.4	301° 51.8	05.0	208° 59.8	00.4	137° 57.1	57.8	Alnilam	275° 44.0	1° 11.7 S	314° 42.9	24.4	32° 37.9	11.3	11.8	11.4	52°	01:32	02:51	03:39	00:41	01:06	01:33					
	10	56° 50.1	16° 11.5	56.2	316° 52.4	04.9	224° 02.2	00.4	152° 59.8	57.8	Alphard	217° 53.6	8° 44.2 S	329° 42.7	24.5	47° 08.2	11.2	23.2	11.3	58.3	50°	02:00	03:06	03:50	00:40	01:07	01:36				
	11	71° 52.6	31° 11.4	56.9	331° 53.1	04.8	239° 04.7	00.5	168° 02.4	57.8				344° 42.6	24.5	61° 38.4	11.1	34.5	11.4	45°	02:46	03:35	04:13	00:39	01:10	01:42					
	12	86° 55.0	46° 11.3	57.7 N	346° 53.8	24° 04.7 N	254° 07.1	4° 00.5 S	183° 05.1	21° 57.8 S	Alphecca	126° 08.4	26° 39.6 N	359° 42.5	23° 24.6 N	76° 08.5	11.2	0° 45.9 N	11.4	58.3	N 40°	03:16	03:58	04:31	00:38	01:12	01:47				
	13	101° 57.5	61° 11.2	58.4	361° 09.5	04.6	269° 09.5	00.5	198° 07.8	57.8	Alpheratz	269° 40.7	29° 11.0 N	14° 42.3	24.6	90° 38.7	11.0	57.3	11.4	58.4	35°	03:40	04:16	04:46	00:37	01:14	01:52				
	14	117° 00.0	76° 11.1	59.2	376° 15.1	04.5	284° 11.9	00.6	213° 10.4	57.8	Altair	62° 05.3	8° 55.0 S	29° 42.2	24.7	105° 08.7	11.1	1° 08.7 N	11.4	30°	03:58	04:32	04:59	00:37	01:15	01:56					
	15	132° 02.4	91° 11.0	13° 00.0 N	391° 20.5	04.4	299° 14.3	00.6	228° 13.1	57.8	Ankaa	353° 13.2	42° 12.5 N	44° 42.0	24.7	119° 38.8	10.9	20.1	11.4	58.5	20°	04:27	04:57	05:21	00:35	01:18	02:03				
	16	147° 04.9	106° 10.9	00.7	46° 56.4	04.3	314° 16.7	00.6	243° 15.8	57.8	Antares	112° 22.6	26° 28.1 S	59° 41.9	24.8	134° 08.7	11.0	31.5	11.4	59.0	N 10°	04:50	05:17	05:40	00:34	01:21	02:09				
	17	162° 07.3	121° 10.8	01.5	61° 57.1	04.2	329° 19.1	00.7	258° 18.4	57.8				74° 41.8	24.8	148° 38.7	10.9	42.9	11.4	0°	05:09	05:35	05:58	00:33	01:23	02:15					
	18	177° 09.8	136° 10.8	02.2	76° 57.8	04.1	344° 21.5	00.7	273° 21.1	57.8	Arcturus	145° 53.1	19° 05.7 N	89° 41.6	24.8	163° 08.6	10.8	54.3	11.4	58.6	S 10°	05:26	05:52	06:15	00:32	01:25	02:21				
	19	192° 12.3	151° 10.7	03.0	91° 58.4	04.0	359° 23.9	00.7	288° 23.7	57.8	Atira	107° 21.4	69° 03.4 S	104° 41.5	24.9	177° 38.4	10.8	2° 05.7 N	11.5	20°	05:42	06:10	06:34	00:31	01:28	02:27					
	20	207° 14.7	166° 10.6	03.7	106° 59.1	03.9	374° 26.9	00.8	303° 26.4	57.8	Avior	234° 17.4	59° 34.2 S	119° 41.4	24.9	192° 08.2	10.7	17.2	11.4	30°	05:59	06:29	06:55	00:30	01:31	02:34					
	21	222° 17.2	181° 10.5	04.5	121° 59.8	03.8	389° 28.7	00.8	318° 29.1	57.8	Bellatrix	278° 29.5	6° 21.7 N	134° 41.2	25.0	206° 37.9	10.7	28.6	11.4	58.7	35°	06:07	06:39	07:07	00:29	01:33	02:39				
	22	237° 19.7	196° 10.4	05.3	137° 00.4	03.7	403° 31.7	00.9	333° 31.7	57.8	Betelgeuse	270° 58.7	7° 24.4 N	149° 41.1	25.0	221° 07.6	10.6	40.0	11.4	40°	06:17	06:51	07:22	00:29	01:35	02:43					
23	252° 22.1	211° 10.3	06.0	152° 01.1	03.6	418° 34.4	00.9	348° 34.4	57.7				164° 41.0	25.0	235° 37.2	10.6	51.4	11.5	45°	06:27	07:04	07:38	00:28	01:37	02:49						
Monday	00	267° 24.6	226° 10.2	13° 06.8 N	167° 01.8	24° 03.5 N	74° 35.9	4° 00.9 S	3° 37.1	21° 57.7 S	Canopus	263° 55.5	52° 42.5 S	179° 40.8	23° 25.1 N	250° 06.8	10.5	3° 02.9 N	11.4	58.8	S 50°	06:39	07:21	07:59	00:27	01:40	02:56				
	01	282° 27.1	241° 10.1	07.5	182° 02.4	03.4	89° 38.3	01.0	18° 39.7	57.7	Capella	280° 30.9	46° 00.6 N	194° 40.7	25.1	264° 36.3	10.5	14.3	11.4	52°	06:44	07:28	08:09	00:26	01:41	02:59					
	02	297° 29.5	256° 10.0	08.3	197° 03.1	03.2	104° 40.7	01.0	33° 42.4	57.7	Deneb	49° 29.2	45° 20.5 N	209° 40.5	25.2	279° 05.8	10.4	25.7	11.4	58.9	54°	06:50	07:36	08:20	00:26	01:43	03:02				
	03	312° 32.0	271° 09.9	09.0	212° 03.8	03.1	119° 43.1	01.0	48° 45.0	57.7	Denebola	182° 30.9	14° 28.6 N	224° 40.4	25.2	293° 35.2	10.4	37.1	11.4	56°	06:56	07:45	08:33	00:25	01:44	03:06					
	04	327° 34.4	286° 09.8	09.8	227° 04.4	03.0	134° 45.5	01.1	63° 47.7	57.7	Diphda	348° 53.3	17° 53.5 S	239° 40.3	25.2	308° 04.6	10.3	48.5	11.5	58°	07:03	07:56	08:48	00:24	01:46	03:10					
	05	342° 36.9	301° 09.7	10.6	242° 05.1	02.9	149° 48.0	01.1	78° 50.4	57.7				254° 40.1	25.3	322° 33.9	10.2	00.0	11.4	59.0	S 60°	07:10	08:07	09:05	00:24	01:48	03:15				
	06	357° 39.4	316° 09.6	11.3	257° 05.8	02.8	164° 50.2	01.2	93° 53.0	57.7	Dubhe	193° 48.7	61° 39.7 N	269° 40.0	25.3	337° 03.1	10.2	4° 11.4 N	11.3	59.1	S 62°	07:19	08:21	09:27	00:23	01:50	03:21				
	07	12° 41.8	331° 09.5	12.1	272° 06.4	02.7	179° 52.8	01.2	108° 55.7	57.7	Elath	278° 09.6	28° 37.1 N	284° 39.9	25.3	351° 32.3	10.2	22.7	11.4												
	08	27° 44.3	346° 09.4	12.8	287° 07.1	02.6	194° 55.2	01.2	123° 58.4	57.7	Eltanin	90° 44.3	51° 29.4 N	299° 39.7	25.4	6° 01.5	10.0	34.1	11.4												
	09	42° 46.8	1° 09.3	13.6	302° 07.8	02.5	209° 57.6	01.3	139° 01.0	57.7	Enif	33° 44.3	9° 57.3 N	314° 39.6	25.4	20° 30.5	10.0	45.5	11.4												
	10	57° 49.2	16° 09.2	14.3	317° 08.4	02.4	225° 00.0	01.3	154° 03.7	57.7	Fomalhaut	15° 21.0	29° 31.6 S	329° 39.5	25.4	34° 59.0	10.0	56.9	11.3												
	11	72° 51.7	31° 09.1	15.1	332° 09.1	02.3	240° 02.4	01.3	169° 06.3	57.7				344° 39.3	25.5	49° 28.5	9.9	5° 08.2 N	11.3	59.2	N 72°	-	-	-	13:08	15:03	17:05				
	12	87° 54.2	46° 09.0	13° 15.8 N	347° 09.8	24° 02.2 N	255° 04.8	4° 01.4 S	184° 09.0	21° 57.7 S	Gacrux	171° 57.7	57° 12.8 S	359° 39.2	23° 25.5 N	63° 57.4	9.8	5° 19.5 N	11.3	59.2	N 70°	-	-	-	13:07	14:54	16:47				
	13	102° 56.6	61° 08.9	16.6	2° 10.4	02.1	270° 07.2	01.4	199° 11.7	57.7	Genah	175° 49.5	17° 38.4 S	14° 39.0	25.5	78° 26.2	9.8	30.8	11.3	68°	-	-	-	13:06	14:47	16:33					
	14	117° 59.1	76° 08.8	17.4	17° 11.1	01.9	285° 09.6	01.5	214° 14.3	57.7	Hadar	148° 43.6	60° 27.5 S	29° 38.9	25.5																

2017 June 21, 22, 23 (Wed, Thur, Fri)

GMT	ARIES			VENUS		MARS		JUPITER		SATURN		STARS			SUN		MOON				Lat	Twilight		Sunrise	MOONRISE		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d		HP	Nautical		Civil	21	22
21 e d a y	00	269° 22.9	226° 04.9	13° 42.9 N	167° 33.9	23° 58.0 N	76° 31.0	4° 02.9 S	5° 44.8	21° 57.5 S	Acamar	315° 16.6	40° 14.1 S	179° 34.3	23° 26.1 N	224° 30.9	7.2	11° 46.4 N	9.8	60.4	N 72°	-	-	-	00:25	00:45	00:49
	01	284° 25.3	241° 04.8	43.7	182° 34.5	57.8	91° 33.4	02.9	20° 47.5	57.5	Achernar	335° 25.1	57° 08.8 S	194° 34.1	26.1	238° 57.1	7.1	56.2	9.8	68°	-	-	-	00:45	01:00	01:27	
	02	299° 27.8	256° 04.6	44.4	197° 35.2	57.7	106° 35.8	02.9	35° 50.2	57.5	Acruz	173° 06.1	63° 12.0 S	209° 34.0	26.1	253° 23.2	7.0	12° 06.0 N	9.7	66°	-	-	-	01:13	01:29	01:54	
	03	314° 30.3	271° 04.5	45.1	212° 35.9	57.6	121° 38.2	03.0	50° 52.8	57.5	Adhara	255° 10.8	29° 00.0 S	224° 34.8	26.1	267° 49.2	7.0	15.7	9.6	60.5	64°	-	-	01:31	01:23	02:15	
	04	329° 32.7	286° 04.4	45.9	227° 36.6	57.5	136° 40.6	03.0	65° 55.5	57.5	Aldebaran	290° 46.6	16° 32.4 N	239° 33.7	26.1	282° 15.2	6.9	25.3	9.6	62°	-	-	02:10	01:33	02:32		
	05	344° 35.2	301° 04.3	46.6	242° 37.2	57.4	151° 43.0	03.1	80° 58.1	57.5				254° 33.6	26.1	296° 41.1	6.8	34.9	9.5	60°	-	00:50	02:36	01:40	02:08	02:46	
	06	359° 37.7	316° 04.1	47.4	257° 37.9	57.2	166° 45.3	03.1	96° 00.8	57.5	Alioth	166° 18.3	55° 52.3 N	269° 33.4	26.1	311° 06.9	6.7	44.4	9.4	58°	-	01:41	02:57	01:47	02:18	02:58	
	07	14° 40.1	331° 04.0	48.1	272° 38.6	57.1	181° 47.7	03.2	111° 03.5	57.5	Alkaid	152° 56.6	49° 13.9 N	284° 33.3	26.1	325° 32.6	6.6	53.8	9.3	60.6	56°	-	02:11	03:13	01:53	02:26	03:08
	08	29° 42.6	346° 03.9	48.9	287° 39.2	57.0	196° 50.1	03.2	126° 06.1	57.5	Alkaid	27° 40.2	46° 52.3 S	299° 33.2	26.1	339° 58.2	6.6	13° 03.1 N	9.3	54°	00:45	02:11	03:28	01:59	02:34	03:18	
	09	44° 45.0	1° 03.7	49.6	302° 39.9	56.9	211° 52.5	03.2	141° 08.8	57.5	Alnilam	275° 44.0	1° 11.7 S	314° 33.0	26.1	354° 23.8	6.5	12.4	9.1	52°	01:33	02:51	03:40	02:04	02:41	03:26	
	10	59° 47.5	16° 03.6	50.4	317° 40.6	56.7	226° 54.9	03.3	156° 11.4	57.5	Alphard	217° 53.6	8° 44.2 S	339° 32.9	26.1	379° 43.3	6.4	21.5	9.1	50°	02:01	03:06	03:51	02:09	02:47	03:33	
	11	74° 50.0	31° 03.5	51.1	332° 41.3	56.6	241° 57.3	03.3	171° 14.1	57.5				344° 32.7	26.1	23° 14.7	6.3	30.6	9.0	60.7	45°	02:46	03:36	04:14	02:18	03:00	03:49
	12	89° 52.4	46° 03.3	51.9 N	347° 41.9	56.5 N	256° 59.7	4° 03.4 S	186° 16.8	21° 57.5 S	Alphecca	126° 08.4	26° 39.6 N	359° 32.6	23° 26.0 N	37° 40.0	6.3	13° 39.6 N	9.0	60.7	N 40°	03:17	03:59	04:32	02:27	03:11	04:02
	13	104° 54.9	61° 03.2	52.6	2° 42.6	56.3	272° 02.1	03.4	201° 19.4	57.5				14° 32.5	26.0	57.5	26.0	48.6	8.8	35°	03:40	04:17	04:47	02:34	03:21	04:14	
	14	119° 57.4	76° 03.1	53.4	17° 43.3	56.2	287° 04.4	03.5	216° 22.1	57.5	Altair	62° 05.3	8° 15.0 S	29° 32.3	26.0	66° 30.4	6.1	57.4	8.7	30°	03:59	04:32	05:00	02:40	03:29	04:23	
	15	134° 59.8	91° 02.9	54.1	32° 44.0	56.1	302° 06.8	03.5	231° 24.8	57.5	Antaa	353° 13.2	42° 12.5 S	44° 32.2	26.0	80° 55.5	6.1	14° 06.1 N	8.7	20°	04:28	04:57	05:22	02:51	03:43	04:40	
	16	150° 02.3	106° 02.8	54.8	47° 44.6	56.0	317° 09.2	03.6	246° 27.4	57.5	Antares	112° 22.6	26° 28.1 S	59° 32.1	26.0	95° 20.6	5.9	14.8	8.6	60.8	N 10°	04:51	05:18	05:41	03:01	03:56	04:55
	17	165° 04.8	121° 02.7	55.6	62° 45.3	55.8	332° 11.6	03.6	261° 30.1	57.5				74° 31.9	26.0	109° 45.5	5.9	23.4	8.5	0°	05:10	05:36	05:58	03:10	04:08	05:09	
	18	180° 07.2	136° 02.5	56.3	77° 46.0	55.7	347° 14.0	03.6	276° 32.7	57.5	Arcturus	145° 53.1	19° 05.8 N	89° 31.8	26.0	124° 10.4	5.7	31.9	8.3	S 10°	05:27	05:53	06:16	03:19	04:20	05:23	
	19	195° 09.7	151° 02.4	57.1	92° 46.7	55.6	2° 16.4	03.7	291° 35.4	57.4	Atria	107° 21.4	69° 03.4 S	104° 31.7	26.0	138° 35.1	5.8	40.2	8.2	20°	05:43	06:10	06:34	03:29	04:33	05:38	
	20	210° 12.2	166° 02.3	57.8	107° 47.3	55.5	17° 47.3	03.7	306° 38.1	57.4	Avior	234° 17.4	59° 34.2 S	119° 31.5	26.0	152° 59.9	5.6	48.5	8.0	60.9	30°	05:59	06:29	06:56	03:40	04:48	05:56
	21	225° 14.6	181° 02.1	58.6	122° 48.0	55.3	32° 21.1	03.8	321° 40.7	57.4	Bellatrix	278° 29.4	6° 21.7 N	134° 31.4	26.0	167° 24.5	5.6	56.7	8.1	35°	06:08	06:40	07:08	03:47	04:56	06:06	
	22	240° 17.1	196° 02.0	59.3	137° 48.7	55.2	47° 23.5	03.8	336° 43.4	57.4	Betelgeuse	270° 58.7	7° 24.4 N	149° 31.2	26.0	181° 49.1	5.4	15° 04.8 N	8.0	40°	06:18	06:52	07:22	03:54	05:06	06:17	
23	255° 19.5	211° 01.8	14° 00.1 N	152° 49.3	55.1	62° 25.9	03.9	351° 46.0	57.4				164° 31.1	25.9	196° 13.5	5.5	12.8	7.9	45°	06:28	07:05	07:39	04:03	05:18	06:31		
22 T h u r s d a y	00	270° 22.0	226° 01.7	14° 00.8 N	167° 50.0	23° 54.9 N	77° 28.3	4° 03.9 S	6° 48.7	21° 57.5 S	Canopus	263° 55.5	52° 42.5 S	179° 31.0	23° 25.9 N	210° 38.0	5.3	15° 20.7 N	7.8	60.9	S 50°	06:40	07:21	08:00	04:14	05:32	06:48
	01	285° 24.5	241° 01.6	01.5	182° 50.7	54.8	92° 30.7	04.0	21° 51.4	57.4	Capella	280° 30.9	46° 00.6 N	194° 30.8	25.9	225° 02.3	5.3	28.5	7.7	52°	06:45	07:29	08:10	04:19	05:39	06:55	
	02	300° 26.9	256° 01.4	02.3	197° 51.4	54.7	107° 33.1	04.0	36° 54.0	57.4	Deneb	49° 29.2	45° 20.5 N	209° 30.7	25.9	239° 26.6	5.2	36.2	7.6	61.0	54°	06:51	07:37	08:21	04:24	05:46	07:04
	03	315° 29.4	271° 01.3	03.0	212° 52.0	54.5	122° 35.5	04.1	51° 56.7	57.4	Denebola	182° 31.0	14° 28.6 N	224° 30.6	25.9	253° 50.8	5.1	43.8	7.5	56°	06:57	07:46	08:34	04:30	05:54	07:14	
	04	330° 31.9	286° 01.1	03.8	227° 52.7	54.4	137° 37.8	04.1	66° 59.3	57.4	Diphda	348° 53.3	17° 53.4 S	239° 30.4	25.9	268° 14.9	5.1	51.3	7.3	58°	07:04	07:56	08:48	04:37	06:04	07:25	
	05	345° 34.3	301° 01.0	04.5	242° 53.4	54.3	152° 40.2	04.1	82° 02.0	57.4				254° 30.3	25.8	282° 39.0	5.0	58.6	7.3	S 60°	07:11	08:08	09:06	04:45	06:14	07:38	
	06	0° 36.8	316° 00.8	05.3	257° 54.1	54.1	167° 42.6	04.2	97° 04.7	57.4	Dubhe	193° 48.7	61° 39.7 N	269° 30.1	25.8	297° 03.0	4.9	16° 05.9 N	7.2	61.1	S 62°	07:20	08:22	09:28	04:54	06:27	07:54
	07	15° 39.3	331° 00.7	06.0	272° 54.7	54.0	182° 45.0	04.2	112° 07.3	57.4	Elnath	278° 09.6	28° 37.1 N	284° 30.0	25.8	311° 26.9	4.8	13.1	7.0								
	08	30° 41.7	346° 00.5	06.7	287° 55.4	53.9	197° 47.4	04.3	127° 10.0	57.4	Eltanin	90° 44.3	51° 29.4 N	299° 29.9	25.8	325° 50.7	4.8	20.1	6.9	61.1							
	09	45° 44.2	1° 00.4	07.5	302° 56.1	53.7	212° 49.7	04.3	142° 12.7	57.4	Enif	33° 44.3	9° 57.3 N	314° 29.7	25.8	340° 14.5	4.7	27.0	6.8								
	10	60° 46.7	16° 00.3	08.2	317° 56.8	53.6	227° 52.1	04.4	157° 15.3	57.4	Fomalhaut	15° 20.9	29° 31.6 S	329° 29.6	25.8	354° 38.2	4.7	33.8	6.7								
	11	75° 49.1	31° 00.1	09.0	332° 57.4	53.5	242° 54.5	04.4	172° 18.0	57.4				344° 29.5	25.7	9° 01.9	4.6	40.5	6.6								
	12	90° 51.6	46° 00.0	14° 09.7 N	347° 58.1	53.3 N	257° 56.9	4° 04.5 S	187° 20.6	21° 57.4 S	Gacrux	171° 57.7	57° 12.8 S	359° 29.3	23° 25.7 N	23° 25.5	4.5	16° 47.1 N	6.5	61.1	N 72°	-	-	-	19:18	22:00	-
	13	105° 54.0	60° 59.8	10.4	2° 58.8	53.2	272° 59.3	04.5	202° 23.3	57.4	Gienah	175° 49.5	17° 38.4 S	14° 29.2	25.7	37° 49.0	4.5	53.6	6.3	61.1	N 70°	-	-	-	18:46	20:48	22:39
	14	120° 56.5	75° 59.7	11.2	17° 59.5	53.1	288° 01.6	04.6	217° 26.0	57.4	Hadar	148° 43.6	60° 27.5 S	29° 29.1	25.7	52° 12.5	4.4	59.9	6.2	68°	-	-	-	18:22	20:10	21:45	
	15	135° 59.0	90° 59.5	11.9	33° 00.1	52.9	303° 04.0																				

2017 June 24, 25, 26 (Sat, Sun, Mon)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise			
																								Nautical		Civil	24		25	26		
24 S a t u r d a y	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	-	-	-	-	-	03:02
	272° 20.3	225° 54.2	14° 36.2 N	168° 22.5	23° 48.3 N	79° 22.4	4° 06.2 S	8° 56.4	21° 57.2 S	Acamar	315° 16.6	40° 14.1 S	179° 24.4	23° 24.4 N	181° 04.3	3.3	19° 17.0 N	1.6	61.2	N 70°	-	-	-	-	-	-	-	-	01:09	02:18	04:08	
	01	287° 22.8	240° 54.0	36.9	183° 23.2	48.1	94° 24.8	06.3	23° 59.1	57.2	Achernar	335° 25.1	57° 08.7 S	194° 24.3	24.4	195° 26.6	3.3	18.6	1.4	68°	-	-	-	-	-	-	-	-	02:04	03:11	04:44	
	02	302° 25.2	255° 53.9	37.6	198° 23.9	48.0	109° 27.1	06.3	39° 01.7	57.2	Acruz	173° 06.1	63° 12.0 S	209° 24.2	24.3	209° 48.9	3.3	20.0	1.3	66°	-	-	-	-	-	-	-	02:37	03:44	05:10		
	03	317° 27.7	270° 53.7	38.4	213° 24.5	47.8	124° 29.5	06.4	54° 04.4	57.2	Adhara	255° 10.8	29° 00.0 S	224° 24.0	24.3	224° 11.2	3.3	21.3	1.1	64°	-	-	-	-	-	-	-	01:33	03:01	04:08	05:30	
	04	332° 30.1	285° 53.5	39.1	228° 25.2	47.7	139° 31.9	06.4	69° 07.0	57.2	Aldebaran	290° 46.6	16° 32.4 N	239° 23.9	24.2	238° 33.5	3.2	22.4	1.0	62°	-	-	-	-	-	-	-	02:11	03:21	04:27	05:46	
	05	347° 32.6	300° 53.3	39.8	243° 25.9	47.5	154° 34.3	06.5	84° 09.7	57.2										60°	-	-	-	-	-	-	-	00:52	02:37	03:37	04:42	05:59
	06	2° 35.1	315° 53.2	40.5	258° 26.6	47.4	169° 36.6	06.5	99° 12.4	57.2	Alioth	166° 18.3	55° 52.3 N	269° 23.6	24.1	267° 18.0	3.3	24.2	0.7	58°	-	-	-	-	-	-	-	01:42	02:58	03:50	04:55	06:11
	07	17° 37.5	330° 53.0	41.3	273° 27.3	47.3	184° 39.0	06.6	114° 15.0	57.2	Alkaid	152° 56.6	49° 13.9 N	284° 23.5	24.1	281° 40.3	3.3	24.9	0.5	56°	-	-	-	-	-	-	-	02:12	03:15	04:02	05:07	06:21
	08	32° 40.0	345° 52.8	42.0	288° 27.9	47.1	199° 41.4	06.6	129° 17.7	57.2	Alkair	27° 40.1	46° 52.3 S	299° 23.4	24.0	296° 02.6	3.4	25.4	0.4	54°	00:48	02:12	03:15	04:02	05:17	06:30	07:42	08:41	09:42	10:43	11:44	
	09	47° 42.5	0° 52.6	42.7	303° 28.6	47.0	214° 43.7	06.7	144° 20.3	57.2	Alnilam	275° 43.9	1° 11.7 S	314° 23.2	24.0	310° 25.0	3.3	25.8	0.2	52°	01:34	02:52	03:41	04:21	05:26	06:38	07:48	08:54	10:00	11:06	12:12	
	10	62° 44.9	15° 52.5	43.5	318° 29.3	46.8	229° 46.1	06.8	159° 23.0	57.2	Alphard	217° 53.6	8° 44.2 S	329° 23.1	23.9	324° 47.3	3.3	26.0	0.1	50°	02:02	03:07	03:52	04:29	05:34	06:45	07:54	09:00	10:06	11:12	12:18	
	11	77° 47.4	30° 52.3	44.2	333° 30.7	46.7	244° 48.5	06.8	174° 25.6	57.2										45°	02:47	03:37	04:14	04:46	05:51	07:00	08:08	09:14	10:20	11:26	12:32	
	12	92° 49.9	45° 52.1	44° 44.9 N	348° 30.7	23° 46.5 N	259° 50.8	4° 06.9 S	189° 28.3	21° 57.2 S	Alphecca	126° 08.4	26° 39.7 N	359° 22.8	23° 23.8 N	353° 32.0	3.4	19° 26.1 N	0.2	61.1	N 40°	03:18	04:00	04:32	05:01	06:05	07:12	08:19	09:26	10:33	11:40	12:47
	13	107° 52.3	60° 51.9	45.6	3° 31.3	46.4	274° 53.2	06.9	204° 31.0	57.2	Alpheratz	357° 40.6	29° 11.0 N	14° 22.7	23.7	7° 54.4	3.4	25.9	0.4	35°	03:41	04:18	04:48	05:13	06:16	07:23	08:30	09:37	10:44	11:51	12:58	
	14	122° 54.8	75° 51.7	46.4	18° 32.0	46.2	289° 55.6	07.0	219° 33.6	57.2	Altair	62° 05.3	8° 55.0 N	29° 22.6	23.7	22° 16.8	3.4	25.5	0.4	30°	04:00	04:33	05:00	05:23	06:27	07:32	08:37	09:42	10:47	11:52	12:57	
	15	137° 57.3	90° 51.6	47.1	33° 32.7	46.1	304° 36.3	07.0	234° 36.3	57.2	Antaa	353° 13.1	42° 12.2 S	44° 22.4	23.6	36° 39.2	3.5	25.1	0.7	61.0	20°	04:29	04:58	05:23	05:41	06:45	07:48	08:51	09:54	10:57	12:00	
	16	152° 59.7	105° 51.4	47.8	48° 33.4	45.9	320° 00.3	07.1	249° 38.9	57.2	Antares	112° 22.6	26° 28.1 S	59° 22.3	23.6	51° 01.7	3.5	24.4	0.8	50°	04:51	05:18	05:41	06:01	07:00	08:02	09:04	10:06	11:08	12:10		
	17	168° 02.2	120° 51.2	48.5	63° 34.1	45.7	335° 02.7	07.1	264° 41.6	57.2										0°	05:10	05:36	05:59	06:12	07:14	08:15	09:16	10:17	11:18	12:19		
	18	183° 04.6	135° 51.0	49.3	78° 34.8	45.6	350° 05.0	07.2	279° 44.3	57.2	Arcturus	145° 53.1	19° 05.8 N	89° 22.0	23.4	79° 46.7	3.5	22.7	1.0	5°	05:27	05:54	06:16	06:27	07:29	08:27	09:25	10:23	11:21	12:19		
	19	198° 07.1	150° 50.7	50.0	93° 35.4	45.4	5° 07.4	07.2	294° 46.9	57.1	Atria	107° 21.3	69° 03.4 S	104° 21.9	23.4	94° 09.2	3.6	21.7	1.3	20°	05:43	06:11	06:35	06:43	07:44	08:41	09:38	10:35	11:32	12:29		
	20	213° 09.6	165° 50.8	50.7	108° 36.1	45.3	20° 09.8	07.3	309° 49.6	57.1	Avior	234° 17.4	59° 34.2 S	119° 21.7	23.3	108° 31.8	3.6	20.4	1.3	30°	06:00	06:30	06:56	07:01	08:02	08:57	09:52	10:47	11:42	12:37		
	21	228° 12.0	180° 50.5	51.4	123° 36.8	45.1	35° 12.1	07.3	324° 52.2	57.1	Bellatrix	278° 29.4	6° 21.7 N	134° 21.6	23.2	122° 54.4	3.7	19.1	1.5	60.9	35°	06:09	06:40	07:08	07:12	08:13	09:06	10:01	10:56	11:51		
22	243° 14.5	195° 50.3	52.2	138° 37.5	45.0	50° 14.5	07.4	339° 54.9	57.1	Betelgeuse	270° 58.7	7° 24.4 N	149° 21.5	23.2	137° 17.1	3.7	17.6	1.7	40°	06:18	06:52	07:23	07:24	08:24	09:17	10:10	11:03	11:56	12:49			
23	258° 17.0	210° 50.1	52.9	153° 38.2	44.8	65° 16.9	07.4	354° 57.6	57.1										45°	06:28	07:06	07:39	07:39	08:38	09:29	10:20	11:11	12:02				
25 S u n d a y	273° 19.4	225° 49.9	14° 53.6 N	168° 38.8	23° 44.7 N	80° 19.2	4° 07.5 S	10° 00.2	21° 57.1 S	Canopus	263° 55.5	52° 42.5 S	179° 21.2	23° 23.1 N	166° 02.5	3.8	19° 14.2 N	2.0	60.9	S 50°	06:40	07:22	08:00	07:56	08:55	09:44	10:33	11:22	12:11			
	01	288° 21.9	240° 49.7	53.6	183° 39.5	44.5	95° 21.6	07.6	25° 02.9	57.0	Capella	280° 30.9	46° 00.6 N	194° 21.1	23.0	18° 25.3	3.8	18.2	2.0	60.8	52°	06:45	07:29	08:10	08:05	09:03	09:51	10:39	11:28	12:17		
	02	303° 24.4	255° 49.5	55.1	198° 40.2	44.4	110° 23.9	07.6	40° 05.5	57.1	Deneb	49° 29.2	45° 20.5 N	209° 20.9	22.9	194° 48.1	3.9	10.2	2.2	60.8	54°	06:51	07:37	08:21	08:14	09:12	09:58	10:44	11:31	12:18		
	03	318° 26.8	270° 49.4	55.8	213° 40.9	44.2	125° 26.3	07.7	55° 08.2	57.1	Denebola	182° 31.0	14° 28.6 N	224° 20.8	22.9	209° 11.0	3.9	08.0	2.4	60.8	56°	06:57	07:46	08:34	08:25	09:22	10:07	10:53	11:39	12:24		
	04	333° 29.3	285° 49.2	56.5	228° 41.6	44.1	140° 28.7	07.7	70° 10.8	57.1	Diphda	348° 53.2	17° 53.4 S	239° 20.7	22.8	223° 33.9	3.9	05.6	2.4	60.8	58°	07:04	07:57	08:48	08:36	09:33	10:16	11:01	11:46	12:29		
	05	348° 31.8	300° 49.0	57.2	243° 42.3	43.9	155° 31.0	07.8	85° 13.5	57.1										S 60°	07:11	08:08	09:06	08:50	09:46	10:27	11:08	11:53	12:34			
	06	3° 34.2	315° 48.8	58.0	258° 42.9	43.7	170° 33.4	07.8	100° 16.2	57.1	Dubhe	193° 48.7	61° 39.7 N	269° 20.4	22.7	252° 19.9	4.0	00.5	2.7	60.7	S 62°	07:20	08:22	09:27	09:07	10:02	10:40	11:21	12:01			
	07	18° 36.7	330° 48.6	58.7	273° 43.6	43.6	185° 35.8	07.9	115° 18.8	57.1	El Nath	278° 09.6	28° 37.1 N	284° 20.3	22.6	266° 42.9	4.1	18° 57.8 N	2.9	60.7	50°	07:29	08:31	09:36	09:15	10:09	10:54	11:39	12:21			
	08	33° 39.1	345° 48.4	59.4	288° 44.3	43.4	200° 38.1	07.9	130° 21.5	57.1	Eltanin	90° 44.3	51° 29.4 N	299° 20.1	22.5	281° 06.0	4.2	54.9	3.0	60.7	52°	07:36	08:39	09:44	09:22	10:15	11:00	11:44	12:24			
	09	48° 41.6	0° 48.2	15° 00.1 N	303° 45.0	43.3	215° 40.5	08.0	145° 24.1	57.1	Enif	33° 44.2	9° 57.3 N	314° 20.0	22.4	295° 29.2	4.2	51.9	3.2	60.7	54°	07:44	08:47	09:52	09:30	10:21	11:06	11:50	12:30			
	10	63° 44.1	15° 48.0	0																												

2017 June 27, 28, 29 (Tue, Wed, Thur)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	GHA	Dec	GHA	GHA	GHA	GHA	GHA	GHA	GHA	GHA	GHA	GHA	GHA	GHA	GHA	GHA	GHA	GHA	GHA	GHA		Nautical	Civil		27	28	29
Tuesday	00	275° 17.7	225° 40'3	15° 28'0 N	169° 11'7	23° 36'9 N	82° 12'4	4° 10'2 S	12° 07'8	21° 56'9 S	12° 07'8	21° 56'9 S	12° 07'8	21° 56'9 S	Acamar	315° 16'6	40° 14'1 S	179° 14'9	23° 19'1 N	137° 29'4	7.3	15° 19'8 N	7.5	59'5	N 72°	-	-	-	05:32	07:37	09:30
	01	290° 20'2	240° 40'1	28'7	184° 12'4	36:7	97° 14'7	10'3	27° 10'4	56'9	27° 10'4	56'9	27° 10'4	56'9	Achernar	335° 25'0	57° 08'7 S	194° 14'7	19'0	151° 55'7	7.4	12'3	7.6	59'4	N 70°	-	-	-	06:04	07:55	09:39
	02	305° 22'6	255° 39'8	29'4	199° 13'1	36:6	112° 17'1	10'3	42° 13'1	56'9	42° 13'1	56'9	42° 13'1	56'9	Acruz	173° 06'1	63° 12'0 S	209° 14'6	18'9	166° 22'1	7.5	04'7	7.7	66°	-	-	-	06:45	08:21	09:54	
	03	320° 25'1	270° 39'6	30'1	214° 13'8	36:4	127° 19'4	10'4	57° 15'7	56'9	57° 15'7	56'9	57° 15'7	56'9	Adhara	255° 10'8	28° 59'0 S	224° 14'5	18'8	180° 48'6	7.6	14° 57'0 N	7.8	59'3	64°	-	-	01:37	07:00	08:31	09:59
	04	335° 27'6	285° 39'4	30'8	229° 14'5	36:2	142° 21'8	10'5	72° 18'4	56'9	72° 18'4	56'9	72° 18'4	56'9	Aldebaran	290° 46'6	16° 32'4 N	239° 14'3	18'7	195° 15'2	7.6	49'2	7.9	62°	-	-	02:14	07:12	08:39	10:04	
	05	350° 30'0	300° 39'2	31'5	244° 15'2	36'0	155° 24'1	10'5	87° 21'1	56'9	87° 21'1	56'9	87° 21'1	56'9				254° 14'2	18'6	209° 41'8	7.8	41'3	7.9	60°	-	00:57	02:39	07:22	08:46	10:08	
	06	5° 32'5	315° 39'0	32'2	259° 15'9	35'9	172° 26'5	10'6	102° 23'7	56'9	102° 23'7	56'9	102° 23'7	56'9	Alioth	166° 18'3	55° 52'3 N	269° 14'1	18'5	224° 08'6	7.8	33'4	8'0	59'2	N 58°	-	01:45	03:00	07:31	08:52	10:11
	07	20° 35'0	330° 38'7	32'9	274° 16'6	35'7	187° 28'8	10'6	117° 26'4	56'9	117° 26'4	56'9	117° 26'4	56'9	Alkaid	152° 56'6	49° 13'9 N	284° 13'9	18'4	238° 35'4	8'0	25'4	8'1	56°	-	02:14	03:16	07:39	08:58	10:14	
	08	35° 37'4	345° 38'5	33'6	289° 17'2	35'5	202° 31'2	10'7	132° 29'0	56'9	132° 29'0	56'9	132° 29'0	56'9	Alnair	27° 40'1	46° 52'3 S	209° 13'8	18'3	253° 02'4	8'0	17'3	8'1	59'1	54°	00:52	02:36	03:30	07:46	09:03	10:17
	09	50° 39'9	0° 38'3	34'3	304° 17'9	35'3	217° 33'5	10'8	147° 31'7	56'9	147° 31'7	56'9	147° 31'7	56'9	Alnilam	275° 43'9	1° 11'6 S	314° 13'7	18'2	267° 29'4	8'1	09'2	8'3	52°	52°	01:37	02:54	03:43	07:52	09:07	10:20
	10	65° 42'4	15° 38'1	35'0	319° 18'6	35'2	232° 35'9	10'8	162° 34'3	56'9	162° 34'3	56'9	162° 34'3	56'9	Alphard	217° 53'7	8° 44'2 S	329° 13'5	18'1	281° 56'5	8'2	00'9	8'3	50°	50°	02:04	03:09	03:53	07:58	09:11	10:22
	11	80° 44'8	30° 37'9	35'7	334° 19'3	35'0	247° 38'2	10'9	177° 37'0	56'9	177° 37'0	56'9	177° 37'0	56'9				344° 13'4	17'9	296° 23'7	8'3	13° 52'6 N	8'4	59'0	45°	02:49	03:38	04:16	08:10	09:20	10:27
	12	95° 47'3	45° 37'6	15° 36'4 N	349° 20'0	23° 34'8 N	262° 40'6	4° 10'9 S	192° 39'6	21° 56'9 S	192° 39'6	21° 56'9 S	192° 39'6	21° 56'9 S	Alphecca	126° 08'4	26° 39'7 N	359° 13'3	23° 17'8 N	310° 51'0	8'4	13° 44'2 N	8'4	59'0	N 40°	03:19	04:01	04:34	08:20	09:27	10:31
	13	110° 49'7	60° 37'4	37'1	4° 20'7	34'7	277° 42'9	11'0	207° 42'3	56'9	207° 42'3	56'9	207° 42'3	56'9	Alpheratz	357° 40'6	29° 11'0 N	14° 13'2	17'7	325° 18'4	8'5	35'8	8'6	53°	33°	03:42	04:19	04:49	08:29	09:33	10:35
	14	125° 52'2	75° 37'2	37'8	19° 21'4	34'5	292° 45'3	11'1	222° 45'0	56'9	222° 45'0	56'9	222° 45'0	56'9	Altair	62° 05'3	8° 55'0 N	29° 13'0	17'6	339° 45'9	8'6	27'2	8'6	58'9	30°	04:01	04:34	05:01	08:36	09:38	10:38
	15	140° 54'7	90° 37'0	38'5	34° 22'1	34'3	307° 47'6	11'1	237° 47'6	56'9	237° 47'6	56'9	237° 47'6	56'9	Ankaa	353° 13'1	42° 12'5 S	44° 22'9	17'5	354° 13'5	8'7	18'6	8'6	58'9	20°	04:30	04:59	05:23	08:49	09:48	10:44
	16	155° 57'1	105° 36'7	39'2	49° 22'8	34'1	322° 49'9	11'2	252° 50'3	56'9	252° 50'3	56'9	252° 50'3	56'9	Antares	112° 22'6	26° 28'1 S	59° 12'6	17'4	8° 41'2	8'7	10'0	8'7	58'8	N 10°	04:52	05:19	05:42	09:00	09:56	10:48
	17	170° 59'6	120° 36'5	39'9	64° 23'5	34'0	337° 52'3	11'2	267° 52'9	56'9	267° 52'9	56'9	267° 52'9	56'9				74° 12'8	17'3	33° 08'9	8'9	01'3	8'8	58'8	0°	05:11	05:37	06:00	09:11	10:04	10:53
	18	186° 02'1	135° 36'3	40'6	79° 24'1	33'8	352° 54'6	11'3	282° 55'6	56'9	282° 55'6	56'9	282° 55'6	56'9	Arcturus	145° 53'1	19° 05'8 N	89° 12'5	17'2	37° 36'8	8'9	12° 52'5 N	8'9	58'8	S 10°	05:28	05:54	06:17	09:22	10:11	10:58
	19	201° 04'5	150° 36'1	41'4	94° 24'8	33'6	7° 57'0	11'4	297° 58'2	56'9	297° 58'2	56'9	297° 58'2	56'9	Atria	107° 21'3	69° 03'4 S	104° 12'4	17'1	52° 04'7	9'0	43'6	8'9	58'7	20°	05:44	06:11	06:35	09:33	10:20	11:02
	20	216° 07'0	165° 35'8	42'1	109° 25'5	33'4	22° 59'3	11'4	313° 00'9	56'8	313° 00'9	56'8	313° 00'9	56'8	Avior	234° 17'4	59° 34'2 S	119° 12'3	17'0	66° 32'7	9'1	34'7	9'0	58'7	30°	06:00	06:30	06:56	09:46	10:29	11:08
	21	231° 09'5	180° 35'6	42'8	124° 26'2	33'3	38° 01'7	11'5	328° 03'6	56'8	328° 03'6	56'8	328° 03'6	56'8	Bellatrix	278° 29'4	6° 21'7 N	134° 12'1	16'8	81° 00'8	9'2	25'7	9'0	58'6	35°	06:09	06:41	07:09	09:53	10:34	11:11
	22	246° 11'9	195° 35'4	43'5	139° 26'9	33'1	343° 06'2	11'5	343° 06'2	56'8	343° 06'2	56'8	343° 06'2	56'8	Betelgeuse	270° 58'7	7° 24'4 N	149° 12'0	16'7	95° 29'0	9'3	16'7	9'1	58'6	40°	06:18	06:52	07:23	10:01	10:40	11:15
23	261° 14'4	210° 35'1	44'2	154° 27'6	32'9	68° 06'4	11'6	358° 08'9	56'8	358° 08'9	56'8	358° 08'9	56'8				164° 11'9	16'6	109° 57'3	9'4	07'6	9'1	45°	45°	06:28	07:06	07:39	10:11	10:47	11:19	
Wednesday	00	276° 16'9	225° 34'9	15° 44'8 N	169° 28'3	23° 32'7 N	83° 08'7	4° 11'7 S	13° 11'5	21° 56'8 S	13° 11'5	21° 56'8 S	13° 11'5	21° 56'8 S	Canopus	263° 55'5	52° 42'5 S	179° 11'7	23° 16'5 N	124° 25'7	9'5	11° 58'5 N	9'2	58'5	S 50°	06:40	07:22	08:00	10:23	10:56	11:24
	01	291° 19'3	240° 34'7	45'5	184° 29'0	32'5	98° 11'1	11'7	28° 14'2	56'8	28° 14'2	56'8	28° 14'2	56'8	Capella	280° 39'8	46° 00'6 N	194° 11'6	16'4	138° 54'2	9'5	49'3	9'3	58'2	52°	06:45	07:29	08:10	10:28	11:00	11:26
	02	306° 21'8	255° 34'5	46'2	199° 29'7	32'4	113° 13'4	11'8	43° 16'8	56'8	43° 16'8	56'8	43° 16'8	56'8	Deneb	49° 29'2	45° 20'6 N	209° 11'5	16'3	153° 22'7	9'6	40'0	9'3	58'4	54°	06:51	07:37	08:21	10:34	11:04	11:28
	03	321° 24'2	270° 34'2	46'9	214° 30'4	32'2	127° 17'7	11'9	58° 19'5	56'8	58° 19'5	56'8	58° 19'5	56'8	Denebola	182° 31'0	14° 28'6 N	224° 11'4	16'1	167° 51'3	9'8	30'7	9'4	56°	56°	06:57	07:46	08:33	10:41	11:08	11:31
	04	336° 26'7	285° 34'0	47'6	229° 31'1	32'0	143° 18'1	11'9	73° 22'1	56'8	73° 22'1	56'8	73° 22'1	56'8	Diphda	348° 53'2	17° 53'4 S	239° 11'2	16'0	182° 20'1	9'8	21'3	9'4	58'3	58°	07:04	07:56	08:48	10:49	11:14	11:34
	05	351° 29'2	300° 33'8	48'3	244° 31'7	31'8	158° 20'4	12'0	88° 24'8	56'8	88° 24'8	56'8	88° 24'8	56'8				254° 11'1	15'9	196° 48'9	9'9	11'9	9'4	58'3	S 60°	07:11	08:08	09:05	10:57	11:19	11:38
	06	6° 31'6	315° 33'5	49'0	259° 32'4	31'6	173° 22'8	12'0	103° 27'4	56'8	103° 27'4	56'8	103° 27'4	56'8	Dubhe	193° 48'8	61° 39'7 N	269° 11'7	17'8	218° 17'8	9'9	02'5	9'5	58'2	S 62°	07:19	08:21	09:26	11:07	11:26	11:41
	07	21° 34'1	330° 33'3	49'7	274° 33'1	31'5	188° 25'1	12'1	118° 30'1	56'8	118° 30'1	56'8	118° 30'1	56'8	El Nath	278° 09'5	28° 37'1 N	284° 10'8	15'7	225° 46'7	10'1	10° 53'0 N	9'6	58'2	S 62°	07:19	08:21	09:26	11:07	11:26	11:41
	08	36° 36'6	345° 33'1	50'4	289° 33'8	31'3	203° 27'5	12'2	133° 32'8	56'8	133° 32'8	56'8	133° 32'8	56'8	Eltanin	90° 44'3	51														

2017 Jun 30, Jul. 1, 2 (Fri, Sat, Sun)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON					Lat	Twilight		Sunrise	Moonrise	
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	30	1		2				
30 F r i d a y	00	278° 15.1	225° 23.1	16° 17.9 N	170° 01.6	23° 23.8 N	85° 00.9	4° 14.8 S	15° 18.9	21° 56.6 S	Acamar	315° 16.6	40° 14.1 S	179° 05.7	23° 10.1 N	100° 39.0	12.9	3° 55.9 N	10.5	56.7	N 72°	-	-	-	11:16	12:57	14:37				
	01	293° 17.6	240° 22.9	18.6	185° 02.3	23.6	100° 03.3	14.8	30° 21.6	56.6	Achernar	335° 25.0	57° 08.7 S	194° 05.6	09.9	115° 10.9	12.9	45.4	10.5	56.6	N 70°	-	-	-	11:18	12:53	14:27				
	02	308° 20.1	255° 22.6	19.3	200° 03.0	23.4	115° 05.6	14.9	45° 24.2	56.6	Acruz	173° 06.2	63° 12.0 S	209° 05.4	09.8	129° 42.8	13.0	34.9	10.6	66°	-	-	00:21	11:22	12:48	14:11					
	03	323° 22.5	270° 22.4	20.0	215° 03.7	23.2	130° 07.9	15.0	60° 26.9	56.6	Adhara	255° 10.8	28° 59.0 S	224° 05.3	09.6	144° 14.8	13.0	24.3	10.5	64°	-	-	01:41	11:24	12:46	14:06					
	04	338° 25.0	285° 22.1	20.7	230° 04.4	23.0	145° 10.3	15.0	75° 29.5	56.6	Aldebaran	290° 46.5	16° 32.4 N	239° 05.2	09.5	158° 46.8	13.1	13.8	10.6	56.5	62°	-	-	02:17	11:25	12:44	14:01				
	05	353° 27.4	300° 21.8	21.3	245° 05.1	22.9	160° 12.6	15.1	90° 32.2	56.6				254° 05.1	09.3	173° 18.9	13.1	03.2	10.5	60°	-	01:04	02:42	11:26	12:42	13:56					
	06	8° 29.9	315° 21.6	22.0	260° 05.8	22.7	175° 14.9	15.2	105° 34.8	56.6	Alioth	166° 18.3	55° 52.3 N	269° 04.9	09.1	187° 51.0	13.2	2° 52.7 N	10.6	56°	N 58°	-	01:49	03:02	11:27	12:41	13:53				
	07	23° 32.4	330° 21.3	22.7	275° 06.5	22.5	190° 17.2	15.2	120° 37.5	56.6	Alkaid	152° 56.7	49° 14.0 N	284° 04.8	09.0	202° 23.2	13.2	42.1	10.5	56.4	54°	-	02:17	03:18	11:28	12:40	13:49				
	08	38° 34.8	345° 21.0	23.4	290° 07.2	22.3	205° 19.7	15.3	135° 40.1	56.6	Alkaid	27° 40.1	46° 52.3 S	299° 04.7	08.8	216° 55.3	13.0	31.6	10.5	56°	54°	00:59	02:39	03:32	11:29	12:39	13:46				
	09	53° 37.3	0° 20.8	24.0	305° 07.9	22.1	220° 21.9	15.4	150° 42.8	56.6	Alnilam	275° 43.9	1° 11.6 S	314° 04.6	08.7	231° 27.7	13.3	21.1	10.6	52°	50°	01:40	02:56	03:44	11:30	12:37	13:43				
	10	68° 39.8	15° 20.5	24.7	320° 08.6	21.9	235° 24.2	15.4	165° 45.4	56.6	Alphard	217° 53.7	8° 44.2 S	329° 04.4	08.5	246° 00.0	13.3	10.5	10.5	56.3	50°	02:07	03:11	03:55	11:30	12:37	13:41				
	11	83° 42.2	30° 20.2	25.4	335° 09.3	21.7	250° 26.6	15.5	180° 48.1	56.6				344° 04.3	08.4	260° 32.3	13.4	2° 00.0 N	10.6	56°	45°	02:51	03:40	04:17	11:32	12:35	13:36				
	12	98° 44.7	45° 20.0	16° 26.1 N	350° 10.0	23° 21.5 N	265° 28.9	4° 15.6 S	195° 50.7	21° 56.6 S	Alphecca	126° 08.5	26° 39.7 N	359° 04.2	23° 08.2 N	275° 04.7	13.5	1° 49.4 N	10.5	56.3	N 40°	03:21	04:02	04:35	11:33	12:33	13:31				
	13	113° 47.2	60° 19.7	26.7	5° 10.7	21.3	280° 31.2	15.6	210° 53.4	56.6				14° 04.1	08.0	289° 37.2	13.5	38.9	10.5	56.2	35°	03:44	04:20	04:50	11:34	12:31	13:27				
	14	128° 49.6	75° 19.4	27.4	20° 11.4	21.1	295° 33.5	15.7	225° 56.0	56.6	Altair	62° 05.3	8° 55.0 N	29° 04.0	07.9	304° 09.7	13.5	28.4	10.5	56°	30°	04:02	04:35	05:03	11:35	12:30	13:24				
	15	143° 52.1	90° 19.2	28.1	35° 12.1	20.9	310° 35.9	15.8	240° 58.7	56.6	Ankaa	353° 13.1	42° 12.2 S	44° 03.8	07.7	318° 42.2	13.6	17.9	10.5	56°	20°	04:31	05:00	05:24	11:37	12:28	13:18				
	16	158° 54.6	105° 18.9	28.8	50° 12.8	20.7	325° 38.2	15.9	256° 01.3	56.6	Antares	112° 22.6	26° 28.1 S	59° 03.7	07.6	333° 14.8	13.6	07.4	10.5	56.1	N 10°	04:53	05:20	05:43	11:38	12:26	13:13				
	17	173° 57.0	120° 18.6	29.4	65° 13.5	20.5	340° 40.5	15.9	271° 04.0	56.6				74° 03.6	07.4	347° 47.4	13.6	0° 56.9 N	10.5	56°	0°	05:12	05:38	06:00	11:40	12:24	13:08				
	18	188° 59.5	135° 18.4	30.1	80° 14.2	20.3	355° 42.9	16.0	286° 06.6	56.6	Arcturus	145° 53.1	19° 05.8 N	89° 03.5	07.2	2° 20.0	13.7	46.4	10.5	56°	S 10°	05:28	05:55	06:17	11:41	12:23	13:03				
	19	204° 01.9	150° 18.1	30.8	95° 14.9	20.1	10° 45.2	16.1	301° 09.3	56.6	Atria	107° 21.4	69° 03.4 S	104° 03.3	07.1	16° 52.7	13.7	35.9	10.5	56.0	20°	05:44	06:12	06:36	11:42	12:21	12:58				
	20	219° 04.4	165° 17.8	31.4	110° 15.6	19.9	25° 47.5	16.1	316° 11.9	56.6	Avior	234° 17.4	59° 34.2 S	119° 03.2	06.9	31° 25.3	13.7	25.4	10.5	56°	30°	06:00	06:30	06:57	11:44	12:19	12:53				
	21	234° 06.9	180° 17.5	32.1	125° 16.3	19.7	40° 49.8	16.2	331° 14.6	56.6	Bellatrix	278° 29.4	6° 21.7 N	134° 03.1	06.7	45° 58.1	13.8	14.9	10.4	56°	35°	06:09	06:41	07:09	11:45	12:17	12:50				
	22	249° 09.3	195° 17.3	32.8	140° 17.0	19.5	55° 52.2	16.3	346° 17.2	56.6	Betelgeuse	270° 58.7	7° 24.4 N	149° 03.0	06.6	60° 30.9	13.8	04.5	10.5	55.9	40°	06:18	06:52	07:23	11:46	12:16	12:46				
23	264° 11.8	210° 17.0	33.5	155° 17.7	19.3	70° 54.5	16.3	1° 19.9	56.6				164° 02.9	06.4	75° 03.7	13.9	0° 06.0 S	10.4	45°	40°	06:28	07:05	07:39	11:47	12:15	12:42					
1 S a t u r d a y	00	279° 14.3	225° 16.7	16° 34.1 N	170° 18.4	23° 19.1 N	85° 56.8	4° 16.4 S	16° 22.5	21° 56.6 S	Canopus	263° 55.5	52° 42.4 S	179° 02.7	23° 06.2 N	89° 36.6	13.8	0° 16.4 S	10.4	55.9	S 50°	06:40	07:21	07:59	11:49	12:13	12:37				
	01	294° 16.7	240° 16.4	34.8	180° 19.1	18.9	100° 59.1	16.5	31° 25.2	56.6	Capella	280° 30.9	46° 00.6 N	194° 02.6	06.1	104° 09.4	14.0	26.8	10.4	54.8	52°	06:45	07:29	08:09	11:50	12:12	12:34				
	02	309° 19.2	255° 16.2	35.5	200° 19.8	18.7	116° 01.5	16.5	46° 27.8	56.5	Deneb	49° 29.2	45° 20.6 N	209° 02.5	05.9	118° 42.4	13.9	37.2	10.4	54°	54°	06:51	07:37	08:20	11:50	12:11	12:32				
	03	324° 21.7	270° 15.9	36.1	215° 20.5	18.5	131° 03.8	16.6	61° 30.5	56.5	Denebola	182° 31.0	14° 28.6 N	224° 02.4	05.7	133° 15.3	14.0	47.6	10.4	56°	56°	06:57	07:45	08:32	11:51	12:10	12:29				
	04	339° 24.1	285° 15.6	36.8	230° 21.2	18.3	146° 06.1	16.7	76° 33.1	56.5	Diphda	348° 53.2	17° 53.4 S	239° 02.3	05.6	147° 48.3	14.0	58.0	10.4	55.7	58°	07:03	07:55	08:47	11:52	12:09	12:26				
	05	354° 26.6	300° 15.3	37.5	245° 21.9	18.1	161° 08.4	16.8	91° 35.8	56.5				254° 02.1	05.4	162° 21.3	14.0	1° 08.4 S	10.3	56°	S 60°	07:10	08:07	09:04	11:53	12:08	12:23				
	06	9° 29.1	315° 15.1	38.1	260° 22.6	17.9	176° 10.8	16.8	106° 38.5	56.5	Dubhe	193° 48.8	61° 39.7 N	269° 02.2	05.2	176° 54.3	14.0	18.7	10.4	56°	S 62°	07:19	08:20	09:24	11:54	12:06	12:19				
	07	24° 31.5	330° 14.8	38.8	275° 23.3	17.7	191° 13.1	16.9	121° 41.1	56.5	Elnath	278° 09.5	28° 37.1 N	284° 01.9	05.1	191° 27.3	14.1	29.1	10.3	56°											
	08	39° 34.0	345° 14.5	39.5	290° 24.0	17.5	206° 15.4	17.0	131° 29.4	56.5	Eltanin	90° 44.3	51° 29.4 N	299° 01.8	04.9	206° 00.4	14.1	39.4	10.3	55.6											
	09	54° 36.4	0° 14.2	40.1	305° 24.7	17.3	221° 17.7	17.0	151° 46.4	56.5	Enif	33° 44.2	9° 57.4 N	314° 01.7	04.7	220° 33.5	14.1	49.7	10.3	56°											
	10	69° 38.9	15° 13.9	40.8	320° 25.4	17.1	236° 20.0	17.1	166° 49.1	56.5	Fomalhaut	15° 20.9	29° 31.6 S	329° 01.5	04.5	235° 06.6	14.2	00.0	10.2	56°											
	11	84° 41.4	30° 13.7	41.5	335° 26.1	16.9	251° 22.4	17.2	181° 51.7	56.5				344° 01.4	04.4	249° 39.8	14.2	2° 10.2 S	10.3	55.5											
	12	99° 43.8	45° 13.4	16° 42.1 N	350° 26.8	23° 16.7 N	266° 24.7	4° 17.3 S	196° 54.4	21° 56.6 S	Gacrux	171° 57.8	57° 12.8 S	359° 01.3	23° 04.2 N	264° 13.0	14.2	2° 20.5 S	10.2	55.5											
	13	114° 46.3	60° 13.1	42.8	5° 27.5	16.5	281° 27.0	17.3	211° 57.0	56.5	Gienah	175° 49.5	17° 38.3 S	14° 01.2	04.0	278° 46.2	14.2	30.7	10.2	56°											
	14	129° 48.8	75° 12.8	43.5	20° 28.2	16.3	296° 29.3	17.4																							

2017 July 3, 4, 5 (Mon, Tue, Wed)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil			3	4	5
Monday	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	-	-	-	16:18	18:02	19:58				
	01	281° 12.5	225° 02.8	17° 05.7 N	170° 52.2	23° 09.1 N	87° 48.1	4° 19.9 S	18° 29.7	21° 56.4 S	Acamar	315° 16.6	40° 14.0 S	178° 57.1	22° 57.4 N	68° 15.6	14.5	8° 11.2 S	9.1	54.7	N 70°	-	-	-	15:59	17:33	19:08				
	02	296° 15.0	240° 02.5	06.4	185° 52.9	08.9	102° 50.4	20.0	33° 32.4	56.4	Achernar	335° 25.0	57° 08.7 S	193° 57.0	57.2	82° 49.1	14.5	20.3	9.1	68°	N 68°	-	-	-	15:45	17:11	18:36				
	03	311° 17.5	255° 02.2	07.0	200° 53.6	08.7	117° 52.7	20.0	48° 35.0	56.4	Acruz	173° 06.2	63° 12.0 S	208° 56.8	57.0	97° 22.6	14.4	29.4	9.0	54.6	66°	-	-	00:43	15:34	16:55	18:13				
	04	326° 19.9	270° 01.9	07.0	215° 54.3	08.5	132° 55.1	20.1	63° 37.7	56.4	Adhara	255° 10.8	28° 59.9 S	223° 56.4	56.8	111° 56.0	14.5	38.4	9.0	64°	N 64°	-	-	01:47	15:24	16:41	17:55				
	05	341° 22.4	285° 01.6	08.3	230° 55.0	08.2	147° 57.4	20.2	78° 40.3	56.4	Aldebaran	290° 46.5	16° 32.4 N	238° 56.6	56.6	126° 29.5	14.4	47.4	9.0	62°	N 62°	-	-	02:21	15:16	16:29	17:40				
	06	356° 24.9	300° 01.3	09.0	245° 55.7	08.0	162° 59.7	20.3	93° 43.0	56.4				253° 56.5	56.4	141° 02.9	14.5	56.4	8.9	60°	N 60°	-	01:12	02:46	15:09	16:20	17:28				
	07		11° 27.3	315° 01.0	09.6	260° 56.5	07.8	178° 02.0	20.3	108° 45.6	56.4	Alioth	166° 18.4	55° 52.3 N	268° 56.4	56.2	155° 36.4	14.4	9° 05.3 S	8.8	58°	N 58°	-	01:53	03:05	15:03	16:11	17:17			
	08		26° 29.8	330° 00.7	10.2	275° 57.2	07.6	193° 04.3	20.4	123° 48.3	56.4	Alkaid	152° 56.7	49° 14.0 N	283° 56.3	56.0	170° 09.8	14.4	14.1	8.9	56°	N 56°	-	02:21	03:21	14:57	16:04	17:08			
	09		41° 32.3	345° 00.0	10.9	290° 57.9	07.4	208° 06.6	20.5	138° 50.9	56.3	Alnair	27° 40.1	46° 52.3 S	298° 56.2	55.8	184° 43.2	14.5	23.0	8.7	54.5	54°	01:06	02:42	03:35	14:52	15:57	17:00			
	10		56° 34.7	0° 00.1	11.5	305° 58.6	07.2	223° 08.9	20.6	153° 53.5	56.3	Alnilam	275° 43.9	1° 11.6 S	313° 56.0	55.6	199° 16.7	14.4	31.7	8.7	52°	S 52°	01:44	02:59	03:47	14:48	15:51	16:52			
	11		71° 37.2	14° 59.8	12.2	320° 59.3	06.9	238° 11.2	20.6	168° 56.2	56.3	Alphard	217° 53.7	8° 44.2 S	328° 55.9	55.3	213° 50.1	14.4	40.5	8.8	50°	S 50°	02:10	03:13	03:57	14:44	15:46	16:46			
	12		86° 39.6	29° 59.4	12.8	336° 00.0	06.7	253° 13.5	20.7	183° 58.8	56.3				343° 55.8	55.1	228° 23.5	14.3	49.2	8.6	45°	S 45°	02:53	03:42	04:19	14:35	15:34	16:32			
	13		101° 42.1	44° 59.1	17° 13.5 N	351° 00.7	23° 06.5 N	268° 15.8	4° 20.8 S	199° 01.5	21° 56.3 S	Alphecca	126° 08.5	26° 39.7 N	358° 55.7	22° 54.9 N	242° 56.8	14.4	9° 57.8 S	8.6	54.5	N 40°	03:23	04:04	04:36	14:28	15:25	16:20			
	14		116° 44.6	59° 58.8	14.1	6° 01.4	06.3	283° 18.2	20.9	214° 04.1	56.3	Alpheratz	357° 40.6	29° 11.0 N	13° 55.6	54.7	257° 30.2	14.4	10° 06.4 S	8.6	53°	S 35°	03:45	04:22	04:51	14:22	15:16	16:10			
	15		131° 47.0	74° 58.5	14.7	21° 02.1	06.1	298° 20.5	20.9	229° 06.8	56.3	Altair	62° 05.2	8° 55.0 N	28° 55.5	54.5	272° 03.6	14.3	15.0	8.5	30°	S 30°	04:03	04:36	05:04	14:17	15:09	16:01			
	16		146° 49.5	89° 58.2	15.4	36° 02.8	05.8	313° 22.8	21.0	244° 09.4	56.3	Ankaa	353° 13.0	42° 12.5 S	43° 55.4	54.3	286° 36.9	14.4	23.5	8.4	54.4	20°	04:32	05:01	05:25	14:08	14:57	15:46			
	17		161° 52.0	104° 57.9	16.0	51° 03.5	05.6	328° 25.1	21.1	259° 12.1	56.3	Antares	112° 22.6	26° 28.1 S	58° 55.3	54.1	301° 10.3	14.3	31.9	8.4	10°	N 10°	04:54	05:21	05:44	13:59	14:46	15:33			
	18		176° 54.4	119° 57.6	16.7	66° 04.3	05.4	343° 27.4	21.2	274° 14.7	56.3				73° 55.1	53.9	315° 43.6	14.3	40.3	8.4	0°	S 0°	05:12	05:38	06:01	13:52	14:36	15:21			
	19		191° 56.9	134° 57.3	17.3	81° 05.0	05.2	358° 29.7	21.2	289° 17.4	56.3	Arcturus	145° 53.1	19° 05.8 N	88° 55.0	53.7	330° 16.9	14.3	48.7	8.3	10°	S 10°	05:29	05:55	06:18	13:44	14:26	15:09			
	20		206° 59.4	149° 56.9	17.9	96° 05.7	05.0	31° 32.0	21.3	304° 20.0	56.3	Atria	107° 21.4	69° 03.4 S	103° 54.9	53.4	344° 50.2	14.3	57.0	8.3	20°	S 20°	05:45	06:12	06:36	13:36	14:16	14:57			
	21		222° 01.8	164° 56.6	18.6	111° 06.4	04.7	28° 34.3	21.4	319° 22.7	56.3	Avior	234° 17.4	59° 34.2 S	118° 54.8	53.2	359° 23.5	14.2	11° 05.3 S	8.2	30°	S 30°	06:00	06:30	06:56	13:27	14:04	14:42			
	22		237° 04.3	179° 56.3	19.2	126° 07.1	04.5	43° 36.6	21.5	334° 25.3	56.3	Bellatrix	278° 29.4	6° 21.7 N	133° 54.7	53.0	13° 56.7	14.3	13.5	8.2	35°	S 35°	06:09	06:40	07:08	13:22	13:57	14:33			
23		252° 06.8	194° 56.0	19.8	141° 07.8	04.3	58° 38.9	21.6	349° 28.0	56.3	Betelgeuse	270° 58.7	7° 24.4 N	148° 54.6	52.8	28° 30.0	14.2	21.7	8.1	54.3	40°	S 40°	06:18	06:52	07:22	13:16	13:49	14:24			
		267° 09.2	209° 55.7	20.5	156° 08.5	04.1	73° 41.2	21.6	4° 30.6	56.3				163° 54.5	52.6	43° 03.2	14.2	29.8	8.0	45°	S 45°	06:28	07:05	07:38	13:10	13:40	14:13				
Tuesday	00	282° 11.7	224° 55.4	17° 21.1 N	171° 09.2	23° 03.8 N	88° 43.5	4° 21.7 S	19° 33.2	21° 56.3 S	Canopus	263° 55.5	52° 42.4 S	178° 54.4	22° 52.1 N	57° 36.4	14.2	11° 37.8 S	8.0	54.3	S 50°	06:39	07:20	07:59	13:02	13:29	13:59				
	01	297° 14.1	239° 55.0	21.7	186° 09.9	03.6	103° 45.8	21.8	34° 35.9	56.3	Capella	280° 30.8	46° 00.6 N	193° 54.2	52.1	72° 09.6	14.2	45.8	8.0	50°	S 52°	06:44	07:28	08:08	12:58	13:24	13:53				
	02	312° 16.6	254° 54.7	22.4	201° 10.7	03.4	118° 48.2	21.9	49° 38.5	56.3	Deneb	49° 29.1	45° 20.6 N	208° 54.1	51.9	86° 42.8	14.1	53.8	7.9	54°	S 54°	06:50	07:35	08:19	12:54	13:18	13:46				
	03	327° 19.1	269° 54.4	23.0	216° 11.4	03.2	133° 50.5	21.9	64° 41.2	56.3	Denebola	182° 11.0	14° 28.6 N	223° 54.0	51.7	101° 15.9	14.2	12° 01.7 S	7.8	56°	S 56°	06:56	07:44	08:31	12:49	13:12	13:38				
	04	342° 21.5	284° 54.1	23.6	231° 12.1	02.9	148° 52.8	22.0	79° 43.8	56.3	Diphda	348° 53.2	17° 53.4 S	238° 53.9	51.5	115° 49.1	14.1	09.5	7.8	58°	S 58°	07:02	07:54	08:45	12:44	13:05	13:29				
	05	357° 24.0	299° 53.8	24.3	246° 12.8	02.7	163° 55.1	22.1	94° 46.5	56.3				253° 53.8	51.3	130° 22.2	14.1	17.3	7.8	60°	S 60°	07:09	08:05	09:01	12:39	12:57	13:19				
	06		12° 26.5	314° 53.4	24.9	261° 13.5	02.5	178° 54.7	22.2	109° 49.1	56.3	Dubhe	193° 48.8	61° 39.7 N	268° 57.4	51.0	144° 55.3	14.1	25.1	7.7	54.2	S 54°	07:17	08:18	09:22	12:32	12:48	13:08			
	07		27° 28.9	329° 53.1	25.5	276° 14.2	02.3	193° 59.7	22.3	124° 51.8	56.3	Elath	278° 09.5	28° 37.1 N	283° 53.6	50.8	159° 28.4	14.1	32.8	7.6	56°	S 56°	07:24	08:25	09:30	12:24	12:40	13:00			
	08		42° 31.4	344° 52.8	26.2	291° 14.9	02.0	209° 02.0	22.3	139° 54.4	56.3	Eltanin	90° 44.3	51° 29.5 N	298° 53.5	50.6	174° 01.5	14.0	40.4	7.6	58°	S 58°	07:31	08:32	09:37	12:15	12:31	12:50			
	09		57° 33.9	359° 52.5	26.8	306° 15.6	01.8	224° 04.3	22.4	154° 57.1	56.3	Enif	33° 44.2	9° 57.4 N	313° 53.4	50.4	188° 34.5	14.0	48.0	7.5	60°	S 60°	07:38	08:39	09:40	12:06	12:22	12:41			
	10		72° 36.3	14° 52.1	27.4	321° 16.3	01.6	239° 06.6	22.5	169° 59.7	56.3	Fomalhaut	15° 20.8	29° 31.6 S	328° 53.3	50.1	203° 07.5	14.0	55.5	7.5	62°	S 62°	07:45	08:46	09:47	11:53	12:09	12:28			
	11		87° 38.8	29° 51.8	28.1	336° 17.1	01.4	254° 08.9	22.6	185° 02.3	56.3				343° 53.1	49.9	217° 40.5	14.0	13° 03.0 S	7.4	64°	S 64°	07:52	08:53	09:54	11:41	11:57	12:16			
	12		102° 41.3	44° 51.5	17° 28.7 N	351° 17.8	23° 01.1 N	269° 11.2	4° 22.6 S	200° 05.0	21° 56.3 S	Gacrux	171° 57.8	57° 12.8 S	358° 5																

2017 July 6, 7, 8 (Thur, Fri, Sat)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	6		7	8	
Thurs day	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	-	-	-	-	-	-	-			
	01	284° 10' 0	224° 39' 4	17° 51' 0 N	171° 43' 5	22° 52' 8 N	90° 34' 0	4° 25' 5 S	21° 40' 2	21° 56' 1 S	Acamar	315° 16' 5	40° 14' 0 S	178° 49' 2	22° 41' 1 N	35° 43' 9	13' 0	16° 54' 7 S	4' 9	54' 0	N 70°	-	-	-	-	20:42	22:07	22:56			
	02	299° 12' 4	239° 39' 0	51' 6	186° 44' 2	52' 5	105° 36' 3	25' 6	36° 42' 8	56' 1	Achernar	335° 24' 9	57° 08' 7 S	193° 49' 1	40' 9	50° 15' 9	12' 9	59' 6	4' 9		N 68°	-	-	-	-	19:56	21:05	21:55			
	03	314° 14' 9	254° 38' 7	52' 2	201° 45' 0	52' 3	120° 38' 5	25' 7	51° 45' 4	56' 1	Acruz	173° 06' 2	63° 12' 0 S	208° 49' 0	40' 6	64° 47' 8	13' 0	17° 04' 5 S	4' 8		N 66°	-	-	-	00:59	19:27	20:31	21:20			
	04	329° 17' 4	269° 38' 3	52' 8	216° 45' 7	52' 1	135° 40' 8	25' 8	28° 46' 4	56' 1	Adhara	255° 10' 8	28° 59' 9 S	223° 48' 0	40' 4	79° 19' 8	12' 9	09' 3	4' 7		N 64°	-	-	-	01:54	19:04	20:06	20:55			
	05	344° 19' 8	284° 38' 0	53' 4	231° 46' 4	51' 8	150° 43' 1	25' 9	81° 50' 7	56' 1	Aldebaran	290° 46' 5	16° 32' 4 N	238° 48' 4	40' 1	93° 51' 7	12' 9	14' 0	4' 7		N 62°	-	-	-	02:26	18:47	19:46	20:35			
	06	359° 22' 3	299° 37' 6	54' 0	246° 47' 1	51' 6	165° 45' 4	26' 0	96° 53' 4	56' 1				253° 48' 7	39' 9	108° 23' 6	12' 9	18' 7	4' 5		N 60°	-	01:20	02:50	18:32	19:30	20:19				
	07		14° 24' 7	314° 37' 3	54' 6	261° 47' 8	51' 3	180° 47' 7	26' 0	111° 56' 0	56' 1	Alioth	166° 18' 4	55° 52' 3 N	268° 48' 6	39' 6	122° 55' 5	12' 8	23' 2	4' 5		N 58°	-	01:59	03:09	18:20	19:16	20:06			
	08		29° 27' 2	329° 36' 9	55' 2	276° 48' 6	51' 1	195° 50' 0	26' 1	126° 58' 7	56' 1	Alkaid	152° 56' 7	49° 14' 0 N	283° 48' 5	39' 3	137° 27' 3	12' 8	27' 7	4' 5		N 56°	-	02:25	03:24	18:09	19:05	19:54			
	09		44° 29' 7	344° 36' 6	55' 8	291° 49' 3	50' 9	210° 52' 3	26' 2	142° 01' 3	56' 1	Alnair	27° 40' 0	46° 52' 3 S	298° 48' 4	39' 1	151° 51' 9	12' 8	32' 2	4' 3		N 54°	01:14	02:45	03:38	17:59	18:54	19:44			
	10		59° 32' 1	359° 36' 2	56' 5	306° 50' 0	50' 6	225° 54' 6	26' 3	157° 03' 9	56' 1	Alnilam	275° 43' 9	1° 11' 6 S	313° 48' 3	38' 8	166° 30' 9	12' 8	36' 5	4' 2		N 52°	01:49	03:02	03:49	17:51	18:45	19:35			
	11		74° 34' 6	374° 35' 9	57' 1	321° 50' 7	50' 4	240° 56' 9	26' 4	172° 06' 6	56' 1	Alphard	217° 53' 7	8° 44' 1 S	328° 48' 2	38' 6	181° 02' 7	12' 7	40' 7	4' 2		N 50°	02:14	03:16	04:00	17:43	18:37	19:26			
	12		89° 37' 1	29° 35' 5	57' 7	336° 51' 4	50' 1	255° 59' 2	26' 5	187° 09' 2	56' 1			343° 48' 0	38' 3	195° 34' 4	12' 7	44' 9	4' 1		N 45°	02:56	03:44	04:21	17:27	18:20	19:09				
	13		104° 39' 5	44° 35' 1	17° 58' 3 N	351° 52' 1	22° 49' 9 N	271° 01' 5	4° 26' 5 S	202° 11' 9	21° 56' 1 S	Alphecca	126° 08' 5	26° 39' 7 N	358° 47' 9	22° 38' 1 N	210° 06' 1	12' 6	17° 49' 0 S	4' 1	54' 0	N 40°	03:25	04:06	04:38	17:14	18:06	18:55			
	14		119° 42' 0	59° 34' 8	58' 9	6° 52' 9	49' 7	286° 03' 8	26' 6	217° 14' 5	56' 1		357° 40' 5	29° 11' 0 N	13° 47' 8	37' 8	224° 37' 7	12' 7	53' 1	3' 9		N 35°	03:47	04:23	04:53	17:03	17:54	18:43			
	15		134° 44' 5	74° 34' 4	59' 5	21° 53' 6	49' 4	301° 06' 1	26' 7	232° 17' 1	56' 1	Altair	62° 05' 2	8° 52' 3 S	28° 47' 7	37' 5	239° 09' 4	12' 6	57' 0	3' 9		N 30°	04:05	04:38	05:05	16:53	17:43	18:32			
	16		149° 46' 9	89° 34' 1	18° 00' 1 N	36° 54' 3	49' 2	316° 08' 3	26' 8	247° 19' 8	56' 1	Antares	353° 13' 0	42° 12' 5 S	43° 47' 6	37' 3	253° 41' 0	12' 6	18° 00' 9 S	3' 9		N 20°	04:33	05:02	05:26	16:36	17:25	18:14			
	17		164° 49' 4	104° 33' 7	00' 7	51° 55' 0	48' 9	331° 10' 6	26' 9	262° 22' 4	56' 1		112° 22' 6	26° 28' 1 S	58° 47' 5	37' 0	268° 12' 6	12' 6	04' 6	3' 7		N 10°	04:55	05:22	05:44	16:21	17:10	17:58			
	18		179° 51' 9	119° 33' 4	01' 3	66° 55' 7	48' 7	346° 12' 9	27' 0	277° 25' 1	56' 1			73° 47' 4	36' 8	282° 44' 2	12' 5	08' 3	3' 7		0°	05:13	05:39	06:01	16:08	16:55	17:44				
	19		194° 54' 3	134° 33' 0	01' 9	81° 56' 5	48' 4	1° 15' 2	27' 0	292° 27' 7	56' 1	Arcturus	145° 53' 1	19° 05' 8 N	88° 47' 3	36' 5	297° 15' 7	12' 5	12' 0	3' 5		S 10°	05:29	05:55	06:18	15:54	16:41	17:29			
	20		209° 56' 8	149° 32' 6	02' 5	96° 57' 2	48' 2	16° 17' 5	27' 1	307° 30' 3	56' 1	Atria	107° 21' 4	69° 03' 4 S	103° 47' 2	36' 2	311° 47' 2	12' 5	15' 5	3' 4		N 20°	05:45	06:12	06:36	15:40	16:25	17:13			
	21		224° 59' 2	164° 32' 3	03' 1	111° 57' 9	48' 0	31° 19' 8	27' 2	322° 33' 0	56' 1	Avior	234° 17' 5	59° 34' 1 S	118° 47' 1	36' 0	326° 18' 7	12' 5	18' 9	3' 4		N 30°	06:00	06:30	06:56	15:23	16:07	16:55			
	22		240° 01' 7	179° 31' 9	03' 7	126° 58' 6	47' 7	46° 22' 1	27' 3	337° 35' 6	56' 1	Bellatrix	278° 29' 4	6° 21' 7 N	133° 47' 0	35' 7	340° 50' 2	12' 4	22' 3	3' 3		N 35°	06:09	06:40	07:08	15:13	15:57	16:45			
23		255° 04' 2	194° 31' 6	04' 3	141° 59' 4	47' 5	61° 24' 4	27' 4	352° 38' 3	56' 1	Betelgeuse	270° 58' 7	7° 24' 4 N	148° 46' 9	35' 4	355° 21' 6	12' 4	25' 6	3' 2		N 40°	06:17	06:51	07:21	15:02	15:45	16:33				
		270° 06' 6	209° 31' 2	04' 9	157° 00' 1	47' 2	76° 26' 7	27' 5	7° 40' 9	56' 1			163° 46' 8	35' 2	9° 53' 0	12' 4	28' 8	3' 1	54' 1	N 45°	06:27	07:04	07:37	14:50	15:31	16:18					
Fri day	00	285° 09' 1	224° 30' 8	18° 05' 1 N	172° 00' 8	22° 47' 0 N	91° 28' 9	4° 27' 5 S	22° 43' 5	21° 56' 1 S	Canopus	263° 55' 5	52° 42' 4 S	178° 46' 7	22° 34' 9 N	24° 24' 4	12' 3	18° 31' 9 S	3' 1	54' 1	S 50°	06:38	07:19	07:57	14:34	15:15	16:01				
	01	300° 11' 6	239° 30' 5	06' 5	187° 01' 5	46' 7	106° 31' 2	27' 6	37° 46' 2	56' 0	Capella	280° 30' 8	46° 00' 6 N	193° 46' 6	34' 6	38° 55' 7	12' 4	35' 0	2' 9		N 52°	06:43	07:26	08:06	14:27	15:07	15:53				
	02	315° 14' 0	254° 30' 1	06' 6	202° 02' 2	46' 5	121° 33' 5	27' 7	52° 48' 8	56' 0	Deneb	49° 29' 1	45° 20' 6 N	208° 46' 5	34' 4	53° 27' 1	12' 3	37' 9	2' 9		N 54°	06:48	07:34	08:17	14:19	14:58	15:44				
	03	330° 16' 5	269° 29' 8	07' 2	217° 03' 0	46' 2	136° 35' 8	27' 8	67° 51' 5	56' 0	Denebola	182° 31' 0	14° 28' 6 N	223° 46' 4	34' 1	67° 58' 4	12' 3	40' 8	2' 8		N 56°	06:54	07:43	08:29	14:10	14:48	15:34				
	04	345° 19' 0	284° 29' 4	07' 8	232° 03' 7	46' 0	151° 38' 1	27' 9	82° 54' 1	56' 0	Diphda	348° 53' 1	17° 53' 4 S	238° 46' 3	33' 8	82° 29' 7	12' 2	43' 6	2' 7		N 58°	07:00	07:52	08:42	13:59	14:36	15:22				
	05	0° 21' 4	299° 29' 0	08' 4	247° 04' 4	45' 8	166° 40' 4	28' 0	97° 56' 7	56' 0				253° 46' 2	33' 6	97° 00' 9	12' 3	46' 3	2' 6		S 60°	07:07	08:03	08:59	13:47	14:23	15:09				
	06	15° 23' 9	314° 28' 7	09' 0	262° 05' 1	45' 5	181° 42' 7	28' 1	112° 59' 4	56' 0	Dubhe	193° 48' 8	61° 39' 7 N	268° 46' 1	33' 3	111° 32' 2	12' 2	48' 9	2' 5		S 62°	07:15	08:16	09:18	13:34	14:08	14:53				
	07	30° 26' 3	329° 28' 3	09' 6	277° 05' 8	45' 3	196° 45' 0	28' 1	128° 02' 0	56' 0	El Nath	278° 09' 5	28° 37' 1 N	283° 46' 0	33' 0	126° 03' 4	12' 2	51' 4	2' 5												
	08	45° 28' 8	344° 27' 9	10' 2	292° 06' 6	45' 0	211° 47' 2	28' 2	143° 04' 7	56' 0	Eltanin	90° 44' 3	51° 29' 5 N	298° 45' 9	32' 7	140° 34' 6	12' 2	53' 9	2' 3												
	09	60° 31' 3	359° 27' 6	10' 8	307° 07' 3	44' 8	226° 49' 5	28' 3	158° 07' 3	56' 0	Enif	33° 44' 2	9° 57' 4 N	313° 45' 8	32' 5	155° 05' 7	12' 1	56' 2	2' 3												
	10	75° 33' 7	14° 27' 2	11' 4	322° 08' 0	44' 5	241° 51' 8	28' 4	173° 09' 9	56' 0	Fomalhaut	15° 20' 8	29° 31' 6 S	328° 45' 7	32' 2	169° 36' 9	12' 1	58' 5	2' 2												
	11	90° 36' 2	29° 26' 8	12' 0	337° 08' 7	44' 3	256° 54' 1	28' 5	188° 12' 6	56' 0				343° 45' 6	31' 9	184° 08' 0	12' 1	19° 00' 7 S	2' 1			</									

2017 July 9, 10, 11 (Sun, Mon, Tue)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON					Lat	Twilight		Sunrise	Moonrise	
	GHA	GHA	Dec	GHA	Dec	34.9 N	GHA	Dec	31.7 S	GHA	Dec	55.9 S	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	9		10	11			
Sunday	00	287° 07.4	224° 12.8	18° 33.4 N	172° 35.6	22° 34.9 N	93° 18.5	4° 31.7 S	24° 50.2	21° 55.9 S	Acamar	315° 16.5	40° 14.0 S	178° 42.1	22° 21.3 N	1° 08.0	11.6	19° 18.3 S	1.2	54.4	N 72°	-	-	-	-	23:59	23:39				
	01	302° 09.8	239° 12.4	34.0	187° 36.3	34.6	108° 20.8	31.8	39° 52.8	55.9	Achernar	335° 24.9	57° 08.7 S	193° 42.0	21.0	15° 38.6	11.6	17.1	1.4		N 70°	-	-	-	23:09	23:11					
	02	317° 12.3	254° 12.0	34.5	202° 37.0	34.4	123° 23.1	31.9	54° 55.4	55.9	Acruz	173° 06.2	63° 12.0 S	208° 41.9	20.7	30° 09.2	11.6	15.7	1.4		N 68°	-	-	-	22:24	22:41					
	03	332° 14.8	269° 11.6	35.1	217° 37.8	34.1	138° 25.3	32.0	69° 58.1	55.9	Adhara	255° 10.7	28° 59.0 S	223° 41.8	20.4	44° 39.8	11.6	14.3	1.6		N 66°	-	-	01:13	21:55	22:18					
	04	347° 17.2	284° 11.2	35.7	232° 38.5	33.8	153° 27.6	32.1	85° 00.7	55.9	Aldebaran	290° 46.5	16° 32.4 N	238° 41.8	20.1	59° 10.4	11.6	12.7	1.6	54.5	N 64°	-	-	02:02	21:32	21:59					
	05	2° 19.7	299° 10.8	36.2	247° 39.2	33.6	168° 29.9	32.2	100° 03.4	55.9				253° 41.7	19.8	73° 41.0	11.5	11.1	1.7		N 62°	-	-	02:32	21:15	21:44					
	06	17° 22.2	314° 10.4	36.8	262° 40.0	33.3	183° 32.2	32.3	115° 06.0	55.9				268° 41.6	19.5	88° 11.5	11.6	09.4	1.8		N 60°	-	01:29	02:55	21:00	21:32					
	07	32° 24.6	329° 10.0	37.4	277° 40.7	33.1	198° 34.4	32.4	130° 08.6	55.9	Alioth	166° 18.4	55° 52.3 N	268° 41.6	19.5	88° 11.5	11.6	09.4	1.8		N 58°	-	02:05	03:13	20:47	21:21					
	08	47° 27.1	344° 09.6	37.9	292° 41.4	32.8	213° 36.7	32.4	145° 11.3	55.9	Alkaid	152° 56.7	49° 14.0 N	283° 41.5	19.2	102° 42.1	11.6	07.6	1.9		N 56°	-	02:30	03:28	20:36	21:11					
	09	62° 29.6	359° 09.2	38.5	307° 42.2	32.5	228° 39.0	32.5	160° 13.9	55.9	Alnair	27° 40.0	46° 52.3 S	298° 41.4	18.9	117° 12.7	11.6	05.7	2.0		N 54°	01:22	02:50	03:41	20:27	21:03					
	10	77° 32.0	14° 08.9	39.0	322° 42.9	32.3	243° 41.2	32.6	175° 16.5	55.9	Alnilam	275° 43.9	1° 11.6 S	313° 41.3	18.6	131° 43.3	11.6	03.7	2.1		N 52°	01:55	03:06	03:52	20:18	20:55					
	11	92° 34.5	29° 08.5	39.6	337° 43.6	32.0	258° 43.5	32.7	190° 19.2	55.9	Alphard	217° 53.7	8° 44.1 S	328° 41.2	18.3	146° 13.9	11.5	01.6	2.2		N 50°	02:18	03:29	04:02	20:10	20:49					
	12	107° 37.0	44° 08.1	18° 40.2 N	352° 44.3	22° 31.7 N	273° 45.8	4° 32.8 S	205° 21.8	21° 55.9 S				343° 41.1	18.0	160° 44.4	11.6	18° 59.4 S	2.3		N 45°	02:59	03:47	04:23	19:54	20:34					
	13	122° 39.4	59° 07.7	40.7	7° 45.1	31.5	288° 48.1	32.9	220° 24.4	55.9	Alphecca	126° 08.5	26° 39.7 N	358° 41.0	22° 17.7 N	175° 15.0	11.6	18° 57.1 S	2.3	54.6	N 40°	03:27	04:08	04:40	19:40	20:22					
	14	137° 41.9	74° 07.3	41.3	22° 45.8	31.2	303° 50.3	33.0	235° 27.1	55.9				13° 40.9	17.3	189° 45.6	11.6	54.8	2.5		N 35°	03:49	04:25	04:54	19:29	20:12					
	15	152° 44.3	89° 06.9	41.8	37° 46.5	31.0	318° 52.6	33.1	250° 29.7	55.9	Altair	62° 05.2	8° 52.1 S	28° 40.9	17.0	204° 16.2	11.6	52.3	2.6		N 30°	04:07	04:39	05:07	19:19	20:03					
	16	167° 46.8	104° 06.5	42.4	52° 47.3	30.7	333° 54.9	33.2	265° 32.3	55.9	Antares	353° 13.0	42° 12.5 S	43° 40.8	16.7	218° 46.8	11.5	49.7	2.6		N 20°	04:34	05:03	05:27	19:01	19:47					
	17	182° 49.3	119° 06.1	43.0	67° 48.0	30.4	348° 57.2	33.3	280° 35.0	55.9				58° 40.7	16.4	233° 17.3	11.6	47.1	2.7		N 10°	04:56	05:22	05:45	18:46	19:34					
	18	197° 51.7	134° 05.7	43.5	82° 48.7	30.2	3° 59.4	33.4	295° 37.6	55.9	Arcturus	145° 53.1	19° 05.8 N	88° 40.5	15.8	262° 18.5	11.6	41.6	3.0		S 10°	05:29	05:56	06:18	18:18	19:08					
	19	212° 54.2	149° 05.3	44.1	97° 49.5	29.9	19° 01.7	33.4	310° 40.2	55.9	Atria	107° 21.4	69° 03.5 S	103° 40.4	15.5	276° 49.1	11.6	38.6	3.1		N 20°	05:45	06:12	06:36	18:03	18:54					
	20	227° 56.7	164° 04.9	44.6	112° 50.2	29.6	34° 00.7	33.5	325° 42.9	55.8	Avior	234° 17.5	59° 34.1 S	118° 40.3	15.2	291° 19.7	11.6	35.6	3.0	54.7	N 30°	06:00	06:30	06:56	17:46	18:39					
	21	242° 59.1	179° 04.5	45.2	127° 50.9	29.4	49° 06.2	33.6	340° 45.5	55.8	Bellatrix	278° 29.4	6° 21.7 N	133° 40.2	14.9	305° 50.3	11.6	32.5	3.1		N 35°	06:08	06:39	07:07	17:36	18:30					
	22	258° 01.6	194° 04.1	45.7	142° 51.7	29.1	64° 08.5	33.7	355° 48.1	55.8	Betelgeuse	270° 58.6	7° 24.4 N	148° 40.1	14.5	320° 20.9	11.6	29.4	3.3		N 40°	06:17	06:50	07:20	17:24	18:19					
23	273° 04.1	209° 03.7	46.3	157° 52.4	28.8	79° 10.8	33.8	10° 50.8	55.8				163° 40.1	14.2	334° 51.5	11.6	26.1	3.4		N 45°	06:26	07:03	07:36	17:10	18:07						
Monday	00	288° 06.5	224° 03.2	18° 46.8 N	172° 53.1	22° 28.6 N	94° 13.1	4° 33.9 S	25° 53.4	21° 55.8 S	Canopus	263° 55.5	52° 42.4 S	178° 40.0	22° 13.9 N	349° 22.1	11.6	18° 22.7 S	3.4	54.7	S 50°	06:37	07:18	07:55	16:54	17:52					
	01	303° 09.0	239° 02.8	47.4	187° 53.9	28.3	109° 15.3	34.0	40° 56.0	55.8	Capella	280° 30.8	46° 00.6 N	193° 39.9	13.6	3° 52.7	11.7	19.3	3.6		S 52°	06:42	07:25	08:04	16:46	17:45					
	02	318° 11.4	254° 02.4	47.9	202° 54.6	28.0	124° 17.6	34.1	55° 58.7	55.8	Deneb	49° 29.1	45° 20.6 N	208° 39.8	13.3	18° 23.4	11.6	15.7	3.6		S 54°	06:47	07:32	08:15	16:37	17:37					
	03	333° 13.9	269° 02.0	48.5	217° 55.3	27.8	139° 19.9	34.2	71° 01.3	55.8	Denebola	182° 31.0	14° 28.6 N	223° 39.7	13.0	32° 54.0	11.6	12.1	3.7	54.8	S 56°	06:52	07:40	08:26	16:28	17:29					
	04	348° 16.4	284° 01.6	49.0	232° 56.0	27.5	154° 22.1	34.3	86° 03.9	55.8	Diphda	348° 53.1	17° 53.4 S	238° 39.6	12.6	47° 24.6	11.7	08.4	3.8		S 58°	06:58	07:50	08:40	16:16	17:19					
	05	3° 18.8	299° 01.2	49.6	247° 56.8	27.2	169° 24.4	34.4	101° 06.6	55.8				253° 39.5	12.3	61° 55.3	11.6	04.6	3.9		S 60°	07:05	08:00	08:55	16:04	17:07					
	06	18° 21.3	314° 00.8	50.1	262° 57.5	27.0	184° 26.7	34.5	116° 09.2	55.8	Dubhe	193° 48.8	61° 39.7 N	268° 39.5	12.0	76° 25.9	11.7	00.7	4.0		S 62°	07:13	08:12	09:14	15:48	16:54					
	07	33° 23.8	329° 00.4	50.7	277° 58.2	26.7	199° 28.9	34.6	131° 11.8	55.8	Elath	278° 09.5	28° 37.1 N	283° 39.4	11.7	90° 56.6	11.6	17° 56.7 S	4.1												
	08	48° 26.2	344° 00.0	51.2	292° 59.0	26.4	214° 31.2	34.6	146° 14.5	55.8	Eltanin	90° 44.3	51° 29.5 S	298° 39.3	11.4	105° 27.2	11.7	52.6	4.2												
	09	63° 28.7	358° 59.6	51.8	307° 59.7	26.2	229° 33.5	34.7	161° 17.1	55.8	Enif	33° 44.1	9° 57.4 N	313° 39.2	11.0	119° 57.9	11.7	48.4	4.2												
	10	78° 31.2	1° 59.2	52.3	323° 00.4	25.9	244° 35.8	34.8	176° 19.7	55.8	Fomalhaut	15° 20.8	29° 31.6 S	328° 39.1	10.7	134° 28.6	11.7	44.2	4.4	54.9											
	11	93° 33.6	28° 58.8	52.9	338° 01.2	25.6	259° 38.0	34.9	191° 22.4	55.8				343° 39.0	10.4	148° 59.3	11.7	39.8	4.4												
	12	108° 36.1	43° 58.4	18° 53.4 N	353° 01.9	22° 25.3 N	274° 40.3	4° 35.0 S	206° 25.0	21° 55.8 S	Gacrux	171° 57.8	57° 12.8 S	358° 38.9	22° 10.1 N	163° 30.0	11.7	17° 35.4 S	4.5	54.9	N 70°	-	-	-	00:57	02:25					
	13	123° 38.6	58° 57.9	54.0	8° 02.6	25.1	289° 42.6	35.1	221° 27.6	55.8	Gienah	175° 49.5	17° 38.3 S	13° 38.9	09.8	178° 00.7	11.7	30.9	4.6		N 68°	-	-	-	01:58	03:09					
	14	138° 41.0	73° 57.5	54.5	23° 03.4	24.8	304° 44.8	35.2	236° 30.3	55.8	Hadar	148° 43.7	60° 27.5 S	28° 38.8	09.4	192° 31.4	11.7	26.3	4.7		N 66°	22:53	-	-	02:32	03:38					
	15	153° 43.5	88° 57.1	55.1	38° 04.1	24.5	319° 47.1	35.3	251° 32.9	55.8	Hamal	327° 57.7	23° 32.5 S	43° 38.7	09.1	207° 02.1	11.8	21.6	4.8		N 64°	22:07	-	-	02:57	04:00					
	16	168° 45.9	103° 56.7																												

