

2010

Sun and Planets

Date	SUN					Mercury						Venus													
	GHA	d	Dec	d		GHA	d	dd	Dec	d	dd	GHA	d	Dec	d										
	o	'	o	'	vis	mag	o	'	o	'	o	'	o	'	o	'									
Jan	1	179	10.5	-7.0	-23	1.6	5.0	ss	1.7	170	13.1	130.9	-3.8	-20	28.4	9.8	0.7	-3.9	181	58.1	-23.2	-23	38.5	2.5	
	2	179	3.4	-7.0	-22	56.6	5.5	2.0	172	24.0	138.5	-3.8	-20	18.6	8.4	0.7	-3.9	181	34.8	-23.2	-23	36.0	3.3		
	3	178	56.5	-6.9	-22	51.1	5.9	2.2	174	42.6	143.7	-2.6	-20	10.2	6.8	0.8	-3.9	181	11.6	-23.1	-23	32.7	4.1		
	4	178	49.6	-6.8	-22	45.2	6.4	2.4	177	6.3	146.2	-1.2	-20	3.4	5.5	0.7	-3.9	180	48.5	-23.0	-23	28.6	4.7		
	5	178	42.8	-6.7	-22	38.8	6.8	2.5	179	32.5	145.9	0.2	-19	57.9	3.9	0.8	-3.9	180	25.5	-22.9	-23	23.9	5.5		
	6	178	36.2	-6.6	-22	32.0	7.3	2.3	181	58.3	142.9	1.5	-19	54.0	2.6	0.7	-3.9	180	2.6	-22.8	-23	18.4	6.2		
	7	178	29.6	-6.4	-22	24.7	7.7	2.1	184	21.2	137.5	2.7	-19	51.4	1.1	0.8	-3.9	179	39.8	-22.6	-23	12.2	6.9		
	8	178	23.1	-6.3	-22	17.0	8.2	sr	2.0	186	38.7	130.1	3.7	-19	50.3	-0.3	0.7	-3.9	179	17.2	-22.5	-23	5.3	7.7	
	9	178	16.8	-6.2	-22	8.8	8.6	sr	1.8	188	48.7	121.2	4.4	-19	50.6	-1.6	0.7	-3.9	178	54.7	-22.3	-22	57.6	8.3	
	10	178	10.6	-6.1	-22	0.2	9.0	sr	1.6	190	50.0	111.4	4.9	-19	52.2	-2.9	0.6	-3.9	178	32.4	-22.1	-22	49.3	9.0	
Jan	11	178	4.6	-5.9	-21	51.2	9.4	sr	1.4	192	41.4	101.0	5.2	-19	55.1	-4.1	0.6	-3.9	178	10.2	-22.0	-22	40.3	9.8	
	12	177	58.6	-5.8	-21	41.8	9.9	sr	1.2	194	22.5	90.5	5.3	-19	59.2	-5.2	0.5	-3.9	177	48.3	-21.8	-22	30.5	10.4	
	13	177	52.9	-5.6	-21	31.9	10.3	sr	1.0	195	53.0	80.2	5.2	-20	4.4	-6.1	0.4	-3.9	177	26.5	-21.5	-22	20.1	11.1	
	14	177	47.2	-5.5	-21	21.6	10.7	sr	0.8	197	13.1	70.2	5.0	-20	10.5	-6.9	0.4	-3.9	177	5.0	-21.3	-22	9.0	11.7	
	15	177	41.8	-5.3	-21	10.9	11.1	sr	0.6	198	23.3	60.7	4.7	-20	17.4	-7.5	0.3	-3.9	176	43.7	-21.1	-21	57.3	12.5	
	16	177	36.5	-5.1	-20	59.8	11.5	sr	0.5	199	24.0	51.8	4.4	-20	24.9	-7.9	0.2	-3.9	176	22.6	-20.8	-21	44.8	13.1	
	17	177	31.4	-4.9	-20	48.3	11.9	sr	0.3	200	15.8	43.6	4.1	-20	32.8	-8.3	0.2	-3.9	176	1.8	-20.6	-21	31.7	13.7	
