



# 2016 October 15, 16, 17 (Sat, Sun, Mon)

GMT	SUN		MOON					Lat	Twilight		Sunrise	Moonrise				
	GHA	Dec	GHA	v	Dec	d	HP		Nautical	Civil		15	16	17		
<b>Saturday</b>	00	183° 33'.4	8° 35'.5 S	18° 07'.7	8'.1	0° 17'.5 N	11'.8	60'.6	N 72°	05:01	06:20	07:31	16:42	16:36	16:30	
	01	198° 33'.5	36'.5	32° 34'.8	8'.1	29'.3	11'.9	60'.7	N 70°	05:04	06:15	07:19	16:47	16:48	16:50	
	02	213° 33'.7	37'.4	47° 01'.9	8'.1	41'.2	11'.9		68°	05:07	06:11	07:09	16:50	16:57	17:07	
	03	228° 33'.8	38'.3	61° 29'.0	8'.0	53'.1	11'.9		66°	05:09	06:08	07:01	16:54	17:05	17:20	
	04	243° 33'.9	39'.2	75° 56'.0	8'.0	1° 05'.0 N	11'.9		64°	05:10	06:05	06:54	16:57	17:12	17:31	
	05	258° 34'.1	40'.1	90° 23'.0	8'.0	16'.9	11'.9	60'.8	62°	05:11	06:03	06:48	16:59	17:18	17:40	
	06	273° 34'.2	41'.1	104° 50'.0	7'.9	28'.8	11'.9		60°	05:12	06:00	06:43	17:01	17:23	17:49	
	07	288° 34'.3	42'.0	119° 16'.9	7'.9	40'.7	11'.9		N 58°	05:13	05:58	06:38	17:03	17:28	17:56	
	08	303° 34'.5	42'.9	133° 43'.8	7'.9	52'.6	11'.9		56°	05:13	05:56	06:34	17:05	17:32	18:02	
	09	318° 34'.6	43'.8	148° 10'.7	7'.8	2° 04'.5 N	11'.8	60'.9	54°	05:14	05:54	06:30	17:06	17:35	18:08	
	10	333° 34'.8	44'.8	162° 37'.5	7'.8	16'.3	11'.9		52°	05:14	05:53	06:27	17:08	17:39	18:13	
	11	348° 34'.9	45'.7	177° 04'.3	7'.8	28'.2	11'.9		50°	05:14	05:51	06:24	17:09	17:42	18:18	
	12	3° 35'.0	8° 46'.6 S	191° 31'.1	7'.7	2° 40'.1 N	11'.8	60'.9	45°	05:14	05:48	06:17	17:12	17:48	18:28	
	13	18° 35'.2	47'.5	205° 57'.8	7'.7	51'.9	11'.9		N 40°	05:13	05:44	06:12	17:14	17:54	18:37	
	14	33° 35'.3	48'.4	220° 24'.5	7'.7	3° 03'.8 N	11'.8	61'.0	35°	05:12	05:41	06:07	17:16	17:59	18:44	
	15	48° 35'.4	49'.4	234° 51'.2	7'.6	15'.6	11'.9		30°	05:11	05:39	06:03	17:18	18:03	18:50	
	16	63° 35'.6	50'.3	249° 17'.8	7'.6	27'.5	11'.8		20°	05:07	05:33	05:55	17:21	18:10	19:02	
	17	78° 35'.7	51'.2	263° 44'.4	7'.5	39'.3	11'.8		N 10°	05:03	05:27	05:49	17:24	18:17	19:12	
	18	93° 35'.9	52'.1	278° 10'.9	7'.5	51'.1	11'.7		0°	04:57	05:21	05:42	17:27	18:23	19:21	
	19	108° 36'.0	53'.0	292° 37'.4	7'.5	4° 02'.8 N	11'.8		S 10°	04:50	05:14	05:36	17:29	18:29	19:31	
	20	123° 36'.1	54'.0	307° 03'.9	7'.5	14'.6	11'.7	61'.1	20°	04:40	05:06	05:29	17:32	18:36	19:41	
	21	138° 36'.3	54'.9	321° 30'.4	7'.4	26'.3	11'.7		30°	04:27	04:56	05:21	17:36	18:44	19:52	