2017 July 12, 13, 14 (Wed, Thur, Fri)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	12		13	14	
12	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	-	-	-	23:27	23:17	23:09				
	01	290° 04.8	223° 43.2	19° 12.6 N	173° 28.4	22° 15.4 N	96° 01.8	4° 38.4 S	27° 59.7	21° 55.7 S	Acamar	315° 16.5	40° 14.0 S	178° 36.0	21° 58.0 N	326° 03.3	12.1	14° 01.3 S	7.4	55.5	N 70°	-	-	-	23:09	23:07	23:05				
	02	305° 07.3	238° 42.7	13.1	188° 29.2	15.2	111° 04.0	38.5	43° 02.3	55.7	Achernar	335° 24.9	57° 08.7 S	193° 35.9	57.7	340° 34.4	12.2	13° 53.9 S	7.4	68°	N 68°	-	-	-	22:55	22:59	23:02				
	03	320° 09.7	253° 42.3	13.7	203° 29.9	14.9	126° 06.3	38.6	58° 05.0	55.7	Acruz	173° 06.3	63° 12.0 S	208° 35.8	57.3	355° 05.6	12.2	46.5	7.5	55.6	N 66°	-	-	-	01:27	22:44	22:52				
	04	335° 12.2	268° 41.9	14.2	218° 30.7	14.6	141° 08.5	38.7	73° 07.6	55.7	Adhara	255° 10.7	28° 59.9 S	223° 35.8	57.0	39° 06.6	12.2	39.0	7.6	64°	N 64°	-	-	-	02:10	22:34	22:46				
	05	350° 14.7	283° 41.4	14.7	233° 31.4	14.3	156° 10.8	38.8	88° 10.2	55.7	Aldebaran	290° 46.5	16° 32.4 N	238° 35.7	56.6	24° 08.0	12.3	31.4	7.7	62°	N 62°	-	00:33	02:39	22:25	22:41	22:54				
	06	5° 17.1	298° 41.0	15.2	248° 32.1	14.0	171° 13.1	38.9	103° 12.9	55.7				253° 35.6	56.3	38° 39.3	12.2	23.7	7.7	60°	N 60°	-	01:39	03:00	22:18	22:36	22:52				
	07	20° 19.6	313° 40.6	15.7	263° 32.9	13.8	186° 15.3	39.0	118° 15.5	55.7	Alioth	166° 18.4	55° 52.3 N	268° 35.5	55.9	53° 10.5	12.3	16.0	7.8	58°	N 58°	-	02:12	03:18	22:12	22:32	22:51				
	08	35° 22.0	328° 40.1	16.3	278° 33.6	13.5	201° 17.6	39.1	133° 18.1	55.7	Alkaid	152° 56.7	49° 14.0 N	283° 35.4	55.6	67° 41.8	12.2	08.2	7.8	55.7	N 56°	00:31	02:35	03:32	22:06	22:29	22:49				
	09	50° 24.5	343° 39.7	16.8	293° 34.4	13.2	216° 19.8	39.2	148° 20.7	55.7	Alnair	27° 40.0	46° 52.3 S	298° 35.4	55.2	82° 13.0	12.3	00.4	7.9	54°	N 54°	01:31	02:54	03:45	22:01	22:25	22:48				
	10	65° 27.0	358° 39.3	17.3	308° 35.1	12.9	231° 22.1	39.3	163° 23.4	55.7	Alnilam	275° 43.9	1° 11.6 S	313° 35.3	54.9	96° 44.3	12.3	12° 52.5 S	8.0	52°	N 52°	02:01	03:10	03:56	21:57	22:22	22:47				
	11	80° 29.4	373° 38.8	17.8	323° 35.8	12.6	246° 24.3	39.4	178° 26.0	55.7	Alphard	217° 53.7	8° 44.1 S	328° 35.2	54.5	111° 15.6	12.3	44.5	8.1	50°	N 50°	02:23	03:23	04:05	21:52	22:20	22:46				
	12	95° 31.9	28° 38.4	18.3	338° 36.6	12.3	261° 26.6	39.5	193° 28.6	55.7				343° 35.1	54.2	125° 46.9	12.3	36.4	8.1	45°	N 45°	03:03	03:50	04:26	21:43	22:14	22:43				
	13	110° 34.4	43° 37.9	19° 18.8 N	353° 37.3	22° 12.1 N	276° 28.9	4° 39.6 S	208° 31.3	21° 55.7 S	Alphecca	126° 08.5	26° 39.7 N	358° 35.1	21° 53.8 N	140° 18.2	12.3	12° 28.3 S	8.2	55.8	N 40°	03:30	04:10	04:42	21:36	22:09	22:41				
	14	125° 36.8	58° 37.5	19.3	8° 38.1	11.8	291° 31.1	39.7	223° 33.9	55.7	Alpheratz	357° 40.5	29° 11.1 N	13° 35.0	53.4	154° 49.5	12.4	20.1	8.2	35°	N 35°	03:51	04:27	04:56	21:29	22:05	22:39				
	15	140° 39.3	73° 37.1	19.9	23° 38.8	11.5	306° 33.4	39.8	238° 36.5	55.7	Altair	62° 05.2	8° 55.1 N	28° 34.9	53.1	169° 20.9	12.3	11.9	8.4	30°	N 30°	04:09	04:41	05:08	21:23	22:01	22:38				
	16	155° 41.8	88° 36.6	20.4	38° 39.5	11.2	321° 35.6	39.9	253° 39.1	55.7	Antaa	353° 13.0	42° 12.5 S	43° 34.8	52.7	183° 52.2	12.4	03.5	8.3	30°	N 30°	04:35	05:04	05:28	21:13	21:55	22:35				
	17	170° 44.2	103° 36.2	20.9	53° 40.3	10.9	336° 37.9	40.0	268° 41.8	55.7	Antares	112° 22.6	26° 28.1 S	58° 34.8	52.4	198° 23.6	12.4	11° 55.2 S	8.5	55.9	N 10°	04:56	05:23	05:46	21:05	21:49	22:33				
	18	185° 46.7	118° 35.7	21.4	68° 41.0	10.6	351° 40.1	40.1	283° 44.4	55.7				73° 34.7	52.0	212° 55.0	12.4	46.7	8.5	55.9	N 0°	05:14	05:40	06:02	20:56	21:43	22:31				
	19	200° 49.2	133° 35.3	21.9	83° 41.8	10.3	6° 42.4	40.2	298° 47.0	55.7	Arcturus	145° 53.2	19° 05.8 N	88° 34.6	51.7	227° 26.4	12.3	38.2	8.5	50°	S 10°	05:30	05:56	06:18	20:48	21:38	22:28				
	20	215° 51.6	148° 34.9	22.4	98° 42.5	10.1	21° 44.6	40.3	313° 49.6	55.7	Atria	107° 21.4	69° 03.5 S	103° 34.5	51.3	241° 57.7	12.5	29.7	8.7	20°	N 20°	05:44	06:12	06:35	20:39	21:32	22:26				
	21	230° 54.1	163° 34.9	22.9	113° 43.2	09.8	36° 46.9	40.4	328° 52.3	55.7	Avia	234° 17.5	59° 34.1 S	118° 34.5	50.9	256° 29.2	12.4	21.1	8.6	30°	N 30°	05:59	06:29	06:55	20:29	21:26	22:23				
	22	245° 56.5	178° 34.0	23.4	128° 44.0	09.5	51° 49.2	40.5	343° 54.9	55.7	Bellatrix	278° 29.3	6° 21.7 N	133° 34.4	50.6	271° 00.6	12.4	12.4	8.8	35°	N 35°	06:07	06:39	07:06	20:23	21:22	22:22				
23	260° 59.0	193° 33.5	23.9	143° 44.7	09.2	66° 51.4	40.6	358° 57.5	55.7	Betelgeuse	270° 58.6	7° 24.4 N	148° 34.3	50.2	285° 32.0	12.4	03.6	8.8	56.0	N 40°	06:16	06:49	07:19	20:17	21:18	22:20					
	276° 01.5	208° 33.1	24.4	158° 45.5	08.9	81° 53.7	40.7	14° 00.2	55.7				163° 34.2	49.9	300° 03.4	12.5	10° 54.8 S	8.8	45°	N 45°	06:25	07:01	07:34	20:09	21:13	22:18					
13	00	291° 03.9	223° 32.6	19° 24.9 N	173° 46.2	22° 08.6 N	96° 55.9	4° 40.8 S	29° 02.8	21° 55.7 S	Canopus	263° 55.5	52° 42.4 S	178° 34.2	21° 49.5 N	314° 34.9	12.4	10° 46.0 S	8.9	56.0	S 50°	06:35	07:16	07:53	19:59	21:07	22:16				
	01	306° 06.4	238° 32.2	25.4	188° 47.0	08.3	111° 58.2	40.9	44° 05.4	55.6	Capella	280° 30.8	46° 00.6 N	193° 34.1	49.1	329° 06.3	12.5	37.1	9.0	52°	N 52°	06:40	07:22	08:02	19:55	21:04	22:15				
	02	321° 08.9	253° 31.7	26.0	203° 47.7	08.1	127° 00.4	41.0	59° 08.0	55.6	Deneb	49° 29.1	45° 20.6 N	208° 34.0	48.8	343° 37.8	12.4	28.1	9.0	56.1	N 54°	06:45	07:30	08:12	19:50	21:01	22:13				
	03	336° 11.3	268° 31.3	26.5	218° 48.4	07.8	142° 02.7	41.1	74° 10.7	55.6	Denebola	182° 31.0	14° 28.6 N	223° 34.0	48.4	358° 09.2	12.5	19.1	9.1	56°	N 56°	06:50	07:38	08:23	19:45	20:58	22:12				
	04	351° 13.8	283° 30.8	27.0	233° 49.2	07.5	157° 04.9	41.2	89° 13.3	55.6	Diphda	348° 53.1	17° 53.4 S	238° 33.9	48.0	12° 40.7	12.5	10.0	9.2	58°	N 58°	06:56	07:47	08:36	19:39	20:54	22:11				
	05	6° 16.3	298° 30.4	27.5	248° 49.9	07.2	172° 07.2	41.3	104° 15.9	55.6				253° 33.8	47.7	27° 12.2	12.5	00.8	9.1	50°	S 60°	07:02	07:57	08:51	19:32	20:50	22:09				
	06	21° 18.7	313° 29.9	28.0	263° 50.7	06.9	187° 09.4	41.4	119° 18.5	55.6	Dubhe	193° 48.9	61° 39.7 N	268° 33.7	47.3	41° 43.7	12.5	9° 51.7 S	9.3	56.2	S 62°	07:10	08:09	09:09	19:25	20:45	22:07				
	07	36° 21.2	328° 29.5	28.5	278° 51.4	06.6	202° 11.7	41.5	134° 21.2	55.6	Elath	278° 09.5	28° 37.1 N	283° 33.7	46.9	56° 15.2	12.5	42.4	9.3	56.2	N 56.2										
	08	51° 23.7	343° 29.1	29.0	293° 52.2	06.3	217° 13.9	41.6	149° 23.8	55.6	Eltanin	90° 44.4	51° 29.5 S	298° 33.6	46.6	70° 46.7	12.5	33.1	9.3	56.2	N 56.2										
	09	66° 26.1	358° 28.6	29.5	308° 52.9	06.0	232° 16.2	41.7	164° 26.4	55.6	Enif	33° 44.1	9° 57.4 N	313° 33.5	46.2	85° 18.2	12.5	23.8	9.4	56.2	N 56.2										
	10	81° 28.6	13° 28.1	30.0	323° 53.7	05.7	247° 18.4	41.8	179° 29.0	55.6	Fomalhaut	15° 20.8	29° 31.6 S	328° 33.4	45.8	99° 49.7	12.5	14.4	9.5	56.3	N 56.3										
	11	96° 31.0	28° 27.7	30.5	338° 54.4	05.4	262° 20.7	41.9	194° 31.7	55.6				343° 33.4	45.5	114° 21.2	12.5	04.9	9.5	56.3	N 56.3										
	12	111° 33.5	43° 27.2	19° 31.0 N	353° 55.1	22° 05.2 N	277° 22.9	4° 42.0 S	209° 34.3	21° 55.6 S	Gacrux	171° 57.8	57° 12.8 S	358° 33.3	21° 45.1 N	128° 52.7	12.5	8° 55.4 S	9.6	56.3	N 40°	19:29	20:01	20:41	07:45	08:46	09:47				
	13	126° 36.0	58° 28.8	31.4	8° 55.9	04.9	292° 25.2	42.1	224° 36.9	55.6	Gienah																				

2017 July 15, 16, 17 (Sat, Sun, Mon)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON				Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	15		16	17				
Saturday	00	293° 02.2	223° 10.6	19° 48.4 N	174° 22.1	21° 54.5 N	98° 43.8	4° 45.6 S	31° 08.7	21° 55.5 S	31° 08.7	21° 55.5 S	Acamar	315° 16.5	40° 14.0 S	178° 30.9	21° 31.3 N	291° 45.6	12.3	2° 45.6 S	10.8	57.2	N 72°	-	-	-	23:01	22:53	22:44		
	01	308° 04.7	238° 10.1	48.8	189° 22.8	54.2	113° 46.0	45.7	46° 11.3	55.5	46° 11.3	55.5	Achernar	335° 24.8	57° 08.7 S	193° 30.8	30.9	306° 16.9	12.3	34.8	10.9	68°	-	-	-	23:03	23:01	22:59			
	02	323° 07.1	253° 09.7	49.3	204° 23.6	53.9	128° 48.3	45.8	61° 14.0	55.5	61° 14.0	55.5	Acruz	173° 06.3	63° 12.0 S	208° 30.8	30.5	320° 48.2	12.2	23.9	10.9	66°	-	-	01:40	23:05	23:13	23:22			
	03	338° 09.6	268° 09.2	49.8	219° 24.3	53.6	143° 50.5	45.9	76° 16.6	55.5	76° 16.6	55.5	Adhara	255° 10.7	28° 59.9 S	223° 30.7	30.2	335° 19.4	12.2	13.0	11.0	57.3	64°	-	-	02:19	23:07	23:18	23:31		
	04	353° 12.1	283° 08.7	50.2	234° 25.1	53.3	158° 52.8	46.0	91° 19.2	55.5	91° 19.2	55.5	Aldebaran	290° 46.5	16° 32.4 N	238° 30.6	29.8	349° 50.6	12.2	02.0	10.9	62°	-	00:58	02:45	23:08	23:22	23:38			
	05	8° 14.5	298° 08.2	50.7	249° 25.8	53.0	173° 55.0	46.1	106° 21.8	55.5	106° 21.8	55.5					253° 30.6	29.4	4° 21.8	12.2	1° 51.1 S	11.0	60°	-	01:49	03:06	23:08	23:25	23:45		
	06	23° 17.0	313° 07.8	51.2	264° 26.6	52.7	188° 57.2	46.2	121° 24.4	55.5	121° 24.4	55.5	Alioth	166° 18.5	55° 52.3 N	268° 30.5	29.0	18° 53.0	12.2	40.1	11.0	57.4	N 58°	-	02:19	03:22	23:09	23:28	23:50		
	07	38° 19.5	328° 07.3	51.6	279° 27.3	52.4	203° 59.5	46.3	136° 27.1	55.5	136° 27.1	55.5	Alkaid	152° 56.8	49° 14.0 N	283° 30.4	28.6	33° 24.2	12.1	29.1	11.0	56°	00:53	02:41	03:37	23:10	23:31	23:55			
	08	53° 21.9	343° 06.8	52.1	294° 28.1	52.1	219° 01.7	46.4	151° 29.7	55.5	151° 29.7	55.5	Alkaid	27° 40.0	46° 52.3 S	298° 30.4	28.2	47° 55.3	12.1	18.1	11.0	54°	01:40	02:59	03:49	23:10	23:34	24:00			
	09	68° 24.4	358° 06.3	52.6	309° 28.8	51.8	234° 04.0	46.5	166° 32.3	55.5	166° 32.3	55.5	Alnilam	275° 43.9	1° 11.6 S	313° 30.3	27.8	62° 26.4	12.1	07.1	11.0	52°	02:08	03:14	03:59	23:11	23:36	24:04			
	10	83° 26.9	13° 05.9	53.0	324° 29.6	51.5	249° 06.2	46.7	181° 34.9	55.5	181° 34.9	55.5	Alphard	217° 53.7	8° 44.1 S	328° 30.3	27.4	76° 57.5	12.1	0° 56.1 S	11.1	57.5	50°	02:28	03:27	04:09	23:11	23:38	24:08		
	11	98° 29.3	28° 05.4	53.5	339° 30.3	51.2	264° 08.4	46.8	196° 37.5	55.5	196° 37.5	55.5					343° 30.2	27.0	91° 28.6	12.0	45.0	11.1	45°	03:06	03:53	04:29	23:13	23:43	24:16		
	12	113° 31.8	43° 04.9	19° 54.0 N	354° 31.1	21° 50.9 N	279° 10.7	4° 46.9 S	211° 40.2	21° 55.5 S	211° 40.2	21° 55.5 S	Alphecca	126° 08.5	26° 39.7 N	358° 30.1	21° 26.6 N	105° 59.6	12.0	0° 33.9 S	11.0	57.5	N 40°	03:33	04:13	04:45	23:13	23:47	24:23		
	13	128° 34.2	58° 04.4	54.4	9° 31.8	50.6	294° 12.9	47.0	226° 42.8	55.5	226° 42.8	55.5	Alpheratz	357° 40.5	29° 11.1 N	13° 30.1	26.2	120° 30.6	12.0	22.9	11.1	30°	03:54	04:29	04:58	23:14	23:50	24:29			
	14	143° 36.7	73° 03.9	54.9	24° 32.6	50.3	309° 15.2	47.1	241° 45.4	55.5	241° 45.4	55.5	Altair	62° 05.2	18° 51.1 N	28° 30.0	25.8	135° 01.6	11.9	11.8	11.1	57.6	30°	04:10	04:43	05:10	23:15	23:54	24:35		
	15	158° 39.2	88° 03.5	55.3	39° 33.3	50.0	324° 17.4	47.2	256° 48.0	55.5	256° 48.0	55.5	Ankaa	353° 12.9	42° 12.5 S	43° 29.9	25.4	149° 32.5	11.9	00.7	11.1	20°	04:37	05:05	05:30	23:16	23:59	24:44			
	16	173° 41.6	103° 03.0	55.8	54° 34.1	49.7	339° 19.6	47.3	271° 50.6	55.5	271° 50.6	55.5	Antares	112° 22.6	26° 28.1 S	58° 29.9	25.0	164° 03.4	11.9	0° 10.4 N	11.2	57.7	N 10°	04:57	05:24	05:47	23:17	-	00:04		
	17	188° 44.1	118° 02.5	56.3	69° 34.8	49.4	354° 21.9	47.4	286° 53.3	55.5	286° 53.3	55.5					73° 29.8	24.6	178° 34.3	11.9	21.6	11.1	0°	05:14	05:40	06:02	23:19	-	00:08		
	18	203° 46.6	133° 02.0	56.7	84° 35.6	49.0	9° 24.1	47.5	301° 55.9	55.5	301° 55.9	55.5	Arcturus	145° 53.2	19° 05.8 N	88° 29.8	24.1	193° 05.2	11.8	32.7	11.1	50°	05:30	05:56	06:18	23:20	-	00:13			
	19	218° 49.0	148° 01.5	57.2	99° 36.3	48.7	24° 26.4	47.6	316° 58.5	55.5	316° 58.5	55.5	Atria	107° 21.4	69° 03.5 S	103° 29.7	23.7	207° 36.0	11.8	43.8	11.2	20°	05:44	06:11	06:35	23:21	-	00:17			
	20	233° 51.5	163° 01.1	57.6	114° 37.1	48.4	39° 28.6	47.7	332° 01.1	55.5	332° 01.1	55.5	Avior	234° 17.5	59° 34.1 S	118° 29.6	23.3	222° 06.8	11.8	55.0	11.1	30°	05:59	06:28	06:54	23:22	-	00:23			
	21	248° 54.0	178° 00.6	58.1	129° 37.8	48.1	54° 30.8	47.8	347° 03.7	55.5	347° 03.7	55.5	Bellatrix	278° 29.3	6° 21.8 N	133° 29.6	22.9	236° 37.6	11.7	1° 06.1 N	11.2	57.8	35°	06:06	06:37	07:05	23:23	-	00:26		
	22	263° 56.4	193° 00.1	58.5	144° 38.6	47.8	69° 33.1	47.9	2° 06.4	55.5	2° 06.4	55.5	Betelgeuse	270° 58.6	7° 24.4 N	148° 29.5	22.5	251° 08.3	11.7	17.3	11.1	40°	06:14	06:48	07:18	23:24	-	00:30			
23	278° 58.9	207° 59.6	59.0	159° 39.4	47.5	84° 35.3	48.0	17° 09.0	55.5	17° 09.0	55.5					163° 29.5	22.1	265° 39.0	11.6	28.4	11.2	45°	06:23	07:00	07:32	23:25	-	00:34			
Sunday	00	294° 01.4	222° 59.1	19° 59.4 N	174° 40.1	21° 47.2 N	99° 37.5	4° 48.1 S	32° 11.6	21° 55.5 S	32° 11.6	21° 55.5 S	Canopus	263° 55.4	52° 42.4 S	178° 29.4	21° 21.7 N	280° 09.6	11.6	1° 39.6 N	11.2	57.9	S 50°	06:33	07:14	07:51	23:27	-	00:39		
	01	309° 03.8	237° 58.6	59.9	189° 40.9	46.9	114° 39.8	48.2	47° 14.2	55.5	47° 14.2	55.5	Capella	280° 30.8	46° 00.6 N	193° 29.4	21.3	294° 40.2	11.6	50.8	11.1	52°	06:38	07:20	07:59	23:27	-	00:42			
	02	324° 06.3	252° 58.1	20° 00.4 N	204° 41.6	46.6	129° 42.0	48.3	62° 16.8	55.5	62° 16.8	55.5	Deneb	49° 29.1	45° 20.6 N	208° 29.3	20.9	309° 10.8	11.6	2° 01.9 N	11.2	54°	06:42	07:27	08:09	23:28	-	00:44			
	03	339° 08.7	267° 57.7	00.8	219° 42.4	48.3	144° 44.2	48.4	77° 19.5	55.5	77° 19.5	55.5	Denebola	182° 31.0	14° 28.6 N	223° 29.2	20.5	323° 41.4	11.5	13.1	11.2	56°	06:47	07:35	08:20	23:29	-	00:47			
	04	354° 11.2	282° 57.2	01.3	234° 43.1	48.0	159° 46.5	48.5	92° 22.1	55.5	92° 22.1	55.5	Diphda	348° 53.1	17° 53.4 S	238° 29.2	20.1	338° 11.9	11.4	24.3	11.1	58.0	58°	06:53	07:44	08:32	23:29	-	00:50		
	05	9° 13.7	297° 56.7	01.7	249° 43.9	45.7	174° 48.7	48.6	107° 24.7	55.5	107° 24.7	55.5					253° 29.1	19.7	352° 42.3	11.5	35.4	11.2	S 60°	06:59	07:53	08:46	23:30	-	00:54		
	06	24° 16.1	312° 56.2	02.2	264° 44.6	45.4	189° 51.0	48.8	122° 27.3	55.5	122° 27.3	55.5	Dubhe	193° 48.9	61° 39.7 N	268° 29.1	19.2	7° 12.8	11.3	46.6	11.2	58.1	S 62°	07:06	08:05	09:04	23:31	-	00:58		
	07	39° 18.6	327° 55.7	02.6	279° 45.4	45.0	204° 53.2	48.9	137° 29.9	55.5	137° 29.9	55.5	El Nath	278° 09.5	28° 37.1 N	283° 29.0	18.8	21° 43.1	11.4	57.8	11.1	58.1									
	08	54° 21.1	342° 55.2	03.0	294° 46.1	44.7	219° 55.4	49.0	152° 32.5	55.5	152° 32.5	55.5	Eltanin	90° 44.4	51° 29.5 N	298° 28.9	18.4	36° 13.5	11.3	3° 08.9 N	11.2										
	09	69° 23.5	357° 54.7	03.5	309° 46.9	44.4	234° 57.7	49.1	167° 35.2	55.5	167° 35.2	55.5	Enif	33° 44.1	9° 57.4 N	313° 28.9	18.0	50° 43.8	11.2	20.1	11.1										
	10	84° 26.0	12° 54.2	03.9	324° 47.7	44.1	249° 59.9	49.2	182° 37.8	55.5	182° 37.8	55.5	Fomalhaut	15° 20.7	29° 31.6 S	328° 28.8	17.6	65° 14.0	11.2	31.2	11.1										
	11	99° 28.5	27° 53.7	04.4	339° 48.4	43.8	265° 02.1	49.3	197° 40.4	55.5	197° 40.4	55.5					343° 28.8	17.2	79° 44.2	11.2	42.3	11.2	58.2								
	12																														

2017 July 24, 25, 26 (Mon, Tue, Wed)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON				Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	24		25	26				
Monday	00	301° 54.5'	221° 16.8'	21° 11.7' N	177° 07.8'	20° 43.2' N	106° 42.8'	5° 10.0' S	40° 32.1'	21° 55.3' S	Acamar	315° 16.4'	40° 14.0' S	178° 22.4'	19° 51.9' N	170° 25.4'	6.0	16° 35.6' N	6.5	60.0	N 72°	-	-	-	02:32	04:48	06:49				
	01	316° 56.9'	236° 16.3'	12.0	192° 08.5'	42.8	121° 45.0'	10.1	55° 34.7'	55.3	Achernar	335° 24.7'	57° 08.7' S	193° 22.4'	51.4	184° 50.4'	6.1	29.1	6.7	58.0	N 70°	-	-	-	03:17	05:12	07:02				
	02	331° 59.4'	251° 15.7'	12.3	207° 09.3'	42.4	136° 47.2'	10.2	70° 37.3'	55.3	Acruz	173° 06.4'	63° 11.9' S	208° 22.3'	50.9	199° 15.5'	6.2	22.4	6.7	58.0	68°	-	-	01:36	03:46	05:31					
	03	347° 01.9'	266° 15.1'	12.6	222° 10.1'	42.1	151° 49.1'	10.3	85° 39.9'	55.3	Adhara	255° 10.7'	28° 59.8' S	223° 22.3'	50.3	213° 40.7'	6.2	15.7	6.8	59.9	64°	-	-	02:18	04:08	05:46					
	04	2° 04.3'	281° 14.5'	12.9	237° 10.9'	41.7	166° 51.5'	10.5	100° 42.5'	55.3	Aldebaran	290° 46.4'	16° 32.4' N	238° 22.3'	49.8	228° 05.9'	6.3	08.9	7.0	59.0	62°	-	-	01:46	03:08	04:40					
	05	17° 06.8'	296° 13.9'	13.2	252° 11.7'	41.4	181° 53.7'	10.6	115° 45.1'	55.3				253° 22.3'	49.3	242° 31.2'	6.4	01.9	7.0	59.0	60°	-	-	02:18	03:25	04:52					
	06	32° 09.3'	311° 13.4'	13.5	267° 12.5'	41.0	196° 55.9'	10.7	130° 47.6'	55.3	Alioth	166° 18.5'	55° 52.3' N	268° 22.3'	48.8	256° 56.6'	6.5	15° 54.9' N	7.1	59.0	N 58°	00:42	02:41	03:39	05:02	06:24	07:46				
	07	47° 11.7'	326° 12.8'	13.8	282° 13.3'	40.6	211° 58.1'	10.8	145° 50.2'	55.3	Alkaid	152° 56.8'	49° 14.0' N	283° 22.3'	48.2	271° 22.1'	6.5	47.8	7.3	59.8	56°	01:37	03:00	03:51	05:11	06:31	07:50				
	08	62° 14.2'	341° 12.2'	14.1	297° 14.0'	40.3	227° 50.0'	11.0	160° 52.8'	55.3	Alnair	27° 39.9'	46° 52.3' S	298° 22.3'	47.7	285° 47.6'	6.6	40.5	7.3	59.0	54°	02:06	03:15	04:02	05:19	06:37	07:54				
	09	77° 16.6'	356° 11.6'	14.4	312° 14.8'	39.9	242° 02.5'	11.1	175° 55.4'	55.3	Alnilam	275° 43.8'	1° 11.6' S	313° 22.3'	47.2	300° 13.2'	6.7	33.2	7.4	59.0	52°	02:28	03:28	04:11	05:26	06:42	07:58				
	10	92° 19.1'	11° 11.0'	14.6	327° 15.6'	39.5	257° 04.7'	11.2	190° 58.0'	55.3	Alphard	217° 53.7'	8° 44.1' S	328° 22.3'	46.6	314° 38.9'	6.8	25.8	7.6	59.0	50°	02:46	03:40	04:20	05:33	06:47	08:01				
	11	107° 21.6'	26° 10.5'	14.9	342° 16.4'	39.2	272° 06.9'	11.3	206° 00.6'	55.3				343° 22.2'	46.1	329° 04.7'	6.9	18.2	7.6	59.0	45°	03:19	04:03	04:38	05:46	06:58	08:08				
	12	122° 24.0'	41° 09.9'	21° 15.2' N	357° 17.2'	20° 38.8' N	287° 09.1'	5° 11.4' S	221° 03.2'	21° 55.3' S	Alphecca	126° 08.5'	26° 39.7' N	358° 22.2'	19° 45.6' N	343° 30.6'	6.9	15° 10.6' N	7.7	59.7	N 40°	03:43	04:21	04:52	05:58	07:06	08:13				
	13	137° 26.5'	56° 09.3'	15.5	372° 18.0'	38.5	302° 11.3'	11.6	236° 05.8'	55.3	Alpheratz	302° 11.3'	29° 11.1' N	13° 22.2'	45.0	357° 56.5'	7.0	02.9	7.8	59.0	35°	04:01	04:36	05:04	06:07	07:14	08:18				
	14	152° 29.0'	71° 08.7'	15.8	27° 18.8'	38.1	317° 13.5'	11.7	251° 08.4'	55.3	Altais	62° 05.2'	8° 55.1' N	28° 22.2'	44.5	12° 22.5'	7.1	14° 55.1' N	7.8	59.6	30°	04:17	04:49	05:15	06:16	07:20	08:23				
	15	167° 31.4'	86° 08.1'	16.1	42° 19.5'	37.7	332° 15.6'	11.8	266° 11.0'	55.3	Antares	353° 12.8'	42° 12.5' S	43° 22.2'	44.0	26° 48.6'	7.2	47.3	8.0	59.0	20°	04:41	05:09	05:33	06:30	07:32	08:30				
	16	182° 33.9'	101° 07.6'	16.3	57° 20.3'	37.4	347° 17.8'	11.9	281° 13.6'	55.3				58° 22.2'	43.4	41° 14.8'	7.3	39.3	8.0	59.0	N 10°	05:00	05:26	05:49	06:43	07:41	08:37				
	17	197° 36.4'	116° 07.0'	16.6	72° 21.1'	37.0	2° 20.0'	12.1	296° 16.2'	55.3				73° 22.2'	42.9	55° 41.1'	7.3	31.3	8.2	59.5	0°	05:16	05:41	06:03	06:55	07:51	08:43				
	18	212° 38.8'	131° 06.4'	16.9	87° 21.9'	36.6	311° 18.8'	12.2	311° 18.8'	55.3	Arcturus	145° 53.2'	19° 05.8' N	88° 22.2'	42.4	70° 07.4'	7.5	23.1	8.2	59.0	S 10°	05:29	05:55	06:17	07:07	08:00	08:49				
	19	227° 41.3'	146° 05.8'	17.2	102° 22.7'	36.3	32° 24.4'	12.3	326° 21.4'	55.3	Atria	107° 21.5'	69° 03.5' S	103° 22.2'	41.8	84° 33.9'	7.5	14.9	8.3	59.0	20°	05:42	06:09	06:33	07:20	08:10	08:55				
	20	242° 43.8'	161° 05.2'	17.5	117° 23.5'	35.9	47° 26.6'	12.4	341° 23.9'	55.3	Avior	234° 17.5'	59° 34.0' S	118° 22.2'	41.3	99° 30.4'	7.6	06.6	8.4	59.0	30°	05:55	06:24	06:50	07:34	08:21	09:03				
	21	257° 46.2'	176° 04.6'	17.7	132° 24.3'	35.6	62° 28.8'	12.6	356° 26.5'	55.3	Bellatrix	278° 29.3'	6° 21.8' N	133° 22.2'	40.8	113° 27.0'	7.7	13° 58.2' N	8.4	59.4	35°	06:02	06:33	07:00	07:42	08:27	09:07				
	22	272° 48.7'	191° 04.0'	18.0	147° 25.1'	35.2	77° 31.0'	12.7	11° 29.1'	55.3	Betelgeuse	270° 58.6'	7° 24.5' N	148° 22.1'	40.2	127° 53.7'	7.7	49.8	8.5	59.0	40°	06:09	06:42	07:11	07:52	08:34	09:12				
23	287° 51.1'	206° 03.5'	18.3	162° 25.8'	34.8	92° 33.2'	12.8	26° 31.7'	55.3				163° 22.1'	39.7	142° 20.4'	7.9	41.3	8.6	59.0	45°	06:17	06:52	07:25	08:03	08:43	09:17					
Tuesday	00	302° 53.6'	221° 02.9'	21° 18.6' N	177° 26.6'	20° 34.5' N	107° 35.3'	5° 12.9' S	41° 34.3'	21° 55.3' S	Canopus	263° 55.4'	52° 42.3' S	178° 22.1'	19° 39.2' N	156° 47.3'	7.9	13° 32.7' N	8.7	59.3	S 50°	06:25	07:05	07:41	08:17	08:53	09:24				
	01	317° 56.1'	236° 02.3'	18.8	192° 27.4'	34.1	122° 37.5'	13.1	56° 36.9'	55.3	Capella	280° 30.7'	46° 00.6' N	193° 22.1'	38.6	171° 14.2'	8.0	24.0	8.8	59.0	52°	06:29	07:10	07:48	08:23	08:58	09:27				
	02	332° 58.5'	251° 01.7'	19.1	207° 28.2'	33.7	137° 39.7'	13.2	71° 39.5'	55.3	Deneb	49° 29.1'	45° 20.7' N	208° 22.1'	38.1	185° 41.2'	8.1	15.2	8.8	59.0	54°	06:33	07:17	07:57	08:30	09:03	09:30				
	03	348° 01.0'	266° 01.1'	19.4	222° 29.0'	33.4	166° 42.1'	13.3	86° 42.1'	55.3	Denebola	182° 31.0'	14° 28.6' N	223° 22.1'	37.5	200° 08.3'	8.2	06.4	8.9	59.2	56°	06:37	07:23	08:06	08:37	09:09	09:34				
	04	3° 03.5'	281° 00.5'	19.7	237° 29.8'	33.0	167° 44.1'	13.4	101° 44.7'	55.3	Diphda	348° 53.0'	17° 53.3' S	238° 22.1'	37.0	214° 35.5'	8.2	12° 57.5' N	9.0	59.0	58°	06:42	07:31	08:17	08:46	09:15	09:38				
	05	18° 05.9'	295° 59.9'	19.9	252° 30.6'	32.6	182° 46.3'	13.6	116° 47.3'	55.3				253° 22.1'	36.5	229° 02.7'	8.4	48.5	9.0	59.0	S 60°	06:47	07:39	08:30	08:56	09:22	09:43				
	06	33° 08.4'	310° 59.3'	20.2	267° 31.4'	32.3	197° 48.5'	13.7	131° 49.8'	55.3	Dubhe	193° 48.9'	61° 39.6' N	268° 22.1'	35.9	243° 30.1'	8.4	39.5	9.1	59.1	S 62°	06:53	07:49	08:44	09:07	09:30	09:48				
	07	48° 10.9'	325° 58.8'	20.5	282° 32.2'	31.9	212° 50.7'	13.8	146° 52.4'	55.3	Elnath	278° 09.4'	28° 37.1' N	283° 22.1'	35.4	257° 57.5'	8.5	30.4	9.1	59.0											
	08	63° 13.3'	340° 58.2'	20.7	297° 32.9'	31.5	227° 52.9'	13.9	161° 55.0'	55.3	Eltanin	90° 44.4'	51° 29.6' N	298° 22.1'	34.8	272° 25.0'	8.6	21.3	9.2	59.0											
	09	78° 15.8'	355° 57.6'	21.0	312° 33.7'	31.2	242° 55.0'	14.0	176° 57.6'	55.3	Enif	33° 44.1'	9° 57.4' N	313° 22.1'	34.3	286° 52.6'	8.7	12.0	9.2	59.0											
	10	93° 18.2'	10° 57.0'	21.3	327° 34.5'	30.8	257° 57.2'	14.2	192° 00.2'	55.3	Fomalhaut	15° 20.7'	29° 31.6' S	328° 22.1'	33.7	301° 20.3'	8.8	02.8	9.4	59.0											
	11	108° 20.7'	25° 56.4'	21.5	342° 35.3'	30.4	272° 59.4'	14.3	207° 02.8'	55.3				343° 22.1'	33.2	315° 48.1'	8.8	11° 53.4' N	9.4	59.0											
	12	123° 23.2'	40° 55.8'	21° 21.8' N	357° 36.1'	20° 30.1' N	288° 01.6'	5° 14.4' S	222° 05.4'	21° 55.3' S	Gacrux	171° 57.9'	57° 12.8' S	358° 22.1'	19° 32.7' N	330° 15.9'	8.9	11° 44.0' N	9.4	58.9	N 72°	-	-	-	22:42	22:31	22:22				
	13	138° 25.6'	55° 55.2'	22.1	12° 36.9'	29.7	303° 03.8'	14.5	237° 08.0'	55.3	Genah	175° 49.6'	17° 38.3' S	13° 22.1'	32.1	344° 43.8'	9.0	34.6	9.6	59.0	N 70°	-	-	-	22:16	22:16	22:14				
	14	153° 28.1'	70° 54.6'	22.3	31° 37.7'	29.3	318°																								

2017 July 27, 28, 29 (Thur, Fri, Sat)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON					Lat	Twilight		Sunrise	Moonrise		
																							Nautical	Civil	27		28	29				
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	-	-	-	08:41	10:26	12:09		
Thurs day	00	304° 51'9	220° 34'3	21° 30'7 N	178° 04'7	20° 16'7 N	109° 20'2	5° 19'0 S	43° 38'5	21° 55'3 S	315° 16'3	40° 14'0 S	178° 22'1	19° 12'7 N	131° 49'6	11'6	5° 37'2 N	10'7	57'6	N 70°	-	-	-	00:39	08:46	10:25	12:01					
	01	319° 54'3	235° 33'7	30'9	193° 05'5	16'3	124° 22'3	19'1	58° 41'1	55'3	335° 24'7	57° 08'7 S	193° 22'1	12'1	146° 20'2	11'6	26'5	10'7	68°	N 68°	-	-	-	01:54	08:51	10:25	11:55					
	02	334° 56'8	250° 33'1	31'2	208° 06'3	15'9	139° 24'5	19'2	73° 43'7	55'3	173° 06'4	63° 11'9 S	208° 22'1	11'5	160° 50'8	11'8	15'8	10'7	57'5	64°	N 64°	-	-	-	02:30	08:55	10:24	11:50				
	03	349° 59'3	265° 32'5	31'4	223° 07'1	15'5	153° 26'7	19'4	88° 46'3	55'3	255° 10'7	28° 59'8 S	223° 22'1	11'0	175° 21'6	11'7	05'1	10'7	66°	64°	N 64°	-	-	01:14	02:56	08:58	10:24	11:46				
	04	5° 01'7	280° 31'9	31'6	238° 07'8	15'2	169° 28'9	19'5	103° 48'8	55'3	290° 46'4	16° 32'5 S	238° 22'1	10'4	189° 52'3	11'8	4° 54'4 N	10'8	62°	60°	N 60°	-	-	01:59	03:16	09:01	10:23	11:42				
	05	20° 04'2	295° 31'3	31'8	253° 08'6	14'8	184° 31'0	19'6	118° 51'4	55'3			253° 22'1	09'8	204° 23'1	11'9	43'6	10'7	57'4	60°	N 60°	-	-	02:28	03:32	09:04	10:23	11:39				
	06	35° 06'7	310° 30'6	32'1	268° 09'4	14'4	199° 33'2	19'7	133° 54'0	55'3	166° 18'5	55° 52'3 N	268° 22'1	09'3	218° 54'0	12'0	32'9	10'8		N 58°	01:07	02:49	03:45	09:06	10:22	11:36						
	07	50° 09'1	325° 30'0	32'3	283° 10'2	14'0	214° 35'4	19'9	148° 56'6	55'3	152° 56'8	49° 14'0 N	283° 22'1	08'7	233° 25'0	12'0	22'1	10'7		56°	01:48	03:07	03:57	09:08	10:22	11:34						
	08	65° 11'6	340° 29'4	32'5	298° 11'0	13'6	229° 52'8	20'0	163° 59'2	55'3	27° 39'9	46° 52'3 S	298° 22'1	08'1	247° 56'0	12'0	11'4	10'8	57'3	54°	02:15	03:21	04:07	09:09	10:22	11:32						
	09	80° 14'1	355° 28'8	32'7	313° 11'8	13'3	244° 39'8	20'1	179° 01'7	55'3	275° 43'8	1° 11'6 S	313° 22'1	07'6	262° 27'0	12'1	00'6	10'8		52°	02:35	03:34	04:16	09:11	10:22	11:30						
	10	95° 16'5	10° 28'2	33'0	328° 12'6	12'9	259° 41'9	20'3	194° 04'3	55'3	217° 53'7	8° 44'1 S	328° 22'2	07'0	276° 58'1	12'2	3° 49'8 N	10'8	57'2	50°	02:52	03:44	04:24	09:12	10:21	11:28						
	11	110° 19'0	25° 27'6	33'2	343° 13'4	12'5	274° 44'1	20'4	209° 06'9	55'3			343° 22'2	06'4	291° 29'3	12'2	39'0	10'8		45°	03:23	04:07	04:41	09:16	10:21	11:24						
	12	125° 21'5	40° 27'0	21° 33'4 N	358° 14'2	20° 12'1 N	289° 46'3	5° 20'5 S	224° 09'5	21° 55'3 S	126° 08'5	26° 39'7 N	358° 22'2	19° 05'9 N	306° 00'5	12'3	3° 28'2 N	10'7	57'2	N 40°	03:46	04:24	04:55	09:18	10:20	11:20						
	13	140° 23'9	55° 26'4	33'6	13° 15'0	11'7	304° 48'5	20'6	239° 12'1	55'3	357° 40'2	29° 11'1 N	13° 22'2	05'3	320° 31'8	12'3	17'5	10'8	57'1	35°	04:04	04:38	05:06	09:20	10:20	11:18						
	14	155° 26'4	70° 25'8	33'8	28° 15'8	11'4	319° 50'6	20'8	254° 14'7	55'3	62° 05'2	8° 55'1 S	28° 22'2	04'7	335° 03'1	12'4	06'7	10'8		30°	04:19	04:50	05:17	09:22	10:20	11:15						
	15	170° 28'8	85° 25'2	34'0	43° 16'6	11'0	334° 52'8	20'9	269° 17'2	55'3	353° 12'8	42° 12'5 S	43° 22'2	04'1	349° 34'5	12'4	2° 55'9 N	10'8		20°	04:42	05:10	05:34	09:26	10:19	11:11						
	16	185° 31'3	100° 24'6	34'3	58° 17'4	10'6	349° 55'0	21'0	284° 19'8	55'3	112° 22'6	26° 28'1 S	58° 22'2	03'6	4° 05'9	12'5	45'1	10'8	57'0	N 10°	05:01	05:27	05:49	09:29	10:19	11:07						
	17	200° 33'8	115° 23'9	34'5	73° 18'2	10'2	4° 57'2	21'2	299° 22'4	55'3			73° 22'2	03'0	18° 37'4	12'5	34'3	10'8		0°	05:16	05:41	06:03	09:32	10:18	11:04						
	18	215° 36'2	130° 23'3	34'7	88° 19'0	09'8	19° 59'3	21'3	314° 25'0	55'3	145° 53'2	19° 05'8 N	88° 22'2	02'4	33° 08'9	12'6	23'5	10'8		S 10°	05:29	05:55	06:17	09:35	10:18	11:00						
	19	230° 38'7	145° 22'7	34'9	103° 19'8	09'5	35° 01'5	21'4	329° 27'6	55'3	107° 21'5	69° 03'5 S	103° 22'2	01'8	47° 40'5	12'7	12'7	10'7	56'9	20°	05:41	06:08	06:31	09:38	10:18	10:56						
	20	245° 41'2	160° 22'1	35'1	118° 20'6	09'1	50° 03'7	21'5	344° 30'1	55'3	234° 17'5	59° 34'0 S	118° 22'2	01'3	62° 12'2	12'6	10'2	10'8		30°	05:54	06:23	06:48	09:41	10:17	10:52						
	21	260° 43'6	175° 21'5	35'3	133° 21'4	08'7	65° 05'9	21'7	359° 32'7	55'3	278° 29'3	6° 21'8 N	133° 22'3	00'7	76° 43'8	12'8	1° 51'2 N	10'8	56'8	35°	06:00	06:31	06:58	09:43	10:17	10:50						
	22	275° 46'1	190° 20'9	35'5	148° 22'2	08'3	80° 08'0	21'8	14° 35'3	55'3	148° 22'2	00'1	91° 15'6	12'7	40'4	10'7	40'4	10'7		40°	06:07	06:39	07:09	09:45	10:17	10:47						
23	290° 48'6	205° 20'3	35'8	163° 23'0	07'9	95° 10'2	21'9	29° 37'9	55'3			163° 22'3	18° 59'5 N	105° 47'3	12'9	29'7	10'8		45°	06:14	06:49	07:21	09:48	10:16	10:44							
Fri day	00	305° 51'0	220° 19'7	21° 36'0 N	178° 23'8	20° 07'5 N	110° 12'4	5° 22'1 S	44° 40'5	21° 55'3 S	263° 55'4	52° 42'3 S	178° 22'3	18° 59'0 N	120° 19'2	12'8	1° 18'9 N	10'7	56'7	S 50°	06:22	07:01	07:37	09:51	10:16	10:40						
	01	320° 53'5	235° 19'1	36'2	193° 24'6	07'2	125° 14'6	22'2	59° 43'1	55'3	190° 30'7	46° 00'6 N	193° 22'3	58'4	134° 51'0	12'9	08'2	10'8		52°	06:25	07:07	07:44	09:52	10:16	10:39						
	02	335° 56'0	250° 18'4	36'4	208° 25'4	06'8	140° 16'7	22'3	74° 45'6	55'3	49° 29'1	45° 20'7 N	208° 22'3	57'8	149° 22'9	13'0	0° 57'4 N	10'7		54°	06:29	07:12	07:52	09:54	10:16	10:37						
	03	350° 58'4	265° 17'8	36'6	223° 26'2	06'4	155° 18'9	22'4	89° 48'2	55'3	182° 31'0	14° 28'6 N	223° 22'3	57'2	163° 54'9	13'0	46'7	10'7	56'6	56°	06:33	07:19	08:01	09:56	10:16	10:35						
	04	6° 00'9	280° 17'2	36'8	238° 27'0	06'0	170° 21'1	22'6	104° 50'8	55'3	348° 53'0	17° 53'3 S	238° 22'3	56'6	178° 26'9	13'0	36'0	10'7		58°	06:37	07:26	08:12	09:58	10:15	10:33						
	05	21° 03'3	295° 16'6	37'0	253° 27'8	05'6	185° 23'2	22'7	119° 53'4	55'3			253° 22'4	56'1	192° 58'9	13'1	25'3	10'7		S 60°	06:42	07:34	08:23	10:00	10:15	10:30						
	06	36° 05'8	310° 16'0	37'2	268° 28'6	05'2	200° 25'4	22'8	134° 56'0	55'3	193° 48'9	61° 39'6 N	268° 22'4	55'5	207° 31'0	13'1	14'6	10'7	56'5	S 62°	06:47	07:43	08:37	10:02	10:15	10:27						
	07	51° 08'3	325° 15'4	37'4	283° 29'4	04'9	215° 27'6	23'0	149° 58'5	55'3	278° 09'4	28° 37'1 N	283° 22'4	54'9	222° 03'1	13'1	03'9	10'7														
	08	66° 10'7	340° 14'7	37'6	298° 30'2	04'5	230° 29'8	23'1	165° 01'1	55'3	90° 44'4	51° 29'6 N	298° 22'4	54'3	236° 35'2	13'2	0° 06'8 S	10'6														
	09	81° 13'2	355° 14'1	37'8	313° 31'0	04'1	245° 31'9	23'2	180° 03'7	55'3	33° 44'1	9° 57'5 N	313° 22'4	53'7	251° 07'4	13'3	17'4	10'7	56'4													
	10	96° 15'7	10° 13'5	38'0	328° 31'8	03'7	260° 34'1	23'4	195° 06'3	55'3	15° 20'7	29° 31'6 S	328° 22'4	53'1	265° 39'7	13'2	28'1	10'6														
	11	111° 18'1	25° 12'9	38'2	343° 32'6	03'3	275° 36'3	23'5	210° 08'8	55'3			343° 22'4	52'6	280° 11'9	13'3	38'7	10'6														
	12	126° 20'6	40° 12'3	21° 38'4 N	358° 33'4	20° 02'9 N																										

2017 Jul 30, 31, Aug. 1 (Sun, Mon, Tue)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON			Lat	Twilight		Sunrise	30		Moonrise			
Sunday	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	-	-	-	13:50	15:34	17:23		
	01	307° 49.3	219° 49.8	21° 44.9 N	179° 02.4	19° 48.9 N	111° 56.5	5° 28.4 S	46° 44.2	21° 55.3 S	46° 44.2	21° 55.3 S	Acamar	315° 16.3	40° 14.0 S	178° 23.2	18° 30.6 N	98° 24.0	14.1	6° 54.8 S	9.5	55.3	N 70°	-	-	-	01:19	13:35	15:09	16:44			
	02	322° 51.8	234° 49.2	45.0	194° 03.2	48.5	126° 58.6	28.5	61° 46.7	55.3	335° 24.7	57° 08.7 S	Achernar	335° 24.7	57° 08.7 S	193° 23.2	30.0	112° 57.1	14.1	7° 04.3 S	9.5	55.2	N 68°	-	-	-	02:11	13:24	14:51	16:17			
	03	337° 54.2	249° 48.6	45.2	209° 04.0	48.1	142° 00.8	28.6	76° 49.3	55.3	173° 06.4	63° 11.9 S	Acruz	173° 06.4	63° 11.9 S	208° 23.2	29.4	127° 30.2	14.1	13.8	9.5	55.0	N 66°	-	-	-	02:42	13:14	14:36	15:56			
	04	352° 56.7	264° 48.0	45.4	224° 04.0	47.7	157° 03.0	28.8	91° 51.9	55.3	255° 10.7	28° 59.8 S	Adhara	255° 10.7	28° 59.8 S	223° 23.3	28.8	142° 30.3	14.0	23.3	9.4	64°	-	-	01:34	03:05	13:06	14:24	15:40				
	05	7° 59.2	279° 47.3	45.5	239° 05.7	47.3	172° 05.1	28.9	106° 54.4	55.3	290° 46.4	16° 32.5 N	Aldebaran	290° 46.4	16° 32.5 N	238° 23.3	28.2	156° 36.3	14.1	32.7	9.4	62°	-	-	02:12	03:24	12:59	14:14	15:27				
	06	23° 01.6	294° 46.7	45.7	254° 06.5	46.9	187° 07.3	29.0	121° 57.0	55.3	187° 07.3	29.0	121° 57.0	55.3	253° 23.3	27.6	171° 09.4	14.1	42.1	9.4	55.1	60°	-	-	02:37	03:39	12:53	14:06	15:15				
	07	38° 04.1	309° 46.1	45.8	269° 07.3	46.5	202° 09.5	29.2	136° 59.6	55.3	166° 18.6	55° 52.3 N	Alioth	166° 18.6	55° 52.3 N	268° 23.3	26.9	185° 42.5	14.1	51.5	9.3	55.0	N 58°	01:26	02:57	03:51	12:48	13:58	15:05				
	08	53° 06.5	324° 45.4	46.0	284° 08.1	46.1	217° 11.6	29.3	152° 02.2	55.3	152° 02.2	55.3	152° 02.2	55.3	200° 15.6	14.1	8° 00.8 S	9.3	56°	02:00	03:13	04:02	12:44	13:51	14:57								
	09	68° 09.0	339° 44.8	46.1	299° 08.9	45.7	232° 13.8	29.4	167° 04.7	55.3	27° 39.9	46° 52.0 S	Alnair	27° 39.9	46° 52.0 S	298° 23.4	25.7	214° 48.7	14.1	10.1	9.2	54°	02:04	03:27	04:12	12:39	13:45	14:49					
	10	83° 11.5	354° 44.2	46.3	314° 09.7	45.3	247° 15.9	29.6	182° 07.3	55.3	275° 43.8	1° 11.6 S	Alnilam	275° 43.8	1° 11.6 S	313° 23.4	25.1	229° 21.8	14.1	19.3	9.2	55.0	52°	02:42	03:39	04:20	12:36	13:40	14:42				
	11	98° 13.9	9° 43.5	46.5	329° 10.5	44.9	262° 18.1	29.7	197° 09.9	55.3	262° 18.1	29.7	197° 09.9	55.3	328° 23.4	24.5	243° 54.9	14.2	28.5	9.1	50°	52°	02:58	03:49	04:28	12:32	13:35	14:36					
	12	113° 16.4	24° 42.9	46.6	344° 11.3	44.5	277° 20.3	29.8	212° 12.4	55.3	300.0	29.8	212° 12.4	55.3	343° 23.5	23.9	258° 28.1	14.1	37.6	9.1	45°	45°	03:28	04:10	04:44	12:25	13:25	14:23					
	13	128° 18.9	39° 42.3	21° 46.8 N	359° 12.1	19° 44.1 N	292° 22.4	30.0	227° 15.0	21° 55.3 S	Alpha	227° 15.0	21° 55.3 S	Alpha	227° 15.0	21° 55.3 S	358° 23.5	18° 23.3 N	273° 01.2	14.1	8° 46.7 S	9.0	55.0	N 40°	03:50	04:27	04:58	12:19	13:16	14:12			
	14	143° 21.3	54° 41.6	46.9	14° 12.9	43.7	307° 24.6	30.1	242° 17.6	55.3	242° 17.6	55.3	242° 17.6	55.3	13° 23.5	22.7	287° 34.3	14.1	55.7	9.0	35°	35°	04:07	04:41	05:09	12:14	13:09	14:03					
	15	158° 23.8	69° 41.0	47.1	29° 13.8	43.3	322° 26.7	30.2	257° 20.2	55.3	62° 05.2	8° 55.1 N	Altais	62° 05.2	8° 55.1 N	28° 23.6	22.1	302° 07.4	14.1	9° 04.7 S	9.0	54.9	30°	04:21	04:52	05:18	12:09	13:02	13:55				
	16	173° 26.3	84° 40.4	47.2	44° 14.6	42.9	337° 28.9	30.4	272° 22.7	55.3	337° 28.9	30.4	272° 22.7	55.3	43° 23.6	21.5	316° 40.5	14.1	13.7	8.9	20°	20°	04:44	05:12	05:35	12:01	13:01	13:41					
	17	188° 28.7	99° 39.7	47.4	59° 15.4	42.6	352° 31.1	30.5	287° 25.3	55.3	112° 22.6	26° 28.1 S	Antares	112° 22.6	26° 28.1 S	58° 23.6	20.8	331° 13.6	14.1	22.6	8.9	10°	10°	05:01	05:27	05:50	11:54	12:41	13:29				
	18	203° 31.2	114° 39.1	47.5	74° 16.2	42.2	7° 33.2	30.6	302° 27.9	55.3	73° 23.6	20.2	345° 46.7	14.1	31.5	8.8	8.8	23.6	14.1	31.5	8.8	0°	0°	05:16	05:41	06:03	11:48	12:32	13:17				
	19	218° 33.7	129° 38.5	47.6	89° 17.0	41.8	22° 35.4	30.8	317° 30.4	55.3	145° 53.2	19° 05.8 N	Arcturus	145° 53.2	19° 05.8 N	88° 23.7	19.6	0° 19.8	14.1	40.3	8.7	54.8	S 10°	05:29	05:54	06:16	11:42	12:23	13:06				
	20	233° 36.1	144° 37.8	47.8	104° 17.8	41.4	37° 37.5	30.9	332° 33.0	55.3	107° 21.5	69° 03.5 S	Avia	107° 21.5	69° 03.5 S	103° 23.7	19.0	14° 52.9	14.1	49.0	8.7	20°	20°	05:40	06:07	06:30	11:35	12:14	12:54				
	21	248° 38.6	159° 37.2	47.9	119° 18.6	41.0	52° 39.7	31.0	347° 35.6	55.3	234° 17.5	59° 34.0 S	Atria	234° 17.5	59° 34.0 S	118° 23.7	18.4	29° 26.0	14.0	57.7	8.7	30°	30°	05:52	06:20	06:46	11:27	12:03	12:41				
	22	263° 41.0	174° 36.6	48.1	134° 19.4	40.6	67° 41.9	31.2	2° 38.2	55.3	278° 29.2	6° 21.8 N	Bellatrix	278° 29.2	6° 21.8 N	133° 23.8	17.8	43° 59.0	14.1	10° 06.4 S	8.6	35°	35°	05:58	06:28	06:55	11:23	11:57	12:33				
23	278° 43.5	189° 35.9	48.2	149° 20.2	40.2	82° 44.0	31.3	17° 40.7	55.3	148° 23.8	17.2	58° 32.1	14.1	15.0	8.6	40°	06:04	06:37	07:06	11:18	11:50	12:24	45°	06:11	06:46	07:18	11:12	11:41	12:13				
00	308° 48.4	219° 34.7	21° 48.5 N	179° 21.9	19° 39.4 N	112° 48.3	5° 31.6 S	47° 45.9	21° 55.3 S	Canopus	263° 55.4	52° 42.3 S	178° 23.9	18° 15.9 N	87° 38.2	14.1	10° 32.1 S	8.5	54.7	S 50°	06:18	06:57	07:33	11:05	11:32	12:01							
01	323° 50.9	234° 34.0	48.6	194° 22.7	39.0	127° 50.5	31.7	62° 48.4	55.3	280° 30.6	46° 00.6 N	Capella	280° 30.6	46° 00.6 N	193° 23.9	15.3	102° 11.3	14.0	40.6	8.4	52°	52°	06:21	07:02	07:40	11:02	11:27	11:55					
02	338° 53.4	249° 33.4	48.8	209° 23.5	38.6	142° 52.7	31.9	77° 51.0	55.3	49° 29.1	45° 20.7 N	Deneb	49° 29.1	45° 20.7 N	208° 23.9	14.7	116° 44.3	14.1	49.0	8.4	54°	54°	06:25	07:08	07:47	10:59	11:22	11:48					
03	353° 55.8	264° 32.7	48.9	224° 24.3	38.2	157° 54.8	32.0	92° 53.6	55.3	182° 31.1	14° 28.6 N	Denebola	182° 31.1	14° 28.6 N	223° 24.0	14.1	131° 17.4	14.0	57.4	8.3	56°	56°	06:28	07:14	07:56	10:55	11:17	11:41					
04	8° 58.3	279° 32.1	49.1	239° 25.1	37.8	172° 57.0	32.1	107° 56.1	55.3	348° 53.0	17° 53.3 S	Diphda	348° 53.0	17° 53.3 S	238° 24.0	13.5	145° 50.4	14.0	11° 05.7 S	8.2	58°	58°	06:32	07:21	08:06	10:51	11:10	11:33					
05	24° 00.8	294° 31.5	49.2	254° 25.9	37.4	187° 59.1	32.3	122° 58.7	55.3	253° 24.0	12.8	160° 23.4	14.0	13.9	8.2	54.6	S 60°	06:37	07:28	08:17	10:46	11:03	11:24										
06	39° 03.2	309° 30.8	49.3	269° 26.7	37.0	203° 01.3	32.4	138° 01.3	55.3	193° 48.9	61° 39.6 N	Dubhe	193° 48.9	61° 39.6 N	268° 24.1	12.2	174° 56.4	14.0	22.1	8.2	S 62°	06:41	07:37	08:30	10:41	10:56	11:14						
07	54° 05.7	324° 30.2	49.5	284° 27.6	36.6	218° 03.5	32.5	153° 03.8	55.3	278° 09.4	28° 37.1 N	Elnath	278° 09.4	28° 37.1 N	283° 24.1	11.6	189° 29.4	14.0	30.3	8.1													
08	69° 08.1	339° 29.6	49.6	299° 28.4	36.2	233° 05.6	32.7	168° 06.4	55.3	90° 44.4	51° 29.6 N	Eltanin	90° 44.4	51° 29.6 N	298° 24.1	11.0	204° 02.4	14.0	38.4	8.0													
09	84° 10.6	354° 28.9	49.7	314° 29.2	35.7	248° 07.8	32.8	183° 09.0	55.3	313° 44.1	9° 57.5 N	Enif	313° 44.1	9° 57.5 N	313° 24.2	10.4	218° 35.4	14.0	46.4	8.0													
10	99° 13.1	9° 28.3	49.8	329° 30.0	35.3	263° 09.9	32.9	198° 11.6	55.3	15° 20.6	29° 31.6 S	Fomalhaut	15° 20.6	29° 31.6 S	328° 24.2	09.7	233° 08.4	13.9	54.4	7.9													
11	114° 15.5	24° 27.6	50.0	344° 30.8	34.9	278° 12.1	33.1	213° 14.1	55.3	343° 24.2	09.1	247																					

2017 August 2, 3, 4 (Wed, Thur, Fri)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	2		3	4				
Wednesday	00	310° 46.7	219° 03.8	21° 54.1 N	180° 01.1	19° 19.9 N	114° 31.8	5° 38.2 S	49° 49.0	21° 55.4 S	Acamar	315° 16.3	178° 25.7	17° 45.8 N	65° 47.9	13.2	16° 12.8 S	5.5	54.2	N 72°	-	-	-	19:47	-	-	19:48	-	-		
	01	325° 49.2	234° 03.1	54.2	195° 01.9	19.5	129° 33.9	38.3	64° 51.6	55.4	Achernar	335° 24.6	193° 25.7	45.1	80° 20.1	13.2	18.3	5.4	68°	N 70°	-	-	01:44	18:18	19:48	18:18	19:48	20:54			
	02	340° 51.6	249° 02.5	54.3	210° 02.7	19.1	144° 36.1	38.4	79° 54.1	55.4	Acruz	173° 06.4	208° 25.8	44.5	94° 52.3	13.1	23.7	5.3	66°	N 68°	-	00:55	02:54	17:12	18:20	19:16	18:20	19:16			
	03	355° 54.1	264° 01.8	54.4	225° 03.5	18.7	169° 56.7	38.6	94° 56.7	55.4	Adhara	255° 10.7	223° 25.8	43.8	109° 24.4	13.1	29.0	5.3	64°	N 66°	-	01:52	03:15	16:52	17:56	18:50	17:56	18:50			
	04	10° 56.6	279° 01.2	54.4	240° 04.3	18.2	174° 40.4	38.7	109° 59.3	55.4	Aldebaran	290° 46.3	238° 25.9	43.2	123° 56.5	13.1	34.3	5.2	62°	N 62°	-	02:24	03:32	16:35	17:37	18:31	17:37	18:31			
	05	25° 59.0	284° 00.5	54.5	255° 05.2	17.8	189° 42.5	38.8	125° 01.8	55.4			235° 25.9	42.5	138° 28.6	13.1	39.5	5.2	60°	N 60°	00:50	02:47	03:46	16:21	17:22	18:14	17:22	18:14			
	06	41° 01.5	308° 59.9	54.6	270° 06.0	17.4	204° 44.7	39.0	140° 04.4	55.4	Alioth	166° 18.6	268° 26.0	41.9	153° 00.7	13.0	44.7	5.0	58°	N 58°	01:41	03:05	03:58	16:09	17:08	18:01	17:08	18:01			
	07	56° 04.0	323° 59.2	54.7	285° 06.8	17.0	219° 46.8	39.1	155° 06.9	55.4	Alkaid	152° 56.9	283° 26.0	41.3	167° 32.7	13.0	49.7	5.0	56°	N 56°	02:10	03:20	04:08	15:50	16:57	17:49	16:57	17:49			
	08	71° 06.4	338° 58.6	54.8	300° 07.6	16.6	234° 49.0	39.3	170° 09.5	55.4	Alkaid	27° 39.8	298° 26.1	40.6	182° 04.7	13.0	54.7	4.9	54°	N 54°	02:30	03:33	04:17	15:50	16:47	17:39	16:47	17:39			
	09	86° 08.9	353° 57.9	54.9	315° 08.4	16.2	249° 51.1	39.4	185° 12.1	55.4	Alnilam	275° 43.8	313° 26.1	40.0	196° 36.7	13.0	59.6	4.8	54.1	N 52°	02:49	03:44	04:25	15:42	16:38	17:30	16:38	17:30			
	10	101° 11.4	8° 57.3	55.0	330° 09.3	15.8	264° 53.3	39.5	200° 14.6	55.4	Alphard	217° 53.7	328° 26.1	39.3	211° 08.7	12.9	17° 04.4 S	4.8	50°	N 50°	03:04	03:54	04:32	15:35	16:30	17:21	16:30	17:21			
	11	116° 13.8	23° 56.6	55.0	345° 10.1	15.4	279° 55.4	39.7	215° 17.2	55.4			343° 26.2	38.7	225° 40.6	12.9	09.2	4.7	45°	N 45°	03:32	04:14	04:48	15:19	16:13	17:04	16:13	17:04			
	12	131° 16.3	38° 56.0	21° 55.1 N	0° 10.9	19° 14.9 N	294° 57.5	5° 39.8 S	230° 19.7	21° 55.4 S	Alphecca	126° 08.6	358° 26.2	17° 38.0 N	240° 12.5	12.9	17° 13.9 S	4.6	54.1	N 40°	03:53	04:30	05:00	15:07	15:59	16:50	15:59	16:50			
	13	146° 18.7	53° 55.3	55.2	15° 11.7	14.5	309° 59.7	40.0	245° 22.3	55.4	Alpheratz	357° 40.3	13° 26.3	37.4	254° 44.4	12.9	18.5	4.5	55°	N 40°	04:10	04:43	05:11	14:56	15:48	16:38	15:48	16:38			
	14	161° 21.2	68° 54.7	55.3	30° 12.6	14.1	325° 01.8	40.1	260° 24.9	55.4	Altair	62° 05.2	28° 26.3	36.7	269° 16.3	12.8	23.0	4.5	50°	N 30°	04:24	04:54	05:20	14:47	15:38	16:27	15:38	16:27			
	15	176° 23.7	83° 54.0	55.4	45° 13.4	13.7	340° 04.0	40.2	275° 27.4	55.4	Antares	353° 12.8	43° 26.1	27.4	283° 48.1	12.8	27.5	4.3	20°	N 20°	04:45	05:13	05:36	14:31	15:20	16:09	15:20	16:09			
	16	191° 26.1	98° 53.3	55.4	60° 14.2	13.3	355° 06.1	40.4	290° 30.0	55.4			58° 26.4	35.4	298° 19.9	12.8	31.8	4.3	10°	N 10°	05:02	05:28	05:50	14:16	15:05	15:53	15:05	15:53			
	17	206° 28.6	113° 52.7	55.5	75° 15.0	12.9	10° 08.3	40.5	305° 32.5	55.4			73° 26.5	34.8	312° 51.7	12.7	36.1	4.2	0°	N 0°	05:16	05:41	06:03	14:03	14:50	15:39	14:50	15:39			
	18	221° 31.1	128° 52.0	55.6	90° 15.8	12.5	25° 10.4	40.7	320° 35.1	55.4	Arcturus	145° 53.2	88° 26.5	34.1	327° 23.4	12.8	40.3	4.2	50°	S 10°	05:28	05:53	06:15	13:50	14:36	15:24	14:36	15:24			
	19	236° 33.5	143° 51.4	55.7	105° 16.7	12.0	40° 12.6	40.8	335° 37.7	55.4	Atria	107° 21.6	103° 26.6	33.5	341° 55.2	12.6	44.5	4.0	50°	N 20°	05:39	06:06	06:29	13:36	14:21	15:08	14:21	15:08			
	20	251° 36.0	158° 57.7	55.7	120° 17.5	11.6	55° 14.7	40.9	350° 40.2	55.4	Avior	234° 17.5	118° 26.6	32.8	356° 26.8	12.7	48.5	4.0	30°	N 30°	05:50	06:19	06:44	13:21	14:04	14:50	14:04	14:50			
	21	266° 38.5	173° 50.1	55.8	135° 18.3	11.2	70° 16.9	41.1	5° 42.8	55.4	Bellatrix	278° 29.2	133° 26.7	32.2	10° 58.5	12.7	52.5	3.9	35°	S 35°	05:56	06:26	06:53	13:11	13:54	14:40	13:54	14:40			
	22	281° 40.9	188° 49.4	55.9	150° 19.1	10.8	85° 19.0	41.2	20° 45.3	55.4	Betelgeuse	270° 58.5	148° 26.7	31.5	25° 30.2	12.6	56.4	3.8	40°	N 40°	06:01	06:34	07:03	13:01	13:42	14:28	13:42	14:28			
23	296° 43.4	203° 48.8	56.0	165° 20.0	10.4	100° 21.2	41.4	35° 47.9	55.4			163° 26.8	30.9	40° 01.8	12.6	18° 00.2 S	3.7	45°	N 45°	06:08	06:43	07:14	12:49	13:29	14:14	13:29	14:14				
Thursday	00	311° 45.9	218° 48.1	21° 56.0 N	180° 20.8	19° 10.0 N	115° 23.3	5° 41.5 S	50° 50.5	21° 55.4 S	Canopus	263° 55.4	52° 42.3 S	178° 26.8	17° 30.2 N	54° 33.4	12.5	18° 03.9 S	3.7	54.1	S 50°	06:14	06:53	07:28	12:34	13:12	13:56	13:12	13:56		
	01	326° 48.3	233° 47.5	56.1	195° 21.6	09.5	130° 25.4	41.6	65° 53.0	55.4	Capella	280° 30.6	46° 00.6 N	193° 26.6	49.9	12.6	6.6	3.6	52°	S 52°	06:17	06:58	07:35	12:27	13:04	13:48	13:04	13:48			
	02	341° 50.8	248° 46.8	56.2	210° 22.4	09.1	145° 27.6	41.8	80° 55.6	55.4	Deneb	49° 29.1	45° 20.7 N	208° 26.9	28.9	83° 36.5	12.5	11.2	3.4	54°	S 54°	06:20	07:03	07:42	12:19	12:56	13:39	12:56	13:39		
	03	356° 53.2	263° 44.1	56.2	225° 23.2	08.7	160° 29.7	41.9	95° 58.1	55.4	Denebola	182° 31.1	14° 28.6 N	223° 27.0	28.3	98° 08.0	12.5	14.6	3.4	56°	S 56°	06:24	07:09	07:50	12:11	12:46	13:29	12:46	13:29		
	04	11° 55.7	278° 45.5	56.3	240° 24.1	08.3	175° 31.9	42.1	111° 00.7	55.4	Diphda	348° 52.9	238° 27.0	27.6	112° 39.5	12.5	18.0	3.4	54.2	S 58°	06:27	07:15	07:59	12:01	12:35	13:17	12:35	13:17			
	05	26° 58.2	293° 44.8	56.4	255° 24.9	07.9	190° 34.0	42.2	126° 03.2	55.4			253° 27.1	27.0	127° 11.0	12.4	21.4	3.2	50°	S 60°	06:31	07:22	08:10	11:50	12:23	13:04	12:23	13:04			
	06	42° 00.6	308° 44.2	56.4	270° 25.7	07.5	205° 36.2	42.3	141° 05.8	55.4	Dubhe	193° 49.0	268° 27.1	26.3	141° 42.4	12.4	24.6	3.2	50°	S 62°	06:35	07:30	08:22	11:37	12:08	12:48	12:08	12:48			
	07	57° 03.1	323° 43.5	56.5	285° 26.6	07.0	220° 38.3	42.5	156° 08.4	55.4	Elnath	278° 09.3	283° 27.2	25.7	156° 13.8	12.4	27.8	3.0	50°	S 62°	06:35	07:30	08:22	11:37	12:08	12:48	12:08	12:48			
	08	72° 05.6	338° 42.9	56.5	300° 27.4	06.6	235° 40.5	42.6	171° 10.9	55.4	Eltanin	90° 44.4	298° 27.3	25.0	170° 45.2	12.4	30.8	3.0	50°	S 62°	06:35	07:30	08:22	11:37	12:08	12:48	12:08	12:48			
	09	87° 08.0	353° 42.2	56.6	315° 28.2	06.2	250° 42.6	42.8	186° 13.5	55.4	Enif	33° 44.0	313° 27.3	24.3	185° 16.6	12.3	33.8	2.9	50°	S 62°	06:35	07:30	08:22	11:37	12:08	12:48	12:08	12:48			
	10	102° 10.5	8° 41.5	56.7	330° 29.0	05.8	265° 44.7	42.9	201° 16.0	55.4	Fomalhaut	15° 20.6	328° 27.4	23.7	199° 47.9	12.3	36.7	2.9	50°	S 62°	06:35	07:30	08:22	11:37	12:08	12:48	12:08	12:48			
	11	117° 13.0	23° 40.9	56.7	345° 29.9	05.4	280° 46.9	43.0	216° 18.6	55.4			343° 27.4	23.0	214° 19.2	12.3	39.6	2.7	50°	S 62°	06:35	07:30	08:22	11:37	12:08	12:48	12:08	12:48			
	12	132° 15.4	38° 40.2	21° 56.8 N	0° 30.7	19° 04.9 N	295° 49.0	5° 43.2 S	231° 21.1	21° 55.4																					

2017 August 5, 6, 7 (Sat, Sun, Mon)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON					Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	5	6		7					
Saturday	00	313° 44.1'	218° 16.4'	21° 58.2' N	181° 00.5'	18° 49.7' N	117° 06.1'	5° 48.3' S	52° 53.1'	21° 55.5' S	Acamar	315° 16.3'	40° 13.9' S	178° 29.6'	16° 58.3' N	31° 22.8'	11.6	19° 22.0' S	0.6	54.5	N 72°	-	-	01:00	-	22:25	21:57					
	01	328° 46.6'	233° 15.7'	58.2	196° 01.4'	49.3	132° 08.2'	48.4	67° 55.6'	55.5	Achernar	335° 24.6'	57° 08.7' S	193° 29.7'	57.7	45° 53.4'	11.6	21.4	0.6	68°	-	-	02:05	21:18	21:23	21:24						
	02	343° 49.1'	248° 15.0'	58.2	211° 02.2'	48.8	147° 10.3'	48.6	82° 58.2'	55.5	Acruz	173° 06.5'	63° 11.9' S	208° 29.7'	57.0	60° 24.0'	11.5	20.8	0.8	66°	-	01:25	03:05	19:56	20:23	20:41						
	03	358° 51.5'	263° 14.4'	58.2	226° 03.0'	48.4	162° 12.5'	48.7	98° 00.7'	55.5	Adhara	255° 10.6'	28° 59.8' S	223° 29.8'	56.3	74° 54.5'	11.6	20.0	0.9	64°	-	02:07	03:24	19:33	20:03	20:26						
	04	13° 54.0'	278° 13.7'	58.3	241° 03.9'	48.0	177° 14.6'	48.9	113° 03.3'	55.5	Aldebaran	290° 46.3'	16° 32.5' N	238° 29.8'	55.6	89° 25.1'	11.5	19.1	0.9	62°	-	02:35	03:40	19:14	19:47	20:13						
	05	28° 56.5'	293° 13.0'	58.3	256° 04.7'	47.6	192° 16.7'	49.0	128° 05.8'	55.5				253° 29.9'	55.0	103° 55.6'	11.6	18.2	1.0	60°	01:16	02:56	03:53	18:58	19:34	20:02						
	06	43° 58.9'	308° 12.4'	58.3	271° 05.5'	47.1	207° 18.9'	49.2	143° 08.4'	55.5	Alioth	166° 18.6'	55° 52.2' N	268° 30.0'	54.3	118° 26.2'	11.5	17.2	1.2	54°	01:55	03:13	04:04	18:45	19:22	19:52						
	07	59° 01.4'	323° 11.7'	58.3	286° 06.4'	46.7	222° 21.0'	49.3	158° 10.9'	55.5	Alkaid	152° 56.9'	49° 14.0' N	283° 30.0'	53.6	132° 56.7'	11.5	16.0	1.2	54°	02:21	03:27	04:14	18:34	19:12	19:44						
	08	74° 03.8'	338° 11.0'	58.3	301° 07.2'	46.3	237° 23.1'	49.4	173° 13.5'	55.5	Alnair	27° 39.8'	46° 52.3' S	298° 30.0'	52.9	147° 27.2'	11.5	14.8	1.3	56°	02:40	03:39	04:22	18:24	19:03	19:37						
	09	89° 06.3'	353° 10.4'	58.3	316° 08.0'	45.8	252° 25.3'	49.6	188° 16.0'	55.5	Alnilam	275° 43.7'	1° 11.6' S	313° 30.2'	52.2	161° 57.7'	11.5	13.5	1.4	52°	02:56	03:50	04:30	18:15	18:55	19:30						
	10	104° 08.8'	8° 09.7'	58.3	331° 08.9'	45.4	267° 27.4'	49.7	203° 18.6'	55.5	Alphard	217° 53.7'	8° 44.1' S	328° 30.2'	51.6	176° 28.2'	11.4	12.1	1.6	50°	03:10	03:59	04:37	18:07	18:48	19:24						
	11	119° 11.2'	23° 09.0'	58.3	346° 09.7'	45.0	282° 29.6'	49.9	218° 21.1'	55.5				343° 30.3'	50.9	190° 58.6'	11.5	10.5	1.6	45°	03:37	04:18	04:51	17:51	18:33	19:11						
	12	134° 13.7'	38° 08.4'	21° 58.4' N	1° 10.5'	18° 44.6' N	297° 31.7'	5° 50.0' S	233° 23.7'	21° 55.5' S	Alphecca	126° 08.6'	26° 39.7' N	358° 30.4'	16° 50.2' N	205° 29.1'	11.5	19° 08.9' S	1.6	54°	N 40°	03:57	04:33	05:03	17:37	18:20	19:00					
	13	149° 16.2'	53° 07.7'	58.4	16° 11.4'	44.1	312° 33.8'	50.2	248° 26.2'	55.5				13° 30.4'	49.5	219° 59.6'	11.4	07.3	1.8	35°	04:13	04:46	05:13	17:25	18:09	18:51						
	14	164° 18.6'	68° 07.0'	58.4	31° 12.2'	43.7	327° 36.0'	50.3	263° 28.8'	55.5	Altair	62° 05.2'	8° 55.1' N	28° 30.5'	48.8	234° 30.0'	11.5	05.5	1.9	54°	30°	04:26	04:56	05:22	17:15	18:00	18:43					
	15	179° 21.1'	83° 06.3'	58.4	46° 13.0'	43.3	342° 38.1'	50.5	282° 38.1'	55.5	Antaa	353° 12.7'	42° 12.5' S	43° 30.6'	48.1	249° 00.5'	11.4	03.6	2.0	30°	20°	04:46	05:14	05:37	16:57	17:44	18:29					
	16	194° 23.6'	98° 05.7'	58.4	61° 13.9'	42.8	357° 40.2'	50.6	293° 33.8'	55.6	Antares	112° 22.6'	26° 28.1' S	58° 30.6'	47.5	263° 30.9'	11.5	01.6	2.1	10°	N 10°	05:03	05:28	05:50	16:42	17:30	18:17					
	17	209° 26.0'	113° 05.0'	58.4	76° 14.7'	42.0	12° 42.4'	50.7	308° 36.4'	55.6				73° 30.7'	46.8	278° 01.4'	11.4	18° 59.5' S	2.1	0°	0°	05:16	05:41	06:02	16:27	17:16	18:05					
	18	224° 28.5'	128° 04.3'	58.4	91° 15.5'	42.4	27° 44.5'	50.9	323° 38.9'	55.6	Arcturus	145° 53.2'	19° 05.8' N	88° 30.8'	46.1	292° 31.8'	11.4	57.4	2.3	S 10°	05:27	05:53	06:14	16:13	17:03	17:53						
	19	239° 31.0'	143° 03.7'	58.4	106° 16.4'	41.5	42° 46.6'	51.0	338° 41.5'	55.6	Atria	107° 21.6'	69° 03.5' S	103° 30.8'	45.4	307° 02.2'	11.5	55.1	2.3	20°	20°	05:38	06:04	06:27	15:57	16:49	17:41					
	20	254° 33.4'	158° 03.0'	58.4	121° 17.2'	41.1	57° 48.8'	51.2	353° 44.0'	55.6	Avior	234° 17.5'	59° 34.0' S	118° 30.9'	44.7	321° 32.7'	11.4	52.8	2.5	30°	30°	05:48	06:17	06:42	15:40	16:32	17:27					
	21	269° 35.9'	173° 02.3'	58.4	136° 18.0'	40.7	72° 50.9'	51.3	8° 46.6'	55.6	Bellatrix	278° 29.2'	6° 21.8' N	133° 31.0'	44.0	336° 03.1'	11.4	50.3	2.5	54°	35°	05:53	06:23	06:50	15:30	16:23	17:19					
	22	284° 38.3'	188° 01.7'	58.4	151° 18.9'	40.2	87° 53.0'	51.5	23° 49.1'	55.6	Betelgeuse	270° 58.5'	7° 24.5' N	148° 31.1'	43.4	350° 33.5'	11.4	47.8	2.6	40°	40°	05:58	06:31	06:59	15:18	16:12	17:09					
23	299° 40.8'	203° 01.0'	58.4	166° 19.7'	39.8	102° 55.1'	51.6	38° 51.7'	55.6				163° 31.1'	42.7	5° 03.9'	11.4	45.2	2.7	45°	45°	06:04	06:39	07:10	15:04	15:59	16:58						
Sunday	00	314° 43.3'	218° 03.3'	21° 58.4' N	181° 20.6'	18° 39.4' N	117° 57.3'	5° 51.8' S	53° 54.2'	21° 55.6' S	Canopus	263° 55.3'	52° 42.3' S	178° 31.2'	16° 42.0' N	19° 34.3'	11.4	18° 42.5' S	2.8	54°	S 50°	06:10	06:49	07:23	14:47	15:43	16:45					
	01	329° 45.7'	232° 59.6'	58.4	196° 21.4'	38.9	132° 59.4'	51.9	68° 56.8'	55.6	Capella	280° 30.6'	46° 00.6' N	193° 31.1'	41.3	34° 04.7'	11.4	39.7	2.9	52°	52°	06:13	06:53	07:30	14:39	15:36	16:39					
	02	344° 48.2'	247° 59.0'	58.4	211° 22.2'	38.5	148° 01.5'	52.1	83° 59.3'	55.6	Deneb	49° 29.1'	45° 20.8' N	208° 31.3'	40.6	48° 35.1'	11.5	36.8	3.0	54°	54°	06:15	06:58	07:36	14:30	15:28	16:32					
	03	359° 50.7'	262° 58.3'	58.4	226° 23.1'	38.1	163° 03.7'	52.2	99° 01.9'	55.6	Denebola	182° 31.1'	14° 28.6' N	223° 31.4'	39.9	63° 05.6'	11.4	33.8	3.1	56°	56°	06:18	07:03	07:44	14:20	15:19	16:24					
	04	14° 53.1'	277° 57.6'	58.4	241° 23.9'	37.6	178° 05.8'	52.3	114° 04.4'	55.6	Diphda	348° 52.9'	17° 53.3' S	238° 31.5'	39.2	77° 36.0'	11.4	30.7	3.2	54°	58°	06:22	07:09	07:53	14:09	15:09	16:15					
	05	29° 55.6'	292° 57.0'	58.4	256° 24.7'	37.2	193° 07.9'	52.5	129° 07.0'	55.6				253° 31.6'	38.5	92° 06.4'	11.4	27.5	3.3	S 60°	S 60°	06:25	07:15	08:02	13:56	14:57	16:05					
	06	44° 58.1'	307° 56.3'	58.3	271° 25.6'	36.8	208° 10.1'	52.6	144° 09.5'	55.6	Dubhe	193° 49.0'	61° 39.6' N	268° 31.6'	37.8	106° 36.8'	11.4	24.2	3.3	S 62°	S 62°	06:29	07:23	08:14	13:40	14:43	15:54					
	07	60° 00.5'	322° 55.6'	58.3	286° 26.4'	36.3	223° 12.2'	52.8	159° 12.0'	55.6	Elmath	278° 09.3'	28° 37.1' N	283° 31.7'	37.2	121° 07.2'	11.4	20.9	3.5													
	08	75° 03.0'	337° 54.9'	58.3	301° 27.3'	35.9	238° 14.3'	52.9	174° 14.6'	55.6	Eltanin	90° 44.5'	51° 29.6' N	298° 31.8'	36.5	135° 37.6'	11.4	17.4	3.5													
	09	90° 05.4'	352° 54.3'	58.3	316° 28.1'	35.5	253° 16.5'	53.1	189° 17.1'	55.6	Enif	33° 44.0'	9° 57.5' N	313° 31.8'	35.8	150° 08.0'	11.4	13.9	3.6													
	10	105° 07.9'	7° 53.6'	58.3	331° 28.9'	35.0	268° 18.6'	53.2	204° 19.7'	55.6	Fomalhaut	15° 20.6'	29° 31.6' S	328° 31.9'	35.1	164° 38.4'	11.4	10.3	3.8	55°	55°	06:31	07:24	08:19	13:30	14:35	15:50					
	11	120° 10.4'	22° 52.9'	58.3	346° 29.8'	34.6	283° 20.7'	53.4	219° 22.2'	55.6				343° 32.0'	34.4	179° 08.8'	11.4	06.5	3.8													
	12	135° 12.8'	37° 52.2'	21° 58.3' N	1° 30.6'	18° 34.2' N	298° 22.9'	5° 53.5' S	234° 24.8'	21° 55.6' S	Gacrux	171° 58.0'	57° 12.8' S	358° 32.1'	16° 33.7' N	193° 39.2'	11.4	18° 02.7' S	3.9	55°	N 70°	22:01	-	-	-	00:05	01:41					
	13	150° 15.3'	52° 51.6'	58.3	16° 31.4'	33.7	313° 25.0'	53.7	249° 27.3'	55.6	Gienah	175° 49.6'	17° 38.3' S	13° 32.1'	33.0	208° 09.6'	11.5	17° 58.8' S	4.0	68°	68°	21:28	-	-	-	00:55	02:15					
	14	165° 17.8'	67° 50.9'	58.2	31° 32.3'	33.3	328° 27.1'	53.8	264° 29.9'	55.6	Hadar	14																				