	18	177	26.4	-4.8	-20	36.4	12.3	sr	0.2	200	59.4	36.0	3.8	-20	41.1	-8.4	0.1	-3.9	175	41.2	-20.3	-21	18.0	14.4	
	19	177	21.7	-4.6	-20	24.1	12.7	sr	0.2	201	35.4	29.1	3.5	-20	49.5	-8.3	-0.1	-3.9	175	21.0	-20.0	-21	3.6	15.0	
	20	177	17.1	-4.4	-20	11.4	13.1	sr	0.1	202	4.5	22.8	3.2	-20	57.8	-8.2	0.0	-3.9	175	0.9	-19.7	-20	48.6	15.6	
Jan	21	177	12.7	-4.2	-19	58.3	13.4	sr	0.1	202	27.3	17.1	2.9	-21	6.0	-8.0	-0.1	-3.9	174	41.2	-19.4	-20	33.0	16.2	
	22	177	8.5	-4.0	-19	44.9	13.8	sr	0.0	202	44.4	11.9	2.6	-21	14.0	-7.5	-0.3	-3.9	174	21.7	-19.2	-20	16.8	16.8	
	23	177	4.5	-3.8	-19	31.1	14.2	sr	0.0	202	56.2	7.2	2.4	-21	21.5	-7.0	-0.3	-3.9	174	2.6	-18.9	-20	0.0	17.4	
	24	177	0.7	-3.6	-19	16.9	14.5	sr	-0.1	203	3.4	2.9	2.1	-21	28.5	-6.4	-0.3	-3.9	173	43.7	-18.6	-19	42.6	18.0	
	25	176	57.1	-3.4	-19	2.4	14.8	sr	-0.1	203	6.3	-0.9	1.9	-21	34.9	-5.8	-0.3	-3.9	173	25.2	-18.2	-19	24.6	18.5	
	26	176	53.7	-3.2	-18	47.6	15.2	sr	-0.1	203	5.4	-4.4	1.7	-21	40.7	-5.0	-0.4	-3.9	173	6.9	-17.9	-19	6.1	19.1	
	27	176	50.5	-3.0	-18	32.4	15.6	sr	-0.1	203	0.9	-7.6	1.6	-21	45.7	-4.1	-0.5	-3.9	172	49.0	-17.6	-18	47.0	19.6	
	28	176	47.5	-2.8	-18	16.8	15.8	sr	-0.1	202	53.3	-10.5	1.4	-21	49.8	-3.3	-0.4	-3.9	172	31.4	-17.3	-18	27.4	20.2	
	29	176	44.8	-2.6	-18	1.0	16.2	sr	-0.1	202	42.9	-13.1	1.3	-21	53.1	-2.3	-0.5	-3.9	172	14.1	-17.0	-18	7.2	20.7	
	30	176	42.2	-2.4	-17	44.8	16.5	sr	-0.1	202	29.8	-15.4	1.2	-21	55.4	-1.3	-0.5	-3.9	171	57.1	-16.7	-17	46.5	21.1	
Jan	31	176	39.8	-2.2	-17	28.3	16.8	sr	-0.1	202	14.4	-17.6	1.1	-21	56.7	-0.3	-0.5	-3.9	171	40.4	-16.4	-17	25.4	21.7	
Feb	1	176	37.6	-2.0	-17	11.5	17.1	sr	-0.1	201	56.8	-19.5	1.0	-21	57.0	0.7	-0.5	-3.9	171	24.1	-16.0	-17	3.7	22.1	
	2	176	35.7	-1.8	-16	54.4	17.4	sr	-0.1	201	37.2	-21.3	0.9	-21	56.3	1.9	-0.6	-3.9	171	8.0	-15.7	-16	41.6	22.6	
	3	176	33.9	-1.6	-16	37.0	17.7	sr	-0.1	201	15.9	-22.9	0.8	-21	54.4	3.0	-0.6	-3.9	170	52.3	-15.4	-16	19.0	23.1	
	4	176	32.3	-1.4	-16	19.3	18.0	sr	-0.1	200	53.0	-24.4	0.7	-21	51.4	4.1	-0.6	-3.9	170	36.9	-15.1	-15	55.9	23.5	
	5	176	31.0	-1.2	-16	1.3	18.3	sr	-0.1	200	28.6	-25.8	0.7	-21	47.3	5.3	-0.6	-3.9	170	21.7	-14.8	-15	32.4	23.9	
