


2019 October 16, 17, 18 (Wed, Thur, Fri)

GMT	ARIES	VENUS	-3.9	MARS	+1.8	JUPITER	-2.0	SATURN	+0.6	STARS			
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	Name	SHA	Dec	
Wednesday	00	24° 13'.3	167° 25'.8	14° 09'.2 S	196° 51'.6	2° 11'.1 S	124° 34'.2	22° 52'.1 S	98° 27'.8	22° 29'.3 S	Acamar	315° 14'.6	40° 13'.5 S
	01	39° 15'.8	182° 25'.2	10'.3	211° 52'.6	11'.8	139° 36'.2	52'.1	113° 30'.2	29'.3	Achernar	335° 22'.9	57° 08'.3 S
	02	54° 18'.3	197° 24'.7	11'.4	226° 53'.6	12'.4	154° 38'.2	52'.1	128° 32'.5	29'.3	Acrux	173° 05'.2	63° 12'.2 S
	03	69° 20'.7	212° 24'.1	12'.5	241° 54'.6	13'.1	169° 40'.2	52'.2	143° 34'.8	29'.3	Adhara	255° 09'.1	28° 59'.7 S
	04	84° 23'.2	227° 23'.6	13'.6	256° 55'.6	13'.7	184° 42'.2	52'.2	158° 37'.2	29'.3	Aldebaran	290° 44'.2	16° 32'.8 N
	05	99° 25'.7	242° 23'.1	14'.6	271° 56'.6	14'.4	199° 44'.2	52'.2	173° 39'.5	29'.3			
	06	114° 28'.1	257° 22'.5	15'.7	286° 57'.5	15'.0	214° 46'.3	52'.3	188° 41'.9	29'.3	Alioth	166° 17'.4	55° 51'.3 N
	07	129° 30'.6	272° 22'.0	16'.8	301° 58'.5	15'.7	229° 48'.3	52'.3	203° 44'.2	29'.3	Alkaid	152° 56'.0	49° 13'.1 N
	08	144° 33'.1	287° 21'.4	17'.9	316° 59'.5	16'.3	244° 50'.3	52'.3	218° 46'.6	29'.2	Alnair	27° 38'.0	46° 52'.1 S
	09	159° 35'.5	302° 20'.9	19'.0	332° 00'.5	17'.0	259° 52'.3	52'.4	233° 48'.9	29'.2	Alnilam	275° 41'.8	1° 11'.4 S
	10	174° 38'.0	317° 20'.3	20'.0	347° 01'.5	17'.6	274° 54'.3	52'.4	248° 51'.2	29'.2	Alphard	217° 52'.0	8° 44'.5 S
	11	189° 40'.4	332° 19'.8	21'.1	2° 02'.5	18'.3	289° 56'.3	52'.4	263° 53'.6	29'.2			
	12	204° 42'.9	347° 19'.2	14° 22'.2 S	17° 03'.4	2° 18'.9 S	304° 58'.3	22° 52'.5 S	278° 55'.9	22° 29'.2 S	Alphecca	126° 07'.7	26° 39'.2 N
	13	219° 45'.4	2° 18'.7	23'.3	32° 04'.4	19'.6	320° 00'.3	52'.5	293° 58'.3	29'.2	Alpheratz	357° 38'.7	29° 12'.0 N
	14	234° 47'.8	17° 18'.2	24'.3	47° 05'.4	20'.2	335° 02'.3	52'.5	309° 00'.6	29'.2	Altair	62° 04'.0	8° 55'.4 N
	15	249° 50'.3	32° 17'.6	25'.4	62° 06'.4	20'.8	350° 04'.4	52'.6	324° 03'.0	29'.2	Ankaa	353° 11'.0	42° 12'.0 S