2017 August 8, 9, 10 (Tue, Wed, Thur)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON				Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	8		9	10				
Tuesday	00	316° 41'.5	217° 27'.9	21° 57'.0 N	182° 00'.9	18° 18'.4 N	119° 39'.4	5° 58'.8 S	55° 56'.3	21° 55'.7 S	Acamar	315° 16'.2	40° 13'.9 S	178° 34'.9	16° 08'.5 N	355° 58'.3	11° 8'	14° 47'.4 S	6° 9'	55.7	N 72°	-	-	01:37	21:44	21:34	21:25				
	01	331° 44'.0	232° 27'.2	57° 0'.0	197° 01'.7	17° 9'.0	134° 41'.5	58° 9'.9	70° 58'.8	55° 7'.0	Achernar	335° 24'.6	57° 08'.7 S	193° 34'.9	07° 8'.0	10° 29'.1	11° 7'	40° 5'	7° 0'	68°	N 70°	-	-	02:24	21:23	21:21	21:19				
	02	346° 46'.5	247° 26'.5	56° 9'.9	212° 02'.6	17° 5'.5	149° 43'.7	59° 1'.0	86° 01'.3	55° 7'.0	Acruz	173° 06'.5	63° 11'.9 S	208° 35'.0	07° 0'.0	24° 59'.8	11° 7'	33° 5'	7° 1'	66°	N 68°	-	00:33	02:54	21:07	21:11	21:14				
	03	1° 48'.9	262° 25'.9	56° 9'.9	227° 03'.4	17° 0'.0	164° 45'.8	59° 2'.0	101° 03'.9	55° 7'.0	Adhara	255° 10'.6	28° 59'.8 S	223° 35'.1	06° 3'.0	39° 30'.5	11° 7'	26° 4'	7° 2'	64°	N 64°	-	01:47	03:16	20:53	21:03	21:10				
	04	16° 51'.4	277° 25'.2	56° 8'.8	242° 04'.2	16° 6'.6	179° 47'.9	59° 4'.0	116° 06'.4	55° 7'.0	Aldebaran	290° 46'.3	16° 32'.5 N	238° 35'.2	05° 6'.6	54° 01'.2	11° 8'	19° 2'	7° 3'	62°	N 62°	00:30	02:46	03:48	20:33	20:49	21:03				
	05	31° 53'.9	292° 24'.5	56° 8'.8	257° 05'.1	16° 2'.0	194° 50'.0	59° 5'.5	131° 09'.0	55° 7'.0				253° 35'.3	04° 9'.6	68° 32'.0	11° 8'	11° 9'	7° 3'	55.8	N 60°	01:36	03:05	04:00	20:25	20:44	21:01				
	06	46° 56'.3	307° 23'.8	56° 7'.7	272° 05'.9	15° 7'.7	209° 52'.1	59° 7'.7	146° 11'.5	55° 7'.7	Alioth	166° 18'.6	55° 52'.2 N	268° 35'.4	04° 2'.2	83° 02'.8	11° 8'	04° 6'	7° 4'	56°	N 58°	02:08	03:21	04:10	20:17	20:39	20:58				
	07	61° 58'.8	322° 23'.1	56° 6'.6	287° 06'.8	15° 3'.3	224° 54'.3	59° 8'.8	161° 14'.0	55° 7'.7	Alkaid	152° 56'.9	49° 14'.0 N	283° 35'.4	03° 5'.5	97° 33'.6	11° 7'	13° 57'.2 S	7° 5'	56°	N 56°	02:30	03:34	04:19	20:11	20:35	20:56				
	08	77° 01'.3	337° 22'.5	56° 6'.6	302° 07'.6	14° 8'.8	239° 56'.4	6° 00'.0 S	176° 16'.6	55° 7'.7	Alkaid	207° 39'.8	46° 52'.4 S	298° 35'.5	02° 8'.8	112° 04'.3	11° 8'	49° 7'	7° 5'	54°	N 54°	02:48	03:45	04:27	20:05	20:31	20:54				
	09	92° 03'.7	352° 21'.8	56° 5'.5	317° 08'.5	14° 4'.4	254° 58'.5	00° 1'.1	191° 19'.1	55° 7'.7	Alnilam	275° 43'.7	1° 11'.5 S	313° 35'.6	02° 1'.1	126° 35'.1	11° 9'	42° 2'	7° 6'	52°	N 52°	03:03	03:55	04:35	20:00	20:27	20:52				
	10	107° 06'.2	7° 21'.1	56° 5'.5	332° 09'.3	13° 9'.9	270° 06'.6	00° 3'.3	206° 21'.6	55° 7'.7	Alphard	217° 53'.7	8° 44'.1 S	328° 35'.7	01° 3'.3	141° 06'.0	11° 8'	34° 6'	7° 7'	55.9	N 50°	03:16	04:04	04:41	19:56	20:24	20:51				
	11	122° 08'.7	22° 20'.4	56° 4'.4	347° 10'.2	13° 5'.5	285° 02'.8	00° 4'.4	221° 24'.2	55° 7'.7				343° 35'.8	00° 6'.6	155° 36'.8	11° 8'	26° 9'	7° 8'	45°	N 45°	03:41	04:22	04:55	19:45	20:17	20:47				
	12	137° 11'.1	37° 19'.7	21° 56'.3 N	2° 11'.0	18° 13'.0 N	300° 04'.9	6° 00'.6 S	236° 26'.7	21° 55'.7 S	Alphecca	126° 08'.6	26° 39'.7 N	358° 35'.9	15° 59'.9 N	170° 07'.6	11° 9'	13° 19'.1 S	7° 8'	55.9	N 40°	04:00	04:36	05:06	19:37	20:11	20:44				
	13	152° 13'.6	52° 19'.1	56° 3'.3	17° 11'.9	12° 6'.6	315° 07'.0	00° 7'.7	251° 29'.3	55° 7'.7				13° 36'.9	59° 2'.2	184° 38'.5	11° 8'	11° 3'	7° 9'	35°	N 35°	04:15	04:48	05:16	19:30	20:06	20:42				
	14	167° 16'.0	67° 18'.4	56° 2'.2	32° 12'.7	12° 1'.1	330° 09'.1	00° 9'.9	266° 31'.8	55° 8'.8	Altair	62° 05'.2	8° 55'.2 N	28° 36'.0	58° 5'.5	199° 09'.3	11° 9'	03° 4'	8° 0'	30°	N 30°	04:28	04:58	05:24	19:23	20:02	20:39				
	15	182° 18'.5	82° 17'.7	56° 1'.1	47° 13'.5	11° 7'.7	345° 11'.2	01° 0'.0	281° 34'.3	55° 8'.8	Ankaa	353° 12'.7	42° 12'.5 S	43° 36'.1	57° 8'.8	213° 40'.2	11° 9'	12° 55'.4 S	8° 0'	56° 0	N 56° 0	02:48	05:15	05:38	19:12	19:54	20:36				
	16	197° 21'.0	97° 17'.0	56° 1'.1	62° 14'.4	11° 3'.3	0° 13'.4	01° 2'.2	296° 36'.9	55° 8'.8	Antares	112° 22'.7	26° 28'.1 S	58° 36'.2	57° 1'.1	228° 11'.1	11° 9'	47° 4'	8° 1'	10°	N 10°	05:03	05:29	05:51	19:02	19:48	20:32				
	17	212° 23'.4	112° 16'.3	56° 0'.0	77° 15'.2	10° 8'.8	15° 15'.5	01° 3'.3	311° 39'.4	55° 8'.8				73° 36'.3	56° 3'.3	242° 42'.0	11° 9'	39° 3'	8° 2'	0°	N 0°	05:16	05:41	06:02	18:53	19:41	20:29				
	18	227° 25'.9	127° 15'.7	55° 9'.9	92° 16'.1	10° 4'.4	30° 17'.6	01° 5'.5	326° 41'.9	55° 8'.8	Arcturus	145° 53'.3	19° 05'.8 N	88° 36'.4	55° 6'.6	257° 12'.9	11° 9'	31° 1'	8° 2'	S 10°	S 10°	05:26	05:52	06:13	18:44	19:35	20:26				
	19	242° 28'.4	142° 15'.0	55° 9'.9	107° 16'.9	09° 9'.9	45° 19'.7	01° 6'.6	341° 44'.5	55° 8'.8	Atria	107° 21'.6	69° 03'.5 S	103° 36'.5	54° 9'.9	271° 43'.8	12° 0'.0	22° 9'	8° 3'	20°	N 20°	05:36	06:03	06:25	18:34	19:28	20:22				
	20	257° 30'.8	157° 14'.3	55° 8'.8	122° 17'.8	09° 5'.5	60° 21'.8	01° 8'.8	356° 47'.0	55° 8'.8	Avior	234° 17'.5	59° 34'.0 S	118° 36'.6	47° 0'.0	286° 14'.8	11° 9'	14° 6'	8° 4'	56.1	N 56.1	03:01	06:16	06:16	16:39	18:23	19:20				
	21	272° 33'.3	172° 13'.6	55° 7'.7	137° 18'.6	09° 0'.0	75° 24'.0	01° 9'.9	11° 49'.5	55° 8'.8	Bellatrix	278° 29'.2	6° 21'.8 N	133° 36'.6	53° 5'.5	300° 45'.7	12° 0'.0	06° 2'	8° 5'	35°	N 35°	05:50	06:20	06:47	18:17	19:16	20:16				
	22	287° 35'.8	187° 12'.9	55° 6'.6	152° 19'.5	08° 6'.6	90° 26'.1	02° 1'.1	26° 52'.1	55° 8'.8	Betelgeuse	270° 58'.5	7° 24'.5 N	148° 36'.7	52° 8'.8	315° 16'.7	11° 9'	11° 57'.7 S	8° 5'	40°	N 40°	05:55	06:27	06:56	18:09	19:11	20:13				
23	302° 38'.2	202° 12'.2	55° 6'.6	167° 20'.3	08° 1'.1	105° 28'.2	02° 2'.2	41° 54'.6	55° 8'.8				163° 36'.8	52° 0'.0	329° 47'.6	12° 0'.0	49° 2'	8° 5'	45°	N 45°	06:00	06:35	07:06	18:01	19:05	20:10					
Wednesday	00	317° 40'.7	217° 11'.6	21° 55'.5 N	182° 21'.2	18° 07'.7 N	120° 30'.3	6° 02'.4 S	56° 57'.1	21° 55'.8 S	Canopus	263° 55'.3	52° 42'.2 S	178° 36'.9	15° 51'.3 N	344° 18'.6	12° 0'.0	11° 40'.7 S	8° 7'	56.1	S 50°	06:06	06:44	07:18	17:50	18:58	20:07				
	01	332° 43'.2	232° 10'.9	55° 4'.4	197° 22'.0	07° 2'.2	135° 32'.4	02° 5'.5	71° 59'.7	55° 8'.8	Capella	280° 30'.5	46° 00'.6 N	193° 37'.0	50° 6'.6	358° 49'.6	12° 0'.0	32° 0'	8° 7'	57.2	S 52°	06:08	06:48	07:24	17:45	18:54	20:05				
	02	347° 45'.6	247° 10'.2	55° 3'.3	212° 22'.9	06° 8'.8	150° 34'.6	02° 7'.7	87° 02'.2	55° 8'.8	Deneb	49° 29'.1	45° 20'.8 N	208° 37'.1	49° 9'.9	13° 20'.6	12° 0'.0	23° 3'	8° 7'	54°	N 54°	06:10	06:53	07:31	17:40	18:51	20:03				
	03	2° 48'.1	262° 09'.5	55° 2'.2	227° 23'.0	06° 8'.8	165° 36'.7	02° 8'.8	182° 31'.1	55° 8'.8	Denebola	227° 04'.7	14° 28'.6 N	182° 37'.2	49° 2'.2	27° 51'.6	12° 0'.0	14° 6'	8° 8'	56°	N 56°	06:13	06:57	07:38	17:34	18:47	20:01				
	04	17° 50'.5	277° 08'.8	55° 2'.2	242° 24'.6	05° 9'.9	180° 38'.8	03° 0'.0	117° 07'.3	55° 8'.8	Diphda	348° 52'.9	17° 53'.3 S	238° 37'.3	48° 4'.4	42° 22'.6	12° 1'.1	05° 8'	8° 9'	58°	N 58°	06:16	07:03	07:46	17:27	18:42	19:59				
	05	32° 53'.0	292° 08'.1	55° 1'.1	257° 25'.4	05° 4'.4	195° 40'.9	03° 1'.1	132° 09'.8	55° 8'.8				253° 37'.4	47° 7'.7	56° 53'.7	12° 0'.0	10° 56'.9 S	8° 9'	S 60°	S 60°	06:19	07:09	07:55	17:20	18:37	19:57				
	06	47° 55'.5	307° 07'.5	55° 0'.0	272° 26'.3	05° 0'.0	210° 43'.0	03° 3'.3	147° 12'.4	55° 8'.8	Dubhe	193° 49'.0	61° 39'.6 N	268° 37'.4	47° 0'.0	71° 24'.7	12° 0'.0	48° 0'	9° 0'	56.3	S 62°	06:22	07:15	08:05	17:11	18:31	19:54				
	07	62° 57'.9	322° 06'.8	54° 9'.9	287° 27'.1	04° 5'.5	225° 45'.2	03° 4'.4	162° 14'.9	55° 8'.8	Elnath	278° 09'.3	28° 37'.1 N	283° 37'.5	46° 3'.3	85° 55'.7	12° 1'.1	39° 0'	9° 1'	56°	N 56°	06:22	07:15	08:05	17:11	18:31	19:54				
	08	78° 00'.4	337° 06'.1	54° 8'.8	302° 28'.0	04° 1'.1	240° 47'.3	03° 6'.6	177° 17'.4	55° 8'.8	Eltanin	90° 44'.5	51° 29'.6 N	298° 37'.6	45° 5'.5	100° 26'.8	12° 1'.1	29° 9'	9° 1'	56°	N 56°	06:22	07:15	08:05	17:11	18:31	19:54				
	09	93° 02'.9	352° 05'.4	54° 7'.7	317° 28'.8	03° 6'.6	255° 49'.4	03° 7'.7	192° 20'.0	55° 8'.8	Enif	33° 44'.0	9° 57'.5 N	313° 37'.6	44° 8'.8	114° 57'.9	12° 0'.0	20° 8'	9° 2'	56°	N 56°	06:22	07:15	08:05	17:11	18:31	19:54				
	10	108° 05'.3	7° 04'.7	54° 7'.7	332° 29'.7	03° 2'.2	270° 51'.5	03° 9'.9	207° 22'.5	55° 8'.8	Fomalhaut	15° 20'.6	29° 31'.6 S	328° 37'.8	44° 1'.1	129° 28'.9	12° 1'.1	11° 6'	9° 2'	56°	N 56°	06:22	07:15	08:05	17:11	18:31	19:54				
	11	123° 07'.8	22° 04'.0	54° 6'.6	347° 30'.5	02° 7'.7	285° 53'.6	04° 0'.0	222° 25'.0	55° 8'.8				343° 37'.9																	

2017 August 11, 12, 13 (Fri, Sat, Sun)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise				
																										Nautical	Civil		11	12	13		
11	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	HP	N 72°	-	-	02:03	21:17	21:09	21:00				
	01	319° 39' 0	216° 38' 7	21° 50' 6 N	183° 02' 0	17° 45' 9 N	122° 11' 8	6° 09' 6 S	58° 58' 6	21° 56' 0 S	Acamar	315° 16' 2	40° 13' 9 S	178° 41' 4	15° 16' 3 N	321° 13' 1	2° 3' 48' 6 S	10' 8	57' 2	178° 41' 4	15° 16' 3 N	321° 13' 1	2° 3' 48' 6 S	10' 8	57' 2	-	-	02:41	21:17	21:15	21:13		
	02	334° 41' 4	231° 38' 0	50' 5	198° 02' 9	45' 5	137° 14' 0	09' 8	74° 01' 1	56' 0	Achernar	335° 24' 5	57° 08' 7 S	193° 41' 5	15' 5	335° 44' 3	12' 1	37' 8	10' 8	193° 41' 5	15' 5	335° 44' 3	12' 1	37' 8	10' 8	68°	-	01:18	03:07	21:17	21:20	21:23	
	03	349° 43' 9	246° 37' 3	50' 3	213° 03' 7	45' 0	152° 16' 1	09' 9	89° 03' 7	56' 0	Acruz	173° 06' 5	63° 11' 9 S	208° 41' 6	14' 8	350° 15' 4	12' 1	27' 0	10' 8	208° 41' 6	14' 8	350° 15' 4	12' 1	27' 0	10' 8	66°	-	02:05	03:27	21:17	21:24	21:32	
	04	4° 46' 4	261° 36' 6	50' 2	228° 04' 6	44' 6	162° 18' 2	10' 1	104° 06' 2	56' 0	Adhara	255° 10' 6	28° 59' 7 S	223° 41' 7	14' 0	4° 46' 5	12' 1	16' 2	10' 8	223° 41' 7	14' 0	4° 46' 5	12' 1	16' 2	10' 8	64°	-	02:35	03:43	21:17	21:27	21:39	
	05	19° 48' 8	276° 35' 9	50' 1	243° 05' 5	44' 1	182° 20' 3	10' 2	119° 08' 7	56' 0	Aldebaran	290° 46' 3	16° 32' 5 N	238° 41' 8	13' 3	19° 47' 6	12' 1	05' 3	10' 9	238° 41' 8	13' 3	19° 47' 6	12' 1	05' 3	10' 9	62°	01:09	02:57	03:56	21:17	21:30	21:46	
	06	34° 51' 3	281° 35' 2	49' 9	258° 06' 3	43' 7	197° 22' 4	10' 4	134° 11' 2	56' 0				253° 41' 9	12' 5	33° 17' 7	12' 1	2° 54' 4 S	10' 9	253° 41' 9	12' 5	33° 17' 7	12' 1	2° 54' 4 S	10' 9	60°	01:52	03:14	04:07	21:17	21:33	21:51	
	07	49° 53' 7	306° 34' 6	49' 8	273° 07' 2	43' 2	212° 24' 5	10' 5	149° 13' 8	56' 0	Alioth	166° 18' 6	55° 52' 2 N	268° 42' 0	11' 8	48° 19' 8	12' 1	43' 5	10' 9	268° 42' 0	11' 8	48° 19' 8	12' 1	43' 5	10' 9	57' 3	N 58°	02:19	03:29	04:17	21:17	21:36	21:56
	08	64° 56' 2	321° 33' 9	49' 7	288° 08' 0	42' 7	227° 26' 6	10' 7	164° 16' 3	56' 0	Alkaid	152° 56' 9	49° 14' 0 N	283° 42' 2	11' 1	62° 50' 9	12' 1	32' 6	10' 9	283° 42' 2	11' 1	62° 50' 9	12' 1	32' 6	10' 9	56°	02:40	03:41	04:25	21:17	21:38	22:01	
	09	79° 58' 7	336° 33' 2	49' 5	303° 08' 9	42' 3	242° 28' 2	10' 8	179° 18' 8	56' 0	Alnair	27° 39' 8	46° 52' 4 S	298° 42' 3	10' 3	77° 22' 0	12' 0	21' 7	11' 0	298° 42' 3	10' 3	77° 22' 0	12' 0	21' 7	11' 0	54°	02:56	03:41	04:33	21:17	21:40	22:05	
	10	95° 01' 1	351° 32' 5	49' 4	318° 09' 7	41' 8	257° 30' 8	11' 0	194° 21' 3	56' 0	Alnilam	275° 43' 7	1° 11' 5 S	313° 42' 4	09' 6	91° 53' 0	12' 0	10' 7	11' 0	313° 42' 4	09' 6	91° 53' 0	12' 0	10' 7	11' 0	52°	03:10	04:01	04:39	21:17	21:41	22:08	
	11	110° 03' 6	6° 31' 8	49' 3	333° 10' 6	41' 4	272° 32' 9	11' 1	209° 23' 9	56' 0	Alphard	217° 53' 7	8° 44' 1 S	338° 42' 5	08' 8	106° 24' 1	12' 0	1° 59' 7 S	11' 0	338° 42' 5	08' 8	106° 24' 1	12' 0	1° 59' 7 S	11' 0	50°	03:22	04:09	04:45	21:17	21:43	22:11	
	12	125° 06' 1	21° 31' 1	49' 1	348° 11' 4	40' 9	287° 35' 1	11' 3	224° 26' 4	56' 0				343° 42' 6	08' 1	120° 55' 1	12' 0	48' 7	11' 0	343° 42' 6	08' 1	120° 55' 1	12' 0	48' 7	11' 0	57' 4	03:46	04:26	04:58	21:17	21:47	22:18	
	13	140° 08' 5	36° 30' 4	21° 49' 0 N	3° 12' 3	17° 40' 4 N	302° 37' 2	6° 11' 4 S	239° 28' 9	21° 56' 0 S	Alphecca	126° 08' 6	26° 39' 7 N	358° 42' 7	15° 07' 3 N	135° 26' 1	12' 0	1° 37' 7 S	11' 0	358° 42' 7	15° 07' 3 N	135° 26' 1	12' 0	1° 37' 7 S	11' 0	57' 4	N 40°	04:04	04:39	05:09	21:17	21:50	22:24
	14	155° 11' 0	51° 29' 7	48' 8	18° 13' 2	40' 0	317° 39' 3	11' 6	254° 31' 4	56' 0				13° 42' 8	06' 6	149° 51' 1	12' 0	26' 7	11' 0	13° 42' 8	06' 6	149° 51' 1	12' 0	26' 7	11' 0	35°	04:18	04:51	05:18	21:17	21:52	22:30	
	15	170° 13' 5	66° 29' 0	48' 7	33° 14' 0	39' 5	332° 41' 4	11' 8	289° 34' 0	56' 0	Altair	62° 05' 2	8° 55' 2 N	28° 42' 9	05' 8	164° 28' 1	12' 0	15' 7	11' 1	28° 42' 9	05' 8	164° 28' 1	12' 0	15' 7	11' 1	30°	04:30	05:00	05:26	21:17	21:55	22:34	
	16	185° 15' 9	81° 28' 4	48' 6	48° 14' 9	39' 1	347° 43' 5	11' 9	284° 36' 5	56' 0	Antaa	353° 12' 7	42° 12' 5 S	43° 43' 0	05' 1	178° 59' 1	12' 0	04' 6	11' 1	43° 43' 0	05' 1	178° 59' 1	12' 0	04' 6	11' 1	20°	04:49	05:16	05:39	21:17	21:59	22:42	
	17	200° 18' 4	96° 27' 7	48' 4	63° 15' 7	38' 6	2° 45' 6	12' 1	299° 39' 0	56' 0	Antares	112° 22' 7	26° 28' 1 S	58° 43' 1	04' 3	193° 30' 1	11' 9	0° 53' 5 S	11' 0	58° 43' 1	04' 3	193° 30' 1	11' 9	0° 53' 5 S	11' 0	57' 5	N 10°	05:03	05:29	05:51	21:17	22:02	22:49
	18	215° 20' 9	111° 27' 0	48' 3	78° 16' 6	38' 1	17° 47' 7	12' 2	314° 41' 5	56' 0				73° 43' 2	03' 6	208° 01' 0	11' 9	42' 5	11' 1	73° 43' 2	03' 6	208° 01' 0	11' 9	42' 5	11' 1	0°	05:15	05:40	06:02	21:17	22:06	22:56	
	19	230° 23' 3	126° 26' 3	48' 1	93° 17' 5	37' 7	32° 49' 8	12' 4	329° 44' 1	56' 0	Arcturus	145° 53' 3	19° 05' 8 N	88° 43' 3	02' 9	222° 31' 9	11' 9	31' 4	11' 1	88° 43' 3	02' 9	222° 31' 9	11' 9	31' 4	11' 1	S 10°	05:26	05:51	06:12	21:17	22:09	23:03	
	20	245° 25' 8	141° 25' 6	48' 0	108° 18' 3	37' 2	47° 51' 9	12' 5	344° 46' 6	56' 0	Atria	107° 21' 7	69° 03' 6 S	103° 43' 4	02' 1	237° 02' 8	11' 9	20' 3	11' 1	103° 43' 4	02' 1	237° 02' 8	11' 9	20' 3	11' 1	20°	05:35	06:01	06:24	21:17	22:13	23:10	
	21	260° 28' 2	156° 24' 9	47' 8	123° 19' 2	36' 7	62° 51' 0	12' 7	359° 49' 1	56' 0	Avior	234° 17' 4	59° 33' 9 S	118° 43' 0	05' 1	251° 33' 7	11' 9	09' 2	11' 2	118° 43' 0	05' 1	251° 33' 7	11' 9	09' 2	11' 2	30°	05:43	06:12	06:36	21:17	22:17	23:18	
	22	275° 30' 7	171° 24' 2	47' 7	138° 20' 0	36' 3	77° 56' 1	12' 8	41° 51' 6	56' 0	Bellatrix	278° 29' 2	6° 21' 8 N	133° 43' 6	00' 6	266° 04' 6	11' 8	0° 02' 0 N	11' 1	133° 43' 6	00' 6	266° 04' 6	11' 8	0° 02' 0 N	11' 1	57' 6	35°	05:48	06:17	06:44	21:17	22:19	23:23
23	290° 33' 2	186° 23' 5	47' 5	153° 20' 9	35' 8	92° 58' 2	13' 0	29° 54' 2	56' 0	Betelgeuse	270° 58' 5	7° 24' 5 N	148° 43' 7	14° 59' 9 N	180° 35' 4	11' 8	13' 1	11' 1	148° 43' 7	14° 59' 9 N	180° 35' 4	11' 8	13' 1	11' 1	40°	05:52	06:24	06:52	21:17	22:22	23:28		
	305° 35' 6	201° 22' 8	47' 4	168° 21' 7	35' 4	108° 00' 3	13' 1	44° 56' 7	56' 0				163° 43' 8	59' 1	295° 06' 2	11' 8	24' 2	11' 2	163° 43' 8	59' 1	295° 06' 2	11' 8	24' 2	11' 2	45°	05:56	06:31	07:02	21:17	22:25	23:35		
12	00	320° 38' 1	216° 22' 2	21° 47' 2 N	183° 22' 6	17° 34' 9 N	123° 02' 5	6° 13' 3 S	59° 59' 2	21° 56' 1 S	Canopus	263° 55' 3	52° 42' 2 S	178° 43' 9	14° 58' 4 N	309° 37' 0	11' 8	0° 35' 4 N	11' 1	57' 6	S 50°	06:01	06:39	07:13	21:17	22:29	23:42						
	01	335° 40' 6	231° 21' 5	47' 1	198° 23' 5	34' 4	138° 04' 6	13' 4	75° 01' 7	56' 1	Capella	280° 30' 5	46° 00' 6 N	193° 44' 0	17° 01' 7	324° 07' 8	11' 8	46' 5	11' 1	193° 44' 0	17° 01' 7	324° 07' 8	11' 8	46' 5	11' 1	57' 2	52°	06:03	06:43	07:19	21:18	22:31	23:46
	02	350° 43' 0	246° 20' 8	46' 9	213° 24' 3	34' 0	153° 06' 7	13' 6	90° 04' 2	56' 1	Deneb	49° 29' 1	45° 20' 8 N	208° 44' 1	56' 9	338° 38' 6	11' 7	57' 6	11' 2	208° 44' 1	56' 9	338° 38' 6	11' 7	57' 6	11' 2	54°	06:05	06:47	07:25	21:18	22:33	23:50	
	03	5° 45' 5	261° 20' 1	46' 8	228° 25' 2	33' 5	183° 08' 8	13' 7	105° 06' 8	56' 1	Denebola	182° 31' 1	14° 28' 6 N	223° 44' 2	56' 1	353° 09' 3	11' 7	1° 08' 8 N	11' 1	223° 44' 2	56' 1	353° 09' 3	11' 7	1° 08' 8 N	11' 1	56°	06:07	06:51	07:31	21:18	22:35	23:54	
	04	20° 48' 0	276° 19' 4	46' 6	243° 26' 0	33' 0	183° 10' 9	13' 9	120° 09' 3	56' 1	Diphda	348° 52' 9	17° 53' 3 S	238° 44' 3	55' 3	7° 40' 0	11' 7	19' 9	11' 2	238° 44' 3	55' 3	7° 40' 0	11' 7	19' 9	11' 2	58°	06:10	06:56	07:39	21:18	22:38	23:59	
	05	35° 50' 4	291° 18' 7	46' 5	258° 26' 9	32' 6	198° 13' 0	14' 1	135° 11' 8	56' 1				253° 44' 5	54' 6	22° 10' 7	11' 7	31' 1	11' 1	253° 44' 5	54' 6	22° 10' 7	11' 7	31' 1	11' 1	S 60°	06:12	07:02	07:47	21:18	22:41	24:05	
	06	50° 52' 9	306° 18' 0	46' 3	273° 27' 8	32' 1	213° 15' 1	14' 2	150° 14' 3	56' 1	Dubhe	193° 49' 0	61° 39' 6 N	268° 44' 6	53' 8	36° 41' 4	11' 6	42' 2	11' 2	268° 44' 6	53' 8	36° 41' 4	11' 6	42' 2	11' 2	57' 8	S 62°	06:15	07:08	07:56	21:18	22:44	24:11
	07	65° 55' 3	321° 17' 3	46' 1	288° 28' 6	31' 7	228° 17' 2	14' 4	165° 16' 9	56' 1	El Nath	278° 09' 3	28° 37' 1 N	283° 44' 7	53' 1	51° 12' 0	11' 6	53' 4	11' 1														

2017 August 14, 15, 16 (Mon, Tue, Wed)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	14		15	16	
Monday	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	-	-	02:25	20:50	20:36	19:54		
	01	322° 36'.4	215° 49'.0	21° 38'.7 N	184° 04'.0	17° 12'.5 N	124° 43'.4	6° 20'.7 S	62° 00'.1	21° 56'.3 S	62° 00'.1	21° 56'.3 S	Acamar	315° 16'.2	40° 13'.9 S	178° 49'.3	14° 21'.8 N	285° 36'.9	9.9	9° 16'.3 N	10.2	58'.6	N 70°	-	-	02:57	21:12	21:13	21:18		
	02	337° 38'.8	230° 48'.3	38'.5	199° 04'.9	12'.0	139° 45'.5	20'.9	77° 02'.6	56'.3	77° 02'.6	56'.3	Achernar	335° 24'.5	57° 08'.7 S	193° 49'.4	21'.1	300° 05'.8	9.9	26'.5	10.1	68°	-	01:45	03:20	21:29	21:39	21:57			
	03	352° 41'.3	245° 47'.6	38'.3	214° 05'.7	11'.5	154° 47'.6	21'.1	92° 05'.1	56'.3	92° 05'.1	56'.3	Acruz	173° 06'.5	63° 11'.9 S	208° 49'.5	20.3	314° 34'.7	9.8	36.6	10.0	66°	-	02:22	03:38	21:43	21:59	22:25			
	04	7° 43'.8	260° 46'.9	38'.1	229° 07'.7	11'.0	169° 49'.7	21'.2	107° 07'.6	56'.3	107° 07'.6	56'.3	Adhara	255° 10'.6	28° 59'.7 S	223° 49'.6	19.5	339° 03'.5	9.8	46.6	10.0	64°	-	02:47	03:52	21:55	22:15	22:46			
	05	22° 46'.2	275° 46'.2	37.9	244° 07'.5	10'.6	184° 51'.8	21'.4	122° 10'.1	56'.3	122° 10'.1	56'.3	Aldebaran	290° 46'.2	16° 32'.5 N	238° 49'.7	18.8	343° 32'.3	9.7	56.6	10.0	58'.7	62°	01:33	03:07	04:04	22:04	22:29	23:03		
	06	37° 48'.7	290° 45'.6	37.9	259° 08'.3	10'.1	199° 53'.9	21'.5	137° 12'.6	56'.3	137° 12'.6	56'.3				253° 49'.9	18.0	358° 01'.0	9.6	10° 06'.6 N	9.9	60°	02:07	03:23	04:14	22:13	22:40	23:17			
	07	52° 51'.2	305° 44'.9	37.5	274° 09'.2	09'.6	214° 56'.0	21'.7	152° 15'.2	56'.3	152° 15'.2	56'.3	Alioth	166° 18'.6	55° 52'.2 N	268° 50'.0	17.2	12° 29'.6	9.6	16'.5	9.8		N 58°	02:30	03:36	04:23	22:20	22:50	23:29		
	08	67° 53'.6	320° 44'.2	37.3	289° 10'.1	09'.2	229° 58'.1	21'.8	167° 17'.7	56'.3	167° 17'.7	56'.3	Alkaid	152° 56'.9	49° 13'.9 N	283° 50'.1	16.4	26° 58'.2	9.6	26.3	9.8		56°	02:49	03:48	04:31	22:27	22:59	23:40		
	09	82° 56'.1	335° 43'.5	37.1	304° 10'.9	08'.7	245° 00'.2	22'.0	182° 20'.2	56'.3	182° 20'.2	56'.3	Alnair	27° 39'.8	46° 52'.4 S	298° 50'.2	15.7	41° 26'.8	9.5	36.1	9.8		54°	03:04	03:57	04:38	22:33	23:07	23:49		
	10	97° 58'.6	350° 42'.8	36.9	319° 11'.8	08'.2	260° 02'.3	22'.1	197° 22'.7	56'.3	197° 22'.7	56'.3	Alnilam	275° 43'.7	1° 11'.5 S	313° 50'.3	14.9	55° 55'.3	9.4	45.9	9.6	58'.8	52°	03:17	04:06	04:44	22:38	23:14	23:57		
	11	113° 01'.0	5° 42'.1	36.7	334° 12'.7	07'.7	275° 04'.4	22'.3	212° 25'.2	56'.3	212° 25'.2	56'.3	Alphard	217° 53'.6	8° 44'.1 S	328° 50'.5	14'.1	70° 23'.7	9.4	55.5	9.7		50°	03:28	04:16	04:50	22:43	23:20	24:05		
	12	128° 03'.5	20° 41'.4	36.5	349° 13'.5	07'.3	290° 06'.5	22'.5	227° 27'.7	56'.3	227° 27'.7	56'.3				343° 50'.6	13'.3	84° 52'.1	9.3	11° 05'.2 N	9.5		45°	03:50	04:30	05:02	22:54	23:34	24:21		
	13	143° 05'.9	35° 40'.7	21° 36'.3 N	4° 14'.4	17° 06'.8 N	305° 08'.6	6° 22'.6 S	242° 30'.2	21° 56'.3 S	242° 30'.2	21° 56'.3 S	Alphecca	126° 08'.6	26° 39'.8 N	358° 50'.7	14° 12'.6 N	99° 20'.4	9.2	11° 14'.7 N	9.6	58'.8	N 40°	04:01	04:43	05:12	23:03	23:45	24:34		
	14	158° 08'.4	50° 40'.0	36.0	19° 15'.3	06'.3	320° 10'.7	22'.8	257° 32'.7	56'.3	257° 32'.7	56'.3	Alpheratz	263° 40'.3	29° 11'.2 N	13° 50'.8	11'.8	113° 48'.6	9.2	24.3	9.4		35°	04:27	04:53	05:20	23:10	23:55	24:45		
	15	173° 10'.9	65° 39'.3	35.8	34° 16'.1	05.8	335° 12'.8	22'.9	272° 35'.3	56'.3	272° 35'.3	56'.3	Altair	62° 05'.2	8° 55'.2 N	28° 50'.9	11.0	128° 16'.8	9.2	33.7	9.4		30°	04:32	05:02	05:27	23:17	-	00:04		
	16	188° 13'.0	80° 38'.6	35.6	49° 17'.0	05.4	350° 14'.8	23'.1	287° 37'.8	56'.3	287° 37'.8	56'.3	Ankaa	353° 12'.7	42° 12'.5 S	43° 51'.1	10.2	142° 45'.0	9.0	43.1	9.2	58'.9	20°	04:50	05:17	05:40	23:29	-	00:18		
	17	203° 15'.8	95° 37'.9	35.4	64° 17'.9	04.9	5° 16'.9	23'.3	302° 40'.3	56'.3	302° 40'.3	56'.3	Antares	112° 22'.7	26° 28'.1 S	58° 51'.2	09.5	157° 13'.0	9.1	52.4	9.3		N 10°	05:04	05:29	05:51	23:39	-	00:31		
	18	218° 18'.3	110° 37'.3	35.2	79° 18'.7	04.4	20° 19'.0	23.4	317° 42'.8	56'.3	317° 42'.8	56'.3				73° 51'.3	08.7	171° 41'.1	8.9	12° 01'.7 N	9.2		0°	05:15	05:40	06:01	23:48	-	00:44		
	19	233° 20'.7	125° 36'.6	34.9	94° 19'.6	03.9	35° 21'.1	23.6	332° 45'.3	56'.3	332° 45'.3	56'.3	Arcturus	145° 53'.3	19° 05'.8 N	88° 51'.4	07.9	186° 09'.0	8.9	10.9	9.1		S 10°	05:24	05:49	06:11	23:58	-	00:56		
	20	248° 23'.2	140° 35'.9	34.7	109° 20'.5	03.5	50° 23'.2	23.7	347° 47'.8	56'.4	347° 47'.8	56'.4	Atria	107° 21'.7	69° 03'.6 S	103° 51'.5	07.1	200° 36'.9	8.9	20.0	9.1		20°	05:33	05:59	06:22	-	00:09	01:09		
	21	263° 25'.7	155° 35'.2	34.5	124° 21'.4	03.0	65° 25'.3	23.9	2° 50'.3	56'.4	2° 50'.3	56'.4	Avior	234° 17'.4	59° 33'.9 S	118° 51'.7	06.4	215° 04'.8	8.7	29.1	9.0	59'.0	30°	05:41	06:09	06:33	-	00:21	01:24		
	22	278° 28'.1	170° 34'.5	34.3	139° 22'.2	02.5	80° 27'.4	24.0	17° 52'.8	56'.4	17° 52'.8	56'.4	Bellatrix	278° 29'.2	6° 21'.8 N	133° 51'.8	05.6	229° 32'.5	8.8	38.1	8.9		35°	05:44	06:14	06:40	-	00:28	01:33		
23	293° 30'.6	185° 33'.8	34.1	154° 23'.1	02.0	95° 29'.5	24.2	32° 55'.3	56'.4	32° 55'.3	56'.4	Betelgeuse	270° 58'.5	7° 24'.5 N	148° 51'.0	04.8	244° 00'.3	8.6	47.0	8.9		40°	05:48	06:20	06:48	-	00:36	01:43			
	308° 33'.0	200° 33'.1	33.8	169° 24'.0	01'.6	110° 31'.6	24.4	47° 57'.8	56'.4	47° 57'.8	56'.4				163° 52'.0	04.0	258° 27'.9	8.6	55.9	8.7		45°	05:52	06:27	06:57	-	00:45	01:55			
Tuesday	00	323° 35'.5	215° 32'.4	21° 33'.6 N	184° 24'.8	17° 01'.1 N	125° 33'.7	6° 24'.5 S	63° 00'.4	21° 56'.4 S	21° 56'.4 S	Canopus	263° 55'.3	52° 42'.2 S	178° 52'.1	14° 03'.2 N	272° 55'.5	8.5	13° 04'.6 N	8.8	59'.0	S 50°	05:56	06:34	07:08	-	00:56	02:10			
	01	338° 38'.0	230° 31'.7	33.4	199° 25'.0	00'.6	140° 35'.8	24.7	78° 02'.9	56'.4	78° 02'.9	56'.4	Capella	280° 30'.5	46° 00'.6 N	193° 52'.3	02.5	287° 23'.0	8.5	13.4	8.6		52°	05:58	06:37	07:13	-	01:02	02:16		
	02	353° 40'.4	245° 31'.0	33.2	214° 26'.6	00'.1	155° 37'.9	24.8	93° 05'.4	56'.4	93° 05'.4	56'.4	Deneb	49° 29'.1	45° 20'.8 N	208° 52'.4	01.7	301° 50'.5	8.4	22.0	8.6	59'.1	54°	05:59	06:41	07:18	-	01:07	02:24		
	03	8° 42'.9	260° 30'.3	32.9	229° 27'.4	16° 59'.6 N	170° 40'.0	25.0	108° 07'.9	56'.4	108° 07'.9	56'.4	Denebola	182° 31'.1	14° 28'.6 N	223° 52'.5	00.9	316° 17'.9	8.4	30.6	8.4		56°	06:01	06:45	07:24	-	01:14	02:32		
	04	23° 45'.4	275° 29'.6	32.7	244° 28'.3	59'.2	185° 42'.1	25.1	123° 10'.4	56'.4	123° 10'.4	56'.4	Diphda	348° 52'.9	17° 53'.3 S	238° 52'.6	00.1	330° 45'.3	8.3	39.0	8.4		58°	06:03	06:49	07:31	-	01:21	02:42		
	05	38° 47'.8	290° 29'.0	32.5	259° 29'.2	58.7	200° 44'.2	25.3	138° 12'.9	56'.4	138° 12'.9	56'.4				253° 52'.8	13° 59'.3 N	345° 12'.6	8.2	47.4	8.4		S 60°	06:05	06:54	07:39	00:05	01:30	02:53		
	06	53° 50'.3	305° 28'.3	32.2	274° 30'.1	58'.2	215° 46'.3	25.5	153° 15'.4	56'.4	153° 15'.4	56'.4	Dubhe	193° 49'.0	61° 39'.5 N	268° 52'.9	58.6	359° 39'.8	8.1	55.8	8.2		S 62°	06:07	07:00	07:48	00:11	01:39	03:06		
	07	68° 52'.8	320° 27'.6	32.0	289° 30'.9	57.7	230° 48'.4	25.6	168° 17'.9	56'.4	168° 17'.9	56'.4	Elnath	278° 09'.2	28° 37'.1 N	283° 53'.0	57.8	14° 06'.9	8.1	14° 04'.0 N	8.2										
	08	83° 55'.2	335° 26'.9	31.8	304° 31'.8	57.3	245° 50'.5	25.8	183° 20'.4	56'.4	183° 20'.4	56'.4	Eltanin	90° 44'.5	51° 29'.6 N	298° 53'.1	57.0	28° 34'.0	8.1	12.2	8.1		59'.2								
	09	98° 57'.7	350° 26'.2	31.5	319° 32'.7	56.8	260° 52'.6	25.9	198° 22'.9	56'.4	198° 22'.9	56'.4	Enif	33° 44'.0	9° 57'.5 N	313° 53'.3	56.2	43° 01'.1	7.9	20.3	8.0										
	10	114° 00'.2	5° 25'.5	31.3	334° 33'.5	56.3	275° 54'.6	26.1	213° 25'.4	56'.4	213° 25'.4	56'.4	Fomalhaut	15° 20'.6	29° 31'.6 S	328° 53'.4	58.4	57° 28'.0	8.0	28.3	7.9										
	11	129° 02'.6	20° 24'.8	31.0	349° 34'.4	55.8	290° 56'.7	26.3																							

2017 August 17, 18, 19 (Thur, Fri, Sat)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON					Lat	Twilight		Sunrise	Moonrise				
Thurs day	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	-	-	02:45	-	-	23:27			
	01	325° 33.8'	214° 59.2'	21° 21.5' N	185° 06.7'	16° 38.0' N	127° 14.1'	6° 32.2' S	65° 00.6'	21° 56.6' S	65° 00.6'	21° 56.6' S	65° 00.6'	21° 56.6' S	Acamar	315° 16.2'	40° 13.9' S	178° 58.3'	13° 25.4' N	245° 49.2'	5.8	18° 20.1' N	4.0	59.7	N 70°	-	01:15	03:12	21:39	22:46	24:34			
	02	340° 36.3'	229° 58.5'	21° 3'	200° 07.6'	37.5'	142° 16.2'	32.3'	80° 03.1'	56.6'	80° 03.1'	56.6'	80° 03.1'	56.6'	Achernar	335° 24.5'	57° 08.7' S	193° 58.4'	24.6'	260° 14.0'	5.8	24.1'	3.8	68°	-	02:06	03:32	22:33	23:39	25:10				
	03	355° 38.7'	244° 57.8'	21.0'	215° 08.5'	37.0'	157° 18.2'	32.5'	95° 05.6'	56.6'	95° 05.6'	56.6'	95° 05.6'	56.6'	Acruz	173° 06.6'	63° 11.9' S	208° 58.5'	23.8'	274° 38.8'	5.7	27.9'	3.7	66°	-	02:37	03:48	23:07	-	00:11				
	04	10° 41.2'	259° 57.2'	20.7'	230° 09.4'	36.5'	174° 20.3'	32.6'	110° 08.1'	56.6'	110° 08.1'	56.6'	110° 08.1'	56.6'	Adhara	255° 10.6'	28° 59.7' S	223° 58.7'	23.0'	289° 03.5'	5.7	31.6'	3.5	64°	01:06	03:00	04:01	23:31	-	00:35				
	05	25° 43.6'	274° 56.5'	20.4'	245° 10.3'	36.0'	187° 22.4'	32.8'	125° 10.6'	56.6'	125° 10.6'	56.6'	125° 10.6'	56.6'	Aldebaran	290° 46.2'	16° 32.5' N	238° 58.8'	22.2'	303° 28.2'	5.6	35.1'	3.5	62°	01:52	03:17	04:12	23:50	-	00:54				
	06	40° 46.1'	289° 55.8'	20.1'	260° 11.1'	35.5'	202° 24.5'	33.0'	140° 13.1'	56.7'	140° 13.1'	56.7'	140° 13.1'	56.7'				253° 58.9'	21.4'	317° 52.8'	5.6	38.6'	3.3	60°	02:20	03:32	04:22	-	00:06	01:09				
	07	55° 48.6'	304° 55.1'	19.9'	275° 12.0'	35.1'	217° 26.6'	33.1'	155° 15.6'	56.7'	155° 15.6'	56.7'	155° 15.6'	56.7'	Alioth	166° 18.7'	55° 52.2' N	268° 59.1'	20.6'	332° 17.4'	5.6	41.9'	3.2	59.8	N 58°	02:41	03:44	04:30	-	00:19	01:22			
	08	70° 51.0'	319° 54.4'	19.6'	290° 12.9'	34.6'	232° 28.7'	33.3'	170° 18.1'	56.7'	170° 18.1'	56.7'	170° 18.1'	56.7'	Alkaid	152° 57.0'	49° 13.9' N	283° 59.2'	19.8'	346° 42.0'	5.5	45.1'	3.1	56°	02:58	03:54	04:37	-	00:31	01:34				
	09	85° 53.5'	334° 53.7'	19.3'	305° 13.8'	34.1'	247° 30.8'	33.4'	185° 20.6'	56.7'	185° 20.6'	56.7'	185° 20.6'	56.7'	Alnair	27° 39.8'	46° 52.4' S	298° 59.3'	19.0'	1° 06.5'	5.5	48.2'	2.9	54°	03:12	04:03	04:43	-	00:41	01:44				
	10	100° 56.0'	349° 53.0'	19.0'	320° 14.6'	33.6'	262° 32.9'	33.6'	200° 23.1'	56.7'	200° 23.1'	56.7'	200° 23.1'	56.7'	Alnilam	275° 43.7'	1° 11.5' S	313° 59.5'	18.2'	15° 31.0'	5.4	51.1'	2.8	52°	03:24	04:12	04:49	-	00:50	01:52				
	11	115° 58.4'	4° 52.3'	18.7'	335° 15.5'	33.1'	277° 34.9'	33.8'	215° 25.6'	56.7'	215° 25.6'	56.7'	215° 25.6'	56.7'	Alphard	217° 53.6'	8° 44.1' S	328° 59.6'	17.4'	29° 55.4'	5.4	53.9'	2.7	50°	03:34	04:19	04:54	00:05	00:58	02:00				
	12	131° 00.9'	19° 51.6'	18.4'	350° 16.4'	32.6'	292° 37.0'	33.9'	230° 28.1'	56.7'	230° 28.1'	56.7'	230° 28.1'	56.7'				343° 59.8'	16.6'	44° 19.8'	5.4	56.6'	2.6	45°	03:55	04:34	05:05	00:21	01:15	02:17				
	13	146° 03.4'	34° 50.9'	21° 18.1' N	5° 17.3'	16° 32.1' N	307° 39.1'	6° 34.1' S	245° 30.6'	21° 56.7' S	245° 30.6'	21° 56.7' S	245° 30.6'	21° 56.7' S	Alphecca	126° 08.6'	26° 39.8' N	358° 59.9'	13° 15.8' N	58° 44.2'	5.4	18° 59.2' N	2.4	59.8	N 40°	04:11	04:46	05:14	00:34	01:30	02:31			
	14	161° 05.8'	49° 50.2'	17.8'	20° 18.2'	31.6'	322° 41.2'	34.3'	260° 33.1'	56.7'	260° 33.1'	56.7'	260° 33.1'	56.7'	Alpheratz	357° 40.2'	29° 11.2' N	14° 00.0'	15.0'	73° 08.6'	5.3	19° 01.6' N	2.3	35°	04:24	04:56	05:22	00:45	01:42	02:43				
	15	176° 08.3'	64° 49.6'	17.6'	35° 19.0'	31.2'	337° 43.3'	34.4'	275° 35.6'	56.7'	275° 35.6'	56.7'	275° 35.6'	56.7'	Altair	62° 05.2'	8° 55.2' S	29° 00.2'	14.2'	87° 32.9'	5.3	03.9'	2.2	30°	04:34	05:04	05:29	00:55	01:52	02:53				
	16	191° 10.8'	79° 48.9'	17.3'	50° 19.9'	30.7'	352° 45.4'	34.6'	290° 38.1'	56.7'	290° 38.1'	56.7'	290° 38.1'	56.7'	Antares	353° 12.7'	42° 12.5' S	44° 00.3'	13.4'	101° 57.2'	5.3	06.1'	2.0	20°	04:51	05:18	05:41	01:12	02:10	03:11				
	17	206° 13.2'	94° 48.2'	17.0'	65° 20.8'	30.2'	7° 47.4'	34.7'	305° 40.6'	56.7'	305° 40.6'	56.7'	305° 40.6'	56.7'				59° 00.4'	12.6'	116° 21.5'	5.2	08.1'	1.9	10°	05:04	05:29	05:51	01:27	02:26	03:26				
	18	221° 15.7'	109° 47.5'	16.7'	80° 21.7'	29.7'	22° 49.5'	34.9'	320° 43.1'	56.7'	320° 43.1'	56.7'	320° 43.1'	56.7'				74° 00.6'	11.7'	130° 45.7'	5.2	10.0'	1.8	0°	05:15	05:39	06:00	01:41	02:41	03:41				
	19	236° 18.1'	124° 46.8'	16.4'	95° 22.6'	29.2'	37° 51.6'	35.1'	335° 45.6'	56.7'	335° 45.6'	56.7'	335° 45.6'	56.7'	Arcturus	145° 53.3'	19° 05.8' N	89° 00.7'	10.9'	145° 09.9'	5.2	11.8'	1.7	10°	05:23	05:48	06:10	01:55	02:56	03:55				
	20	251° 20.6'	139° 46.1'	16.1'	110° 23.4'	28.7'	52° 53.7'	35.2'	350° 48.1'	56.7'	350° 48.1'	56.7'	350° 48.1'	56.7'	Atria	107° 21.7'	69° 03.6' S	104° 00.8'	10.1'	159° 34.1'	5.2	13.5'	1.5	20°	05:31	05:57	06:19	02:10	03:11	04:10				
	21	266° 23.1'	154° 45.4'	15.8'	125° 24.3'	28.2'	67° 59.3'	35.4'	5° 50.6'	56.7'	5° 50.6'	56.7'	5° 50.6'	56.7'	Avior	234° 17.4'	59° 33.9' S	119° 01.0'	09.3'	173° 58.3'	5.2	15.0'	1.4	30°	05:38	06:06	06:31	02:28	03:30	04:28				
	22	281° 25.5'	169° 44.7'	15.5'	140° 25.2'	27.7'	82° 57.9'	35.5'	20° 53.1'	56.7'	20° 53.1'	56.7'	20° 53.1'	56.7'	Bellatrix	278° 29.1'	6° 21.8' N	134° 01.1'	08.5'	188° 22.5'	5.1	16.4'	1.2	59.9	35°	05:41	06:11	06:37	02:38	03:40	04:38			
23	296° 28.0'	184° 44.0'	15.2'	155° 26.1'	27.2'	98° 00.0'	35.7'	35° 55.6'	56.7'	35° 55.6'	56.7'	35° 55.6'	56.7'	Betelgeuse	270° 58.4'	7° 24.5' N	149° 01.3'	07.7'	202° 46.6'	5.1	17.6'	1.1	40°	05:44	06:16	06:44	02:50	03:53	04:50					
	311° 30.5'	199° 43.3'	14.9'	170° 27.0'	26.7'	113° 02.0'	35.9'	50° 58.1'	56.8'	50° 58.1'	56.8'	50° 58.1'	56.8'				164° 01.4'	06.9'	217° 10.7'	5.1	18.7'	1.0	45°	05:48	06:22	06:52	03:03	04:07	05:04					
Fri day	00	326° 32.9'	214° 42.7'	21° 14.6' N	185° 27.8'	16° 26.3' N	128° 04.1'	6° 36.0' S	66° 00.6'	21° 56.8' S	66° 00.6'	21° 56.8' S	66° 00.6'	Canopus	263° 55.2'	52° 42.2' S	179° 01.5'	13° 06.1' N	231° 34.8'	5.1	19° 19.7' N	0.9	59.9	S 50°	05:51	06:29	07:02	03:20	04:25	05:21				
	01	341° 35.4'	229° 42.0'	14.3'	200° 28.7'	25.8'	143° 06.2'	36.2'	81° 03.1'	56.8'	81° 03.1'	56.8'	81° 03.1'	56.8'	Capella	280° 30.5'	46° 00.6' N	194° 01.7'	05.3'	245° 58.9'	5.1	20.6'	0.7	52°	05:52	06:32	07:07	03:28	04:33	05:29				
	02	356° 37.9'	244° 41.3'	14.0'	215° 29.6'	25.3'	158° 08.3'	36.4'	96° 05.6'	56.8'	96° 05.6'	56.8'	96° 05.6'	56.8'	Deneb	49° 29.1'	45° 20.8' N	209° 01.8'	04.5'	260° 23.0'	5.0	21.3'	0.6	54°	05:54	06:35	07:12	03:37	04:42	05:38				
	03	11° 40.3'	259° 40.6'	13.7'	230° 30.5'	34.8'	173° 10.4'	36.5'	111° 08.1'	56.8'	111° 08.1'	56.8'	111° 08.1'	56.8'	Denebola	182° 31.8'	14° 28.6' N	224° 01.9'	05.1'	274° 47.0'	5.1	21.9'	0.4	56°	05:55	06:39	07:17	03:46	04:52	05:48				
	04	26° 42.8'	274° 39.9'	13.4'	245° 31.4'	24.3'	188° 12.5'	36.7'	126° 10.6'	56.8'	126° 10.6'	56.8'	126° 10.6'	56.8'	Diphda	348° 52.8'	17° 53.3' S	239° 02.1'	02.9'	289° 11.1'	5.0	22.3'	0.3	58°	05:56	06:42	07:24	03:58	05:04	05:59				
	05	41° 45.3'	289° 39.2'	13.1'	260° 32.2'	23.8'	203° 14.5'	36.8'	141° 13.1'	56.8'	141° 13.1'	56.8'	141° 13.1'	56.8'				254° 02.2'	02.1'	303° 35.1'	5.1	22.6'	0.2	S 60°	05:58	06:47	07:31	04:11	05:18	06:12				
	06	56° 47.7'	304° 38.5'	12.8'	275° 33.1'	23.3'	218° 16.6'	37.0'	156° 15.6'	56.8'	156° 15.6'	56.8'	156° 15.6'	56.8'	Dubhe	193° 49.0'	61° 39.5' N	269° 02.4'	01.3'	317° 59.2'	5.0	22.8'	0.8	S 62°	05:59	06:51	07:39	04:26	05:35	06:27				
	07	71° 50.2'	319° 37.8'	12.5'	290° 34.0'	22.8'	233° 18.7'	37.2'	171° 18.1'	56.8'	171° 18.1'	56.8'	171° 18.1'	56.8'	Elath	278° 09.2'	28° 37.1' N	284° 02.5'	00.5'	332° 23.2'	5.0	22.9'	0.1											
	08	86° 52.6'	334° 37.1'	12.2'	305° 34.9'	22.3'	248° 20.8'	37.3'	186° 20.6'	56.8'	186° 20.6'	56.8'	186° 20.6'	56.8'	Eltanin	90° 44.5'	51° 29.6' N	299° 02.6'																

2017 August 20, 21, 22 (Sun, Mon, Tue)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON					Lat	Twilight		Sunrise	Moonrise					
																					Nautical	Civil	20	21	22		20	21		22					
Sunday	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	v	Dec	d	HP	N 72°	-	-	03:03	-	01:57	04:03			
	01	328° 31'.2	214° 09'.6	20° 58'.9 N	186° 10'.3	16° 02'.5 N	129° 43'.9	6° 43'.9 S	68° 00'.3	21° 57'.0 S	68° 00'.3	21° 57'.0 S	Acamar	315° 16'.1	44° 0'	179° 08'.4	12° 27'.0 N	203° 00'.3	6'.0	17° 31'.3 N	5'.4	59'.7	6'.0	25'.9	5'.4	68°	-	01:46	03:27	00:34	02:29	04:22			
	02	343° 33'.7	229° 09'.0	58'.6	201° 11'.2	02'.0	144° 46'.0	44'.0	83° 02'.8	57'.1	144° 46'.0	44'.0	Achernar	335° 24'.4	57° 08'.7 S	194° 08'.5	26'.1	217° 25'.3	6'.1	25'.9	5'.4	68°	-	02:25	03:45	01:10	02:52	04:36							
	03	358° 36'.1	244° 08'.3	58'.2	216° 12'.0	01'.5	159° 48'.1	44'.2	98° 05'.2	57'.1	159° 48'.1	44'.2	Acruz	173° 06'.6	63° 11'.9 S	209° 08'.7	25'.3	231° 50'.4	6'.1	20'.5	5'.6	66°	-	02:51	03:59	01:35	03:10	04:47							
	04	13° 38'.6	259° 07'.6	57'.9	231° 12'.0	01'.0	174° 50'.2	44'.3	113° 07'.7	57'.1	174° 50'.2	44'.3	Adhara	255° 10'.6	28° 59'.5 S	224° 08'.8	24'.5	246° 15'.5	6'.1	14'.9	5'.7	64°	01:33	03:11	04:11	01:55	03:25	04:57							
	05	28° 41'.1	274° 06'.9	57'.5	246° 13'.8	00'.5	189° 52'.2	44'.5	128° 10'.2	57'.1	189° 52'.2	44'.5	Aldebaran	290° 46'.2	16° 32'.5 N	239° 09'.0	23'.7	260° 40'.6	6'.3	09'.2	5'.8	59'.6	62°	02:08	03:27	04:20	02:11	03:37	05:05						
	06	43° 43'.5	289° 06'.2	57'.2	261° 14'.7	00'.4	204° 54'.3	44'.7	143° 12'.7	57'.1	204° 54'.3	44'.7					254° 09'.1	22'.8	275° 05'.9	6'.2	03'.4	5'.9	60°	02:32	03:40	04:29	02:25	03:47	05:12						
	07	58° 46'.0	304° 05'.5	56'.8	276° 15'.6	15° 59'.5 N	219° 56'.4	44'.8	158° 15'.2	57'.1	219° 56'.4	44'.8	Alioth	166° 18'.7	55° 52'.2 N	269° 09'.3	22'.0	289° 31'.1	6'.3	16° 57'.5 N	6'.0		N 58°	02:51	03:51	04:36	02:36	03:56	05:18						
	08	73° 48'.5	319° 04'.8	56'.5	291° 16'.5	59'.0	234° 58'.5	45'.0	173° 17'.7	57'.1	234° 58'.5	45'.0	Alkaid	152° 57'.0	49° 13'.9 N	284° 09'.4	21'.2	303° 56'.4	6'.4	51'.5	6'.2	56°	03:06	04:01	04:43	02:46	04:04	05:24							
	09	88° 50'.9	330° 04'.2	56'.1	306° 17'.4	58'.5	250° 50'.5	45'.2	188° 20'.2	57'.1	250° 50'.5	45'.2	Alnair	277° 39'.8	46° 52'.4 S	299° 09'.6	20'.4	318° 21'.8	6'.5	45'.3	6'.2	54°	03:19	04:09	04:49	02:55	04:11	05:29							
	10	103° 53'.4	349° 03'.5	55'.7	321° 18'.3	58'.0	265° 02'.6	45'.3	203° 22'.7	57'.1	265° 02'.6	45'.3	Alnilam	275° 43'.6	1° 11'.5 S	314° 09'.7	19'.5	332° 47'.3	6'.5	39'.1	6'.3	52°	03:30	04:17	04:54	03:03	04:17	05:33							
	11	118° 55'.9	4° 02'.8	55'.4	336° 19'.1	57'.0	285° 04'.7	45'.5	218° 25'.2	57'.1	285° 04'.7	45'.5	Alphard	217° 53'.6	8° 44'.1 S	329° 09'.9	18'.7	347° 12'.8	6'.5	32'.8	6'.5	50°	03:40	04:27	04:59	03:10	04:23	05:37							
	12	133° 58'.3	19° 02'.1	55'.0	351° 20'.0	57'.0	295° 06'.8	45'.7	233° 27'.6	57'.1	295° 06'.8	45'.7					344° 10'.0	17'.9	1° 38'.3	6'.6	26'.3	6'.5	45°	03:59	04:38	05:09	03:25	04:35	05:46						
	13	149° 00'.8	34° 01'.4	20° 54'.7 N	6° 20'.9	15° 56'.5 N	130° 08'.8	6° 45'.8 S	248° 30'.1	21° 57'.1 S	130° 08'.8	6° 45'.8 S	Alphecca	126° 08'.6	26° 39'.8 N	359° 10'.2	12° 17'.1 N	16° 03'.9	6'.7	16° 19'.8 N	6'.7	59'.5	N 40°	04:14	04:49	05:17	03:37	04:45	05:53						
	14	164° 03'.2	49° 00'.7	54'.3	21° 21'.8	56'.0	325° 10'.9	46'.0	263° 32'.6	57'.1	325° 10'.9	46'.0	Alpheratz	307° 40'.2	29° 11'.2 N	14° 10'.3	29'.6	30° 29'.6	6'.7	13'.1	6'.8	35°	04:27	04:58	05:25	03:48	04:54	05:59							
	15	179° 05'.7	64° 00'.0	53'.9	36° 22'.7	55'.5	340° 13'.0	46'.2	278° 35'.1	57'.1	340° 13'.0	46'.2	Altair	62° 05'.2	8° 55'.2 N	29° 10'.5	15'.4	44° 55'.3	6'.8	06'.0	6'.8	30°	04:37	05:06	05:31	03:57	05:01	06:05							
	16	194° 08'.2	78° 59'.4	53'.6	51° 23'.6	55'.0	355° 15'.1	46'.3	293° 37'.6	57'.1	355° 15'.1	46'.3	Ankaa	353° 12'.6	42° 12'.5 S	44° 10'.6	14'.6	59° 21'.1	6'.8	15° 59'.5 N	7'.0	20°	04:52	05:19	05:42	04:13	05:14	06:14							
	17	209° 10'.6	93° 58'.7	53'.2	66° 24'.5	54'.5	10° 17'.1	46'.5	308° 40'.1	57'.2	10° 17'.1	46'.5	Antares	112° 22'.7	26° 28'.1 S	59° 10'.8	13'.7	73° 46'.9	6'.9	52'.5	7'.0	N 10°	05:04	05:30	05:51	04:27	05:25	06:22							
	18	224° 13'.1	108° 58'.0	52'.8	81° 25'.4	54'.0	25° 19'.2	46'.7	323° 42'.6	57'.2	25° 19'.2	46'.7					74° 10'.9	12'.9	88° 12'.8	7'.0	45'.5	7'.2	0°	05:14	05:39	06:00	04:39	05:36	06:30						
	19	239° 15'.6	123° 57'.3	52'.5	96° 26'.3	53'.5	40° 21'.3	46'.8	338° 45'.0	57'.2	40° 21'.3	46'.8	Arcturus	145° 53'.3	19° 05'.8 N	89° 11'.1	12'.1	102° 38'.8	7'.0	38'.3	7'.2	59'.4	S 10°	05:22	05:47	06:08	04:52	05:47	06:37						
	20	254° 18'.0	138° 56'.6	52'.1	111° 27'.2	53'.0	55° 23'.3	47'.0	353° 47'.5	57'.2	55° 23'.3	47'.0	Atria	107° 21'.7	69° 03'.6 S	104° 11'.2	11'.3	117° 04'.8	7'.1	31'.1	7'.4	20°	05:29	05:55	06:17	05:06	05:58	06:46							
	21	269° 20'.5	153° 55'.9	51'.7	126° 28'.0	52'.5	70° 25'.4	47'.2	8° 50'.0	57'.2	70° 25'.4	47'.2	Avior	234° 17'.4	59° 33'.5 S	119° 11'.4	10'.4	131° 30'.9	7.2	23'.7	7'.4	30°	05:35	06:03	06:27	05:22	06:11	06:55							
	22	284° 23'.0	168° 55'.3	51'.4	141° 28'.9	52'.0	85° 27'.5	47'.3	23° 52'.5	57'.2	85° 27'.5	47'.3	Bellatrix	278° 29'.1	6° 21'.8 N	134° 11'.5	09'.6	145° 57'.1	7.2	16'.3	7'.6	35°	05:38	06:07	06:33	05:31	06:18	07:00							
23	299° 25'.4	183° 54'.6	51'.0	156° 29'.8	51'.5	100° 29'.6	47'.5	38° 55'.0	57'.2	100° 29'.6	47'.5	Betelgeuse	270° 58'.4	7° 24'.5 N	149° 11'.7	08'.8	160° 23'.3	7.3	08'.7	7'.6	40°	05:41	06:12	06:40	05:42	06:27	07:06								
24	314° 27'.9	198° 53'.9	50'.6	171° 30'.7	51'.0	115° 31'.6	47'.6	53° 57'.5	57'.2	115° 31'.6	47'.6					164° 11'.8	07'.9	174° 49'.6	7.4	01'.1	7'.7	59'.3	45°	05:43	06:17	06:47	05:54	06:36	07:13						
Monday	00	329° 30'.4	213° 53'.2	20° 50'.2 N	186° 31'.6	15° 50'.5 N	130° 33'.7	6° 47'.8 S	57'.2 S	130° 33'.7	6° 47'.8 S	Canopus	263° 55'.2	52° 42'.2 S	179° 12'.0	12° 07'.1 N	189° 16'.0	7.4	14° 53'.4 N	7'.8	59'.3	S 50°	05:46	06:23	06:56	06:09	06:48	07:21							
	01	344° 32'.8	228° 52'.5	49'.9	201° 32'.5	50'.0	145° 33'.8	48'.0	68° 59'.9	57'.2 S	68° 59'.9	57'.2 S	Capella	280° 30'.4	46° 00'.6 N	194° 12'.2	06'.3	203° 42'.4	7.5	45'.6	7'.9	52°	05:47	06:26	07:01	06:15	06:54	07:25							
	02	359° 35'.3	243° 51'.8	49'.5	216° 33'.4	49'.5	160° 37'.9	48'.1	99° 04'.9	57'.2	160° 37'.9	48'.1	Deneb	49° 29'.1	45° 20'.8 N	209° 12'.3	05'.4	218° 08'.9	7.5	37'.7	8'.0	54°	05:48	06:29	07:05	06:23	07:00	07:30							
	03	14° 37'.7	258° 51'.2	49'.1	231° 34'.3	49'.0	175° 39'.9	48'.3	114° 07'.4	57'.2	175° 39'.9	48'.3	Denebola	182° 31'.1	14° 28'.6 N	224° 12'.5	04'.6	232° 35'.4	7.6	29'.7	8'.1	56°	05:48	06:32	07:10	06:32	07:06	07:34							
	04	29° 40'.2	273° 50'.5	48'.7	246° 35'.2	48'.5	190° 42'.0	48'.5	129° 09'.9	57'.2	190° 42'.0	48'.5	Diphda	348° 52'.8	17° 53'.3 S	239° 12'.6	03'.8	247° 02'.0	7.7	21'.6	8'.1	58°	05:49	06:35	07:16	06:41	07:14	07:39							
	05	44° 42'.7	288° 49'.8	48'.3	261° 36'.1	48'.0	205° 44'.1	48'.6	144° 12'.4	57'.2	205° 44'.1	48'.6					254° 12'.8	02'.9	261° 28'.7	7.8	13'.5	8'.2	59'.2	S 60°	05:50	06:39	07:22	06:52	07:22	07:45					
	06	59° 45'.1	303° 49'.1	48'.0	276° 37'.0	47'.0	225° 46'.1	48'.8	159° 14'.9	57'.2	225° 46'.1	48'.8	Dubhe	193° 49'.0	61° 39'.5 N	269° 12'.9	02'.1	275° 55'.5	7.8	05'.3	8'.4	60°	05:51	06:43	07:30	07:05	07:32	07:52							
	07	74° 47'.6	318° 48'.4	47'.6	291° 37'.8	47'.0	235° 48'.2	49'.0	174° 17'.3	57'.2	235° 48'.2	49'.0	El Nath	278° 09'.2	28° 37'.1 N	284° 13'.1	01'.3	290° 22'.3	7.9	13° 56'.9 N	8'.4	60°	06:01	06:50	07:40	07:15	07:45	08:15							
	08	89° 50'.1	333° 47'.7	47'.2	306° 38'.7	46'.5	250° 50'.3	49'.1	189° 19'.8	57'.3	250° 5																								

2017 August 23, 24, 25 (Wed, Thur, Fri)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	23		24	25	
Wednesday	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	-	01:17	03:20	06:00	07:50	09:35				
	01	331° 28'.6	213° 20'.6	20° 31'.1 N	187° 14'.5	15° 26'.2 N	132° 13'.0	6° 55'.8 S	70° 59'.0	21° 57'.5 S	Acamar	315° 16'.1	40° 13'.9 S	179° 19'.6	11° 26'.8 N	163° 40'.7	10.7	7° 21'.5 N	10.6	58.1	N 70°	-	02:10	03:41	06:09	07:52	09:31				
	02	346° 31'.1	228° 19'.9	30.6	202° 15'.4	25.6	147° 15'.1	56.0	86° 01'.5	57.5	Achernar	335° 24'.4	57° 08'.7 S	194° 19'.7	25.9	178° 10'.4	10.7	10.9	10.6	68°	N 68°	-	02:42	03:56	06:17	07:54	09:27				
	03	1° 33'.6	243° 19'.2	30.2	217° 16'.3	25.1	162° 17'.1	56.1	101° 03'.9	57.5	Acruz	173° 06'.6	63° 11'.8 S	209° 19'.9	25.1	192° 40'.1	10.7	00.3	10.7	66°	N 66°	01:07	03:04	04:09	06:23	07:55	09:24				
	04	16° 36'.0	258° 18'.5	29.8	232° 17'.2	24.6	177° 17'.2	56.2	116° 06'.4	57.6	Adhara	255° 10'.6	28° 59'.7 S	224° 20'.0	24.2	207° 09'.8	10.8	6° 49'.6 N	10.6	58.0	N 64°	01:54	03:22	04:20	06:28	07:56	09:22				
	05	31° 38'.5	273° 17'.9	29.4	247° 18'.1	24.1	192° 21'.3	56.5	131° 08'.9	57.6	Aldebaran	290° 46'.2	16° 32'.5 N	239° 20'.2	23.4	221° 39'.6	10.9	39.0	10.7	62°	N 62°	02:22	03:37	04:28	06:33	07:57	09:19				
	06	46° 40'.9	288° 17'.2	28.9	262° 19'.0	23.6	207° 23'.3	56.7	146° 11'.4	57.6				254° 20'.4	22.6	236° 09'.5	11.0	28.3	10.8	60°	N 60°	02:44	03:49	04:36	06:36	07:58	09:17				
	07	61° 43'.4	303° 16'.5	28.5	277° 19'.9	23.1	222° 25'.4	56.8	161° 13'.8	57.6	Alioth	166° 18'.7	55° 52'.2 N	269° 20'.5	21.7	250° 39'.5	10.9	17.5	10.7	57.9	N 58°	03:01	03:59	04:43	06:40	07:59	09:16				
	08	76° 45'.9	318° 15'.8	28.1	292° 20'.8	22.6	237° 27'.5	57.0	176° 16'.3	57.6	Alkaid	152° 57'.0	49° 13'.9 N	284° 20'.7	20.9	265° 09'.4	11.1	06.8	10.8	56°	N 56°	03:15	04:08	04:49	06:43	08:00	09:14				
	09	91° 48'.3	333° 15'.2	27.6	307° 21'.7	22.1	252° 29'.5	57.2	191° 18'.8	57.6	Alnair	209° 20'.9	46° 52'.4 S	299° 20'.9	20.0	279° 39'.5	11.1	5° 56'.1 N	10.7	54°	N 54°	03:26	04:15	04:54	06:46	08:00	09:13				
	10	106° 50'.8	348° 14'.5	27.2	322° 22'.6	21.5	267° 31'.6	57.3	206° 21'.3	57.6	Alnilam	275° 43'.6	1° 11'.5 S	314° 21'.0	19.2	294° 09'.6	11.2	45.3	10.8	57.8	N 57°	03:37	04:22	04:59	06:48	08:01	09:12				
	11	121° 53'.3	3° 13'.8	26.8	337° 23'.5	21.0	282° 32'.6	57.5	221° 23'.7	57.6	Alphard	217° 53'.6	8° 44'.1 S	329° 21'.2	18.3	308° 39'.8	11.2	34.5	10.8	50°	N 50°	03:46	04:29	05:03	06:50	08:02	09:10				
	12	136° 55'.7	18° 13'.1	26.3	352° 24'.4	20.5	297° 35'.7	57.7	236° 26'.2	57.6				344° 21'.4	17.5	323° 10'.0	11.3	23.7	10.9	45°	N 45°	04:04	04:41	05:13	06:55	08:03	09:08				
	13	151° 58'.2	33° 12'.5	25.9 N	7° 25'.3	15° 20'.0 N	312° 37'.8	6° 57'.8 S	251° 28'.7	21° 57'.6 S	Alphecca	126° 08'.7	26° 39'.7 N	359° 21'.5	11° 16'.6 N	337° 40'.3	11.3	5° 12'.8 N	10.8	57.7	N 40°	04:18	04:52	05:20	06:59	08:04	09:06				
	14	167° 00'.7	48° 11'.8	25.5	22° 26'.2	19.5	327° 39'.8	58.0	266° 31'.2	57.6	Alpheratz	257° 40'.2	29° 11'.2 N	14° 21'.7	15.7	352° 10.6	11.4	02.0	10.8	35°	N 35°	04:29	05:01	05:27	07:03	08:05	09:04				
	15	182° 03'.1	63° 11'.1	25.0	37° 27'.1	19.0	342° 41'.9	58.2	281° 33'.6	57.6	Altair	62° 05'.2	8° 55'.2 N	29° 21'.8	14.9	6° 41'.0	11.4	4° 51'.1 N	10.8	30°	N 30°	04:39	05:08	05:33	07:06	08:05	09:03				
	16	197° 05'.6	78° 10'.4	24.6	52° 28'.0	18.5	357° 40'.0	58.3	296° 36'.1	57.6	Ankaa	353° 12.6	42° 12'.5 S	44° 22'.0	14.0	21° 11'.4	11.5	40.3	10.9	20°	N 20°	04:53	05:20	05:42	07:11	08:07	09:00				
	17	212° 08'.1	93° 09'.8	24.1	67° 28'.9	18.0	12° 46'.0	58.5	311° 38'.6	57.6	Antares	112° 22'.7	26° 28'.1 S	59° 22'.2	13.2	35° 41'.9	11.6	29.4	10.9	57.6	N 10°	05:05	05:30	05:51	07:16	08:08	08:58				
	18	227° 10'.5	108° 09'.1	23.7	82° 29'.8	17.4	27° 48'.1	58.7	326° 41'.0	57.7				74° 22'.3	12.3	50° 12'.5	11.6	18.5	10.9	0°	N 0°	05:13	05:38	05:59	07:21	08:09	08:56				
	19	242° 13'.0	123° 08'.4	23.3	97° 30'.7	16.9	42° 50'.1	58.8	341° 43'.5	57.7	Arcturus	145° 53'.3	19° 05'.8 N	89° 22'.5	11.5	64° 43'.1	11.6	07.6	10.9	57.9	S 10°	05:21	05:45	06:07	07:25	08:10	08:54				
	20	257° 15'.4	138° 07'.7	22.8	112° 31'.6	16.4	57° 52'.2	59.0	356° 46.0	57.7	Atria	107° 21'.8	69° 03'.6 S	104° 22'.7	10.6	79° 13'.7	11.7	3° 56'.7 N	11.0	57.5	N 20°	05:27	05:53	06:15	07:30	08:11	08:51				
	21	272° 17'.9	153° 07'.1	22.4	127° 32'.5	15.9	72° 54'.3	59.2	11° 48'.5	57.6	Avior	234° 17'.4	59° 33'.9 S	119° 22.8	09.8	93° 44'.4	11.8	45.7	10.9	30°	N 30°	05:32	06:00	06:24	07:35	08:13	08:49				
	22	287° 20'.4	168° 06'.4	21.9	142° 33'.4	15.4	87° 56'.3	59.3	26° 50'.9	57.7	Bellatrix	278° 29'.1	6° 21'.8 N	134° 23'.0	08.9	108° 15'.2	11.8	34.8	10.9	35°	N 35°	05:34	06:04	06:30	07:38	08:14	08:47				
23	302° 22'.8	183° 05'.7	21.5	157° 34'.3	14.9	102° 58'.4	59.5	41° 53'.4	57.7	Betelgeuse	270° 58'.4	7° 24'.5 N	149° 23'.2	08.1	122° 46'.0	11.9	23.9	11.0	57.4	N 40°	05:36	06:08	06:35	07:42	08:14	08:46					
24	317° 25'.3	198° 05'.0	21.0	172° 35'.2	14.4	118° 00'.5	59.7	56° 55'.9	57.7				164° 23'.3	07.2	137° 16'.9	11.9	12.9	10.9	45°	N 45°	05:38	06:12	06:42	07:46	08:16	08:44					
Thursday	00	332° 27'.8	213° 04'.4	20° 20'.6 N	187° 36'.1	15° 13'.8 N	133° 02'.5	6° 59'.9 S	71° 58'.3	21° 57.7 S	Canopus	263° 55'.2	52° 42'.2 S	179° 23'.5	11° 06.4 N	151° 47.8	11.9	3° 02'.0 N	10.9	57.4	S 50°	05:40	06:18	06:51	07:51	08:17	08:42				
	01	347° 30'.2	228° 03'.7	20.1	202° 37'.0	13.3	148° 04'.6	7° 00'.0 S	87° 00'.8	57.7	Capella	280° 30'.4	46° 00'.6 N	194° 23'.7	05.5	166° 18'.7	12.0	2° 51'.1 N	11.0	57.3	S 52°	05:41	06:20	06:54	07:53	08:17	08:41				
	02	2° 32'.7	243° 03'.0	19.7	217° 37.9	12.8	163° 06'.6	00.2	102° 03'.3	57.7	Deneb	49° 29'.1	45° 20'.9 N	209° 23'.8	04.7	180° 49'.7	12.0	40.1	10.9	54°	N 54°	05:41	06:22	06:58	07:55	08:18	08:40				
	03	17° 35'.2	258° 02'.3	19.2	232° 38'.8	11.3	178° 08'.7	00.4	117° 05'.8	57.7	Denebola	182° 31'.1	14° 28'.6 N	224° 24'.0	03.8	195° 20'.7	12.1	29.2	11.0	56°	N 56°	05:42	06:25	07:03	07:58	08:19	08:39				
	04	32° 37'.6	273° 01'.7	18.8	247° 39'.7	11.8	193° 10'.8	00.5	132° 08'.2	57.7	Diphda	348° 52'.8	17° 53'.3 S	239° 24'.2	02.9	209° 51'.8	12.2	18.2	10.9	57.2	N 58°	05:42	06:28	07:08	08:01	08:20	08:37				
	05	47° 40'.1	288° 01'.0	18.3	262° 40'.6	11.3	208° 12'.8	00.7	147° 10'.7	57.7				254° 24'.3	02.1	224° 23'.0	12.1	07.3	10.9	57.0	S 60°	05:43	06:31	07:14	08:04	08:20	08:36				
	06	62° 42'.5	303° 00'.3	17.9	277° 41'.5	10.7	223° 14'.9	00.9	162° 13'.2	57.7	Dubhe	193° 49'.0	61° 39'.5 N	269° 24'.5	13.2	238° 54'.1	12.3	1° 56'.4 N	11.0	57.1	S 62°	05:43	06:34	07:20	08:08	08:21	08:34				
	07	77° 45'.0	317° 59'.7	17.4	292° 42.4	10.2	238° 16'.9	01.0	177° 15'.6	57.8	El Nath	278° 09'.2	28° 37'.1 N	284° 24'.7	10.0	253° 25'.4	12.2	45.4	10.9	57.1	N 57°	05:47	06:34	07:20	08:08	08:21	08:34				
	08	92° 47'.5	332° 59'.0	17.0	307° 43.4	09.7	253° 19'.0	01.2	192° 18'.1	57.8	Eltanin	90° 44'.6	51° 29'.7 N	299° 24.8	10° 59'.5 N	267° 56'.6	12.3	34.5	10.9	57.1	N 57°	05:47	06:34	07:20	08:08	08:21	08:34				
	09	107° 49'.9	347° 58'.3	16.5	322° 44.3	09.2	268° 21'.1	01.4	207° 20'.6	57.8	Enif	314° 25'.0	58.7	282° 27'.9	12.4	23.6	11.0			57.0	N 57°	05:47	06:34	07:20	08:08	08:21	08:34				
	10	122° 52'.4	2° 57'.6	16.1	337° 45'.2	08.7	283° 23'.1	01.5	222° 23'.0	57.8	Fomalhaut	15° 20'.5	29° 31'.6 S	329° 25'.2	57.8	296° 59'.3	12.4	12.6	10.9	57.0	N 57°	05:47	06:34	07:20	08:08	08:21	08:34				
	11	137° 54'.9	17° 57'.0	15.6	352° 46'.1	08.2	298° 25'.2	01.7	237° 25'.5	57.8				344° 25'.3	56.9	311° 30'.7	12.4	01.7	10.9	57.0	N 72°	20:40	22:36	-	20:30	20:22	20:14				
	12	152° 57'.3	32° 56'.3	20° 15'.1 N	7° 47.0	15° 07'.6 N	313° 27'.2	7° 01'.9 S	252° 28'.0	21° 57'.8 S	Gacrux	171° 58'.1	57° 12'.7 S	359° 25'.5	10° 56'.1 N																

2017 August 26, 27, 28 (Sat, Sun, Mon)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON				Lat	Twilight		Sunrise	Moonrise		
	-4.0			+1.8			-1.8			+0.4			Name			SHA		Dec		v		Civil		26		27					
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	Nautical	Civil	26	27	28		
Saturday	00	334° 26'.0	212° 32'.3	19° 57'.9 N	188° 19'.6	14° 48'.9 N	134° 41'.3	7° 08'.0 S	73° 56'.8	21° 58'.1 S	315° 16'.1	10° 13'.9 S	179° 31'.7	10° 25'.0 N	129° 15'.1	13.4	5° 29'.5 S	10.1	55.9	58.9	58.9	58.9	N 70°	-	01:51	03:37	11:19	13:03	14:50		
	01	349° 28'.5	227° 31'.6	57.5	203° 20'.5	48.4	149° 43'.4	08.2	88° 59'.2	58.1	335° 24'.4	57° 08'.7 S	194° 31.9	24.1	143° 47.5	13.5	39.6	10.0	68°	-	02:30	03:54	11:07	12:43	14:18						
	02	4° 31'.0	242° 31'.0	57.0	218° 21'.4	47.9	164° 45'.4	08.3	104° 01'.7	58.1	273° 06'.6	63° 11'.8 S	209° 32.1	23.3	158° 20'.0	13.5	49.6	10.0	55.8	66°	01:36	03:17	04:19	10:51	12:15	13:37					
	03	19° 33'.4	257° 30'.3	56.5	233° 22'.4	47.4	179° 04'.1	08.5	119° 04'.1	58.1	255° 10'.5	28° 59'.7 S	224° 32.2	22.4	172° 52.5	13.5	59.6	9.9	64°	02:11	03:33	04:28	10:44	12:05	13:22						
	04	34° 35'.9	272° 29'.6	56.0	248° 23'.2	46.8	194° 49'.5	08.7	134° 06'.6	58.1	290° 46'.2	16° 32'.5 N	239° 32.4	21.5	187° 25.0	13.5	69° 09'.5 S	9.9	62°	02:36	03:46	04:36	10:39	11:56	13:10						
	05	49° 38'.4	287° 29'.0	55.5	263° 24'.1	46.3	209° 51'.6	08.9	149° 09'.1	58.1	345° 32'.6	20.6	251° 57.5	13.6	19.4	9.8	55.7	60°	02:55	03:57	04:43	10:34	11:48	13:00							
	06	64° 40'.8	302° 28'.3	55.0	278° 25'.0	45.8	224° 53'.6	09.0	164° 11'.5	58.1	399° 57'.7	18.9	216° 30.1	13.5	29.2	9.9	58°	03:10	04:06	04:49	10:30	11:42	12:51								
	07	79° 43'.3	317° 27'.6	54.5	293° 25'.9	45.3	239° 55'.7	09.2	179° 14'.0	58.1	452° 57.0	18.9	231° 02.6	13.6	39.1	9.8	56°	03:23	04:14	04:55	10:26	11:36	12:43								
	08	94° 45'.7	332° 27'.0	54.0	308° 26'.8	44.7	254° 57'.7	09.4	194° 16'.4	58.1	506° 52.4	18.9	245° 35.2	13.6	48.9	9.7	54°	03:33	04:21	04:59	10:23	11:31	12:36								
	09	109° 48'.2	347° 26'.3	53.4	323° 27'.7	44.2	269° 59'.8	09.5	209° 18'.9	58.1	559° 43.6	17.2	260° 07.8	13.5	58.6	9.7	55.6	52°	03:43	04:28	05:04	10:20	11:26	12:30							
	10	124° 50'.7	2° 25'.7	52.9	338° 28'.7	43.7	285° 01'.9	09.7	224° 21'.4	58.2	613° 33.5	16.3	274° 40.3	13.6	7° 08'.3 S	9.6	50°	03:51	04:33	05:08	10:17	11:22	12:24								
	11	139° 53'.1	17° 25'.0	52.4	353° 29'.6	43.2	300° 03'.9	09.9	239° 23'.8	58.2	667° 33.7	15.4	289° 12.9	13.6	17.9	9.7	45°	04:08	04:45	05:16	10:11	11:13	12:12								
	12	154° 55'.6	32° 24'.3	19° 51'.9 N	8° 30'.5	14° 42'.6 N	315° 06'.0	7° 10'.2 S	254° 26'.3	21° 58'.2 S	720° 08.7	26° 39'.8 N	359° 33.8	10° 14'.5 N	303° 45.5	13.6	7° 27'.6 S	9.5	55.6	N 40°	04:21	04:55	05:23	10:06	11:05	12:02					
	13	169° 58'.1	47° 23'.7	51.4	23° 31'.4	42.1	330° 08'.0	10.1	269° 28'.7	58.2	773° 40.2	26° 11'.2 N	44° 34.0	13.7	318° 18.1	13.6	37.1	9.6	55.5	35°	04:32	05:03	05:29	10:02	10:58	11:54					
	14	185° 00'.5	62° 23'.0	50.9	38° 32'.3	41.6	345° 10'.1	10.4	284° 31'.2	58.2	826° 05.2	8° 55'.2 S	29° 34.2	12.8	332° 50.7	13.7	46.7	9.4	30°	04:41	05:10	05:34	09:58	10:53	11:46						
	15	200° 03'.0	77° 22'.3	50.4	53° 33'.2	41.1	0° 12'.1	10.6	299° 33'.7	58.2	879° 12.6	42° 12.5 S	44° 34.4	11.9	347° 23.4	13.6	56.1	9.5	20°	04:50	05:21	05:43	09:52	10:43	11:33						
	16	215° 05'.5	92° 21'.7	49.9	68° 34'.1	40.5	15° 14'.2	10.7	314° 36'.1	58.2	931° 22.7	26° 28'.1 S	59° 34.5	11.0	1° 56'.0	13.6	8° 05'.6 S	9.4	10°	05:05	05:30	05:51	09:46	10:34	11:22						
	17	230° 07'.9	107° 21'.0	49.4	83° 35'.0	40.0	30° 16'.2	10.9	329° 38'.6	58.2	984° 38.6	10.2	16° 28'.6	13.7	15.0	9.3	55.4	0°	05:13	05:37	05:58	09:41	10:26	11:12							
	18	245° 10'.4	122° 20'.4	48.9	98° 35'.9	39.5	45° 18'.3	11.1	344° 41.0	58.2	1037° 53.3	19° 05'.8 N	89° 34.9	09.3	31° 01'.3	13.6	24.3	9.3	S 10°	05:19	05:44	06:05	09:36	10:18	11:01						
	19	260° 12'.9	137° 19'.7	48.4	113° 36'.9	39.0	60° 20'.3	11.3	359° 43'.5	58.2	1090° 21.8	69° 03'.6 S	104° 35.1	08.4	45° 33'.9	13.7	33.6	9.3	20°	05:25	05:50	06:13	09:31	10:10	10:50						
	20	275° 15'.3	152° 19.0	47.8	128° 37'.8	38.4	75° 22'.4	11.4	374° 46'.0	58.2	1143° 17.4	59° 33.9 S	119° 35.0	07.6	60° 06.6	13.6	42.9	9.2	30°	05:29	05:57	06:21	09:24	10:00	10:38						
	21	290° 17.8	167° 18'.4	47.3	143° 38'.7	37.9	90° 24'.4	11.6	389° 48'.4	58.2	1196° 29.1	6° 21'.8 N	134° 35.4	06.7	74° 39'.2	13.7	52.1	9.1	55.3	35°	05:31	06:00	06:26	09:21	09:55	10:30					
	22	305° 20'.2	182° 17.7	46.8	158° 39.6	37.4	105° 26'.5	11.8	404° 50.9	58.2	1249° 58.4	7° 24'.5 N	149° 35.6	05.8	89° 11.9	13.6	9° 01'.2 S	9.1	40°	05:32	06:04	06:31	09:17	09:49	10:22						
23	320° 22'.7	197° 17'.1	46.3	173° 40'.5	36.9	120° 28'.5	11.9	419° 53'.3	58.3	1302° 58.4	8° 44'.0 S	164° 35.8	04.9	103° 44'.5	13.7	10.3	9.1	45°	05:33	06:07	06:37	09:12	09:41	10:12							
Sunday	00	335° 25'.2	212° 16'.4	19° 45'.8 N	188° 41'.4	14° 36'.3 N	135° 30'.6	7° 12'.1 S	74° 55'.8	21° 58'.3 S	320° 55.2	52° 42'.2 S	179° 36.0	10° 04'.1 N	118° 17.2	13.7	9° 19'.4 S	9.0	55.3	S 50°	05:34	06:12	06:45	09:07	09:33	10:01					
	01	350° 27'.6	227° 15.8	45.3	203° 42.3	35.8	150° 32.6	12.3	89° 58'.3	58.3	373° 30.4	46° 00'.6 N	194° 36.2	03.2	132° 49.9	13.6	29.4	9.0	55.2	52°	05:35	06:14	06:48	09:04	09:29	09:56					
	02	5° 30'.1	242° 15'.1	44.7	218° 43'.2	35.3	165° 34'.7	12.5	105° 00'.7	58.3	426° 49.2	45° 20'.9 N	209° 36.3	02.3	147° 22'.5	13.7	37.4	8.9	54°	05:35	06:16	06:52	09:01	09:24	09:50						
	03	20° 32'.6	257° 14'.4	44.2	233° 44'.1	34.7	182° 31'.1	14° 28'.6 N	122° 03'.2	58.3	479° 18.1	14° 28'.6 N	224° 36.5	01.4	161° 55'.2	13.7	46.3	8.8	56°	05:35	06:18	06:56	08:58	09:20	09:43						
	04	35° 35'.0	272° 13'.8	43.7	248° 45'.1	34.2	195° 38'.8	12.8	135° 05'.6	58.3	531° 34.8	17° 53'.3 S	239° 36.7	00.5	176° 27.9	13.6	55.1	8.8	58°	05:35	06:20	07:00	08:55	09:14	09:36						
	05	50° 37'.5	287° 13'.1	43.2	263° 46.0	33.7	210° 40'.8	13.0	150° 08'.1	58.3	584° 36.9	9° 59'.7 N	254° 36.9	9° 59'.7 N	191° 00'.5	13.7	10° 03'.9 S	8.8	55.1	S 60°	05:35	06:23	07:05	08:51	09:08	09:28					
	06	65° 40'.0	302° 12'.5	42.6	278° 46'.9	33.2	225° 42'.9	13.2	165° 10'.5	58.3	637° 49.0	61° 39'.5 N	269° 37.1	58.8	205° 33'.2	13.6	12.7	8.7	58°	05:36	06:24	07:06	08:47	09:01	09:18						
	07	80° 42'.4	317° 11'.8	42.1	293° 47.8	32.6	240° 44.9	13.3	180° 13.0	58.3	690° 09.1	28° 37.1 N	284° 37.2	57.9	220° 05'.8	13.7	21.4	8.7	58°	05:36	06:24	07:06	08:47	09:01	09:18						
	08	95° 44'.9	332° 11'.1	41.6	308° 48.7	32.1	255° 47.0	13.5	195° 15'.5	58.3	743° 44.6	51° 29'.7 N	299° 37.4	57.0	234° 38'.5	13.7	30.1	8.5	58°	05:36	06:24	07:06	08:47	09:01	09:18						
	09	110° 47.4	347° 10'.5	41.1	323° 49.6	31.6	270° 49.0	13.7	210° 17.9	58.3	796° 34.4	9° 57.5 N	314° 37.6	56.2	249° 11.2	13.6	38.6	8.6	58°	05:36	06:24	07:06	08:47	09:01	09:18						
	10	125° 49.8	2° 09'.8	40.5	338° 50'.5	31.1	285° 51.1	13.8	225° 20.4	58.3	849° 58.4	29° 31.6 S	329° 37.8	55.3	263° 43.8	13.7	47.2	8.5	55.0	58°	05:36	06:24	07:06	08:47	09:01	09:18					
	11	140° 52'.3	17° 09'.2	40.0	353° 51.4	30.5	300° 53'.1	14.0	240° 22.8	58.4	902° 58.4	30° 54.4	344° 38.5	54.4	278° 16.5	13.6	57.7	8.4	55.0	58°	05:36	06:24	07:06	08:47	09:01	09:18					
	12	155° 54'.7	32° 08'.5	19° 39'.5 N	8° 52'.4	14° 30'.0 N	315° 55'.2	7° 14'.2 S	255° 25'.3	21° 58'.4 S	956° 58.4	57° 12.7 S	359° 38.1	9° 53'.5 N	292° 49.1	13.7	11° 04'.1 S	8.4	55.0	N 70°	20:23	22:04	-	20:05	19:55	19:42					
	13	170° 57.2	47° 07'.9	38.9	23° 53'.3	29.5	330° 57.2	14.4	270° 27.7	58.4	1009° 49.6	17° 38'.3 S	14° 38.3	52.6	307° 21.8	13.6	12.5	8.3	68°	19:52	21:02	23:25	20:19	20:17	20:15						
	14	185° 59'.7	62° 07'.2	38.4	38° 54.2	28.9	345° 59.3	14.5	285° 30.2	58.4	1062° 44.1	60° 27'.5 S	29° 38.5	51.8	321° 54.4	13.6	20														