	6	176	29.8	-1.0	-15	43.0	18.5	sr	-0.1	200	2.8	-27.0	0.6	-21	42.0	6.5	-0.6	-3.9	170	6.9	-14.5	-15	8.5	24.4	
	7	176	28.8	-0.8	-15	24.5	18.8	sr	-0.2	199	35.8	-28.1	0.6	-21	35.5	7.8	-0.7	-3.9	169	52.4	-14.2	-14	44.1	24.8	
	8	176	28.0	-0.6	-15	5.7	19.1	sr	-0.2	199	7.7	-29.2	0.5	-21	27.7	8.9	-0.5	-3.9	169	38.2	-13.9	-14	19.3	25.1	
	9	176	27.5	-0.4	-14	46.6	19.3	sr	-0.2	198	38.5	-30.1	0.5	-21	18.8	10.2	-0.6	-3.9	169	24.2	-13.7	-13	54.2	25.5	
Feb	10	176	27.1	-0.2	-14	27.3	19.5	sr	-0.2	198	8.4	-31.0	0.4	-21	8.6	11.5	-0.7	-3.9	169	10.6	-13.4	-13	28.7	25.9	
	11	176	26.9	0.0	-14	7.8	19.8	sr	-0.2	197	37.4	-31.8	0.4	-20	57.1	12.7	-0.6	-3.9	168	57.2	-13.1	-13	2.8	26.2	
	12	176	26.8	0.2	-13	48.0	20.0	sr	-0.2	197	5.6	-32.5	0.4	-20	44.4	14.0	-0.7	ss	-3.9	168	44.1	-12.8	-12	36.6	26.6
	13	176	27.0	0.4	-13	28.0	20.3	sr	-0.2	196	33.2	-33.2	0.3	-20	30.4	15.3	-0.7	ss	-3.9	168	31.3	-12.6	-12	10.0	26.9
	14	176	27.4	0.5	-13	7.7	20.4	sr	-0.2	195	60.0	-33.8	0.3	-20	15.1	16.6	-0.6	ss	-3.9	168	18.7	-12.3	-11	43.1	27.2
	15	176	27.9	0.7	-12	47.3	20.7	sr	-0.2	195	26.2	-34.4	0.3	-19	58.5	17.8	-0.6	ss	-3.9	168	6.4	-12.1	-11	15.9	27.5
	16	176	28.7	0.9	-12	26.6	20.8	sr	-0.3	194	51.8	-34.9	0.3	-19	40.7	19.2	-0.7	ss	-3.9	167	54.4	-11.8	-10	48.4	27.8
	17	176	29.6	1.1	-12	5.8	21.1	sr	-0.3	194	16.9	-35.4	0.2	-19	21.5	20.4	-0.6	ss	-3.9	167	42.5	-11.6	-10	20.6	28.1
	18	176	30.7	1.3	-11	44.7	21.2	sr	-0.3	193	41.5	-35.9	0.2	-19	1.1	21.8	-0.7	ss	-3.9	167	31.0	-11.3	-9	52.5	28.3
	19	176	31.9	1.4	-11	23.5	21.4	sr	-0.3	193	5.7	-36.3	0.2	-18	39.3	23.1	-0.6	ss	-3.9	167	19.6	-11.1	-9	24.2	28.6
Feb	20	176	33.4	1.6	-11	2.1	21.6	sr	-0.3	192	29.4	-36.7	0.2	-18	16.2	24.4	-0.7	ss	-3.9	167	8.5	-10.9	-8	55.6	28.8
	21	176	35.0	1.8	-10	40.5	21.7	sr	-0.4	191	52.7	-37.1	0.2	-17	51.8	25.7	-0.6	ss	-3.9	166	57.6	-10.7	-8	26.8	29.0
	22	176	36.7	1.9	-10	18.8	21.9	sr	-0.4	191	15.5	-37.5	0.2	-17	26.1	27.0	-0.6	ss	-						

2010

Sun and Planets

Date	Mars					Jupiter					Saturn													
	vis	GHA		d	Dec	vis	GHA		d	Dec	vis	GHA		d	Dec									
	mag	o	'	'	o	mag	o	'	'	o	mag	o	'	'	o									