	16	264° 52'.8	47° 17'.1	26'.5	77° 07'.4	21'.5	5° 06'.4	52'.6	339° 05'.3	29'.2	Antares	112° 21'.2	26° 28'.4 S
	17	279° 55'.2	62° 16'.5	27'.6	92° 08'.3	22'.1	20° 08'.4	52'.7	354° 07'.6	29'.2			
	18	294° 57'.7	77° 16'.0	28'.6	107° 09'.3	22'.8	35° 10'.4	52'.7	9° 10'.0	29'.2	Arcturus	145° 52'.1	19° 05'.1 N
	19	310° 00'.2	92° 15'.4	29'.7	122° 10'.3	23'.4	50° 12'.4	52'.7	24° 12'.3	29'.2	Atria	107° 19'.5	69° 03'.8 S
	20	325° 02'.6	107° 14'.9	30'.8	137° 11'.3	24'.1	65° 14'.4	52'.8	39° 14'.7	29'.1	Avior	234° 16'.4	59° 34'.0 S
	21	340° 05'.1	122° 14'.3	31'.9	152° 12'.3	24'.7	80° 16'.4	52'.8	54° 17'.0	29'.1	Bellatrix	278° 27'.2	6° 22'.0 N
	22	355° 07'.5	137° 13'.8	32'.9	167° 13'.3	25'.4	95° 18'.4	52'.8	69° 19'.3	29'.1	Betelgeuse	270° 56'.5	7° 24'.6 N
23	10° 10'.0	152° 13'.2	34'.0	182° 14'.2	26'.0	110° 20'.4	52'.9	84° 21'.7	29'.1				
Thursday	00	25° 12'.5	167° 12'.7	14° 35'.1 S	197° 15'.2	2° 26'.7 S	125° 22'.4	22° 52'.9 S	99° 24'.0	22° 29'.1 S	Canopus	263° 54'.1	52° 42'.1 S
	01	40° 14'.9	182° 12'.1	36'.1	212° 16'.2	27'.3	140° 24'.4	52'.9	114° 26'.4	29'.1	Capella	280° 27'.8	46° 00'.8 N
	02	55° 17'.4	197° 11'.6	37'.2	227° 17'.2	28'.0	155° 26'.5	53'.0	129° 28'.7	29'.1	Deneb	49° 28'.5	45° 21'.4 N
	03	70° 19'.9	212° 11'.0	38'.3	242° 18'.2	28'.6	170° 28'.5	53'.0	144° 31'.0	29'.1	Denebola	182° 29'.6	14° 27'.9 N
	04	85° 22'.3	227° 10'.4	39'.3	257° 19'.1	29'.3	185° 30'.5	53'.0	159° 33'.4	29'.1	Diphda	348° 51'.2	17° 52'.7 S
	05	100° 24'.8	242° 09'.9	40'.4	272° 20'.1	29'.9	200° 32'.5	53'.1	174° 35'.7	29'.1			
	06	115° 27'.3	257° 09'.3	41'.5	287° 21'.1	30'.6	215° 34'.5	53'.1	189° 38'.1	29'.1	Dubhe	193° 46'.9	61° 38'.6 N
	07	130° 29'.7	272° 08'.8	42'.5	302° 22'.1	31'.2	230° 36'.5	53'.1	204° 40'.4	29'.1	Elnath	278° 07'.0	28° 37'.3 N
	08	145° 32'.2	287° 08'.2	43'.6	317° 23'.1	31'.9	245° 38'.5	53'.2	219° 42'.7	29'.0	Eltanin	90° 44'.4	51° 29'.6 N
	09	160° 34'.7	302° 07'.7	44'.7	332° 24'.0	32'.5	260° 40'.5	53'.2	234° 45'.1	29'.0	Enif	33° 42'.7	9° 58'.1 N