2017 August 29, 30, 31 (Tue, Wed, Thur)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	29		30	31	
29 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23		GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	-	02:17	03:52	16:51	-	-		
		337° 23.5	211° 45.0	19° 19.7 N	189° 25.3	14° 10.9 N	137° 08.9	7° 20.4 S	76° 53.6	21° 58.7 S	91° 56.0	58.7	Acamar	315° 16.1	40° 13.9 S	179° 44.8	9° 21.7 N	96° 18.2	13.2	15° 27.2 S	6.1	54.4	N 70°	-	02:49	04:07	15:53	17:26	18:45		
		352° 25.9	226° 44.4	19.2	204° 26.2	10.3	152° 10.9	20.6	91° 56.0	58.7	204° 26.2	10.3	Achernar	335° 24.3	57° 08.7 S	194° 45.0	20.8	110° 50.4	13.2	33.3	6.0		68°	01:11	03:12	04:19	15:20	16:38	17:43		
		7° 28.4	241° 43.7	18.6	219° 27.2	09.8	167° 13.0	20.8	106° 58.5	58.7	219° 27.2	09.8	Acruz	173° 06.6	63° 11.8 S	209° 45.2	19.9	125° 22.6	13.2	39.3	6.0		66°	01:58	03:29	04:29	14:55	16:07	17:08		
		22° 30.8	256° 43.1	18.0	234° 28.1	09.3	182° 15.0	20.9	122° 00.9	58.7	255° 10.5	20.9	Adhara	255° 10.5	28° 59.7 S	224° 45.4	19.0	139° 54.8	13.1	45.3	5.9		64°	02:27	03:43	04:37	14:36	15:44	16:43		
		37° 33.3	271° 42.5	17.5	249° 29.0	08.7	197° 17.1	21.1	137° 03.4	58.7	219° 27.2	09.8	Aldebaran	290° 46.1	16° 32.5 N	239° 45.5	18.1	154° 26.9	13.2	51.2	5.8		62°	02:48	03:55	04:44	14:21	15:26	16:23		
		52° 35.8	286° 41.8	16.9	264° 29.9	08.2	212° 19.1	21.3	152° 05.8	58.7	212° 19.1	21.3				239° 45.5	17.3	168° 59.1	13.1	57.0	5.7		60°	03:05	04:05	04:50	14:08	15:11	16:07		
		67° 38.2	301° 41.2	16.3	279° 30.8	07.7	227° 21.2	21.5	167° 08.3	58.7	227° 21.2	21.5	Alioth	166° 18.7	55° 52.2 N	269° 45.9	16.4	183° 31.2	13.1	16° 02.7 S	5.6		N 58°	03:19	04:13	04:56	13:57	14:58	15:53		
		82° 40.7	316° 40.5	15.8	294° 31.8	07.1	242° 23.2	21.6	182° 10.7	58.7	182° 10.7	21.6	Alkaid	152° 57.0	49° 13.9 N	284° 46.1	15.5	198° 03.3	13.1	08.3	5.6		56°	03:30	04:21	05:01	13:47	14:47	15:41		
		97° 43.2	331° 39.9	15.2	309° 32.7	06.6	257° 25.2	21.8	197° 13.2	58.7	257° 25.2	21.8	Alnair	27° 39.8	46° 52.4 S	209° 46.3	14.6	212° 35.4	13.0	13.9	5.5	54.3	54°	03:40	04:27	05:05	13:39	14:37	15:31		
		112° 45.6	346° 39.2	14.6	324° 33.6	06.1	272° 27.3	22.0	212° 15.6	58.7	272° 27.3	22.0	Alnilam	275° 43.6	1° 11.5 S	314° 46.5	13.7	227° 07.4	13.1	19.4	5.5		52°	03:49	04:33	05:09	13:31	14:29	15:22		
		127° 48.1	1° 38.6	14.0	339° 34.5	05.5	287° 29.3	22.2	227° 18.1	58.7	287° 29.3	22.2	Alphard	217° 53.6	8° 44.0 S	329° 46.7	12.8	241° 39.5	13.0	24.9	5.3		50°	03:57	04:38	05:12	13:24	14:21	15:14		
		142° 50.6	16° 37.9	13.5	354° 35.4	05.0	302° 31.4	22.3	242° 20.5	58.8	302° 31.4	22.3				344° 46.9	11.9	256° 11.5	13.0	30.2	5.3		45°	04:12	04:49	05:20	13:10	14:05	14:57		
		157° 53.0	31° 37.3	19° 12.9 N	9° 36.4	14° 04.4 N	317° 33.5	7° 22.5 S	257° 22.9	21° 58.8 S	317° 33.5	7° 22.5 S	Alphaeca	126° 08.7	26° 39.8 N	359° 47.1	9° 11.0 N	270° 43.5	13.0	16° 35.5 S	5.2	54.3	N 40°	04:25	04:58	05:26	12:58	13:51	14:42		
		172° 55.5	46° 36.6	12.3	24° 37.3	03.9	332° 35.5	22.7	272° 25.4	58.8	332° 35.5	22.7	Alpheratz	357° 40.2	29° 11.2 N	14° 47.2	10.1	285° 15.5	13.0	40.7	5.2		35°	04:35	05:05	05:31	12:47	13:40	14:30		
		187° 57.9	61° 36.0	11.7	39° 38.2	03.4	347° 37.5	22.9	287° 27.8	58.8	347° 37.5	22.9	Altair	62° 05.2	8° 55.2 N	29° 47.4	09.2	299° 47.5	12.9	45.9	5.0		30°	04:43	05:11	05:36	12:39	13:30	14:20		
		203° 00.4	76° 35.4	11.2	54° 39.1	02.8	2° 39.6	23.0	302° 30.3	58.8	54° 39.1	02.8	Ankaa	353° 12.6	42° 12.5 S	44° 47.6	08.3	314° 19.4	12.9	50.9	5.0		20°	04:55	05:22	05:44	12:23	13:13	14:02		
		218° 02.9	91° 34.7	10.6	69° 40.0	02.3	17° 41.6	23.2	317° 32.7	58.8	69° 40.0	02.3	Antares	112° 22.7	26° 28.1 S	59° 47.8	07.5	328° 51.3	12.9	55.9	4.9		N 10°	05:05	05:30	05:51	12:10	12:58	13:46		
		233° 05.3	106° 34.1	10.0	84° 41.0	01.8	32° 43.6	23.4	332° 35.2	58.8	84° 41.0	01.8				74° 48.0	06.6	343° 23.2	12.9	17° 00.8 S	4.8		0°	05:12	05:36	05:57	11:57	12:44	13:32		
		248° 07.8	121° 33.4	09.4	99° 41.9	01.2	47° 45.7	23.6	347° 37.6	58.8	99° 41.9	01.2	Arcturus	145° 53.3	19° 05.8 N	89° 48.2	05.7	357° 55.1	12.9	05.6	4.8		S 10°	05:18	05:42	06:04	11:45	12:30	13:17		
		263° 10.3	136° 32.8	08.8	114° 42.8	00.7	62° 47.7	23.7	2° 40.1	58.8	114° 42.8	00.7	Atira	107° 21.9	69° 03.6 S	104° 48.4	04.8	12° 27.0	12.8	10.4	4.6		20°	05:22	05:48	06:10	11:32	12:16	13:01		
		278° 12.7	151° 32.1	08.2	129° 43.7	00.2	77° 49.8	23.9	17° 42.5	58.8	151° 32.1	08.2	Avior	234° 17.4	59° 33.9 S	119° 48.6	03.9	26° 58.8	12.8	15.0	4.6		30°	05:26	05:53	06:18	11:17	11:59	12:44		
		293° 15.2	166° 31.5	07.7	144° 44.6	13° 59.6 N	92° 51.8	24.1	32° 45.0	58.9	144° 44.6	13° 59.6 N	Bellatrix	278° 29.0	6° 21.8 N	134° 48.8	03.0	41° 30.6	12.8	19.6	4.6		35°	05:27	05:56	06:22	11:08	11:49	12:33		
	308° 17.7	181° 30.8	07.1	159° 45.6	59.1	107° 53.9	24.3	47° 47.4	58.9	181° 30.8	07.1	Betelgeuse	270° 58.4	7° 24.5 N	149° 49.0	02.1	56° 02.4	12.8	24.2	4.4		40°	05:28	05:59	06:26	10:58	11:38	12:21			
	323° 20.1	196° 30.2	06.5	174° 46.5	58.5	122° 55.9	24.4	62° 49.9	58.9	174° 46.5	58.5				164° 49.2	01.2	70° 34.2	12.8	28.6	4.3		45°	05:28	06:02	06:32	10:47	11:25	12:07			
30 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17		338° 22.6	211° 29.6	19° 05.9 N	189° 47.4	13° 58.0 N	137° 57.9	7° 24.6 S	77° 52.3	21° 58.9 S	77° 52.3	21° 58.9 S	Canopus	263° 55.1	52° 42.2 S	179° 49.3	9° 00.3 N	85° 06.0	12.7	17° 32.9 S	4.3	54.3	S 50°	05:28	06:06	06:38	10:33	11:09	11:50		
		353° 25.1	226° 28.9	05.3	204° 48.3	57.5	153° 00.0	24.8	92° 54.7	58.9	204° 48.3	57.5	Capella	280° 30.3	46° 00.6 N	194° 49.5	8° 59.4 N	99° 37.7	12.7	37.2	3.2		52°	05:28	06:07	06:41	10:26	11:01	11:42		
		8° 27.5	241° 28.3	04.7	219° 49.2	56.9	168° 02.0	25.0	107° 57.2	58.9	219° 49.2	56.9	Deneb	49° 29.1	45° 20.9 N	209° 49.7	58.5	114° 09.4	12.7	41.4	4.1	54.2	54°	05:28	06:09	06:45	10:19	10:53	11:33		
		23° 30.0	256° 27.6	04.1	234° 50.2	58.4	183° 04.1	25.1	122° 59.6	58.9	234° 50.2	58.4	Denebola	182° 31.1	14° 28.6 N	224° 49.9	57.6	128° 41.1	12.7	45.5	4.1		56°	05:28	06:11	06:48	10:11	10:44	11:23		
		38° 32.4	271° 27.0	03.5	249° 51.1	55.9	198° 06.1	25.3	138° 02.1	58.9	249° 51.1	55.9	Diphda	348° 52.8	17° 53.3 S	239° 50.1	56.7	143° 12.8	12.6	49.6	3.9		58°	05:27	06:12	06:52	10:02	10:33	11:12		
		53° 34.9	286° 26.4	02.9	264° 52.0	55.3	213° 08.2	25.5	153° 04.5	58.9	264° 52.0	55.3				254° 50.3	55.8	157° 44.4	12.7	53.5	3.9		S 60°	05:26	06:14	06:57	09:51	10:21	10:59		
		68° 37.4	301° 25.7	02.4	279° 52.9	54.8	228° 10.2	25.7	168° 07.0	58.9	301° 25.7	02.4	Dubhe	193° 49.0	61° 39.5 N	269° 50.5	54.9	172° 16.1	12.6	57.4	3.8		S 62°	05:25	06:17	07:02	09:39	10:07	10:43		
		83° 39.8	316° 25.1	01.8	294° 53.9	54.2	243° 12.2	25.8	183° 09.4	58.9	294° 53.9	54.2	Elath	278° 09.1	28° 37.1 N	284° 50.7	54.0	186° 47.7	12.6	18° 01.2 S	3.7										
		98° 42.3	331° 24.4	01.2	309° 54.8	53.7	258° 14.3	26.0	198° 11.9	59.0	309° 54.8	53.7	Eltanin	90° 44.6	51° 29.7 N	299° 50.9	53.1	201° 19.3	12.5	04.9	3.7										
		113° 44.8	346° 23.8	00.6	324° 55.7	53.2	273° 16.3	26.2	213° 14.3	59.0	324° 55.7	53.2	Enif	33° 44.0	9° 57.5 N	314° 51.1	52.2	215° 50.8	12.6	08.6	3.5										
		128° 47.2	1° 23.2	00.0	339° 56.6	52.6	288° 18.4	26.4	228° 16.7	59.0	1° 23.2	00.0	Fomalhaut	15° 20.5	29° 31.6 S	329° 51.3															

2017 September 1, 2, 3 (Fri, Sat, Sun)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	Dec	RA	GHA	Dec	RA	GHA	Dec	RA	GHA	Dec	RA	Name	SHA	Dec	GHA	Dec	RA	GHA	v	Dec	d	HP	Nautical		Civil	1		2	3	
Friday	00	340° 20' 9	210° 59' 0	18° 36' 6 N	190° 31' 8	13° 32' 0 N	139° 35' 8	7° 33' 0 S	79° 49' 4	21° 59' 3 S	315° 16' 0	40° 13' 9 S	Acamar	315° 16' 0	40° 13' 9 S	179° 58' 7	8° 17' 1 N	179° 58' 7	8° 17' 1 N	62° 06' 1	11' 8	19° 23' 4 S	0' 1	54' 4	N 72°	-	02:39	04:07	-	-	20:18
	01	355° 23' 3	225° 58' 4	36' 0	205° 32' 7	31' 5	154° 37' 8	33' 2	94° 51' 9	59' 3	335° 24' 3	57° 08' 7 S	Achernar	335° 24' 3	57° 08' 7 S	194° 58' 9	16' 2	194° 58' 9	16' 2	76° 36' 9	11' 7	23' 5	0' 1	68°	00:21	03:06	04:20	19:24	19:35	19:36	
	02	10° 25' 8	240° 57' 8	35' 3	220° 33' 6	31' 0	169° 39' 9	33' 4	109° 54' 3	59' 3	273° 06' 6	63° 11' 8 S	Acruz	273° 06' 6	63° 11' 8 S	209° 59' 1	15' 3	209° 59' 1	15' 3	91° 07' 6	11' 8	23' 6	0' 1	66°	02:16	03:41	04:39	17:54	18:26	18:47	
	03	25° 28' 3	255° 57' 1	34' 7	235° 34' 6	30' 4	184° 41' 9	33' 6	124° 56' 8	59' 4	255° 10' 5	28° 59' 7 S	Adhara	255° 10' 5	28° 59' 7 S	124° 56' 8	14' 4	105° 38' 4	11' 8	23' 5	0' 1	54' 5	64°	02:41	03:53	04:46	17:29	18:04	18:30		
	04	40° 30' 7	270° 56' 5	34' 1	250° 35' 5	29' 9	199° 44' 0	33' 7	139° 59' 2	59' 4	290° 46' 1	16° 32' 5 N	Aldebaran	290° 46' 1	16° 32' 5 N	239° 59' 5	13' 5	120° 09' 2	11' 7	23' 4	0' 2	62°	03:00	04:04	04:52	17:10	17:47	18:16			
	05	55° 33' 2	285° 55' 9	33' 4	265° 36' 4	29' 3	214° 46' 0	33' 9	155° 01' 6	59' 4	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08							
	06	70° 35' 7	300° 55' 3	32' 8	280° 37' 4	28' 8	229° 48' 0	34' 1	170° 04' 1	59' 4	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08							
	07	85° 38' 1	315° 54' 6	32' 1	295° 38' 3	28' 2	244° 50' 1	34' 3	185° 06' 5	59' 4	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08							
	08	100° 40' 6	330° 54' 0	31' 5	310° 39' 2	27' 7	259° 52' 1	34' 5	200° 08' 9	59' 4	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08							
	09	115° 43' 0	345° 53' 4	30' 9	325° 40' 1	27' 1	274° 54' 1	34' 6	215° 11' 4	59' 4	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08							
	10	130° 45' 5	0° 52' 8	30' 2	340° 41' 1	26' 6	289° 56' 2	34' 8	230° 13' 8	59' 4	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08							
	11	145° 48' 0	15° 52' 1	29' 6	355° 42' 0	26' 0	304° 58' 2	35' 0	245° 16' 2	59' 4	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08							
	12	160° 50' 4	30° 51' 5	18° 28' 9 N	10° 42' 9	13° 25' 5 N	320° 00' 2	3° 35' 2	260° 18' 7	21° 59' 4 S	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08							
	13	175° 52' 9	45° 50' 9	28' 3	25° 43' 9	25' 0	335° 02' 3	35' 3	275° 21' 1	59' 4	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08							
	14	190° 55' 4	60° 50' 2	27' 6	40° 44' 8	24' 4	350° 04' 3	35' 5	290° 23' 5	59' 5	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08							
	15	205° 57' 8	75° 49' 6	27' 0	55° 45' 7	23' 9	5° 06' 3	35' 7	305° 26' 0	59' 5	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08							
	16	221° 00' 3	90° 49' 0	26' 3	70° 46' 7	23' 3	20° 08' 4	35' 9	320° 28' 4	59' 5	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08							
	17	236° 02' 8	105° 48' 4	25' 7	85° 47' 6	22' 8	35° 10' 4	36' 0	335° 30' 8	59' 5	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08							
	18	251° 05' 2	120° 47' 7	25' 1	100° 48' 5	22' 2	50° 12' 4	36' 2	350° 33' 3	59' 5	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08							
	19	266° 07' 7	135° 47' 1	24' 8	115° 49' 4	21' 7	65° 14' 5	36' 4	5° 35' 7	59' 5	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08							
	20	281° 10' 2	150° 46' 5	23' 4	130° 50' 4	21' 1	80° 16' 5	36' 6	20° 38' 1	59' 5	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08							
	21	296° 12' 6	165° 45' 9	23' 1	145° 51' 3	20' 6	95° 18' 5	36' 8	35° 40' 6	59' 5	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08							
	22	311° 15' 1	180° 45' 2	22' 4	160° 52' 2	20' 0	110° 20' 6	36' 9	50° 43' 0	59' 5	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08							
23	326° 17' 5	195° 44' 6	21' 8	175° 53' 2	19' 5	125° 22' 6	37' 1	65° 45' 4	59' 5	345° 00' 9	07' 1	221° 44' 0	11' 7	19' 9	0' 9	54' 6	45°	04:17	04:53	05:23	15:45	16:29	17:08								
Saturday	00	341° 20' 0	210° 44' 0	18° 21' 1 N	190° 54' 1	13° 18' 9 N	140° 24' 6	7° 37' 3 S	80° 47' 9	21° 59' 6 S	263° 55' 1	52° 42' 2 S	Canopus	263° 55' 1	52° 42' 2 S	180° 03' 5	7° 55' 3 N	50° 21' 6	11' 5	19° 01' 3 S	2' 1	54' 7	S 50°	05:22	06:00	06:32	12:38	13:32	14:32		
	01	356° 22' 5	225° 43' 4	20' 5	205° 55' 0	18' 4	155° 26' 7	37' 5	95° 50' 3	59' 6	280° 30' 3	46° 00' 6 N	Capella	280° 30' 3	46° 00' 6 N	195° 03' 7	54' 4	64° 52' 1	11' 5	18° 59' 2 S	2' 1	54' 8	S 52°	05:22	06:01	06:35	12:30	13:25	14:25		
	02	11° 24' 9	240° 42' 8	19' 8	220° 56' 0	17' 8	170° 28' 7	37' 6	110° 52' 7	59' 6	49° 29' 1	45° 20' 9 N	Deneb	49° 29' 1	45° 20' 9 N	210° 03' 9	53' 5	79° 22' 6	11' 5	57' 1	2' 3	54°	05:21	06:02	06:37	12:21	13:16	14:18			
	03	26° 27' 4	255° 42' 1	19' 2	235° 56' 9	17' 3	185° 30' 7	37' 8	125° 55' 2	59' 6	182° 31' 1	14° 28' 6 N	Denebola	182° 31' 1	14° 28' 6 N	225° 04' 1	52' 5	93° 53' 1	11' 5	54' 8	2' 3	56°	05:20	06:03	06:41	12:11	13:07	14:10			
	04	41° 29' 9	270° 41' 5	18' 5	250° 57' 8	16' 7	200° 32' 8	38' 0	140° 57' 6	59' 6	348° 52' 8	17° 53' 3 S	Diphda	348° 52' 8	17° 53' 3 S	240° 04' 3	51' 6	108° 23' 6	11' 5	52' 5	2' 5	58°	05:19	06:04	06:44	11:59	12:56	14:00			
	05	56° 32' 3	285° 40' 9	17' 9	265° 58' 8	16' 2	215° 34' 8	38' 2	156° 00' 0	59' 6	255° 04' 5	50' 7	122° 54' 1	11' 5	50' 0	2' 5	60°	05:18	06:06	06:48	11:46	12:43	13:49								
	06	71° 34' 8	300° 40' 3	17' 2	280° 59' 7	15' 6	230° 36' 8	38' 4	171° 02' 5	59' 6	270° 04' 7	49' 8	137° 24' 6	11' 5	47' 5	2' 7	54' 9	S 62°	05:16	06:07	06:52	11:30	12:28	13:37							
	07	86° 37' 3	315° 39' 6	16' 5	296° 00' 6	15' 1	245° 38' 9	38' 5	186° 04' 9	59' 6	278° 09' 1	28° 37' 1 N	Elnath	278° 09' 1	28° 37' 1 N	285° 04' 9	48' 9	151° 55' 1	11' 4	44' 8	2' 8	54' 9	05:15	06:05	06:48	11:24	12:21	13:30			
	08	101° 39' 7	330° 39' 0	15' 9	311° 01' 6	14' 5	260° 40' 9	38' 7	201° 07' 3	59' 6	300° 05' 1	48' 0	166° 25' 5	11' 4	42' 1	2' 7	54' 9	S 62°	05:16	06:07	06:52	11:30	12:28	13:37							
	09	116° 42' 2	345° 38' 4	15' 2	326° 02' 5	14' 0	275° 42' 9	38' 9	216° 09' 7	59' 6	315° 05' 3	47' 1	180° 56' 0	11' 4	39' 3	2' 9	54' 9	S 62°	05:16	06:07	06:52	11:30	12:28	13:37							
	10	131° 44' 6	0° 37' 8	14' 5	341° 03' 4	13' 4	290° 45' 0	39' 1	231° 12' 2	59' 7	330° 05' 5	46' 2	195° 26' 4	11' 5	36' 4	3' 0	54' 9	S 62°	05:16	06:07	06:52	11:30	12:28	13:37							
	11	146° 47' 1	15° 37' 2	13' 9	356° 04' 3	12' 9	305° 47' 0	39' 2	246° 14' 6	59' 7	345° 05' 5	45' 2	209° 56' 9	11' 4	33' 4	3' 1	54' 9	S 62°	05:16	06:07	06:52	11:30	12:28	13:37							
	12	161° 49' 6	30° 36' 5	18° 13' 2 N	11° 05' 3	13° 12' 3 N	320° 49' 0	7° 39' 4 S	261° 17' 0	21° 59' 7 S	171° 58' 1	57° 12' 7 S	Gacrux	171° 58' 1	57° 12' 7 S	0° 05' 9	7° 44' 3 N	224° 27' 3	11' 5	18° 30' 3 S	3' 2</										

2017 September 4, 5, 6 (Mon, Tue, Wed)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON				Lat	Twilight		Sunrise	Moonrise				
Monday	00	343° 18.3	210° 14.4	17° 48.7 N	191° 38.9	12° 52.5 N	142° 02.1	7° 45.8 S	82° 44.4	22° 00.0 S	Acamar	315° 16.0	40° 13.9 S	180° 13.3	7° 11.3 N	26° 42.6	11.5	15° 38.7 S	d	3	HP	N 72°	-	02:59	04:21	20:01	19:50	19:40					
	01	358° 20.7	225° 13.8	48.0	206° 39.9	51.9	157° 04.1	46.0	97° 46.8	00.0	Achernar	335° 24.3	57° 08.7 S	195° 13.5	10.4	41° 13.1	11.5	32.4	6.5			N 70°	01:19	03:21	04:32	19:36	19:34						
	02	13° 23.2	240° 13.2	47.3	221° 40.8	51.4	172° 06.1	46.2	112° 49.2	00.1	Acruz	173° 06.7	63° 11.8 S	210° 13.7	09.4	55° 43.6	11.4	25.9	6.5	55.8		66°	02:33	03:52	04:49	19:01	19:12						
	03	28° 25.7	255° 12.6	46.3	236° 41.7	50.8	182° 08.4	46.2	127° 51.7	00.1	Adhara	255° 10.5	28° 59.7 S	225° 13.9	08.5	70° 14.0	11.5	19.4	6.6			64°	02:54	04:03	04:55	18:49	19:03						
	04	43° 28.1	270° 12.0	45.9	251° 42.7	50.3	202° 10.2	46.6	142° 54.1	00.1	Aldebaran	290° 46.1	16° 32.5 N	240° 14.1	07.6	84° 44.5	11.5	12.8	6.8			62°	03:11	04:13	05:00	18:38	18:56						
	05	58° 30.6	285° 11.4	45.2	266° 43.6	49.7	217° 12.2	46.7	157° 56.5	00.1				255° 14.3	06.7	99° 15.0	11.5	06.0	6.7			60°	03:24	04:21	05:05	18:29	18:49						
	06	73° 33.1	300° 10.8	44.5	281° 44.6	49.2	232° 14.2	46.9	172° 58.9	00.1	Alioth	166° 18.7	55° 52.1 N	270° 14.5	05.8	113° 45.5	11.5	14° 59.3 S	6.9			N 58°	03:36	04:27	05:09	18:20	18:43						
	07	88° 35.5	315° 10.2	43.8	296° 45.5	48.6	247° 16.3	47.1	188° 01.3	00.1	Alkaid	152° 57.0	49° 13.9 N	285° 14.7	04.8	128° 16.0	11.5	52.4	6.9	55.9		56°	03:45	04:33	05:12	18:13	18:38						
	08	103° 38.0	330° 09.5	43.1	311° 46.4	48.0	262° 18.4	47.3	203° 03.8	00.1	Alnair	27° 39.8	46° 52.4 S	300° 15.0	03.9	142° 46.5	11.5	45.5	7.1			54°	03:54	04:39	05:15	18:07	18:34						
	09	118° 40.5	345° 08.9	42.4	326° 47.4	47.5	277° 20.3	47.5	218° 06.2	00.1	Alnilam	275° 43.5	1° 11.5 S	315° 15.2	03.0	157° 17.0	11.5	38.4	7.1			52°	04:01	04:43	05:18	18:01	18:30						
	10	133° 42.9	0° 08.3	41.7	341° 48.3	46.9	292° 22.3	47.6	233° 08.6	00.1	Alphard	217° 53.6	8° 44.0 S	330° 15.4	02.1	171° 47.5	11.5	31.3	7.2			50°	04:07	04:48	05:21	17:56	18:26						
	11	148° 45.4	15° 07.7	40.9	356° 49.2	46.4	307° 24.4	47.8	248° 11.0	00.1				345° 15.6	01.1	186° 18.0	11.5	24° 1.1	7.2	56.0		45°	04:21	04:57	05:27	17:45	18:18						
	12	163° 47.9	30° 07.1	17° 40.2 N	11° 50.2	12° 45.8 N	322° 26.4	7° 48.0 S	263° 13.4	22° 00.2 S	Alphecca	126° 08.7	26° 39.7 N	0° 15.8	7° 00.2 N	200° 48.5	11.5	14° 16.9 S	7.4	56.0		N 40°	04:31	05:04	05:32	17:35	18:11						
	13	178° 50.3	45° 06.5	39.5	26° 51.1	45.3	337° 28.4	48.2	278° 15.9	00.2		26° 51.1	48.2	15° 16.0	6° 59.3 N	215° 19.0	11.5	09.5	7.4			35°	04:40	05:10	05:36	17:27	18:05						
	14	193° 52.8	60° 05.9	38.8	41° 52.1	44.7	352° 30.4	48.4	293° 18.3	00.2	Altair	62° 05.2	8° 55.2 N	30° 16.2	58.4	229° 49.5	11.6	02.1	7.5			30°	04:46	05:15	05:39	17:20	18:00						
	15	208° 55.2	75° 05.3	38.1	56° 53.0	44.2	7° 32.5	48.5	308° 20.7	00.2	Ankaa	353° 12.6	42° 12.5 S	45° 16.4	57.4	244° 20.1	11.5	13° 54.6 S	7.5	56.1		20°	04:57	05:23	05:45	17:08	17:51						
	16	223° 57.7	90° 04.7	37.4	71° 53.9	43.6	22° 34.5	48.7	323° 23.1	00.2	Antares	112° 22.8	26° 28.1 S	60° 16.6	56.5	258° 50.6	11.5	47.1	7.7			N 10°	05:05	05:29	05:51	16:57	17:43						
	17	239° 00.2	105° 04.1	36.7	86° 54.9	43.0	37° 36.5	48.9	338° 25.6	00.2				75° 16.8	55.6	273° 21.1	11.6	39.4	7.7			0°	05:10	05:35	05:55	16:47	17:35						
	18	254° 02.6	120° 03.5	36.0	101° 55.8	42.5	52° 38.5	49.1	353° 28.0	00.2	Arcturus	145° 53.4	19° 05.8 N	90° 17.0	54.7	287° 51.7	11.5	31.7	7.8			S 10°	05:14	05:39	06:00	16:36	17:28						
	19	269° 05.1	135° 02.9	35.3	116° 56.8	41.9	67° 40.6	49.2	8° 30.4	00.2	Atria	107° 21.9	69° 03.6 S	105° 17.3	53.7	302° 22.2	11.6	23.9	7.9	56.2		20°	05:17	05:43	06:05	16:26	17:20						
	20	284° 07.6	150° 02.3	34.5	131° 57.7	41.4	82° 42.6	49.4	23° 32.8	00.2	Avior	234° 17.3	59° 33.8 S	120° 17.5	52.8	316° 52.8	11.5	16.0	7.9			30°	05:19	05:46	06:10	16:13	17:11						
	21	299° 10.0	165° 01.7	33.8	146° 58.6	40.8	97° 44.6	49.6	38° 35.2	00.3	Bellatrix	278° 29.0	6° 21.8 N	135° 17.7	51.9	331° 23.3	11.6	08.1	8.0			35°	05:19	05:48	06:14	16:06	17:05						
	22	314° 12.5	180° 01.1	33.1	161° 59.6	40.3	112° 46.6	49.8	53° 37.6	00.3	Betelgeuse	270° 58.3	7° 24.5 N	150° 17.9	51.0	345° 53.9	11.6	00.1	8.1			40°	05:19	05:50	06:17	15:58	16:59						
23	329° 15.0	195° 00.5	32.4	177° 00.5	39.7	127° 48.7	50.0	68° 40.1	00.3				165° 18.1	50.0	0° 24.5	11.6	12° 52.0 S	8.2	56.3		45°	05:18	05:52	06:21	15:48	16:52							
Tuesday	00	344° 17.4	209° 59.9	17° 31.7 N	192° 01.5	12° 39.1 N	142° 50.7	7° 50.1 S	83° 42.5	22° 00.3 S	Canopus	263° 55.1	52° 42.2 S	180° 18.3	6° 49.1 N	14° 55.1	11.5	12° 43.8 S	8.2	56.3		S 50°	05:16	05:53	06:26	15:36	16:44						
	01	359° 19.9	224° 59.3	31.0	207° 02.4	38.6	157° 52.7	50.3	98° 44.9	00.3	Capella	280° 30.3	46° 00.6 N	195° 18.5	48.2	29° 25.6	11.6	35.6	8.3			52°	05:15	05:54	06:28	15:31	16:40						
	02	14° 22.3	239° 58.7	30.2	222° 03.3	38.0	172° 54.7	50.5	113° 47.3	00.3	Deneb	49° 29.1	45° 20.9 N	210° 18.7	47.3	43° 56.2	11.6	27.3	8.4			54°	05:14	05:55	06:30	15:25	16:36						
	03	29° 24.8	254° 58.1	29.5	237° 04.3	37.5	187° 56.8	50.7	128° 49.7	00.3	Denebola	182° 31.1	14° 28.6 N	225° 18.9	46.3	58° 26.8	11.6	18.9	8.4	56.4		56°	05:13	05:56	06:33	15:18	16:31						
	04	44° 27.3	269° 57.5	28.8	252° 05.2	36.9	202° 58.8	50.9	143° 52.2	00.3	Diphda	348° 52.8	17° 53.3 S	240° 19.1	45.4	72° 57.4	11.6	10.5	8.5			58°	05:11	05:56	06:36	15:11	16:26						
	05	59° 29.7	284° 56.9	28.1	267° 06.2	36.4	218° 00.8	51.0	158° 54.6	00.3				255° 19.3	44.5	87° 28.0	11.6	02.0	8.6			S 60°	05:09	05:57	06:39	15:02	16:20						
	06	74° 32.2	299° 56.3	27.3	282° 07.1	35.8	233° 02.8	51.2	173° 57.0	00.3	Dubhe	193° 49.0	61° 39.4 N	270° 19.6	43.6	101° 58.6	11.6	11° 53.4 S	8.6			S 62°	05:07	05:58	06:43	14:52	16:13						
	07	89° 34.7	314° 55.7	26.6	297° 08.0	35.2	248° 04.9	51.4	188° 59.4	00.4	Elnath	278° 09.1	28° 37.1 N	285° 19.8	42.6	116° 29.2	11.6	44.8	8.8			56.5											
	08	104° 37.1	329° 55.1	25.9	312° 09.0	34.7	263° 06.9	51.6	204° 01.8	00.4	Eltanin	90° 44.7	51° 29.7 N	300° 20.0	41.7	130° 59.8	11.7	36.0	8.7														
	09	119° 39.6	344° 54.5	25.2	327° 09.9	34.1	278° 08.9	51.8	219° 04.2	00.4	Enif	33° 44.0	9° 57.6 N	315° 20.2	40.8	145° 30.5	11.6	27.3	8.9														
	10	134° 42.1	359° 53.9	24.4	342° 10.9	33.6	293° 10.9	51.9	234° 06.7	00.4	Fomalhaut	15° 20.5	29° 31.6 S	330° 20.4	39.8	160° 01.1	11.6	18.4	8.9														
	11	149° 44.5	14° 53.3	23.7	357° 11.8	33.0	308° 12.9	52.1	249° 09.1	00.4				345° 20.6	38.9	174° 31.7	11.6	09.5	9.0	56.6													
	12	164° 47.0	29° 52.7	17° 23.0 N	12° 12.7	12° 32.4 N	323° 15.0	7° 52.3 S	284° 11.5	22° 00.4 S	Gacrux	171° 58.2	57° 12.7 S	0° 20.8	6° 38.0 N	189° 02.3	11.7	11° 00.5 S	9.0	56.6		N 72°	19:33	20:53	-	00:13	02:12						
	13	179° 49.5	44° 52.1	23.3	27° 13.7	31.9	338° 17.0	52.5	279° 13.9	00.4	Genah	175° 49.7	17° 38.2 S	15° 21.0	37.1	203° 33.0	11.6	10° 51.5 S	9.1			N 70°	19:22	20:32	22:28	00:53	02:35						
	14	194° 51.9	59° 51.5	21.5	42° 14.6	31.3	353° 19.0	52.7	294° 16.3	00.4	Hadar	148° 44.2	60° 27.5 S	30° 21.2	36.1	218° 03.6	11.7	42.4	9.2			68°	19:14	20:16	21:47	01:21							

2017 September 7, 8, 9 (Thur, Fri, Sat)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON					Lat	Twilight		Sunrise	Moonrise		
	GHA	Dec		GHA	Dec		GHA	Dec		GHA	Dec		GHA	Dec		Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP		Nautical	Civil		7	8	9
Thurs day	00	346° 15.7	209° 31.3	16° 56.2 N	192° 46.7	12° 12.2 N	144° 27.7	7° 58.8 S	85° 38.4	22° 00.8 S	Acamar	315° 16.0	40° 13.9 S	180° 28.5	6° 04.4 N	351° 25.9	11.6	5° 01.1 S	10.8	57.4	N 72°	00:40	03:17	04:36	19:32	19:24	19:15					
	01	1° 18.2	224° 30.7	55.4	207° 47.7	11.7	159° 29.7	59.0	100° 40.8	00.8	Achernar	335° 24.3	57° 08.7 S	195° 28.7	03.5	5° 56.5	11.6	4° 50.3 S	10.9	57.5	N 70°	01:49	03:36	04:45	19:30	19:28	19:26					
	02	16° 20.6	239° 30.1	54.7	222° 48.6	11.1	174° 31.8	59.2	115° 43.2	00.8	Acruz	173° 06.7	63° 11.8 S	210° 28.9	02.6	20° 27.1	11.6	39.4	10.8	66°	68°	02:48	04:03	04:58	19:27	19:34	19:42					
	03	31° 23.1	254° 29.5	53.9	237° 49.5	10.5	189° 33.8	59.4	130° 45.6	00.8	Adhara	255° 10.5	28° 59.7 S	225° 29.1	01.6	34° 57.7	11.5	28.6	10.9	64°	64°	03:07	04:13	05:03	19:25	19:36	19:48					
	04	46° 25.6	269° 28.9	53.1	252° 50.5	10.0	204° 35.8	59.5	145° 48.0	00.8	Aldebaran	290° 46.1	16° 32.5 N	240° 29.3	00.7	49° 28.2	11.6	17.7	11.0	62°	62°	03:21	04:21	05:08	19:24	19:38	19:53					
	05	61° 28.0	284° 28.3	52.4	267° 51.4	09.4	219° 37.8	59.7	160° 50.4	00.9											57.6	60°	03:33	04:28	05:12	19:23	19:40	19:58				
	06	76° 30.5	299° 27.8	51.6	282° 52.4	08.9	234° 39.8	59.9	175° 52.8	00.9	Alioth	166° 18.7	55° 52.1 N	270° 29.8	58.8	78° 29.4	11.5	3° 55.8 S	11.0			N 58°	03:44	04:34	05:15	19:23	19:42	20:02				
	07	91° 32.9	314° 27.2	50.8	297° 53.3	08.3	249° 41.8	8° 00.1 S	190° 55.2	00.9	Alkaid	152° 57.1	49° 13.9 N	285° 30.0	57.9	92° 59.9	11.6	44.8	11.0	56°	56°	03:52	04:40	05:18	19:22	19:43	20:06					
	08	106° 35.4	329° 26.6	50.1	312° 54.3	07.7	264° 43.9	00.3	205° 57.7	00.9	Alnair	312° 54.3	27° 39.8	300° 30.2	57.0	107° 30.5	11.5	33.8	11.1	54°	54°	04:00	04:44	05:21	19:21	19:44	20:09					
	09	121° 37.9	344° 26.0	49.3	327° 55.2	07.2	279° 45.9	00.4	221° 00.1	00.9	Alnilam	275° 43.5	1° 11.5 S	315° 30.4	56.0	122° 01.0	11.5	22.7	11.1	52°	52°	04:07	04:49	05:23	19:21	19:46	20:12					
	10	136° 40.3	359° 25.4	48.5	342° 56.2	06.6	294° 47.9	00.6	236° 02.5	00.9	Alphard	217° 53.6	8° 44.0 S	330° 30.6	55.1	136° 31.5	11.6	11.6	11.0	57.7	50°	04:13	04:52	05:26	19:20	19:47	20:15					
	11	151° 42.8	14° 24.8	47.8	357° 57.1	06.0	309° 49.9	00.8	251° 04.9	00.9											45°	04:25	05:01	05:30	19:19	19:49	20:21					
	12	166° 45.3	29° 24.2	16° 47.0 N	12° 58.1	12° 05.5 N	324° 51.9	8° 01.0 S	266° 07.3	22° 00.9 S	Alphecca	126° 08.7	26° 39.7 N	0° 31.0	5° 53.2 N	165° 32.6	11.4	2° 49.4 S	11.1	57.7	N 40°	04:34	05:07	05:34	19:18	19:51	20:26					
	13	181° 47.7	44° 23.7	46.2	27° 59.0	04.9	339° 53.9	01.2	281° 09.7	00.9											35°	04:42	05:12	05:38	19:17	19:53	20:30					
	14	196° 50.2	59° 23.1	45.5	43° 00.0	04.3	354° 56.0	01.3	296° 12.1	01.0	Altair	62° 05.2	8° 55.2 N	30° 31.5	51.3	194° 33.5	11.5	27.1	11.2	57.8	30°	04:48	05:17	05:41	19:16	19:54	20:34					
	15	211° 52.7	74° 22.5	44.7	58° 00.9	03.8	9° 58.0	01.5	311° 14.5	01.0	Ankaa	353° 12.5	42° 12.5 S	45° 31.7	14.4	209° 04.0	11.4	15.9	11.2	20°	20°	04:58	05:24	05:46	19:15	19:57	20:41					
	16	226° 55.1	89° 21.9	43.9	73° 01.9	03.2	25° 00.0	01.7	326° 16.9	01.0	Antares	112° 22.8	26° 28.1 S	60° 31.9	49.5	223° 34.4	11.5	04.7	11.2	N 10°	0°	05:05	05:29	05:50	19:14	20:00	20:47					
	17	241° 57.6	104° 21.3	43.1	88° 02.8	02.6	40° 02.0	01.9	341° 19.3	01.0											0°	05:09	05:34	05:54	19:13	20:02	20:53					
	18	257° 00.0	119° 20.7	42.4	103° 03.8	02.1	55° 04.0	02.1	356° 21.7	01.0	Arcturus	145° 53.4	19° 05.8 N	90° 32.3	47.6	252° 35.3	11.4	42.3	11.3	S 10°	5°	05:13	05:37	05:58	19:12	20:04	20:58					
	19	272° 02.5	134° 20.2	41.6	118° 04.7	01.5	70° 06.0	02.3	11° 24.1	01.0	Atria	107° 22.0	69° 03.6 S	105° 32.6	46.7	267° 05.7	11.4	31.0	11.2	57.9	20°	05:15	05:40	06:02	19:10	20:07	21:05					
	20	287° 05.0	149° 19.6	40.8	133° 05.6	00.9	85° 08.1	02.4	26° 26.5	01.0	Avior	234° 17.3	59° 33.8 S	120° 32.8	45.7	281° 36.1	11.4	19.8	11.3	30°	30°	05:15	05:43	06:07	19:09	20:10	21:12					
	21	302° 07.4	164° 19.0	40.0	148° 06.6	00.4	100° 10.1	02.6	41° 29.0	01.0	Bellatrix	278° 29.0	6° 21.8 N	135° 33.0	44.8	296° 06.5	11.3	08.5	11.3	35°	35°	05:15	05:44	06:09	19:08	20:12	21:16					
	22	317° 09.9	179° 18.4	39.3	163° 07.5	11° 59.8 N	115° 12.1	02.8	56° 31.4	01.0	Betelgeuse	270° 58.3	7° 24.5 N	150° 33.2	43.8	310° 36.8	11.3	0° 57.2 S	11.3	40°	40°	05:14	05:45	06:12	19:08	20:14	21:20					
23	332° 12.4	194° 17.8	38.5	178° 08.5	59.2	130° 14.1	03.0	71° 33.8	01.1											45°	05:12	05:46	06:15	19:07	20:16	21:26						
Fri day	00	347° 14.8	209° 17.3	16° 37.7 N	193° 09.4	11° 58.7 N	145° 16.1	8° 03.2 S	86° 36.2	22° 01.1 S	Canopus	263° 55.1	52° 42.1 S	180° 33.6	5° 42.0 N	339° 37.5	11.3	0° 34.5 S	11.3	58.0	S 50°	05:10	05:47	06:19	19:05	20:18	21:33					
	01	2° 17.3	224° 16.7	36.9	208° 10.4	58.1	160° 18.1	03.0	101° 38.6	01.1	Capella	208° 30.3	46° 00.6 N	195° 33.3	41.0	354° 07.8	11.3	23.2	11.3	52°	52°	05:08	05:47	06:21	19:05	20:20	21:36					
	02	17° 19.8	239° 16.1	36.2	223° 11.3	57.5	175° 20.2	03.5	116° 41.0	01.1	Deneb	49° 29.1	45° 20.9 N	210° 34.1	40.1	8° 38.1	11.2	11.9	11.4	54°	54°	05:07	05:48	06:23	19:04	20:21	21:39					
	03	32° 22.2	254° 15.5	35.4	238° 12.3	57.0	180° 22.2	03.7	131° 43.4	01.1	Denebola	182° 31.0	14° 28.6 N	225° 34.3	39.1	-23° 08.3	11.3	00.5	11.3	56°	56°	05:05	05:48	06:25	19:04	20:23	21:43					
	04	47° 24.7	269° 14.9	34.6	253° 13.2	56.4	205° 24.2	03.9	146° 45.8	01.1	Diphda	348° 52.7	17° 53.3 S	240° 34.5	38.2	37° 38.6	11.2	0° 10.8 N	11.4	58.1	58°	05:03	05:48	06:27	19:03	20:24	21:47					
	05	62° 27.2	284° 14.4	33.8	268° 14.2	55.8	220° 26.2	04.1	161° 48.2	01.1											S 60°	05:00	05:49	06:30	19:02	20:26	21:51					
	06	77° 29.6	299° 13.8	33.0	283° 15.1	55.3	235° 28.2	04.3	176° 50.6	01.1	Dubhe	193° 49.0	61° 39.4 N	270° 34.9	37.3	66° 39.0	11.2	33.6	11.4	S 62°	04:57	05:49	06:33	19:01	20:28	21:57						
	07	92° 32.1	314° 13.2	32.2	298° 16.1	54.7	250° 30.2	04.4	191° 53.0	01.1	Elnath	278° 09.0	28° 37.1 N	285° 35.1	35.4	81° 09.2	11.1	45.0	11.3													
	08	107° 34.5	329° 12.6	31.4	313° 17.0	54.1	265° 32.3	04.6	206° 55.4	01.2	Eltanin	90° 44.7	51° 29.7 N	300° 35.4	34.4	95° 39.3	11.2	56.3	11.4													
	09	122° 37.0	344° 12.0	30.7	328° 18.0	53.6	280° 34.3	04.8	221° 57.8	01.2	Enif	33° 44.0	9° 57.6 N	315° 35.6	33.5	110° 09.5	11.1	1° 07.7 N	11.4													
	10	137° 39.5	359° 11.5	29.9	343° 18.9	53.0	295° 36.3	05.0	237° 00.2	01.2	Fomalhaut	15° 20.5	29° 31.6 S	330° 35.8	32.6	124° 39.6	11.1	19.1	11.4													
	11	152° 41.9	14° 10.9	29.1	358° 19.9	52.4	310° 38.3	05.2	252° 02.6	01.2																						
	12	167° 44.4	29° 10.3	16° 28.3 N	13° 20.8	11° 51.9 N	325° 40.3	8° 05.4 S	267° 05.0	22° 01.2 S	Gacrux	171° 58.2	57° 12.7 S	0° 36.2	5° 30.7 N	153° 39.8	11.0	1° 41.8 N	11.4	58.2	N 70°	19:08	20:15	21:58	06:01	07:45	09:31					
	13	182° 46.9	44° 09.7	27.5	28° 21.8	51.3	340° 42.3	05.5	282° 07.4	01.2	Genah	175° 49.7	17° 38.2 S	15° 36.4	29.7	168° 09.8	11.0	53.2	11.4	68°	68°	19:01	20:01	21:26	06:06	07:44	09:24					
	14	197° 49.3	59° 09.2	26.7	43° 22.7	50.7	355° 44.3	05.7	299° 09.8	01.2	Hadar	148° 44.2	60° 27.5 S	30° 36.7	28.8	182° 39.8	11.0	2° 04.6 N	11.4	66°	66°	18										

2017 September 13, 14, 15 (Wed, Thur, Fri)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON				Lat	Twilight		Sunrise	Moonrise					
Wednesday	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	v	Dec	d	HP	N 72°	02:00	03:50	05:03	-	-	-		
	01	352° 10'.5	208° 09'.8	14° 58'.4 N	195° 04'.0	10° 49'.9 N	149° 17'.3	8° 25'.2 S	91° 23'.6	22° 02'.5 S	106° 26'.0	02'.5	Acamar	315° 16'.0	40° 13'.9 S	180° 59'.9	3° 48'.2 N	275° 57'.1	6'.5	17° 59'.3 N	4'.5	59'.3	N 70°	02:34	04:04	05:09	19:39	20:26	22:02					
	02	7° 13'.0	223° 09'.2	57.5	210° 05'.0	49'.3	164° 19'.3	25.4	106° 26'.0	02'.5	164° 19'.3	25.4	Achernar	335° 24'.2	57° 08'.7 S	196° 00'.2	47'.2	290° 22'.6	6'.5	18° 03'.8 N	4'.5	68°	N 70°	02:34	04:04	05:09	19:39	20:26	22:02					
	03	22° 15'.5	238° 08'.7	56.6	225° 05'.9	48'.7	179° 21'.3	25.5	121° 28'.4	02'.5	179° 21'.3	25.5	Acruz	173° 06'.7	63° 11'.8 S	211° 00'.4	46.3	304° 48'.1	6'.5	08.3	4'.3	66°	N 70°	02:34	04:04	05:09	19:39	20:26	22:02					
	04	37° 17'.9	253° 08'.1	55.8	240° 06'.9	48'.1	194° 23'.3	25.7	136° 30'.8	02'.5	194° 23'.3	25.7	Adhara	255° 10'.4	28° 59'.7 S	226° 00'.6	45.3	319° 13'.6	6'.4	12.6	4'.2	64°	N 70°	02:34	04:04	05:09	19:39	20:26	22:02					
	05	52° 20'.4	268° 07'.6	54.9	255° 07'.9	47'.5	209° 25'.3	25.9	151° 33'.1	02'.5	209° 25'.3	25.9	Aldebaran	290° 46'.0	16° 32'.5 N	241° 00'.8	44.4	333° 39'.0	6'.4	16.8	4'.1	62°	N 70°	02:34	04:04	05:09	19:39	20:26	22:02					
	06	67° 22'.8	283° 07'.1	54.0	270° 08'.8	47'.0	224° 27'.3	26.1	166° 35'.5	02'.5	224° 27'.3	26.1					256° 01'.0	43.4	348° 04'.4	6'.4	20.9	3'.9	60°	N 70°	02:34	04:04	05:09	19:39	20:26	22:02				
	07	82° 25'.3	298° 06'.5	53.1	285° 09'.8	46.4	239° 29'.3	26.3	181° 37'.9	02'.6	239° 29'.3	26.3	Alioth	166° 18'.8	55° 52'.1 N	271° 01'.3	42.4	2° 29'.8	6'.4	24.8	3'.9	58°	N 70°	02:34	04:04	05:09	19:39	20:26	22:02					
	08	97° 27'.8	313° 06'.0	52.2	300° 10'.8	45.8	254° 31'.3	26.5	196° 40'.3	02'.6	254° 31'.3	26.5	Alkaid	152° 57'.1	49° 13'.9 S	286° 01'.5	41.5	16° 55'.2	6'.3	28.7	3'.7	56°	N 70°	02:34	04:04	05:09	19:39	20:26	22:02					
	09	112° 30'.2	328° 05'.4	51.4	315° 11'.7	45.2	269° 33'.3	26.7	211° 42'.7	02'.6	269° 33'.3	26.7	Alnair	207° 59'.1	46° 52'.5 S	301° 01'.7	45.5	31° 20'.5	6'.3	32.4	3'.6	54°	N 70°	02:34	04:04	05:09	19:39	20:26	22:02					
	10	127° 32'.7	343° 04'.9	50.5	330° 12'.7	44.6	284° 35'.3	26.8	226° 45'.1	02'.6	284° 35'.3	26.8	Alnilam	275° 43'.5	1° 11'.5 S	316° 01'.9	39.6	45° 45'.8	6'.2	36.0	3'.5	52°	N 70°	02:34	04:04	05:09	19:39	20:26	22:02					
	11	142° 35'.2	358° 04'.9	49.6	345° 13'.6	44.0	299° 37'.3	27.0	241° 47.4	02'.6	299° 37'.3	27.0	Alphard	217° 53'.6	8° 44'.0 S	331° 02'.2	38.6	60° 11'.0	6'.3	39.5	3'.4	50°	N 70°	02:34	04:04	05:09	19:39	20:26	22:02					
	12	157° 37'.6	13° 03'.8	48.7	0° 14.6	43.5	314° 39'.3	27.2	256° 49.8	02'.6	314° 39'.3	27.2					346° 02.4	37.7	74° 36'.3	6'.2	42.9	3'.2	45°	N 70°	02:34	04:04	05:09	19:39	20:26	22:02				
	13	172° 40'.1	28° 03'.3	47.0	15° 15.6	40.0	329° 41'.3	27.4	271° 52'.2	02'.6	329° 41'.3	27.4	Alphecca	126° 08'.8	26° 39'.7 N	1° 02'.6	3° 36.7 N	89° 01'.5	6'.2	18° 46'.1 N	3'.1	59'.3	N 40°	04:41	05:13	05:40	23:23	-	00:21					
	14	187° 42'.6	43° 02'.7	47.0	30° 16.5	42.3	344° 43'.3	27.6	286° 54'.6	02'.6	344° 43'.3	27.6	Alpheratz	267° 40'.1	29° 0'.2	16° 02'.8	35.7	103° 26'.7	6'.0	19° 15'.3 N	1'.6	59'.3	N 40°	04:41	05:13	05:40	23:23	-	00:21					
	15	202° 45.0	58° 02'.2	46.1	45° 17.5	41.7	359° 45'.3	27.8	301° 57.0	02'.7	359° 45'.3	27.8	Altair	62° 05'.3	8° 55'.2 S	31° 03'.0	34.8	117° 51'.8	6'.2	52.2	2'.9	30°	N 40°	04:41	05:13	05:40	23:23	-	00:21					
	16	217° 47'.5	73° 01'.7	45.2	60° 18.5	41.1	14° 47'.3	28.0	316° 59.3	02'.7	14° 47'.3	28.0	Antares	353° 12.5	42° 12.5 S	46° 03'.3	33.8	132° 17.0	6'.1	55.1	2'.7	20°	N 40°	04:41	05:13	05:40	23:23	-	00:21					
	17	232° 49.9	88° 01'.1	44.3	75° 19.4	40.6	29° 49'.3	28.1	332° 01.7	02'.7	29° 49'.3	28.1	Arcturus	112° 22'.8	26° 28'.1 S	61° 03'.5	32.9	146° 42'.1	6'.1	57.8	2'.6	10°	N 40°	04:41	05:13	05:40	23:23	-	00:21					
	18	247° 52.4	103° 00'.6	43.4	90° 20.4	40.0	44° 51'.3	28.3	347° 04.1	02'.7	44° 51'.3	28.3	Atira	76° 03'.7	31.9	76° 03'.7	31.9	161° 07'.2	6'.1	19° 00'.4 N	2'.5	0°	N 40°	04:41	05:13	05:40	23:23	-	00:21					
	19	262° 54.9	118° 00'.0	42.5	105° 21.3	39.4	59° 53'.3	28.5	2° 06.5	02'.7	59° 53'.3	28.5	Avia	145° 53'.4	19° 05'.8 N	91° 03'.9	31.0	175° 32.3	6'.0	02.9	2'.4	S 10°	N 40°	04:41	05:13	05:40	23:23	-	00:21					
	20	277° 57.3	132° 59'.5	41.6	120° 22.3	38.8	74° 55'.3	28.7	17° 08.9	02'.7	74° 55'.3	28.7	Bellatrix	107° 22'.1	69° 03'.8 S	106° 04'.1	30.0	189° 57.3	6'.1	05.3	2'.2	20°	N 40°	04:41	05:13	05:40	23:23	-	00:21					
	21	292° 59.8	147° 59.0	40.8	135° 23.3	38.2	89° 57'.3	28.9	32° 11.3	02'.7	89° 57'.3	28.9	Betelgeuse	234° 17'.2	59° 33.8 S	121° 04'.4	29.0	204° 22.4	6'.0	07.5	2'.2	30°	N 40°	04:41	05:13	05:40	23:23	-	00:21					
	22	308° 02.3	162° 58'.4	39.9	150° 24.2	37.6	104° 59'.3	29.1	47° 13.6	02'.7	104° 59'.3	29.1					136° 04'.6	28.1	218° 47.4	6'.0	09.7	2'.0	35°	N 40°	04:41	05:13	05:40	23:23	-	00:21				
23	323° 04.7	177° 57.9	39.0	165° 25.2	37.1	120° 01'.3	29.3	62° 16.0	02'.8	120° 01'.3	29.3					151° 04'.8	27.1	233° 12.4	6'.0	11.7	2'.8	40°	N 40°	04:41	05:13	05:40	23:23	-	00:21					
	338° 07.2	192° 57.4	38.1	180° 26.2	36.5	135° 03'.3	29.4	77° 18.4	02'.8	135° 03'.3	29.4					166° 05.0	26.2	247° 37.4	6'.0	13.5	1'.8	45°	N 40°	04:41	05:13	05:40	23:23	-	00:21					
Thursday	00	353° 09.7	207° 56'.8	14° 37'.2 N	195° 27'.1	10° 35'.9 N	150° 05'.3	8° 29'.8 S	92° 20'.8	22° 02'.8 S	107° 23.2	02.8	Canopus	263° 55.0	52° 42'.1 S	181° 05.3	3° 25'.2 N	262° 02.4	6'.0	19° 15'.3 N	1'.6	59'.3	S 50°	04:57	05:34	06:06	01:12	02:17	03:15					
	01	8° 12'.1	222° 56'.3	36.3	210° 28'.1	35.3	165° 07'.3	29.6	280° 30'.2	02.8	210° 28'.1	35.3	Capella	180° 30'.2	46° 00'.6 N	196° 05.5	24.2	276° 27.4	5.9	16.9	1'.4	52°	S 50°	04:57	05:34	06:06	01:12	02:17	03:15					
	02	23° 14'.6	237° 55'.7	35.4	225° 29.0	34.7	180° 09'.3	30.0	122° 25.5	02.8	180° 09'.3	30.0	Deneb	49° 29'.2	45° 20'.9 N	211° 05.7	23.3	300° 52.3	6.0	18.3	1.4	54°	S 50°	04:57	05:34	06:06	01:12	02:17	03:15					
	03	38° 17'.1	252° 52'.2	34.5	240° 30.0	34.1	195° 11'.3	30.2	137° 27.9	02.8	195° 11'.3	30.2	Denebola	182° 31'.1	14° 28'.6 N	226° 05.9	22.3	295° 17.3	5.9	19.7	1.2	56°	S 50°	04:57	05:34	06:06	01:12	02:17	03:15					
	04	53° 19'.5	267° 54.7	33.6	255° 31.0	33.6	210° 13'.3	30.4	152° 30'.3	02.8	210° 13'.3	30.4	Diphda	348° 52'.7	17° 53'.3 S	241° 06.1	21.4	319° 42.2	6.0	20.9	1.1	58°	S 50°	04:57	05:34	06:06	01:12	02:17	03:15					
	05	68° 22.0	282° 54.1	32.7	270° 31.9	33.0	225° 15'.3	30.6	167° 32.7	02.8	225° 15'.3	30.6					256° 06.4	20.4	334° 07.2	5.9	22.0	1.0	S 60°	S 50°	04:57	05:34	06:06	01:12	02:17	03:15				
	06	83° 24.4	297° 53.6	31.8	285° 32.9	32.4	240° 17'.3	30.7	182° 35.1	02.9	240° 17'.3	30.7	Dubhe	193° 49.0	61° 39'.4 N	271° 06.6	19.4	348° 32.1	5.9	23.0	0.8	52°	S 50°	04:57	05:34	06:06	01:12	02:17	03:15					
	07	98° 26.9	312° 53.1	30.9	300° 33.9	31.8	255° 19'.3	30.9	197° 37.4	02.9	300° 33.9	31.8	El Nath	278° 09.0	28° 37.1 N	286° 06.8	18.5	2° 57.0	5.9	23.8	0.7	50°	S 50°	04:57	05:34	06:06	01:12	02:17	03:15					
	08	113° 29.4	327° 52'.5	30.0	315° 34.8	31.2	270° 21'.3	31.1	212° 39.8	02.9	315° 34.8	31.2	Eltanin	90° 44.7	51° 29.7 N	301° 07.0	17.5	17° 21.9	5.9	24.5	0.6	48°	S 50°	04:57	05:34	06:06	01:12	02:17	03:15					
	09	128° 31.8	342° 52.0	29.1	330° 35.8	30.6	285° 23'.3	31.3	227° 42.2	02.9	330° 35.8	30.6	Enif	33° 44.0	9° 57.6 N	316° 07.3	16.6	31° 46.8	6.0	25.1	0.5	46°	S 50°	04:57	05:34	06:06	01:12	02:17	03:15					
	10	143° 34.3	357° 51'.5	28.2	345° 36.8	30.1	300°																											

2017 September 16, 17, 18 (Sat, Sun, Mon)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise				
																											16		17	18			
16 S a t u r d a y	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	02:25	04:06	05:17	23:13	-	01:23					
	355° 07'.9	207° 31'.4	13° 53'.6 N	196° 13'.5	10° 07'.8 N	151° 41'.2	8° 38'.6 S	94° 14'.8	22° 03'.4 S	109° 15'.9	13° 19'.9 S	Acamar	315° 15'.9	40° 13'.9 S	181° 15'.9	2° 39'.0 N	234° 07'.7	6.7	18° 08'.9 N	4.4	59.1	N 70°	02:52	04:17	05:21	23:54	-	01:46					
	10° 10'.4	222° 30'.9	52'.6	211° 14'.4	07'.2	166° 43'.2	38'.7	109° 17'.2	03'.4	196° 16'.2	38'.1	Achernar	335° 24'.2	57° 08'.7 S	248° 33'.4	6.7	04'.5	4.5	59.0	68°	03:12	04:27	05:24	-	00:22	02:04							
	25° 12'.9	237° 30'.4	51'.7	226° 15'.4	06'.6	181° 45'.2	38'.9	124° 19'.6	03'.4	173° 06'.7	37'.1	Acruz	173° 06'.7	63° 11'.7 S	211° 16'.4	37.1	262° 59'.1	6.8	18° 00'.0 N	4.7	66°	03:28	04:34	05:27	-	00:43	02:18						
	40° 15'.3	252° 29'.9	50'.8	241° 16'.4	06'.0	196° 21'.9	39.1	139° 21'.9	03'.4	255° 10'.4	36.2	Adhara	255° 10'.4	28° 59'.7 S	226° 16'.6	36.2	277° 24'.9	6.8	55.3	4.7	64°	03:40	04:41	05:29	-	01:00	02:30						
	55° 17'.8	267° 29'.4	49'.9	256° 17'.4	05'.4	211° 49'.2	39.3	154° 24'.3	03'.4	290° 46'.0	34.2	Aldebaran	290° 46'.0	16° 32'.5 N	241° 16'.8	35.2	291° 50'.7	6.9	50.6	4.9	62°	03:50	04:46	05:31	-	01:14	02:40						
	70° 20'.3	282° 28'.8	48'.9	271° 18'.3	04'.9	226° 51'.2	39.5	169° 26'.7	03'.5						256° 17'.0	34.2	306° 16'.6	6.8	45.7	4.9	60°	03:59	04:51	05:33	00:07	01:25	02:48						
	85° 22'.7	297° 28'.3	48'.0	286° 19'.3	04'.3	241° 53'.2	39.7	184° 29'.1	03'.5						166° 18'.8	55.5	52'.1 N	271° 17.3	33.3	320° 42'.4	7.0	40'.8	5.1	N 58°	04:07	04:55	05:34	00:19	01:35	02:55			
	100° 25'.2	312° 27'.8	47'.1	301° 20'.3	03'.7	251° 55'.2	39.9	199° 31'.4	03'.5						152° 57'.1	49.3	13'.8 N	286° 17.5	32.3	335° 08'.4	6.9	35.7	5.2	56°	04:13	04:58	05:36	00:30	01:44	03:02			
	115° 27'.7	327° 27'.3	46'.1	316° 21'.2	03'.1	276° 57'.2	40.0	214° 33'.8	03'.5						27° 39'.8	46.3	52'.5 S	301° 17'.7	31.3	349° 34'.3	7.1	30.5	5.3	54°	04:19	05:01	05:37	00:39	01:52	03:08			
	130° 30'.1	342° 26'.8	45'.2	331° 22'.2	02'.5	286° 59'.2	40.2	229° 36'.2	03'.5						275° 43'.5	1° 11'.5 S		316° 17.9	30.4	4° 00'.4	7.0	25.2	5.4	52°	04:23	05:04	05:38	00:48	01:59	03:13			
	145° 32'.6	357° 26'.2	44'.3	346° 23'.2	01'.9	302° 01'.2	40.4	244° 38'.5	03'.5						217° 53'.5	8° 44'.0 S		331° 18'.2	29.4	18° 26'.4	7.1	19.8	5.5	50°	04:28	05:06	05:39	00:55	02:05	03:18			
	160° 35'.0	12° 25'.7	43'.3	1° 24'.1	01'.3	317° 03'.2	40.6	259° 40'.9	03'.5									346° 18'.4	28.4	32° 52'.5	7.2	14'.3	5.7	58'.9	45°	04:37	05:12	05:41	01:11	02:19	03:28		
	175° 37'.5	27° 25'.2	13° 42'.4 N	16° 25'.1	10° 00'.7 N	332° 05'.2	8° 40'.8 S	274° 43'.3	22° 03'.5 S						126° 08'.8	26° 39'.7 N		1° 18'.6	2° 27'.5 N	47° 18'.7	7.2	17° 08'.6 N	5.7	58'.9	N 40°	04:44	05:16	05:43	01:24	02:30	03:36		
	190° 40'.0	42° 24'.7	41'.5	31° 26'.1	00'.1	347° 07'.1	41.0	289° 45'.6	03'.6						289° 45'.6	26° 53'.6		16° 18'.8	29.9	51'.3 N	7.2	02.9	5.8	35°	04:49	05:19	05:44	01:35	02:39	03:44			
	205° 42'.4	57° 24'.2	40'.5	46° 27.0	9° 59'.6 N	2° 09'.1	41'.2	304° 48'.0	03'.6						62° 05'.3	8° 55'.2 S		31° 19'.0	25.5	76° 11'.1	7.3	16° 57'.1 N	6.0	30°	04:54	05:22	05:46	01:45	02:47	03:50			
	220° 44'.9	72° 23'.7	39'.6	61° 28'.0	59.0	61° 11'.1	41'.4	319° 50'.4	03'.6						353° 12'.5	42° 12'.5 S		46° 19'.0	24.6	90° 37'.4	7.4	51'.1	6.0	20°	05:00	05:26	05:48	01:02	03:02	04:01			
	235° 47'.4	87° 23'.1	38'.7	76° 29.0	58.4	32° 13'.1	41'.5	334° 52'.8	03'.6						112° 22'.8	26° 28'.1 S		61° 19'.5	23.6	105° 03'.8	7.4	45.1	6.2	N 10°	05:04	05:29	05:50	02:16	03:14	04:10			
	250° 49'.8	102° 22'.6	37'.7	91° 30'.0	57.8	47° 15'.1	41'.7	349° 55'.1	03'.6									76° 19'.7	22.6	119° 30'.2	7.5	38.9	6.2	0°	05:06	05:30	05:51	02:30	03:26	04:19			
	265° 52'.3	117° 22'.1	36'.8	106° 30.9	57.2	62° 17'.1	41'.9	4° 57'.5	03'.6									145° 53'.4	19° 05'.8 N	91° 19.9	21.7	133° 56'.7	7.5	32.7	S 10°	05:07	05:32	05:53	02:43	03:37	04:28		
	280° 54'.8	132° 21'.6	35'.8	121° 31.9	56.6	77° 19'.1	42.1	19° 59.9	03'.6									107° 22'.1	20.7	148° 23'.2	7.5	26.3	6.4	20°	05:07	05:32	05:54	02:58	03:50	04:38			
	295° 57'.2	147° 21'.1	34'.9	136° 32.9	56.0	92° 21'.1	42.3	35° 02'.2	03'.6									234° 17'.2	19.7	162° 49.7	7.6	19.9	6.6	58'.8	30°	05:04	05:32	05:56	03:15	04:04	04:49		
	310° 59'.7	162° 20'.6	34'.0	151° 33.8	55.4	107° 23'.1	42.5	50° 04'.6	03'.7									278° 28'.9	6° 21'.8 N	136° 20.6	18.8	177° 16'.3	7.7	13.3	35°	05:02	05:31	05:57	03:24	04:12	04:55		
326° 02'.2	177° 20'.1	33'.0	166° 34.8	54.8	122° 25'.1	42.7	65° 07'.0	03'.7									270° 58'.2	7° 24'.5 N	151° 20.8	17.8	191° 43'.0	7.7	06.7	40°	04:59	05:30	05:57	03:35	04:21	05:02			
341° 04'.6	192° 19'.5	32'.1	181° 35.8	54.2	137° 27'.1	42.8	80° 09'.3	03'.7									166° 21.0	16.8	206° 09'.7	7.7	15° 59'.9 N	6.8	45°	40°	04:55	05:29	05:58	03:48	04:32	05:10			
17 S u n d a y	356° 07'.1	207° 19.0	13° 31'.1 N	196° 36.7	9° 53'.7 N	152° 29'.1	8° 43'.0 S	95° 11'.7	22° 03'.7 S					263° 55.0	52° 42'.1 S		181° 21'.3	2° 15'.9 N	220° 36'.4	7.9	15° 53'.1 N	7.0	58'.8	S 50°	04:50	05:28	06:00	04:04	04:45	05:20			
	11° 09'.5	222° 18'.5	30'.2	210° 31'.7	53'.1	167° 31'.1	43.2	110° 14'.1	03'.7					280° 30'.2	46° 00'.6 N		196° 21'.5	14.9	235° 03'.3	7.8	46.1	7.0	52°	04:47	05:27	06:00	04:11	04:51	05:25				
	26° 12'.0	237° 18'.0	29'.3	226° 38'.7	52'.5	182° 33'.1	43.4	125° 16'.4	03'.7					49° 29'.2	45° 20'.9 N		211° 21'.7	14.0	249° 30'.1	8.0	39.1	7.1	54°	04:44	05:26	06:01	04:20	04:58	05:30				
	41° 14'.5	252° 17'.5	28'.3	241° 39.7	51'.9	187° 35'.1	43.6	140° 18'.8	03'.7					182° 31'.1	14° 28'.6 N		226° 21.9	13.0	263° 57.1	7.9	32.0	7.2	56°	04:41	05:24	06:01	04:29	05:06	05:35				
	56° 16'.9	267° 17.0	27.4	256° 40.6	51'.3	212° 37'.1	43.8	155° 21'.2	03'.8					348° 52'.7	17° 53'.3 S		241° 22.2	12.0	278° 24'.0	8.1	24.8	7.3	58'.7	58°	04:37	05:23	06:02	04:39	05:14	05:41			
	71° 19'.4	282° 16'.5	26'.4	271° 41'.6	50.7	227° 39'.0	44.0	170° 23'.5	03'.8									256° 22.4	11.1	292° 51.1	8.1	17.5	7.4	S 60°	04:33	05:22	06:03	04:51	05:23	05:48			
	86° 21'.9	297° 16'.0	25'.5	286° 42.6	50.1	242° 41'.0	44.2	185° 25'.9	03'.8									271° 22.6	10.1	307° 18'.2	8.1	10.1	7.5	50°	04:40	05:28	06:04	05:05	05:34	06:04			
	101° 24'.3	312° 15'.4	24'.5	301° 43'.5	49'.5	257° 43'.0	44.3	200° 28'.3	03'.8									278° 09.0	28° 37'.1 N	286° 22.8	09.1	321° 45'.3	8.2	02.6	7.6	S 62°	04:27	05:20	06:04	05:05	05:34	06:04	
	116° 26'.8	327° 14'.9	23'.6	316° 44'.5	48.9	272° 45'.0	44.5	215° 30'.6	03'.8									301° 23.1	08.2	336° 12.5	8.3	14° 55'.0 N	7.7										
	131° 29'.3	342° 14.4	22.6	331° 45'.5	48.3	287° 47'.0	44.7	230° 33'.0	03'.8									316° 23.0	07.2	350° 39.8	8.3	47.3	7.7										
	146° 31'.7	357° 13'.9	21.7	346° 46.4	47.8	302° 49'.0	44.9	245° 34'.4	03'.8									331° 23.5	06.2	5° 07'.1	8.4	39.6	7.8										
	161° 34'.2	12° 13'.4	20.7	1° 47.4	47.2	317° 51'.0	45.1	260° 37.7	03'.8									346° 23'.0	05.3	19° 34'.5	8.4	31.8	8.0	58'.6									
	176° 36'.6	27° 12'.9	13° 19'.8 N	16° 48.4	9° 46'.6 N	332° 53'.0	8° 45'.3 S	275° 40'.1	22° 03'.9 S									171° 58'.2	57° 12'.6 S	1° 23'.9	2° 04'.3 N	34° 01'.9	8.5	14° 23'.8 N	8.0	58'.6	N 70°	18:26	19:28	20:52	18:40	18:41	18:40
	191° 39'.1	42° 12'.4	18'.8	31° 49.4	46.0	347° 55'.0	45.5	290° 42'.5	03'.9									175° 49'.7	17° 38'.2 S	16° 24.2	03.3	48° 29'.4	8.6	15.8	8.0	68°	18:23	19:20	20:33	18:11	18:22	18:28	
	206° 41'.6	57° 11'.9	17'.9	46° 50'.3	45.4	2° 57'.0	45.7	305° 44'.8	03'.9									148° 44.2	60° 27'.4 S	31° 24.4	02.4	62° 57.0	8.6	07.8	8.2	66°	18:20	19:12	20:18	17:49	18:07	18:18	
	221° 44'.0	72° 11'.4	16'.9	61° 51'.3	44.8	17° 59'.0	45.8	320° 47.2	03'.9									327° 57.2	23° 32'.7 S	46° 24.6	01.4	77° 24'.6	8.6	13° 59'.6 N	8.2	64°	18:18	19:06	20:06	17:32	17:54	18:10	
	236° 46'.5	87° 10'.8	16'.0	76° 52'.3	44.2	33° 01'.0	46.0	335°																									

2017 September 19, 20, 21 (Tue, Wed, Thur)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise			
																								Nautical		Civil	19		20	21		
19 T u e s d a y	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	02:46	04:21	05:30	03:21	05:13	07:01
	358° 05'.4	206° 54'.7	12° 45'.1 N	197° 23'.4	9° 25'.2 N	154° 04'.7	8° 52'.0 S	97° 05'.1	22° 04'.3 S	Acamar	315° 15'.9	40° 13'.9 S	181° 31'.9	1° 29'.4 N	195° 07'.8	10° 5	8° 52'.7 N	10° 2	58'.0	N 70°	03:09	04:30	05:33	03:34	05:18	06:59						
	13° 07'.8	221° 54'.2	44'.2	212° 24'.4	24'.6	169° 06'.6	52'.2	112° 07'.5	04'.4	Achernar	335° 24'.2	57° 08'.8 S	196° 32'.2	28'.5	209° 37'.3	10'.6	42'.5	10'.2	57'.9	68°	03:26	04:38	05:34	03:45	05:23	06:58						
	28° 10'.3	236° 53'.7	43'.2	227° 25'.4	24'.0	184° 08'.6	52'.4	127° 09'.9	04'.4	Acruz	173° 06'.7	63° 11'.7 S	211° 32'.4	27'.5	224° 06'.9	10'.6	32'.3	10'.3		66°	03:39	04:44	05:36	03:53	05:26	06:57						
	43° 12'.7	251° 53'.2	42'.2	242° 26'.4	23'.4	199° 10'.6	52'.6	142° 12'.2	04'.4	Adhara	255° 10'.4	28° 59'.7 S	226° 32'.6	26'.5	238° 36'.5	10'.7	22'.0	10'.4		64°	03:50	04:50	05:38	04:00	05:29	06:56						
	58° 15'.2	266° 52'.7	41'.2	257° 27'.3	22'.8	214° 12'.6	52'.8	157° 14'.6	04'.4	Aldebaran	290° 46'.0	16° 32'.5 N	241° 32'.8	25'.6	253° 06'.2	10'.8	11'.6	10'.3		62°	04:00	04:54	05:39	04:06	05:32	06:55						
	73° 17'.7	281° 52'.2	40'.3	272° 28'.3	22'.2	229° 14'.6	53'.0	172° 16'.9	04'.4				256° 33'.0	24'.6	267° 36'.0	10'.8	01'.3	10'.4		60°	04:07	04:58	05:40	04:12	05:34	06:54						
	88° 20'.1	296° 51'.7	39'.3	287° 29'.3	21'.7	244° 16'.6	53'.2	187° 19'.3	04'.4	Alioth	166° 18'.8	55° 52'.1 N	271° 33'.3	23'.6	282° 05'.8	10'.8	7° 50'.9 N	10'.5	57'.8	N 58°	04:14	05:01	05:41	04:16	05:36	06:54						
	103° 22'.6	311° 51'.2	38'.3	302° 30'.3	21'.1	259° 18'.6	53'.3	202° 21'.7	04'.4	Alkaid	152° 57'.1	49° 13'.8 N	286° 33'.5	22'.6	296° 35'.6	10'.9	40'.4	10'.4		56°	04:20	05:04	05:41	04:20	05:38	06:53						
	118° 25'.1	326° 50'.7	37'.3	317° 31'.2	20'.5	274° 20'.6	53'.5	217° 24'.0	04'.4	Alnair	301° 37'.4	46° 52'.5 S	301° 33'.7	21'.7	311° 05'.5	10'.9	30'.0	10'.5		54°	04:24	05:07	05:42	04:24	05:39	06:53						
	133° 27'.5	341° 50'.2	36'.4	332° 32'.2	19'.9	289° 22'.6	53'.7	232° 26'.4	04'.5	Alnilam	275° 43'.4	1° 11'.5 S	316° 33'.9	20'.7	325° 35'.4	11'.0	19'.5	10'.6		52°	04:29	05:09	05:43	04:27	05:41	06:52						
	148° 30'.0	356° 49'.7	35'.4	347° 33'.2	19'.3	304° 24'.5	53'.9	247° 28'.7	04'.5	Alphard	217° 53'.5	8° 44'.0 S	331° 34'.2	19'.7	340° 05'.4	11'.1	08'.9	10'.5		50°	04:33	05:11	05:43	04:30	05:42	06:52						
	163° 32'.5	1° 49'.3	34'.4	2° 34'.2	18'.7	319° 26'.5	54'.1	262° 31'.1	04'.5				346° 34'.4	18'.8	354° 35'.5	11'.1	6° 58'.4 N	10'.6	57'.7	45°	04:41	05:15	05:45	04:37	05:45	06:51						
	178° 34'.9	26° 48'.8	12° 33'.4 N	17° 35'.1	9° 18'.1 N	334° 28'.5	8° 54'.3 S	277° 33'.5	22° 04'.5 S	Alphecca	126° 08'.8	26° 39'.7 N	1° 34'.6	1° 17'.8 N	9° 05'.6	11'.1	6° 47'.8 N	10'.7	57'.7	N 40°	04:47	05:19	05:46	04:42	05:47	06:50						
	193° 37'.4	41° 48'.3	32'.4	32° 36'.1	17'.5	349° 30'.5	54'.5	292° 35'.8	04'.5				16° 34'.8	16'.8	23° 35'.7	11'.2	37'.1	10'.6		35°	04:52	05:19	05:47	04:47	05:49	06:50						
	208° 39'.9	56° 47'.8	31'.5	47° 37'.1	16'.9	4° 32'.5	54'.7	307° 38'.2	04'.5	Altair	62° 05'.3	8° 55'.2 N	31° 35'.0	15'.9	38° 05'.9	11'.3	26'.5	10'.7		30°	04:55	05:23	05:47	04:51	05:51	06:49						
	223° 42'.3	71° 47'.3	30'.5	62° 38'.1	16'.3	19° 34'.5	54'.9	322° 40'.5	04'.5	Ankaa	353° 12'.5	42° 12'.6 S	46° 35'.3	14'.9	52° 36'.2	11'.3	15'.8	10'.7	57'.6	20°	05:01	05:26	05:48	04:58	05:54	06:48						
	238° 44'.8	86° 46'.8	29'.5	77° 39'.0	15'.7	34° 36'.5	55'.0	337° 42'.9	04'.6	Antares	112° 22'.8	26° 28'.1 S	61° 35'.5	13'.9	67° 06'.5	11'.3	05'.1	10'.7		N 10°	05:04	05:28	05:49	05:05	05:57	06:48						
	253° 47'.2	101° 46'.3	28'.5	92° 40'.0	15'.1	49° 38'.5	55'.2	352° 45'.2	04'.6				76° 35'.7	12'.9	81° 36'.8	11'.4	5° 54'.4 N	10'.7		0°	05:05	05:29	05:50	05:10	05:59	06:47						
	268° 49'.7	116° 45'.8	27'.5	107° 41'.0	14'.5	64° 40'.4	55'.4	7° 47'.6	04'.6	Arcturus	145° 53'.4	19° 05'.8 N	91° 35'.9	12'.0	96° 07'.2	11'.4	43'.7	10'.8		S 10°	05:05	05:30	05:51	05:16	06:02	06:46						
	283° 52'.2	131° 45'.3	26'.5	122° 42'.0	13'.9	79° 42'.4	55'.6	22° 49'.9	04'.6	Atria	107° 22'.2	69° 03'.8 S	106° 36'.1	11'.0	110° 37'.6	11'.5	32'.9	10'.8	57'.5	20°	05:04	05:29	05:51	05:23	06:05	06:45						
	298° 54'.6	146° 44'.8	25'.5	137° 42'.9	13'.3	94° 44'.4	55'.8	37° 52'.3	04'.6	Avior	234° 17'.2	59° 33'.8 S	121° 36'.4	10'.0	125° 08'.1	11'.5	22'.1	10'.8		30°	05:00	05:28	05:52	05:30	06:08	06:45						
	313° 57'.1	161° 44'.3	24'.6	152° 43'.9	12'.7	109° 46'.4	56'.0	52° 54'.7	04'.6	Bellatrix	278° 28'.9	6° 21'.8 N	136° 36'.6	09'.1	139° 38'.6	11'.5	11'.3	10'.8		35°	04:58	05:27	05:52	05:34	06:10	06:44						
328° 59'.6	176° 43'.8	23'.6	167° 44'.9	12'.1	124° 48'.4	56'.2	67° 57'.0	04'.6	Betelgeuse	270° 58'.2	7° 24'.5 N	151° 36'.8	08'.1	154° 09'.1	11'.6	00'.5	10'.9		40°	04:54	05:26	05:52	05:38	06:12	06:44							
344° 02'.0	191° 43'.3	22'.6	182° 45'.9	11'.5	139° 50'.4	56'.4	82° 59'.4	04'.7				166° 37'.0	07'.1	168° 39'.7	11'.7	4° 49'.6 N	10'.8	57'.4	45°	04:49	05:24	05:53	05:44	06:14	06:43							
20 W e d n e s d a y	359° 04'.0	206° 42'.8	12° 21'.6 N	197° 46'.8	9° 10'.9 N	154° 52'.4	8° 56'.5 S	98° 01'.7	22° 04'.7 S	Canopus	263° 54'.9	52° 42'.1 S	181° 37'.3	1° 06'.1 N	183° 10'.4	11'.7	4° 38'.8 N	10'.9	57'.4	S 50°	04:43	05:21	05:53	05:50	06:17	06:42						
	14° 07'.5	221° 42'.3	20'.6	212° 47'.8	10'.3	169° 54'.3	56'.7	113° 04'.1	04'.7	Capella	280° 30'.1	46° 00'.6 N	196° 37'.5	05'.2	197° 41'.1	11'.7	27'.9	10'.9	57'.2	50°	04:40	05:20	05:53	05:53	06:18	06:42						
	29° 09'.4	236° 41'.8	19'.6	227° 48'.8	09'.7	184° 56'.3	56'.9	128° 06'.4	04'.7	Deneb	49° 29'.2	45° 21'.0 N	211° 37'.7	04'.2	212° 11'.8	11'.8	17'.0	10'.9		54°	04:37	05:18	05:53	05:56	06:20	06:42						
	44° 11'.9	251° 41'.4	18'.6	242° 49'.8	09'.1	199° 58'.3	57'.1	143° 08'.8	04'.7	Denebola	182° 31'.1	14° 28'.6 N	226° 37'.9	03'.2	226° 42'.6	11'.8	06'.0	10'.9		56°	04:33	05:16	05:53	06:00	06:21	06:41						
	59° 14'.3	266° 40'.9	17'.6	257° 50'.8	08'.5	215° 00'.3	57'.3	158° 11'.1	04'.7	Diphda	348° 52'.7	17° 53'.3 S	241° 38'.1	02'.3	241° 13'.4	11'.9	3° 55'.2 N	10'.9	57'.3	58°	04:28	05:15	05:54	06:04	06:23	06:41						
	74° 16'.8	281° 40'.4	16'.6	272° 51'.7	07'.9	230° 02'.3	57'.5	173° 13'.5	04'.7				256° 38'.4	01'.3	255° 44'.3	11'.9	44'.3	10'.9		S 60°	04:23	05:12	05:54	06:08	06:25	06:41						
	89° 19'.3	296° 39'.9	15'.7	287° 52'.7	15'.7	245° 04'.3	57'.7	188° 15'.9	04'.7	Dubhe	193° 48'.9	61° 39'.4 N	271° 38'.6	00'.3	270° 15'.2	11'.9	33'.4	11'.0		S 62°	04:17	05:10	05:54	06:13	06:27	06:40						
	104° 21'.7	311° 39'.4	14'.7	302° 53'.7	06'.7	260° 06'.3	57'.9	203° 18'.2	04'.8	El Nath	278° 08'.9	28° 37'.1 N	286° 38'.8	0° 59'.3 N	284° 46'.1	12'.0	22'.4	10'.9														
	119° 24'.2	326° 38'.9	13'.7	317° 54'.7	06'.1	275° 08'.3	58'.1	218° 20'.6	04'.8	Eltanin	90° 44'.8	51° 29'.7 N	301° 39'.0	58'.4	299° 17'.1	12'.0	11'.5	11'.0	57'.2													
	134° 26'.7	341° 38'.4	12'.7	332° 55'.6	05'.5	290° 10'.2	58'.2	233° 22'.9	04'.8	Enif	33° 44'.0	9° 57'.6 N	316° 39'.2	57'.4	313° 48'.1	12'.0	00'.5	10'.9														
	149° 29'.1	356° 37'.9	11'.7	347° 56'.6	05'.0	305° 12'.2	58'.4	248° 25'.3	04'.8	Fomalhaut	15° 20'.5	29° 31'.6 S	331° 39'.5	56'.4	328° 19'.1	12'.1	2° 49'.6 N	11'.0														
	164° 31'.6	1° 37'.4	10'.7	2° 57'.6	04'.4	320° 14'.2	58'.6	263° 27'.6	04'.8				346° 39'.7	55'.5	342° 50'.2	12'.2	38'.6	10'.9														
	179° 34'.1	26° 37'.0	12° 09'.7 N	17° 58'.6	9° 03'.8 N	335° 16'.2	8° 58'.8 S	278° 30'.0	22° 04'.8 S	Gacrux	171° 58'.2	57° 12'.6 S	1° 39'.9	0° 54'.5 N	357° 21'.4	12'.1	2° 27'.7 N	11'.0	57'.1	N 70°	18:12	19:14	20:34	18:38	18:36	18:33						
	194° 36'.5	41° 36'.5	08'.7	32° 59'.6	03'.2	350° 18'.2	59'.0	293° 32'.3	04'.8	Gienah	175° 49'.7	17° 38'.2 S	16° 40'.1	53'.5	11° 52'.5	12'.2	16'.7	11'.0		68°	18:10	19:06	20:17	18:32	18:34	18:37						
	209° 39'.0	56° 36'.0	07'.7	48° 00'.5	02'.6																											