Jan 1	y	-0.8	318	3.9	68.0	18	45.1	5.4	y	-2.1	131	37.2	47.4	-13	36.5	4.2	y	1.1	275	29.9	57.8	0	18.6	-0.3
2	y	-0.8	319	11.9	68.8	18	50.5	5.6	y	-2.1	132	24.6	47.3	-13	32.3	4.2	y	1.1	276	27.7	57.9	0	18.3	-0.2
3	y	-0.8	320	20.8	69.7	18	56.1	5.8	y	-2.1	133	11.9	47.2	-13	28.1	4.3	y	1.1	277	25.6	58.0	0	18.1	-0.2
4	y	-0.8	321	30.4	70.5	19	1.9	6.0	y	-2.1	133	59.1	47.2	-13	23.8	4.3	y	1.1	278	23.6	58.1	0	17.9	-0.1
5	y	-0.9	322	40.9	71.3	19	7.9	6.2	y	-2.1	134	46.3	47.1	-13	19.5	4.3	y	1.1	279	21.7	58.2	0	17.8	-0.1
6	y	-0.9	323	52.2	72.1	19	14.1	6.5	y	-2.1	135	33.4	47.0	-13	15.2	4.4	y	1.1	280	19.9	58.3	0	17.7	-0.1
7	y	-0.9	325	4.4	72.9	19	20.6	6.6	y	-2.1	136	20.4	47.0	-13	10.8	4.4	y	1.1	281	18.2	58.4	0	17.6	0.0
8	y	-0.9	326	17.3	73.7	19	27.2	6.7	y	-2.1	137	7.4	46.9	-13	6.4	4.4	y	1.1	282	16.7	58.5	0	17.6	0.1
9	y	-1.0	327	31.0	74.5	19	33.9	7.0	y	-2.1	137	54.3	46.8	-13	2.0	4.5	y	1.1	283	15.2	58.6	0	17.7	0.0
10	y	-1.0	328	45.6	75.3	19	40.9	7.1	y	-2.1	138	41.1	46.8	-12	57.5	4.5	y	1.1	284	13.8	58.7	0	17.7	0.2
11	y	-1.0	330	0.8	76.0	19	48.0	7.2	y	-2.1	139	27.9	46.7	-12	53.0	4.5	y	1.1	285	12.5	58.8	0	17.9	0.1
12	y	-1.0	331	16.9	76.8	19	55.2	7.4	y	-2.1	140	14.6	46.7	-12	48.5	4.6	y	1.1	286	11.3	58.9	0	18.0	0.3
13	y	-1.0	332	33.7	77.5	20	2.6	7.4	y	-2.1	141	1.3	46.6	-12	43.9	4.6	y	1.1	287	10.2	59.0	0	18.3	0.2
14	y	-1.1	333	51.1	78.2	20	10.0	7.6	y	-2.1	141	47.9	46.5	-12	39.3	4.6	y	1.1	288	9.2	59.1	0	18.5	0.3
15	y	-1.1	335	9.3	78.8	20	17.6	7.6	y	-2.1	142	34.4	46.5	-12	34.7	4.7	y	1.0	289	8.3	59.2	0	18.8	0.3
16	y	-1.1	336	28.1	79.4	20	25.2	7.7	y	-2.1	143	20.9	46.4	-12	30.0	4.6	y	1.0	290	7.5	59.3	0	19.1	0.4
17	y	-1.1	337	47.5	80.0	20	32.9	7.7	y	-2.1	144	7.3	46.4	-12	25.4	4.8	y	1.0	291	6.8	59.4	0	19.5	0.5
18	y	-1.1	339	7.6	80.6	20	40.6	7.8	y	-2.1	144	53.7	46.3	-12	20.6	4.7	y	1.0	292	6.2	59.5	0	20.0	0.4
19	y	-1.2	340	28.1	81.1	20	48.4	7.7	y	-2.1	145	40.0	46.3	-12	15.9	4.8	y	1.0	293	5.8	59.6	0	20.4	0.5
20	y	-1.2	341	49.2	81.6	20	56.1	7.8	y	-2.1	146	26.3	46.2	-12	11.1	4.8	y	1.0	294	5.4	59.7	0	20.9	0.6