	10	175° 37'.1	317° 07'.1	45'.7	347° 25'.0	33'.2	275° 42'.5	53'.2	249° 47'.4	29'.0	Fomalhaut	15° 18'.9	29° 31'.1 S
	11	190° 39'.6	332° 06'.6	46'.8	2° 26'.0	33'.8	290° 44'.5	53'.3	264° 49'.7	29'.0			
	12	205° 42'.0	347° 06'.0	14° 47'.9 S	17° 27'.0	2° 34'.5 S	305° 46'.5	22° 53'.3 S	279° 52'.1	22° 29'.0 S	Gacrux	171° 56'.7	57° 13'.2 S
	13	220° 44'.5	2° 05'.4	48'.9	32° 28'.0	35'.1	320° 48'.5	53'.4	294° 54'.4	29'.0	Giennah	175° 48'.2	17° 38'.8 S
	14	235° 47'.0	17° 04'.9	50'.0	47° 28'.9	35'.8	335° 50'.5	53'.4	309° 56'.8	29'.0	Hadar	148° 42'.4	60° 27'.9 S
	15	250° 49'.4	32° 04'.3	51'.1	62° 29'.9	36'.4	350° 52'.5	53'.4	324° 59'.1	29'.0	Hamal	327° 55'.5	23° 33'.3 N
	16	265° 51'.9	47° 03'.8	52'.1	77° 30'.9	37'.1	5° 54'.5	53'.5	340° 01'.4	29'.0	Kaus Aust.	83° 38'.2	34° 22'.5 S
	17	280° 54'.4	62° 03'.2	53'.2	92° 31'.9	37'.7	20° 56'.5	53'.5	355° 03'.8	29'.0			
	18	295° 56'.8	77° 02'.6	54'.2	107° 32'.9	38'.4	35° 58'.6	53'.5	10° 06'.1	29'.0	Kochab	137° 21'.2	74° 04'.7 N
	19	310° 59'.3	92° 02'.1	55'.3	122° 33'.8	39'.0	51° 00'.6	53'.6	25° 08'.4	28'.9	Markab	13° 33'.8	15° 18'.8 N
	20	326° 01'.8	107° 01'.5	56'.3	137° 34'.8	39'.7	66° 02'.6	53'.6	40° 10'.8	28'.9	Menkar	314° 10'.2	4° 10'.0 N
	21	341° 04'.2	122° 01'.0	57'.4	152° 35'.8	40'.3	81° 04'.6	53'.6	55° 13'.1	28'.9	Menkent	148° 02'.9	36° 27'.8 S
	22	356° 06'.7	137° 00'.4	58'.5	167° 36'.8	40'.9	96° 06'.6	53'.7	70° 15'.5	28'.9	Miaplacidus	221° 39'.2	69° 47'.5 S
23	11° 09'.2	151° 59'.8	59'.5	182° 37'.8	41'.6	111° 08'.6	53'.7	85° 17'.8	28'.9				
Friday	00	26° 11'.6	166° 59'.3	15° 00'.6 S	197° 38'.7	2° 42'.2 S	126° 10'.6	22° 53'.7 S	100° 20'.1	22° 28'.9 S	Mirfak	308° 33'.7	49° 55'.7 N
	01	41° 14'.1	181° 58'.7	01'.6	212° 39'.7	42'.9	141° 12'.6	53'.8	115° 22'.5	28'.9	Nunki	75° 53'.0	26° 16'.3 S
	02	56° 16'.5	196° 58'.1	02'.7	227° 40'.7	43'.5	156° 14'.6	53'.8	130° 24'.8	28'.9	Peacock	53° 12'.3	56° 40'.4 S
	03	71° 19'.0	211° 57'.6	03'.7	242° 41'.7	44'.2	171° 16'.6	53'.8	145° 27'.1	28'.9	Polaris	315° 27'.1	89° 20'.6 N