2017 September 22, 23, 24 (Fri, Sat, Sun)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	22		23	24	
22	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	03:05	04:35	05:44	08:46	10:31	12:18				
	01	16° 05' 2	206° 19' 6	11° 33' 4 N	198° 33' 8	8° 42' 2 N	156° 27' 6	9° 05' 6 S	99° 54' 6	22° 05' 3 S	Acamar	315° 15' 9	40° 13' 9 S	181° 47' 8	0° 19' 5 N	160° 21' 9	13' 1	4° 01' 8 S	10' 4	56' 2	N 70°	03:24	04:43	05:44	08:37	10:15	11:51				
	02	31° 07' 7	236° 18' 6	31' 4	228° 35' 8	41' 0	186° 31' 6	06' 0	129° 59' 3	05' 4	Achernar	335° 24' 2	57° 08' 8 S	196° 48' 1	18' 5	174° 54' 0	13' 1	12' 2	10' 5	68°	N 68°	03:39	04:49	05:45	08:31	10:02	11:32				
	03	46° 10' 2	251° 18' 1	30' 4	243° 36' 8	40' 4	201° 33' 6	06' 2	145° 01' 6	05' 4	Acruz	173° 06' 7	63° 11' 7 S	211° 48' 3	17' 6	189° 26' 1	13' 1	22' 7	10' 4	66°	N 64°	03:51	04:54	05:46	08:25	09:51	11:16				
	04	61° 12' 6	266° 17' 7	29' 4	258° 37' 8	39' 8	216° 35' 6	06' 4	160° 04' 0	05' 4	Adhara	255° 10' 4	28° 59' 7 S	226° 48' 5	16' 6	203° 58' 2	13' 2	33' 1	10' 3	56' 1	64°	N 64°	04:00	04:58	05:46	08:20	09:43	11:03			
	05	76° 15' 1	281° 17' 2	28' 3	273° 38' 8	39' 2	231° 37' 5	06' 5	175° 06' 3	05' 4	Aldebaran	290° 46' 0	16° 32' 5 N	241° 48' 7	15' 6	218° 30' 4	13' 2	43' 4	10' 4	62°	N 62°	04:08	05:02	05:46	08:16	09:35	10:52				
	06	91° 17' 5	296° 16' 7	27' 3	288° 39' 7	38' 6	246° 39' 5	06' 7	190° 08' 7	05' 4	Alioth	166° 18' 8	55° 52' 1 N	271° 49' 2	13' 7	247° 34' 7	13' 2	5° 04' 1 S	10' 3	56' 0	N 58°	04:21	05:08	05:47	08:10	09:23	10:35				
	07	106° 20' 0	311° 16' 2	26' 3	303° 40' 7	38' 0	261° 41' 5	06' 9	205° 11' 0	05' 4	Alkaid	152° 57' 1	49° 13' 8 N	286° 49' 4	12' 7	262° 06' 9	13' 2	14' 4	10' 2	56' 0	N 56°	04:26	05:10	05:47	08:07	09:14	10:28				
	08	121° 22' 4	326° 15' 8	25' 3	318° 41' 7	37' 4	276° 43' 5	07' 1	220° 13' 3	05' 4	Alnair	27° 39' 8	46° 52' 5 S	301° 49' 6	11' 7	276° 39' 1	13' 2	24' 6	10' 2	54°	N 54°	04:30	05:12	05:48	08:04	09:18	10:21				
	09	136° 24' 9	341° 15' 3	24' 3	333° 42' 7	36' 8	291° 45' 5	07' 3	235° 15' 7	05' 5	Alnilam	275° 43' 4	1° 11' 5 S	316° 49' 8	10' 7	291° 11' 3	13' 3	34' 8	10' 2	52°	N 52°	04:34	05:14	05:48	08:02	09:10	10:16				
	10	151° 27' 4	356° 14' 8	23' 2	306° 43' 7	36' 2	306° 47' 4	07' 5	250° 18' 0	05' 5	Alphard	217° 53' 5	8° 44' 0 S	331° 50' 0	09' 8	305° 43' 6	13' 2	45' 0	10' 1	50°	N 50°	04:38	05:16	05:48	08:00	09:06	10:11				
	11	166° 29' 9	11° 14' 3	22' 2	3° 44' 6	35' 6	321° 49' 4	07' 7	265° 20' 4	05' 5				346° 50' 2	08' 8	320° 15' 8	13' 3	55' 1	10' 1	55' 9	N 45°	04:45	05:19	05:48	07:56	08:58	10:00				
	12	181° 32' 3	26° 13' 9	11° 21' 2 N	18° 45' 6	8° 35' 0 N	336° 51' 4	9° 07' 9 S	280° 22' 7	22° 05' 5 S	Alphecca	126° 08' 8	26° 39' 7 N	1° 50' 5	0° 07' 8 N	334° 48' 1	13' 2	6° 05' 2 S	10' 1	55' 9	N 40°	04:50	05:22	05:49	07:52	08:52	09:50				
	13	196° 34' 8	41° 13' 4	20' 2	33° 46' 6	34' 4	351° 53' 4	08' 1	295° 25' 1	05' 5		357° 40' 1	29° 11' 3 N	16° 50' 7	06' 9	349° 20' 3	13' 3	15' 3	10' 0	35°	N 35°	04:54	05:23	05:49	07:49	08:46	09:43				
	14	211° 37' 3	56° 12' 9	19' 1	48° 47' 6	33' 8	6° 55' 4	08' 2	310° 27' 4	05' 5	Altair	62° 05' 3	8° 55' 2 S	31° 50' 9	05' 9	3° 52' 6	13' 3	25' 3	10' 0	30°	N 30°	04:57	05:25	05:49	07:46	08:41	09:36				
	15	226° 39' 7	71° 12' 4	18' 1	63° 48' 6	33' 2	21° 57' 4	08' 4	325° 29' 8	05' 5	Ankaa	353° 12' 5	42° 12' 6 S	46° 51' 1	04' 9	18° 24' 9	13' 2	35' 3	9' 9	55' 8	N 20°	05:01	05:27	05:49	07:41	08:33	09:24				
	16	241° 42' 2	86° 12' 0	17' 1	78° 49' 6	32' 6	36° 59' 3	08' 6	340° 32' 1	05' 6	Antares	112° 22' 9	26° 28' 1 S	61° 51' 3	03' 9	32° 57' 1	13' 3	45' 2	9' 9	55' 8	N 10°	05:04	05:28	05:49	07:37	08:26	09:14				
	17	256° 44' 7	101° 11' 5	16' 1	93° 50' 5	31' 9	52° 01' 3	08' 8	355° 34' 5	05' 6				76° 51' 6	03' 0	47° 29' 4	13' 3	55' 1	9' 9	0°	N 0°	05:04	05:28	05:49	07:33	08:19	09:04				
	18	271° 47' 1	116° 11' 0	15' 0	108° 51' 5	31' 3	67° 03' 3	09' 0	10° 36' 8	05' 6	Arcturus	145° 53' 4	19° 05' 8 N	91° 51' 8	02' 0	62° 01' 7	13' 4	7° 05' 0 S	9' 8	55' 7	S 10°	05:04	05:28	05:49	07:29	08:12	08:55				
	19	286° 49' 6	131° 10' 5	14' 0	123° 52' 5	30' 7	82° 05' 3	09' 2	25° 39' 1	05' 6	Atria	107° 22' 2	69° 03' 8 S	106° 52' 0	01' 0	76° 34' 1	13' 3	14' 8	9' 8	55' 7	N 20°	05:01	05:27	05:49	07:25	08:05	08:45				
	20	301° 52' 0	146° 10' 1	13' 0	138° 53' 5	30' 1	97° 07' 5	09' 4	40° 41' 5	05' 6	Avior	234° 17' 2	59° 33' 8 S	121° 52' 2	00' 0	91° 06' 4	13' 3	24' 6	9' 7	30°	N 30°	04:56	05:24	05:48	07:20	07:56	08:33				
	21	316° 54' 5	161° 09' 6	11' 9	153° 54' 5	29' 5	112° 09' 2	09' 6	55° 43' 8	05' 6	Bellatrix	278° 28' 9	6° 21' 8 N	136° 52' 4	0° 00' 9 S	105° 38' 7	13' 3	34' 3	9' 7	35°	N 35°	04:53	05:23	05:48	07:18	07:52	08:27				
	22	331° 57' 0	176° 09' 1	10' 9	168° 55' 5	28' 9	127° 11' 2	09' 8	70° 46' 2	05' 6	Betelgeuse	270° 58' 2	7° 24' 5 N	151° 52' 7	01' 9	120° 11' 0	13' 4	44' 0	9' 7	40°	N 40°	04:49	05:21	05:48	07:15	07:46	08:19				
23	346° 59' 4	191° 08' 7	09' 9	183° 56' 4	28' 3	142° 13' 2	09' 9	85° 48' 5	05' 7				166° 52' 9	02' 9	134° 43' 4	13' 3	53' 7	9' 6	55' 6	N 45°	04:43	05:18	05:47	07:11	07:40	08:11					
23	00	2° 01' 9	206° 08' 2	11° 08' 8 N	198° 57' 4	8° 27' 7 N	157° 15' 2	9° 10' 1 S	22° 05' 7 S	Canopus	263° 54' 9	52° 42' 1 S	181° 53' 1	0° 03' 9 S	149° 15' 7	13' 3	8° 03' 3 S	9' 6	55' 6	S 50°	04:36	05:14	05:46	07:07	07:33	08:00					
	01	17° 04' 4	221° 07' 7	07' 8	213° 58' 4	27' 1	172° 17' 2	10' 3	115° 53' 2	05' 7	Capella	280° 30' 1	46° 00' 6 N	196° 53' 0	04' 8	163° 48' 0	13' 4	12' 9	9' 5	52°	N 52°	04:33	05:13	05:46	07:05	07:29	07:55				
	02	32° 06' 8	236° 07' 2	06' 8	228° 59' 4	26' 5	187° 19' 1	10' 5	130° 55' 5	05' 7	Deneb	49° 29' 2	45° 21' 0 N	211° 53' 5	05' 8	178° 20' 4	13' 3	22' 4	9' 4	54°	N 54°	04:29	05:11	05:46	07:03	07:26	07:50				
	03	47° 09' 3	251° 08' 8	05' 8	244° 00' 4	25' 9	202° 21' 1	10' 7	145° 57' 9	05' 7	Denebola	182° 31' 1	14° 28' 6 N	226° 53' 7	05' 8	192° 52' 7	13' 4	31' 8	9' 5	55' 5	N 55°	04:24	05:08	05:45	07:01	07:22	07:44				
	04	62° 11' 8	266° 06' 3	04' 7	259° 01' 4	25' 3	217° 23' 1	10' 9	161° 00' 2	05' 7	Diphda	348° 52' 7	17° 53' 3 S	241° 54' 0	07' 7	207° 25' 1	13' 3	41' 3	9' 3	58°	N 58°	04:19	05:06	05:45	06:59	07:17	07:38				
	05	77° 14' 2	281° 05' 8	03' 7	274° 02' 3	24' 7	232° 25' 1	11' 1	176° 02' 6	05' 7				256° 54' 2	08' 7	221° 57' 4	13' 4	50' 6	9' 4	60°	N 60°	04:13	05:03	05:45	06:56	07:12	07:30				
	06	92° 16' 7	296° 05' 4	02' 7	289° 03' 3	24' 1	247° 27' 1	11' 3	191° 04' 9	05' 8	Dubhe	193° 48' 9	61° 39' 3 N	271° 54' 0	09' 7	236° 29' 8	13' 3	00' 0	9' 2	55' 4	S 62°	04:06	05:00	05:44	06:53	07:06	07:22				
	07	107° 19' 1	311° 04' 9	01' 6	304° 04' 3	23' 5	262° 29' 0	11' 5	206° 07' 3	05' 8	Elnath	278° 08' 9	28° 37' 1 N	286° 54' 6	10' 7	251° 02' 1	13' 4	9° 09' 2 S	9' 3	55' 4	N 55°	04:01	05:00	05:44	06:53	07:06	07:22				
	08	122° 21' 6	326° 04' 4	00' 6	319° 05' 3	22' 9	277° 31' 0	11' 6	221° 09' 6	05' 8	Eltanin	90° 44' 8	51° 29' 7 N	301° 54' 8	11' 6	265° 34' 5	13' 4	18' 5	9' 1	55' 4	N 55°	04:01	05:00	05:44	06:53	07:06	07:22				
	09	137° 24' 1	341° 04' 0	10° 59' 5 N	334° 06' 3	22' 3	292° 33' 0	11' 8	236° 11' 9	05' 8	Enif	33° 44' 0	9° 57' 6 N	316° 55' 1	12' 6	280° 06' 9	13' 3	27' 6	9' 2	55' 4	N 55°	04:01	05:00	05:44	06:53	07:06	07:22				
	10	152° 26' 5	356° 03' 5	58' 5	349° 07' 3	21' 7	307° 35' 0	12' 0	251° 14' 3	05' 8	Fomalhaut	15° 20' 5	29° 31' 6 S	331° 55' 3	13' 6	294° 39' 2	13' 4	36' 8	9' 0	55' 4	N 55°	04:01	05:00	05:44	06:53	07:06	07:22				
	11	167° 29' 0	11° 03' 0	57' 5	4° 08' 2	21' 1	322° 37' 0	12' 2	266° 16' 6	05' 8				346° 55' 6	14' 6	309° 11' 6	13' 3	45' 8	9' 1	5											

2017 September 28, 29, 30 (Thur, Fri, Sat)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	28		29	30	
Thurs day	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	03:39	05:03	06:10	-	-	18:46				
	01	6° 57'6"	205° 13'6"	9° 01'3" N	200° 56'0"	7° 14'8" N	161° 12'3"	9° 32'9" S	105° 30'8"	22° 07'4" S	Acamar	315° 15'9"	40° 14'0" S	182° 18'9"	2° 00'7" S	92° 59'4"	12'0"	19° 26'3" S	0'8"	54'3"	N 70°	03:53	05:07	06:08	17:32	17:48	17:51				
	02	22° 00'1"	220° 13'2"	00'2"	215° 57'0"	14'2"	176° 14'2"	33'1"	120° 33'1"	07'4"	Achernar	335° 24'1"	57° 08'8" S	197° 19'1"	01'6"	107° 30'4"	12'1"	27'1"	0'8"		68°	04:04	05:11	06:06	16:27	16:59	17:17				
	03	37° 02'5"	235° 12'7"	8° 59'1" N	230° 58'0"	13'6"	191° 16'2"	33'3"	135° 35'4"	07'4"	Acruz	173° 06'7"	63° 11'7" S	212° 19'3"	02'6"	122° 01'5"	12'0"	27'9"	0'7"		66°	04:12	05:14	06:05	15:51	16:28	16:52				
	04	52° 05'0"	250° 12'3"	58'5"	245° 59'0"	13'0"	206° 18'2"	33'5"	150° 37'8"	07'5"	Adhara	255° 10'3"	28° 59'7" S	227° 19'6"	03'6"	136° 32'5"	12'1"	28'6"	0'6"		64°	04:19	05:16	06:03	15:25	16:05	16:33				
	05	67° 07'4"	265° 11'8"	56'9"	261° 00'0"	12'4"	221° 20'2"	33'7"	165° 40'1"	07'5"	Aldebaran	290° 45'9"	16° 32'5" N	242° 19'7"	04'6"	151° 03'6"	12'0"	29'2"	0'5"		62°	04:25	05:18	06:02	15:05	15:46	16:17				
	06	82° 09'9"	280° 11'4"	55'8"	276° 01'0"	11'8"	236° 22'1"	33'9"	180° 42'4"	07'5"				257° 19'9"	05'5"	165° 34'6"	12'0"	29'7"	0'4"		60°	04:31	05:20	06:01	14:49	15:31	16:04				
	07	97° 12'4"	295° 11'0"	54'7"	291° 01'9"	11'2"	251° 24'1"	34'1"	195° 44'7"	07'5"	Alioth	166° 18'8"	55° 52'0" N	272° 20'1"	06'5"	180° 05'6"	12'0"	30'1"	0'4"		N 58°	04:35	05:21	06:00	14:35	15:18	15:53				
	08	112° 14'8"	310° 10'5"	53'6"	306° 02'9"	10'6"	266° 26'1"	34'3"	210° 47'1"	07'5"	Alkaid	152° 57'1"	49° 13'8" N	287° 20'3"	07'5"	194° 36'6"	12'0"	30'5"	0'2"		56°	04:39	05:22	05:59	14:23	15:07	15:43				
	09	127° 17'3"	325° 10'1"	52'5"	321° 03'9"	10'0"	281° 28'0"	34'4"	225° 49'4"	07'5"	Alnair	27° 39'8"	46° 52'5" S	302° 20'5"	08'5"	209° 07'6"	11'9"	30'7"	0'1"		54°	04:42	05:23	05:58	14:13	14:57	15:34				
	10	142° 19'8"	340° 09'6"	51'4"	336° 04'9"	09'3"	296° 30'0"	34'6"	240° 51'7"	07'5"	Alnilam	275° 43'4"	1° 11'5" S	317° 20'7"	09'4"	223° 38'5"	12'0"	30'8"	0'1"		52°	04:45	05:24	05:58	14:04	14:48	15:26				
	11	157° 22'2"	355° 09'2"	50'3"	351° 05'9"	08'7"	311° 32'0"	34'8"	255° 54'0"	07'6"	Alphard	217° 53'5"	8° 44'0" S	332° 21'0"	10'4"	238° 09'5"	12'0"	30'9"	0'0"		50°	04:47	05:25	05:57	13:56	14:40	15:19				
	12	172° 24'7"	10° 08'8"	49'2"	6° 06'9"	08'1"	326° 34'0"	35'0"	270° 56'3"	07'6"				347° 21'2"	11'4"	252° 40'5"	11'9"	30'9"	0'2"		45°	04:52	05:26	05:56	13:38	14:23	15:04				
	13	187° 27'2"	25° 08'3"	8° 48'1" N	21° 07'9"	7° 07'5" N	341° 35'9"	35° 35'2" S	285° 58'7"	22° 07'6" S	Alphecca	126° 08'8"	26° 39'7" N	2° 21'4"	2° 12'3" S	267° 11'4"	12'0"	19° 30'7" S	0'2"	54'4"	N 40°	04:56	05:27	05:54	13:24	14:09	14:52				
	14	202° 29'6"	40° 07'9"	47'0"	36° 08'9"	06'9"	356° 37'9"	35'4"	301° 01'0"	07'6"		367° 40'1"	29° 11'4" N	17° 21'6"	13'3"	281° 42'4"	11'9"	30'5"	0'3"		35°	04:59	05:28	05:53	13:11	13:58	14:41				
	15	217° 32'1"	55° 07'5"	45'9"	51° 09'9"	06'3"	11° 39'9"	35'6"	316° 03'3"	07'6"	Altair	62° 05'3"	8° 55'2" N	32° 21'8"	14'3"	296° 13'3"	11'9"	30'2"	0'4"		30°	05:01	05:28	05:52	13:01	13:48	14:32				
	16	232° 34'6"	70° 07'0"	44'8"	66° 10'9"	05'7"	26° 41'8"	35'8"	331° 05'6"	07'6"	Ankaa	353° 12'5"	42° 12'6" S	47° 22'0"	15'3"	310° 44'2"	11'9"	29'8"	0'5"		20°	05:03	05:28	05:50	12:43	13:30	14:16				
	17	247° 37'0"	85° 06'6"	43'7"	81° 11'9"	05'1"	41° 43'8"	36'0"	346° 08'0"	07'6"	Antares	112° 22'9"	26° 28'1" S	62° 22'2"	16'2"	325° 15'1"	11'9"	29'3"	0'6"		N 10°	05:03	05:28	05:49	12:27	13:15	14:02				
	18	262° 39'5"	100° 06'2"	42'6"	96° 12'9"	04'4"	56° 45'8"	36'2"	1° 10'3"	07'7"				77° 22'4"	17'2"	339° 46'0"	11'9"	28'7"	0'6"		0°	05:02	05:26	05:47	12:12	13:00	13:49				
	19	277° 41'9"	115° 05'7"	41'5"	111° 13'9"	03'8"	71° 47'8"	36'4"	16° 12'6"	07'7"	Arcturus	145° 53'4"	19° 05'7" N	92° 22'6"	18'2"	354° 16'9"	11'9"	28'1"	0'8"		S 10°	05:00	05:24	05:45	11:57	12:46	13:36				
	20	292° 44'4"	130° 05'3"	40'4"	126° 14'9"	03'2"	86° 49'7"	36'5"	31° 14'9"	07'7"	Atria	107° 22'3"	69° 03'6" S	107° 22'8"	19'2"	8° 47'8"	11'9"	27'3"	0'9"		20°	04:55	05:21	05:43	11:41	12:31	13:21				
	21	307° 46'9"	145° 04'8"	39'3"	141° 15'9"	02'6"	101° 51'7"	36'7"	46° 17'2"	07'7"	Avior	104° 17'1"	59° 33'8" S	122° 23'0"	20'1"	23° 18'7"	11'8"	26'4"	0'9"		30°	04:49	05:17	05:41	11:23	12:13	13:05				
	22	322° 49'3"	160° 04'4"	38'2"	156° 16'9"	02'0"	116° 53'7"	36'9"	61° 19'6"	07'7"	Bellatrix	278° 28'8"	6° 21'8" N	137° 23'2"	21'1"	37° 49'5"	11'9"	25'5"	1'0"		35°	04:44	05:14	05:39	11:13	12:03	12:56				
23	337° 51'8"	175° 04'0"	37'1"	171° 17'8"	01'4"	131° 55'6"	37'1"	76° 21'9"	07'7"	Betelgeuse	270° 58'1"	7° 24'5" N	152° 19'5"	22'1"	52° 20'4"	11'9"	24'5"	1'2"	54'5"	40°	04:39	05:10	05:38	11:01	11:51	12:45					
	352° 54'3"	190° 03'5"	36'0"	186° 18'8"	00'8"	146° 57'6"	37'3"	91° 24'2"	07'8"				167° 23'7"	23'0"	66° 51'3"	11'8"	23'3"	1'2"		45°	04:31	05:06	05:36	10:46	11:37	12:33					
Fri day	00	7° 56'7"	205° 03'1"	8° 34'9" N	201° 19'8"	7° 00'2" N	161° 59'6"	9° 37'5" S	106° 26'5"	22° 07'8" S	Canopus	263° 54'8"	52° 42'1" S	182° 23'9"	2° 24'0" S	81° 22'1"	11'8"	19° 22'1" S	1'3"	54'5"	S 50°	04:22	05:01	05:33	10:29	11:20	12:17				
	01	22° 59'2"	220° 02'7"	33'8"	216° 20'8"	6° 59'5" N	177° 01'5"	37'7"	121° 28'8"	07'8"	Capella	280° 30'0"	46° 00'6" N	197° 24'1"	07'8"	95° 52'9"	11'9"	20'8"	1'4"		52°	04:18	05:06	05:32	10:21	11:12	12:10				
	02	38° 01'7"	235° 02'2"	32'7"	231° 21'8"	58'9"	192° 03'5"	37'9"	136° 31'1"	07'8"	Deneb	49° 29'2"	45° 21'0" N	212° 24'3"	26'0"	110° 23'8"	11'8"	19'4"	1'5"		54°	04:13	04:55	05:31	10:12	11:03	12:02				
	03	53° 04'1"	250° 01'8"	31'6"	246° 22'8"	58'3"	222° 05'5"	38'1"	151° 33'5"	07'8"	Denebola	182° 31'1"	14° 28'6" N	227° 24'5"	26'9"	124° 54'6"	11'8"	17'9"	1'6"		56°	04:07	04:52	05:30	10:01	10:53	11:53				
	04	68° 06'6"	265° 01'4"	30'5"	261° 23'8"	57'7"	202° 07'4"	38'3"	166° 35'8"	07'8"	Diphda	348° 52'7"	17° 53'3" S	242° 24'7"	27'9"	139° 25'4"	11'8"	16'3"	1'7"		58°	04:00	04:48	05:28	09:50	10:42	11:43				
	05	83° 09'1"	280° 00'9"	29'4"	276° 24'8"	57'1"	237° 09'4"	38'4"	181° 38'1"	07'8"				257° 24'9"	28'9"	153° 56'2"	11'8"	14'6"	1'8"	54'6"	S 60°	03:53	04:44	05:26	09:36	10:29	11:31				
	06	98° 11'5"	295° 00'5"	28'3"	291° 25'8"	56'5"	252° 11'4"	38'6"	196° 40'4"	07'9"	Dubhe	193° 48'9"	61° 39'3" N	272° 25'1"	29'8"	168° 27'0"	11'8"	12'8"	1'8"		S 62°	03:44	04:40	05:24	09:20	10:13	11:17				
	07	113° 14'0"	310° 00'1"	27'2"	306° 26'8"	55'9"	267° 13'4"	38'8"	211° 42'7"	07'9"	Elnath	278° 08'9"	28° 37'1" N	287° 25'3"	30'8"	182° 57'8"	11'8"	11'0"	2'0"												
	08	128° 16'4"	324° 59'6"	26'1"	321° 27'8"	55'2"	282° 15'3"	39'0"	226° 45'1"	07'9"	Eltanin	90° 44'9"	51° 29'7" N	302° 25'5"	31'8"	197° 28'6"	11'8"	09'0"	2'0"												
	09	143° 18'9"	339° 59'2"	25'0"	336° 28'8"	54'6"	299° 17'3"	39'2"	241° 47'4"	07'9"	Enif	33° 44'0"	9° 57'6" N	317° 24'1"	32'8"	111° 59'4"	11'8"	07'0"	2'2"												
	10	158° 21'4"	354° 58'8"	23'9"	351° 29'8"	54'0"	312° 19'3"	39'4"	256° 49'7"	07'9"	Fomalhaut	15° 20'5"	29° 31'7" S	332° 25'9"	33'7"	226° 30'2"	11'8"	04'8"	2'2"												
	11	173° 23'8"	9° 58'3"	22'9"	6° 30'8"	53'4"	327° 21'2"	39'6"	271° 52'0"	07'9"				347° 26'1"	34'7"	241° 01'0"	11'8"	02'6"	2'3"												
	12	188° 26'3"	24° 57'9"	8° 21'6" N	21° 31'8"	6° 52'8" N	342° 23'2"	9° 39'8" S	286° 54'3"	22° 07'9" S	Gacrux	171° 58'2"	57° 12'6" S	2° 26'4"	2° 35'7" S	255° 31'8"	11'7"	19° 00'3" S	2'4"	54'7"	N 70°	17:30	18:31	19:44	19:16	20:41	22:19				
	13	203° 28'8"	39° 57'5"	20'5"	36° 32'8"	52'2"	357° 25'2"	40'0"	301° 56'6"	08'0"	Genah	175° 49'6"	17° 38'2" S	17° 26'6"	36'6"	270° 02'5"															

2017 October 4, 5, 6 (Wed, Thur, Fri)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON					Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	4	5		6					
Wednesday	00	12° 52.4	204° 12.5	6° 19.5 N	203° 19.6	5° 46.2 N	165° 55.4	10° 00.4 S	111° 03.7	22° 09.6 S	111° 03.7	22° 09.6 S	Acamar	315° 15.8	40° 14.0 S	182° 48.0	4° 20.2 S	22° 44.4	11.4	6° 36.5 S	10.7	57.5	N 72°	04:10	05:30	06:38	17:48	17:39	17:30			
	01	27° 54.9	219° 12.1	18.3	218° 20.6	45.5	180° 57.4	00.6	126° 06.0	09.6	126° 06.0	09.6	Achernar	335° 24.1	57° 08.8 S	197° 48.2	21.2	37° 14.8	11.4	25.9	10.7	68°	N 70°	04:19	05:31	06:32	17:43	17:40	17:38			
	02	42° 57.3	234° 11.6	17.2	233° 21.6	44.9	195° 59.4	00.8	141° 08.3	09.6	141° 08.3	09.6	Acruz	173° 06.7	63° 11.7 S	212° 48.4	22.1	51° 45.2	11.4	15.2	10.7	57.6	66°	04:33	05:33	06:24	17:36	17:43	17:50			
	03	57° 59.8	249° 11.2	16.0	248° 22.6	44.3	211° 01.3	01.0	156° 10.6	09.7	156° 10.6	09.7	Adhara	255° 10.3	28° 59.7 S	227° 46.4	23.1	66° 15.6	11.4	04.5	10.8	64°	04:38	05:33	06:21	17:33	17:43	17:55				
	04	73° 02.3	264° 10.8	14.9	263° 23.6	43.7	226° 03.3	01.2	171° 12.9	09.7	171° 12.9	09.7	Aldebaran	290° 45.9	16° 32.5 N	242° 48.7	24.1	80° 46.0	11.4	5° 53.7 S	10.8	62°	04:42	05:33	06:18	17:31	17:44	17:59				
	05	88° 04.7	279° 10.4	13.7	278° 24.6	43.1	241° 05.2	01.4	186° 15.2	09.7	186° 15.2	09.7					257° 48.9	25.0	95° 16.4	11.3	42.9	10.9	57.7	60°	04:45	05:34	06:15	17:28	17:45	18:02		
	06	103° 07.2	294° 10.0	12.6	293° 25.7	42.4	256° 07.2	01.5	201° 17.5	09.7	201° 17.5	09.7	Alioth	166° 18.8	55° 52.0 N	272° 49.1	26.0	109° 46.7	11.4	32.0	10.8		N 58°	04:48	05:34	06:13	17:27	17:46	18:05			
	07	118° 09.7	309° 09.6	11.4	308° 26.7	41.8	271° 09.2	01.7	216° 19.8	09.7	216° 19.8	09.7	Alkaid	152° 57.1	49° 13.8 N	287° 49.3	26.9	124° 17.1	11.3	21.2	11.0		56°	04:51	05:34	06:11	17:25	17:46	18:08			
	08	133° 12.1	324° 09.2	11.0	323° 27.7	41.1	286° 11.1	01.9	231° 22.1	09.7	231° 22.1	09.7	Alnair	239° 59.5	46° 52.5 S	303° 49.5	27.9	138° 34.4	11.3	10.2	10.9	57.8	54°	04:53	05:34	06:09	17:23	17:47	18:11			
	09	148° 14.6	339° 08.8	09.1	338° 28.7	40.6	301° 13.1	02.1	246° 24.4	09.7	246° 24.4	09.7	Alnilam	275° 43.3	1° 11.5 S	317° 49.7	28.9	153° 17.7	11.3	4° 59.3 S	11.0	52°	04:55	05:34	06:08	17:22	17:47	18:13				
	10	163° 17.1	354° 08.4	08.0	353° 29.7	40.0	316° 15.1	02.3	261° 26.7	09.8	261° 26.7	09.8	Alphard	217° 53.5	8° 44.0 S	332° 49.9	29.8	167° 48.0	11.3	48.3	11.1	50°	04:57	05:34	06:06	17:21	17:47	18:15				
	11	178° 19.5	9° 08.0	06.8	8° 30.7	39.3	331° 17.0	02.5	276° 29.0	09.8	276° 29.0	09.8					347° 50.1	30.8	182° 18.3	11.2	37.2	11.1	45°	05:00	05:34	06:03	17:18	17:48	18:20			
	12	193° 22.0	24° 07.5	6° 05.6 N	23° 31.7	5° 38.7 N	346° 19.0	10° 02.7 S	291° 31.3	22° 09.8 S	291° 31.3	22° 09.8 S	Alphecca	126° 08.8	26° 39.7 N	2° 50.3	4° 31.8 S	196° 48.5	11.2	4° 28.1 S	11.1	57.9	N 40°	05:02	05:33	06:00	17:16	17:49	18:24			
	13	208° 24.5	39° 07.1	04.5	38° 32.7	38.1	1° 20.9	02.9	306° 33.6	09.8	306° 33.6	09.8	Alpheratz	387° 40.1	29° 11.4 N	17° 50.3	32.7	15.0	11.3	15.0	11.1	35°	05:03	05:33	05:58	17:14	17:50	18:27				
	14	223° 26.9	54° 06.7	03.3	53° 33.7	37.5	16° 22.9	03.1	321° 35.9	09.8	321° 35.9	09.8	Alkair	62° 05.3	8° 55.2 N	32° 50.7	33.7	225° 49.0	11.2	03.9	11.2	30°	05:04	05:32	05:56	17:12	17:50	18:30				
	15	238° 29.4	69° 06.3	02.2	68° 34.7	36.9	31° 24.9	03.3	336° 38.2	09.8	336° 38.2	09.8	Antaa	353° 12.5	42° 12.6 S	47° 50.9	34.6	240° 19.2	11.1	3° 52.7 S	11.2	58.0	20°	05:04	05:30	05:52	17:09	17:51	18:36			
	16	253° 31.8	84° 05.9	01.0	83° 35.7	36.2	46° 26.8	03.5	351° 40.5	09.9	351° 40.5	09.9	Antares	112° 22.9	26° 28.1 S	62° 51.0	35.6	254° 49.3	11.2	41.5	11.3	N 10°	05:03	05:27	05:48	17:06	17:52	18:40				
	17	268° 34.3	99° 05.9	05.9	98° 36.7	35.6	6° 42.8	03.6	6° 42.8	09.9	6° 42.8	09.9					77° 51.2	36.6	269° 19.5	11.1	30.2	11.3	0°	05:00	05:24	05:45	17:03	17:53	18:45			
	18	283° 36.8	114° 05.1	58.7	113° 37.7	35.0	76° 30.7	03.8	21° 45.1	09.9	21° 45.1	09.9	Arcturus	145° 53.4	19° 05.7 N	92° 51.4	37.5	283° 49.6	11.1	18.9	11.3	58.1	S 10°	04:56	05:21	05:42	17:01	17:54	18:49			
	19	298° 39.2	129° 04.7	57.5	128° 38.7	34.4	91° 32.7	04.0	36° 47.4	09.9	36° 47.4	09.9	Atria	107° 22.3	69° 03.5 S	107° 51.6	38.5	298° 19.7	11.1	07.6	11.3	20°	04:50	05:16	05:38	16:58	17:55	18:54				
	20	313° 41.7	144° 04.3	56.4	143° 39.7	33.8	106° 34.7	04.2	51° 49.7	09.9	51° 49.7	09.9	Avior	234° 17.0	59° 33.7 S	122° 51.8	39.5	312° 49.8	11.1	2° 56.3 S	11.4	30°	04:41	05:09	05:33	16:55	17:57	19:00				
	21	328° 44.2	159° 03.9	55.2	158° 40.7	33.1	121° 36.6	04.4	66° 52.0	09.9	66° 52.0	09.9	Bellatrix	278° 28.8	6° 21.8 N	137° 52.0	40.4	327° 19.9	11.0	44.9	11.4	35°	04:35	05:05	05:31	16:53	17:57	19:03				
	22	343° 46.6	174° 03.5	54.1	173° 41.7	32.5	136° 38.6	04.6	81° 54.2	09.9	81° 54.2	09.9	Betelgeuse	270° 58.1	7° 24.5 N	152° 52.2	41.4	341° 49.9	11.1	33.5	11.4	58.2	40°	04:28	05:01	05:28	16:51	17:58	19:06			
23	358° 49.1	189° 03.0	52.9	188° 42.7	31.9	151° 40.5	04.8	96° 56.5	10.0	96° 56.5	10.0					167° 52.4	42.3	356° 20.0	11.0	22.1	11.4	45°	04:19	04:55	05:24	16:49	17:59	19:11				
Thursday	00	13° 51.6	204° 02.6	5° 51.8 N	203° 43.7	5° 31.3 N	166° 42.5	10° 05.0 S	111° 58.8	22° 10.0 S	111° 58.8	22° 10.0 S	Canopus	263° 54.8	52° 42.1 S	182° 52.6	4° 43.3 S	10° 50.0	11.0	2° 10.7 S	11.5	58.2	S 50°	04:08	04:47	05:20	16:46	18:00	19:16			
	01	28° 54.0	219° 02.2	50.6	218° 44.7	30.7	181° 44.5	05.2	127° 01.1	10.0	127° 01.1	10.0	Capella	280° 30.0	46° 00.6 N	197° 52.8	44.3	25° 20.9	10.9	1° 59.2 S	11.5	58.3	52°	04:02	04:44	05:18	16:45	18:01	19:18			
	02	43° 56.5	234° 01.8	49.4	233° 45.7	30.0	196° 46.4	05.4	142° 03.4	10.0	142° 03.4	10.0	Deneb	49° 29.3	45° 21.0 N	212° 52.9	45.2	39° 49.9	10.9	47.7	11.5	54°	03:56	04:40	05:16	16:43	18:01	19:21				
	03	58° 59.0	249° 01.4	48.3	248° 46.7	29.4	221° 48.4	05.6	182° 31.1	10.0	182° 31.1	10.0	Denebola	182° 31.1	14° 28.5 N	227° 53.1	46.2	54° 19.8	10.9	36.2	11.5	56°	03:49	04:36	05:14	16:42	18:02	19:24				
	04	74° 01.4	264° 01.0	47.1	263° 47.7	28.8	226° 50.3	05.7	172° 08.0	10.0	172° 08.0	10.0	Diphda	348° 52.7	17° 53.3 S	242° 53.3	47.2	68° 49.7	10.9	24.7	11.6	58°	03:41	04:31	05:11	16:40	18:03	19:27				
	05	89° 03.9	279° 00.6	46.0	278° 48.7	27.2	241° 52.3	05.9	187° 10.3	10.1	187° 10.3	10.1					257° 53.5	48.1	83° 19.6	10.9	13.1	11.5	58.4	S 60°	03:32	04:25	05:08	16:38	18:03	19:31		
	06	104° 06.3	294° 00.2	44.8	293° 49.7	28.5	256° 54.3	06.1	202° 12.6	10.1	202° 12.6	10.1	Dubhe	193° 48.9	61° 39.3 N	272° 53.7	49.1	97° 49.5	10.8	01.6	11.6		S 62°	03:21	04:19	05:05	16:36	18:04	19:35			
	07	119° 08.8	308° 59.8	43.6	308° 50.7	28.9	271° 56.2	06.3	217° 14.9	10.1	217° 14.9	10.1	Elath	278° 08.8	28° 37.1 N	287° 53.9	50.0	112° 19.3	10.8	0° 50.0 S	11.6											
	08	134° 11.3	323° 59.4	42.5	323° 51.7	28.3	282° 58.2	06.5	232° 17.2	10.1	232° 17.2	10.1	Eltanin	90° 44.9	51° 29.7 N	302° 54.1	51.0	126° 49.1	10.8	38.4	11.6											
	09	149° 13.7	338° 59.0	41.3	338° 52.7	25.7	300° 00.1	06.7	247° 19.5	10.1	247° 19.5	10.1	Enif	33° 44.1	9° 57.6 N	317° 54.3	52.0	141° 18.9	10.7	26.8	11.7	58.5										
	10	164° 16.2	353° 58.6	40.1	353° 53.7	25.1	317° 02.1	06.9	262° 21.8	10.1	262° 21.8	10.1	Fomalhaut	15° 20.5	29° 31.7 S	332° 54.4	52.9	155° 48.6	10.7	15.1	11.6											
	11	179° 18.7	8° 58.2	39.0	8° 54.7	24.4	332° 04.1	07.1	277° 24.1	10.1																						

2017 October 7, 8, 9 (Sat, Sun, Mon)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise			
																								Nautical		Civil	7		8	9		
7 S a t u r d a y	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	04:24	05:43	06:51	17:20	17:07	16:45
	15° 49.8	203° 43.2	4° 55.7 N	204° 31.9	5° 01.4 N	168° 16.5	10° 14.1 S	113° 48.9	22° 10.7 S	Acamar	315° 15.8	40° 14.0 S	183° 01.5	5° 29.3 S	346° 13.1	9° 2	7° 04.8 N	11° 2	59.3	N 70°	04:32	05:43	06:44	17:36	17:34	17:34						
	30° 52.3	218° 42.8	54.6	219° 32.9	00.8	183° 18.5	14.3	128° 51.2	10.7	Achernar	335° 24.1	57° 08.8 S	198° 01.6	30.3	0° 41.3	9.3	16.0	11.1		68°	04:38	05:42	06:38	17:48	17:55	18:06						
	45° 54.8	233° 42.4	53.2	234° 33.9	00.2	198° 20.4	14.5	143° 53.5	10.8	Acruz	173° 06.7	63° 11.6 S	213° 01.8	31.2	15° 09.6	9.1	27.1	11.2	59.4	66°	04:43	05:42	06:33	17:59	18:11	18:29						
	60° 57.2	248° 42.0	52.4	249° 34.9	4° 59.5 N	213° 22.4	14.7	158° 55.8	10.8	Adhara	255° 10.2	28° 59.7 S	228° 02.0	32.2	29° 37.7	9.2	38.3	11.0		64°	04:47	05:42	06:29	18:08	18:24	18:48						
	75° 59.7	263° 41.6	51.0	264° 35.9	58.9	228° 24.4	14.9	173° 58.1	10.8	Aldebaran	290° 45.9	16° 32.5 N	243° 02.2	33.2	44° 05.9	9.1	49.3	11.1		62°	04:50	05:41	06:26	18:15	18:36	19:03						
	91° 02.2	278° 41.2	49.9	279° 36.9	58.3	243° 26.3	15.1	189° 00.4	10.8				258° 02.4	34.1	58° 34.0	9.0	8° 00.4 N	11.0		60°	04:53	05:41	06:23	18:22	18:46	19:16						
	106° 04.6	293° 40.8	48.7	294° 38.0	57.7	258° 28.3	15.3	204° 02.6	10.8	Alioth	166° 18.8	55° 52.0 N	273° 02.5	35.1	73° 02.0	9.0	11.4	11.0		N 58°	04:55	05:40	06:20	18:28	18:54	19:27						
	121° 07.1	308° 40.4	47.5	309° 39.0	57.1	273° 30.2	15.5	219° 04.9	10.8	Alkaid	152° 57.1	49° 13.7 N	288° 02.7	36.0	87° 30.0	9.0	22.4	10.9		56°	04:57	05:40	06:17	18:33	19:02	19:37						
	136° 09.5	323° 40.0	46.3	324° 40.0	56.4	288° 32.2	15.7	234° 07.2	10.9	Alnair	27° 39.8	46° 52.5 S	303° 02.9	37.0	101° 58.0	8.9	33.3	10.8	59.5	54°	04:59	05:40	06:15	18:37	19:08	19:46						
	151° 12.0	338° 39.6	45.2	339° 41.0	55.8	303° 34.1	15.9	249° 09.5	10.9	Alnilam	275° 43.3	1° 11.5 S	318° 03.1	37.9	116° 25.9	8.8	44.1	10.9		52°	05:00	05:39	06:13	18:42	19:14	19:53						
	166° 14.5	353° 39.2	44.0	354° 42.0	55.2	318° 36.1	16.1	264° 11.8	10.9	Alphard	217° 53.4	8° 44.0 S	333° 03.3	38.9	130° 53.7	8.8	55.0	10.7		50°	05:01	05:39	06:11	18:46	19:20	20:00						
	181° 16.9	8° 38.8	42.8	9° 43.0	54.6	333° 38.1	16.2	279° 14.1	10.9				348° 03.4	39.8	145° 21.5	8.8	9° 05.7 N	10.8		45°	05:03	05:37	06:07	18:54	19:32	20:15						
	196° 19.4	23° 38.4	4° 41.6 N	24° 44.0	4° 53.9 N	348° 40.0	10° 16.4 S	294° 16.4	22° 10.9 S	Alphecca	126° 08.9	26° 39.7 N	3° 03.6	5° 40.8 S	159° 49.3	8.7	9° 16.5 N	10.6	59.5	N 40°	05:05	05:36	06:03	19:01	19:42	20:27						
	211° 21.9	38° 38.0	40.5	39° 45.0	53.3	39° 45.0	53.3	3° 42.0	16.6	Alpheratz	305° 40.1	29° 11.4 N	18° 03.8	41.7	174° 17.0	8.6	27° 11.0	10.6		35°	05:06	05:35	06:00	19:07	19:50	20:38						
	226° 24.3	53° 37.6	39.3	54° 46.0	52.7	18° 43.9	16.8	324° 20.9	10.9	Altair	62° 05.4	8° 55.2 N	33° 04.0	42.7	188° 44.6	8.7	37.7	10.6		30°	05:06	05:34	05:58	19:12	19:58	20:47						
	241° 26.8	68° 37.2	38.1	69° 47.0	52.1	33° 45.9	17.0	339° 23.2	11.0	Ankaa	353° 12.5	42° 12.6 S	48° 04.2	43.7	203° 12.3	8.5	48.3	10.5		20°	05:05	05:31	05:53	19:22	20:11	21:03						
	256° 29.3	83° 36.8	36.9	84° 48.0	51.4	48° 47.8	17.2	354° 25.5	11.0	Antares	112° 22.9	26° 28.1 S	63° 04.3	44.6	217° 39.8	8.5	58.8	10.5	59.6	N 10°	05:03	05:27	05:48	19:30	20:22	21:17						
	271° 31.7	98° 36.4	35.7	99° 49.0	50.8	63° 49.8	17.4	9° 27.8	11.0				78° 04.5	45.6	232° 07.3	8.5	10° 09.3 N	10.4		0°	04:59	05:23	05:44	19:38	20:33	21:30						
	286° 34.2	113° 36.0	34.6	114° 50.0	50.2	78° 51.8	17.6	24° 30.1	11.0	Arcturus	145° 53.4	19° 05.7 N	93° 04.7	46.5	246° 34.8	8.4	19.7	10.3		S 10°	04:54	05:19	05:40	19:46	20:44	21:44						
	301° 36.6	128° 35.6	33.4	129° 51.0	49.6	93° 53.7	17.8	39° 32.4	11.0	Atria	107° 22.4	69° 03.5 S	108° 04.9	47.5	261° 02.2	8.4	30.0	10.3		20°	04:47	05:13	05:35	19:54	20:56	21:58						
	316° 39.1	143° 35.2	32.2	144° 52.0	48.9	108° 55.7	18.0	50° 34.7	11.0	Avior	234° 17.0	59° 33.7 S	123° 05.0	48.4	275° 29.6	8.3	40.3	10.2		30°	04:37	05:06	05:30	20:04	21:09	22:14						
	331° 41.6	158° 34.8	31.0	159° 53.0	48.3	123° 57.6	18.2	69° 37.0	11.1	Bellatrix	278° 28.8	6° 21.8 N	138° 05.2	49.4	289° 56.9	8.3	50.5	10.1		35°	04:31	05:01	05:27	20:10	21:17	22:24						
346° 44.0	173° 34.4	29.9	174° 54.1	47.7	138° 59.6	18.3	84° 39.2	11.1	Betelgeuse	270° 58.1	7° 24.5 N	153° 05.4	50.3	304° 24.2	8.2	11° 00.6 N	10.1		40°	04:23	04:56	05:23	20:16	21:26	22:35							
1° 46.5	188° 34.0	28.7	189° 55.1	47.1	154° 01.5	18.5	99° 41.5	11.1				168° 05.6	51.3	318° 51.4	8.1	10.7	10.0		45°	04:13	04:49	05:19	20:24	21:36	22:47							
8 S u n d a y	16° 49.0	203° 33.6	4° 27.5 N	204° 56.1	4° 46.4 N	169° 03.5	10° 18.7 S	114° 43.8	22° 11.1 S	Canopus	263° 54.8	52° 42.1 S	183° 05.8	5° 52.2 S	333° 18.5	8.2	11° 20.7 N	10.0	59.6	S 50°	04:01	04:41	05:14	20:33	21:49	23:03						
	31° 51.4	218° 33.2	26.3	219° 57.1	45.8	184° 05.5	18.9	129° 46.1	11.1	Capella	280° 30.0	46° 00.6 N	198° 05.9	53.2	347° 45.7	8.0	30.7	9.9		52°	03:55	04:37	05:11	20:37	21:55	23:11						
	46° 53.9	233° 32.8	25.1	234° 58.1	45.2	199° 07.4	19.1	144° 48.4	11.1	Deneb	49° 29.3	45° 21.0 N	213° 06.1	54.1	2° 12.7	8.1	40.6	9.8	59.7	54°	03:48	04:32	05:09	20:41	22:02	23:19						
	61° 56.4	248° 32.5	23.9	249° 59.1	44.6	219° 09.4	19.3	159° 50.7	11.2	Denebola	182° 31.0	14° 28.5 N	228° 06.3	55.1	16° 39.8	7.9	50.4	9.7		56°	03:40	04:28	05:06	20:47	22:09	23:28						
	76° 58.8	263° 32.1	22.8	265° 00.1	43.9	229° 11.3	19.5	174° 53.0	11.2	Diphda	348° 52.7	17° 53.3 S	243° 06.5	56.1	31° 06.7	7.9	12° 00.1 N	9.7		58°	03:31	04:22	05:03	20:52	22:17	23:38						
	92° 01.3	278° 31.7	21.6	280° 01.1	43.3	244° 13.3	19.7	189° 55.2	11.2				258° 06.6	57.0	45° 33.6	7.9	09.8	9.6		S 60°	03:21	04:16	04:59	20:59	22:27	23:51						
	107° 03.8	293° 31.3	20.4	295° 02.1	42.7	259° 15.2	19.9	204° 57.5	11.2	Dubhe	193° 48.8	61° 39.3 N	273° 06.8	58.0	60° 00.5	7.8	19.4	9.5		S 62°	03:08	04:08	04:55	21:06	22:38	24:05						
	122° 06.2	308° 30.9	19.2	310° 03.1	42.1	274° 17.2	20.1	219° 59.8	11.2	Elnath	278° 08.8	28° 37.1 N	288° 07.0	58.9	74° 27.3	7.8	28.9	9.5														
	137° 08.7	323° 30.5	18.0	325° 04.1	41.4	289° 19.1	20.3	235° 02.1	11.2	Eltanin	90° 45.0	51° 29.7 N	303° 07.2	59.9	88° 54.1	7.7	38.4	9.3														
	152° 11.1	338° 30.1	16.9	340° 05.1	40.8	304° 21.1	20.4	250° 04.4	11.2	Enif	33° 44.1	9° 57.6 N	318° 07.3	6° 00.8 S	103° 20.8	7.7	47.7	9.3														
	167° 13.6	353° 29.7	15.7	355° 06.1	40.2	319° 23.1	20.6	265° 06.7	11.3	Fomalhaut	15° 20.5	29° 31.7 S	333° 07.5	01.8	117° 47.5	7.6	57.0	9.2														
	182° 16.1	8° 29.3	14.5	10° 07.1	39.6	334° 25.0	20.8	280° 09.0	11.3				348° 07.2	02.7	132° 14.1	7.6	13° 06.2 N	9.1														
	197° 18.5	23° 28.9	4° 13.3 N	25° 08.1	4° 39.0 N	349° 27.0	10° 21.0 S	295° 11.2	22° 11.3 S	Gacrux	171° 58.2	57° 12.5 S	3° 07.9	6° 03.7 S	146° 40.7	7.5	13° 15.3 N	9.1	59.7	N 70°	16:49	17:50	19:01	08:52	10:47	12:45						
	212° 21.0	38° 28.5	12.1	40° 09.2	38.3	4° 28.9	21.2	310° 13.5	11.3	Gienah	175° 49.6	17° 38.2 S	18° 08.0	04.6	161° 07.2	7.5	24.4	8.9		68°	16:55	17:51	18:55	08:41	10:27	12:14						
	227° 23.5	53° 28.1	10.9	55° 10.2	37.7	19° 30.9	21.4	325° 15.8	11.3	Hadar	14																					

2017 October 10, 11, 12 (Tue, Wed, Thur)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	10		11	12	
Tuesday	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	04:38	05:56	07:06	-	-	-
	01	18° 47.2'	203° 14.6'	3° 30.5' N	205° 44.4'	4° 16.4' N	170° 37.3'	10° 27.9' S	116° 33.4'	22° 11.9' S	131° 35.6'	11.9'	Acamar	315° 15.8'	40° 14.0' S	183° 14.0'	6° 37.8' S	306° 08.0'	6.1	17° 40.2' N	5.4	59.7	N 70°	04:44	05:55	06:57	17:40	18:10	19:37		
	02	33° 49.7'	218° 14.2'	29.3'	220° 45.4'	15.8'	185° 39.3'	28.1'	131° 35.6'	11.9'	131° 35.6'	11.9'	Achernar	335° 24.1'	57° 08.8' S	198° 14.2'	38.8'	320° 33.1'	6.0	45.6'	5.2	68°	04:48	05:53	06:49	18:28	19:13	20:27			
	03	48° 52.2'	233° 13.8'	28.1'	235° 46.5'	15.2'	200° 41.2'	28.3'	146° 37.9'	11.9'	200° 41.2'	28.3'	Acruz	173° 06.7'	63° 11.6' S	213° 14.3'	39.7'	334° 58.1'	6.0	50.8'	5.0	66°	04:52	05:52	06:43	19:00	19:48	20:59			
	04	63° 54.6'	248° 13.4'	26.9'	250° 47.5'	14.6'	215° 43.2'	28.5'	161° 40.2'	11.9'	215° 43.2'	28.5'	Adhara	255° 10.2'	28° 59.7' S	228° 14.5'	40.7'	349° 23.1'	6.0	55.9'	5.1	64°	04:55	05:50	06:38	19:23	20:14	21:22			
	05	78° 57.1'	263° 13.0'	25.8'	265° 48.5'	13.9'	230° 45.1'	28.7'	176° 42.5'	11.9'	230° 45.1'	28.7'	Aldebaran	290° 45.8'	16° 32.5' N	243° 14.7'	41.6'	3° 48.1'	6.0	18° 00.9' N	4.9	62°	04:58	05:49	06:34	19:41	20:34	21:41			
	06	93° 59.6'	278° 12.6'	24.6'	280° 49.5'	13.3'	245° 47.1'	28.8'	191° 44.8'	11.9'	245° 47.1'	28.8'				258° 14.8'	42.6'	18° 13.1'	5.9	05.8'	4.7	60°	05:00	05:48	06:30	19:57	20:50	21:56			
	07	109° 02.0'	293° 12.3'	23.4'	295° 50.5'	12.7'	260° 49.1'	29.0'	206° 47.0'	12.0'	260° 49.1'	29.0'	Alioth	166° 18.8'	55° 52.0' N	273° 15.0'	43.5'	32° 38.0'	5.9	10.5'	4.7	N 58°	05:01	05:47	06:26	20:10	21:04	22:09			
	08	124° 04.5'	308° 11.9'	22.2'	310° 51.5'	12.1'	275° 51.0'	29.2'	221° 49.3'	12.0'	275° 51.0'	29.2'	Alkaid	152° 57.1'	49° 13.7' N	288° 15.2'	44.5'	47° 02.9'	5.9	15.2'	4.5	56°	05:03	05:46	06:23	20:21	21:16	22:20			
	09	139° 07.0'	323° 11.5'	21.0'	325° 52.5'	11.4'	279° 53.0'	29.4'	236° 51.6'	12.0'	279° 53.0'	29.4'	Alnair	27° 39.8'	46° 52.6' S	303° 15.3'	51.4'	61° 27.8'	5.9	19.7'	4.4	54°	05:04	05:45	06:20	20:31	21:26	22:30			
	10	154° 09.4'	338° 11.1'	19.8'	340° 53.5'	10.8'	305° 54.9'	29.6'	251° 53.9'	12.0'	305° 54.9'	29.6'	Alnilam	275° 43.3'	1° 11.5' S	318° 15.5'	46.3'	75° 52.7'	5.8	24.1'	4.2	52°	05:05	05:44	06:18	20:40	21:35	22:39			
	11	169° 11.9'	353° 10.7'	18.6'	355° 54.5'	10.2'	320° 56.9'	29.8'	266° 56.1'	12.0'	320° 56.9'	29.8'	Alphard	217° 53.4'	8° 44.0' S	333° 15.7'	47.3'	90° 17.5'	5.9	28.3'	4.1	50°	05:06	05:43	06:16	20:48	21:44	22:46			
	12	184° 14.4'	8° 10.3'	17.4'	10° 55.5'	09.5'	335° 58.8'	30.0'	281° 58.4'	12.0'	335° 58.8'	30.0'				348° 15.8'	48.2'	104° 42.4'	5.8	32.4'	4.0	45°	05:07	05:41	06:11	21:05	22:01	23:03			
	13	199° 16.8'	23° 09.9'	3° 16.2' N	25° 56.5'	4° 08.9' N	351° 00.8'	10° 30.2' S	297° 00.7'	22° 12.1' S	351° 00.8'	10° 30.2' S	Alphecca	126° 08.9'	26° 39.7' N	3° 16.0'	6° 49.2' S	119° 07.2'	5.8	18° 36.4' N	3.9	59.7	N 40°	05:08	05:39	06:06	21:19	22:15	23:17		
	14	214° 19.3'	38° 09.5'	15.0'	40° 57.6'	08.3'	6° 02.7'	30.4'	312° 03.0'	12.1'	6° 02.7'	30.4'	Alpheratz	40° 57.6'	29° 11.4' N	18° 16.2'	50.1'	133° 32.0'	5.7	40.3'	3.8	59.6	35°	05:08	05:39	06:03	21:30	22:28	23:28		
	15	229° 21.7'	53° 09.1'	13.8'	55° 58.6'	07.7'	21° 04.7'	30.6'	327° 05.3'	12.1'	21° 04.7'	30.6'	Altair	62° 05.4'	8° 55.2' N	33° 16.3'	51.1'	147° 56.7'	5.8	44.1'	3.6	30°	05:08	05:35	05:59	21:41	22:38	23:39			
	16	244° 24.2'	68° 08.7'	12.6'	70° 59.6'	07.0'	36° 06.6'	30.8'	342° 07.5'	12.1'	36° 06.6'	30.8'	Ankaa	353° 12.5'	42° 12.6' S	48° 16.5'	52.0'	162° 21.5'	5.7	47.7'	3.5	20°	05:06	05:31	05:54	21:59	22:57	23:56			
	17	259° 26.7'	83° 08.3'	11.4'	86° 00.6'	06.4'	51° 08.6'	30.9'	357° 09.8'	12.1'	51° 08.6'	30.9'	Antares	112° 22.9'	26° 28.1' S	63° 16.7'	53.0'	176° 46.2'	5.8	51.2'	3.4	N 10°	05:03	05:27	05:48	22:14	23:13	24:11			
	18	274° 29.1'	98° 07.9'	10.2'	101° 01.6'	05.8'	66° 10.5'	31.1'	12° 12.1'	12.1'	66° 10.5'	31.1'				78° 16.8'	53.9'	191° 11.0'	5.7	54.6'	3.2	0°	04:58	05:23	05:43	22:29	23:28	24:25			
	19	289° 31.6'	113° 07.5'	09.0'	116° 02.6'	05.2'	81° 12.5'	31.3'	27° 14.4'	12.1'	81° 12.5'	31.3'	Arcturus	145° 53.4'	19° 05.7' N	93° 17.0'	54.8'	205° 35.7'	5.7	57.8'	3.1	S 10°	04:52	05:17	05:38	22:43	23:43	24:39			
	20	304° 34.1'	128° 07.1'	07.8'	131° 03.6'	04.5'	96° 14.4'	31.5'	42° 16.6'	12.2'	96° 14.4'	31.5'	Atria	107° 22.4'	69° 03.5' S	108° 17.2'	55.8'	220° 00.4'	5.7	19° 00.9' N	3.0	20°	04:45	05:11	05:33	22:59	23:59	24:55			
	21	319° 36.5'	143° 06.7'	06.6'	146° 04.6'	03.9'	111° 14.4'	31.7'	57° 18.9'	12.2'	111° 14.4'	31.7'	Avior	234° 17.0'	59° 33.7' S	123° 17.3'	56.7'	234° 25.1'	5.7	03.9'	2.9	30°	04:34	05:02	05:26	23:17	-	00:17			
	22	334° 39.0'	158° 06.3'	05.4'	161° 05.6'	03.3'	126° 18.3'	31.9'	72° 21.2'	12.2'	126° 18.3'	31.9'	Bellatrix	278° 28.7'	6° 21.8' N	138° 17.5'	57.7'	248° 49.8'	5.7	06.8'	2.7	35°	04:27	04:57	05:23	23:28	-	00:28			
23	349° 41.5'	173° 06.0'	04.2'	176° 06.6'	02.7'	141° 20.3'	32.1'	87° 23.5'	12.2'	141° 20.3'	32.1'	Betelgeuse	270° 58.1'	7° 24.5' N	153° 17.6'	58.6'	263° 14.5'	5.7	09.5'	2.6	40°	04:18	04:51	05:18	23:40	-	00:40				
	4° 43.9'	188° 05.6'	03.0'	191° 07.6'	02.0'	156° 22.3'	32.3'	102° 25.7'	12.2'	156° 22.3'	32.3'				168° 17.8'	59.6'	277° 39.2'	5.7	12.1'	2.5	45°	04:07	04:43	05:13	23:54	-	00:55				
Wednesday	00	19° 46.4'	203° 05.2'	3° 01.8' N	206° 08.7'	4° 01.4' N	171° 24.2'	10° 32.5' S	117° 28.0'	22° 12.2' S	117° 28.0'	22° 12.2' S	Canopus	263° 54.7'	52° 42.1' S	183° 18.0'	7° 00.5' S	292° 03.9'	5.6	19° 14.6' N	2.3	59.5	S 50°	03:54	04:34	05:07	-	00:12	01:12		
	01	34° 48.9'	218° 04.8'	00.6'	221° 39.7'	00.8'	186° 26.2'	32.7'	132° 30.3'	12.3'	186° 26.2'	32.7'	Capella	280° 29.9'	46° 00.6' N	198° 18.1'	01.4'	306° 28.5'	5.7	16.9'	2.2	52°	03:47	04:30	05:05	-	00:20	01:21			
	02	49° 51.3'	233° 04.4'	2° 59.4' N	236° 10.7'	00.1'	201° 28.1'	32.9'	147° 32.6'	12.3'	201° 28.1'	32.9'	Deneb	49° 29.3'	45° 21.0' N	213° 18.3'	02.4'	320° 53.2'	5.7	19.1'	2.1	54°	03:40	04:25	05:02	-	00:29	01:30			
	03	64° 53.8'	248° 04.0'	58.2'	251° 11.7'	3° 59.5' N	216° 30.1'	33.0'	162° 34.8'	12.3'	216° 30.1'	33.0'	Denebola	182° 31.0'	14° 28.5' S	228° 18.4'	03.3'	335° 17.9'	5.6	21.2'	2.0	56°	03:31	04:19	04:58	-	00:40	01:41			
	04	79° 56.2'	263° 03.6'	57.1'	266° 12.7'	58.9'	231° 32.0'	33.2'	177° 37.1'	12.3'	231° 32.0'	33.2'	Diphda	348° 52.7'	17° 53.4' S	243° 18.6'	04.3'	349° 42.5'	5.7	23.2'	1.8	58°	03:21	04:13	04:54	-	00:51	01:53			
	05	94° 58.7'	278° 03.2'	55.9'	281° 13.7'	58.3'	246° 34.0'	33.4'	192° 39.4'	12.3'	246° 34.0'	33.4'				258° 18.8'	05.2'	4° 07.2'	5.7	25.0'	1.7	S 60°	03:10	04:06	04:50	-	01:05	02:07			
	06	110° 01.2'	293° 02.8'	54.7'	296° 14.7'	57.6'	261° 35.9'	33.6'	207° 41.7'	12.3'	261° 35.9'	33.6'	Dubhe	193° 48.8'	61° 39.2' N	273° 18.9'	06.1'	18° 31.9'	5.6	26.7'	1.5	S 62°	02:56	03:58	04:45	00:05	01:22	02:23			
	07	125° 03.6'	308° 02.4'	53.5'	311° 15.7'	57.0'	276° 37.9'	33.8'	222° 43.9'	12.4'	276° 37.9'	33.8'	Elnath	278° 08.8'	28° 37.1' N	288° 19.1'	07.1'	32° 56.5'	5.7	28.2'	1.4										
	08	140° 06.1'	323° 02.0'	52.3'	326° 16.7'	56.4'	291° 39.8'	34.0'	237° 46.2'	12.4'	291° 39.8'	34.0'	Eltanin	90° 45.0'	51° 29.7' N	303° 19.3'	08.0'	47° 21.2'	5.7	29.6'	1.3										
	09	155° 08.6'	338° 01.6'	51.1'	341° 17.7'	55.8'	306° 41.8'	34.2'	252° 48.5'	12.4'	306° 41.8'	34.2'	Enif	33° 44.1'	9° 57.6' N	318° 19.4'	09.0'	61° 45.9'	5.7	30.9'	1.2										
	10	170° 11.0'	353° 01.2'	49.9'	356° 18.8'	55.1'	321° 43.7'	34.4'	267° 50.8'	12.4'	321° 43.7'	34.4'	Fomalhaut	15° 20.5'	29° 31.7' S	333° 19.6'	09.9'	76° 10.6'	5.7	32.1'	1.0	59.4									
	11	185° 13.5'	8° 00.9'	48.7'	11° 19.8'	54.5'	336° 45.7'	34.6'	282° 53.0'	12.4'	336° 45.7'	34.6																			

2017 October 13, 14, 15 (Fri, Sat, Sun)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise			
																										Nautical	Civil		13	14	15	
13	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	v	Dec	d	HP	N 72°	04:51	06:10	07:20	20:34	22:51	24:51
	01	21° 44.7'	202° 46.4'	2° 04.1' N	206° 57.2'	3° 31.3' N	172° 57.9'	10° 41.6' S	119° 17.1'	22° 13.0' S	Acamar	315° 15.8'	40° 14.0' S	183° 25.5'	7° 45.5' S	264° 04.5'	6° 8'	18° 40.8' N	3.7	58.9	N 70°	04:56	06:06	07:09	21:28	23:20	25:08					
	02	36° 47.1'	217° 46.0'	02.9'	221° 58.2'	30.6'	187° 59.8'	41.8'	134° 19.3'	13.0'	Achernar	335° 24.1'	57° 08.9' S	198° 25.6'	46.5'	278° 30.3'	6.9	37.1'	3.9	68°	04:59	06:03	07:00	22:01	23:41	25:21						
	03	51° 49.6'	232° 45.6'	01.7'	236° 59.2'	30.0'	203° 01.8'	42.0'	149° 21.6'	13.0'	Acruz	173° 06.6'	63° 11.6' S	213° 25.8'	47.4'	292° 56.2'	6.8	33.2'	4.0	66°	05:02	06:01	06:53	22:25	23:57	25:31						
	04	66° 52.1'	247° 45.2'	00.5'	252° 00.2'	29.4'	218° 03.7'	42.2'	164° 23.9'	13.1'	Adhara	255° 10.2'	28° 59.7' S	228° 25.9'	48.3'	307° 22.0'	7.0	29.2'	4.1	64°	05:04	05:59	06:47	22:43	-	00:11						
	05	81° 54.5'	262° 44.8'	1° 59.3' N	267° 01.2'	28.8'	233° 05.7'	42.4'	179° 26.1'	13.1'	Aldebaran	290° 45.8'	16° 32.5' S	243° 26.1'	49.3'	321° 48.0'	7.0	25.1'	4.2	58.8	62°	05:05	05:57	06:42	22:59	-	00:22					
	06	96° 57.0'	277° 44.4'		282° 02.2'	28.1'	248° 07.6'	42.6'	194° 28.4'	13.1'				258° 26.2'	50.2'	336° 14.0'	7.0	20.9'	4.3	60°	05:07	05:55	06:37	23:11	-	00:32						
	07	111° 59.5'	292° 44.0'	56.9'	297° 03.2'	27.5'	263° 09.6'	42.8'	209° 30.7'	13.1'	Alioth	166° 18.8'	55° 51.9' N	273° 26.4'	51.1'	350° 40.0'	7.1	16.6'	4.5		N 58°	05:08	05:53	06:33	23:22	-	00:40					
	08	127° 01.9'	307° 43.6'	55.7'	312° 04.2'	26.9'	278° 11.5'	43.0'	224° 33.0'	13.1'	Alkaid	152° 57.1'	49° 13.7' N	288° 26.5'	52.1'	5° 06.1'	7.1	12.1'	4.6		56°	05:09	05:52	06:29	23:32	-	00:48					
	09	142° 04.4'	322° 43.2'	54.5'	327° 05.2'	26.2'	297° 13.5'	43.1'	239° 35.2'	13.1'	Alkair	327° 05.2'	46° 52.6' S	303° 26.7'	53.0'	19° 32.2'	7.2	07.5'	4.6		54°	05:09	05:50	06:26	23:40	-	00:54					
	10	157° 06.8'	337° 42.8'	53.3'	342° 06.3'	25.6'	308° 15.4'	43.3'	254° 37.5'	13.2'	Alnilam	275° 43.3'	1° 11.5' S	318° 26.8'	53.9'	33° 58.4'	7.2	02.9'	4.8		52°	05:10	05:49	06:23	23:48	-	01:00					
	11	172° 09.3'	352° 42.5'	52.1'	357° 07.3'	25.0'	323° 17.4'	43.5'	289° 39.8'	13.2'	Alphard	217° 53.4'	8° 44.0' S	333° 27.0'	54.9'	48° 24.6'	7.3	17° 58.1' N	4.9	58.7	50°	05:10	05:48	06:20	23:55	-	01:05					
	12	187° 11.8'	7° 42.1'	50.9'	12° 08.3'	24.4'	338° 19.3'	43.7'	284° 42.0'	13.2'				348° 27.1'	55.8'	62° 50.9'	7.3	53.2'	5.0		45°	05:11	05:45	06:14	-	00:09	01:17					
	13	202° 14.2'	22° 41.7'	1° 49.6' N	27° 09.3'	3° 23.7' N	353° 21.3'	10° 43.9' S	299° 44.3'	22° 13.2' S	Alphecca	126° 08.9'	26° 39.7' N	3° 27.3'	7° 56.7' S	77° 17.2'	7.4	17° 48.2' N	5.1	58.7	N 40°	05:11	05:42	06:09	-	00:21	01:26					
	14	217° 16.7'	37° 41.3'	48.4'	42° 10.3'	23.1'	8° 23.2'	44.1'	314° 46.6'	13.2'	Alpheratz	327° 40.1'	29° 11.4' N	18° 27.4'	57.7'	91° 43.6'	7.5	43.1'	5.2		35°	05:10	05:40	06:05	-	00:31	01:34					
	15	232° 19.2'	52° 40.9'	47.2'	57° 11.3'	22.5'	23° 25.2'	44.3'	329° 48.8'	13.2'	Altair	62° 05.4'	8° 55.2' N	33° 27.6'	58.6'	106° 10.1'	7.5	37.9'	5.3		30°	05:09	05:37	06:01	-	00:40	01:41					
	16	247° 21.6'	67° 40.5'	46.0'	72° 12.3'	21.8'	38° 27.1'	44.5'	344° 51.1'	13.2'	Antaa	353° 12.5'	42° 12.6' S	48° 27.7'	59.5'	120° 36.6'	7.6	32.6'	5.5		20°	05:07	05:32	05:54	-	00:55	01:54					
	17	262° 24.1'	82° 40.1'	44.8'	87° 13.3'	21.2'	53° 29.1'	44.7'	359° 53.4'	13.3'	Antares	112° 22.9'	26° 28.1' S	63° 27.9'	8° 00.5' S	135° 03.2'	7.6	27.1'	5.5	58.6	N 10°	05:03	05:27	05:48	00:11	01:09	02:04					
	18	277° 26.6'	97° 39.7'	43.6'	102° 14.3'	20.6'	68° 31.0'	44.9'	14° 55.6'	13.3'				78° 28.0'	01.4'	149° 29.8'	7.6	21.6'	5.6		0°	04:58	05:22	05:43	00:25	01:21	02:14					
	19	292° 29.0'	112° 39.3'	42.4'	117° 15.4'	20.0'	83° 33.0'	45.0'	29° 57.9'	13.3'	Arcturus	145° 53.4'	19° 05.7' N	93° 28.2'	02.3'	163° 56.4'	7.8	16.0'	5.7		S 10°	04:51	05:16	05:37	00:39	01:33	02:24					
	20	307° 31.5'	127° 38.9'	41.2'	132° 16.4'	19.3'	98° 34.9'	45.2'	45° 00.2'	13.3'	Atria	107° 22.4'	69° 03.5' S	108° 28.3'	03.3'	178° 23.2'	7.8	10.3'	5.9		20°	04:42	05:08	05:30	00:55	01:47	02:35					
	21	322° 33.9'	142° 38.5'	40.0'	147° 17.4'	18.7'	113° 36.9'	45.4'	60° 02.4'	13.3'	Avior	234° 16.9'	59° 33.7' S	123° 28.6'	04.2'	192° 50.0'	7.8	04.4'	5.9		30°	04:30	04:50	05:23	01:12	02:02	02:47					
	22	337° 36.4'	157° 38.2'	38.8'	162° 18.4'	18.1'	128° 38.8'	45.6'	75° 04.7'	13.3'	Bellatrix	278° 28.7'	6° 21.8' N	138° 28.6'	05.1'	207° 16.8'	7.9	16° 58.5' N	6.0	58.5	35°	04:22	04:53	05:19	01:22	02:11	02:54					
23	352° 38.9'	172° 37.8'	37.6'	177° 19.4'	17.4'	143° 40.8'	45.8'	90° 06.9'	13.4'	Betelgeuse	270° 58.0'	7° 24.5' N	153° 28.7'	06.1'	221° 43.7'	8.0	52.5'	6.2		40°	04:13	04:46	05:14	01:34	02:21	03:02						
	7° 41.3'	187° 37.4'	36.3'	192° 20.4'	16.8'	158° 42.7'	46.0'	105° 09.2'	13.4'				168° 28.9'	07.0'	236° 10.7'	8.0	46.3'	6.2		45°	04:01	04:38	05:08	01:47	02:32	03:11						
14	00	22° 43.8'	202° 37.0'	1° 35.1' N	207° 21.4'	3° 16.2' N	173° 44.7'	10° 46.2' S	120° 11.5'	22° 13.4' S	Canopus	263° 54.7'	52° 42.1' S	183° 29.0'	8° 07.9' S	250° 37.7'	8.1	16° 40.1' N	6.3	58.5	S 52°	03:46	04:27	05:01	02:04	02:47	03:22					
	01	37° 46.3'	217° 36.6'	33.9'	222° 22.4'	15.6'	188° 46.6'	46.4'	133° 13.7'	13.4'	Capella	280° 29.9'	46° 00.6' N	198° 29.7'	08.8'	265° 04.8'	8.1	33.8'	6.5		50°	03:39	04:23	04:58	02:11	02:53	03:27					
	02	52° 48.7'	232° 36.2'	32.7'	237° 23.5'	14.9'	203° 48.6'	46.6'	150° 16.0'	13.4'	Deneb	49° 29.3'	45° 21.0' N	213° 29.3'	09.8'	279° 31.9'	8.2	27.3'	6.5		54°	03:31	04:17	04:54	02:20	03:00	03:33					
	03	67° 51.2'	247° 35.8'	31.5'	252° 24.5'	14.3'	218° 50.5'	46.8'	165° 18.3'	13.4'	Denebola	182° 31.0'	14° 28.5' S	228° 28.5'	10.7'	293° 59.1'	8.2	20.8'	6.6	58.4	56°	03:22	04:11	04:50	02:30	03:09	03:39					
	04	82° 53.7'	262° 35.4'	30.3'	267° 25.5'	13.7'	233° 52.5'	46.9'	180° 20.5'	13.5'	Diphda	348° 52.7'	17° 53.4' S	243° 29.6'	11.6'	308° 26.3'	8.3	14.2'	6.7		58°	03:11	04:04	04:46	02:41	03:18	03:46					
	05	97° 56.1'	277° 35.0'	29.1'	282° 26.5'	13.0'	248° 54.4'	47.1'	195° 28.2'	13.5'				258° 29.8'	12.6'	322° 53.6'	8.4	07.5'	6.8		S 60°	02:58	03:56	04:41	02:53	03:28	03:54					
	06	112° 58.6'	292° 34.6'	27.9'	297° 27.5'	12.4'	263° 56.4'	47.3'	210° 25.1'	13.5'	Dubhe	193° 48.8'	61° 39.2' N	273° 29.9'	13.5'	337° 21.0'	8.4	00.7'	6.9		S 62°	02:43	03:47	04:36	03:08	03:40	04:03					
	07	128° 01.1'	307° 34.2'	26.7'	312° 28.5'	11.8'	278° 58.3'	47.5'	225° 27.3'	13.5'	Elnath	278° 08.8'	28° 37.1' N	288° 30.1'	14.4'	351° 48.4'	8.5	15° 53.8' N	7.0													
	08	143° 03.5'	322° 33.9'	25.5'	327° 29.5'	11.2'	294° 00.3'	47.7'	240° 29.6'	13.5'	Eltanin	90° 45.0'	51° 29.7' N	303° 30.2'	15.3'	6° 15.9'	8.6	46.8'	7.0													
	09	158° 06.0'	337° 33.5'	24.2'	342° 30.5'	10.5'	309° 02.2'	47.9'	255° 31.9'	13.5'	Enif	33° 44.1'	9° 57.6' N	318° 30.3'	16.3'	20° 43.5'	8.6	39.8'	7.2	58.3												
	10	173° 08.4'	352° 33.1'	23.0'	357° 31.5'	09.9'	324° 04.2'	48.1'	270° 34.1'	13.6'	Fomalhaut	15° 20.5'	29° 31.7' S	333° 30.5'	17.2'	35° 11.1'	8.7	32.6'	7.2													
	11	188° 10.9'	7° 32.7'	21.8'	12° 32.6'	09.3'	339° 06.1'	48.3'	285° 36.4'	13.6'				348° 30.6'	18.1'	49° 38.8'	8.7	25.4'	7.4													
	12	203° 13.4'	22° 32.3'	1° 20.6' N	27° 33.6'	3° 08.6' N	354° 08.0'	10° 48.5' S	300° 38.7'	22° 13.6' S	Gacrux	171° 58.1'	57° 12.5' S	3° 30.8'	8° 19.1' S	64° 06.5'	8.8	15° 18.0' N	7.4	58.3	N 70°	16:21	17:24	18:34	16:55	16:56	16:54					
	13	218° 15.8'	37° 31.9'	19.4'	42° 34.6'	08.0'	9° 10.0'	48.7'	315° 40.9'	13.6'	Gienah	175° 49.6'	17° 38.2' S	18° 30.9'	20.0'	78° 34.3'	8.9	10.6'	7.5		68°	16:										

2017 October 16, 17, 18 (Mon, Tue, Wed)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	16		17	18	
Monday	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	05:05	06:23	07:35	00:51	02:44	04:31		
	01	24° 42.1'	202° 18.2'	0° 36.9' N	208° 10.0'	2° 46.0' N	175° 18.2'	10° 55.3' S	122° 00.0'	22° 14.2' S	137° 02.3'	14.2'	Acamar	315° 15.8'	40° 14.0' S	183° 35.7'	8° 52.3' S	225° 24.5'	10.9	10° 05.4' N	9.7	57.6	N 70°	05:07	06:18	07:22	01:08	02:51	04:32		
	02	39° 44.5'	217° 17.8'	35.7	223° 11.0'	45.3	190° 20.1'	55.5	130° 02.3'	14.2'	198° 35.9'	53.2	Achernar	335° 24.1'	57° 08.9' S	198° 35.9'	53.2	239° 54.4'	10.9	9° 55.7' N	9.9	68°	05:09	06:14	07:12	01:21	02:58	04:33			
	03	54° 47.0'	232° 17.5'	34.5	238° 12.1'	44.7	205° 22.1'	55.7	152° 04.6'	14.2'	213° 36.0'	54.2	Acruz	173° 06.6'	63° 11.6' S	213° 36.0'	54.2	254° 24.3'	11.0	45.8	9.9	66°	05:11	06:10	07:03	01:31	03:03	04:34			
	04	69° 49.5'	247° 17.1'	33.3	253° 13.1'	44.1	220° 24.0'	55.9	167° 06.8'	14.2'	255° 10.2'	55.1	Adhara	255° 10.2'	28° 59.7' S	268° 36.1'	11.0	268° 36.1'	11.0	35.9	9.9	57.5	64°	05:12	06:10	07:03	01:40	03:08	04:34		
	05	84° 51.9'	262° 16.7'	32.0	268° 14.1'	43.5	235° 26.0'	56.1	182° 09.1'	14.2'	243° 36.3'	56.0	Aldebaran	290° 45.8'	16° 32.5' N	243° 36.3'	56.0	283° 24.3'	11.1	26.0	10.0	62°	05:13	06:04	06:50	01:47	03:12	04:35			
	06	99° 54.4'	277° 16.3'	30.8	283° 15.1'	42.8	250° 27.9'	56.3	197° 11.3'	14.2'	258° 36.4'	56.9		297° 54.4'	11.1	26.0	10.0	11.1	16.0	10.0	60°	05:14	06:02	06:45	01:54	03:15	04:35				
	07	114° 56.9'	292° 15.9'	29.6	298° 16.1'	42.2	265° 29.9'	56.4	212° 13.6'	14.3'	273° 36.5'	57.8	Alioth	166° 18.8'	55° 51.9' N	273° 36.5'	57.8	312° 24.5'	11.2	06.0	10.0	58°	05:14	06:00	06:40	01:59	03:18	04:36			
	08	129° 59.3'	307° 15.5'	28.4	313° 17.1'	41.6	280° 31.8'	56.6	227° 15.9'	14.3'	288° 36.7'	58.7	Alkaid	152° 57.1'	49° 13.7' N	288° 36.7'	58.7	326° 54.7'	11.3	8° 56.0' N	10.1	56°	05:15	05:58	06:36	02:04	03:21	04:36			
	09	145° 01.8'	322° 15.1'	27.2	328° 18.1'	40.9	295° 37.7'	56.8	242° 18.1'	14.3'	303° 36.8'	59.7	Alnair	27° 39.9'	46° 52.6' S	303° 36.8'	59.7	341° 25.0'	11.3	45.9	10.2	57.4	54°	05:15	05:56	06:32	02:09	03:23	04:36		
	10	160° 04.3'	337° 14.7'	26.0	343° 19.1'	40.3	310° 35.7'	57.0	257° 20.4'	14.3'	318° 36.9'	60.0	Alnilam	275° 43.3'	1° 11.5' S	318° 36.9'	60.0	355° 55.3'	11.3	35.7	10.1	52°	05:15	05:54	06:28	02:13	03:25	04:37			
	11	175° 06.7'	352° 14.3'	24.7	358° 20.2'	39.7	325° 37.6'	57.2	272° 22.6'	14.3'	333° 37.1'	61.5	Alphard	217° 53.4'	8° 44.0' S	333° 37.1'	61.5	10° 25.6'	11.4	25.6	10.3	50°	05:15	05:52	06:25	02:17	03:27	04:37			
	12	190° 09.2'	7° 13.9'	23.5	13° 21.2'	39.0	340° 39.6'	57.4	287° 24.9'	14.3'	348° 37.2'	62.4		24° 56.0'	11.4	15.3	10.2	11.4	15.3	10.2	45°	05:15	05:49	06:18	02:25	03:32	04:37				
	13	205° 11.6'	22° 13.5'	20° 22.3' N	28° 22.2'	2° 38.4' N	355° 41.5'	10° 57.6' S	302° 27.1'	22° 14.4' S	Alphaecca	126° 08.9'	26° 39.7' N	3° 37.3'	9° 03.3' S	39° 26.4'	11.5	8° 05.1' N	10.3	57.4	N 40°	05:14	05:45	06:13	02:31	03:35	04:38				
	14	220° 14.1'	37° 13.2'	21.1	43° 23.2'	37.8	10° 43.5'	57.8	317° 29.4'	14.4	18° 37.4'	57.8		29° 11.4' N	11.5	7° 54.8' N	10.3	57.3	35°	05:13	05:42	06:08	02:37	03:38	04:38						
	15	235° 16.6'	52° 12.8'	19.9	58° 24.2'	37.2	25° 47.4'	58.0	332° 31.7'	14.4	33° 37.6'	56.2	Altair	62° 05.4'	8° 55.2' N	33° 37.6'	56.2	68° 27.4'	11.6	44.5	10.4	30°	05:11	05:39	06:03	02:42	03:41	04:39			
	16	250° 19.0'	67° 12.4'	18.7	73° 25.2'	36.5	40° 47.4'	58.2	347° 33.9'	14.4	48° 37.6'	56.0	Antares	353° 12.5'	42° 12.7' S	48° 37.6'	56.0	34.1	10.3	20°	05:07	05:33	05:55	02:50	03:46	04:39					
	17	265° 21.5'	82° 12.0'	17.4	88° 26.2'	35.9	55° 49.3'	58.3	2° 36.2'	14.4	63° 37.8'	57.0		97° 28.6'	11.7	23.8	10.5	11.7	23.8	10.5	N 10°	05:03	05:27	05:49	02:58	03:50	04:40				
	18	280° 24.0'	97° 11.6'	16.2	103° 27.3'	35.3	70° 51.3'	58.5	17° 38.4'	14.4	78° 38.0'	57.9	Arcturus	111° 59.3'	11.7	13.3	10.4	0°	04:57	05:21	05:42	03:05	03:54	04:41							
	19	295° 26.4'	112° 11.2'	15.0	118° 28.3'	34.6	85° 53.2'	58.7	32° 40.7'	14.4	93° 38.1'	58.8		126° 30.0'	11.7	02.9	10.5	57.2	S 10°	04:49	05:14	05:35	03:12	03:58	04:41						
	20	310° 28.9'	127° 10.8'	13.8	133° 29.3'	34.0	100° 55.2'	58.9	47° 42.9'	14.5	108° 38.2'	59.8	Atria	107° 22.5'	69° 03.5' S	108° 38.2'	59.8	141° 00.7'	11.8	6° 52.4' N	10.5	20°	04:39	05:06	05:28	03:20	04:02	04:42			
	21	325° 31.4'	142° 10.4'	12.6	148° 30.3'	33.4	115° 57.1'	59.1	62° 45.2'	14.5	123° 38.4'	60.7	Avior	234° 16.9'	59° 33.7' S	123° 38.4'	60.7	155° 31.5'	11.9	41.9	10.5	30°	04:26	04:55	05:20	03:28	04:06	04:43			
	22	340° 33.8'	157° 10.0'	11.4	163° 31.3'	32.7	130° 59.1'	59.3	77° 47.4'	14.5	138° 38.5'	61.6	Bellatrix	278° 28.7'	6° 21.8' N	138° 38.5'	61.6	170° 02.4'	11.8	31.4	10.6	35°	04:18	04:49	05:15	03:33	04:09	04:43			
23	355° 36.3'	172° 09.6'	10.1	178° 32.3'	32.1	146° 01.0'	59.5	92° 49.7'	14.5	153° 38.6'	62.5	Betelgeuse	270° 58.0'	7° 24.5' N	153° 38.6'	62.5	184° 33.2'	12.0	20.8	10.5	40°	04:08	04:41	05:09	03:39	04:12	04:44				
	10° 38.8'	187° 09.2'	08.9	193° 33.3'	31.5	161° 02.9'	59.7	107° 52.0'	14.5	168° 38.7'	63.4		199° 04.2'	11.9	10.3	10.7	57.1	45°	03:55	04:32	05:03	03:45	04:16	04:44							
Tuesday	00	25° 41.3'	202° 08.8'	0° 07.7' N	208° 34.3'	2° 30.9' N	176° 04.9'	10° 59.9' S	122° 54.2'	22° 14.5' S	137° 56.5'	14.6	Canopus	263° 54.7'	52° 42.1' S	183° 38.9'	9° 14.3' S	213° 35.1'	12.0	5° 59.6' N	10.6	57.1	S 50°	03:39	04:21	04:55	03:53	04:20	04:45		
	01	40° 43.7'	217° 08.5'	06.7	223° 35.4'	30.2	191° 06.8'	11° 00.1' S	131° 06.8'	14.6	198° 39.9'	55.2	Capella	280° 29.9'	46° 00.6' N	198° 39.9'	55.2	228° 06.1'	12.1	49.0	10.6	52°	03:31	04:16	04:51	03:56	04:22	04:45			
	02	55° 46.1'	232° 08.1'	05.3	238° 36.4'	29.6	206° 08.8'	00.2	152° 58.7'	14.6	213° 39.1'	56.2	Deneb	49° 29.4'	45° 21.0' N	213° 39.1'	56.2	242° 37.2'	12.0	38.4	10.7	54°	03:23	04:10	04:47	04:00	04:24	04:46			
	03	70° 48.6'	247° 07.7'	04.0	253° 37.4'	29.0	221° 10.7'	00.4	168° 01.0'	14.6	228° 39.2'	57.1	Denebola	182° 31.0'	14° 28.5' N	228° 39.2'	57.1	257° 08.2'	12.2	27.7	10.7	57.0	03:12	04:03	04:43	04:04	04:26	04:46			
	04	85° 51.1'	262° 07.3'	02.8	268° 38.4'	28.3	236° 12.7'	00.6	183° 03.2'	14.6	243° 39.4'	58.0	Diphda	348° 52.7'	17° 53.4' S	243° 39.4'	58.0	271° 39.4'	12.1	17.0	10.7	58°	03:00	03:55	04:38	04:09	04:29	04:46			
	05	100° 53.5'	277° 06.9'	01.6	283° 39.4'	27.1	251° 14.6'	00.8	198° 05.5'	14.6	258° 39.5'	58.9		286° 10.5'	12.2	06.3	10.8	S 60°	02:46	03:47	04:32	04:15	04:32	04:47							
	06	115° 56.0'	292° 06.5'	00.4	298° 40.4'	27.1	266° 16.6'	01.0	213° 07.7'	14.6	273° 39.6'	59.8	Dubhe	193° 48.8'	61° 39.2' N	273° 39.6'	59.8	300° 41.7'	12.3	4° 55.5' N	10.7	S 62°	02:29	03:36	04:26	04:21	04:35	04:47			
	07	130° 58.5'	307° 06.1'	00.8	313° 41.4'	26.4	281° 18.5'	01.2	228° 10.0'	14.7	288° 39.7'	60.7	Elath	278° 08.7'	28° 37.1' N	288° 39.7'	60.7	315° 13.0'	12.2	44.8	10.8										
	08	146° 00.9'	322° 05.7'	02.0	328° 42.5'	25.8	296° 20.5'	01.4	243° 12.3'	14.7	303° 39.9'	61.6	Eltanin	90° 45.0'	51° 29.7' N	303° 39.9'	61.6	329° 44.2'	12.3	34.0	10.8	56.9									
	09	161° 03.4'	337° 05.3'	03.3	343° 43.5'	25.2	311° 22.4'	01.6	258° 14.5'	14.7	318° 40.0'	62.5	Enif	33° 44.1'	9° 57.6' N	318° 40.0'	62.5	344° 15.5'	12.4	23.2	10.8										
	10	176° 05.9'	352° 04.9'	04.5	358° 44.5'	24.5	326° 24.4'	01.8	273° 16.8'	14.7	333° 40.1'	63.5	Fomalhaut	15° 20.5'	29° 31.7' S	333° 40.1'	63.5	358° 46.9'	12.4	12.4	10.8										
	11	191° 08.3'	7° 04.5'	05.7	13° 45.5'	23.9	341° 26.3'	01.9	288° 19.0'	14.7	348° 40.2'	64.4		13° 18.3'	12.4	01.6	10.8														
	12	206° 10.8'	22° 04.1'																												