	22	153° 36'.4	55'.8	335° 56'.8	7'.3	38'.0	11'.7		35°	04:19	04:50	05:16	17:38	18:48	19:59	
	23	168° 36'.5	56'.7	350° 23'.1	7'.4	49'.7	11'.7		40°	04:09	04:42	05:10	17:40	18:54	20:07	
								45°	03:57	04:34	05:04	17:43	19:00	20:16		
<b>Sunday</b>	00	183° 36'.7	8° 57'.6 S	4° 49'.5	7'.2	5° 01'.4 N	11'.6	61'.1	S 50°	03:41	04:23	04:56	17:46	19:07	20:27	
	01	198° 36'.8	58'.5	19° 15'.7	7'.3	13'.0	11'.6		52°	03:33	04:17	04:53	17:47	19:10	20:32	
	02	213° 36'.9	59'.5	33° 42'.0	7'.2	24'.6	11'.6		54°	03:25	04:12	04:49	17:49	19:14	20:38	
	03	228° 37'.1	9° 00'.4 S	48° 08'.2	7'.2	36'.2	11'.5	61'.2	56°	03:15	04:05	04:45	17:51	19:18	20:44	
	04	243° 37'.2	01'.3	62° 34'.4	7'.1	47'.7	11'.5		58°	03:03	03:58	04:40	17:53	19:23	20:51	
	05	258° 37'.3	02'.2	77° 00'.5	7'.1	59'.2	11'.5		S 60°	02:49	03:49	04:35	17:55	19:28	20:59	
	06	273° 37'.5	03'.1	91° 26'.6	7'.1	6° 10'.7 N	11'.4		S 62°	02:32	03:39	04:28	17:58	19:34	21:09	
	07	288° 37'.6	04'.0	105° 52'.7	7'.0	22'.1	11'.4									
	08	303° 37'.7	05'.0	120° 18'.7	7'.0	33'.5	11'.4									
	09	318° 37'.8	05'.9	134° 44'.7	7'.0	44'.9	11'.3		Lat	Sunset	Twilight		Moonset			
	10	333° 38'.0	06'.8	149° 10'.7	6'.9	56'.2	11'.2				Civil	Nautical	15	16	17	
	11	348° 38'.1	07'.7	163° 36'.6	6'.9	7° 07'.4 N	11'.3		N 72°	15:58	17:09	18:27	05:13	07:16	09:22	
	12	3° 38'.2	9° 08'.6 S	178° 02'.5	6'.8	7° 18'.7 N	11'.1	61'.2	N 70°	16:11	17:14	18:24	05:11	07:06	09:03	
	13	18° 38'.4	09'.5	192° 28'.3	6'.8	29'.8	11'.2		68°	16:21	17:18	18:22	05:10	06:59	08:48	
	14	33° 38'.5	10'.5	206° 54'.1	6'.8	41'.0	11'.1		66°	16:29	17:21	18:20	05:09	06:52	08:36	
	15	48° 38'.6	11'.4	221° 19'.9	6'.7	52'.1	11'.0	61'.3	64°	16:36	17:24	18:19	05:08	06:47	08:26	
	16	63° 38'.8	12'.3	235° 45'.6	6'.7	8° 03'.1 N	11'.0		62°	16:42	17:27	18:18	05:07	06:42	08:18	
	17	78° 38'.9	13'.2	250° 11'.3	6'.6	14'.1	10'.9		60°	16:47	17:29	18:17	05:06	06:38	08:11	
	18	93° 39'.0	14'.1	264° 36'.9	6'.6	25'.0	10'.8		N 58°	16:52	17:32	18:17	05:06	06:35	08:04	
	19	108° 39'.1	15'.0	279° 02'.5	6'.6	35'.8	10'.8		56°	16:56	17:34	18:17	05:05	06:32	07:58	
	20	123° 39'.3	15'.9	293° 28'.1	6'.5	46'.6	10'.8		54°	17:00	17:35	18:16	05:05	06:29	07:53	
	21	138° 39'.4	16'.9	307° 53'.6	6'.5	57'.4	10'.7		52°	17:03	17:37	18:16	05:04	06:26	07:49	
	22	153° 39'.5	17'.8	322° 19'.1	6'.5	9° 08'.1 N	10'.6		50°	17:06	17:39	18:16	05:04	06:24	07:45	