	04	86° 21'.5	226° 57'.0	04'.8	257° 42'.7	44'.8	186° 18'.6	53'.9	160° 29'.5	28'.9	Pollux	243° 22'.5	27° 58'.6 N
	05	101° 23'.9	241° 56'.5	05'.8	272° 43'.6	45'.5	201° 20'.6	53'.9	175° 31'.8	28'.9			
	06	116° 26'.4	256° 55'.9	06'.9	287° 44'.6	46'.1	216° 22'.6	53'.9	190° 34'.1	28'.8	Procyon	244° 55'.2	5° 10'.5 N
	07	131° 28'.9	271° 55'.3	07'.9	302° 45'.6	46'.8	231° 24'.6	54'.0	205° 36'.5	28'.8	Rasalhague	96° 02'.6	12° 33'.0 N
	08	146° 31'.3	286° 54'.8	09'.0	317° 46'.6	47'.4	246° 26'.6	54'.0	220° 38'.8	28'.8	Regulus	207° 39'.1	11° 52'.3 N
	09	161° 33'.8	301° 54'.2	10'.0	332° 47'.6	48'.1	261° 28'.6	54'.0	235° 41'.1	28'.8	Rigel	281° 07'.7	8° 10'.7 S
	10	176° 36'.3	316° 53'.6	11'.1	347° 48'.5	48'.7	276° 30'.6	54'.1	250° 43'.5	28'.8	Rigel Kent	139° 46'.5	60° 54'.8 S
	11	191° 38'.7	331° 53'.0	12'.1	2° 49'.5	49'.4	291° 32'.6	54'.1	265° 45'.8	28'.8			
	12	206° 41'.2	346° 52'.5	15° 13'.2 S	17° 50'.5	2° 50'.0 S	306° 34'.6	22° 54'.2 S	280° 48'.1	22° 28'.8 S	Sabik	102° 07'.8	15° 44'.8 S
	13	221° 43'.7	1° 51'.9	14'.2	32° 51'.5	50'.7	321° 36'.6	54'.2	295° 50'.5	28'.8	Schedar	349° 35'.1	56° 38'.8 N
	14	236° 46'.1	16° 51'.3	15'.3	47° 52'.5	51'.3	336° 38'.6	54'.2	310° 52'.8	28'.8	Shaula	96° 16'.3	37° 07'.0 S
	15	251° 48'.6	31° 50'.8	16'.3	62° 53'.4	52'.0	351° 40'.6	54'.3	325° 55'.1	28'.8	Sirius	258° 29'.8	16° 44'.5 S
	16	266° 51'.0	46° 50'.2	17'.4	77° 54'.4	52'.6	6° 42'.6	54'.3	340° 57'.5	28'.8	Spica	158° 27'.0	11° 15'.6 S
	17	281° 53'.5	61° 49'.6	18'.4	92° 55'.4	53'.3	21° 44'.6	54'.3	355° 59'.8	28'.7			
	18	296° 56'.0	76° 49'.1	19'.5	107° 56'.4	53'.9	36° 46'.6	54'.4	11° 02'.1	28'.7	Suhail	222° 49'.5	43° 30'.4 S
	19	311° 58'.4	91° 48'.5	20'.5	122° 57'.4	54'.5	51° 48'.6	54'.4	26° 04'.5	28'.7	Vega	80° 36'.2	38° 48'.5 N
	20	327° 00'.9	106° 47'.9	21'.5	137° 58'.3	55'.2	66° 50'.6	54'.4	41° 06'.8	28'.7	Zuben'ubi	137° 01'.0	16° 07'.2 S
	21	342° 03'.4	121° 47'.3	22'.6	152° 59'.3	55'.8	81° 52'.6	54'.5	56° 09'.1	28'.7			
	22	357° 05'.8	136° 46'.8	23'.6	168° 00'.3	56'.5	96° 54'.6	54'.5	71° 11'.5	28'.7	Venus	SHA	Mer.Pass.