2017 October 19, 20, 21 (Thur, Fri, Sat)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise				
																								Nautical		Civil	19		20	21			
19 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23		GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	05:17	06:36	07:50	06:16	08:01	09:48
		27° 39' 5	201° 50' 0	0° 50' 8 S	209° 23' 0	2° 00' 6 N	177° 38' 3	11° 09' 0 S	124° 42' 3	22° 15' 3 S	Acamar	315° 15' 8	40° 14' 0 S	183° 44' 7	9° 58' 0 S	190° 58' 4	13° 2	2° 39' 8 S	10.7	56.1	N 70°	05:19	06:30	07:35	06:10	07:48	09:26						
		42° 42' 0	216° 49' 6	52:1	224° 24' 1	1° 59' 9 N	192° 40' 2	09:1	139° 44' 6	15:3	Achernar	335° 24' 1	57° 08' 9 S	198° 44' 8	58:9	205° 30' 6	13:3	50:5	10:6	68°	N 68°	05:20	06:24	07:23	06:06	07:38	09:09						
		57° 44' 4	231° 49' 2	53:3	239° 25' 1	59:3	207° 42' 2	09:3	154° 46' 8	15:4	Acruz	173° 06' 6	63° 11' 6 S	213° 44' 9	59:8	220° 02' 9	13:3	3° 01' 1 S	10:7	66°	N 64°	05:20	06:20	07:13	06:02	07:29	08:55						
		72° 46' 9	246° 48' 8	54:5	254° 26' 1	58:7	222° 44' 1	09:5	169° 49' 1	15:3	Adhara	255° 10' 1	28° 59' 7 S	228° 45' 0	10° 00' 7 S	234° 35' 2	13:3	11:8	10:6	64°	N 64°	05:21	06:16	07:05	05:59	07:22	08:44						
		87° 49' 3	261° 48' 4	55:7	269° 27' 1	58:1	237° 46' 0	09:7	184° 51' 3	15:4	Aldebaran	290° 45' 8	16° 32' 5 N	243° 45' 1	01:6	249° 07' 5	13:3	22:4	10:5	56.0	N 62°	05:21	06:12	06:58	05:56	07:16	08:34						
		102° 51' 8	276° 48' 0	56:9	284° 28' 1	57:4	252° 48' 0	09:9	199° 53' 6	15:4				258° 45' 2	02:5	263° 39' 8	13:4	32:9	10:6	60°	N 60°	05:21	06:09	06:52	05:54	07:11	08:26						
		117° 54' 3	291° 47' 6	58:2	299° 29' 1	56:8	267° 49' 9	10:1	214° 55' 8	15:4	Alioth	166° 18' 8	55° 51' 9 N	273° 45' 3	03:4	278° 12' 2	13:3	43:5	10:5		N 58°	05:21	06:06	06:47	05:52	07:06	08:19						
		132° 56' 7	306° 47' 2	59:4	314° 30' 1	56:2	282° 51' 9	10:3	229° 58' 1	15:4	Alkaid	152° 57' 1	49° 13' 7 N	288° 45' 0	04:3	292° 44' 5	13:4	54:0	10:6	56°	N 56°	05:21	06:04	06:42	05:50	07:02	08:12						
		147° 59' 2	321° 46' 9	1° 00' 6 S	329° 31' 2	55:5	297° 53' 8	10:5	245° 00' 3	15:4	Alnair	237° 39' 9	46° 52' 6 S	303° 45' 0	05:2	307° 16' 9	13:3	4° 04' 6 S	10:4	54°	N 50°	05:20	06:01	06:38	05:48	06:58	08:07						
		163° 01' 7	336° 46' 5	01:8	344° 32' 2	54:9	312° 55' 8	10:7	260° 02' 5	15:4	Alnilam	275° 43' 2	1° 11' 5 S	318° 45' 7	06:1	321° 49' 2	13:4	15:0	10:5	55.9	N 52°	05:20	05:59	06:34	05:46	06:55	08:02						
		178° 04' 1	351° 46' 1	03:0	359° 33' 2	54:3	327° 57' 7	10:8	275° 04' 8	15:5	Alphard	217° 53' 4	8° 44' 0 S	333° 45' 8	07:0	336° 21' 6	13:3	25:5	10:4	50°	N 50°	05:20	05:57	06:30	05:45	06:52	07:57						
		193° 06' 6	6° 45' 7	04:3	14° 34' 2	53:6	342° 59' 7	11:0	290° 07' 0	15:5				348° 45' 9	07:9	350° 53' 9	13:4	35:9	10:4	45°	N 45°	05:18	05:52	06:22	05:42	06:45	07:47						
		208° 09' 1	21° 45' 3	1° 05' 5 S	29° 35' 2	1° 53' 0 N	358° 01' 6	11° 11' 2 S	305° 09' 3	22° 15' 5 S	Alphecca	126° 08' 9	26° 39' 6 N	3° 46' 0	10° 08' 8 S	5° 26' 3	13:4	4° 46' 3 S	10:4	55.9	N 40°	05:17	05:48	06:16	05:39	06:40	07:39						
		223° 11' 5	36° 44' 9	06:7	44° 36' 2	52:4	13° 03' 5	11:4	320° 11' 5	15:5				18° 46' 1	09:7	19° 11' 4 N	13:4	56:7	10:4	55.8	N 35°	05:15	05:45	06:10	05:37	06:35	07:32						
		238° 14' 0	51° 44' 5	07:9	59° 37' 2	51:7	28° 05' 5	11:6	335° 13' 8	15:5	Altair	62° 05' 4	8° 55' 2 N	33° 46' 2	10:6	34° 31' 1	13:4	5° 07' 1 S	10:3	30°	N 30°	05:13	05:41	06:05	05:35	06:31	07:26						
		253° 16' 5	66° 44' 1	09:1	74° 38' 3	51:1	43° 07' 4	11:8	350° 16' 0	15:5	Ankaa	353° 12' 5	42° 12' 7 S	48° 46' 3	16:0	49° 03' 5	13:4	17:4	10:3	20°	N 20°	05:08	05:34	05:57	05:32	06:24	07:16						
		268° 18' 9	81° 43' 7	10:4	89° 39' 3	50:5	58° 09' 4	12:0	5° 18' 3	15:6	Antares	112° 23' 0	26° 28' 0 S	63° 46' 5	12:4	63° 35' 9	13:4	27:7	10:2	10°	N 10°	05:03	05:27	05:49	05:29	06:18	07:06						
		283° 21' 4	96° 43' 3	11:6	104° 40' 3	49:8	73° 11' 3	12:2	20° 20' 5	15:6				78° 46' 6	13:3	78° 08' 3	13:4	37:9	10:2	0°	N 0°	04:56	05:20	05:41	05:27	06:12	06:58						
		298° 23' 8	111° 42' 9	12:8	119° 41' 3	49:2	88° 13' 3	12:4	35° 22' 8	15:6	Arcturus	145° 53' 4	19° 05' 7 N	93° 46' 7	14:2	92° 40' 7	13:4	48:1	10:2	55.7	S 10°	04:48	05:13	05:34	05:24	06:06	06:49						
		313° 26' 3	126° 42' 5	14:0	134° 42' 3	48:6	103° 15' 2	12:5	50° 25' 0	15:6	Atria	107° 22' 5	69° 03' 5 S	108° 46' 8	15:1	107° 13' 1	13:4	58:3	10:2	20°	N 20°	04:37	05:03	05:26	05:21	06:00	06:40						
		328° 28' 8	141° 42' 1	15:2	149° 43' 3	48:0	118° 17' 2	12:7	65° 27' 3	15:6	Avior	234° 16' 9	59° 33' 7 S	123° 46' 9	16:0	121° 45' 5	13:4	6° 08' 5 S	10:1	30°	N 30°	04:23	04:52	05:17	05:18	05:54	06:30						
		343° 31' 2	156° 41' 7	16:5	164° 44' 4	47:3	133° 19' 1	12:9	80° 29' 5	15:6	Bellatrix	278° 28' 7	6° 21' 8 N	138° 47' 0	16:9	136° 17' 9	13:5	18:6	10:1	35°	N 35°	04:14	04:45	05:11	05:16	05:50	06:24						
	358° 33' 7	171° 41' 3	17:7	179° 45' 4	46:7	148° 21' 0	13:1	95° 31' 8	15:7	Betelgeuse	270° 58' 0	7° 24' 5 N	153° 47' 1	17:8	150° 50' 4	13:4	28:7	10:0	40°	N 40°	04:03	04:37	05:05	05:14	05:45	06:17							
	13° 36' 2	186° 40' 9	18:9	194° 46' 4	46:1	163° 23' 0	13:3	110° 34' 0	15:7				168° 47' 2	18:7	165° 22' 8	13:4	38:7	10:0	55.6	N 45°	03:50	04:27	04:58	05:12	05:40	06:10							
20 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23		28° 38' 6	201° 40' 5	1° 20' 1 S	209° 47' 4	1° 45' 4 N	178° 24' 9	11° 13' 5 S	125° 36' 2	22° 15' 7 S	Canopus	263° 54' 6	52° 42' 2 S	183° 47' 3	10° 19' 6 S	179° 55' 2	13:4	6° 48' 7 S	10:0	55.6	S 52°	03:32	04:15	04:49	05:09	05:34	06:00						
		43° 41' 1	216° 40' 1	2:14	224° 48' 4	44:8	193° 24' 9	13:7	140° 38' 5	15:7	Capella	280° 29' 8	46° 00' 6 N	198° 47' 4	20:5	194° 27' 6	13:5	58:7	9:9	50°	S 50°	03:24	04:09	04:45	05:08	05:31	05:56						
		58° 43' 6	231° 39' 7	22:6	239° 49' 4	44:2	208° 28' 8	13:9	155° 40' 7	15:7	Deneb	49° 29' 4	45° 21' 0 N	213° 47' 5	21:3	209° 00' 1	13:4	7° 08' 6 S	9:9	54°	N 54°	03:14	04:02	04:40	05:07	05:28	05:51						
		73° 46' 0	246° 39' 3	23:8	254° 50' 4	43:5	223° 30' 8	14:1	170° 43' 0	15:7	Denebola	182° 31' 0	14° 28' 5 N	228° 47' 6	22:2	223° 32' 5	13:4	18:5	9:9	56°	N 56°	03:03	03:55	04:35	05:05	05:25	05:46						
		88° 48' 5	261° 39' 0	25:0	269° 51' 5	42:9	238° 32' 7	14:2	185° 45' 2	15:8	Diphda	348° 52' 7	17° 53' 4 S	243° 47' 8	23:1	238° 04' 9	13:4	28:4	9:8	55.5	S 58°	02:50	03:46	04:30	05:03	05:21	05:40						
		103° 50' 9	276° 38' 6	26:2	284° 52' 5	42:3	253° 34' 6	14:4	200° 47' 5	15:8				258° 47' 9	24:0	252° 37' 3	13:5	38:2	9:7	50°	S 60°	02:34	03:37	04:24	05:02	05:17	05:34						
		118° 53' 4	291° 38' 2	27:5	299° 53' 5	41:6	268° 36' 6	14:6	215° 49' 7	15:8	Dubhe	193° 48' 7	61° 39' 2 N	273° 48' 0	24:9	267° 09' 8	13:4	47:9	9:6	52°	S 62°	02:15	03:26	04:16	05:00	05:12	05:26						
		133° 55' 9	306° 37' 8	28:7	314° 54' 5	41:0	283° 38' 5	14:8	230° 52' 0	15:8	Elnath	278° 08' 7	28° 37' 1 N	288° 48' 1	25:8	281° 42' 2	13:4	57:7	9:7														
		148° 58' 3	321° 37' 4	29:9	329° 55' 5	40:4	298° 40' 5	15:0	245° 54' 2	15:8	Eltanin	90° 45' 1	51° 29' 6 N	303° 48' 2	26:7	296° 14' 6	13:4	8° 07' 4 S	9:6														
		164° 00' 8	336° 37' 0	31:1	344° 56' 5	39:8	313° 42' 4	15:2	260° 56' 5	15:8	Enif	33° 44' 1	9° 57' 6 N	318° 48' 3	27:6	310° 47' 0	13:5	17:0	9:6	55.4	N 55.4												
		179° 03' 3	351° 36' 6	32:3	359° 57' 6	39:1	328° 44' 4	15:4	275° 58' 7	15:8	Fomalhaut	15° 20' 5	29° 31' 7 S	333° 48' 4	28:5	325° 19' 5	13:4	26:6	9:5														
		194° 05' 7	6° 36' 2	33:6	14° 58' 6	38:5	343° 46' 3	15:6	291° 00' 9	15:9				348° 48' 5	29:4	339° 51' 9	13:4	3															

2017 October 22, 23, 24 (Sun, Mon, Tue)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise			
																								Nautical		Civil	22		23	24		
Sunday	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	v	Dec	d	HP	N 72°	05:30	06:49	08:06	11:41	14:06	-
	01	30° 36' 9	201° 21' 4	2° 18' 7 S	210° 36' 2	1° 15' 1 N	179° 58' 2	11° 22' 5 S	127° 23' 9	22° 16' 4 S	Acamar	315° 15' 7	40° 14' 1 S	183° 52' 2	11° 02' 3 S	157° 46' 1	13' 0	13° 52' 5 S	7' 4	54' 8	N 70°	05:30	06:41	07:49	11:04	12:43	14:21					
	02	45° 39' 4	216° 21' 0	20' 0	225° 37' 2	14' 5	195° 00' 1	22' 7	142° 26' 1	16' 5	Achernar	335° 24' 1	57° 08' 9 S	198° 52' 3	03' 2	172° 18' 1	13' 1	59' 9	7' 4	54' 7	68°	05:30	06:35	07:35	10:38	12:05	13:23					
	03	60° 41' 8	231° 20' 6	21' 2	240° 38' 2	13' 9	210° 02' 1	22' 9	157° 28' 4	16' 5	Acruz	173° 06' 6	63° 11' 6 S	213° 52' 4	04' 1	186° 50' 2	13' 0	14° 07' 3 S	7' 2	66°	66°	05:29	06:29	07:24	10:19	11:38	12:49					
	04	75° 44' 3	246° 20' 2	22' 4	255° 39' 2	13' 2	225° 04' 0	23' 1	172° 30' 6	16' 5	Adhara	255° 10' 1	28° 59' 7 S	228° 52' 5	04' 9	201° 22' 2	13' 1	14' 5	7' 2	64°	64°	05:29	06:24	07:14	10:03	11:17	12:25					
	05	90° 46' 8	261° 19' 8	23' 6	270° 40' 2	12' 6	240° 06' 0	23' 3	187° 32' 9	16' 5	Aldebaran	290° 45' 8	16° 32' 5 N	243° 52' 5	05' 8	215° 54' 3	13' 0	21' 7	7' 2	62°	62°	05:28	06:20	07:06	09:50	11:01	12:06					
	06	105° 49' 2	276° 19' 4	24' 9	285° 41' 2	12' 0	255° 07' 9	23' 5	202° 35' 1	16' 5				258° 52' 6	06' 7	230° 26' 3	13' 0	28' 9	7' 0	60°	60°	05:28	06:16	07:00	09:39	10:47	11:50					
	07	120° 51' 7	291° 19' 0	26' 1	300° 42' 3	11' 3	270° 09' 9	23' 7	217° 37' 3	16' 5	Alioth	166° 18' 7	55° 51' 9 N	273° 52' 7	07' 6	244° 58' 3	13' 0	35' 9	7' 0	58°	58°	05:27	06:13	06:54	09:29	10:35	11:36					
	08	135° 54' 2	306° 18' 6	27' 3	315° 43' 3	10' 7	285° 11' 8	23' 8	232° 39' 6	16' 6	Alkaid	152° 57' 1	49° 13' 7 N	288° 52' 8	08' 5	259° 30' 3	13' 0	42' 9	6' 9	56°	56°	05:26	06:10	06:48	09:21	10:25	11:25					
	09	150° 56' 6	321° 18' 2	28' 5	330° 44' 3	10' 1	300° 13' 2	23' 0	247° 41' 8	16' 6	Alnair	27° 39' 9	46° 52' 6 S	303° 52' 9	09' 4	274° 02' 3	12' 9	49' 8	6' 9	54' 6	54° 6	05:26	06:07	06:43	09:13	10:16	11:15					
	10	165° 59' 1	336° 17' 8	29' 7	345° 45' 3	09' 4	315° 15' 7	24' 2	262° 44' 0	16' 6	Alnilam	275° 43' 2	1° 11' 5 S	318° 53' 0	10' 2	288° 34' 2	13' 0	56' 7	6' 8	52°	52°	05:25	06:04	06:39	09:07	10:08	11:06					
	11	181° 01' 5	351° 17' 4	31' 0	0° 46' 3	08' 3	330° 17' 6	24' 4	277° 46' 3	16' 6	Alphard	217° 53' 3	8° 44' 0 S	333° 53' 1	11' 1	303° 06' 2	12' 9	15° 03' 5 S	6' 7	50°	50°	05:24	06:02	06:35	09:01	10:01	10:58					
	12	196° 04' 0	6° 17' 0	32' 2	15° 47' 3	08' 2	345° 19' 6	24' 6	292° 48' 5	16' 6				348° 53' 2	12' 0	317° 38' 1	12' 9	10' 2	6' 6	45°	45°	05:22	05:56	06:26	08:48	09:46	10:41					
	13	211° 06' 5	21° 16' 6	2° 33' 4 S	30° 48' 3	1° 07' 5 N	0° 21' 5	11° 24' 8 S	307° 50' 8	22° 16' 6 S	Alphecca	126° 08' 9	26° 39' 6 N	3° 53' 3	11° 12' 9 S	332° 10' 0	12' 9	15° 16' 8 S	6' 6	54' 6	N 40°	05:20	05:51	06:19	08:37	09:33	10:27					
	14	226° 08' 9	36° 16' 2	34' 6	45° 49' 4	06' 9	15° 23' 5	25' 0	322° 53' 0	16' 7				18° 53' 4	13' 8	346° 41' 9	12' 9	23' 4	6' 5	35°	35°	05:17	05:47	06:13	08:28	09:23	10:15					
	15	241° 11' 4	51° 15' 8	35' 8	60° 50' 4	06' 3	30° 25' 4	25' 2	337° 55' 2	16' 7	Altair	62° 05' 4	8° 55' 2 N	33° 53' 5	14' 6	1° 13' 8	12' 9	29' 9	6' 4	30°	30°	05:15	05:43	06:07	08:20	09:13	10:05					
	16	256° 13' 9	66° 15' 4	37' 1	75° 51' 4	05' 7	45° 27' 3	25' 3	352° 57' 5	16' 7	Ankaa	353° 12' 5	42° 12' 7 S	48° 53' 6	15' 5	15° 45' 7	12' 9	36' 3	6' 3	54' 5	54' 5	05:09	05:35	05:58	08:07	08:57	09:47					
	17	271° 16' 3	81° 15' 0	38' 3	90° 52' 4	05' 0	60° 29' 3	25' 5	7° 59' 7	16' 7	Antares	112° 23' 0	26° 28' 0 S	63° 53' 6	16' 4	30° 17' 6	12' 8	42' 6	6' 3	50°	50°	05:03	05:28	05:49	07:55	08:43	09:32					
	18	286° 18' 8	96° 14' 6	39' 5	105° 53' 4	04' 4	75° 31' 2	25' 7	23° 02' 0	16' 7				78° 53' 7	17' 3	44° 49' 4	12' 8	48' 9	6' 2	0°	0°	04:55	05:20	05:41	07:44	08:30	09:17					
	19	301° 21' 3	111° 14' 2	40' 7	120° 54' 4	03' 8	90° 33' 2	25' 9	38° 04' 2	16' 7	Arcturus	145° 53' 4	19° 05' 7 N	93° 53' 8	18' 2	59° 21' 2	12' 9	55' 1	6' 1	S 10°	10°	04:46	05:11	05:33	07:33	08:17	09:03					
	20	316° 23' 7	126° 13' 8	41' 9	135° 55' 5	03' 1	105° 35' 1	26' 1	53° 06' 4	16' 7	Atria	107° 22' 5	69° 03' 5 S	108° 53' 9	19' 0	73° 53' 1	12' 8	16° 01' 2 S	6' 1	20°	20°	04:35	05:01	05:24	07:21	08:04	08:48					
	21	331° 26' 2	141° 13' 4	42' 2	150° 56' 5	02' 5	120° 37' 0	26' 3	68° 08' 7	16' 8	Avior	234° 16' 8	59° 33' 7 S	123° 54' 0	19' 9	88° 24' 9	12' 8	07' 3	5' 9	30°	30°	04:19	04:49	05:13	07:08	07:48	08:30					
	22	346° 28' 7	156° 13' 0	44' 4	165° 57' 5	01' 9	135° 39' 0	26' 5	83° 10' 9	16' 8	Bellatrix	278° 28' 7	6° 21' 8 N	138° 54' 1	20' 8	102° 56' 7	12' 7	13' 2	5' 9	35°	35°	04:10	04:41	05:07	07:00	07:39	08:20					
23	1° 31' 1	171° 12' 6	45' 6	180° 58' 5	01' 2	150° 40' 9	26' 7	98° 13' 1	16' 8	Betelgeuse	270° 58' 0	7° 24' 5 N	153° 54' 2	21' 7	117° 28' 4	12' 8	19' 1	5' 8	40°	40°	03:58	04:32	05:01	06:51	07:28	08:09						
	16° 33' 6	186° 12' 2	46' 8	195° 59' 5	00' 6	165° 42' 9	26' 8	113° 15' 4	16' 8				168° 54' 3	22' 5	132° 00' 2	12' 8	24' 9	5' 8	54' 4	54° 4	03:44	04:22	04:53	06:41	07:16	07:55						
Monday	00	31° 36' 0	201° 11' 8	2° 48' 0 S	211° 00' 5	1° 00' 0 N	180° 44' 8	11° 27' 0 S	128° 17' 6	22° 16' 8 S	Canopus	263° 54' 6	52° 42' 2 S	183° 54' 3	11° 23' 4 S	146° 32' 0	12' 7	16° 30' 7 S	5' 6	54' 4	S 50°	03:25	04:08	04:43	06:29	07:01	07:39					
	01	46° 38' 5	216° 11' 4	49' 3	226° 01' 6	0° 59' 3 N	195° 46' 8	27' 2	143° 19' 8	16' 8	Capella	280° 29' 8	46° 00' 6 N	198° 54' 4	24' 3	161° 03' 7	12' 7	36' 3	5' 6	52°	52°	03:16	04:02	04:38	06:23	06:55	07:31					
	02	61° 41' 0	231° 11' 0	50' 5	241° 02' 6	58' 7	210° 48' 7	27' 4	158° 22' 1	16' 9	Deneb	49° 29' 4	45° 21' 0 N	213° 54' 5	25' 2	175° 35' 4	12' 7	41' 9	5' 5	54°	54°	03:05	03:55	04:34	06:17	06:47	07:22					
	03	76° 43' 4	246° 10' 6	51' 7	256° 03' 6	58' 1	225° 50' 6	27' 6	182° 17' 3	16' 9	Denebola	182° 31' 0	14° 28' 5 N	228° 54' 6	26' 0	190° 07' 1	12' 7	47' 4	5' 5	56°	56°	02:53	03:47	04:28	06:10	06:39	07:12					
	04	91° 45' 9	261° 10' 2	52' 9	271° 04' 6	57' 4	240° 52' 6	27' 8	188° 26' 6	16' 9	Diphda	348° 52' 7	17° 53' 4 S	243° 54' 7	26' 9	204° 38' 8	12' 7	52' 9	5' 3	58°	58°	02:39	03:38	04:22	06:02	06:29	07:01					
	05	106° 48' 4	276° 09' 8	54' 1	286° 05' 6	56' 8	255° 54' 5	28' 0	203° 28' 8	16' 9				258° 54' 8	27' 8	219° 10' 5	12' 6	58' 2	5' 3	S 60°	60°	02:21	03:27	04:15	05:54	06:18	06:49					
	06	121° 50' 8	291° 09' 4	55' 4	301° 06' 6	56' 2	270° 56' 5	28' 2	218° 31' 0	16' 9	Dubhe	193° 48' 7	61° 39' 2 N	273° 54' 9	28' 7	233° 42' 1	12' 7	17° 03' 5 S	5' 2	54' 3	S 62°	01:59	03:15	04:07	05:44	06:05	06:34					
	07	136° 53' 3	306° 09' 0	56' 6	316° 07' 7	55' 6	285° 58' 4	28' 3	233° 33' 3	16' 9	Elath	278° 08' 7	28° 37' 1 N	288° 55' 0	29' 5	248° 13' 8	12' 6	08' 7	5' 1													
	08	151° 55' 8	321° 08' 6	57' 8	331° 08' 7	54' 9	301° 00' 3	28' 5	248° 35' 5	17' 0	Eltanin	90° 45' 1	51° 29' 6 N	303° 55' 0	30' 4	262° 45' 4	12' 6	13' 8	5' 0	54' 3	54' 3	01:59	03:15	04:07	05:44	06:05	06:34					
	09	166° 58' 2	336° 08' 2	59' 0	346° 09' 7	54' 3	316° 02' 3	28' 5	263° 37' 7	17' 0	Enif	33° 44' 1	9° 57' 6 N	318° 55' 1	31' 3	277° 17' 0	12' 6	18' 8	5' 0													
	10	182° 00' 7	351° 07' 8	3° 00' 2 S	1° 10' 7	53' 7	331° 04' 2	28' 9	278° 40' 0	17' 0	Fomalhaut	15° 20' 6	29° 31' 7 S	333° 55' 2	32' 2	291° 48' 6	12' 6	23' 8	4' 8													
	11	197° 03' 1	6° 07' 4	01' 4	16° 11' 7	53' 0																										

2017 October 25, 26, 27 (Wed, Thur, Fri)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	25		26	27	
25	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	05:43	07:03	08:22	-	-	-				
	01	33° 34.3'	200° 52.3'	3° 46.5' S	211° 49.4'	0° 29.7' N	182° 18.0'	11° 36.0' S	130° 04.8'	22° 17.6' S	Acamar	315° 15.7'	40° 14.1' S	183° 58.2'	12° 05.1' S	123° 40.6'	12.2	19° 29.3' S	1:6	54:1	N 70°	05:41	06:53	08:02	15:44	16:08	16:09				
	02	48° 36.8'	215° 51.9'	47.7	226° 50.4'	29.0	197° 19.9'	36.2	145° 07.1'	17.6	Achernar	335° 24.1'	57° 08.9' S	198° 58.3'	06.0	138° 11.8'	12.2	30° 9'	1:5	68°	05:40	06:45	07:47	14:26	15:06	15:27					
	03	63° 39.2'	230° 51.5'	48.9	241° 51.4'	28.4	212° 21.9'	36.4	160° 09.3'	17.6	Acruz	173° 06.6'	63° 11.6' S	213° 58.3'	06.9	152° 43.0'	12.1	32.4	1:3	66°	05:38	06:39	07:34	13:48	14:31	14:59					
	04	78° 41.7'	245° 51.1'	50.2	256° 52.4'	27.8	227° 23.8'	36.6	175° 11.5'	17.6	Adhara	255° 10.1'	28° 59.7' S	228° 58.4'	07.7	167° 14.1'	12.2	33.9	1:5	64°	05:37	06:33	07:24	13:22	14:05	14:37					
	05	93° 44.2'	260° 50.6'	51.4	271° 53.4'	27.1	242° 25.8'	36.8	190° 13.7'	17.6	Aldebaran	290° 45.7'	16° 32.5' N	243° 58.5'	08.6	181° 45.3'	12.1	35.2	1:2	62°	05:36	06:28	07:15	13:01	13:46	14:20					
	06	108° 46.6'	275° 50.2'	52.6	286° 54.4'	26.5	257° 27.7'	37.0	205° 16.0'	17.7				196° 16.4'	12.2	36.4	1:2	60°	05:34	06:23	07:07	12:44	13:29	14:06							
	07	123° 49.1'	290° 49.8'	53.8	301° 55.5'	25.9	272° 29.6'	37.1	220° 18.2'	17.7	Alioth	166° 18.7'	55° 51.9' N	273° 58.6'	10.3	210° 47.6'	12.1	37.6	1:1	58°	05:33	06:19	07:00	12:30	13:16	13:53					
	08	138° 51.6'	305° 49.4'	55.0	316° 56.5'	25.2	287° 31.6'	37.3	235° 20.4'	17.7	Alkaid	152° 57.1'	49° 13.6' N	288° 58.7'	11.2	225° 18.7'	12.1	38.7	0:9	56°	05:32	06:16	06:54	12:18	13:04	13:43					
	09	153° 54.0'	320° 49.0'	56.2	331° 57.5'	24.6	300° 33.6'	37.5	250° 22.7'	17.7	Alnair	27° 39.9'	46° 52.6' S	303° 58.4'	12.0	239° 49.8'	12.2	39.6	0:9	54°	05:31	06:12	06:49	12:08	12:54	13:33					
	10	168° 56.5'	335° 48.6'	57.4	346° 58.5'	24.0	317° 35.5'	37.7	265° 24.9'	17.7	Alnilam	275° 43.2'	1° 11.5' S	318° 58.8'	12.9	254° 21.0'	12.1	40.5	0:8	52°	05:30	06:09	06:44	11:58	12:44	13:25					
	11	183° 59.0'	350° 48.2'	58.4	1° 59.5'	23.4	332° 37.4'	37.9	280° 27.1'	17.7	Alphard	217° 53.3'	8° 44.0' S	333° 58.9'	13.7	268° 52.1'	12.1	41.3	0:7	50°	05:29	06:06	06:40	11:50	12:36	13:17					
	12	199° 01.4'	5° 47.8'	59.9	17° 00.5'	22.7	347° 39.3'	38.1	295° 29.4'	17.8				348° 59.0'	14.6	283° 23.2'	12.1	42.0	0:6	45°	05:26	06:00	06:30	11:32	12:19	13:01					
	13	214° 03.9'	20° 47.4'	4° 01.1' S	32° 01.6'	0° 22.1' N	2° 41.3'	11° 38.3' S	310° 31.6'	22° 17.8' S	Alphecca	126° 08.9'	26° 39.6' N	3° 59.0'	12° 15.5' S	297° 54.3'	12.1	19° 42.6' S	0:5	54:1	N 40°	05:23	05:55	06:22	11:17	12:04	12:48				
	14	229° 06.4'	35° 46.9'	02.3	47° 02.6'	21.5'	17° 43.2'	38.5	325° 33.8'	17.8				18° 59.1'	16.3	312° 25.4'	12.1	43.1	0:5	52°	05:20	05:50	06:16	11:05	11:52	12:36					
	15	244° 08.8'	50° 46.5'	03.5	62° 03.6'	20.8	32° 45.2'	38.6	340° 36.0'	17.8	Altair	62° 05.4'	8° 55.2' N	33° 59.2'	17.2	326° 56.5'	12.1	43.6	0:3	30°	05:17	05:45	06:09	10:54	11:42	12:27					
	16	259° 11.3'	65° 46.1'	04.7	77° 04.6'	20.2	47° 47.1'	38.8	355° 38.3'	17.8	Ankaa	353° 12.5'	42° 12.7' S	48° 59.2'	18.0	341° 27.6'	12.1	43.9	0:3	20°	05:10	05:36	05:59	10:36	11:24	12:09					
	17	274° 13.7'	80° 45.7'	05.9	92° 05.6'	19.6	62° 49.0'	39.0	10° 40.5'	17.8	Antares	112° 23.0'	26° 28.0' S	63° 59.3'	18.9	355° 58.7'	12.1	44.2	0:1	10°	05:03	05:28	05:49	10:20	11:08	11:55					
	18	289° 16.2'	95° 45.3'	07.2	107° 06.6'	18.9	77° 51.0'	39.2	25° 42.7'	17.8				78° 59.4'	19.7	10° 29.8'	12.1	44.3	0:1	0°	04:55	05:19	05:41	10:05	10:53	11:41					
	19	304° 18.7'	110° 44.9'	08.4	122° 07.7'	18.3	92° 52.9'	39.4	40° 45.0'	17.9	Arcturus	145° 53.4'	19° 05.7' N	93° 59.4'	20.6	25° 00.9'	12.1	44.4	0:0	54:2	S 10°	04:45	05:10	05:32	09:50	10:38	11:27				
	20	319° 21.1'	125° 44.5'	09.6	137° 08.7'	17.7	107° 54.9'	39.6	55° 47.2'	17.9	Atria	107° 22.5'	69° 03.5' S	108° 59.5'	21.5	39° 32.0'	12.1	44.4	0:2	20°	04:32	04:59	05:22	09:34	10:22	11:12					
	21	334° 23.6'	140° 44.1'	10.8	152° 09.7'	17.0	122° 56.8'	39.8	70° 49.4'	17.9	Avior	234° 16.8'	59° 33.7' S	123° 59.6'	22.3	54° 03.1'	12.0	44.2	0:2	30°	04:16	04:46	05:11	09:16	10:04	10:55					
	22	349° 26.1'	155° 43.6'	12.0	167° 10.7'	16.4	137° 58.8'	39.9	85° 51.6'	17.9	Bellatrix	278° 28.6'	6° 21.8' N	138° 59.6'	23.2	68° 34.1'	12.1	44.0	0:3	35°	04:06	04:38	05:04	09:05	09:53	10:45					
23	4° 28.5'	170° 43.2'	13.2	182° 11.7'	15.8	153° 00.7'	40.1	100° 53.9'	17.9	Betelgeuse	270° 57.9'	7° 24.5' N	153° 59.7'	24.0	83° 05.2'	12.1	43.7	0:4	40°	03:53	04:28	04:57	08:53	09:41	10:33						
24	19° 31.0'	185° 42.8'	14.4	197° 12.7'	15.1	168° 02.6'	40.3	115° 56.1'	17.9				168° 59.8'	24.9	97° 36.3'	12.1	43.3	0:4	45°	03:38	04:16	04:48	08:39	09:27	10:20						
26	00	34° 33.5'	200° 42.4'	4° 15.7' S	212° 13.8'	0° 14.5' N	183° 04.6'	11° 40.5' S	130° 58.3'	22° 18.0' S	Canopus	263° 54.6'	52° 42.2' S	183° 59.8'	12° 25.7' S	112° 07.4'	12.0	19° 42.9' S	0:6	54:2	S 50°	03:18	04:02	04:37	08:21	09:10	10:04				
	01	49° 35.9'	215° 42.0'	16.9	227° 14.8'	13.9	198° 06.5'	40.7	146° 00.6'	18.0	Capella	280° 29.8'	46° 00.6' N	198° 59.9'	26.6	126° 37.4'	12.1	42.3	0:7	52°	03:08	03:55	04:32	08:13	09:01	09:56					
	02	64° 38.4'	230° 41.6'	18.1	242° 15.8'	13.3	213° 08.5'	40.9	161° 02.8'	18.0	Deneb	49° 29.4'	45° 21.0' N	214° 00.0'	27.4	141° 09.5'	12.0	41.6	0:7	54°	02:57	03:47	04:27	08:04	08:52	09:47					
	03	79° 40.9'	245° 41.2'	19.3	257° 16.8'	12.6	228° 10.4'	41.1	176° 05.0'	18.0	Denebola	182° 31.0'	14° 28.5' N	229° 00.0'	28.3	150° 40.6'	12.0	40.9	0:9	56°	02:44	03:39	04:21	07:53	08:42	09:38					
	04	94° 43.3'	260° 40.7'	20.5	272° 17.8'	12.0	243° 12.3'	41.3	191° 07.2'	18.0	Diphda	348° 52.7'	17° 53.4' S	244° 00.1'	29.1	170° 11.6'	12.1	40.0	0:9	58°	02:28	03:29	04:14	07:42	08:30	09:27					
	05	109° 45.8'	275° 40.3'	21.7	287° 18.8'	11.4	258° 14.3'	41.4	206° 09.5'	18.0				259° 00.2'	30.0	184° 42.7'	12.1	39.1	1:0	S 60°	02:08	03:17	04:06	07:28	08:16	09:14					
	06	124° 48.2'	290° 39.9'	22.9	302° 19.9'	10.7	273° 16.2'	41.6	221° 11.7'	18.0	Dubhe	193° 48.7'	61° 39.2' N	274° 00.2'	30.9	199° 13.8'	12.0	39.1	1:1	54:2	S 62°	01:43	03:04	03:57	07:11	08:00	08:59				
	07	139° 50.7'	305° 39.5'	24.2	317° 20.9'	10.1	288° 18.2'	41.8	236° 13.9'	18.1	Elnath	278° 08.7'	28° 37.1' N	289° 00.3'	31.7	213° 44.8'	12.1	37.0	1:2												
	08	154° 53.2'	320° 39.1'	25.4	332° 21.9'	09.5	303° 21.1'	42.0	251° 16.1'	18.1	Eltanin	90° 45.1'	51° 29.6' N	304° 00.4'	32.6	228° 15.9'	12.1	35.8	1:3												
	09	169° 55.6'	335° 38.7'	26.6	347° 22.9'	08.8	318° 22.0'	42.2	266° 18.4'	18.1	Enif	33° 44.1'	9° 57.6' N	319° 00.4'	33.4	242° 47.0'	12.0	34.5	1:4	54:3	Lat	Sunset	Twilight	25	Moonset	26	27				
	10	184° 58.1'	350° 38.3'	27.8	2° 23.9'	08.2	333° 24.0'	42.4	281° 20.6'	18.1	Fomalhaut	15° 20.6'	29° 31.7' S	334° 00.5'	34.3	257° 18.0'	12.1	33.1	1:5												
	11	200° 00.6'	5° 37.8'	29.0	17° 25.0'	07.6	348° 25.9'	42.6	296° 22.8'	18.1				349° 00.5'	35.1	271° 49.1'	12.1	31.6	1:6												
	12	215° 03.0'	20° 37.4'	4° 30.2' S	32° 26.0'	0° 06.9' N	3° 27.9'	11° 42.7' S	311° 25.1'	22° 18.1' S	Gacrux	171° 58.1'	57° 12.5' S	4° 00.6'	12° 36.0' S	286° 20.2'	12.0	19° 30.0' S	1:6	54:3	N 72°	15:04	16:23	17:43	-	-	-				
	13	230° 05.5'	35° 37.0'	31.4	47° 27.0'	06.3	18° 29.8'	42.9	326° 27.3'	18.2	Gienah	175° 49.6'	17° 38.2' S	19° 00.7'	36.8	300° 51.2'	12.1	28.4	1:6	68°	15:40	16:41	17:47	18:07	19:07	20:24					
	14	245° 08.0'	50° 36.6'	32.6	62° 28.0'	05.7	33° 31.7'	43.1																							

2017 October 28, 29, 30 (Sat, Sun, Mon)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	28		29	30	
28 S a t u r d a y	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	05:55	07:16	08:39	16:48	16:29	16:16		
	01	36° 31' 7"	200° 22' 3"	5° 13' 8" S	213° 02' 6"	0° 15' 8" S	184° 37' 7"	11° 49' 4" S	132° 45' 1"	22° 18' 7" S	132° 45' 1"	22° 18' 7" S	Acamar	315° 15' 7"	40° 14' 1" S	184° 02' 6"	13° 06' 3" S	89° 00' 3"	12° 2'	17° 34' 0" S	4' 9"	54' 8"	N 70°	05:52	07:05	08:17	16:07	16:04	16:01		
	02	51° 34' 2"	215° 21' 9"	15' 0"	228° 03' 6"	16' 4"	199° 39' 6"	49' 6"	147° 47' 4"	18' 7"	147° 47' 4"	18' 7"	Achernar	335° 24' 1"	57° 08' 9" S	199° 02' 7"	07' 2"	103° 31' 5"	12' 2"	29' 1"	4' 9"	68°	05:49	06:56	07:59	15:39	15:45	15:49			
	03	66° 36' 7"	230° 21' 5"	16' 2"	243° 04' 6"	17' 0"	214° 41' 6"	49' 8"	162° 49' 6"	18' 7"	162° 49' 6"	18' 7"	Acruz	173° 06' 6"	63° 11' 6" S	214° 02' 7"	08' 0"	118° 02' 7"	12' 2"	24' 2"	5' 0"	54' 9"	66°	05:47	06:48	07:45	15:17	15:30	15:39		
	04	81° 39' 1"	245° 21' 0"	17' 4"	258° 05' 6"	17' 7"	229° 43' 5"	50' 0"	177° 51' 8"	18' 7"	177° 51' 8"	18' 7"	Adhara	255° 10' 1"	28° 59' 7" S	255° 10' 1"	08' 8"	132° 33' 9"	12' 2"	19' 2"	5' 1"	64°	05:45	06:41	07:33	15:00	15:17	15:30			
	05	96° 41' 6"	260° 20' 6"	18' 6"	273° 06' 7"	18' 3"	244° 45' 5"	50' 2"	192° 54' 0"	18' 8"	192° 54' 0"	18' 8"	Aldebaran	290° 45' 7"	16° 32' 5" N	244° 02' 8"	09' 7"	147° 05' 1"	12' 2"	14' 1"	5' 2"	62°	05:43	06:35	07:23	14:46	15:06	15:23			
	06	111° 44' 1"	275° 20' 2"	19' 8"	288° 07' 7"	18' 9"	259° 47' 4"	50' 4"	207° 56' 2"	18' 8"	207° 56' 2"	18' 8"					259° 02' 9"	10' 5"	161° 36' 3"	12' 2"	08' 9"	5' 3"	60°	05:41	06:30	07:15	14:34	14:57	15:16		
	07	126° 46' 5"	290° 19' 8"	21' 0"	303° 08' 7"	19' 5"	274° 49' 3"	50' 5"	222° 58' 5"	18' 8"	222° 58' 5"	18' 8"	Alioth	166° 18' 7"	55° 51' 9" N	274° 02' 9"	11' 3"	176° 07' 5"	12' 3"	03' 6"	5' 3"		N 58°	05:39	06:26	07:07	14:24	14:49	15:11		
	08	141° 49' 0"	305° 19' 3"	22' 2"	318° 09' 7"	20' 2"	289° 51' 3"	50' 7"	238° 00' 7"	18' 8"	238° 00' 7"	18' 8"	Alkaid	152° 57' 1"	49° 13' 6" N	289° 03' 0"	12' 2"	190° 38' 8"	12' 2"	16° 58' 3" S	5' 4"	55' 0"	56°	05:38	06:22	07:01	14:15	14:42	15:06		
	09	156° 51' 5"	320° 18' 9"	23' 4"	333° 10' 7"	20' 8"	304° 53' 2"	50' 9"	253° 02' 9"	18' 8"	253° 02' 9"	18' 8"	Alnair	27° 39' 9"	46° 52' 6" S	304° 03' 0"	13' 0"	205° 10' 0"	12' 2"	52' 9"	5' 6"		54°	05:36	06:18	06:55	14:07	14:36	15:01		
	10	171° 53' 9"	335° 18' 5"	24' 6"	348° 11' 7"	21' 4"	319° 55' 2"	51' 1"	268° 05' 1"	18' 8"	268° 05' 1"	18' 8"	Alnilam	275° 43' 2"	1° 11' 5" S	319° 03' 1"	13' 8"	219° 41' 2"	12' 2"	47' 3"	5' 6"		52°	05:35	06:14	06:50	14:00	14:30	14:57		
	11	186° 56' 4"	350° 18' 1"	25' 8"	3° 12' 8"	22' 1"	334° 57' 1"	51' 3"	283° 07' 3"	18' 9"	283° 07' 3"	18' 9"	Alphard	217° 53' 3"	8° 44' 0" S	334° 03' 1"	14' 7"	234° 12' 4"	12' 3"	41' 7"	5' 6"		50°	05:33	06:11	06:45	13:53	14:25	14:53		
	12	201° 58' 8"	5° 17' 6"	27' 0"	18° 13' 8"	22' 7"	349° 59' 0"	51' 5"	298° 09' 6"	18' 9"	298° 09' 6"	18' 9"					349° 03' 2"	15' 5"	248° 43' 7"	12' 2"	36' 1"	5' 8"	55' 1"	45°	05:30	06:04	06:34	13:39	14:13	14:45	
	13	217° 01' 3"	20° 17' 2"	5° 28' 2" S	33° 14' 8"	0° 23' 3" S	5° 01' 0"	11° 51' 7" S	313° 11' 8"	22° 18' 9" S	313° 11' 8"	22° 18' 9" S	Alphecca	126° 08' 9"	26° 39' 6" N	4° 03' 2"	13° 16' 3" S	263° 14' 9"	12' 2"	36° 30' 3" S	5' 9"	55' 1"	N 40°	05:26	05:58	06:26	13:27	14:04	14:39		
	14	232° 03' 38"	35° 16' 8"	29' 4"	48° 15' 8"	24' 0"	20° 23' 2"	51' 8"	328° 14' 0"	18' 9"	328° 14' 0"	18' 9"	Alpheratz	357° 40' 1"	29° 11' 4" N	19° 03' 2"	17' 2"	277° 46' 1"	12' 3"	24' 4"	5' 9"		35°	05:22	05:52	06:18	13:18	13:56	14:33		
	15	247° 06' 2"	50° 16' 4"	30' 6"	63° 16' 8"	24' 6"	35° 04' 9"	52' 0"	343° 16' 2"	18' 9"	343° 16' 2"	18' 9"	Altair	62° 05' 4"	8° 55' 2" N	34° 03' 3"	18' 0"	292° 17' 4"	12' 2"	18' 5"	6' 0"		30°	05:19	05:47	06:12	13:09	13:49	14:28		
	16	262° 08' 7"	65° 15' 9"	31' 8"	78° 17' 9"	25' 2"	50° 06' 8"	52' 2"	358° 18' 5"	18' 9"	358° 18' 5"	18' 9"	Ankaa	353° 12' 5"	42° 12' 7" S	49° 03' 3"	18' 8"	306° 48' 6"	12' 3"	12' 5"	6' 1"	55' 2"	20°	05:12	05:38	06:00	12:54	13:37	14:19		
	17	277° 11' 2"	80° 15' 5"	33' 0"	93° 18' 9"	25' 9"	65° 08' 7"	52' 4"	13° 20' 7"	18' 9"	13° 20' 7"	18' 9"	Antares	112° 23' 0"	26° 28' 0" S	64° 03' 4"	19' 7"	321° 19' 9"	12' 2"	06' 4"	6' 2"		N 10°	05:03	05:28	05:50	12:41	13:26	14:11		
	18	292° 13' 6"	95° 15' 1"	34' 3"	108° 19' 9"	26' 5"	80° 10' 7"	52' 6"	28° 22' 9"	19' 0"	28° 22' 9"	19' 0"					79° 03' 4"	20' 5"	335° 51' 1"	12' 3"	00' 2"	6' 2"	0°	04:54	05:19	05:40	12:28	13:16	14:03		
	19	307° 16' 1"	110° 14' 6"	35' 5"	123° 20' 9"	27' 1"	95° 12' 6"	52' 8"	43° 25' 1"	19' 0"	43° 25' 1"	19' 0"	Arcturus	145° 53' 4"	19° 05' 6" N	94° 03' 5"	21' 3"	350° 22' 4"	12' 2"	15° 54' 0" S	6' 4"		S 10°	04:44	05:09	05:31	12:16	13:06	13:56		
	20	322° 18' 6"	125° 14' 2"	36' 7"	138° 21' 9"	27' 7"	110° 14' 6"	52' 9"	58° 27' 3"	19' 0"	58° 27' 3"	19' 0"	Atria	107° 22' 6"	69° 03' 5" S	109° 03' 5"	22' 2"	4° 53' 6"	12' 3"	47' 6"	6' 4"	55' 3"	20°	04:30	04:57	05:20	12:03	12:55	13:48		
	21	337° 21' 0"	140° 13' 8"	37' 9"	153° 22' 9"	28' 4"	125° 16' 5"	53' 1"	73° 29' 6"	19' 0"	73° 29' 6"	19' 0"	Avior	234° 16' 7"	59° 33' 7" S	124° 03' 6"	23' 0"	19° 24' 9"	12' 3"	41' 2"	6' 5"		30°	04:13	04:43	05:08	11:48	12:42	13:39		
	22	352° 23' 5"	155° 13' 4"	39' 1"	168° 24' 0"	29' 0"	140° 18' 4"	53' 3"	88° 31' 8"	19' 0"	88° 31' 8"	19' 0"	Bellatrix	278° 28' 6"	6° 21' 8" N	139° 03' 6"	23' 8"	33° 56' 2"	12' 2"	34' 7"	6' 6"		35°	04:02	04:34	05:01	11:39	12:35	13:34		
23	7° 25' 9"	170° 12' 9"	40' 3"	183° 25' 0"	29' 6"	155° 20' 4"	53' 5"	103° 34' 0"	19' 0"	103° 34' 0"	19' 0"	Betelgeuse	270° 57' 9"	7° 24' 5" N	154° 03' 6"	24' 7"	48° 27' 4"	12' 3"	28' 1"	6' 6"		40°	03:49	04:24	04:53	11:29	12:27	13:28			
	22° 28' 4"	185° 12' 5"	41' 5"	198° 26' 0"	30' 3"	170° 22' 3"	53' 7"	118° 36' 2"	19' 0"	118° 36' 2"	19' 0"					169° 03' 7"	25' 5"	62° 58' 7"	12' 3"	21' 5"	6' 8"	55' 4"	45°	03:32	04:11	04:43	11:17	12:17	13:21		
29 S u n d a y	00	37° 30' 9"	200° 12' 1"	5° 42' 7" S	213° 27' 0"	0° 30' 9" S	185° 24' 2"	11° 53' 9" S	133° 38' 4"	22° 19' 1" S	133° 38' 4"	22° 19' 1" S	Canopus	263° 54' 6"	52° 42' 2" S	184° 03' 7"	13° 26' 3" S	77° 30' 0"	12' 3"	15° 14' 7" S	6' 8"	55' 4"	S 50°	03:11	03:56	04:32	11:03	12:06	13:13		
	01	52° 33' 3"	215° 11' 7"	43' 9"	228° 28' 0"	31' 5"	200° 26' 2"	54' 1"	148° 40' 7"	19' 1"	148° 40' 7"	19' 1"	Capella	280° 29' 8"	46° 00' 7" N	199° 03' 7"	27' 1"	92° 01' 2"	12' 2"	07' 9"	6' 9"	52°	03:00	03:49	04:26	10:56	12:00	13:09			
	02	67° 35' 8"	230° 11' 2"	45' 1"	243° 29' 0"	32' 2"	215° 28' 1"	54' 2"	163° 42' 9"	19' 1"	163° 42' 9"	19' 1"	Deneb	49° 29' 4"	45° 21' 0" N	214° 03' 8"	28' 0"	106° 32' 5"	12' 3"	01' 0"	7' 0"		54°	02:48	03:40	04:20	10:48	11:55	13:04		
	03	82° 38' 3"	245° 10' 8"	46' 3"	258° 30' 1"	32' 8"	230° 30' 1"	54' 4"	178° 45' 1"	19' 1"	178° 45' 1"	19' 1"	Denebola	182° 31' 0"	14° 28' 5" S	229° 03' 9"	28' 8"	121° 03' 8"	12' 3"	14° 54' 0" S	7' 0"	55' 5"	56°	02:34	03:31	04:14	10:40	11:48	13:00		
	04	97° 40' 7"	260° 10' 4"	47' 5"	273° 31' 1"	33' 4"	245° 32' 0"	54' 6"	193° 47' 3"	19' 1"	193° 47' 3"	19' 1"	Diphda	348° 52' 7"	17° 53' 4" S	244° 03' 9"	29' 6"	135° 35' 1"	12' 3"	47' 0"	7' 1"		58°	02:16	03:20	04:06	10:31	11:40	12:54		
	05	112° 43' 2"	275° 09' 9"	48' 7"	288° 32' 1"	34' 0"	260° 33' 9"	54' 8"	208° 49' 5"	19' 1"	208° 49' 5"	19' 1"					259° 03' 9"	30' 5"	150° 06' 4"	12' 3"	39' 9"	7' 2"	S 60°	01:54	03:07	03:58	10:20	11:32	12:49		
	06	127° 45' 7"	290° 09' 5"	49' 9"	303° 33' 1"	34' 7"	275° 35' 9"	55' 0"	223° 51' 8"	19' 2"	223° 51' 8"	19' 2"	Dubhe	193° 48' 6"	61° 39' 1" N	274° 04' 0"	31' 3"	164° 37' 7"	12' 2"	32' 7"	7' 3"		S 62°	01:24	02:52	03:48	10:07	11:22	12:42		
	07	142° 48' 1"	305° 09' 1"	51' 1"	318° 34' 1"	35' 3"	290° 37' 8"	55' 2"	238° 54' 0"	19' 2"	238° 54' 0"	19' 2"	Elnath	278° 08' 6"	28° 37' 1" N	289° 04' 0"	32' 1"	179° 08' 9"	12' 3"	25' 4"	7' 4"		55' 6"								
	08	157° 50' 6"	320° 08' 6"	52' 3"	333° 35' 1"	35' 9"	305° 39' 8"	55' 4"	253° 56' 2"																						

2017 Oct 31, Nov. 1, 2 (Tue, Wed, Thur)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	31		1	2	
Tuesday	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	06:07	07:30	08:58	16:06	15:56	15:47				
	01	39° 29.2'	199° 51.2'	6° 40.2' S	214° 15.8'	1° 01.1' S	186° 57.3'	12° 02.7' S	135° 24.8'	22° 19.8' S	Acamar	315° 15.7'	40° 14.1' S	184° 05.4'	14° 05.7' S	199° 05.4'	06.5	54° 28.5'	12.1	8° 26.3' S	10.1	56.9	N 70°	06:03	07:17	08:31	15:58	15:55	15:51		
	02	54° 31.6'	214° 50.8'	41.4	229° 16.9'	01.8	201° 59.3'	02.9	150° 27.1'	19.8	Achernar	335° 24.1'	57° 08.9' S	199° 05.4'	06.5	68° 59.6'	12.0	16.2	10.2	57.0	68°	05:59	07:06	08:11	15:51	15:53	15:55				
	03	69° 34.1'	229° 50.3'	42.6	244° 17.9'	02.4	217° 01.2'	03.1	165° 29.3'	19.8	Acruz	173° 06.5'	63° 11.6' S	214° 05.4'	07.3	83° 30.6'	11.9	06.0	10.2		66°	05:56	06:57	07:56	15:46	15:52	15:58				
	04	84° 36.5'	244° 49.9'	43.7	259° 18.9'	03.0	232° 03.2'	03.3	180° 31.5'	19.8	Adhara	255° 10.1'	28° 59.7' S	229° 05.5'	08.1	98° 01.5'	12.0	7° 55.8' S	10.2		64°	05:53	06:50	07:43	15:41	15:51	16:01				
	05	99° 39.0'	259° 49.5'	44.9	274° 19.9'	03.6	247° 05.1'	03.5	195° 33.7'	19.9	Aldebaran	290° 45.7'	16° 32.5' N	244° 05.5'	08.9	112° 32.5'	12.0	45.6	10.3	57.1	62°	05:50	06:43	07:32	15:37	15:50	16:04				
	06	114° 41.5'	274° 49.0'	46.1	289° 20.9'	04.3	262° 07.0'	03.6	210° 35.9'	19.9				259° 05.5'	09.7	127° 03.5'	11.9	35.3	10.4		60°	05:48	06:37	07:23	15:33	15:49	16:06				
	07	129° 43.9'	289° 48.6'	47.3	304° 21.9'	04.9	277° 09.0'	03.8	225° 38.1'	19.9	Alioth	166° 18.7'	55° 51.8' N	274° 05.5'	10.5	141° 34.4'	11.9	24.9	10.4		N 58°	05:46	06:32	07:14	15:30	15:49	16:08				
	08	144° 46.4'	304° 48.1'	48.5	319° 23.0'	05.5	292° 10.9'	04.0	240° 40.3'	19.9	Alkaid	152° 57.1'	49° 13.6' N	289° 05.6'	11.3	156° 05.3'	11.9	14.5	10.4	57.2	56°	05:43	06:28	07:07	15:27	15:48	16:09				
	09	159° 48.9'	319° 47.7'	49.7	334° 24.0'	06.2	307° 12.8'	04.2	255° 42.6'	19.9	Alnair	27° 39.9'	46° 52.6' S	304° 05.6'	12.1	170° 36.2'	11.9	04.1	10.5		54°	05:41	06:23	07:01	15:25	15:48	16:11				
	10	174° 51.3'	334° 47.3'	50.9	349° 25.0'	06.8	322° 14.8'	04.4	270° 44.8'	19.9	Alnilam	275° 43.2'	1° 11.5' S	319° 05.6'	12.9	185° 07.1'	11.9	6° 53.6' S	10.6	57.3	52°	05:39	06:19	06:55	15:22	15:47	16:12				
	11	189° 53.8'	349° 46.8'	52.1	4° 26.0'	07.4	337° 16.7'	04.6	285° 47.0'	19.9	Alphard	337° 16.7'	8° 44.1' S	334° 05.6'	13.7	199° 38.0'	11.8	43.0	10.6		50°	05:38	06:16	06:50	15:20	15:47	16:13				
	12	204° 56.3'	4° 46.4'	53.3	19° 27.0'	08.0	352° 18.7'	04.7	300° 49.2'	20.0				349° 05.7'	14.5	214° 08.8'	11.8	32.4	10.6		45°	05:33	06:08	06:39	15:16	15:46	16:16				
	13	219° 58.7'	19° 45.9'	6° 54.5' S	34° 28.0'	1° 08.7' S	7° 20.6'	12° 04.9' S	315° 51.4'	22° 20.0' S	Alphecca	126° 08.9'	26° 39.6' N	4° 05.7'	14° 15.3' S	228° 39.6'	11.8	6° 21.8' S	10.7	57.4	N 40°	05:29	06:01	06:29	15:12	15:45	16:19				
	14	235° 01.2'	34° 45.5'	55.7	64° 30.1'	09.9	22° 22.5'	05.1	330° 53.6'	20.0				19° 05.7'	16.2	243° 10.4'	11.8	11.1	10.8		35°	05:25	05:55	06:21	15:08	15:44	16:21				
	15	250° 03.7'	49° 45.0'	56.8	64° 30.1'	09.9	37° 24.5'	05.3	345° 55.8'	20.0	Altair	62° 05.5'	8° 55.2' N	34° 05.7'	17.0	257° 41.2'	11.7	00.3	10.8		30°	05:21	05:49	06:14	15:05	15:43	16:22				
	16	265° 06.1'	64° 44.6'	58.0	79° 31.1'	10.6	52° 26.4'	05.5	0° 58.1'	20.0	Ankaa	353° 12.5'	42° 12.7' S	49° 05.8'	17.8	272° 11.9'	11.8	5° 49.5' S	10.8	57.5	20°	05:13	05:39	06:02	15:00	15:42	16:26				
	17	280° 08.6'	79° 44.1'	59.2	94° 32.1'	11.2	67° 28.4'	05.7	16° 00.3'	20.0	Antares	112° 23.0'	26° 28.0' S	64° 05.8'	18.6	286° 42.7'	11.7	38.7	10.9		N 10°	05:04	05:29	05:51	14:56	15:41	16:28				
	18	295° 11.0'	94° 43.7'	7° 00.4' S	109° 33.1'	11.8	82° 30.3'	05.8	31° 02.5'	20.1				79° 05.8'	19.4	301° 13.4'	11.7	27.8	10.9	57.6	0°	04:54	05:19	05:40	14:51	15:40	16:31				
	19	310° 13.5'	109° 43.3'	01.6	124° 34.2'	12.4	97° 32.2'	06.0	46° 04.7'	20.1	Arcturus	145° 53.4'	19° 05.6' N	94° 05.8'	20.2	315° 44.1'	11.6	16.9	11.0		S 10°	04:42	05:08	05:30	14:47	15:40	16:34				
	20	325° 16.0'	124° 42.8'	02.8	139° 35.2'	13.1	112° 34.2'	06.2	61° 06.9'	20.1	Atria	107° 22.6'	69° 03.5' S	109° 05.8'	21.0	330° 14.7'	11.7	05.9	11.0		20°	04:28	04:55	05:18	14:43	15:39	16:37				
	21	340° 18.4'	139° 42.4'	04.0	154° 36.2'	13.7	127° 36.1'	06.4	76° 09.1'	20.1	Avior	234° 16.7'	59° 33.7' S	124° 05.9'	21.8	344° 45.4'	11.6	4° 54.9' S	11.0	57.7	30°	04:10	04:40	05:05	14:37	15:38	16:40				
	22	355° 20.9'	154° 41.9'	05.2	169° 37.2'	14.3	142° 38.1'	06.6	91° 11.3'	20.1	Bellatrix	278° 28.6'	6° 21.8' N	139° 05.9'	22.6	359° 16.0'	11.5	43.9	11.1		35°	03:58	04:31	04:58	14:34	15:37	16:42				
23	25° 25.8'	184° 41.0'	07.5	199° 39.2'	15.6	172° 41.9'	06.9	121° 15.8'	20.1	Betelgeuse	270° 57.9'	7° 24.5' N	154° 05.9'	23.4	13° 46.5'	11.6	32.8	11.2		40°	03:44	04:20	04:49	14:31	15:36	16:44					
													169° 05.9'	24.2	28° 17.1'	11.5	21.6	11.1	57.8	45°	03:27	04:07	04:39	14:27	15:36	16:47					
Wednesday	00	40° 28.3'	199° 40.6'	7° 08.7' S	214° 40.3'	1° 16.2' S	187° 43.9'	12° 07.1' S	136° 18.0'	22° 20.2' S	Canopus	263° 54.5'	52° 42.2' S	184° 05.9'	14° 25.0' S	42° 47.6'	11.5	4° 10.5' S	11.2	57.8	S 50°	03:04	03:50	04:26	14:22	15:35	16:50				
	01	55° 30.8'	214° 40.1'	09.9	229° 41.3'	16.8	202° 45.8'	07.3	151° 20.2'	20.0	Capella	280° 29.7'	46° 00.7' N	199° 06.0'	25.8	57° 18.1'	11.5	3° 59.3' S	11.3	57.9	52°	02:53	03:42	04:20	14:20	15:34	16:52				
	02	70° 33.2'	229° 39.7'	11.1	244° 42.3'	17.5	217° 47.8'	07.5	166° 22.4'	20.2	Deneb	49° 29.5'	45° 21.0' N	214° 06.0'	26.6	71° 48.6'	11.4	48.0	11.2		54°	02:39	03:33	04:14	14:18	15:34	16:53				
	03	85° 35.7'	244° 39.2'	12.3	259° 43.3'	18.1	232° 49.7'	07.7	181° 24.6'	20.2	Denebola	182° 30.9'	14° 28.5' N	229° 06.0'	27.4	86° 19.0'	11.4	36.8	11.3		56°	02:24	03:23	04:07	14:15	15:34	16:55				
	04	100° 38.1'	259° 38.8'	13.5	274° 44.3'	18.7	247° 51.6'	07.9	196° 26.8'	20.2	Diphda	348° 52.7'	17° 53.4' S	244° 06.0'	28.2	100° 49.4'	11.4	25.5	11.4	58.0	58°	02:04	03:21	03:59	14:12	15:33	16:57				
	05	115° 40.6'	274° 38.3'	14.7	289° 45.3'	19.4	262° 53.6'	08.0	211° 29.0'	20.2				259° 06.0'	29.0	115° 19.8'	11.3	14.1	11.4		S 60°	01:39	02:58	03:50	14:09	15:32	16:59				
	06	130° 43.1'	289° 37.9'	15.8	304° 46.4'	20.0	277° 55.5'	08.2	226° 31.2'	20.2	Dubhe	193° 48.6'	61° 39.1' N	274° 06.0'	29.8	129° 50.1'	11.3	02.7	11.4		S 62°	01:03	02:41	03:39	14:05	15:32	17:02				
	07	145° 45.5'	304° 37.4'	17.0	319° 47.4'	20.6	292° 57.4'	08.4	241° 33.4'	20.3	El Nath	278° 08.6'	28° 37.1' N	289° 06.1'	30.6	144° 20.4'	11.3	2° 51.3' S	11.4	58.1											
	08	160° 48.0'	319° 37.0'	18.2	334° 48.4'	21.2	307° 59.4'	08.6	256° 35.7'	20.3	Eltanin	90° 45.1'	51° 29.6' N	304° 06.1'	31.4	158° 50.7'	11.2	39.9	11.5												
	09	175° 50.5'	334° 36.5'	19.4	349° 49.4'	21.9	323° 01.3'	08.8	271° 37.9'	20.3	Enif	33° 44.2'	9° 57.6' N	319° 06.1'	32.2	173° 20.9'	11.2	28.4	11.5	58.2		Lat	Sunset								
	10	190° 52.9'	349° 36.1'	20.6	4° 50.4'	22.5	338° 03.3'	09.0	286° 40.1'	20.3	Fomalhaut	15° 20.6'	29° 31.7' S	334° 06.1'	33.0	187° 51.1'	11.2	16.9	11.5												
	11	205° 55.4'	4° 35.7'	21.8	19° 51.4'	23.1	353° 05.2'	09.1	301° 42.3'	20.3				349° 06.1'	33.8	202° 21.3'	11.2	05.4	11.5												
	12	220° 57.9'	19° 35.2'	7° 23.0' S	34° 52.5'	1° 23.8' S	8° 07.1'	12° 09.3' S	316° 44.5'	22° 20.3' S	Gacrux	171° 58.0'	57° 12.5' S	4° 06.1'	14° 34.6' S	216° 51.5'	11.1	1° 53.9' S	11.6	58.3											
	13	236° 00.3'	34° 34.7'	24.1	49° 53.5'	24.4	23° 09.1'	09.5	331° 46.7'	20.3	Genah	175° 49.5'	17° 38.2' S	19° 06.1'	35.4	2															

2017 November 3, 4, 5 (Fri, Sat, Sun)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	3		4	5				
Friday	00	42° 26.6'	199° 18.8'	8° 05.4' S	215° 29.1'	1° 46.4' S	189° 16.9'	12° 15.9' S	138° 04.0'	22° 20.9' S	Acamar	315° 15.7'	40° 14.1' S	184° 06.4'	15° 02.9' S	18° 27.6'	9.4	5° 10.4' N	11.7	59.5	N 72°	06:19	07:44	09:17	15:37	15:24	15:06				
	01	57° 29.0'	214° 18.3'	06:6	230° 30.1'	47.0	204° 18.9'	16.1	153° 06.2'	20.9	Achernar	335° 24.1'	57° 09.0' S	199° 06.4'	03:7	32° 56.0'	9.3	22.4	11.7	68°	N 70°	06:13	07:29	08:47	15:48	15:46	15:44				
	02	72° 31.5'	229° 17.9'	07:7	245° 31.1'	47.6	219° 20.8'	16.3	168° 08.4'	20.9	Acruz	173° 06.5'	63° 11.5' S	214° 06.4'	04:5	47° 24.3'	9.3	34.1	11.8	59.6	66°	06:04	07:07	08:07	16:06	16:16	16:31				
	03	87° 34.0'	244° 17.4'	08:9	260° 32.1'	48.2	234° 22.8'	16.4	183° 10.6'	20.9	Adhara	255° 10.0'	28° 59.7' S	229° 06.4'	05:3	61° 52.6'	9.2	45.9	11.6	64°	64°	06:01	06:58	07:52	16:13	16:27	16:47				
	04	102° 36.4'	259° 17.0'	10:1	275° 33.1'	48.9	249° 24.7'	16.6	198° 12.8'	20.9	Aldebaran	290° 45.7'	16° 32.5' N	244° 06.4'	06:1	76° 20.8'	9.2	57.5	11.7	62°	62°	05:57	06:51	07:40	16:19	16:37	17:01				
	05	117° 38.9'	274° 16.5'	11:3	290° 34.1'	49.5	264° 26.6'	16.8	213° 15.0'	20.9				259° 06.4'	06:8	90° 49.0'	9.1	6° 09.2' N	11.7	60°	60°	05:54	06:40	07:30	16:24	16:45	17:13				
	06	132° 41.3'	289° 16.0'	12:4	305° 35.2'	50.1	279° 28.6'	17.0	228° 17.2'	21.0	Alioth	166° 18.7'	55° 51.8' N	274° 06.4'	07:6	105° 17.1'	9.0	20.9	11.6	59.7	N 58°	05:52	06:39	07:21	16:28	16:53	17:23				
	07	147° 43.8'	304° 15.6'	13:6	320° 36.2'	50.8	294° 30.5'	17.2	243° 19.5'	21.0	Alkaid	152° 57.1'	49° 13.6' N	289° 06.4'	08:4	119° 45.1'	9.0	32.5	11.6	56°	56°	05:49	06:33	07:14	16:32	16:59	17:32				
	08	162° 46.3'	319° 15.1'	14:8	335° 37.2'	51.4	309° 32.4'	17.4	258° 21.7'	21.0	Alnair	27° 40.0'	46° 52.6' S	304° 06.4'	09:2	134° 13.1'	9.0	44.1	11.5	54°	54°	05:47	06:29	07:07	16:36	17:05	17:40				
	09	177° 48.7'	334° 14.6'	16:0	350° 38.2'	52.0	324° 34.4'	17.5	273° 23.9'	21.0	Alnilam	275° 43.1'	1° 11.5' S	319° 06.4'	09:9	148° 41.1'	8.8	55.6	11.6	59.8	52°	05:44	06:24	07:00	16:39	17:10	17:47				
	10	192° 51.2'	349° 14.2'	17:1	5° 39.2'	52.6	339° 36.3'	17.7	288° 26.1'	21.0	Alphard	217° 53.3'	8° 44.1' S	334° 06.4'	10:7	163° 08.9'	8.8	7° 07.2' N	11.5	50°	50°	05:42	06:21	06:55	16:42	17:15	17:53				
	11	207° 53.7'	4° 13.7'	18:3	20° 40.2'	53.3	354° 38.3'	17.9	303° 28.3'	21.0				349° 06.4'	11:5	177° 36.7'	8.8	18.7	11.4	45°	45°	05:37	06:12	06:43	16:49	17:26	18:07				
	12	222° 56.1'	19° 13.3'	8° 19.5' S	35° 41.3'	1° 53.9' S	9° 40.2'	12° 11.0' S	318° 30.5'	22° 21.0' S	Alphecca	126° 08.9'	26° 39.6' N	4° 06.4'	15° 12.3' S	192° 04.5'	8.7	7° 30.1' N	11.4	59.8	N 40°	05:32	06:04	06:33	16:55	17:34	18:19				
	13	237° 58.6'	34° 12.8'	20:6	50° 42.3'	54.5	24° 42.1'	18.3	333° 32.7'	21.1	Alpheratz	59° 40.2'	29° 11.4' N	19° 06.4'	13.1'	206° 32.2'	8.6	41.5	11.4	59.9	35°	05:28	05:58	06:24	16:59	17:42	18:29				
	14	253° 01.1'	49° 12.3'	21:8	65° 43.3'	55.1	39° 44.1'	18.4	348° 34.9'	21.1	Altair	62° 05.5'	8° 55.2' N	34° 06.4'	13.8	220° 59.8'	8.5	52.9	11.4	30°	30°	05:23	05:50	06:16	17:04	17:48	18:37				
	15	268° 03.5'	64° 11.9'	23:0	80° 44.3'	55.8	54° 46.0'	18.6	3° 37.1'	21.1	Ankaa	353° 12.5'	42° 12.7' S	49° 06.4'	14.6	235° 27.3'	8.5	8° 04.3' N	11.3	20°	20°	05:14	05:40	06:03	17:11	18:00	18:52				
	16	283° 06.0'	79° 11.4'	24:1	95° 45.3'	56.4	69° 48.0'	18.8	18° 39.3'	21.1	Antares	112° 23.0'	26° 28.0' S	64° 06.4'	15.4	249° 54.8'	8.5	15.6	11.3	N 10°	N 10°	05:04	05:29	05:51	17:18	18:10	19:05				
	17	298° 08.5'	94° 10.9'	25:3	110° 46.3'	57.0	84° 49.9'	19.0	33° 41.5'	21.1				79° 06.4'	16.1	264° 22.3'	8.3	26.9	11.2	60.0	0°	04:54	05:19	05:40	17:24	18:20	19:18				
	18	313° 10.9'	109° 10.5'	26:5	125° 47.4'	57.7	99° 51.8'	19.2	48° 43.7'	21.1	Arcturus	145° 53.4'	19° 05.6' N	94° 06.4'	16.9	278° 49.6'	8.3	38.1	11.2	S 10°	S 10°	04:41	05:07	05:29	17:30	18:29	19:30				
	19	328° 13.4'	124° 10.0'	27:6	140° 48.4'	58.3	114° 53.8'	19.3	63° 45.9'	21.1	Atria	107° 22.6'	69° 03.4' S	109° 06.4'	17.7	293° 16.9'	8.3	49.3	11.2	20°	20°	04:27	04:54	05:17	17:37	18:40	19:44				
	20	343° 15.8'	139° 09.5'	28:8	155° 49.4'	58.9	129° 55.7'	19.5	78° 48.1'	21.2	Avior	124° 16.7'	59° 33.8' S	124° 06.4'	18.5	307° 44.2'	8.1	9° 00.5' N	11.1	30°	30°	04:07	04:37	05:03	17:45	18:52	19:59				
	21	358° 18.3'	154° 09.1'	30:0	170° 50.4'	59.5	144° 57.7'	19.7	93° 50.3'	21.2	Bellatrix	278° 28.6'	6° 21.8' N	139° 06.4'	19.2	322° 11.3'	8.2	11.6	11.0	60.1	35°	03:55	04:28	04:55	17:49	18:59	20:08				
	22	13° 20.8'	169° 08.6'	31:1	185° 51.4'	2° 00.2' S	159° 59.6'	19.9	108° 52.5'	21.2	Betelgeuse	270° 57.9'	7° 24.5' N	154° 06.4'	20.0	336° 38.5'	8.0	22.6	11.0	40°	40°	03:40	04:16	04:45	17:55	19:06	20:18				
23	28° 23.2'	184° 08.1'	32:3	200° 52.4'	00.8	175° 01.5'	20.1	123° 54.7'	21.2				169° 06.4'	20.8	351° 05.5'	8.0	33.6	11.0	45°	45°	03:22	04:02	04:34	18:01	19:16	20:31					
Saturday	00	43° 25.7'	199° 07.7'	8° 33.5' S	215° 53.4'	2° 01.4' S	190° 03.5'	12° 20.3' S	138° 56.9'	22° 21.2' S	Canopus	263° 54.5'	52° 42.2' S	184° 06.4'	15° 21.3' S	5° 32.5'	7.9	9° 44.6' N	10.9	60.1	S 50°	02:57	03:44	04:21	18:08	19:27	20:45				
	01	58° 28.2'	214° 07.2'	34:6	230° 54.5'	02.0	205° 05.4'	20.4	153° 59.1'	21.2	Capella	280° 29.7'	46° 00.7' N	199° 06.4'	22.3	19° 54.6'	7.9	55.5	10.8	52°	52°	02:45	03:36	04:15	18:11	19:32	20:52				
	02	73° 30.6'	229° 06.7'	35:8	245° 55.5'	02.7	220° 07.3'	20.6	169° 01.3'	21.2	Deneb	49° 29.5'	45° 21.0' N	214° 06.4'	23.1	34° 26.3'	7.7	10° 06.3' N	10.8	60.2	54°	02:31	03:26	04:08	18:15	19:38	21:00				
	03	88° 33.1'	244° 06.2'	37:0	260° 56.5'	03.3	235° 09.3'	20.8	184° 03.6'	21.3	Denebola	182° 30.9'	14° 28.5' N	229° 06.4'	23.9	48° 53.0'	7.8	17.1	10.7	56°	56°	02:13	03:15	04:00	18:19	19:44	21:09				
	04	103° 35.6'	259° 05.8'	38:1	275° 57.5'	03.9	250° 11.2'	21.0	199° 05.8'	21.3	Diphda	348° 52.7'	17° 53.4' S	244° 06.3'	24.6	63° 19.8'	7.6	27.8	10.7	58°	58°	01:52	03:03	03:52	18:24	19:52	21:18				
	05	118° 38.0'	274° 05.3'	39:3	290° 58.5'	04.5	265° 13.2'	21.2	214° 08.0'	21.3				259° 06.3'	25.4	77° 46.4'	7.6	38.5	10.6	S 60°	S 60°	01:23	02:48	03:42	18:29	20:00	21:30				
	06	133° 40.5'	289° 04.8'	40:5	305° 59.5'	05.2	280° 15.1'	21.3	229° 10.2'	21.3	Dubhe	193° 48.6'	61° 39.1' N	274° 06.3'	26.2	92° 13.0'	7.5	49.1	10.6	60.3	S 62°	00:34	02:30	03:30	18:35	20:09	21:43				
	07	148° 43.0'	304° 04.4'	41:6	321° 00.6'	05.8	295° 17.0'	21.5	244° 12.4'	21.3	El Nath	278° 08.6'	28° 37.1' N	289° 06.3'	26.9	106° 39.5'	7.5	59.7	10.5												
	08	163° 45.4'	319° 03.9'	42:8	336° 01.6'	06.4	310° 19.0'	21.7	259° 14.6'	21.3	Eltanin	90° 45.2'	51° 29.6' N	304° 06.3'	27.7	121° 06.0'	7.4	11° 10.2' N	10.4												
	09	178° 47.9'	334° 03.4'	44:0	351° 02.6'	07.1	325° 20.9'	21.9	274° 16.8'	21.3	Enif	33° 44.2'	9° 57.6' N	319° 06.3'	28.5	135° 32.4'	7.3	20.6	10.3												
	10	193° 50.3'	349° 02.9'	45:1	6° 03.6'	07.7	330° 22.9'	22.1	289° 19.0'	21.4	Fomalhaut	15° 20.6'	29° 31.7' S	334° 06.3'	29.2	149° 58.7'	7.3	30.9	10.3												
	11	208° 52.8'	4° 02.5'	46:3	21° 04.6'	08.3	355° 24.8'	22.3	304° 21.2'	21.4				349° 06.3'	30.0	164° 25.0'	7.2	41.2	10.2												
	12	223° 55.3'	19° 02.0'	8° 47.5' S	36° 05.6'	2° 08.9' S	10° 26.7'	12° 22.4' S	319° 23.4'	22° 21.4' S	Gacrux	171° 58.0'	57° 12.5' S	4° 06.3'	15° 30.8' S	178° 51.2'	7.1	11° 51.4' N	10.2	60.4	N 72°	14:08	15:42	17:07	06:18	08:25	10:44				
	13	238° 57.7'	34° 01.5'	48:6	51° 06.7'	09.6	25° 28.7'	22.6	334° 25.6'	21.4	Genah	175° 49.5'	17° 38.2' S	19° 06.3'	31.5	193° 17.3'	7.1	12° 01.6' N	10.1												

2017 November 6, 7, 8 (Mon, Tue, Wed)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																										Nautical	Civil		6	7	8
Monday	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	06:30	07:57	09:39	-	-	-		
	01	45° 24.0	198° 44.8	9° 29.1 S	216° 42.2	2° 31.5 S	191° 36.5	12° 28.9 S	140° 42.6	22° 21.9 S	Acamar	315° 15.7	40° 14.1 S	184° 05.6	15° 58.0 S	337° 53.9	5.1	17° 00.6 N	6.7	60.7		N 70°	06:23	07:41	09:03	15:44	15:55	17:05			
	02	60° 26.4	213° 44.3	30.2	231° 43.2	32.1	206° 38.5	29.1	155° 44.8	21.9	Achernar	335° 24.1	57° 09.0 S	199° 05.6	58.8	352° 18.0	5.1	07.3	6.5			N 68°	06:18	07:27	08:37	16:27	17:01	18:07			
	03	75° 28.9	228° 43.8	31.4	246° 44.2	32.7	221° 40.4	29.3	170° 47.0	21.9	Acruz	173° 06.5	63° 11.5 S	214° 05.6	59.5	6° 42.1	5.0	13.8	6.4			N 66°	06:13	07:16	08:18	16:55	17:37	18:42			
	04	90° 31.4	243° 43.3	32.5	261° 45.2	33.3	236° 42.4	29.5	185° 49.2	21.9	Adhara	255° 10.0	28° 59.7 S	229° 05.6	16° 00.3 S	21° 06.1	5.0	20.2	6.3			N 64°	06:08	07:06	08:02	17:17	18:03	19:07			
	05	105° 33.8	258° 42.8	33.7	276° 46.3	34.0	251° 44.3	29.7	200° 51.4	22.0	Aldebaran	290° 45.7	16° 32.5 N	244° 05.5	01.0	35° 30.1	4.9	26.5	6.1			N 62°	06:04	06:58	07:49	17:35	18:23	19:27			
	06	120° 36.3	273° 42.3	34.8	291° 47.3	34.6	266° 46.2	29.8	215° 53.6	22.0				259° 05.5	01.7	49° 54.0	4.9	32.6	6.1			N 60°	06:01	06:51	07:38	17:50	18:40	19:43			
	07	135° 38.8	288° 41.9	36.0	306° 48.3	35.2	281° 48.2	30.0	230° 55.8	22.0	Alioth	166° 18.7	55° 51.8 N	274° 05.5	02.5	64° 17.9	4.8	38.7	5.9			N 58°	05:57	06:45	07:28	18:02	18:54	19:57			
	08	150° 41.2	303° 41.4	37.1	321° 49.3	35.8	296° 50.1	30.2	245° 58.0	22.0	Alkaid	152° 57.1	49° 13.6 N	289° 05.5	03.2	78° 41.7	4.8	44.6	5.7			N 56°	05:54	06:39	07:20	18:13	19:06	20:09			
	09	165° 43.7	318° 40.9	38.3	336° 50.3	36.5	311° 52.1	30.4	261° 00.2	22.0	Alkair	27° 40.0	46° 52.6 S	304° 05.4	0.0	93° 05.5	4.8	50.3	5.7			N 54°	05:52	06:34	07:13	18:23	19:16	20:19			
	10	180° 46.2	333° 40.4	39.4	351° 51.3	37.1	326° 54.0	30.6	276° 02.4	22.0	Alnilam	275° 43.1	1° 11.5 S	319° 05.4	04.7	107° 29.3	4.8	56.0	5.5	60.6		N 52°	05:49	06:29	07:06	18:32	19:25	20:28			
	11	195° 48.6	348° 39.9	40.6	6° 52.3	37.7	341° 55.9	30.7	291° 04.6	22.0	Alphard	217° 53.2	8° 44.1 S	334° 05.4	05.5	121° 53.1	4.7	18° 01.5 N	5.4			N 50°	05:46	06:25	07:00	18:39	19:34	20:36			
	12	210° 51.1	3° 39.4	41.7	21° 53.4	38.3	356° 57.9	30.9	306° 06.8	22.1				349° 05.4	06.2	136° 16.8	4.7	06.9	5.3			N 45°	05:41	06:16	06:47	18:56	19:52	20:54			
	13	225° 53.6	18° 38.9	9° 42.9 S	36° 54.4	2° 39.0 S	11° 59.8	12° 31.1 S	321° 09.0	22° 22.1 S	Alphecca	126° 08.9	26° 39.6 N	4° 05.3	16° 07.0 S	150° 40.5	4.6	18° 12.2 N	5.1	60.6		N 40°	05:35	06:08	06:36	19:09	20:06	21:08			
	14	240° 56.0	33° 38.4	44.0	51° 55.4	39.6	27° 01.7	31.3	336° 11.2	22.1	Alpheratz	357° 40.2	29° 11.4 N	19° 05.3	07.7	165° 00.4	4.7	17.3	5.0			N 35°	05:30	06:00	06:27	19:21	20:18	21:20			
	15	255° 58.5	48° 38.0	45.2	66° 56.4	40.2	42° 03.7	31.5	351° 13.4	22.1	Altair	62° 05.5	8° 55.2 N	34° 05.3	08.4	179° 27.8	4.6	22.3	4.8			N 30°	05:25	05:54	06:19	19:31	20:29	21:31			
	16	271° 00.9	63° 37.5	46.3	81° 57.4	40.8	57° 05.6	31.6	6° 15.6	22.1	Antares	353° 12.5	42° 12.7 S	49° 05.2	09.2	193° 51.4	4.5	27.1	4.8			N 20°	05:15	05:42	06:04	19:49	20:48	21:49			
	17	286° 03.4	78° 37.0	47.4	96° 58.4	41.5	72° 07.6	31.8	21° 17.8	22.1				64° 05.2	09.9	208° 14.9	4.6	31.9	4.6			N 10°	05:05	05:30	05:52	20:04	21:04	22:04			
	18	301° 05.9	93° 36.5	48.6	111° 59.4	42.1	87° 09.5	32.0	36° 20.0	22.1				79° 05.2	10.7	222° 38.5	4.5	38.5	4.4			0°	04:54	05:19	05:40	20:18	21:19	22:19			
	19	316° 08.3	108° 36.0	49.7	127° 00.5	42.7	102° 11.4	32.2	51° 22.2	22.2	Arcturus	145° 53.4	19° 05.6 N	94° 05.2	11.4	237° 02.0	4.5	40.9	4.4			S 10°	04:41	05:06	05:28	20:33	21:34	22:34			
	20	331° 10.8	123° 35.5	50.9	142° 01.5	43.3	117° 13.4	32.3	66° 24.4	22.2	Atria	107° 22.6	69° 03.4 S	109° 05.1	12.2	251° 25.5	4.5	45.3	4.2			N 20°	04:25	04:52	05:15	20:48	21:51	22:50			
	21	346° 13.3	138° 35.0	52.0	157° 02.5	44.0	132° 13.3	32.5	81° 26.6	22.2	Avior	234° 16.6	59° 33.8 S	124° 05.1	12.9	265° 49.0	4.5	49.5	4.0			N 20°	04:05	04:35	05:01	21:06	22:09	23:08			
	22	1° 15.7	153° 34.5	53.2	172° 03.5	44.6	147° 17.3	32.7	96° 28.8	22.2	Bellatrix	278° 28.6	6° 21.8 N	139° 05.1	13.6	280° 12.5	4.4	53.5	4.0			N 35°	03:52	04:25	04:52	21:16	22:20	23:19			
23	16° 18.2	168° 34.0	54.3	187° 04.5	45.2	162° 19.2	32.9	111° 31.0	22.2	Betelgeuse	270° 57.9	7° 24.5 N	154° 05.0	14.4	294° 35.9	4.5	57.5	3.7			N 40°	03:36	04:12	04:42	21:28	22:33	23:31				
	31° 20.7	183° 33.5	55.5	202° 05.5	45.8	177° 21.1	33.1	126° 33.2	22.2				169° 05.0	15.1	308° 59.4	4.4	19° 01.2 N	3.7			N 45°	03:17	03:58	04:30	21:42	22:48	23:45				
Tuesday	00	46° 23.1	198° 33.0	9° 56.6 S	217° 06.5	2° 46.4 S	192° 23.1	12° 33.2 S	22° 22.2 S	Canopus	263° 54.5	52° 42.2 S	184° 05.0	16° 15.8 S	323° 22.8	4.4	19° 04.9 N	3.5	60.5		S 50°	02:51	03:39	04:16	21:59	23:06	24:02				
	01	61° 25.6	213° 32.5	57.7	232° 07.6	47.1	207° 25.0	33.4	236° 37.6	22.2	Capella	280° 29.7	46° 00.7 N	199° 04.0	16.6	337° 46.2	4.4	08.4	3.4			S 52°	02:37	03:30	04:10	22:08	23:14	24:10			
	02	76° 28.1	228° 32.0	58.9	247° 08.6	47.7	222° 27.0	33.6	171° 39.8	22.3	Deneb	49° 29.5	45° 21.0 N	214° 04.9	17.3	352° 09.6	4.4	11.8	3.2			S 54°	02:22	03:20	04:02	22:17	23:24	24:20			
	03	91° 30.5	243° 31.6	10° 00.0 S	262° 09.6	48.3	252° 28.9	33.8	186° 42.0	22.3	Denebola	282° 30.9	14° 28.4 N	229° 04.0	18.1	6° 33.0	4.4	15.0	3.1			S 56°	02:03	03:08	03:54	22:27	23:35	24:30			
	04	106° 33.0	258° 31.1	01.2	277° 10.6	48.9	237° 30.8	34.0	201° 44.2	22.3	Diphda	348° 52.7	17° 53.4 S	244° 04.8	18.8	20° 56.4	4.4	18.1	2.9			S 58°	01:39	02:54	03:45	22:39	23:47	24:41			
	05	121° 35.4	273° 30.6	02.3	292° 11.6	49.6	267° 32.8	34.1	216° 46.4	22.3				259° 04.8	19.5	35° 19.8	4.4	21.0	2.9			S 60°	01:04	02:38	03:34	22:52	-	00:02			
	06	136° 37.9	288° 30.1	03.4	307° 12.6	50.2	282° 34.7	34.3	231° 48.6	22.3	Dubhe	193° 48.6	61° 39.1 N	274° 04.8	20.3	49° 43.2	4.4	23.9	2.6			S 62°	-	02:18	03:21	23:08	-	00:19			
	07	151° 40.4	303° 29.6	04.6	322° 13.6	50.8	297° 36.7	34.5	246° 50.8	22.3	Elath	278° 08.6	28° 37.1 N	289° 04.7	21.0	64° 06.6	4.3	26.5	2.6			S 60°									
	08	166° 42.8	318° 29.1	05.7	337° 14.7	51.4	312° 38.6	34.7	261° 53.0	22.4	Eltanin	90° 45.2	51° 29.6 N	304° 04.7	21.7	78° 29.9	4.4	29.1	2.4	60.4		S 60°									
	09	181° 45.3	333° 28.6	06.8	352° 15.7	52.1	327° 40.5	34.9	276° 55.2	22.4	Enif	33° 44.2	9° 57.6 N	310° 04.7	22.5	92° 53.3	4.4	31.5	2.2			S 60°									
	10	196° 47.8	348° 28.1	08.0	7° 16.7	52.7	342° 42.5	35.0	291° 57.4	22.4	Fomalhaut	15° 20.6	29° 31.8 S	334° 04.6	23.2	107° 16.7	4.4	33.7	2.1			S 60°									
	11	211° 50.2	3° 27.6	09.1	22° 17.7	53.3	357° 44.4	35.2	306° 59.6	22.4				349° 04.6	23.9	121° 40.1	4.4	35.8	2.0			S 60°									
	12	226° 52.7	18° 27.1	10° 10.3 S	37° 18.7	2° 53.9 S	12° 46.3	12° 35.4 S	322° 01.8	22° 22.4 S	Gacrux	171° 58.0	57° 12.4 S	4° 04.5	16° 24.7 S	136° 03.5	4.4	19° 37.8 N	1.8	60.4		N 72°	13:47	15:29	16:56	-	-	-			
	13	241° 55.2	33° 28.6	11.4	52° 19.7	54.6	27° 48.3	35.6	337° 03.9	22.4																					