21	y	-1.2	343	10.8	82.0	21	3.9	7.7	y	-2.1	147	12.6	46.2	-12	6.3	4.8	y	1.0	295	5.1	59.8	0	21.5	0.6
22	y	-1.2	344	32.8	82.4	21	11.6	7.6	y	-2.1	147	58.8	46.2	-12	1.5	4.8	y	1.0	296	4.9	59.9	0	22.1	0.6
23	y	-1.2	345	55.2	82.8	21	19.2	7.6	y	-2.1	148	44.9	46.1	-11	56.7	4.9	y	1.0	297	4.8	60.0	0	22.7	0.7
24	y	-1.2	347	18.0	83.1	21	26.8	7.6	y	-2.0	149	31.1	46.1	-11	51.8	4.9	y	1.0	298	4.8	60.1	0	23.4	0.7
25	y	-1.3	348	41.0	83.3	21	34.4	7.4	y	-2.0	150	17.2	46.0	-11	46.9	4.9	y	1.0	299	4.9	60.2	0	24.1	0.8
26	y	-1.3	350	4.4	83.5	21	41.8	7.3	y	-2.0	151	3.2	46.0	-11	42.0	5.0	y	1.0	300	5.1	60.3	0	24.9	0.8
27	y	-1.3	351	27.9	83.7	21	49.1	7.2	y	-2.0	151	49.2	46.0	-11	37.0	4.9	y	1.0	301	5.4	60.4	0	25.7	0.8
28	y	-1.3	352	51.6	83.8	21	56.3	7.1	y	-2.0	152	35.2	45.9	-11	32.1	5.0	y	1.0	302	5.8	60.5	0	26.5	0.9
29	y	-1.3	354	15.4	83.9	22	3.4	6.8	y	-2.0	153	21.1	45.9	-11	27.1	5.0	y	1.0	303	6.3	60.6	0	27.4	0.9
30	y	-1.3	355	39.3	83.9	22	10.2	6.8	y	-2.0	154	7.0	45.9	-11	22.1	5.1	y	1.0	304	6.9	60.7	0	28.3	0.9
Jan 31	y	-1.3	357	3.2	83.9	22	17.0	6.5	y	-2.0	154	52.9	45.9	-11	17.0	5.0	y	1.0	305	7.6	60.8	0	29.2	1.0
Feb 1	y	-1.3	358	27.1	83.8	22	23.5	6.4	y	-2.0	155	38.8	45.8	-11	12.0	5.1	y	1.0	306	8.3	60.9	0	30.2	1.1
2	y	-1.3	359	50.9	83.7	22	29.9	6.1	y	-2.0	156	24.6	45.8	-11	6.9	5.1	y	0.9	307	9.2	61.0	0	31.3	1.0
3	y	-1.2	1	14.7	83.5	22	36.0	6.0	y	-2.0	157	10.4	45.8	-11	1.8	5.1	y	0.9	308	10.1	61.0	0	32.3	1.1
4	y	-1.2	2	38.2	83.3	22	42.0	5.7	y	-2.0	157	56.1	45.7	-10	56.7	5.1	y	0.9	309	11.2	61.1	0	33.4	1.1
5	y	-1.2	4	1.5	83.1	22	47.7	5.5	y	-2.0	158	41.9	45.7	-10	51.6	5.2	y	0.9	310	12.3	61.2	0	34.5	1.2
6	y	-1.2	5	24.6	82.8	22	53.2	5.3	y	-2.0	159	27.6	45.7	-10	46.4	5.1	y	0.9	311	13.5	61.3	0	35.7	1.2
7	y	-1.2	6	47.4	82.4	22	58.5	5.0	y	-2.0	160	13.3	45.7	-10	41.3	5.2	y	0.9	312	14.8	61.4	0	36.9	1.3
8	y	-1.1	8	9.8	82.0	23	3.5	4.7	y	-2.0	160	59.0	45.7	-10	36.1	5.2	y	0.9	313	16.2	61.5	0	38.2	1.2
9	y	-1.1	9	31.8	81.6	23	8.2	4.5	y	-2.0	161	44.6	45.6	-10	30.9	5.3	y	0.9	314	17.7	61.6	0	39.4	1.3
10	y	-1.1	10	53.4	81.1	23	12.7	4.3	y	-2.0	162	30.3	45.6	-10	25.6	5.2	y	0.9	315	19.3	61.6	0	40.7	1.4