23	12° 08'.3	151° 46'.2	24'.7	183° 01'.3	57'.1	111° 56'.6	54'.5	86° 13'.8	28'.7	Mars	142° 00'.2	12:52	
										Jupiter	172° 02'.7	10:50	

2019 October 16, 17, 18 (Wed, Thur, Fri)

GMT	SUN			MOON				Lat	Twilight		Sunrise	Moonrise				
	GHA	Dec		GHA	v	Dec	d		HP	Nautical		Civil	16	17	18	
W e d n e s d a y	00	183° 34'.5	8° 41'.5 S	339° 15'.7	13'.5	12° 43'.4 N	10'.2	55'.2	N 72°	05:02	06:21	07:32	16:05	-	-	
	01	198° 34'.6	42'.4	353° 48'.2	13'.4	53'.6	10'.1	55'.3	N 70°	05:05	06:16	07:20	16:39	16:10	-	
	02	213° 34'.8	43'.3	8° 20'.6	13'.3	13° 03'.7 N	10'.1		68°	05:08	06:12	07:10	17:03	16:54	16:38	
	03	228° 34'.9	44'.3	22° 52'.9	13'.3	13'.8	10'.0		66°	05:09	06:09	07:02	17:22	17:24	17:30	
	04	243° 35'.0	45'.2	37° 25'.2	13'.2	23'.8	9'.9		64°	05:11	06:06	06:55	17:38	17:46	18:02	
	05	258° 35'.2	46'.1	51° 57'.4	13'.2	33'.7	10'.0		62°	05:12	06:03	06:49	17:51	18:04	18:26	
	06	273° 35'.3	47'.0	66° 29'.6	13'.1	43'.7	9'.8		60°	05:13	06:01	06:43	18:02	18:19	18:45	
	07	288° 35'.4	47'.9	81° 01'.7	13'.1	53'.5	9'.8	55'.4	N 58°	05:13	05:59	06:39	18:11	18:32	19:01	
	08	303° 35'.6	48'.9	95° 33'.8	12'.9	14° 03'.3 N	9'.7		56°	05:14	05:57	06:35	18:20	18:43	19:15	
	09	318° 35'.7	49'.8	110° 05'.7	13'.0	13'.0	9'.7		54°	05:14	05:55	06:31	18:27	18:53	19:26	
	10	333° 35'.8	50'.7	124° 37'.7	12'.8	22'.7	9'.6		52°	05:14	05:53	06:27	18:34	19:02	19:37	
	11	348° 36'.0	51'.6	139° 09'.5	12'.8	32'.3	9'.6		50°	05:14	05:52	06:24	18:40	19:10	19:46	
	12	3° 36'.1	8° 52'.5 S	153° 41'.3	12'.8	14° 41'.9 N	9'.5	55'.5	N 40°	05:13	05:45	06:12	19:04	19:40	20:22	
	13	18° 36'.3	53'.5	168° 13'.1	12'.6	51'.4	9'.4		35°	05:12	05:42	06:07	19:14	19:52	20:35	
	14	33° 36'.4	54'.4	182° 44'.7	12'.7	15° 00'.8 N	9'.4		30°	05:11	05:39	06:03	19:22	20:02	20:47	
	15	48° 36'.5	55'.3	197° 16'.4	12'.5	10'.2	9'.3		20°	05:07	05:33	05:55	19:36	20:20	21:07	
	16	63° 36'.7	56'.2	211° 47'.9	12'.5	19'.5	9'.2		N 10°	05:03	05:27	05:49	19:49	20:35	21:25	
	17	78° 36'.8	57'.1	226° 19'.4	12'.4	28'.7	9'.2		0°	04:57	05:21	05:42	20:01	20:50	21:42	
	18	93° 36'.9	58'.1	240° 50'.8	12'.4	37'.9	9'.1	55'.6	S 10°	04:49	05:14	05:36	20:13	21:05	21:59	
	19	108° 37'.1	59'.0	255° 22'.2	12'.2	47'.0	9'.1		20°	04:40	05:06	05:28	20:26	21:20	22:16	
	20	123° 37'.2	59'.9	269° 53'.4	12'.3	56'.1	8'.9		30°	04:27	04:56	05:20	20:40	21:38	22:37	
	21	138° 37'.3	9° 00'.8 S	284° 24'.7	12'.1	16° 05'.0 N	9'.0		35°	04:19	04:49	05:15	20:49	21:49	22:49	