2017 November 9, 10, 11 (Thur, Fri, Sat)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	Nautical	Civil	9		10	11				
g 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	48° 21'.4	198° 08'.9	10° 50'.9 S	217° 55'.2	3° 16'.4 S	193° 56'.2	12° 41'.8 S	143° 20'.8	22° 22'.9 S	158° 22'.9	22° 9'.0 S	Acamar	315° 15'.7	40° 14'.1 S	184° 03'.0	16° 50'.7 S	294° 21'.7	5'.6	19° 15'.9 N	3.1	59.7	N 72°	06:42	08:11	10:04	17:25	20:20	22:26			
	63° 23'.9	213° 08'.4	52.0	232° 56'.2	17.0	208° 58'.1	42.0	158° 22'.9	22.9	335° 24'.1	57° 09'.0 S	Achernar	335° 24'.1	57° 09'.0 S	199° 02'.9	51.4	308° 46'.3	5.6	12.8	3.3	59.6	N 70°	06:33	07:52	09:19	18:59	20:55	22:46			
	78° 26'.3	228° 07'.9	53.2	247° 57'.2	17.6	224° 00'.0	42.2	173° 25'.1	22.9	239° 02'.0	42.4	Acrux	173° 06'.4	63° 11'.5 S	214° 02'.9	52.1	323° 10'.9	5.8	09.5	3.3	66°	06:21	07:25	08:29	20:06	21:39	23:14				
	93° 28'.8	243° 07'.4	54.3	262° 58'.2	18.2	239° 02'.0	42.4	188° 27'.3	23.0	255° 10'.0	28° 59'.7 S	Adhara	255° 10'.0	28° 59'.7 S	337° 35'.7	5.8	06.2	3.5	64°	06:16	07:15	08:12	20:27	21:55	23:24						
	108° 31'.3	258° 06'.8	55.4	277° 59'.3	18.9	254° 03'.9	42.5	203° 29'.5	23.0	290° 45'.7	16° 32'.5 N	Aldebaran	290° 45'.7	16° 32'.5 N	244° 02'.8	53.6	352° 00'.5	5.8	02.7	3.6	62°	06:11	07:06	07:58	20:44	22:08	23:33				
	123° 33'.7	273° 06'.3	56.5	293° 00'.3	19.5	269° 05'.9	42.7	218° 31'.7	23.0	259° 02'.7	54.3	259° 02'.7	54.3	6° 25'.3	5.9	18° 57'.1 N	3.7	3.6	59.5	60°	06:07	06:58	07:46	20:58	22:18	23:41					
	138° 36'.2	288° 05'.8	57.6	308° 01'.3	20.1	284° 07'.8	42.9	233° 33'.9	23.0	304° 52'.6	55.5 51'.8 N	Alioth	166° 18'.6	55° 51'.8 N	274° 02'.7	55.0	20° 50'.2	6.0	55.4	3.8	58°	06:03	06:51	07:35	21:10	22:28	23:47				
	153° 38'.7	303° 05'.3	58.8	323° 02'.3	20.7	299° 09'.7	43.1	248° 36'.1	23.0	329° 02'.6	57.1	Alkaid	152° 57'.1	49° 13'.6 N	289° 02'.6	55.7	35° 15'.2	6.1	51.6	4.0	56°	06:00	06:45	07:26	21:20	22:36	23:53				
	168° 41'.1	318° 04'.8	59.9	338° 03'.3	21.3	314° 11'.7	43.3	263° 38'.3	23.0	347° 40.0	46.6 52'.6 S	Alnair	27° 40.0	46° 52'.6 S	304° 02'.5	56.4	49° 40'.3	6.1	47.6	4.1	54°	05:57	06:39	07:18	21:29	22:43	23:58				
	183° 43'.6	333° 04'.3	11° 01'.0 S	353° 04.3	22.0	329° 13'.6	43.4	278° 40'.5	23.0	349° 43.1	1° 11'.5 S	Alnilam	275° 43.1	1° 11'.5 S	319° 02'.5	57.1	64° 05'.4	6.1	43.5	4.2	59.4	52°	05:54	06:34	07:11	21:37	22:50	24:03			
	198° 46.0	348° 03'.8	02.1	8° 05'.3	22.6	344° 15'.6	43.6	293° 42'.7	5.8	372° 53.2	8° 44'.1 S	Alphard	217° 53.2	8° 44'.1 S	334° 02'.4	57.3	78° 30'.5	6.3	39.3	4.3	50°	05:51	06:30	07:05	21:45	22:56	24:07				
	213° 48'.5	3° 03'.2	03.2	23° 06'.3	23.2	359° 17'.5	43.8	308° 44'.9	23.1	349° 02.4	58.5	Alphecca	126° 08'.9	26° 39'.6 N	4° 02.3	16° 59'.2 S	107° 21'.1	6.3	18° 30'.0 N	4.6	59.4	N 40°	05:38	06:11	06:39	22:13	23:19	24:24			
	228° 51'.0	18° 02'.7	11° 04'.3 S	38° 07.4	3° 23'.8 S	14° 19'.4	12° 44'.0 S	323° 47'.1	22° 23'.1 S	357° 40.2	29° 11'.5 N	Alpheratz	357° 40.2	29° 11'.5 N	19° 02.3	59.9	121° 46'.4	6.5	26.0	4.6	59.3	35°	05:33	06:03	06:30	22:24	23:28	24:31			
	243° 53.4	33° 02'.2	05.5	53° 08.4	24.5	29° 21.4	44.1	338° 49.2	23.1	62° 05.5	8° 55.2 N	Altair	62° 05.5	8° 55.2 N	34° 02.2	17° 00.7 S	136° 11.9	6.5	21.4	4.8	30°	05:27	05:56	06:21	22:33	23:36	24:36				
	258° 55.9	48° 01'.7	06.6	68° 09.4	25.1	44° 23.3	44.3	353° 51.4	23.1	353° 12.5	42° 12.7 S	Antaa	353° 12.5	42° 12.7 S	49° 02.2	01.4	150° 37.4	6.5	16.6	4.9	20°	05:17	05:43	06:06	22:50	23:49	24:46				
	273° 58.4	63° 01'.2	07.7	83° 10.4	25.7	59° 25.3	44.5	8° 53.6	23.1	112° 23.0	26° 28.0 S	Antares	112° 23.0	26° 28.0 S	64° 02.1	02.1	165° 02.9	6.7	11.7	5.0	10°	05:06	05:31	05:53	23:04	-	00:01				
	289° 00.8	78° 00'.7	08.8	98° 11.4	26.3	74° 27.2	44.7	23° 55.8	23.1	89° 29.1	38° 58.0 S	Arcturus	145° 53.4	19° 05.6 N	94° 02.0	03.5	193° 54.3	6.8	01.6	5.3	S 10°	04:40	05:06	05:28	23:30	-	00:23				
	304° 03'.3	93° 00'.1	09.9	113° 12.4	26.9	104° 31.1	45.0	54° 00.2	23.2	107° 22.6	69° 03.4 S	Avior	107° 22.6	69° 03.4 S	109° 01.9	04.2	208° 20.1	6.8	17° 56.3 N	5.3	20°	04:23	04:51	05:14	23:44	-	00:34				
	319° 05.8	107° 59.6	11.0	128° 13.4	27.6	140° 21.1	45.0	54° 00.2	23.2	234° 16.6	59° 33.8 S	Avia	234° 16.6	59° 33.8 S	124° 01.9	04.9	222° 45.9	7.0	51.0	5.4	59.1	30°	04:02	04:33	04:59	-	00:01	00:48			
	334° 08.2	122° 59.1	12.1	143° 14.4	28.2	119° 33.0	45.2	69° 02.4	23.2	278° 28.6	6° 21.8 N	Bellatrix	278° 28.6	6° 21.8 N	139° 01.8	05.6	237° 11.9	7.0	45.6	5.6	35°	03:49	04:22	04:50	-	00:10	00:55				
	349° 10.7	137° 58.6	13.3	158° 15.5	28.8	134° 35.0	45.4	84° 04.6	23.2	114° 09.0	7° 24.5 N	Betelgeuse	270° 57.8	7° 24.5 N	154° 01.8	05.3	251° 37.9	7.0	40.0	5.6	40°	03:32	04:09	04:39	-	00:21	01:04				
	4° 13'.2	152° 58'.1	14.4	173° 16.5	29.4	149° 36.9	45.6	99° 06.8	23.2	129° 11'.2	23.2	Canopus	263° 54.4	52° 42.2 S	184° 01.6	17° 07.7 S	280° 30.1	7.2	17° 28'.6 N	5.9	59.0	S 50°	02:44	03:34	04:12	00:02	00:49	01:26			
	19° 15'.6	167° 57.5	15.5	188° 17.5	30.0	164° 38.8	45.7	114° 09.0	23.2	144° 13'.3	22° 23'.2 S	Capella	280° 29.7	46° 00.7 N	199° 01.6	15.4	294° 56.3	7.3	22.7	6.0	50°	02:30	03:24	04:04	00:10	00:56	01:32				
34° 18'.1	182° 57.0	16.6	203° 18.5	30.7	179° 40.8	45.9	129° 11'.2	23.2	199° 19'.5	31.9	Deneb	49° 29.5	45° 21.0 N	214° 01.5	09.1	309° 22.6	7.4	16.7	6.0	54°	02:13	03:13	03:57	00:20	01:04	01:38					
									224° 46'.6	46.4	Denebola	182° 30.9	14° 28'.4 N	229° 01.5	09.8	323° 49.0	7.4	10.7	6.2	56°	01:53	03:01	03:48	00:30	01:12	01:45					
									239° 48'.5	46.6	Diphda	348° 52.7	17° 53.4 S	244° 01.4	10.5	338° 15.4	7.5	04.5	6.3	58.9	58°	01:25	02:46	03:38	00:41	01:22	01:53				
									269° 52.4	47.0	Dubhe	193° 48'.5	61° 39.1 N	259° 01.3	11.2	352° 41.9	7.6	16° 58'.2 N	6.3	S 60°	00:41	02:28	03:26	00:55	01:34	02:02					
									284° 54.4	47.2	Elnath	278° 08'.6	28° 37.1 N	289° 01.2	12.6	21° 35.2	7.7	45.4	6.6	58.8	S 62°	-	02:06	03:13	01:11	01:47	02:12				
									299° 56'.3	47.3	Elnath	278° 08'.6	28° 37.1 N	289° 01.2	12.6	21° 35.2	7.7	45.4	6.6	58.8	S 62°	-	02:06	03:13	01:11	01:47	02:12				
									314° 58'.2	47.5	Eltanin	90° 45'.2	51° 29.6 N	304° 01.1	13.3	36° 01.9	7.8	38.8	6.6	58.8	S 62°	-	02:06	03:13	01:11	01:47	02:12				
									330° 00'.2	47.7	Enif	93° 44.2	9° 57.6 N	319° 01.1	14.0	50° 28.7	7.9	32.2	6.8	58.8	S 62°	-	02:06	03:13	01:11	01:47	02:12				
									345° 02.1	47.9	Fomalhaut	15° 20'.6	29° 31.8 S	334° 01.0	14.7	64° 55.6	8.0	25.4	6.8	58.8	S 62°	-	02:06	03:13	01:11	01:47	02:12				
									0° 04'.1	48.0	Gacrux	171° 58'.0	57° 12.4 S	349° 01.0	15.4	79° 22.6	8.0	18.6	7.0	58.7	N 72°	13:23	15:15	16:45	16:49	15:50	15:33				
									15° 06'.0	12° 48'.2 S	Gienah	175° 49'.5	17° 38.2 S	19° 00.8	16.8	108° 16.7	8.2	04.6	7.1	58.7	N 70°	14:07	15:34	16:53	15:14	15:13	15:11				
									354° 44.0	23.4	Hadar	148° 44.2	60° 27.2 S	34° 00.8	17.5	122° 43.9	8.3	15° 57.5 N	7.2	58.6	68°	14:58	15:49	17:00	14:34	14:47	14:54				
									75° 11'.8	48.7	Hamal	327° 57.1	23° 32.8 N	49° 00.7	18.2	137° 11.2	8.4	50.3	7.3	64°	15:15	16:12	17:11	13:44	14:11	14:29					
									24° 48'.4	23.5	Kaus Aust.	83° 40.2	34° 22.4 S	64° 00.6	18.9	151° 38.6	8.4	43.0	7.4	62°	15:29	16:21	17:16	13:27	13:58	14:19					
									39° 50'.6	23.5	Kochab	137° 21'.4	74° 05.1 N	79° 00.6	19.6	166° 06.0	8.5	35.6	7.5	50°	15:41	16:29	17:20	13:13	13:46	14:11					
									105° 17'.6	49.3	Markab	13° 35'.2	15° 18.2 N	94° 00.5	20.3	180° 33.5	8.6	28													

2017 November 12, 13, 14 (Sun, Mon, Tue)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	12		13	14	
Sunday	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	06:53	08:25	10:35	-	00:20	02:08		
	01	51° 18'.8	197° 31'.0	12° 10'.5 S	219° 08'.0	4° 01'.0 S	196° 15'.9	12° 54'.6 S	145° 58'.4	22° 23'.9 S	161° 00'.6	23'.9	Acamar	315° 15'.7	40° 14'.1 S	183° 58'.3	17° 40'.8 S	254° 52'.9	10.7	11° 10'.1 N	9.5	57.7	N 70°	06:43	08:04	09:38	-	00:31	02:11		
	02	66° 21'.3	212° 30'.4	11'.6	234° 09'.1	01'.7	211° 17'.8	54'.7	161° 00'.6	23'.9	54'.7	54'.7	Achernar	335° 24'.1	57° 09'.0 S	198° 58'.3	41'.5	269° 22'.6	10.8	00'.6	9.6	68°	06:35	07:48	09:04	-	00:39	02:14			
	03	81° 23'.7	227° 29'.9	12'.7	249° 10'.1	02'.3	226° 19'.7	54'.9	176° 02'.8	23'.9	54'.9	54'.9	Acruz	173° 06'.4	63° 11'.5 S	213° 58'.2	42'.2	283° 52'.4	10.9	10° 51'.0 N	9.7	57.6	66°	06:29	07:34	08:40	-	00:46	02:16		
	04	96° 26'.2	242° 29'.3	13'.8	264° 11'.1	02'.9	241° 21'.7	55'.1	191° 05'.0	23'.9	55'.1	55'.1	Adhara	255° 10'.0	28° 59'.7 S	228° 58'.1	42'.9	298° 22'.3	10.9	41'.3	9.7	64°	06:23	07:23	08:21	-	00:52	02:18			
	05	111° 28'.7	257° 28'.8	14'.8	279° 12'.1	03'.5	256° 23'.6	55'.3	206° 07'.1	23'.9	55'.3	55'.3	Aldebaran	290° 45'.6	16° 32'.5 N	243° 58'.0	43'.5	312° 52'.2	11.0	31'.6	9.7	62°	06:18	07:13	08:06	-	00:57	02:20			
	06	126° 31'.1	272° 28'.2	15'.9	294° 13'.1	04'.1	271° 25'.6	55'.4	221° 09'.3	24'.0	55'.4	55'.4					258° 57'.9	44'.2	327° 22'.2	11.1	21'.9	9.8	60°	06:13	07:05	07:53	-	01:02	02:21		
	07	141° 33'.6	287° 27'.7	17'.0	309° 14'.1	04'.8	286° 27'.5	55'.6	236° 11'.5	24'.0	55'.6	55'.6	Alioth	166° 18'.6	55° 51'.8 N	273° 57'.9	44'.9	341° 52'.3	11.1	12'.1	9.8	57.5	N 58°	06:09	06:57	07:42	-	01:06	02:23		
	08	156° 36'.1	302° 27'.1	18'.1	324° 15'.1	05'.4	301° 29'.4	55'.8	251° 13'.7	24'.0	55'.8	55'.8	Alkaid	152° 57'.1	49° 13'.5 N	288° 57'.8	45'.6	356° 22'.4	11.2	02'.3	9.9	56°	06:05	06:51	07:33	-	01:09	02:24			
	09	171° 38'.5	317° 26'.6	19'.2	339° 16'.1	06'.0	316° 31'.4	56'.0	266° 15'.9	24'.0	56'.0	56'.0	Alnair	27° 40'.0	46° 52'.6 S	303° 57'.7	46'.2	10° 52'.6 N	11.2	9° 52'.4 N	9.9	54°	06:02	06:45	07:24	-	01:12	02:25			
	10	186° 41'.0	332° 26'.1	20'.3	354° 17'.1	06'.6	331° 33'.3	56'.1	281° 18'.1	24'.0	56'.1	56'.1	Alnilam	275° 43'.1	1° 11'.5 S	318° 57'.6	46'.9	25° 22'.8	11.3	42'.5	10.0	57.4	52°	05:58	06:39	07:17	00:03	01:15	02:26		
	11	201° 43'.5	347° 25'.5	21'.4	37° 18'.1	07'.2	346° 35'.3	56'.3	296° 20'.3	24'.0	56'.3	56'.3	Alphard	217° 53'.2	8° 44'.1 S	333° 57'.5	47'.6	39° 53'.1	11.4	32'.5	10.0	50°	05:55	06:34	07:10	00:07	01:18	02:27			
	12	216° 45'.9	2° 25'.0	22'.4	24° 19'.2	07'.9	1° 37'.2	56'.5	311° 22'.4	24'.0	56'.5	56'.5					348° 57'.5	48'.3	54° 23'.5	11.4	22'.5	10.0	45°	05:48	06:23	06:55	00:16	01:23	02:29		
	13	231° 48'.4	17° 24'.4	12° 23'.5 S	39° 20'.2	4° 08'.5 S	16° 39'.1	12° 56'.7 S	326° 24'.6	22° 24'.0 S	16° 39'.1	12° 56'.7 S	Alphaeca	126° 08'.9	26° 39'.5 N	3° 57'.4	17° 48'.9 S	68° 53'.9	11.5	9° 12'.5 N	10.1	57.4	N 40°	05:41	06:14	06:43	00:24	01:28	02:30		
	14	246° 50'.9	32° 23'.9	24'.6	54° 21'.2	09'.1	31° 41'.1	56'.8	341° 26'.8	24'.1	56'.8	56'.8	Alpheratz	357° 40'.2	29° 11'.5 N	18° 57'.3	49'.6	83° 24'.4	11.5	02'.4	10.1	57.3	35°	05:35	06:06	06:33	00:31	01:32	02:32		
	15	261° 53'.3	47° 23'.3	25'.7	69° 22'.2	09'.7	46° 43'.0	57'.0	356° 29'.0	24'.1	57'.0	57'.0	Altair	62° 05'.5	8° 55'.2 N	33° 57'.2	50'.3	97° 54'.9	11.6	8° 52'.3 N	10.2	30°	05:29	05:58	06:23	00:36	01:35	02:33			
	16	276° 55'.8	62° 22'.8	26'.8	84° 23'.2	10'.3	61° 43'.0	57'.2	11° 31'.2	24'.1	57'.2	57'.2	Ankaa	353° 12'.5	42° 12'.8 S	48° 57'.1	50'.9	11° 31'.2	11.6	42'.1	10.1	20°	05:18	05:45	06:08	00:46	01:42	02:35			
	17	291° 58'.2	77° 22'.2	27'.8	99° 24'.2	10'.9	76° 46'.9	57'.4	26° 33'.4	24'.1	57'.4	57'.4	Antares	112° 23'.0	26° 28'.0 S	63° 57'.0	51'.6	126° 56'.1	11.7	32'.0	10.3	57.2	N 10°	05:06	05:32	05:54	00:55	01:47	02:37		
	18	307° 00'.7	92° 21'.7	28'.9	114° 25'.2	11'.6	91° 48'.8	57'.5	41° 35'.5	24'.1	57'.5	57'.5					78° 57'.0	52'.3	141° 26'.8	11.8	21'.7	10.2	57.2	0°	04:54	05:19	05:41	01:03	01:52	02:39	
	19	322° 03'.2	107° 21'.1	30'.0	129° 26'.2	12'.2	106° 50'.8	57'.7	56° 37'.7	24'.1	57'.7	57'.7	Arcturus	145° 53'.4	19° 05'.6 N	93° 56'.9	52'.9	155° 57'.6	11.8	11'.5	10.3	S 10°	04:39	05:05	05:28	01:11	01:57	02:40			
	20	337° 05'.6	122° 20'.6	31'.1	144° 27'.2	12'.8	121° 52'.7	57'.9	71° 39'.9	24'.1	57'.9	57'.9	Atria	107° 22'.6	69° 03'.4 S	108° 56'.8	53'.6	170° 28'.4	11.9	01'.2	10.3	20°	04:22	04:50	05:13	01:20	02:02	02:42			
	21	352° 08'.1	137° 20'.0	32'.2	159° 28'.2	13'.4	136° 54'.7	58'.1	86° 42'.1	24'.1	58'.1	58'.1	Avior	234° 16'.6	59° 33'.8 S	123° 56'.7	54'.3	184° 59'.3	11.9	7° 50'.9 N	10.4	30°	04:00	04:31	04:57	01:30	02:08	02:44			
	22	7° 10'.6	152° 19'.5	33'.2	174° 29'.3	14'.0	151° 56'.6	58'.2	101° 44'.3	24'.2	58'.2	58'.2	Bellatrix	278° 28'.5	6° 21'.8 N	138° 56'.6	54'.9	199° 30'.2	12.0	40'.5	10.3	57.1	35°	03:46	04:19	04:47	01:35	02:12	02:46		
23	22° 13'.0	167° 18'.9	34'.2	189° 30'.3	14'.6	166° 58'.5	58'.4	116° 46'.5	24'.2	58'.4	58'.4	Betelgeuse	270° 57'.8	7° 24'.5 N	153° 56'.5	56'.6	214° 01'.2	12.0	30'.2	10.5	40°	03:29	04:06	04:36	01:42	02:16	02:47				
	37° 15'.5	182° 18'.4	35'.4	204° 31'.3	15'.3	182° 00'.5	58'.6	131° 48'.7	24'.2	58'.6	58'.6					168° 56'.4	56'.3	228° 32'.2	12.1	19'.7	10.4	45°	03:07	03:49	04:23	01:49	02:20	02:49			
Monday	00	52° 18'.0	197° 17'.8	12° 36'.5 S	219° 32'.3	4° 15'.9 S	197° 02'.4	12° 58'.8 S	146° 50'.8	22° 24'.2 S	161° 53'.0	24'.2	Canopus	263° 54'.4	52° 42'.2 S	183° 56'.4	17° 56'.9 S	243° 03'.3	12.1	7° 09'.3 N	10.5	57.1	S 50°	02:38	03:29	04:07	01:58	02:26	02:50		
	01	67° 20'.4	212° 17'.3	37'.5	234° 33'.3	16'.5	212° 04'.4	58'.9	161° 53'.0	24'.2	58.9	280° 29'.6	46° 00'.7 N	198° 56'.3	57'.6	257° 34'.4	12.2	6° 58'.8 N	10.4	57.0	52°	02:23	03:14	04:00	02:02	02:28	02:51				
	02	82° 22'.9	227° 16'.7	38'.6	249° 34'.3	17'.1	227° 06'.3	59'.1	176° 55'.2	24'.2	59.1	49° 29'.5	45° 21'.0 N	213° 56'.2	58'.3	272° 05'.6	12.2	48'.4	10.6	54°	02:05	03:07	03:51	02:07	02:31	02:52					
	03	97° 25'.4	242° 16'.2	39'.7	264° 35'.3	17'.7	242° 08'.3	59'.3	191° 57'.4	24'.2	59.3	182° 30'.9	14° 28'.4 N	228° 56'.1	58'.9	286° 36'.8	12.3	37'.8	10.5	56°	01:42	02:54	03:42	02:12	02:34	02:53					
	04	112° 27'.8	257° 15'.6	40'.8	279° 36'.3	18'.4	257° 10'.2	59'.5	206° 59'.6	24'.3	59.5	348° 52'.7	17° 53'.4 S	243° 56'.0	59'.6	301° 08'.1	12'.3	27'.3	10.6	58°	01:10	02:38	03:31	02:17	02:37	02:55					
	05	127° 30'.3	272° 15'.0	41'.8	294° 37'.3	19'.0	272° 12'.1	59'.6	222° 01'.8	24'.3	59.6	222° 01'.8	24'.3	258° 55'.9	18° 00'.3 S	258° 55'.9	18° 00'.3 S	315° 39'.4	12'.3	16'.7	10.5	56.9	S 60°	-	02:19	03:19	02:24	02:41	02:56		
	06	142° 32'.7	287° 14'.5	42'.9	309° 38'.3	19'.6	287° 14'.1	59'.8	237° 03'.9	24'.3	59.8	193° 48'.5	61° 39'.1 N	273° 55'.8	00'.9	330° 10'.7	12.4	06'.2	10.6	S 62°	-	01:54	03:04	02:31	02:37	02:45	02:57				
	07	157° 35'.2	302° 13'.9	44'.0	324° 39'.4	20'.2	302° 16'.0	13° 00'.0 S	252° 06'.1	24'.3	60.0	278° 08'.5	28° 37'.1 N	288° 55'.7	01'.6	344° 42'.1	12.5	5° 55'.6 N	10.7												
	08	172° 37'.7	317° 13'.4	45'.1	339° 40'.4	20'.8	317° 18'.0	00'.2	267° 08'.3	24'.3	60.0	90° 45'.2	51° 29'.6 N	303° 55'.7	02'.2	359° 13'.6	12.5	44'.9	10.6												
	09	187° 40'.1	332° 12'.8	46'.1	354° 41'.4	21'.4	332° 19'.9	00'.3	282° 10'.5	24'.3	60.0	33° 44'.2	9° 57'.6 N	318° 55'.6	02'.9	13° 45'.1	12.5	34'.3	10.7	56.8											
	10	202° 42'.6	347° 12'.3	47'.2	37° 42'.4	22'.1	347° 21'.8	00'.5	299° 12'.7	24'.3	60.0	15° 20'.6	29° 31'.8 S	333° 55'.5	03'.6	28° 16'.6	12.6	23'.6	10.7												
	11	217° 45'.1	2° 11'.7	48'.3	24° 43'.4	22'.7	2° 23'.8	00'.7	312° 14'.9	24'.3	60.0	312° 14'.9	24'.3	348° 55'.4	04'.2	42° 48'.2	12.7	12'.9	10.7												

2017 November 15, 16, 17 (Wed, Thur, Fri)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise			
																								Nautical		Civil	15		16	17		
15 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	W e d n e s d a y	GHA	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	07:03	08:40	-	03:52	05:36	07:21											
		54° 16.2'	196° 50.8'	13° 27.5' S	220° 20.7'	4° 45.5' S	198° 35.6'	13° 07.1' S	148° 35.6'	22° 24.8' S	315° 15.7'	40° 14.2' S	183° 51.8'	18° 28.2' S	220° 40.2'	13.6'	1° 26.9' S	10.7'	55.9'				N 70°	06:53	08:16	09:57	03:49	05:26	07:03			
		69° 18.7'	211° 50.2'	28.5'	235° 21.7'	46.1'	213° 37.6'	07.3'	163° 37.8'	24.8'	335° 24.1'	57° 09.0' S	198° 51.7'	28.9'	235° 12.8'	13.7'	37.7'	10.8'	68°	06:44	07:58	09:18	03:46	05:18	06:48							
		84° 21.2'	226° 49.6'	29.6'	250° 22.7'	46.7'	228° 39.5'	07.5'	178° 40.0'	24.8'	173° 06.4'	63° 11.5' S	213° 51.6'	29.5'	249° 45.5'	13.7'	48.4'	10.7'	66°	06:37	07:43	08:51	03:44	05:11	06:37							
		99° 23.6'	241° 49.0'	30.6'	265° 23.7'	47.3'	243° 51.2'	07.7'	193° 42.1'	24.9'	255° 09.9'	28° 59.7' S	267° 51.4'	30.1'	264° 18.2'	13.7'	59.1'	10.7'	64°	06:30	07:31	08:31	03:42	05:05	06:27							
		114° 26.1'	256° 48.5'	31.7'	280° 24.7'	47.9'	258° 43.4'	07.8'	208° 44.3'	24.9'	295° 25.7'	16° 32.5' N	243° 51.3'	30.8'	278° 50.9'	13.7'	2° 09.8' S	10.7'	62°	06:24	07:20	08:15	03:41	05:00	06:19							
		129° 28.6'	271° 47.9'	32.7'	295° 25.7'	48.5'	273° 45.3'	08.0'	223° 46.5'	24.9'			258° 51.2'	31.4'	293° 23.6'	13.8'	20.5'	10.6'	55.8'	60°	06:19	07:15	08:01	03:39	04:56	06:11						
		144° 31.0'	286° 47.3'	33.8'	310° 26.7'	49.1'	288° 47.3'	08.2'	238° 48.7'	24.9'			166° 18.6'	55° 51.7' N	273° 51.1'	32.0'	307° 56.4'	13.7'	31.1'	10.7'			N 58°	06:15	07:03	07:49	03:38	04:52	06:05			
		159° 33.5'	301° 46.7'	34.8'	325° 27.8'	49.8'	303° 49.2'	08.3'	253° 50.8'	24.9'			152° 57.1'	49° 13.5' N	288° 51.0'	32.7'	322° 29.1'	13.7'	41.8'	10.6'			56°	06:10	06:56	07:39	03:37	04:49	06:00			
		174° 35.9'	316° 46.1'	35.9'	340° 28.8'	50.4'	318° 51.2'	08.5'	268° 53.0'	24.9'			340° 50.8'	33.3'	337° 01.8'	13.8'	52.4'	10.6'	54°	06:06	06:50	07:30	03:36	04:46	05:55							
		189° 38.4'	331° 45.6'	36.9'	355° 29.8'	51.0'	333° 53.1'	08.7'	283° 55.2'	24.9'			275° 43.1'	1° 11.6' S	318° 50.8'	33.9'	351° 34.6'	13.8'	3° 03.0' S	10.6'	55.7'	52°	06:03	06:44	07:22	03:35	04:43	05:50				
		204° 40.9'	346° 45.0'	38.0'	10° 30.8'	51.6'	348° 55.1'	08.9'	298° 57.4'	24.9'			217° 53.2'	8° 44.1' S	333° 50.7'	34.6'	6° 07.4'	13.8'	13.6'	10.5'			50°	05:59	06:39	07:15	03:34	04:41	05:46			
		219° 43.3'	1° 44.4'	39.0'	25° 31.8'	52.2'	3° 57.0'	09.0'	313° 59.6'	25.0'			348° 50.6'	35.2'	20° 40.2'	13.7'	24.1'	10.6'	45°	05:52	06:27	06:59	03:33	04:36	05:38							
		234° 45.8'	16° 43.8'	13° 40.0' S	40° 32.8'	4° 52.8' S	18° 58.9'	13° 09.2' S	329° 01.7'	22° 25.0' S			126° 08.9'	26° 39.5' N	3° 50.5'	18° 35.8' S	35° 12.9'	13.8'	3° 34.7' S	10.5'	55.7'		N 40°	05:44	06:17	06:46	03:31	04:31	05:30			
		249° 48.3'	31° 43.2'	41.1'	55° 33.8'	53.4'	34° 20.9'	09.4'	344° 03.9'	25.0'			357° 40.2'	29° 11.5' N	18° 50.4'	36.5'	49° 45.7'	13.8'	45.2'	10.5'			35°	05:38	06:09	06:35	03:30	04:28	05:24			
		264° 50.7'	46° 42.7'	42.1'	70° 34.8'	54.1'	49° 02.8'	09.6'	359° 06.1'	25.0'			62° 05.5'	8° 55.2' N	33° 50.3'	37.1'	64° 18.5'	13.8'	55.7'	10.4'			30°	05:32	06:01	06:26	03:29	04:24	05:19			
		279° 53.2'	61° 42.1'	43.2'	85° 35.8'	54.7'	64° 00.8'	09.7'	14° 08.3'	25.0'			353° 12.6'	42° 12.8' S	48° 50.1'	37.7'	78° 51.4'	13.9'	4° 06.1' S	10.5'	55.6'	20°	05:20	05:46	06:09	03:27	04:18	05:09				
		294° 55.7'	76° 41.5'	44.2'	100° 36.8'	55.3'	79° 06.7'	09.9'	29° 10.5'	25.0'			112° 23.0'	26° 28.0' S	63° 50.0'	38.4'	93° 24.2'	13.8'	16.6'	10.4'			N 10°	05:07	05:33	05:55	03:25	04:13	05:01			
		309° 58.1'	91° 40.9'	45.3'	115° 37.8'	55.9'	94° 08.7'	10.1'	44° 12.6'	25.0'			78° 49.9'	39.0'	107° 57.0'	13.8'	27.0'	10.4'	0°	04:54	05:19	05:41	03:24	04:09	04:54							
		325° 00.6'	106° 40.3'	46.3'	130° 38.8'	56.5'	109° 10.6'	10.2'	59° 14.8'	25.0'			145° 53.4'	19° 05.6' N	93° 49.8'	39.6'	122° 29.8'	13.8'	37.4'	10.4'			S 10°	04:39	05:05	05:27	03:22	04:04	04:46			
		340° 03.1'	121° 39.7'	47.3'	145° 39.8'	57.1'	124° 12.5'	10.4'	74° 17.0'	25.1'			107° 22.6'	69° 03.4' S	108° 49.7'	40.2'	137° 02.6'	13.9'	47.8'	10.3'			20°	04:21	04:49	05:13	03:21	03:59	04:38			
		355° 05.5'	136° 39.2'	48.4'	160° 40.8'	57.7'	139° 14.5'	10.6'	89° 19.2'	25.1'			234° 16.5'	59° 33.8' S	123° 49.6'	40.9'	151° 35.5'	13.8'	58.1'	10.3'	55.5'	30°	03:58	04:29	04:55	03:19	03:54	04:29				
		10° 08.0'	151° 38.6'	49.4'	175° 41.9'	58.4'	154° 16.4'	10.8'	104° 21.4'	25.1'			278° 28.5'	6° 21.8' N	138° 49.5'	41.5'	166° 08.3'	13.8'	5° 08.4' S	10.3'			35°	03:43	04:17	04:45	03:18	03:51	04:24			
25° 10.4'	166° 38.0'	50.4'	190° 42.9'	59.0'	169° 18.4'	10.9'	119° 23.5'	25.1'			169° 18.4'	10.9'	153° 49.4'	42.1'	180° 41.1'	13.9'	18° 01.1'	10.2'			40°	03:25	04:03	04:34	03:17	03:47	04:18					
40° 12.9'	181° 37.4'	51.5'	205° 43.9'	59.6'	184° 20.3'	11.1'	134° 25.7'	25.1'			168° 49.3'	42.8'	195° 14.0'	13.8'	28.9'	10.3'	45°	03:03	03:46	04:20	03:16	03:43	04:11									
55° 15.4'	196° 36.8'	13° 52.5' S	220° 44.9'	5° 00.2' S	199° 22.3'	13° 11.3' S	149° 27.9'	22° 25.1' S			263° 54.4'	52° 42.3' S	183° 49.1'	18° 43.4' S	209° 46.8'	13.8'	5° 39.2' S	10.2'	55.5'		S 50°	02:32	03:24	04:03	03:14	03:38	04:03					
70° 17.8'	211° 36.2'	53.6'	235° 45.9'	00.8'	214° 24.2'	11.5'	164° 30.1'	25.1'			280° 29.6'	46° 00.7' N	198° 49.0'	44.0'	224° 19.6'	13.9'	49.4'	10.1'	55.4'	52°	02:16	03:13	03:55	03:14	03:36	04:03						
85° 20.3'	226° 35.7'	54.6'	250° 46.9'	01.4'	229° 26.1'	11.6'	179° 32.3'	25.1'			49° 29.6'	45° 21.0' N	213° 48.9'	44.6'	238° 52.5'	13.8'	59.5'	10.2'			54°	01:56	03:01	03:46	03:13	03:33	03:55					
100° 22.8'	241° 35.1'	55.6'	265° 47.9'	02.0'	244° 28.1'	11.8'	194° 34.4'	25.2'			182° 30.8'	14° 28.4' N	228° 48.8'	45.2'	253° 25.3'	13.9'	6° 09.7' S	10.1'			56°	01:30	02:47	03:36	03:12	03:31	03:51					
115° 25.2'	256° 34.5'	56.7'	280° 48.9'	02.6'	259° 30.0'	12.0'	209° 36.6'	25.2'			348° 52.7'	17° 53.4' S	243° 48.7'	45.9'	267° 58.2'	13.8'	19.8'	10.0'			58°	00:52	02:30	03:25	03:11	03:28	03:46					
130° 27.7'	271° 33.9'	57.7'	295° 49.9'	03.3'	274° 32.0'	12.1'	224° 38.8'	25.2'			258° 48.6'	46.5'	282° 31.0'	13.8'	29.8'	10.0'	S 60°	-	02:09	03:12	03:10	03:24	03:40									
145° 30.2'	286° 33.3'	58.7'	310° 50.9'	03.9'	289° 33.9'	12.3'	239° 41.0'	25.2'			193° 48.4'	61° 39.1' N	273° 48.5'	47.1'	297° 03.8'	13.9'	39.8'	10.0'			S 62°	-	01:41	02:56	03:09	03:21	03:33					
160° 32.6'	301° 32.7'	59.8'	325° 51.9'	04.5'	304° 35.9'	12.5'	254° 43.1'	25.2'			278° 08.5'	28° 37.1' N	288° 48.3'	47.7'	311° 36.7'	13.8'	49.8'	10.0'	55.3'													
175° 35.1'	316° 32.1'	14° 00.8' S	340° 52.9'	05.1'	319° 37.8'	12.7'	269° 45.3'	25.2'			90° 45.2'	51° 29.6' N	303° 48.2'	48.4'	326° 09.5'	13.8'	59.8'	9.9'														
190° 37.5'	331° 31.5'	01.8'	355° 53.9'	05.7'	334° 39.7'	12.8'	284° 47.5'	25.2'			33° 44.2'	9° 57.6' N	318° 48.1'	49.0'	340° 42.3'	13.8'	7° 09.7' S	9.9'														
205° 40.0'	346° 30.9'	02.8'	10° 54.9'	06.3'	349° 41.7'	13.0'	299° 49.7'	25.2'			15° 20.6'	29° 31.8' S	333° 48.0'	49.6'	355° 15.1'	13.8'	19.6'	9.9'														
220° 42.5'	1° 30.4'	03.9'	25° 55.9'	06.9'	4° 43.6'	13.2'	314° 51.9'	25.3'			4° 43.6'	13.2'	314° 51.9'	50.2'	9° 47.9'	13.8'	29.5'	9.8'														
235° 44.9'	16° 29.8'	14° 04.9' S	40° 57.0'	5° 07.5' S	19° 45.6'	13° 13.3' S	329° 54.0'	22° 25.3' S			171° 57.9'	57° 12.4' S	3° 47.7'	18° 50.8' S	24° 20.7'	13.8'	7° 39.3' S	9.7'	55.2'		N 7											

2017 November 18, 19, 20 (Sat, Sun, Mon)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise							
18 S a t u r d a y	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	07:14	08:54	-	09:12	11:20	-							
	01	57° 13'6"	196° 08'1"	14° 41'5" S	221° 33'2"	5° 29'6" S	200° 55'5"	13° 19'5" S	151° 12'4"	22° 25'7" S	166° 14'5"	25'7"	Acamar	315° 15'7"	40° 14'2" S	183° 43'3"	19° 12'7" S	187° 54'9"	13'3"	13° 01'5" S	7'9"	54'7"	N 70°	07:02	08:28	10:19	08:41	10:21	12:04							
	02	72° 16'1"	211° 07'5"	42'5"	236° 34'2"	30'2"	215° 57'5"	19'7"	166° 14'5"	25'7"	198° 43'1"	13'3"	Achernar	335° 24'1"	57° 09'0" S	198° 43'1"	13'3"	202° 27'2"	13'3"	09'4"	7'9"	68°	66°	06:52	08:08	09:33	08:19	09:48	11:11							
	03	87° 18'6"	226° 06'9"	43'5"	251° 35'2"	30'8"	230° 59'4"	19'9"	181° 16'7"	25'7"	213° 43'0"	13'9"	Acruz	173° 06'3"	63° 11'5" S	213° 43'0"	13'9"	216° 59'5"	13'4"	17'3"	7'8"	66°	66°	06:44	07:52	09:03	08:01	09:23	10:39							
	04	102° 21'0"	241° 06'3"	44'5"	266° 36'2"	31'4"	246° 01'4"	20'0"	196° 18'9"	25'7"	255° 09'9"	14'5"	Adhara	265° 09'9"	28° 59'8" S	265° 09'9"	14'5"	231° 31'9"	13'2"	25'1"	7'8"	54'6"	64°	64°	06:37	07:39	08:41	07:47	09:04	10:16						
	05	117° 23'5"	256° 05'7"	45'5"	281° 37'2"	32'0"	261° 03'3"	20'2"	211° 21'1"	25'7"	290° 45'6"	16'6"	Aldebaran	290° 45'6"	16° 32'5" N	243° 42'7"	15'1"	246° 04'1"	13'3"	32'9"	7'7"	62°	62°	06:31	07:27	08:23	07:35	08:49	09:57							
	06	132° 26'0"	271° 05'1"	46'5"	296° 38'2"	32'6"	276° 05'3"	20'4"	226° 23'2"	25'8"	258° 42'6"	15'7"	260° 36'4"	13'3"	40'6"	7'6"	258° 42'6"	15'7"	260° 36'4"	13'3"	40'6"	7'6"	60°	60°	06:25	07:18	08:08	07:25	08:36	09:41						
	07	147° 28'4"	286° 04'5"	47'6"	311° 39'2"	33'2"	291° 07'2"	20'5"	241° 25'4"	25'8"	166° 18'6"	55° 51'7" N	273° 42'5"	16'3"	275° 08'7"	13'2"	48'2"	7'6"	48'2"	7'6"	48'2"	7'6"	58°	58°	06:20	07:09	07:56	07:16	08:25	09:28						
	08	162° 30'9"	301° 03'9"	48'6"	326° 40'2"	33'8"	306° 09'2"	20'7"	256° 27'6"	25'8"	152° 57'1"	49° 13'5" N	288° 42'3"	16'9"	289° 40'9"	13'2"	55'8"	7'5"	55'8"	7'5"	55'8"	7'5"	56°	56°	06:15	07:02	07:45	07:09	08:15	09:17						
	09	177° 33'4"	316° 03'3"	49'6"	341° 41'2"	34'4"	320° 11'1"	20'9"	271° 29'8"	25'8"	207° 40'1"	46° 52'6" S	303° 42'2"	17'4"	304° 13'1"	13'2"	14° 03'3" S	7'4"	54°	06:11	06:55	07:35	07:02	08:07	09:07	10:04	11:01	12:04								
	10	192° 35'8"	331° 02'6"	50'6"	356° 42'2"	35'0"	336° 13'0"	21'0"	286° 31'9"	25'8"	275° 43'1"	1° 11'6" S	318° 42'1"	18'0"	318° 45'3"	13'2"	10'7"	7'4"	52°	06:07	06:49	07:27	06:56	07:59	08:59	09:59	10:59									
	11	207° 38'3"	346° 02'0"	51'6"	11° 43'2"	35'7"	315° 15'2"	21'2"	301° 34'1"	25'8"	333° 41'9"	18'6"	333° 17'5"	13'2"	18'1"	7'3"	50°	06:04	06:43	07:19	06:50	07:52	08:51	09:51	10:51											
	12	222° 40'8"	1° 01'4"	52'6"	26° 44'2"	36'3"	6° 16'9"	21'4"	316° 36'3"	25'8"	348° 41'8"	19'2"	347° 49'7"	13'1"	25'4"	7'2"	54'5"	45°	05:55	06:31	07:03	06:38	07:38	08:34												
	13	237° 43'2"	16° 00'8"	14° 53'6" S	41° 45'2"	5° 36'9" S	21° 18'9"	13° 21'6" S	331° 38'5"	22° 25'8" S	126° 08'9"	26° 39'5" N	3° 41'7"	19° 19'8" S	2° 21'8"	13'1"	14° 32'6" S	7'2"	54'5"	N 40°	05:48	06:20	06:50	06:29	07:26	08:20										
	14	252° 45'7"	31° 00'2"	54'5"	56° 46'2"	37'5"	36° 20'8"	21'7"	346° 40'6"	25'9"	18° 45'9"	20'4"	18° 45'9"	13'1"	39'8"	7'1"	35°	05:41	06:11	06:38	06:20	07:15	08:09													
	15	267° 48'1"	45° 59'6"	55'5"	71° 47'2"	38'1"	51° 22'8"	21'9"	1° 42'8"	25'9"	36° 05'5"	8° 55'2" N	33° 41'4"	21'0"	31° 26'0"	13'1"	46'9"	7'0"	30°	05:34	06:03	06:28	06:13	07:06	07:59											
	16	282° 50'6"	60° 59'0"	56'5"	86° 48'2"	38'7"	66° 24'7"	22'1"	16° 45'0"	25'9"	48° 41'3"	21'6"	45° 58'1"	13'1"	53'9"	7'0"	20°	05:21	05:48	06:11	06:00	06:51	07:41													
	17	297° 53'1"	75° 58'3"	57'5"	101° 49'2"	39'3"	81° 26'7"	22'2"	31° 47'2"	25'9"	112° 23'0"	26° 28'0" S	63° 41'1"	22'2"	60° 30'2"	13'0"	15° 00'9" S	6'9"	N 10°	05:08	05:34	05:56	05:49	06:38	07:26											
	18	312° 55'5"	90° 57'7"	58'5"	116° 50'2"	39'9"	96° 28'6"	22'4"	46° 49'3"	25'9"	78° 41'0"	22'7"	75° 02'2"	13'0"	07'8"	6'8"	0°	04:54	05:20	05:42	05:39	06:25	07:12													
	19	327° 58'0"	105° 57'1"	59'5"	131° 51'2"	40'5"	111° 30'5"	22'6"	61° 51'5"	25'9"	93° 40'8"	23'3"	89° 34'2"	13'1"	14'6"	6'7"	S 10°	04:39	05:05	05:27	05:29	06:13	06:58													
	20	343° 00'5"	120° 56'5"	15° 00'5" S	146° 52'2"	41'1"	126° 32'5"	22'8"	76° 53'7"	25'9"	107° 22'6"	69° 03'4" S	108° 40'7"	23'9"	104° 06'3"	12'9"	21'3"	6'7"	54'4"	20°	04:20	04:48	05:12	05:18	06:00	06:43										
	21	358° 02'9"	135° 55'9"	01'0"	161° 53'2"	41'7"	141° 34'8"	22'9"	91° 55'9"	25'9"	123° 40'6"	24'5"	118° 38'2"	13'0"	28'0"	6'6"	30°	03:56	04:24	04:54	05:06	05:45	06:26													
	22	13° 05'4"	150° 55'2"	02'5"	176° 54'2"	42'4"	156° 36'4"	23'1"	106° 58'0"	25'9"	138° 40'4"	25'1"	133° 10'2"	13'0"	34'6"	6'5"	35°	03:41	04:15	04:44	04:59	05:36	06:16													
23	28° 07'9"	165° 54'6"	03'5"	191° 55'2"	43'0"	171° 38'3"	23'3"	122° 00'2"	26'0"	153° 40'0"	25'7"	147° 42'2"	12'9"	41'1"	6'5"	40°	03:22	04:01	04:31	04:51	05:26	06:05														
	43° 10'3"	180° 54'0"	04'5"	206° 56'2"	43'6"	186° 40'3"	23'4"	137° 02'4"	26'0"	168° 40'1"	26'3"	162° 14'1"	12'9"	47'6"	6'4"	45°	02:58	03:43	04:17	04:41	05:15	05:52														
19 S u n d a y	00	58° 12'8"	195° 53'4"	15° 05'5" S	221° 57'3"	5° 44'2" S	201° 42'2"	13° 23'6" S	152° 04'5"	22° 26'0" S	263° 54'4"	52° 42'3" S	183° 40'0"	19° 26'8" S	176° 46'0"	12'9"	15° 54'0" S	6'3"	54'4"	S 50°	02:26	03:20	03:59	04:30	05:01	05:36										
	01	73° 15'3"	210° 52'8"	06'5"	236° 58'3"	44'8"	216° 41'2"	23'8"	167° 06'7"	26'0"	280° 29'6"	46° 00'7" N	198° 39'9"	27'4"	191° 17'9"	12'9"	16° 00'3" S	6'2"	52°	02:09	03:08	03:51	04:25	04:54	05:28											
	02	88° 17'7"	225° 52'1"	07'5"	251° 59'3"	45'4"	231° 46'1"	23'9"	182° 08'9"	26'0"	49° 29'6"	45° 21'0" N	213° 39'7"	28'0"	205° 49'8"	12'8"	06'5"	6'2"	54°	01:47	02:55	03:42	04:19	04:47	05:20											
	03	103° 20'2"	240° 51'5"	08'5"	267° 00'3"	46'0"	246° 08'1"	24'1"	197° 11'1"	26'0"	228° 39'6"	28'6"	220° 21'6"	12'8"	12'7"	6'1"	56°	01:19	02:40	03:31	04:13	04:39	05:10													
	04	118° 22'6"	255° 50'9"	09'4"	282° 01'3"	46'6"	261° 50'0"	24'3"	212° 13'2"	26'0"	348° 52'7"	17° 53'4" S	243° 39'4"	29'2"	234° 53'4"	12'9"	18'8"	6'0"	54'3"	58°	00:30	02:22	03:19	04:06	04:30	05:00										
	05	133° 25'1"	270° 50'3"	10'4"	297° 02'3"	47'2"	276° 51'9"	24'4"	242° 15'4"	26'0"	258° 39'3"	29'7"	249° 25'3"	12'8"	24'8"	5'9"	S 60°	-	01:59	03:05	03:58	04:20	04:47													
	06	148° 27'6"	285° 49'7"	11'4"	312° 03'3"	47'8"	291° 53'9"	24'6"	227° 17'6"	26'1"	273° 39'2"	30'3"	263° 57'1"	12'7"	30'7"	5'9"	S 62°	-	01:28	02:48	03:49	04:08	04:33													
	07	163° 30'0"	300° 40'0"	12'4"	327° 04'3"	48'4"	306° 55'8"	24'8"	257° 19'8"	26'1"	278° 08'5"	28° 37'1" N	288° 39'0"	30'9"	278° 28'8"	12'8"	36'6"	5'8"																		
	08	178° 32'5"	315° 48'4"	13'4"	342° 05'3"	49'0"	321° 57'8"	25'0"	272° 21'9"	26'1"	90° 45'2"	51° 29'5" N	303° 38'0"	31'5"	293° 00'6"	12'7"	42'4"	5'7"																		
	09	193° 35'0"	330° 47'8"	14'4"	357° 06'3"	49'7"	336° 59'7"	25'1"	287° 24'1"	26'1"	318° 38'7"	32'0"	307° 32'3"	12'8"	48'1"	5'6"																				
	10	208° 37'4"	345° 47'2"	15'4"	12° 07'3"	50'3"	352° 01'7"	25'3"	302° 26'3"	26'1"	333° 38'6"	32'6"	322° 04'1"	12'7"	53'7"	5'6"																				
	11	223° 39'9"	0° 46'5"	16'3"	27° 08'3"	50'9"	7° 03'6"	25'5"	317° 28'4"	26'1"	348° 38'5"	33'2"	336° 35'8"	12'6"	59'3"	5'4"																				
	12	238° 42'4"	15° 45'9"	15° 17'3" S	42° 09'3"	5° 51'5" S	22° 05'6"	13° 25'6" S	332° 30'6"	22° 26'1" S	171° 57'9"	57° 12'4" S	3° 38'3"	19° 33'8" S	351° 07'4"	12'7"	17° 04'7" S	5'4"	54'3"	N 72°	-	14:36	16:16	14:15	13:44	-										
	13	253° 44'8"	30° 45'3"	18'3"	57° 10'3"	52'1"	37° 07'5"	25'8"	347° 32'8"	26'1"	175° 49'4"	17° 38'2" S	18° 38'2"	34'3"	5° 39'1"	12'7"	10'1"	5'4"																		
	14	268° 47'3"	45° 44'6"	19'3"	72° 11'3"	52'7"	52° 09'5"	26'0"	2° 35'0"	26'1"	148° 44'2"	60° 27'2" S	33° 34'9"	34'9"	20° 10'8"	12'6"	15'4"	5'3"	54'2"	68°																

2017 November 21, 22, 23 (Tue, Wed, Thur)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise			
																								Nautical		Civil	21		22	23		
21 T u e s d a y	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	07:24	09:08	-	-	-	-
	60° 11'.1	195° 23'.0	15° 52'.2 S	222° 45'.4	6° 13'.3 S	203° 15'.6	13° 31'.7 S	153° 48'.8	22° 26'.5 S	Acamar	315° 15'.7	40° 14'.2 S	183° 32'.9	19° 54'.1 S	153° 57'.6	12° 2	19° 26'.4 S	2	54'.0	N 70°	07:11	08:39	10:47	13:51	14:38	14:31						
	75° 13'.5	210° 22'.4	53'.2	237° 46'.4	13'.9	218° 17'.6	31'.9	168° 50'.9	26'.5	Achernar	335° 24'.2	57° 09'.0 S	198° 32'.7	54'.6	168° 28'.8	12'.1	28'.7	2'.2		68°	07:00	08:17	09:48	12:23	13:12	13:39						
	90° 16'.0	225° 21'.7	54'.2	252° 47'.4	14'.5	233° 19'.5	32'.0	183° 53'.1	26'.6	Acruz	173° 06'.3	63° 11'.5 S	213° 32'.6	55'.2	182° 59'.9	12'.2	30'.9	2'.0		66°	06:51	08:00	09:14	11:44	12:33	13:06						
	105° 18'.5	240° 21'.1	55'.1	267° 48'.4	15'.1	248° 21'.5	32'.2	193° 55'.3	26'.6	Adhara	255° 09'.9	28° 59'.8 S	228° 32'.4	55'.7	197° 31'.1	12'.1	33'.1	2'.2		64°	06:44	07:46	08:50	11:17	12:06	12:43						
	120° 20'.9	255° 20'.4	56'.1	282° 49'.4	15'.7	263° 23'.4	32'.4	213° 57'.4	26'.6	Aldebaran	290° 45'.6	16° 32'.5 N	243° 32'.3	56'.3	212° 02'.2	12'.2	35'.1	1'.0		62°	06:37	07:34	08:31	10:57	11:46	12:24						
	135° 23'.4	270° 19'.8	57'.0	297° 50'.4	16'.3	278° 25'.4	32'.5	228° 59'.6	26'.6				258° 32'.1	56'.8	226° 33'.4	12'.1	37'.1	2'.0		60°	06:31	07:24	08:15	10:40	11:29	12:08						
	150° 25'.9	285° 19'.1	58'.0	312° 51'.4	16'.9	293° 27'.3	32'.7	244° 01'.8	26'.6	Alioth	166° 18'.6	55° 51'.7 N	273° 31'.9	57'.4	241° 04'.5	12'.1	39'.0	1'.8		N 58°	06:25	07:15	08:02	10:26	11:14	11:55						
	165° 28'.3	300° 18'.5	58'.9	327° 52'.4	17'.5	308° 29'.3	32'.9	259° 04'.0	26'.6	Alkaid	152° 57'.0	49° 13'.5 N	288° 31'.8	57'.9	255° 35'.6	12'.1	40'.8	1'.7		56°	06:20	07:07	07:51	10:13	11:02	11:43						
	180° 30'.8	315° 17'.8	59'.9	342° 53'.4	18'.1	323° 31'.2	33'.0	274° 06'.1	26'.6	Alnair	27° 40'.1	46° 52'.6 S	303° 31'.6	58'.5	270° 06'.7	12'.2	42'.5	1'.6		54°	06:16	07:00	07:41	10:03	10:52	11:33						
	195° 33'.2	330° 17'.2	16° 00'.8 S	357° 54'.4	18'.7	338° 33'.2	33'.2	289° 08'.3	26'.6	Alnilam	275° 43'.0	1° 11'.6 S	318° 31'.5	59'.0	284° 37'.9	12'.1	44'.1	1'.5		52°	06:12	06:53	07:32	09:53	10:42	11:25						
	210° 35'.7	345° 16'.5	01'.8	12° 55'.4	19'.3	353° 35'.1	33'.4	304° 10'.5	26'.6	Alphard	217° 53'.1	8° 44'.1 S	333° 31'.5	59'.6	299° 09'.0	12'.1	45'.6	1'.4		50°	06:08	06:48	07:24	09:45	10:34	11:17						
	225° 38'.2	0° 15'.9	02'.7	27° 56'.4	19'.9	8° 37'.0	33'.5	319° 12'.6	26'.7				348° 31'.1	20° 00'.1 S	313° 40'.1	12'.1	47'.0	1'.4		45°	05:59	06:35	07:07	09:27	10:16	11:00						
	240° 40'.6	15° 15'.2	16° 03'.7 S	42° 57'.4	6° 20'.5 S	23° 39'.0	33° 33'.7 S	334° 14'.8	22° 26'.7 S	Alphecca	126° 08'.9	26° 39'.5 N	3° 31'.0	20° 00'.6 S	328° 11'.2	12'.0	19° 48'.4 S	1'.2	54'.0	N 40°	05:51	06:24	06:53	09:12	10:01	10:46						
	255° 43'.1	30° 14'.6	04'.6	57° 58'.4	21'.2	38° 40'.9	33'.9	349° 17'.0	26'.7				18° 30'.5	21'.2	342° 42'.2	12'.1	49'.6	1'.2		35°	05:43	06:14	06:41	09:00	09:49	10:34						
	270° 45'.6	45° 13'.9	05'.6	72° 59'.4	21'.8	53° 42'.9	34'.1	4° 19'.1	26'.7	Altair	62° 05'.5	8° 55'.2 N	33° 30'.7	01'.7	357° 13'.3	12'.1	50'.8	1'.0		30°	05:36	06:05	06:31	08:49	09:38	10:23						
	285° 48'.0	60° 13'.3	06'.5	88° 00'.4	22'.4	68° 44'.8	34'.2	19° 21'.3	26'.7	Antares	353° 12'.6	42° 12'.8 S	48° 30'.5	02'.3	11° 44'.4	12'.1	51'.8	1'.0		20°	05:23	05:50	06:13	08:31	09:19	10:05						
	300° 50'.5	75° 12'.6	07'.5	103° 01'.4	23'.0	83° 46'.8	34'.4	34° 23'.5	26'.7				63° 30'.3	02'.8	26° 15'.5	12'.1	52'.8	0'.9		N 10°	05:09	05:35	05:57	08:15	09:03	09:50						
	315° 53'.0	90° 12'.0	08'.4	118° 02'.4	23'.6	98° 48'.7	34'.6	49° 25'.6	26'.7				78° 30'.2	03'.4	40° 46'.6	12'.0	53'.7	0'.8		0°	04:55	05:21	05:43	08:00	08:48	09:35						
	330° 55'.4	105° 11'.3	09'.4	133° 03'.4	24'.2	113° 50'.7	34'.7	64° 27'.8	26'.7	Arcturus	145° 53'.4	19° 05'.5 N	93° 30'.0	03'.9	55° 17'.6	12'.1	54'.5	0'.6		S 10°	04:39	05:05	05:28	07:45	08:33	09:21						
	345° 57'.9	120° 10'.7	10'.3	148° 04'.4	24'.8	128° 52'.6	34'.9	79° 30'.0	26'.7	Atria	107° 22'.6	69° 03'.4 S	108° 29'.9	04'.4	69° 48'.7	12'.1	55'.1	0'.7		20°	04:19	04:48	05:12	07:29	08:16	09:05						
	1° 00'.3	135° 10'.0	11'.2	163° 05'.4	25'.4	143° 54'.6	35'.1	94° 32'.1	26'.8	Avior	234° 16'.5	59° 33'.8 S	123° 29'.7	05'.0	84° 19'.8	12'.1	55'.8	0'.5		30°	03:55	04:26	04:53	07:11	07:58	08:47						
	16° 02'.8	150° 09'.3	12'.2	178° 06'.4	26'.0	158° 56'.5	35'.2	109° 34'.3	26'.8	Bellatrix	278° 28'.5	6° 21'.8 N	138° 29'.5	05'.5	98° 50'.9	12'.0	56'.3	0'.4		35°	03:39	04:14	04:42	07:00	07:47	08:37						
21° 05'.3	165° 08'.7	13'.1	193° 07'.4	26'.6	173° 58'.5	35'.4	124° 36'.5	26'.8	Betelgeuse	270° 57'.8	7° 24'.5 N	153° 29'.4	06'.1	113° 21'.9	12'.1	56'.7	0'.3		40°	03:19	03:58	04:29	06:48	07:35	08:25							
46° 07'.7	180° 08'.0	14'.1	208° 08'.4	27'.2	189° 00'.4	35'.6	139° 38'.7	26'.8				168° 29'.2	06'.6	127° 53'.0	12'.1	57'.0	0'.3		45°	02:55	03:40	04:15	06:34	07:20	08:11							
22 W e d n e s d a y	61° 10'.2	195° 07'.4	16° 15'.0 S	223° 09'.4	6° 27'.8 S	204° 02'.4	13° 35'.7 S	154° 40'.8	22° 26'.8 S	Canopus	263° 54'.4	52° 42'.3 S	183° 29'.0	20° 07'.1 S	142° 24'.1	12'.0	19° 57'.3 S	0'.1	54'.0	S 50°	02:02	03:16	03:56	06:16	07:02	07:54						
	76° 12'.7	210° 06'.7	15'.9	238° 01'.4	28'.4	219° 04'.3	35'.9	169° 43'.0	26'.8	Capella	280° 29'.6	46° 00'.7 N	198° 28'.9	43'.7	156° 55'.1	12'.1	57'.4	0'.1		52°	02:20	03:04	03:47	06:08	06:54	07:46						
	91° 15'.1	225° 06'.1	16'.9	253° 11'.4	29'.0	234° 06'.3	36'.1	184° 45'.2	26'.8	Deneb	49° 29'.6	45° 21'.0 N	213° 28'.7	08'.2	171° 26'.2	12'.1	57'.5	0'.1		54°	01:39	02:50	03:38	05:59	06:44	07:37						
	106° 17'.6	240° 05'.4	17'.8	268° 12'.4	29'.6	264° 08'.2	36'.2	182° 19'.7	26'.8	Denebola	182° 30'.8	14° 28'.4 N	228° 58'.7	08'.7	185° 57'.3	12'.1	57'.4	0'.1		56°	01:06	02:34	03:27	05:48	06:34	07:27						
	121° 20'.1	255° 04'.7	18'.8	283° 13'.4	30'.2	284° 10'.2	36'.4	214° 49'.5	26'.8	Diphda	348° 52'.7	17° 53'.4 S	243° 28'.4	09'.3	200° 28'.4	12'.0	57'.3	0'.2		58°	-	02:15	03:14	05:37	06:22	07:15						
	136° 22'.5	270° 04'.1	19'.7	298° 14'.4	30'.8	279° 12'.1	36'.6	229° 51'.7	26'.9				258° 28'.2	09'.8	214° 59'.4	12'.1	57'.1	0'.3		S 60°	-	01:50	02:59	05:23	06:07	07:01						
	151° 25'.0	285° 03'.4	20'.6	313° 15'.4	31'.4	294° 14'.1	36'.7	244° 53'.8	26'.9	Dubhe	193° 48'.4	61° 39'.0 N	273° 28'.0	10'.4	229° 30'.5	12'.1	56'.8	0'.4		S 62°	-	01:14	02:41	05:07	05:51	06:46						
	166° 27'.5	300° 02'.8	21'.6	328° 16'.4	32'.0	309° 16'.0	36'.9	259° 56'.0	26'.9	El Nath	278° 08'.5	28° 37'.1 N	288° 27'.9	10'.9	244° 01'.6	12'.1	56'.4	0'.5														
	181° 29'.9	315° 02'.1	22'.5	343° 17'.4	32'.6	324° 18'.0	37'.1	274° 58'.2	26'.9	Eltanin	90° 45'.2	51° 29'.5 N	303° 27'.7	11'.4	258° 32'.7	12'.1	55'.9	0'.6														
	196° 32'.4	330° 01'.4	23'.4	358° 18'.4	33'.2	339° 19'.9	37'.2	290° 00'.3	26'.9	Enif	33° 44'.2	9° 57'.6 N	318° 27'.5	11'.9	273° 03'.8	12'.1	55'.3	0'.7														
	211° 34'.8	345° 00'.8	24'.4	13° 19'.4	33'.8	354° 21'.9	37'.4	305° 02'.5	26'.9	Fomalhaut	15° 20'.7	29° 31'.8 S	333° 27'.4	12'.5	287° 34'.9	12'.0	54'.6	0'.8														
	226° 37'.3	0° 00'.1	25'.3	28° 20'.4	34'.4	9° 23'.8	37'.6	320° 04'.7	26'.9				348° 27'.2	13'.0	302° 05'.9	12'.1	53'.8	0'.8														
	241° 39'.8	14° 59'.5	16° 26'.2 S	43° 21'.4	6° 35'.0 S	24° 25'.7	13° 37'.7 S	335° 06'.8	22° 26'.9 S	Gacrux	171° 57'.8	57° 12'.4 S	3° 27'.0	20° 13'.5 S	316° 37'.0	12'.1	19° 53'.0 S	1'.0	54'.0	N 70°	12:45	14:52	16:20	14:30	15:22	17:09						
	256° 42'.2	29° 58'.2	27'.2	58° 22'.4	35'.6	39° 27'.7	37'.9	350° 09'.0	26'.9	Genah	175° 49'.4	17° 38'.2 S	18° 26'.9	14'.1	331° 08'.1	12'.2	52'.0	1'.0		68°	13:44	15:14	16:31	15:59	16:49	18:00						
	271° 44'.7	44° 58'.1	28'.1	73° 23'.4	36'.2	54° 29'.6	38'.1	5° 11'.2	27'.0	Hadar	148° 44'.1	60° 27'.2 S	33° 26'.9	14'.6	345° 39'.3	12'.1	51'.0	1'.1		66°												

2017 November 24, 25, 26 (Fri, Sat, Sun)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON				Lat	Twilight		Sunrise	Moonrise		
																					Nautical	Civil	24	25		26	24		25	26	
24	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	07:34	09:23	-	15:23	14:53	14:38		
	01	63° 08'.5	194° 35'.2	16° 59'.3 S	223° 57'.3	6° 56'.6 S	205° 35'.9	13° 43'.7 S	156° 24'.8	22° 27'.3 S	171° 27'.0	27.3	Acamar	315° 15'.7	40° 14'.2 S	183° 20'.7	20° 32'.2 S	119° 21'.8	12.4	18° 22'.2 S	4.1	54'.3	N 70°	07:20	08:50	11:43	14:26	14:22	14:18		
	02	78° 10'.9	209° 34'.6	17° 00'.2 S	238° 58'.3	57'.2	220° 37'.9	43'.9	238° 58'.3	57'.2	220° 37'.9	43'.9	Achernar	335° 24'.2	57° 09'.1 S	198° 20'.6	32.7	133° 53'.2	12.5	18'.1	4.2		68°	07:08	08:27	10:03	13:52	13:59	14:03		
	03	93° 13'.4	224° 33'.9	01.1	253° 59'.3	57'.8	235° 39'.8	44.0	186° 29'.1	27.3	201° 31'.3	27.4	Acruz	173° 06'.3	63° 11'.5 S	213° 20'.4	33.2	148° 24'.7	12.4	13.9	4.4		66°	06:58	08:08	09:26	13:27	13:41	13:50		
	04	108° 15'.9	239° 33'.2	02.0	269° 00'.3	58.4	250° 41'.8	44.2	201° 31'.3	27.4	201° 31'.3	27.4	Adhara	255° 09'.9	28° 59'.8 S	228° 20'.2	31.7	162° 56'.1	12.5	09.5	4.3	54'.4	64°	06:50	07:53	08:59	13:08	13:26	13:40		
	05	123° 18'.3	254° 32'.5	02.9	284° 01'.3	59.0	265° 43'.7	44.3	216° 33'.5	27.4	216° 33'.5	27.4	Aldebaran	290° 45'.6	16° 32'.5 N	243° 20'.0	34.2	177° 27'.6	12.5	05.2	4.5		62°	06:43	07:41	08:39	12:52	13:14	13:31		
	06	138° 20'.8	269° 31'.8	03.8	299° 02'.3	58.6	280° 45'.7	44.5	231° 35'.6	27.4	231° 35'.6	27.4					258° 19'.8	34.7	191° 59'.1	12.5	00.7	4.6	60°	06:36	07:30	08:22	12:39	13:03	13:23		
	07	153° 23'.3	284° 31'.1	04.7	314° 03'.3	7° 00'.2 S	295° 47'.6	44.7	246° 37'.8	27.4	246° 37'.8	27.4	Alioth	166° 18'.5	55° 51'.7 N	273° 19'.6	35.2	206° 30'.6	12.5	17° 56'.1 S	4.6		N 58°	06:30	07:21	08:08	12:28	12:54	13:16		
	08	168° 25'.7	299° 30'.5	05.6	329° 04'.3	00.8	310° 49'.6	44.8	261° 40'.0	27.4	261° 40'.0	27.4	Alkaid	152° 57'.0	49° 13'.5 N	288° 19'.5	35.7	221° 02'.1	12.6	51.5	4.8		56°	06:25	07:12	07:56	12:18	12:46	13:10		
	09	183° 28'.2	314° 29'.8	06.5	344° 05'.3	01.4	325° 51'.5	45.0	277° 42'.1	27.4	277° 42'.1	27.4	Alnair	27° 40'.1	46° 52'.6 S	303° 19'.3	36.2	235° 33'.7	12.5	46.7	4.8		54°	06:20	07:05	07:46	12:09	12:39	13:05		
	10	198° 30'.7	329° 29'.1	07.4	359° 06'.3	02.0	340° 53'.5	45.2	291° 44'.3	27.4	291° 44'.3	27.4	Alnilam	275° 43'.0	1° 11'.6 S	318° 19'.1	36.7	250° 05'.2	12.6	41.9	4.9		52°	06:16	06:58	07:37	12:01	12:32	13:00		
	11	213° 33'.1	344° 28'.4	08.3	14° 07'.3	02.6	355° 55'.4	45.3	306° 46'.5	27.4	306° 46'.5	27.4	Alphard	217° 53'.1	8° 44'.1 S	333° 18'.9	37.2	264° 36'.8	12.5	37.0	5.0	54'.5	50°	06:11	06:52	07:28	11:54	12:26	12:55		
	12	228° 35'.6	359° 27.7	09.2	29° 08'.3	03.2	10° 57.4	45.5	321° 48.6	27.4	321° 48.6	27.4					348° 18.7	37.7	279° 08.3	12.6	32.0	5.0	45°	06:02	06:38	07:11	11:39	12:14	12:46		
	13	243° 38'.1	14° 27'.0	17° 10'.1 S	44° 09'.3	7° 03'.8 S	25° 59'.3	13° 45'.7 S	336° 50'.8	22° 27'.4 S	336° 50'.8	22° 27'.4 S	Alphecca	126° 08'.9	26° 39'.5 N	3° 18'.5	20° 38'.2 S	293° 39'.9	12.6	17° 27'.0 S	5.2	54'.5	N 40°	05:53	06:27	06:56	11:26	12:03	12:38		
	14	258° 40'.5	29° 26'.3	10.9	59° 10'.3	04.4	41° 01'.3	45.8	351° 53'.0	27.5	351° 53'.0	27.5					18° 18'.4	53'.7	308° 11'.5	12.6	21.8	5.2	35°	05:46	06:17	06:44	11:15	11:54	12:31		
	15	273° 43'.0	44° 25'.6	11.8	74° 11'.3	05.0	56° 03'.2	46.0	6° 55'.1	27.5	6° 55'.1	27.5	Altair	62° 05'.5	8° 55'.2 N	33° 18'.2	39.2	322° 43'.1	12.6	16.6	5.3		30°	05:38	06:08	06:33	11:06	11:46	12:25		
	16	288° 45'.4	59° 25'.0	12.7	89° 12'.3	05.6	71° 05'.2	46.2	21° 57'.3	27.5	21° 57'.3	27.5	Ankaa	353° 12.6	42° 12.8 S	48° 20'.0	39.7	337° 14'.7	12.7	11.3	5.4		30°	05:24	05:51	06:15	10:50	11:33	12:14		
	17	303° 47'.9	74° 24'.3	13.6	104° 13'.3	06.2	86° 07'.1	46.3	36° 59'.4	27.5	36° 59'.4	27.5	Antares	112° 23'.0	26° 28'.0 S	63° 17'.8	40.2	351° 46'.4	12.6	05.9	5.4	54'.6	N 10°	05:10	05:36	05:59	10:36	11:21	12:05		
	18	318° 50'.4	89° 23'.6	14.5	119° 14'.3	06.8	101° 09'.1	46.5	52° 01'.6	27.5	52° 01'.6	27.5					78° 17'.6	40.7	6° 18'.0	12.7	00.5	5.6	0°	04:56	05:21	05:43	10:23	11:09	11:56		
	19	333° 52'.8	104° 22'.9	15.4	134° 15'.3	07.4	116° 11'.0	46.6	67° 03'.8	27.5	67° 03'.8	27.5	Arcturus	145° 53'.3	19° 05'.5 N	93° 17.4	41.2	20° 49.7	12.6	16° 54.9 S	5.6		S 10°	04:39	05:05	05:28	10:09	10:58	11:47		
	20	348° 55'.3	119° 22'.2	16.3	149° 16'.3	08.0	131° 13'.0	46.8	82° 05'.9	27.5	82° 05'.9	27.5	Atria	107° 22'.6	69° 03'.4 S	108° 17.2	41.7	35° 21'.3	12.7	49.3	5.7		20°	04:19	04:47	05:11	09:55	10:46	11:38		
	21	3° 57'.8	134° 21'.5	17.2	164° 17'.3	08.6	146° 14'.9	47.0	97° 08'.1	27.5	97° 08'.1	27.5	Avior	234° 16.4	59° 33'.8 S	123° 17.1	42.2	49.5	53.0	12.7	43.6	5.8		30°	03:53	04:25	04:52	09:39	10:32	11:27	
	22	19° 00'.2	149° 20'.8	18.1	179° 18'.3	09.2	161° 16'.9	47.1	112° 10'.3	27.5	112° 10'.3	27.5	Bellatrix	278° 28'.5	6° 21'.8 N	138° 16'.9	42.7	64° 24.7	12.7	37.8	5.9		35°	03:37	04:12	04:41	09:30	10:24	11:21		
23	34° 02'.7	164° 20'.1	19.0	194° 19'.3	09.8	176° 18'.8	47.3	127° 12'.4	27.5	127° 12'.4	27.5	Betelgeuse	270° 57.8	7° 24.5 N	153° 16.7	43.1	78° 56.4	12.7	31.9	5.9	54'.7	40°	03:17	03:56	04:28	09:19	10:15	11:13			
24	49° 05'.2	179° 19'.4	19.8	209° 20'.3	10.4	191° 20'.8	47.5	142° 14'.6	27.6	142° 14'.6	27.6					168° 16.5	43.6	93° 28.1	12.8	26.0	6.0	45°	02:51	03:37	04:12	09:06	10:04	11:05			
25	00	64° 07'.6	194° 18'.7	17° 20'.7 S	224° 21'.3	7° 11'.0 S	206° 22'.8	13° 47'.6 S	157° 16'.8	22° 27'.6 S	157° 16'.8	22° 27'.6 S	Canopus	263° 54.3	52° 42.3 S	183° 16.3	20° 44.1 S	107° 59.9	12.7	16° 20.0 S	6.1	54.7	S 50°	02:15	03:12	03:53	08:51	09:51	10:55		
	01	79° 10'.1	209° 18'.0	21.6	239° 22'.3	11.6	226° 21'.7	47.8	172° 18.9	27.6	172° 18.9	27.6	Capella	280° 29.6	46° 00'.7 N	198° 16.1	44.6	122° 31.6	12.8	13.9	6.2		52°	01:56	02:00	03:44	08:43	09:45	10:50		
	02	94° 12.6	224° 17'.3	22.5	254° 23'.3	12.2	236° 26'.7	48.0	187° 21.1	27.6	187° 21.1	27.6	Deneb	49° 29.6	45° 21.0 N	213° 15.9	45.1	137° 03.4	12.7	07.7	6.3		54°	01:30	02:45	03:34	08:35	09:38	10:45		
	03	109° 15.0	239° 16.6	23.4	269° 24'.3	12.8	251° 28'.6	48.1	202° 23'.2	27.6	202° 23'.2	27.6	Denebola	282° 30.8	14° 28'.4 N	228° 15.7	45.6	151° 35.1	12.8	01.4	6.3	54'.8	56°	00:53	02:28	03:22	08:26	09:31	10:40		
	04	124° 17'.5	254° 16'.0	24.3	284° 25'.3	13.4	266° 30'.6	48.3	217° 25'.4	27.6	217° 25'.4	27.6	Diphda	348° 52.7	17° 53'.5 S	243° 15.5	46.1	166° 06.9	12.8	15° 55.1 S	6.4		58°	-	02:08	03:09	08:16	09:22	10:33		
	05	139° 19.9	269° 15.3	25.1	299° 26'.3	14.0	281° 32'.5	48.5	232° 27.6	27.6	232° 27.6	27.6					258° 15.4	46.6	180° 38.7	12.8	48.7	6.5	S 60°	-	01:40	02:53	08:04	09:13	10:26		
	06	154° 22'.4	284° 14'.6	26.0	314° 27'.3	14.6	296° 34'.5	48.6	247° 29'.7	27.6	247° 29'.7	27.6	Dubhe	193° 48'.3	61° 39'.0 N	273° 15.2	47.1	195° 10.5	12.8	42.2	6.5		S 62°	-	00:59	02:34	07:50	09:01	10:18		
	07	169° 24.9	299° 13'.9	26.9	329° 28'.3	15.2	311° 36'.4	48.8	262° 31.9	27.6	262° 31.9	27.6	Elath	278° 08'.5	28° 37.1 N	288° 15.0	47.5	209° 42.3	12.8	35.7	6.7										
	08	184° 27'.3	314° 13'.2	27.8	344° 29'.3	15.8	326° 38'.4	48.9	277° 34'.1	27.7	277° 34'.1	27.7	Eltanin	90° 45'.3	51° 29'.5 N	303° 14.8	48.0	224° 14.1	12.9	29.0	6.7	54'.9									
	09	199° 29.8	329° 12'.5	28.7	359° 30'.2	16.4	341° 40'.3	49.1	292° 36.2	27.7	292° 36.2	27.7	Enif	33° 44.2	9° 57.6 N	318° 14.6	48.5	238° 46.0	12.8	22.3	6.8										
	10	214° 32'.3	344° 11'.8	29.5	14° 31'.2	16.9	356° 42'.3	49.3	307° 38'.4	27.7	307° 38'.4	27.7	Fomalhaut	15° 20.7	29° 31.8 S	333° 14.4	49.0	253° 17.8	12.9	15.5	6.8										

2017 December 6, 7, 8 (Wed, Thur, Fri)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		HP	Nautical		Civil	6	7
Wednesday	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	HP	N 72°	08:06	10:18	-	-	17:31	19:52
	01	74° 58'.2	190° 57'.5	20° 43'.5 S	228° 42'.2	9° 45'.1 S	215° 00'.1	14° 29'.3 S	166° 46'.2	22° 29'.9 S	Acamar	315° 15'.7	40° 14'.2 S	182° 16'.3	22° 28'.9 S	326° 36'.6	3.7	19° 49'.4 N	1.9	60'.9	N 70°	07:48	09:30	-	-	16:15	18:19	20:17			
	02	90° 00'.6	205° 56'.7	44'.1	243° 43'.1	45'.7	230° 02'.1	29'.5	181° 48'.4	29'.9	Achernar	335° 24'.2	57° 09'.1 S	197° 16'.1	29'.2	340° 59'.3	3.7	47'.5	2.0	68°	N 68°	07:33	08:59	11:20	17:06	18:50	20:36				
	03	105° 03'.1	220° 55'.9	44'.8	258° 44'.1	46'.3	245° 04'.0	29'.6	196° 50'.5	29'.9	Acruz	173° 06'.1	63° 11'.5 S	212° 15'.8	29'.5	355° 22'.0	3.7	45'.5	2.2	66°	N 66°	07:21	08:36	10:07	17:38	19:13	20:51				
	04	120° 05'.5	235° 55'.0	45'.4	273° 45'.1	46'.8	260° 06'.0	29'.8	211° 52'.7	29'.9	Adhara	255° 09'.8	28° 59'.8 S	227° 15'.5	29'.8	9° 44'.7	3.8	43'.3	2.3	60'.8	N 64°	07:11	08:18	09:32	18:02	19:31	21:04				
	05	135° 08'.0	250° 54'.2	46'.1	288° 46'.1	47'.4	275° 08'.0	29'.9	226° 54'.8	29'.9	Aldebaran	290° 45'.6	16° 32'.5 N	242° 15'.3	30'.1	24° 07'.5	3.9	41'.0	2.5	62°	N 62°	07:02	08:03	09:06	18:21	19:46	21:14				
	06	150° 10'.5	265° 53'.4	46'.7	303° 47'.1	48'.0	290° 05'.9	30'.1	241° 57'.0	29'.9				257° 15'.0	30'.4	38° 30'.4	3.9	38'.5	2.6	60°	N 60°	06:54	07:50	08:46	18:36	19:58	21:23				
	07	165° 12'.9	280° 52'.5	47'.3	318° 48'.0	48'.6	305° 11'.9	30'.2	256° 59'.1	29'.9	Alioth	166° 18'.4	55° 51'.6 N	272° 14'.8	30'.7	52° 53'.3	3.9	35'.9	2.8		N 58°	06:47	07:39	08:30	18:49	20:09	21:31				
	08	180° 15'.4	295° 51'.7	48'.0	333° 49'.0	49'.1	320° 13'.9	30'.4	272° 01'.3	29'.9	Alkaid	152° 56'.9	49° 13'.4 N	287° 14'.5	31'.0	67° 16'.2	4.1	33'.1	2.9		N 56°	06:41	07:30	08:16	19:00	20:21	21:38				
	09	195° 17'.9	310° 50'.9	48'.6	348° 50'.0	49'.7	335° 03'.0	30'.5	287° 03'.4	29'.9	Alnair	27° 40'.1	46° 52'.6 S	303° 14'.2	31'.3	81° 39'.3	4.0	30'.2	3.0	60'.7	N 54°	06:35	07:21	08:04	19:10	20:26	21:44				
	10	210° 20'.3	325° 50'.0	49'.2	3° 51'.0	50'.3	350° 17'.8	30'.7	302° 05'.6	29'.9	Alnilam	275° 43'.0	1° 11'.6 S	317° 14'.0	31'.6	96° 02'.3	4.2	27'.2	3.2		N 52°	06:30	07:13	07:54	19:19	20:33	21:49				
	11	225° 22'.8	340° 49'.2	49'.9	18° 52'.0	50'.8	5° 19'.8	30'.8	317° 07'.7	29'.9	Alphard	217° 53'.0	8° 44'.2 S	332° 13'.7	31'.9	110° 25'.5	4.2	24'.0	3.3		N 50°	06:25	07:06	07:44	19:27	20:40	21:54				
	12	240° 25'.3	355° 48'.4	50'.5	33° 52'.9	51'.4	20° 21'.8	31'.0	332° 09'.9	30'.0				347° 13'.4	32'.2	124° 48'.7	4.2	20'.7	3.5		N 45°	06:14	06:51	07:24	19:44	20:54	22:05				
	13	255° 27'.7	10° 47'.5	20° 51'.1 S	48° 53'.9	9° 52'.0 S	35° 23'.7	14° 31'.1 S	347° 12'.0	22° 30'.0	Alphecca	126° 08'.8	26° 39'.4 N	2° 13'.2	22° 32'.5 S	139° 11'.9	4.3	19° 17'.2 N	3.6	60'.6	N 40°	06:04	06:38	07:08	19:57	21:06	22:21				
	14	270° 30'.2	25° 46'.7	51'.8	63° 54'.9	52'.5	50° 25'.7	31'.3	2° 14'.2	30'.0	Alpheratz	357° 40'.2	29° 17'.0 N	17° 12'.9	32'.7	153° 35'.2	4.4	13'.6	3.7		N 35°	05:55	06:27	06:55	20:09	21:16	22:24				
	15	285° 32'.7	40° 45'.9	52'.4	78° 55'.9	53'.1	65° 27'.7	31'.4	17° 16'.3	30'.0	Altair	62° 05'.6	8° 55'.1 N	32° 12'.6	33'.0	167° 58'.6	4.5	09'.9	3.9		N 30°	05:47	06:17	06:43	20:19	21:24	22:28				
	16	300° 35'.1	55° 45'.0	53'.0	93° 56'.8	53'.7	80° 29'.6	31'.6	32° 18'.5	30'.0	Antaa	353° 12'.6	42° 12'.8 S	47° 12'.4	33'.3	182° 22'.1	4.5	06'.0	3.9	60'.5	N 20°	05:31	05:59	06:22	20:37	21:39	22:39				
	17	315° 37'.6	70° 44'.2	53'.6	108° 57'.8	54'.2	95° 31'.6	31'.7	47° 20'.6	30'.0	Antares	112° 22'.9	26° 28'.0 S	62° 12'.1	33'.6	196° 45'.6	4.6	02'.1	4.2		N 10°	05:16	05:42	06:05	20:52	21:52	22:49				
	18	330° 40'.0	85° 43'.4	54'.3	123° 58'.8	54'.8	110° 33'.6	31'.9	62° 22'.8	30'.0				77° 11'.8	33'.9	211° 09'.2	4.7	18° 57'.9 N	4.2		N 0°	04:59	05:25	05:48	21:06	22:04	22:59				
	19	345° 42'.5	100° 42'.5	54'.9	138° 59'.8	55'.4	125° 35'.5	32'.0	77° 24'.9	30'.0	Arcturus	145° 53'.3	19° 05'.5 N	92° 11'.6	34'.2	225° 32'.9	4.7	53'.7	4.4		S 10°	04:41	05:08	05:31	21:20	22:16	23:08				
	20	0° 45'.0	115° 41'.7	55'.5	154° 00'.8	55'.9	140° 37'.5	32'.2	92° 27'.1	30'.0	Atria	107° 22'.6	69° 03'.3 S	107° 11'.3	34'.5	239° 56'.6	4.8	49'.3	4.5	60'.4	N 20°	04:19	04:48	05:13	21:35	22:29	23:18				
	21	15° 47'.4	130° 40'.9	56'.1	169° 01'.7	56'.5	155° 39'.5	32'.3	107° 29'.2	30'.0	Avior	234° 16'.3	59° 33'.9 S	122° 11'.0	34'.8	254° 20'.4	4.9	44'.8	4.6		N 30°	03:51	04:24	04:51	21:53	22:44	23:29				
	22	30° 49'.9	145° 40'.0	56'.7	184° 02'.7	57'.1	170° 41'.5	32'.5	122° 31'.4	30'.0	Bellatrix	278° 28'.4	6° 21'.8 N	137° 10'.8	35'.0	268° 44'.3	5.0	40'.2	4.8		N 35°	03:33	04:10	04:39	22:03	22:53	23:36				
23	45° 52'.4	160° 39'.2	57'.4	199° 03'.7	57'.6	185° 43'.4	32'.6	137° 33'.5	30'.0	Betelgeuse	270° 57'.7	7° 24'.4 N	152° 10'.5	33'.5	283° 08'.3	5.0	35'.4	4.9		N 40°	03:11	03:52	04:24	22:14	23:02	23:43					
	60° 54'.8	175° 38'.3	58'.0	214° 04'.7	58'.2	200° 45'.4	32'.8	152° 35'.7	30'.0				167° 10'.2	35'.6	297° 32'.3	5.1	30'.5	5.0	60'.3	N 45°	02:42	03:31	04:07	22:28	23:14	23:52					
Thursday	00	75° 57'.3	190° 37'.5	20° 58'.6 S	229° 05'.6	9° 58'.8 S	215° 47'.4	14° 32'.9 S	167° 37'.8	22° 30'.0 S	Canopus	263° 54'.3	52° 42'.4 S	182° 10'.0	22° 35'.9 S	311° 56'.4	5.2	18° 25'.5 N	5.1	60'.3	S 52°	02:00	03:02	03:46	22:45	23:27	24:02				
	01	90° 59'.8	205° 36'.7	59'.2	240° 06'.6	59'.3	230° 04'.3	33'.1	182° 40'.0	30'.1	Capella	280° 29'.5	46° 00'.7 N	197° 09'.7	36'.2	320° 20'.6	5.3	20° 24'.0 N	5.1		S 50°	02:02	03:26	04:03	23:06	23:54	24:07				
	02	106° 02'.2	220° 35'.8	59'.8	259° 07'.6	59'.9	245° 51'.3	33'.2	197° 42'.1	30'.1	Deneb	49° 29'.7	45° 21'.0 N	212° 09'.4	36'.4	340° 44'.9	5.3	15'.1	5.4	60'.2	N 54°	00:59	02:31	03:24	23:01	23:41	24:12				
	03	121° 04'.7	235° 35'.0	21° 00'.4 S	274° 08'.6	10° 00'.5 S	260° 53'.3	33'.4	212° 44'.3	30'.1	Denebola	182° 30'.7	14° 28'.3 N	227° 09'.2	36'.7	355° 09'.2	5.5	08'.7	5.4		N 56°	-	02:11	03:11	23:11	23:49	24:18				
	04	136° 07'.2	250° 34'.1	01'.1	289° 09'.5	01'.1	275° 55'.2	33'.5	227° 46'.4	30'.1	Diphda	348° 52'.7	17° 53'.5 S	242° 08'.9	37'.0	9° 33'.7	5.5	04'.3	5.7		N 58°	-	01:45	02:55	23:22	23:57	24:24				
	05	151° 09'.6	265° 33'.3	01'.7	304° 10'.5	01'.6	290° 57'.2	33'.7	242° 48'.6	30'.1				257° 08'.6	37'.3	23° 58'.2	5.6	17° 58'.6 N	5.7	60'.1	S 60°	-	01:06	02:36	23:34	-	00:07				
	06	166° 12'.1	280° 32'.5	02'.3	319° 11'.5	02'.2	305° 59'.2	33'.8	257° 50'.7	30'.1	Dubhe	193° 48'.1	61° 39'.0 N	272° 08'.4	37'.6	38° 22'.8	5.7	52'.9	5.8		S 62°	-	-	02:12	23:49	-	00:19				
	07	181° 14'.5	295° 31'.6	02'.9	334° 12'.5	02'.7	321° 01'.2	34'.0	272° 52'.9	30'.1	El Nath	278° 08'.4	28° 37'.1 N	287° 08'.1	37'.8	52° 47'.5	5.7	47'.1	6.0												
	08	196° 17'.0	310° 30'.8	03'.5	349° 13'.4	03'.3	336° 03'.1	34'.1	287° 55'.0	30'.1	Eltanin	90° 45'.3	51° 29'.4 N	302° 07'.8	38'.1	67° 12'.2	5.9	41'.1	6.0	60'.0											
	09	211° 19'.5	325° 29'.9	04'.1	4° 14'.4	03'.9	351° 05'.1	34'.3	302° 57'.2	30'.1	Enif	33° 44'.3	9° 57'.6 N	317° 07'.6	38'.4	81° 37'.1	5.9	35'.1	6.2												
	10	226° 21'.9	340° 29'.1	04'.7	19° 15'.4	04'.4	6° 07'.1	34'.4	317° 59'.3	30'.1	Fomalhaut	15° 20'.7	29° 31'.8 S	332° 07'.3	38'.7	96° 02'.0	6.0	28'.9	6.3												
	11	241° 24'.4	355° 28'.2	05'.3	34° 16'.4	05'.0	21° 09'.0	34'.6	333° 01'.5	30'.1				347° 07'.0	38'.9	110° 27'.0	6.1	22'.6	6.4	59'.9											
	12	256° 26'.9	10° 27'.4	21° 05'.9 S	49° 17'.4	10° 05'.6 S	36° 11'.0	14° 34'.7 S	348° 03'.6	22° 30'.1 S	Gacrux	171° 57'.7	57° 12'.4 S	2° 06'.7	22° 39'.2 S	124° 52'.1	6.2	17° 16'.2 N	6.5	59'.9	N 70°	-	14:13	15:55	13:32	13:31	13:29				
	13	271° 29'.3	25° 26'.5	06'.5	64° 18'.3	06'.1	51° 13'.0	34'.9	3° 05'.8	30'.1	Gienah	175° 49'.3	17° 38'.3 S	17° 06'.5	39'.5	139° 17'.3	6.3	09'.7	6.7		N 68°	12:22	14:44	16:09	12:40	12:59	13:08				
	14	286° 31'.8	40° 25'.7	07'.1	79° 19'.3	06'.7	66° 15'.0	35'.0	18° 07'.9	30'.1	Hadar	148° 44'.0	60° 27'.2 S	32° 06'.2	39'.8	153° 42'.6	6.4	03'.1	6.1	59'.8	N 66°	13:35	15:07	16:21	12:08	12:36	12:52				
	15	301° 34'.3	55° 24'.9	07'.7	94° 20'.3	07'.3	81° 16'.9	35'.2	33° 10'.1	30'.1	Hamal	327° 57'.1	23° 32'.8 S	47° 05'.9	40'.0	168° 08'.0	6.5	16° 56'.4 N	6.8		N 64°	14:11	15:25	16:31	11:44	12:17	12:39				
	16	316° 36'.7	70° 24'.0	08'.3	109° 21'.3	07'.8	96° 18'.9	35'.3	48° 12'.3	30'.2	Kaus Aust.	83° 40'.2	34° 22'.4 S	62° 05'.7	40'.3	182° 33'.5	6.5	49'.6	6.9		N 62°	14:37	15:40	16:40	11:25	12:02	12:27				
	17	331° 39'.2	85° 23'.2	08'.9	124° 22'.2																										