11	y	-1.1	12	14.5	80.6	23	17.0	4.0	y	-2.0	163	15.9	45.6	-10	20.4	5.3	y	0.9	316	20.9	61.7	0	42.1	1.3
12	y	-1.1	13	35.1	80.0	23	21.0	3.7	y	-2.0	164	1.5	45.6	-10	15.1	5.2	y	0.9	317	22.6	61.8	0	43.4	1.4
13	y	-1.0	14	55.2	79.5	23	24.7	3.5	y	-2.0	164	47.1	45.6	-10	9.9	5.3	y	0.9	318	24.4	61.9	0	44.8	1.5
14	y	-1.0	16	14.6	78.8	23	28.2	3.2	y	-2.0	165	32.7	45.6	-10	4.6	5.3	y	0.9	319	26.3	62.0	0	46.3	1.4
15	y	-1.0	17	33.5	78.2	23	31.4	2.9	y	-2.0	166	18.2	45.6	-9	59.3	5.3	y	0.9	320	28.3	62.0	0	47.7	1.5
16	y	-1.0	18	51.6	77.5	23	34.3	2.7	y	-2.0	167	3.8	45.5	-9	54.0	5.3	y	0.9	321	30.3	62.1	0	49.2	1.6
17	y	-0.9	20	9.1	76.8	23	37.0	2.4	y	-2.0	167	49.3	45.5	-9	48.7	5.4	y	0.9	322	32.5	62.2	0	50.8	1.5
18	y	-0.9	21	25.9	76.0	23	39.4	2.2	y	-2.0	168	34.9	45.5	-9	43.3	5.3	y	0.8	323	34.7	62.3	0	52.3	1.6
19	y	-0.9	22	41.9	75.3	23	41.6	1.9	y	-2.0	169	20.4	45.5	-9	38.0	5.4	y	0.8	324	36.9	62.3	0	53.9	1.6
20	y	-0.9	23	57.2	74.5	23	43.5	1.6	y	-2.0	170	5.9	45.5	-9	32.6	5.3	y	0.8	325	39.2	62.4	0	55.5	1.6
21	y	-0.8	25	11.7	73.7	23	45.1	1.4	y	-2.0	170	51.5	45.5	-9	27.3	5.4	y	0.8	326	41.6	62.5	0	57.1	1.6
22	y	-0.8	26	25.5	72.9	23	46.5	1.2	y	-2.0	171	37.0	45.5	-9	21.9	5.4	y	0.8	327	44.1	62.5	0	58.7	1.7
23	y	-0.8	27	38.4	72.1	23	47.7	0.9	y	-2.0	172	22.5	45.5	-9	16.5	5.4	y	0.8	328	46.6	62.6	1	0.4	1.7
24	y	-0.8	28	50.5	71.3	23	48.6	0.7	y	-2.0	173	8.0	45.5	-9	11.1	5.4	y	0.8	329	49.2	62.6	1	2.1	1.7
25	y	-0.7	30	1.8	70.5	23	49.3	0.5	y	-2.0	173	53.5	45.5	-9	5.7	5.4	y	0.8	330	51.8	62.7	1	3.8	1.7
26	y	-0.7	31	12.3	69.6	23	49.8	0.2	y	-2.0	174	39.1	45.5	-9	0.3	5.4	y	0.8	331	54.5	62.8	1	5.5	1.8
27	y	-0.7	32	21.9	68.8	23	50.0	0.0	y	-2.0	175	24.6	45.5	-8	54.9	5.4	y	0.8	332	57.3	62.8	1	7.3	1.7
Feb 28	y	-0.7	33	30.7	68.0	23	50.0	-0.2	y	-2.0	176	10.1	45.5	-8	49.5	5.5	y	0.8	334	0.1	62.9	1	9.0	1.8
Mar 1	y	-0.6	34	38.7	67.1	23	49.8	-0.4	y	-2.0	176	55.7	45.6	-8	44.0	5.4	y	0.8	335	3.0	62.9	1	10.8	1.8
2	y	-0.6	35	45.8	66.3	23	49.4	-0.6	y	-2.0	177	41.2	45.6	-8	38									

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Sun and Planets

Date	SUN					Mercury					Venus													