	22	153° 37'.5	01'.7	298° 55'.8	12'.1	14'.0	8'.8		40°	04:09	04:42	05:10	20:59	22:01	23:03	
	23	168° 37'.6	02'.6	313° 26'.9	12'.0	22'.8	8'.7	55'.7	45°	03:56	04:33	05:04	21:11	22:16	23:20	
T h u r s d a y	00	183° 37'.7	9° 03'.6 S	327° 57'.9	12'.0	16° 31'.5 N	8'.7	55'.7	S 50°	03:40	04:22	04:56	21:25	22:33	23:40	
	01	198° 37'.8	04'.5	342° 28'.9	11'.9	40'.2	8'.6		52°	03:33	04:17	04:52	21:31	22:42	23:50	
	02	213° 38'.0	05'.4	356° 59'.8	11'.8	48'.8	8'.6		54°	03:24	04:11	04:48	21:39	22:51	24:01	
	03	228° 38'.1	06'.3	11° 30'.6	11'.7	57'.4	8'.5		56°	03:14	04:04	04:44	21:47	23:02	24:14	
	04	243° 38'.2	07'.2	26° 01'.3	11'.7	17° 05'.9 N	8'.3	55'.8	58°	03:02	03:57	04:39	21:56	23:14	24:28	
	05	258° 38'.4	08'.1	40° 32'.0	11'.6	14'.2	8'.3		S 60°	02:48	03:48	04:34	22:07	23:28	24:45	
	06	273° 38'.5	09'.1	55° 02'.6	11'.6	22'.5	8'.3		S 62°	02:31	03:38	04:28	22:19	23:45	25:07	
	07	288° 38'.6	10'.0	69° 33'.2	11'.5	30'.8	8'.1									
	08	303° 38'.8	10'.9	84° 03'.7	11'.4	38'.9	8'.1									
	09	318° 38'.9	11'.8	98° 34'.1	11'.3	47'.0	8'.0	55'.9	Lat	Sunset	Twilight		Moonset			
	10	333° 39'.0	12'.7	113° 04'.4	11'.3	55'.0	7'.9				Civil	Nautical	16	17	18	
	11	348° 39'.2	13'.6	127° 34'.7	11'.2	18° 02'.9 N	7'.8		N 72°	15:57	17:08	18:26	11:14	-	-	
	12	3° 39'.3	9° 14'.5 S	142° 04'.9	11'.1	18° 10'.7 N	7'.8	55'.9	N 70°	16:09	17:13	18:23	10:42	12:51	-	
	13	18° 39'.4	15'.5	156° 35'.0	11'.1	18'.5	7'.6		68°	16:19	17:17	18:21	10:19	12:08	14:10	
	14	33° 39'.5	16'.4	171° 05'.1	11'.0	26'.1	7'.6	56'.0	66°	16:28	17:20	18:20	10:01	11:39	13:19	
	15	48° 39'.7	17'.3	185° 35'.1	10'.9	33'.7	7'.5		64°	16:35	17:24	18:18	09:46	11:17	12:47	
	16	63° 39'.8	18'.2	200° 05'.0	10'.8	41'.2	7'.4		62°	16:41	17:26	18:17	09:34	11:00	12:23	
	17	78° 39'.9	19'.1	214° 34'.8	10'.8	48'.6	7'.3		60°	16:46	17:29	18:17	09:24	10:45	12:05	
	18	93° 40'.0	20'.0	229° 04'.6	10'.7	55'.9	7'.2	56'.1	N 58°	16:51	17:31	18:16	09:15	10:33	11:49	
	19	108° 40'.2	20'.9	243° 34'.3	10'.7	19° 03'.1 N	7'.1		56°	16:55	17:33	18:16	09:07	10:22	11:36	
	20	123° 40'.3	21'.8	258° 04'.0	10'.5	10'.2	7'.0		54°	16:59	17:35	18:16	09:00	10:13	11:25	
	21	138° 40'.4	22'.8	272° 33'.5	10'.5	17'.2	7'.0		52°	17:02	17:37	18:16	08:54	10:05	11:14	
	22	153° 40'.6	23'.7	287° 03'.0	10'.5	24'.2	6'.8		50°	17:06	17:38	18:16	08:49	09:57	11:05	