2017 December 15, 16, 17 (Fri, Sat, Sun)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	15		16	17	
Friday	00	GHA	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	08:21	10:50	-	06:46	08:45	-										
	01	83° 50.4	187° 48.3	22° 36.7 S	232° 11.7	11° 45.4 S	222° 07.4	15° 00.8 S	174° 30.2	22° 31.1 S	189° 32.4	31.1	Acamar	315° 15.7	40° 14.3 S	181° 15.0	23° 15.6 S	217° 28.6	13.7	12° 07.2 S	8.4	54.6	N 70°	08:02	09:49	-	06:20	08:00	09:42		
	02	98° 52.9	202° 47.4	37.1	247° 12.6	45.9	237° 09.4	01.0	209° 32.4	31.1	189° 32.4	31.1	Achernar	335° 24.3	57° 09.1 S	196° 14.7	15.7	232° 01.3	13.7	15.6	8.3		68°	07:46	09:15	-	06:01	07:30	08:57		
	03	113° 55.3	217° 46.5	37.5	262° 13.6	46.4	252° 11.4	01.1	204° 34.5	31.1	173° 06.0	31.1	Acruz	173° 06.0	63° 11.5 S	211° 14.4	15.8	246° 34.0	13.7	23.9	8.2		66°	07:33	08:50	10:29	05:46	07:08	08:27		
	04	128° 57.8	232° 45.6	37.9	277° 14.6	47.0	267° 13.3	01.2	219° 36.7	31.1	255° 09.8	31.1	Adhara	255° 09.8	28° 59.9 S	226° 14.1	16.0	261° 06.7	13.7	32.1	8.2		64°	07:22	08:30	09:48	05:33	06:51	08:05		
	05	144° 00.3	247° 44.6	38.3	292° 15.5	47.5	282° 15.3	01.4	234° 38.8	31.2	290° 45.6	31.2	Aldebaran	290° 45.6	16° 32.5 N	241° 13.8	16.1	275° 39.4	13.7	40.3	8.0		62°	07:12	08:14	09:20	05:22	06:37	07:47		
	06	159° 02.7	262° 43.7	38.7	307° 16.5	48.1	297° 17.3	01.5	249° 41.0	31.2	307° 16.5	31.2		256° 13.5	16.2	290° 12.1	13.6	290° 12.1	13.6	48.4	8.1		60°	07:04	08:01	08:58	05:13	06:25	07:33		
	07	174° 05.2	277° 42.8	39.1	322° 17.5	48.6	312° 19.3	01.7	264° 43.1	31.2	312° 19.3	31.2	Alioth	166° 18.3	55° 51.6 N	271° 13.2	16.3	304° 44.7	13.7	56.4	8.0	54.5	N 58°	06:57	07:49	08:41	05:06	06:15	07:20		
	08	189° 07.7	292° 41.9	39.5	337° 18.4	49.2	327° 21.3	01.8	279° 45.3	31.2	279° 45.3	31.2	Alkaid	152° 56.9	49° 13.4 N	286° 12.9	16.5	319° 17.4	13.6	13° 04.4 S	7.9		56°	06:50	07:39	08:26	04:59	06:06	07:09		
	09	204° 10.1	307° 41.0	39.9	352° 19.4	49.7	342° 23.3	01.9	294° 47.4	31.2	342° 23.3	31.2	Alnair	27° 40.2	46° 52.6 S	301° 12.6	16.6	333° 50.0	13.6	12.3	7.9	54.4	54°	06:44	07:30	08:14	04:52	05:58	07:00		
	10	219° 12.6	322° 40.0	40.3	7° 20.3	50.2	357° 25.3	02.1	309° 49.6	31.2	357° 25.3	31.2	Alnilam	2175° 43.0	1° 11.6 S	316° 12.3	16.7	348° 22.6	13.6	20.2	7.8		52°	06:38	07:22	08:03	04:47	05:51	06:52		
	11	234° 15.0	337° 39.1	40.7	22° 21.3	50.8	12° 27.3	02.2	324° 51.7	31.2	12° 27.3	31.2	Alphard	275° 52.9	8° 44.2 S	331° 12.0	16.8	2° 55.2	13.5	28.0	7.8		50°	06:33	07:14	07:53	04:42	05:44	06:44		
	12	249° 17.5	352° 38.2	41.1	37° 22.3	51.3	27° 29.3	02.4	339° 53.8	31.2	339° 53.8	31.2		346° 11.7	17.0	17° 27.7	13.5	35.8	7.7			45°	06:21	06:58	07:32	04:31	05:31	06:28			
	13	264° 20.0	7° 37.3	22° 41.5 S	52° 23.2	11° 51.9 S	42° 31.2	15° 02.5 S	354° 56.0	22° 31.2 S	354° 56.0	22° 31.2 S	Alphaeca	126° 08.8	26° 39.4 N	1° 11.4	23° 17.1 S	32° 00.2	13.6	13° 43.5 S	7.6	54.5	N 40°	06:11	06:45	07:15	04:22	05:19	06:15		
	14	279° 22.4	22° 36.4	41.8	67° 24.2	52.4	57° 33.2	02.6	9° 58.1	31.2	57° 33.2	31.2		16° 11.1	17.2	46° 32.8	13.5	51.1	7.5			35°	06:01	06:33	07:01	04:15	05:10	06:04			
	15	294° 24.9	37° 35.4	42.2	82° 25.1	52.9	72° 35.2	02.8	25° 30.3	31.2	25° 30.3	31.2	Altair	62° 05.6	8° 55.1 N	31° 10.8	17.3	61° 05.3	13.4	58.6	7.5		30°	05:53	06:23	06:49	04:08	05:01	05:54		
	16	309° 27.4	52° 34.5	42.6	97° 26.1	53.5	87° 37.2	02.9	40° 02.4	31.2	40° 02.4	31.2	Ankaa	353° 12.7	42° 12.8 S	46° 10.5	17.4	75° 37.7	13.5	14° 06.1 S	7.5	54.4	30°	05:36	06:04	06:28	03:56	04:47	05:37		
	17	324° 29.8	67° 33.6	43.0	112° 27.1	54.0	102° 39.2	03.1	55° 04.6	31.2	55° 04.6	31.2	Antares	112° 22.9	26° 28.0 S	61° 10.2	17.6	90° 10.2	13.4	13.6	7.3		N 10°	05:20	05:47	06:09	03:46	04:34	05:23		
	18	339° 32.3	82° 32.7	43.4	127° 28.0	54.6	117° 41.2	03.2	70° 06.7	31.2	70° 06.7	31.2		76° 09.9	17.7	104° 42.6	13.4	20.9	7.3			0°	05:03	05:29	05:52	03:37	04:23	05:09			
	19	354° 34.8	97° 31.7	43.8	142° 29.0	55.1	132° 43.2	03.3	85° 08.9	31.2	85° 08.9	31.2	Arcturus	145° 53.2	19° 05.4 N	91° 09.6	17.8	119° 15.0	13.4	28.2	7.3		S 10°	04:44	05:11	05:34	03:28	04:11	04:55		
	20	9° 37.2	112° 30.8	44.1	157° 29.9	55.6	147° 45.2	03.5	100° 11.0	31.2	100° 11.0	31.2	Atria	107° 22.5	69° 03.3 S	106° 09.0	17.9	133° 47.4	13.4	35.5	7.1		20°	04:22	04:51	05:16	03:18	03:58	04:41		
	21	24° 39.7	127° 29.9	44.5	172° 30.9	56.2	162° 47.7	03.6	115° 13.2	31.2	115° 13.2	31.2	Avior	234° 16.2	59° 33.9 S	121° 09.3	18.0	148° 19.8	13.3	42.6	7.1		30°	03:53	04:26	04:54	03:07	03:44	04:25		
	22	39° 42.2	142° 29.0	44.9	187° 31.9	56.7	177° 49.2	03.8	130° 15.3	31.2	130° 15.3	31.2	Bellatrix	278° 28.4	6° 21.8 N	136° 08.7	18.1	162° 52.1	13.3	49.7	7.1		35°	03:34	04:11	04:41	03:00	03:36	04:15		
23	54° 44.6	157° 28.0	45.3	202° 32.8	57.3	192° 51.2	03.9	145° 17.4	31.2	145° 17.4	31.2	Betelgeuse	270° 57.7	7° 24.4 N	151° 08.4	18.3	177° 24.4	13.3	56.8	6.9	54.3	40°	03:11	03:53	04:26	02:53	03:27	04:04			
	69° 47.1	172° 27.1	45.7	217° 33.8	57.8	207° 53.1	04.0	160° 19.6	31.2	160° 19.6	31.2		166° 08.1	18.4	191° 56.7	13.3	15° 03.7 S	6.9			45°	02:41	03:30	04:08	02:44	03:16	03:51				
Saturday	00	84° 49.5	187° 26.2	22° 46.0 S	232° 34.7	11° 58.3 S	223° 55.1	15° 04.2 S	175° 21.7	22° 31.2 S	175° 21.7	22° 31.2 S	Canopus	263° 54.2	52° 42.4 S	181° 07.8	23° 18.5 S	206° 29.0	13.2	15° 10.6 S	6.8	54.3	S 50°	01:56	03:01	03:45	02:34	03:03	03:36		
	01	99° 52.0	202° 25.3	46.4	247° 35.7	58.9	237° 57.1	04.3	190° 23.9	31.2	190° 23.9	31.2	Capella	280° 29.5	46° 00.8 N	196° 07.5	18.6	221° 01.2	13.3	17.4	6.8		52°	01:28	02:46	03:34	02:30	02:57	03:29		
	02	114° 54.5	217° 24.3	46.8	262° 36.6	59.4	252° 59.1	04.4	205° 26.0	31.2	205° 26.0	31.2	Deneb	49° 29.7	45° 20.9 N	211° 07.2	18.7	235° 33.5	13.2	24.2	6.7		54°	00:43	02:28	03:22	02:24	02:50	03:21		
	03	129° 56.9	232° 23.4	47.1	277° 37.6	12° 00.0 S	268° 01.1	04.6	220° 28.2	31.3	220° 28.2	31.3	Denebola	182° 30.6	14° 28.3 N	226° 06.9	18.8	250° 05.7	13.1	30.9	6.6		56°	-	02:06	03:08	02:19	02:43	03:12		
	04	144° 59.4	247° 22.5	47.5	292° 38.6	00.5	283° 03.1	04.7	235° 30.3	31.3	235° 30.3	31.3	Diphda	348° 52.8	17° 53.5 S	241° 06.6	18.9	264° 37.8	13.2	37.5	6.6		58°	-	01:37	02:51	02:12	02:34	03:02		
	05	160° 01.9	262° 21.5	47.9	307° 39.5	01.0	298° 05.1	04.9	250° 35.2	31.3	250° 35.2	31.3		256° 06.3	19.0	279° 10.0	13.1	44.1	6.4			S 60°	-	00:48	02:31	02:05	02:25	02:50			
	06	175° 04.3	277° 20.6	48.2	322° 40.5	01.6	313° 07.1	05.0	265° 34.6	31.3	265° 34.6	31.3	Dubhe	193° 48.0	61° 39.0 N	271° 06.0	19.1	293° 42.1	13.1	50.5	6.4		S 62°	-	-	02:05	01:57	02:14	02:36		
	07	190° 06.8	292° 19.7	48.6	337° 41.4	02.1	328° 09.1	05.1	280° 36.8	31.3	280° 36.8	31.3	El Nath	278° 08.4	28° 37.1 N	286° 05.7	19.2	308° 14.2	13.1	56.9	6.4										
	08	205° 09.3	307° 18.8	49.0	352° 42.4	02.6	343° 11.1	05.3	295° 38.9	31.3	295° 38.9	31.3	Eltanin	90° 45.3	51° 29.4 N	301° 05.4	19.3	322° 46.3	13.1	16° 03.3 S	6.2	54.2									
	09	220° 11.7	322° 17.8	49.3	7° 43.4	03.2	358° 13.1	05.4	310° 41.0	31.3	310° 41.0	31.3	Enif	33° 44.3	9° 57.5 N	316° 05.0	19.4	337° 18.4	13.0	09.5	6.2										
	10	235° 14.2	337° 16.9	49.7	22° 44.3	03.7	13° 15.0	05.6	325° 42.3	31.3	325° 42.3	31.3	Fomalhaut	15° 20.8	29° 31.8 S	331° 04.7	19.6	351° 50.4	13.1	15.7	6.1										
	11	250°																													

2017 December 18, 19, 20 (Mon, Tue, Wed)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	18		19	20	
Monday	00	GHA	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	08:24	10:56	-	-	-	-								
	01	86° 47.8	186° 41.4	23° 02.6 S	233° 20.7	12° 24.0 S	224° 30.8	15° 10.8 S	177° 04.7	22° 31.4 S	177° 04.7	22° 31.4 S	Acamar	315° 15.7	40° 14.3 S	180° 53.1	23° 22.9 S	183° 52.1	12.2	19° 12.2 S	3.0	54.0	N 70°	08:04	09:53	-	-	11:31	-	12:53	
	02	101° 50.3	201° 40.4	02.9	248° 21.6	24.6	239° 32.8	10.9	192° 06.8	31.4	192° 06.8	31.4	Achernar	335° 24.3	57° 09.1 S	195° 52.8	23.0	198° 23.3	12.2	15.2	2.9	68°	07:48	09:18	-	-	10:15	11:13	11:48		
	03	116° 52.8	216° 39.5	03.2	263° 22.6	25.1	254° 34.8	11.0	207° 09.0	31.4	207° 09.0	31.4	Acruz	173° 05.9	63° 11.5 S	210° 52.5	23.0	212° 54.5	12.3	18.1	2.8	66°	07:35	08:52	10:33	09:37	10:33	11:12			
	04	131° 55.2	231° 38.6	03.5	278° 23.5	25.6	269° 36.8	11.2	222° 11.1	31.4	222° 11.1	31.4	Adhara	255° 09.8	28° 59.9 S	225° 52.2	23.1	227° 25.8	12.2	20.9	2.8	64°	07:24	08:33	09:51	09:11	10:05	10:46			
	05	146° 57.7	246° 37.6	03.8	293° 24.5	26.2	284° 38.8	11.3	233° 13.3	31.4	233° 13.3	31.4	Aldebaran	290° 45.5	16° 32.5 N	240° 51.9	23.2	241° 57.0	12.2	23.7	2.6	62°	07:15	08:17	09:22	08:51	09:44	10:26			
	06	162° 00.1	261° 36.7	04.1	308° 25.4	26.7	299° 40.8	11.4	252° 15.4	31.4	252° 15.4	31.4		255° 51.6	23.2	256° 28.2	12.2	26.3	2.6	60°	07:06	08:03	09:01	08:34	09:27	10:10					
	07	177° 02.6	276° 35.7	04.4	323° 26.4	27.2	314° 42.8	11.6	267° 17.6	31.4	267° 17.6	31.4	Alioth	166° 18.3	55° 51.6 N	270° 51.3	23.3	270° 59.4	12.1	28.9	2.5	58°	06:59	07:51	08:43	08:20	09:12	09:56			
	08	192° 05.1	291° 34.8	04.7	338° 27.3	27.8	329° 44.8	11.7	282° 19.7	31.4	282° 19.7	31.4	Alkaid	152° 56.8	49° 13.3 N	285° 50.9	23.4	285° 30.5	12.2	31.4	2.3	56°	06:52	07:41	08:29	08:08	09:00	09:44			
	09	207° 07.5	306° 33.9	05.0	353° 28.3	28.3	344° 46.8	11.9	297° 21.9	31.4	297° 21.9	31.4	Alnair	27° 40.2	46° 52.6 S	300° 50.9	23.4	300° 01.7	12.1	33.7	2.3	54°	06:46	07:32	08:16	07:58	08:49	09:34			
	10	222° 10.0	321° 32.9	05.3	8° 29.3	28.8	359° 48.8	12.0	312° 24.0	31.5	312° 24.0	31.5	Alnilam	275° 42.9	1° 11.6 S	315° 50.3	23.5	314° 32.8	12.2	36.0	2.2	53.9	52°	06:40	07:24	08:05	07:48	08:40	09:25		
	11	237° 12.5	336° 32.0	05.6	23° 30.2	29.4	14° 50.8	12.1	327° 26.1	31.5	327° 26.1	31.5	Alphard	217° 52.9	8° 44.2 S	330° 50.0	23.6	329° 04.0	12.1	38.2	2.2	50°	06:35	07:16	07:55	07:40	08:31	09:16			
	12	252° 14.9	351° 31.0	05.9	38° 31.2	29.9	29° 52.8	12.3	342° 28.3	31.5	342° 28.3	31.5		345° 49.7	23.6	343° 35.1	12.1	40.4	2.0	45°	06:23	07:00	07:34	07:22	08:13	08:59					
	13	267° 17.4	6° 30.1	23° 06.2 S	53° 32.1	12° 30.4 S	44° 54.8	15° 12.4 S	357° 30.4	22° 31.5 S	357° 30.4	22° 31.5 S	Alphecca	126° 08.8	26° 39.4 N	0° 49.4	23° 23.7 S	358° 06.2	12.1	19° 42.4 S	1.9	53.9	N 40°	06:13	06:47	07:17	07:08	07:58	08:44		
	14	282° 19.9	21° 29.1	06.5	68° 33.1	30.9	59° 56.8	12.5	12° 32.6	31.5	12° 32.6	31.5		15° 49.3	29.8	15° 49.3	23.8	12° 37.3	12.1	44.3	1.9	35°	06:03	06:35	07:03	06:56	07:45	08:32			
	15	297° 22.3	36° 28.2	06.8	83° 34.0	31.5	74° 58.8	12.7	27° 34.7	31.5	27° 34.7	31.5	Altair	62° 05.6	8° 55.1 N	30° 48.8	23.8	27° 08.4	12.1	46.2	1.7	30°	05:54	06:24	06:51	06:45	07:35	08:21			
	16	312° 24.8	51° 27.2	07.1	98° 35.0	32.0	90° 50.8	12.8	42° 36.9	31.5	42° 36.9	31.5	Ankaa	353° 12.7	42° 12.8 S	45° 48.5	23.9	41° 39.5	12.0	47.9	1.7	20°	05:38	06:05	06:29	06:27	07:16	08:03			
	17	327° 27.3	66° 26.3	07.4	113° 35.9	32.5	105° 02.8	12.9	57° 39.0	31.5	57° 39.0	31.5	Antares	112° 22.9	26° 28.0 S	60° 48.2	23.9	56° 10.5	12.1	49.6	1.5	10°	05:22	05:48	06:11	06:11	06:59	07:47			
	18	342° 29.7	81° 25.4	07.7	128° 36.9	33.1	120° 04.8	13.1	72° 41.2	31.5	72° 41.2	31.5		75° 47.9	24.0	70° 41.6	12.1	51.1	1.5	0°	05:05	05:31	05:53	05:56	06:44	07:32					
	19	357° 32.2	96° 24.4	08.0	143° 37.8	33.6	135° 06.8	13.2	87° 43.3	31.5	87° 43.3	31.5	Arcturus	145° 53.2	19° 05.4 N	90° 47.5	24.1	85° 12.7	12.0	52.6	1.4	10°	04:46	05:13	05:36	05:42	06:29	07:17			
	20	12° 34.6	111° 23.5	08.3	158° 38.8	34.1	150° 08.8	13.3	102° 45.4	31.5	102° 45.4	31.5	Atria	107° 22.5	69° 03.3 S	105° 47.2	24.1	99° 43.7	12.0	54.0	1.3	20°	04:23	04:52	05:17	05:26	06:13	07:01			
	21	27° 37.1	126° 22.5	08.6	173° 39.7	34.6	165° 10.8	13.5	117° 47.6	31.5	117° 47.6	31.5	Avior	234° 16.2	59° 33.9 S	120° 46.9	24.2	114° 14.7	12.1	55.3	1.2	30°	03:54	04:27	04:55	05:08	05:54	06:43			
	22	42° 39.6	141° 21.6	08.9	188° 40.7	35.2	180° 12.8	13.6	132° 49.7	31.5	132° 49.7	31.5	Bellatrix	278° 28.4	6° 21.7 N	135° 46.6	24.2	128° 45.8	12.0	56.5	1.1	35°	03:35	04:12	04:42	04:57	05:43	06:32			
23	57° 42.0	156° 20.6	09.2	203° 41.7	35.7	195° 14.8	13.7	147° 51.9	31.5	147° 51.9	31.5	Betelgeuse	270° 57.7	7° 24.4 N	150° 46.3	24.3	143° 16.8	12.0	57.6	1.0	40°	03:12	03:54	04:27	04:45	05:31	06:20				
	72° 44.5	171° 19.7	09.5	218° 42.6	36.2	210° 16.8	13.9	162° 54.0	31.5	162° 54.0	31.5		165° 46.0	24.3	157° 47.8	12.1	58.6	0.9	45°	02:41	03:31	04:09	04:31	05:16	06:05						
Tuesday	00	87° 47.0	186° 18.7	23° 09.8 S	233° 43.6	12° 36.8 S	225° 18.8	15° 14.0 S	177° 56.2	22° 31.5 S	177° 56.2	22° 31.5 S	Canopus	263° 54.2	52° 42.4 S	180° 45.7	23° 24.4 S	172° 18.9	12.0	19° 59.5 S	0.9	53.9	S 50°	01:56	03:01	03:46	04:14	04:58	05:48		
	01	102° 49.4	201° 17.8	10.1	240° 44.5	37.3	240° 24.8	14.1	192° 58.3	31.5	192° 58.3	31.5	Capella	280° 29.5	46° 00.8 N	195° 45.4	24.4	186° 49.9	12.0	20° 00.4 S	0.7	52°	01:28	02:46	03:35	04:06	04:49	05:39			
	02	117° 51.9	216° 16.8	10.3	263° 45.5	37.8	255° 22.8	14.3	208° 00.5	31.5	208° 00.5	31.5	Deneb	49° 29.7	45° 20.9 N	210° 45.1	24.5	201° 20.9	12.0	01.1	0.7	54°	00:41	02:28	03:23	03:57	04:40	05:30			
	03	132° 54.4	231° 15.9	10.6	278° 46.4	38.3	275° 24.8	14.4	223° 02.6	31.5	223° 02.6	31.5	Denebola	182° 30.6	14° 28.3 N	225° 44.8	24.5	215° 51.9	12.0	01.8	0.5	56°	-	02:06	03:09	03:47	04:29	05:19			
	04	147° 56.8	246° 15.0	10.9	293° 47.4	38.9	285° 26.8	14.6	238° 04.8	31.5	238° 04.8	31.5	Diphda	348° 52.8	17° 53.5 S	240° 44.5	24.6	230° 22.9	12.0	02.3	0.5	58°	-	01:36	02:52	03:35	04:17	05:07			
	05	162° 59.3	261° 14.0	11.2	308° 48.3	39.4	300° 28.8	14.7	253° 06.9	31.5	253° 06.9	31.5		255° 44.1	24.6	244° 53.9	12.0	02.8	0.4	S 60°	-	00:46	02:31	03:22	04:03	04:53					
	06	178° 01.8	276° 13.1	11.5	323° 49.3	39.9	315° 30.8	14.8	268° 09.0	31.5	268° 09.0	31.5	Dubhe	193° 48.0	61° 39.0 N	270° 43.8	24.7	259° 24.9	12.0	03.2	0.2	S 62°	-	-	02:05	03:06	03:46	04:37			
	07	193° 04.2	291° 12.1	11.7	338° 50.2	40.5	330° 32.8	15.0	283° 11.2	31.5	283° 11.2	31.5	Elnath	278° 08.4	28° 37.1 N	285° 43.5	24.7	273° 55.9	12.0	03.4	0.2										
	08	208° 06.7	306° 11.2	12.0	353° 51.2	41.0	345° 34.8	15.1	298° 13.3	31.5	298° 13.3	31.5	Eltanin	90° 45.3	51° 29.4 N	300° 43.2	24.8	288° 26.9	11.9	03.6	0.1										
	09	223° 09.1	321° 10.2	12.3	8° 52.1	41.5	0° 36.8	15.2	313° 15.5	31.5	313° 15.5	31.5	Enif	33° 44.3	9° 57.5 N	315° 42.9	24.8	302° 57.8	12.0	03.7	0.0										
	10	238° 11.6	336° 09.3	12.6	23° 53.1	42.0	15° 38.8	15.4	328° 17.6	31.5	328° 17.6	31.5	Fomalhaut	15° 20.8	29° 31.8 S	330° 42.6	24.9	317° 28.8	12.0	03.7	0.1										
	11	253° 14.1	351° 08.3	12.8	38° 54.0	42.6	30° 40.8	15.5	343° 19.8	31.5	343° 19.8	31.5		345° 42.4	24.9	331° 59.8	12.0</														

2017 December 21, 22, 23 (Thur, Fri, Sat)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise		
																								Nautical		Civil	21		22	23	
Thurs day	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	08:26	10:58	-	-	13:19	12:59		
	01	89° 45.2	185° 33.1	23° 22.1 S	234° 29.2	13° 01.9 S	226° 54.9	15° 20.4 S	179° 39.1	22° 31.6 S	194° 41.3	31.6	Acamar	315° 15.8	40° 14.3 S	180° 30.8	23° 26.0 S	149° 10.6	12.3	18° 55.9 S	3.5	54.1	N 70°	08:06	09:55	-	-	12:45	12:40		
	02	104° 47.7	200° 32.1	22.3	249° 30.2	02.5	241° 56.9	20.5	249° 30.2	31.6	194° 41.3	31.6	Achernar	335° 24.3	57° 09.1 S	195° 30.5	26.0	163° 41.9	12.4	52.4	3.6		68°	07:50	09:20	-	-	12:05	12:13		
	03	119° 50.2	215° 31.1	22.5	264° 31.1	03.0	256° 58.9	20.7	209° 43.4	31.6	209° 43.4	31.6	Acruz	173° 05.9	63° 11.5 S	210° 30.2	26.0	178° 13.3	12.3	48.8	3.7		66°	07:37	08:54	10:35	11:37	11:52	12:02		
	04	134° 52.6	230° 30.2	22.7	279° 32.1	03.5	272° 50.9	20.8	224° 45.5	31.6	224° 45.5	31.6	Adhara	255° 09.7	28° 59.9 S	225° 29.9	26.0	192° 44.6	12.4	45.1	3.8		64°	07:26	08:34	09:53	11:15	11:36	11:50		
	05	149° 55.1	245° 29.2	23.0	294° 33.0	04.0	287° 02.9	20.9	239° 47.7	31.6	240° 29.5	26.0	Aldebaran	290° 45.5	16° 32.5 N	240° 29.5	26.0	207° 16.0	12.3	41.3	3.9		62°	07:16	08:18	09:24	10:58	11:22	11:40		
	06	164° 57.6	260° 28.3	23.2	309° 34.0	04.6	302° 04.9	21.1	254° 49.8	31.7	255° 29.2	26.0				221° 47.3	12.4	37.4	3.9				60°	07:08	08:05	09:03	10:44	11:10	11:31		
	07	180° 00.0	275° 27.3	23.4	324° 34.9	05.1	317° 06.9	21.2	269° 52.0	31.7	269° 52.0	31.7	Alioth	166° 18.2	55° 51.6 N	270° 28.9	26.0	236° 18.7	12.4	33.5	4.1		N 58°	07:00	07:53	08:45	10:32	11:00	11:23		
	08	195° 02.5	290° 26.4	23.6	339° 35.8	05.6	332° 08.9	21.3	284° 54.1	31.7	285° 28.6	26.0	Alkaid	152° 56.8	49° 13.3 N	285° 28.6	26.0	250° 50.1	12.5	29.4	4.1	54.2	56°	06:54	07:43	08:30	10:12	10:51	11:16		
	09	210° 05.0	305° 25.4	23.8	354° 36.8	06.1	347° 10.9	21.5	299° 56.3	31.7	300° 28.6	26.1	Alnair	27° 40.2	46° 52.6 S	300° 28.6	26.1	265° 21.6	12.4	25.3	4.2		54°	06:47	07:34	08:17	10:10	10:41	11:10		
	10	225° 07.4	320° 24.4	24.1	9° 37.7	06.6	2° 12.9	21.6	314° 58.4	31.7	315° 28.0	26.1	Alnilam	275° 42.9	1° 11.6 S	315° 28.0	26.1	279° 53.0	12.5	21.1	4.3		52°	06:42	07:25	08:06	10:03	10:36	11:05		
	11	240° 09.9	335° 23.5	24.3	24° 38.7	07.2	17° 14.9	21.7	330° 00.6	31.7	330° 27.7	26.1	Alphard	217° 52.9	8° 44.2 S	330° 27.7	26.1	294° 24.5	12.5	16.8	4.4		50°	06:36	07:18	07:56	09:56	10:30	11:00		
	12	255° 12.4	350° 22.5	24.5	39° 39.6	07.7	32° 16.9	21.9	345° 02.7	31.7	345° 27.4	26.1				308° 56.0	12.5	12.4	4.5				45°	06:25	07:02	07:36	09:40	10:16	10:49		
	13	270° 14.8	5° 21.6	23° 24.7 S	54° 40.6	13° 08.2 S	47° 19.0	15° 22.0 S	0° 04.8	22° 31.7 S	0° 27.1	23° 26.1 S	Alphaecca	126° 08.8	26° 39.4 N	0° 27.1	23° 26.1 S	323° 27.5	12.5	18° 07.9 S	4.5	54.2	N 40°	06:14	06:48	07:19	09:26	10:05	10:39		
	14	285° 17.3	20° 20.6	24.9	69° 41.5	08.7	62° 21.0	22.1	15° 07.0	31.7	15° 26.7	26.1				15° 26.7	26.1	337° 59.0	12.5	03.4	4.7		35°	06:05	06:36	07:05	09:15	09:55	10:32		
	15	300° 19.7	35° 19.6	25.1	84° 42.5	09.2	77° 23.0	22.2	30° 09.1	31.7	30° 26.4	26.1	Altair	62° 05.6	8° 55.1 N	30° 26.4	26.1	352° 30.5	12.6	17° 58.7 S	4.7		30°	05:56	06:26	06:52	09:05	09:46	10:25		
	16	315° 22.2	50° 18.7	25.3	99° 43.4	09.7	92° 25.0	22.4	45° 26.1	31.7	45° 26.1	31.7	Antares	353° 12.7	42° 12.8 S	45° 26.1	31.7	7° 02.1	12.5	54.0	4.8		20°	05:39	06:07	06:32	08:48	09:31	10:13		
	17	330° 24.7	65° 17.7	25.5	114° 44.4	10.3	107° 27.0	22.5	60° 13.4	31.7	60° 25.8	26.1				60° 25.8	26.1	21° 33.6	12.6	49.2	4.9		N 10°	05:23	05:50	06:12	08:33	09:19	10:02		
	18	345° 27.1	80° 16.8	25.7	129° 45.3	10.8	122° 29.0	22.6	75° 15.6	31.7	75° 25.5	26.1				75° 25.5	26.1	36° 05.2	12.6	44.3	5.0	54.3	0°	05:06	05:32	05:55	08:20	09:06	09:52		
	19	0° 29.6	95° 15.8	26.0	144° 46.3	11.3	137° 31.0	22.8	90° 17.7	31.7	90° 25.2	26.1	Arcturus	145° 53.2	19° 05.4 N	90° 25.2	26.1	50° 36.8	12.7	39.3	5.0		S 10°	04:47	05:14	05:37	08:06	08:54	09:43		
	20	15° 32.1	110° 14.8	26.2	159° 47.2	11.8	152° 33.0	22.9	105° 19.9	31.7	105° 24.9	26.1	Atria	107° 22.4	69° 03.2 S	105° 24.9	26.1	65° 08.5	12.6	34.3	5.1		20°	04:24	04:54	05:18	07:51	08:41	09:32		
	21	30° 34.5	125° 13.9	26.4	174° 48.2	12.3	167° 35.0	23.0	120° 22.0	31.7	120° 24.6	26.1	Avior	234° 16.2	59° 33.9 S	120° 24.6	26.1	79° 40.1	12.7	29.2	5.2		30°	03:55	04:24	04:56	07:34	08:26	09:20		
	22	45° 37.0	140° 12.9	26.6	189° 49.1	12.9	182° 37.0	23.2	135° 24.1	31.7	135° 24.3	26.1	Bellatrix	278° 28.4	6° 21.7 N	135° 24.3	26.1	94° 11.8	12.7	24.0	5.3		35°	03:37	04:13	04:43	07:24	08:18	09:13		
23	60° 39.5	155° 12.0	26.8	204° 50.1	13.4	197° 39.0	23.3	150° 26.3	31.7	150° 29.3	26.1	Betelgeuse	270° 57.7	7° 24.4 N	150° 29.3	26.1	108° 43.5	12.7	18.7	5.4		40°	03:13	03:55	04:28	07:12	08:08	09:05			
	75° 41.9	170° 11.0	27.0	219° 51.0	13.9	212° 41.0	23.4	165° 28.4	31.7	165° 23.6	26.1				165° 23.6	26.1	123° 15.2	12.7	13.3	5.4		45°	02:43	03:33	04:10	06:59	07:56	08:56			
Fri day	00	90° 44.4	185° 10.0	23° 27.2 S	234° 52.0	13° 14.4 S	227° 43.0	15° 23.6 S	180° 30.6	22° 31.7 S	22° 31.7 S	Canopus	263° 54.2	52° 42.5 S	180° 23.3	23° 26.1 S	137° 46.9	12.7	17° 07.9 S	5.6	54.3	S 50°	01:57	03:03	03:47	06:43	07:42	08:44			
	01	105° 46.9	200° 09.1	27.4	249° 52.8	14.9	242° 45.1	23.7	195° 32.7	31.7	195° 23.0	26.1	Capella	280° 29.4	46° 00.8 N	152° 18.6	12.8	02.3	5.6	54.4	52°	01:29	02:48	03:37	06:35	07:35	08:39				
	02	120° 49.3	215° 08.1	27.5	264° 53.9	15.4	257° 47.1	23.8	210° 34.9	31.7	210° 22.7	26.1	Deneb	49° 29.7	45° 20.9 N	210° 22.7	26.1	166° 50.4	12.8	16° 56.7 S	5.7		54°	00:42	02:30	03:24	06:26	07:28	08:33		
	03	135° 51.8	230° 07.2	27.7	279° 54.8	16.0	282° 49.1	23.9	225° 37.0	31.7	225° 24.2	26.0	Denebola	182° 30.6	14° 28.3 N	225° 24.2	26.0	51.0	5.7				56°	-	02:07	03:10	06:17	07:20	08:27		
	04	150° 54.2	245° 06.2	27.9	294° 55.7	16.5	277° 51.1	24.1	240° 39.2	31.7	240° 22.1	26.0	Diphda	348° 52.8	17° 53.5 S	240° 22.1	26.0	195° 54.0	12.8	45.3	5.9		58°	-	01:37	02:53	06:06	07:10	08:19		
	05	165° 56.7	260° 05.2	28.1	309° 56.7	17.0	302° 53.1	24.2	255° 41.3	31.7	255° 21.8	26.0				255° 21.8	26.0	210° 25.8	12.8	39.4	5.9		S 60°	-	00:46	02:33	05:53	07:00	08:11		
	06	180° 59.2	275° 04.3	28.3	324° 57.6	17.5	317° 55.1	24.3	270° 43.4	31.7	270° 21.4	26.0	Dubhe	193° 47.9	61° 39.0 N	270° 21.4	26.0	224° 57.6	12.9	33.5	5.9		S 62°	-	-	02:06	05:38	06:47	08:02		
	07	196° 01.6	290° 03.3	28.5	339° 58.6	18.0	332° 57.1	24.5	285° 45.6	31.7	285° 21.1	26.0	Elnath	278° 08.4	28° 37.2 N	285° 21.1	26.0	239° 29.5	12.9	27.5	6.0										
	08	211° 04.1	305° 02.3	28.7	354° 59.5	18.5	347° 59.1	24.6	300° 47.7	31.7	300° 20.8	26.0	Eltanin	90° 45.3	51° 29.4 N	300° 20.8	26.0	254° 01.4	12.8	21.5	6.2										
	09	226° 06.6	320° 01.4	28.9	10° 00.5	19.1	3° 01.1	24.7	315° 49.9	31.7	315° 20.5	26.0	Enif	33° 44.3	9° 57.5 N	315° 20.5	26.0	268° 33.2	13.0	15.3	6.2	54.5									
	10	241° 09.0	335° 00.4	29.1	25° 01.4	19.6	18° 03.1	24.9	330° 52.0	31.7	330° 20.2	26.0	Fomalhaut	15° 20.8	29° 31.8 S	330° 20.2	26.0	283° 05.2	12.9	09.1	6.3										
	11	256° 11.5	349° 59.5	29.2	40° 02.4	20.1	33° 05.1	25.0	345° 54.2	31.7	345° 19.9																				

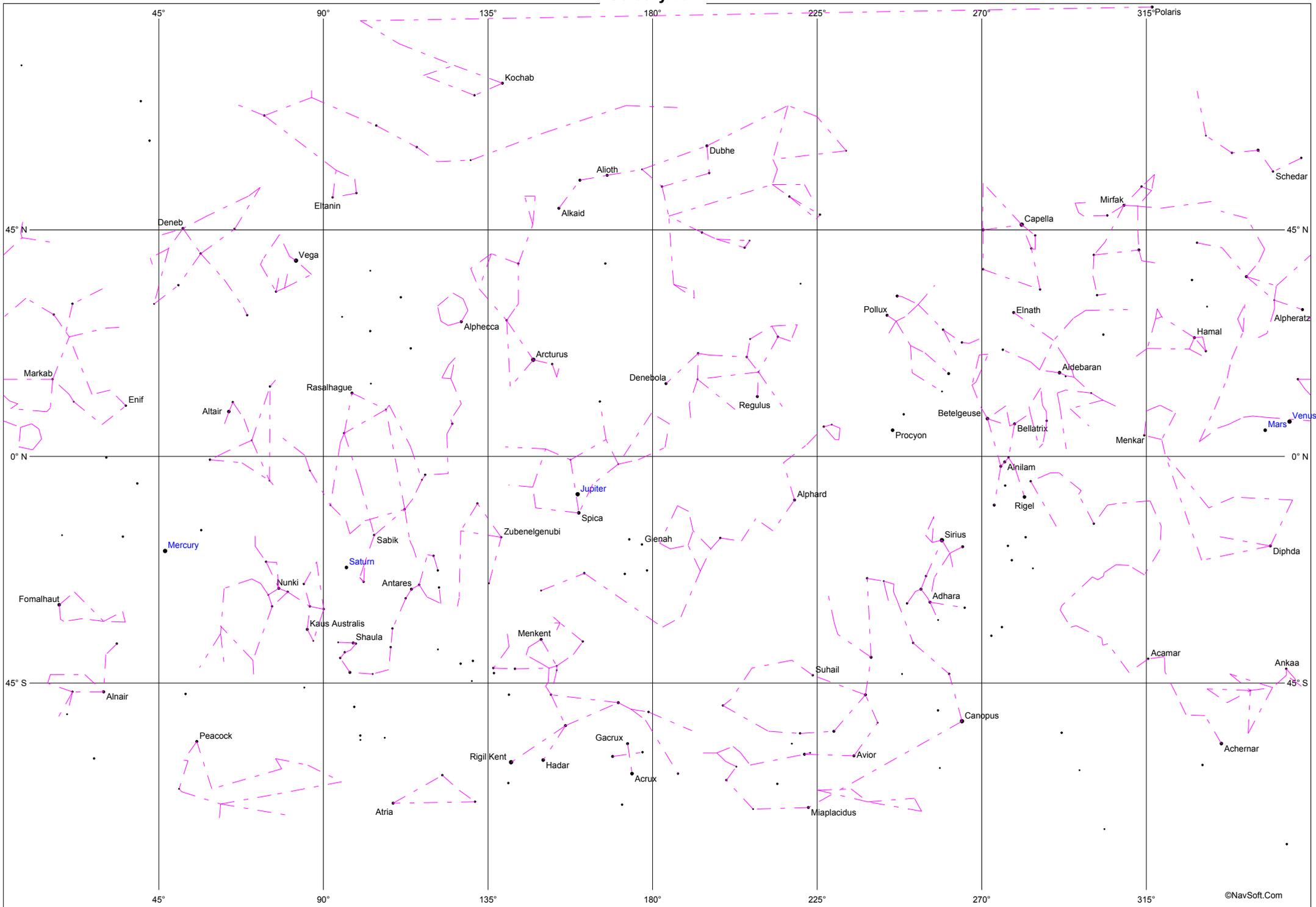
2017 December 24, 25, 26 (Sun, Mon, Tue)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN		MOON				Lat	Twilight		Sunrise	Moonrise		
																					Nautical	Civil	24	25		26					
24 S u n d a y	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	08:27	10:57	-	12:46	12:35	12:25	
	92° 42.7	184° 23.7	23° 35.2 S	235° 37.3	13° 39.0 S	229° 19.6	15° 29.7 S	182° 13.5	22° 31.8 S	Acamar	315° 15.8	40° 14.3 S	180° 08.4	23° 24.8 S	115° 30.1	13.5	11° 21.3 S	8.8	55.2	N 70°	08:07	09:55	-	12:31	12:27	12:23					
	107° 45.1	199° 22.8	35.3	250° 38.3	39.6	244° 21.6	29.9	197° 15.7	31.8	Achernar	335° 24.4	57° 09.2 S	195° 08.1	24.8	130° 02.6	13.5	12.5	8.8	68°	07:51	09:50	-	12:20	12:21	12:22						
	122° 47.6	214° 21.8	35.4	265° 39.2	40.1	259° 23.6	30.0	212° 17.8	31.8	Acruz	173° 05.8	63° 11.5 S	210° 07.7	24.7	144° 35.1	13.5	03.7	9.0	66°	07:38	08:55	10:35	12:10	12:16	12:21						
	137° 50.1	229° 20.8	35.6	280° 40.1	40.6	274° 25.6	30.1	227° 19.9	31.8	Adhara	255° 09.7	28° 59.9 S	225° 07.4	24.7	159° 07.6	13.5	10° 54.7 S	8.9	64°	07:27	08:35	09:53	12:02	12:11	12:20						
	152° 52.5	244° 19.9	35.7	295° 41.1	41.1	289° 27.6	30.3	242° 22.1	31.8	Aldebaran	290° 45.5	16° 32.5 N	240° 07.1	24.6	173° 40.1	13.5	45.8	9.1	55.3	62°	07:19	08:19	09:25	11:55	12:07	12:19					
	167° 55.0	259° 18.9	35.8	310° 42.0	41.6	304° 29.7	30.4	257° 24.2	31.8				255° 06.8	24.6	188° 12.6	13.6	36.7	9.0	60°	07:07	08:06	09:03	11:48	12:04	12:18						
	182° 57.4	274° 17.9	35.9	325° 43.0	42.1	319° 31.7	30.5	272° 26.4	31.8	Alioth	166° 18.2	55° 51.6 N	270° 06.5	24.5	202° 45.2	13.5	27.7	9.2		N 58°	07:01	07:54	08:46	11:43	12:01	12:17					
	197° 59.9	289° 16.9	36.1	340° 43.9	42.6	334° 33.7	30.6	287° 28.5	31.8	Alkaid	152° 56.8	49° 13.3 N	285° 06.2	24.5	217° 17.7	13.5	18.5	9.2		56°	06:55	07:44	08:31	11:38	11:58	12:17					
	213° 02.4	304° 16.0	36.2	355° 44.8	43.1	349° 33.7	30.8	302° 30.7	31.8	Alnair	27° 40.2	46° 52.6 S	300° 05.9	24.4	231° 50.2	13.5	09.3	9.2	55.4	54°	06:49	07:35	08:19	11:34	11:55	12:16					
	228° 04.8	319° 15.0	36.3	370° 45.8	43.6	4° 37.7	30.9	317° 32.8	31.8	Alnilam	275° 42.9	1° 11.6 S	315° 05.6	24.4	246° 22.7	13.6	00.1	9.3		52°	06:43	07:27	08:07	11:30	11:53	12:16					
	243° 07.3	334° 14.0	36.5	385° 46.7	44.1	19° 39.7	31.0	332° 35.0	31.8	Alphard	217° 52.9	8° 44.2 S	330° 05.3	24.3	260° 55.3	13.5	9° 50.8 S	9.3		50°	06:38	07:19	07:58	11:26	11:51	12:15					
	258° 09.8	349° 13.1	36.6	40° 47.7	44.6	34° 41.8	31.1	347° 37.1	31.8				345° 05.0	24.3	275° 27.8	13.6	41.5	9.4		45°	06:26	07:03	07:37	11:18	11:47	12:14					
	273° 12.2	4° 12.1	23° 36.7 S	55° 48.6	13° 45.1 S	49° 43.8	15° 31.3 S	2° 39.2	22° 31.8 S	Alphecca	126° 08.7	26° 39.3 N	0° 04.6	23° 24.2 S	290° 00.4	13.5	9° 32.1 S	9.5	55.5	N 40°	06:15	06:50	07:20	11:12	11:43	12:14					
	288° 14.7	19° 11.1	36.8	70° 49.6	45.7	64° 45.8	31.4	17° 41.4	31.8				15° 33.4	24.2	304° 32.9	13.5	22.6	9.5		35°	06:06	06:38	07:06	11:06	11:40	12:13					
	303° 17.2	34° 10.2	36.9	85° 50.5	46.2	79° 47.8	31.5	32° 43.5	31.8	Altair	62° 05.6	8° 55.1 N	30° 04.0	24.1	319° 05.4	13.6	13.1	9.5		30°	05:57	06:27	06:54	11:01	11:37	12:12					
	318° 19.6	49° 09.2	37.1	100° 51.4	46.7	94° 49.8	31.6	47° 45.7	31.8	Ankaa	353° 12.7	42° 12.8 S	45° 03.7	24.1	333° 38.0	13.5	03.6	9.6		20°	05:41	06:08	06:32	10:53	11:32	12:11					
	333° 22.1	64° 08.2	37.2	115° 52.4	47.2	109° 51.8	31.8	62° 47.8	31.8	Antares	112° 22.8	26° 28.0 S	60° 03.4	24.0	348° 10.5	13.6	8° 54.0 S	9.7	55.6	N 10°	05:25	05:51	06:14	10:45	11:27	12:10					
	348° 24.6	79° 07.3	37.3	130° 53.3	47.7	124° 53.8	31.9	77° 50.0	31.8				75° 03.1	23.9	2° 43.1	13.5	44.3	9.7		0°	05:08	05:34	05:56	10:38	11:23	12:09					
	3° 27.0	94° 06.3	37.4	145° 54.3	48.2	139° 55.9	32.0	92° 52.1	31.8	Arcturus	145° 53.2	19° 05.4 N	90° 02.8	23.9	17° 15.6	13.5	34.6	9.7		S 10°	04:49	05:16	05:39	10:31	11:19	12:08					
	18° 29.5	109° 05.3	37.5	160° 55.2	48.7	154° 57.9	32.2	107° 54.3	31.8	Avia	107° 22.4	69° 03.2 S	105° 02.5	23.8	31° 48.1	13.6	24.9	9.8	55.7	20°	04:26	04:55	05:20	10:23	11:15	12:08					
	33° 31.9	124° 04.3	37.6	175° 56.1	49.2	169° 59.9	32.3	122° 56.4	31.8	Avior	234° 16.1	59° 34.0 S	120° 02.2	23.8	46° 20.7	13.5	15.1	9.8		30°	03:57	04:30	04:58	10:14	11:10	12:07					
	48° 34.4	139° 03.4	37.7	190° 57.1	49.7	185° 01.9	32.4	137° 58.6	31.8	Bellatrix	278° 28.4	6° 21.7 N	135° 01.8	23.7	60° 53.2	13.5	05.3	9.9		35°	03:38	04:15	04:45	10:09	11:07	12:06					
63° 36.9	154° 02.4	37.8	205° 58.0	50.2	200° 03.9	32.5	153° 00.7	31.8	Betelgeuse	270° 57.7	7° 24.4 N	150° 01.5	23.6	75° 25.7	13.6	7° 55.4 S	9.9		40°	03:15	03:57	04:30	10:04	11:04	12:05						
78° 39.3	169° 01.4	38.0	220° 59.0	50.7	215° 06.0	32.7	168° 02.8	31.8				165° 01.2	23.6	89° 58.3	13.5	45.5	10.0	55.8	45°	02:45	03:34	04:12	09:57	11:00	12:05						
25 M o n d a y	93° 41.8	184° 00.5	23° 38.1 S	235° 59.9	13° 51.2 S	230° 08.0	15° 32.8 S	183° 05.0	22° 31.8 S	Canopus	263° 54.2	52° 42.5 S	180° 00.9	23° 23.5 S	104° 30.8	13.5	7° 35.5 S	10.0	55.8	S 50°	01:59	03:05	03:49	09:49	10:55	12:04					
	108° 44.3	198° 59.5	38.2	251° 00.9	51.7	245° 01.0	32.9	198° 07.1	31.8	Capella	280° 29.4	46° 00.8 N	195° 00.6	23.4	51° 03.3	13.5	25.5	10.0		52°	01:31	02:50	03:38	09:45	10:53	12:03					
	123° 46.7	213° 58.5	38.3	266° 01.8	52.2	260° 12.0	33.0	213° 09.3	31.8	Deneb	49° 29.8	45° 20.9 N	210° 00.3	23.4	133° 35.8	13.5	15.5	10.1	55.9	54°	00:45	02:32	03:26	09:41	10:51	12:03					
	138° 49.2	228° 57.6	38.4	281° 02.7	52.7	275° 14.0	33.2	228° 11.4	31.8	Denebola	182° 30.5	14° 28.3 N	225° 00.2	23.3	148° 08.3	13.5	05.4	10.2		56°	-	02:09	03:12	03:36	09:36	10:48	12:02				
	153° 51.7	243° 56.6	38.5	296° 03.7	53.2	290° 16.0	33.3	243° 13.6	31.8	Diphda	348° 52.8	17° 53.5 S	239° 59.7	23.2	162° 40.8	13.5	6° 55.2 S	10.1		58°	-	01:40	02:55	03:31	09:31	10:45	12:02				
	168° 54.1	258° 55.6	38.6	311° 04.6	53.8	305° 18.1	33.4	258° 15.7	31.8				254° 59.4	23.2	177° 13.3	13.4	45.1	10.3		S 60°	-	00:49	02:35	03:26	09:26	10:42	12:01				
	183° 56.6	273° 54.6	38.7	326° 05.6	54.3	320° 20.1	33.5	273° 17.9	31.8	Dubhe	193° 47.9	61° 39.0 N	269° 59.1	23.1	191° 45.7	13.5	34.8	10.2	56.0	S 62°	-	-	02:08	09:19	10:39	12:01					
	198° 59.1	288° 53.7	38.8	341° 06.5	54.8	335° 22.1	33.7	288° 20.0	31.8	El Nath	278° 08.4	28° 37.2 N	284° 58.7	23.0	206° 18.2	13.4	24.6	10.3													
	214° 01.5	303° 52.7	38.9	356° 07.4	55.3	350° 24.1	33.8	303° 22.1	31.8	Eltanin	90° 45.3	51° 29.3 S	299° 58.4	23.0	220° 50.6	13.5	14.3	10.4													
	229° 04.0	318° 51.7	39.0	371° 08.4	55.8	5° 26.1	33.9	318° 24.3	31.8	Enif	33° 44.3	9° 57.5 N	314° 58.1	22.9	235° 23.1	13.4	03.9	10.3	56.1												
	244° 06.4	333° 50.8	39.1	386° 09.3	56.3	20° 28.2	34.0	333° 26.4	31.8	Fomalhaut	15° 20.8	29° 31.8 S	329° 57.8	22.8	249° 55.5	13.4	5° 53.6 S	10.5													
	259° 08.9	348° 49.8	39.2	41° 10.3	56.8	35° 30.2	34.2	348° 28.6	31.8				344° 57.8	22.7	264° 27.9	13.4	43.1	10.4													
	274° 11.4	3° 48.8	23° 39.2 S	56° 11.2	13° 57.3 S	50° 32.2	15° 34.3 S	3° 30.7	22° 31.8 S	Gacrux	171° 57.4	57° 12.4 S	359° 57.2	23° 22.7 S	279° 00.3	13.4	5° 32.7 S	10.5	56.2	N 72°	-	13:04	15:34	21:12	22:58	24:46					
	289° 13.8	18° 47.8	39.3	71° 12.1	57.8	65° 34.2	34.4	18° 32.9	31.8	Gienah	175° 49.1	17° 38.3 S	14° 56.9	22.6	293° 32.7	13.4	22.2	10.5		N 70°	-	14:05	15:54	21:25	23:03	24:44					
	304° 16.3	33° 46.9	39.4	86° 13.1	58.3	80° 36.2	34.5	33° 35.0	31.8	Hadar	148° 43.8	60° 27.1 S	29°																		

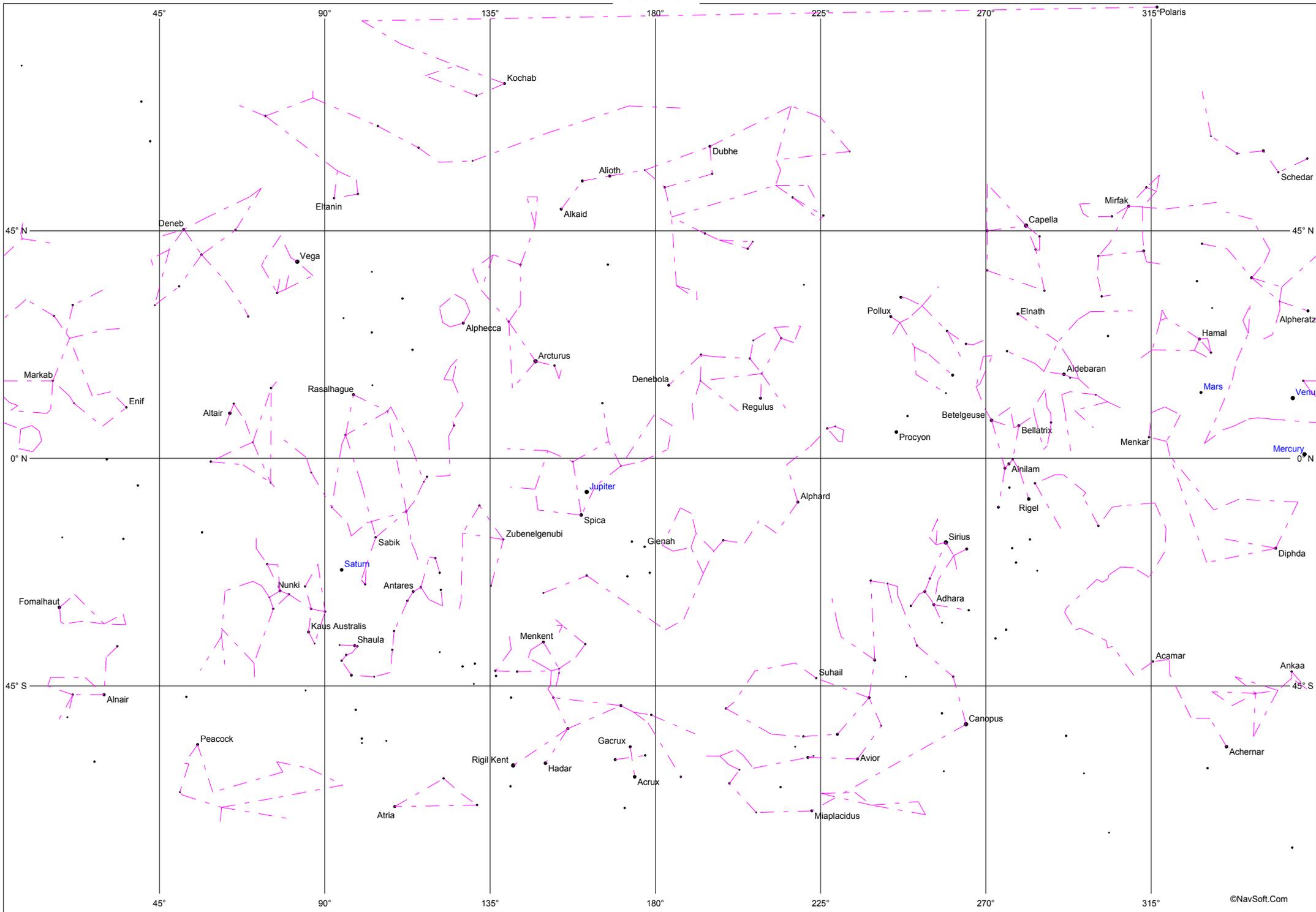
2017 December 27, 28, 29 (Wed, Thur, Fri)

GMT	ARIES			VENUS			MARS			JUPITER			SATURN			STARS			SUN			MOON			Lat	Twilight		Sunrise	Moonrise						
Wednesday	00	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	GHA	Dec	GHA	v	Dec	d	HP	N 72°	08:26	10:52	-	12:15	12:04	11:52								
	01	95° 40'.1	183° 13'.8	23° 41'.7 S	236° 45'.0	14° 15'.3 S	231° 45'.0	15° 38'.8 S	184° 47'.9	22° 31'.9 S	Acamar	315° 15'.8	40° 14'.3 S	179° 46'.1	23° 19'.5 S	82° 10'.6	12.3	1° 02'.6 N	11'.4	57.4	N 70°	08:07	09:54	-	12:19	12:16	12:12								
	02	110° 42'.5	198° 12'.8	41'.7	251° 45'.9	15'.8	246° 47'.0	38'.9	199° 50'.1	31'.9	Achernar	335° 24'.4	57° 09'.2 S	194° 45'.8	19.4	96° 41'.9	12.3	14.0	11'.3	68°	07:51	09:19	-	12:23	12:25	12:28									
	03	125° 45'.0	213° 11'.9	41'.8	266° 46'.8	16.3	261° 49'.0	39.0	214° 52'.2	31'.9	Acruz	173° 05'.8	63° 11'.5 S	209° 45'.5	19.2	111° 13'.2	12.2	25.3	11'.4	57.5	66°	07:38	08:55	10:33	12:26	12:32	12:41								
	04	140° 47'.5	228° 10'.9	41'.8	281° 47'.8	16.8	276° 51'.1	39.9	229° 54'.4	31'.9	Adhara	255° 09'.7	28° 59'.9 S	224° 45'.2	19.1	125° 44'.4	12.2	36.7	11'.3	64°	07:27	08:35	09:52	12:29	12:39	12:52									
	05	155° 49'.9	243° 09'.9	41'.8	296° 48'.7	17.3	291° 53'.1	39.3	244° 56'.5	31'.9	Aldebaran	290° 45'.5	16° 32'.5 N	239° 44'.9	19.0	140° 15'.6	12.1	48.0	11'.4	57.6	62°	07:18	08:19	09:25	12:31	12:44	13:01								
	06	170° 52'.4	258° 08'.9	41'.9	311° 49'.6	17.8	306° 55'.1	39.4	259° 58'.7	31'.9				254° 44'.6	18.9	154° 46'.7	12.0	59.4	11'.4	60°	07:09	08:06	09:03	12:33	12:49	13:09									
	07	185° 54'.9	273° 08'.0	41'.9	326° 50'.6	18.3	321° 57'.1	39.5	275° 00'.8	31'.9	Alioth	166° 18'.2	55° 51'.6 N	269° 44'.3	18.8	169° 17'.7	12.1	2° 10'.8 N	11'.4		N 58°	07:02	07:55	08:46	12:35	12:54	13:16								
	08	200° 57'.3	288° 07'.0	42.0	341° 51'.5	18.3	336° 59'.2	39.6	290° 03'.0	31'.9	Alkaid	152° 56'.7	49° 13'.3 N	284° 43'.9	18.7	183° 48'.8	11.9	22.2	11'.4	57.7	56°	06:55	07:44	08:32	12:36	12:57	13:22								
	09	215° 59'.8	303° 06'.0	42.0	356° 52'.5	19.8	352° 01'.2	39.7	305° 05'.1	31'.9	Alnair	27° 40'.2	46° 52'.6 S	299° 43'.9	18.6	198° 19'.7	11.9	33.6	11'.3	54°	06:49	07:38	08:19	12:38	13:01	13:28									
	10	231° 02'.3	318° 05'.0	42.0	11° 53'.4	19.8	7° 03'.2	39.9	320° 07'.2	31'.9	Alnilam	275° 42'.9	1° 11'.7 S	314° 43'.3	18.5	212° 50'.6	11.9	44.9	11'.4	52°	06:44	07:27	08:08	12:39	13:04	13:33									
	11	246° 04'.7	333° 04'.1	42.1	26° 54'.3	20.3	22° 05'.2	40.0	335° 09'.4	31'.9	Alphard	217° 52'.8	8° 44'.2 S	329° 43'.0	18.4	227° 21'.5	11.8	56.3	11'.4	57.8	50°	06:38	07:20	07:58	12:40	13:07	13:38								
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	14	291° 12'.1	18° 01'.2	42.2	67° 11'.3	21.7	67° 11'.3	40.4	20° 15'.8	31'.9				14° 52'.1	18.0	270° 53'.7	11.7	30.5	11'.4	35°	06:07	06:39	07:07	12:47	13:23	14:03									
	15	306° 14'.6	33° 00'.2	42.2	86° 58'.1	22.2	82° 13'.3	40.5	35° 18'.0	31'.9	Altair	62° 05'.6	8° 55'.1 N	29° 41'.8	17.9	285° 24'.4	11.5	41.9	11'.4	30°	05:59	06:28	06:55	12:49	13:27	14:10									
	16	321° 17'.0	47° 59'.2	42.2	101° 59'.0	22.7	97° 15'.4	40.6	50° 20'.1	31'.9	Ankaa	353° 12.7	42° 12'.9 S	44° 41'.5	17.8	299° 54'.9	11.6	53.3	11'.4	58.0	20°	05:42	06:10	06:34	12:52	13:35	14:21								
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	18	351° 22.0	77° 57'.3	42.3	132° 00'.9	23.7	127° 19'.4	40.8	80° 24'.4	31'.9				74° 40'.9	17.6	328° 55'.9	11.4	16.0	11'.4	58.1	0°	05:09	05:35	05:58	12:57	13:47	14:40								
	19	6° 24'.4	92° 56'.3	42.3	147° 01'.8	24.2	142° 21'.4	41.0	95° 26'.6	31'.9	Arcturus	145° 53'.1	19° 05'.4 N	89° 40'.6	17.5	343° 26'.3	11.3	27.4	11'.4	S 10°	04:50	05:17	05:40	12:59	13:53	14:49									
	20	21° 26'.9	107° 55'.3	42.3	162° 02'.7	24.7	157° 23'.5	41.1	110° 28'.7	31'.9	Atria	107° 22'.4	69° 03'.2 S	104° 40'.3	17.3	357° 56'.6	11.3	38.8	11'.3	20°	04:28	04:57	05:22	13:02	13:59	14:59									
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23	66° 34'.3	152° 52'.4	42.4	207° 05'.5	28.2	202° 29'.5	41.5	155° 35'.1	31'.9	Betelgeuse	270° 57'.6	7° 24'.4 N	149° 39'.4	17.0	41° 27'.3	11.1	12'.8	11'.3	58.3	40°	03:17	03:59	04:32	13:09	14:16	15:25									
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Thursday	00	96° 39'.2	182° 50'.4	23° 42'.4 S	237° 07'.4	14° 27'.2 S	232° 33'.6	15° 41'.7 S	22° 31'.9 S	Canopus	263° 54'.2	52° 42'.5 S	179° 38'.7	23° 16'.7 S	70° 27'.4	10.9	5° 35'.4 N	11'.3	58.3	S 50°	02:02	03:07	03:52	13:15	14:29	15:45									
	01	111° 41'.7	197° 49'.5	42.4	250° 08'.3	27.7	247° 35'.6	41.8	280° 41'.6	31'.9	Capella	280° 29'.4	46° 00'.8 N	194° 38'.4	16.6	84° 57'.3	10.9	46.7	11'.3	58.4	52°	01:35	02:52	03:41	13:16	14:32	15:50								
	02	126° 44'.1	212° 48'.5	42.4	267° 09'.3	28.2	262° 37'.7	41.9	215° 43'.7	31'.9	Deneb	49° 29'.8	45° 20'.9 N	209° 38'.1	16.5	99° 27'.2	10.8	58.0	11'.3	54°	00:50	02:34	03:29	13:18	14:35	15:56									
	03	141° 46'.6	227° 47'.5	42.4	282° 10'.2	28.7	277° 39'.7	42.1	230° 45'.9	31'.9	Denebola	282° 30'.5	14° 28'.3 N	224° 37'.8	16.4	113° 57'.0	10.8	6° 09'.3 N	11'.2	58.5	56°	-	02:12	03:14	13:19	14:39	16:02								
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	06	186° 54'.0	272° 44'.6	42.4	327° 13'.0	30.1	322° 45'.8	42.4	275° 52'.3	31'.9	Dubhe	193° 47'.8	61° 39'.0 N	269° 36'.9	16.0	157° 26'.0	10.6	42.9	11'.2	58.6	S 62°	-	-	02:12	13:26	14:54	16:26								
	07	201° 56'.5	287° 43'.6	42.5	342° 14'.0	30.6	337° 47'.8	42.5	290° 54'.4	31'.9	Elath	278° 08'.4	28° 37'.2 N	284° 36'.6	15.8	171° 55'.6	10.4	54'.1	11'.2																
	08	216° 58'.9	302° 42'.7	42.5	357° 14'.9	31.1	352° 49'.8	42.7	305° 56'.6	31'.9	Eltanin	90° 45'.3	51° 29'.3 S	299° 36'.3	15.7	186° 25'.0	10.4	7° 05'.3 N	11'.1	58.7															
	09	232° 01'.4	317° 41'.7	42.5	12° 15'.8	31.6	7° 51'.9	42.8	320° 58'.7	31'.9	Enif	33° 44'.3	9° 57'.5 N	314° 36'.0	15.6	200° 54'.4	10.3	16.4	11'.2																
	10	247° 03'.9	332° 40'.7	42.5	27° 16'.8	32.1	22° 53'.9	42.9	336° 00'.9	31'.9	Fomalhaut	15° 20'.8	29° 31'.8 S	329° 35'.7	15.4	219° 23'.7	10.2	27.6	11'.1																
	11	262° 06'.3	347° 39'.7	42.5	42° 17'.7	32.6	37° 55'.9	43.0	351° 03'.0	31'.9				344° 35'.5	15.3	225° 52'.9	10.2	38.7	11'.0	58.8															
	12	277° 08'.8	2° 38'.8	23° 42'.5 S	57° 18'.6	14° 33'.1 S	52° 57'.9	15° 43'.1 S	6° 05'.2	22° 31'.9 S	Gacrux	171° 57'.4	57° 12'.4 S	359° 35'.1	23° 15'.2 S	244° 22'.1	10.1	7° 49'.7 N	11'.1	58.8	N 72°	-	13:11	15:37	00:46	02:38	04:39								
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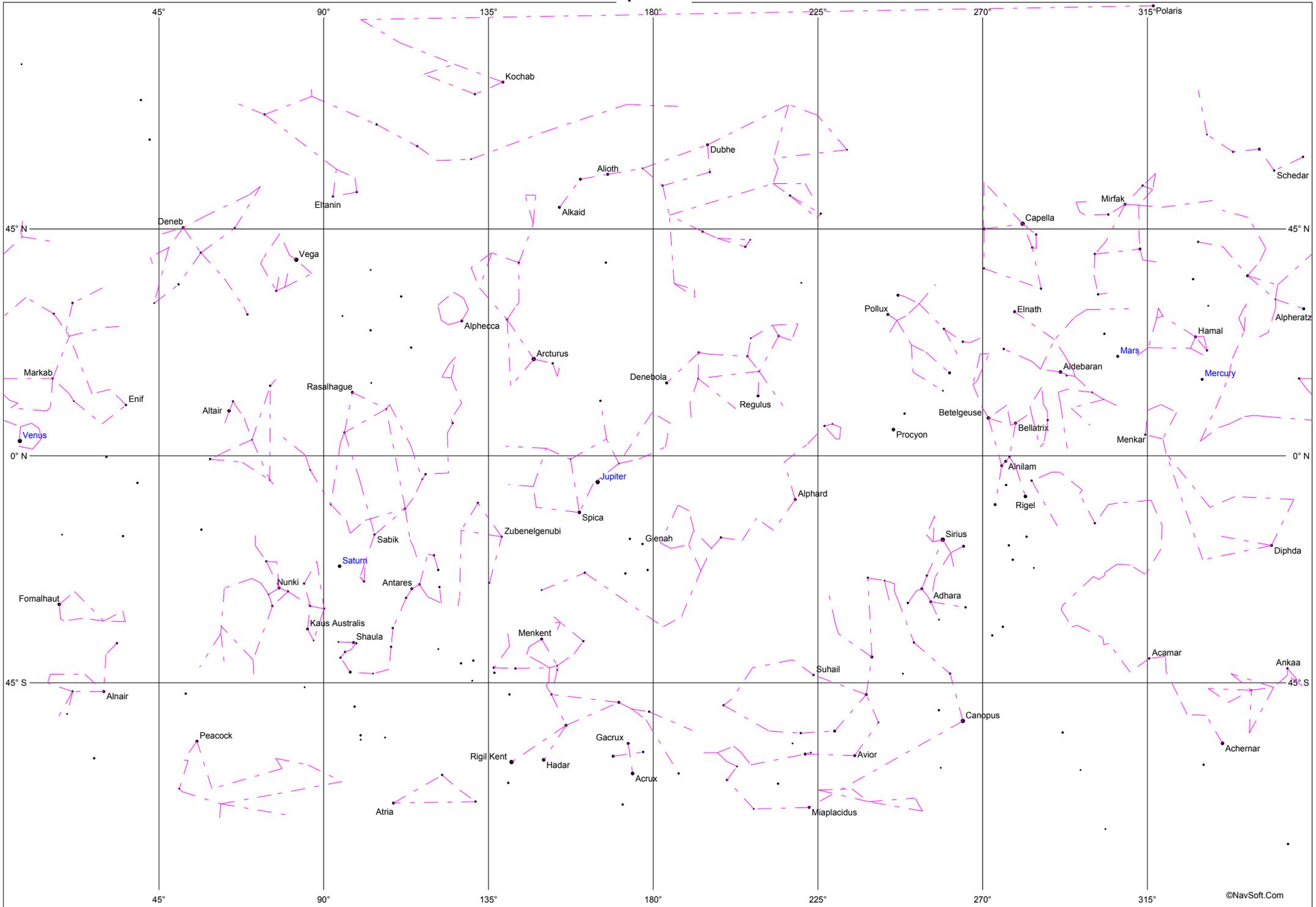
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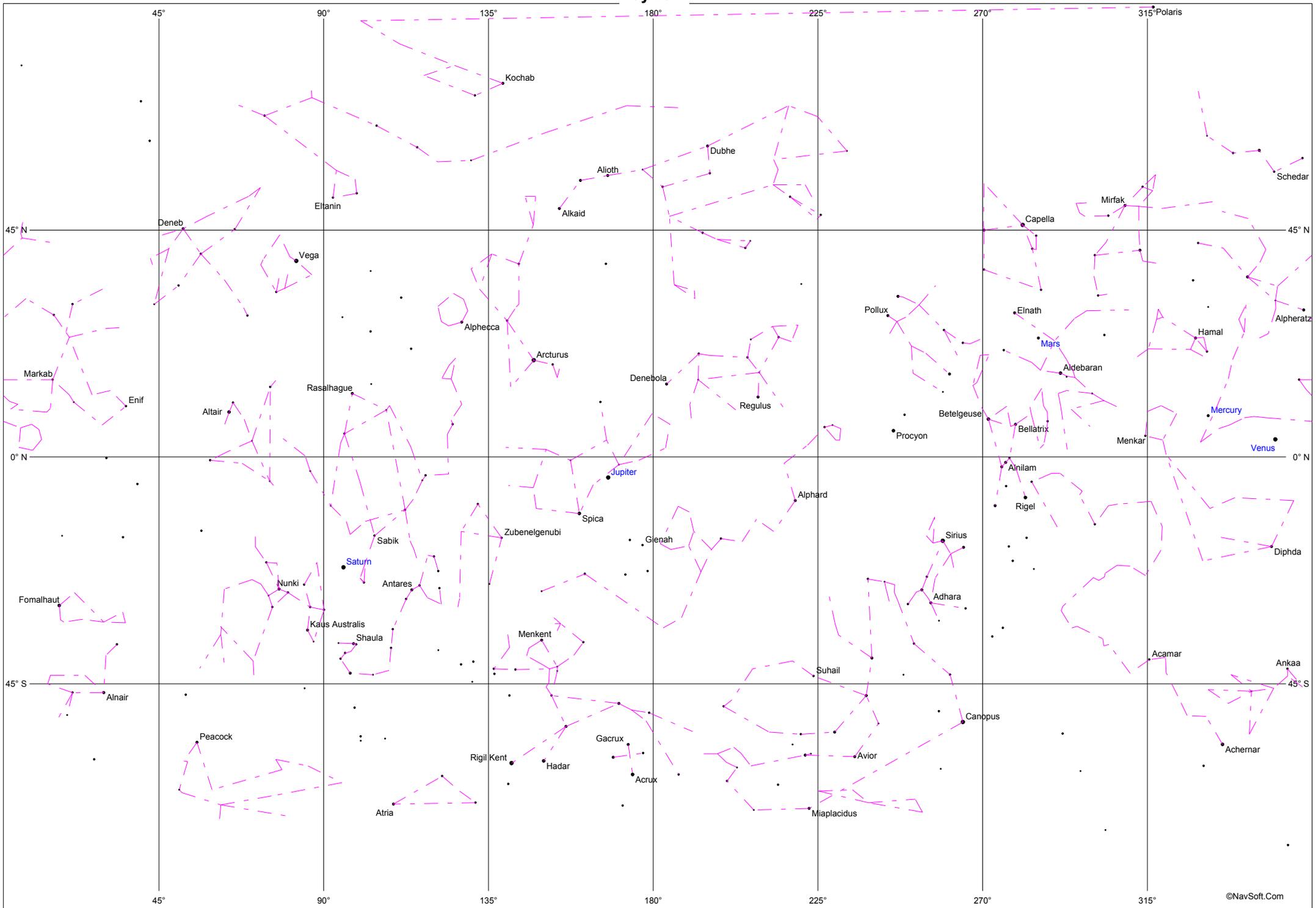
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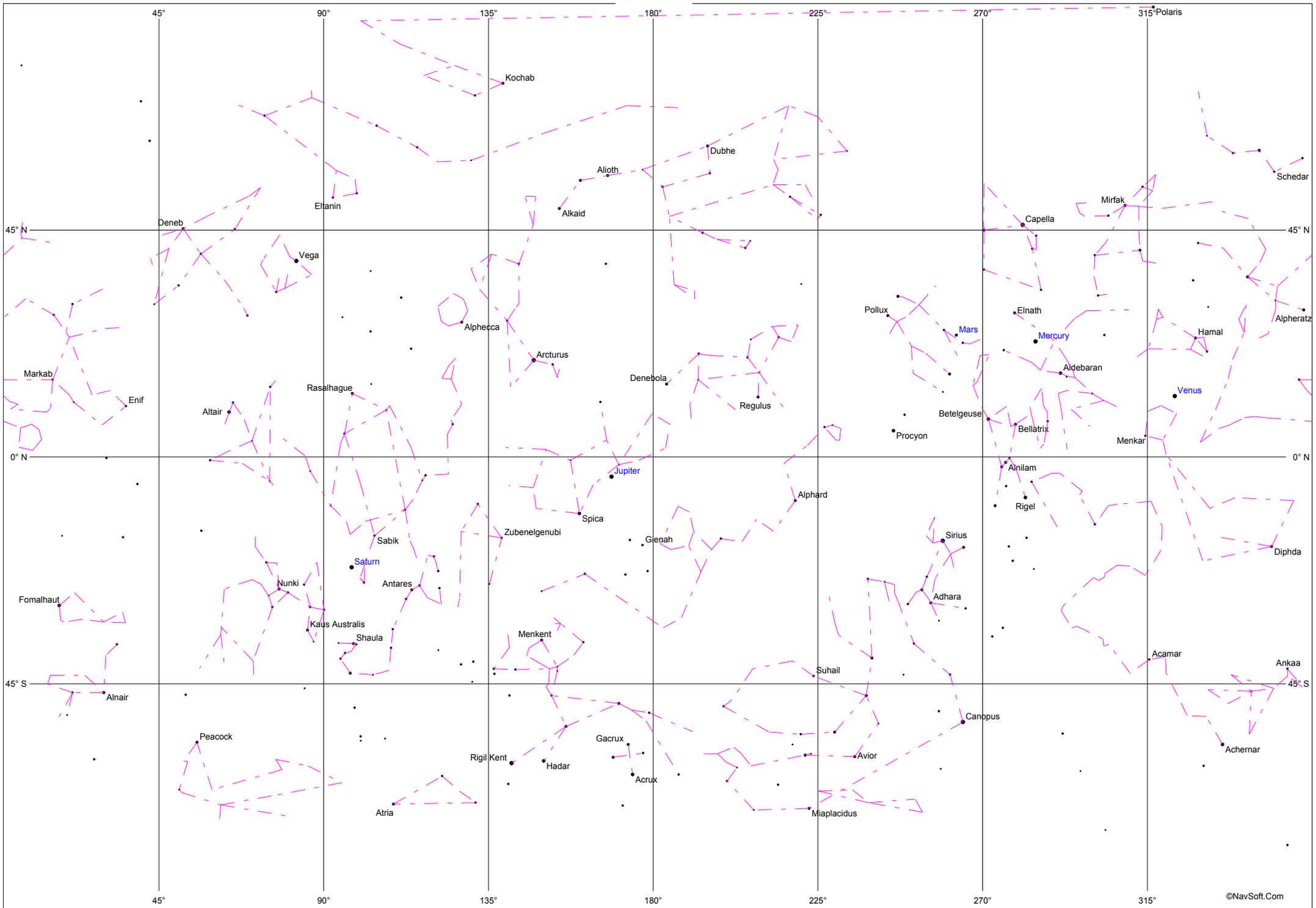
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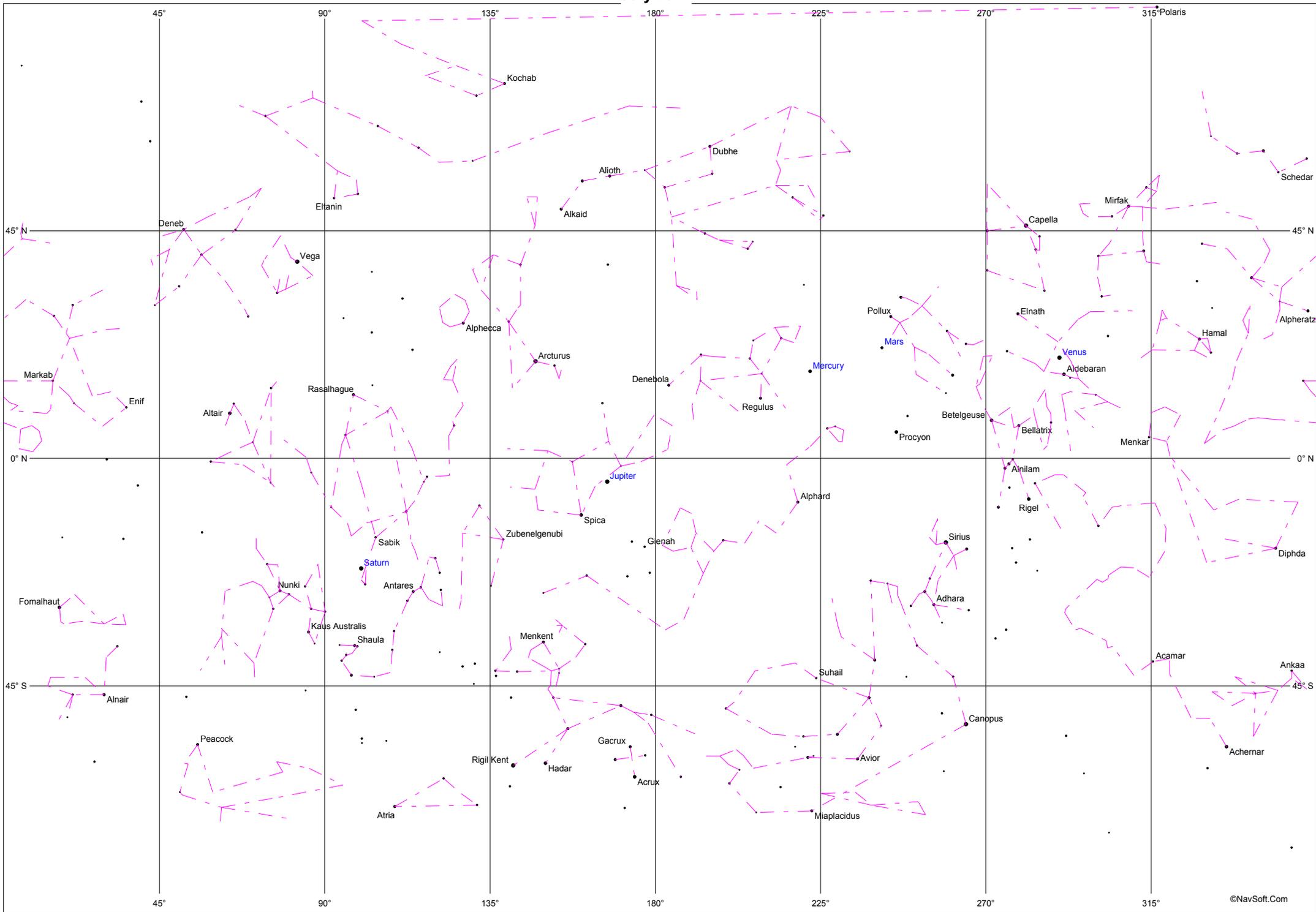
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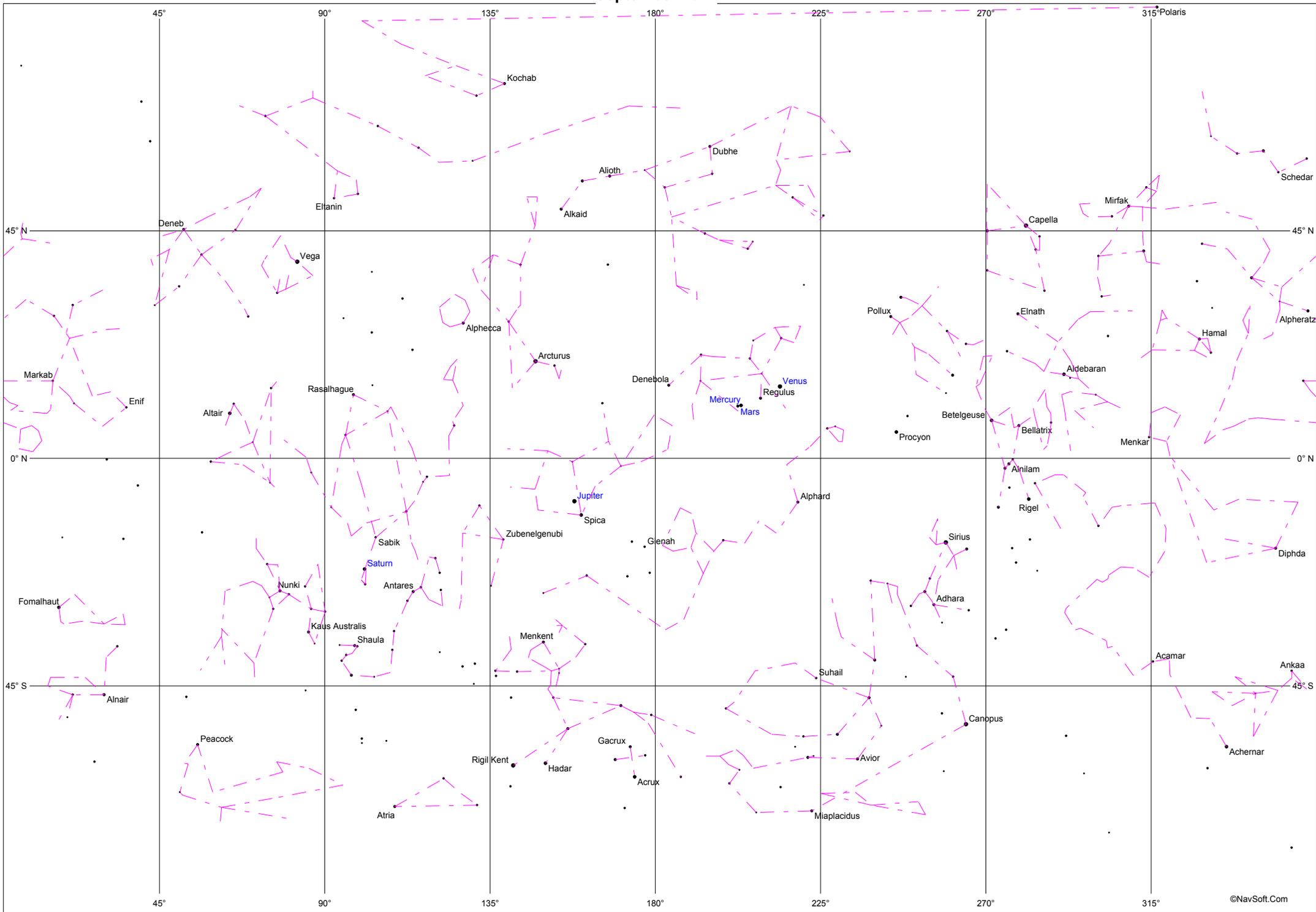
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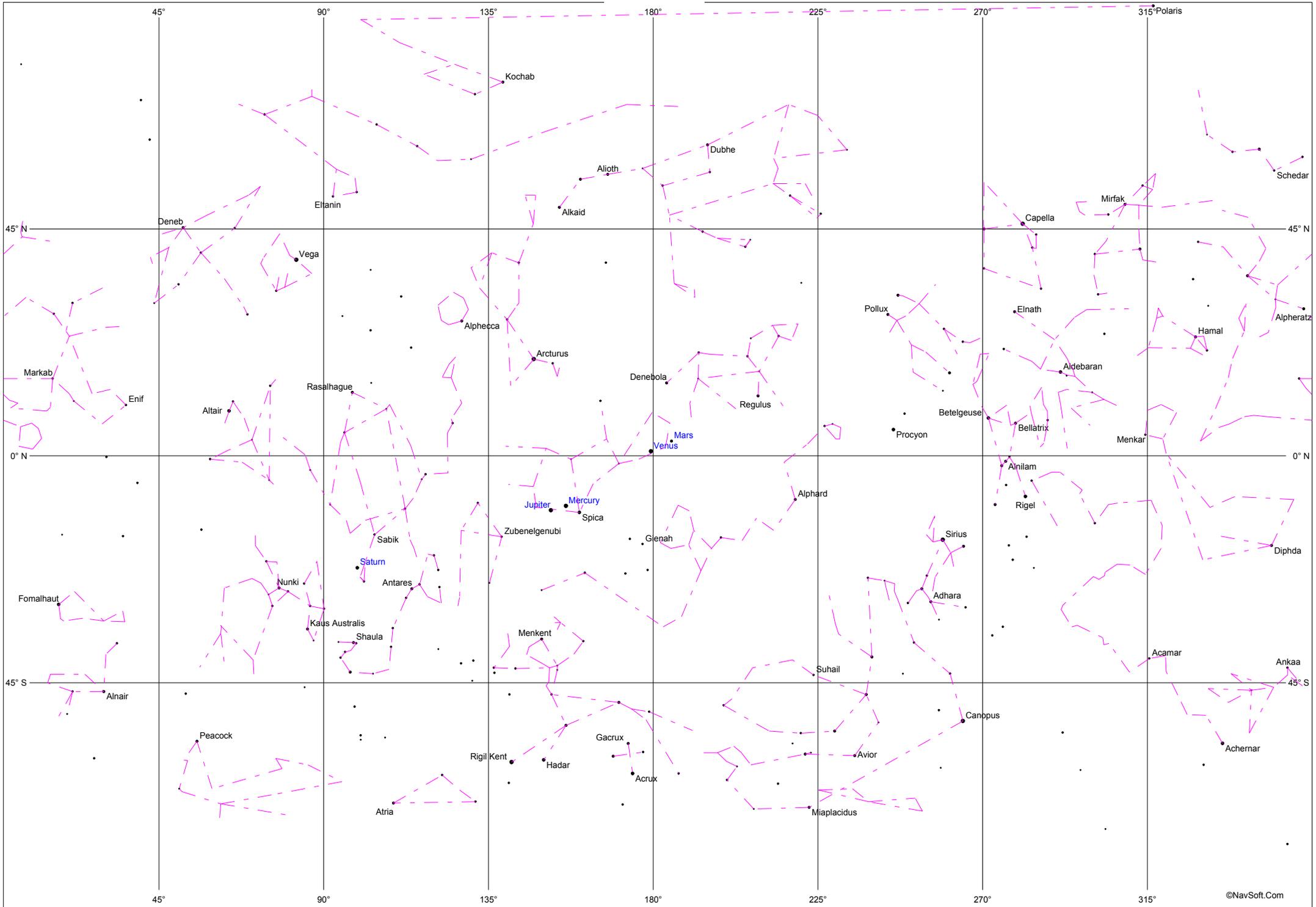
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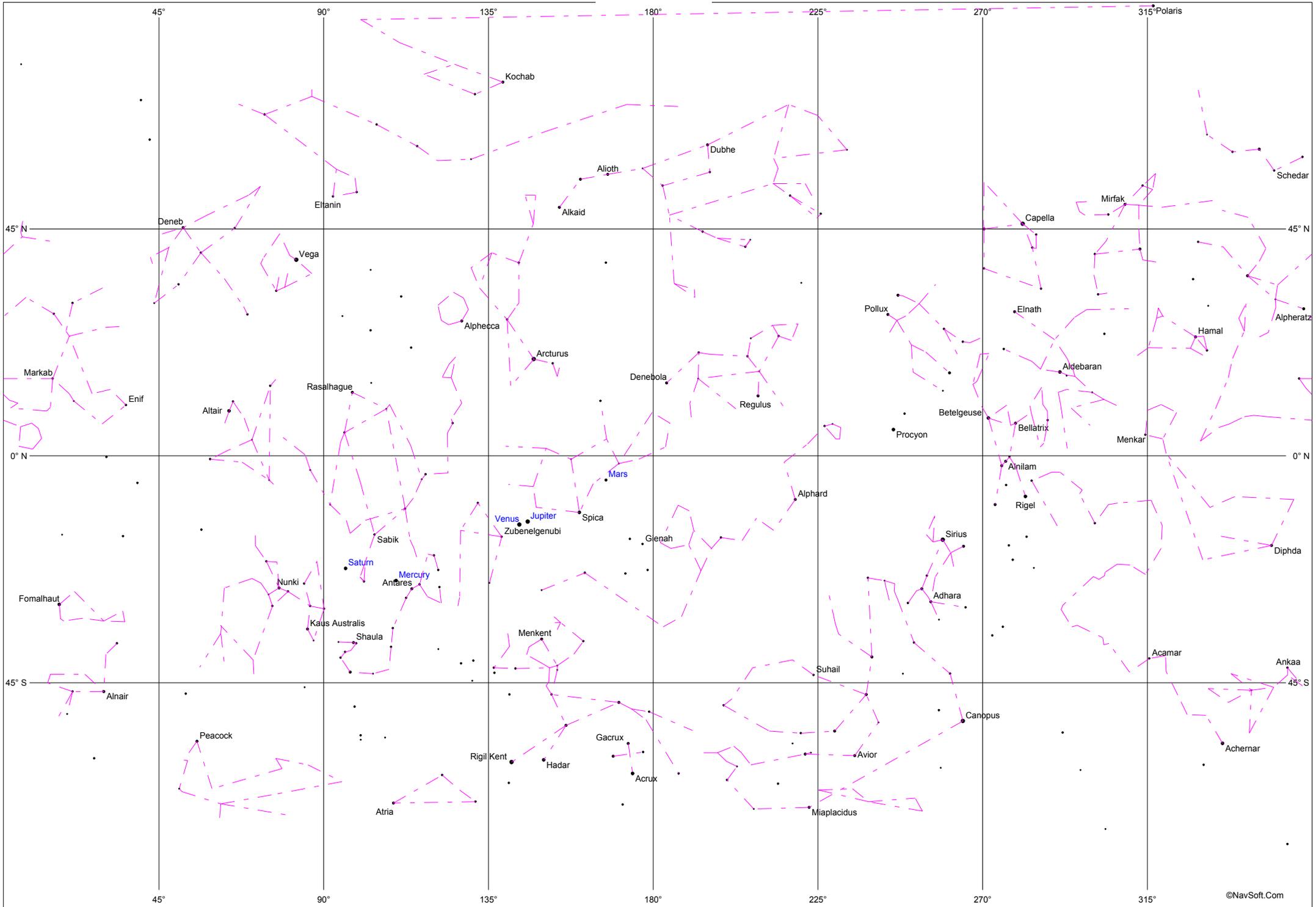
September 2017



October 2017



November 2017



December 2017