	23	168° 39'.7	18'.7	336° 44'.6	6'.4	18'.7	10'.6		45°	17:13	17:42	18:16	05:03	06:19	07:36	
<b>Monday</b>	00	183° 39'.8	9° 19'.6 S	351° 10'.0	6'.4	9° 29'.3 N	10'.5	61'.3	N 40°	17:19	17:46	18:17	05:02	06:15	07:28	
	01	198° 39'.9	20'.5	5° 35'.4	6'.4	39'.8	10'.4		35°	17:23	17:49	18:18	05:01	06:11	07:22	
	02	213° 40'.0	21'.4	20° 00'.8	6'.3	50'.2	10'.3		30°	17:28	17:52	18:20	05:01	06:08	07:16	
	03	228° 40'.2	22'.3	34° 26'.1	6'.3	10° 00'.5 N	10'.3		20°	17:35	17:58	18:23	05:00	06:03	07:07	
	04	243° 40'.3	23'.2	48° 51'.4	6'.2	10'.8	10'.3		N 10°	17:42	18:03	18:28	04:59	05:58	06:58	
	05	258° 40'.4	24'.2	63° 16'.6	6'.2	21'.1	10'.1		0°	17:49	18:10	18:34	04:58	05:53	06:50	
	06	273° 40'.5	25'.1	77° 41'.8	6'.2	31'.2	10'.1		S 10°	17:55	18:17	18:42	04:57	05:49	06:43	
	07	288° 40'.7	26'.0	92° 07'.0	6'.1	41'.3	10'.0		20°	18:03	18:25	18:51	04:56	05:44	06:34	
	08	303° 40'.8	26'.9	106° 32'.1	6'.1	51'.3	9'.9		30°	18:11	18:35	19:04	04:55	05:38	06:25	
	09	318° 40'.9	27'.8	120° 57'.2	6'.1	11° 01'.2 N	9'.8	61'.2	35°	18:16	18:42	19:13	04:54	05:35	06:19	
	10	333° 41'.0	28'.7	135° 22'.3	6'.0	11'.0	9'.8		40°	18:21	18:49	19:23	04:53	05:32	06:13	
	11	348° 41'.2	29'.6	149° 47'.3	6'.1	20'.8	9'.7		45°	18:28	18:58	19:35	04:52	05:28	06:06	
	12	3° 41'.3	9° 30'.5 S	164° 12'.4	5'.9	11° 30'.5 N	9'.6	61'.2	S 50°	18:36	19:10	19:51	04:51	05:23	05:57	
	13	18° 41'.4	31'.4	178° 37'.3	6'.0	40'.1	9'.5		52°	18:39	19:15	19:59	04:51	05:20	05:53	
	14	33° 41'.5	32'.4	193° 02'.3	5'.9	49'.6	9'.5		54°	18:43	19:21	20:08	04:50	05:18	05:48	
	15	48° 41'.7	33'.3	207° 27'.2	5'.9	59'.1	9'.3		56°	18:48	19:28	20:18	04:49	05:15	05:44	
	16	63° 41'.8	34'.2	221° 52'.1	5'.8	12° 08'.4 N	9'.3		58°	18:52	19:35	20:30	04:49	05:12	05:38	
	17	78° 41'.9	35'.1	236° 16'.9	5'.8	17'.7	9'.1		S 60°	18:58	19:44	20:44	04:48	05:09	05:32	
	18	93° 42'.0	36'.0	250° 41'.7	5'.8	26'.8	9'.1		S 62°	19:04	19:54	21:02	04:47	05:05	05:25	
	19	108° 42'.2	36'.9	265° 06'.5	5'.8	35'.9	9'.0									
	20	123° 42'.3	37'.8	279° 31'.3	5'.7	44'.9	8'.9									
	21	138° 42'.4	38'.7	293° 56'.0	5'.7	53'.8	8'.8	61'.1								
	22	153° 42'.5	39'.6	308° 20'.7	5'.7	13° 02'.6 N	8'.7		Day	SUN		Mer.	MOON			
	23	168° 42'.6	40'.5	322° 45'.4	5'.6	11'.3	8'.6			Eqn. of Time	Pass.	Mer. Pass.		Age/ Vis		
								15	14 13	14 20	11:46	23:40	11:12	14d 99%		
								16	14 26	14 33	11:45	24:37	1			