	23	168° 40'.7	24'.6	301° 32'.5	10'.3	31'.0	6'.8	56'.2	45°	17:12	17:42	18:16	08:37	09:42	10:46	
F r i d a y	00	183° 40'.8	9° 25'.5 S	316° 01'.8	10'.3	19° 37'.8 N	6'.6	56'.2	N 40°	17:18	17:45	18:17	08:27	09:29	10:31	
	01	198° 40'.9	26'.4	330° 31'.1	10'.2	44'.4	6'.6		35°	17:23	17:49	18:18	08:18	09:18	10:18	
	02	213° 41'.1	27'.3	345° 00'.3	10'.2	51'.0	6'.4		30°	17:27	17:52	18:19	08:11	09:08	10:07	
	03	228° 41'.2	28'.2	359° 29'.5	10'.1	57'.4	6'.4	56'.3	20°	17:35	17:57	18:23	07:58	08:52	09:47	
	04	243° 41'.3	29'.1	13° 58'.6	10'.0	20° 03'.8 N	6'.2		N 10°	17:42	18:03	18:28	07:47	08:37	09:30	
	05	258° 41'.4	30'.0	28° 27'.6	9'.9	10'.0	6'.2		0°	17:49	18:10	18:34	07:37	08:24	09:14	
	06	273° 41'.6	31'.0	42° 56'.5	9'.9	16'.2	6'.0		S 10°	17:55	18:17	18:42	07:26	08:11	08:59	
	07	288° 41'.7	31'.9	57° 25'.4	9'.8	22'.2	6'.0		20°	18:03	18:25	18:51	07:15	07:57	08:42	
	08	303° 41'.8	32'.8	71° 54'.2	9'.8	28'.2	5'.8	56'.4	30°	18:11	18:36	19:04	07:03	07:40	08:23	
	09	318° 41'.9	33'.7	86° 23'.0	9'.6	34'.0	5'.8		35°	18:16	18:42	19:13	06:55	07:31	08:11	
	10	333° 42'.0	34'.6	100° 51'.6	9'.6	39'.8	5'.6		40°	18:22	18:50	19:23	06:47	07:20	07:59	
	11	348° 42'.2	35'.5	115° 20'.2	9'.6	45'.4	5'.6		45°	18:28	18:59	19:36	06:38	07:08	07:44	
	12	3° 42'.3	9° 36'.4 S	129° 48'.8	9'.5	20° 51'.0 N	5'.4	56'.5	S 50°	18:36	19:10	19:52	06:26	06:53	07:25	
	13	18° 42'.4	37'.3	144° 17'.3	9'.4	56'.4	5'.3		52°	18:40	19:15	20:00	06:21	06:45	07:16	
	14	33° 42'.5	38'.2	158° 45'.7	9'.3	21° 01'.7 N	5'.2		54°	18:44	19:21	20:09	06:15	06:38	07:07	
	15	48° 42'.7	39'.1	173° 14'.0	9'.3	06'.9	5'.1		56°	18:48	19:28	20:19	06:08	06:29	06:56	
	16	63° 42'.8	40'.0	187° 42'.3	9'.2	12'.0	5'.0	56'.6	58°	18:53	19:36	20:31	06:01	06:19	06:43	
	17	78° 42'.9	40'.9	202° 10'.5	9'.1	17'.0	4'.9		S 60°	18:59	19:45	20:45	05:53	06:08	06:28	
	18	93° 43'.0	41'.9	216° 38'.6	9'.1	21'.9	4'.8		S 62°	19:05	19:55	21:03	05:43	05:54	06:11	
	19	108° 43'.1	42'.8	231° 06'.7	9'.0	26'.7	4'.6									
	20	123° 43'.3	43'.7	245° 34'.7	9'.0	31'.3	4'.5	56'.7								
	21	138° 43'.4	44'.6	260° 02'.7	8'.9	35'.8	4'.5									
	22	153° 43'.5	45'.5	274° 30'.6	8'.8	40'.3	4'.3		Day	Eqn. of Time	Mer.		Mer. Pass.			
	23	168° 43'.6	46'.4	288° 58'.4	8'.8	44'.6	4'.2		00h	12h	Pass.	Upper	Lower	Age/ Vis		
								16	14 18	14 24	11:46	01:26	13:49	18d 93%		
								17	14 31	14 37	11:45	02:12	14:37	19d 88%		
								18	14 43	14 49	11:45	03:02	15:28	20d 80%		