	GHA O	d	Dec O	d	d'	vis mag	GHA O	d	dd	Dec O	d	dd	vis mag	GHA O	d	Dec O	d							
Mar 7	177	12.8	3.6	-5	24.3	23.4	-1.1	182	38.9	-42.6	0.2	-9	52.3	44.0	-0.6	SS	-3.9	164	41.8	-8.9	-1	26.0	30.8	
8	177	16.4	3.7	-5	0.9	23.4	-1.2	181	56.3	-43.0	0.2	-9	8.3	45.2	-0.6	SS	-3.9	164	32.9	-8.9	-0	55.2	30.8	
9	177	20.1	3.8	-4	37.5	23.5	-1.3	181	13.3	-43.5	0.2	-8	23.1	46.4	-0.6	SS	-3.9	164	24.1	-8.8	0	24.4	30.9	
10	177	23.9	3.9	-4	14.0	23.5	-1.4	180	29.8	-44.0	0.2	-7	36.7	47.6	-0.6	SS	-3.9	164	15.3	-8.8	0	6.5	30.9	
11	177	27.7	3.9	-3	50.5	23.6	-1.5	179	45.8	-44.5	0.2	-6	49.1	48.8	-0.6	SS	-3.9	164	6.5	-8.8	0	37.4	30.9	
12	177	31.6	4.0	-3	26.9	23.6	-1.6	179	1.3	-45.0	0.2	-6	0.3	49.9	-0.6	SS	-3.9	163	57.7	-8.8	1	8.3	30.8	
13	177	35.6	4.1	-3	3.3	23.7	-1.7	178	16.4	-45.4	0.2	-5	10.4	51.0	-0.5	SS	-3.9	163	49.0	-8.8	1	39.1	30.9	
14	177	39.7	4.1	-2	39.6	23.6	-1.8	177	30.9	-45.9	0.2	-4	19.4	52.0	-0.5	SS	-3.9	163	40.2	-8.8	2	10.0	30.8	
15	177	43.9	4.2	-2	16.0	23.7	-1.8	176	45.0	-46.4	0.2	-3	27.4	53.0	-0.5	SS	-3.9	163	31.4	-8.8	2	40.8	30.7	
16	177	48.0	4.3	-1	52.3	23.8	-1.8	175	58.7	-46.8	0.2	-2	34.4	53.8	-0.4	SS	-3.9	163	22.6	-8.8	3	11.5	30.7	
17	177	52.3	4.3	-1	28.5	23.7	-1.8	175	11.9	-47.1	0.2	-1	40.6	54.7	-0.4	SS	-3.9	163	13.8	-8.9	3	42.2	30.6	
18	177	56.6	4.3	-1	4.8	23.7	-1.8	174	24.8	-47.4	0.1	0	45.9	55.3	-0.3	SS	-3.9	163	4.9	-8.9	4	12.8	30.5	
19	178	0.9	4.4	0	41.1	23.8	-1.7	173	37.4	-47.6	0.1	0	9.4	55.9	-0.3	SS	-3.9	162	56.0	-9.0	4	43.3	30.4	
20	178	5.3	4.4	0	17.3	23.7	-1.7	172	49.8	-47.7	0.0	1	5.3	56.3	-0.2	SS	-3.9	162	47.0	-9.1	5	13.7	30.4	
21	178	9.8	4.5	0	6.4	23.7	-1.6	172	2.2	-47.6	0.0	2	1.6	56.6	-0.2	SS	-3.9	162	37.9	-9.2	5	44.1	30.1	
22	178	14.2	4.5	0	30.1	23.7	-1.6	171	14.6	-47.4	-0.1	2	58.2	56.7	-0.1	SS	-3.9	162	28.7	-9.3	6	14.2	30.1	
23	178	18.7	4.5	0	53.8	23.6	SS	-1.5	170	27.2	-46.9	-0.2	3	54.9	56.6	0.1	SS	-3.9	162	19.5	-9.4	6	44.3	29.9
24	178	23.2	4.5	1	17.4	23.6	SS	-1.5	169	40.3	-46.3	-0.3	4	51.5	56.3	0.1	SS	-3.9	162	10.1	-9.5	7	14.2	29.7
25	178	27.7	4.5	1	41.0	23.6	SS	-1.4	168	54.0	-45.3	-0.5	5	47.8	55.8	0.3	SS	-3.9	162	0.6	-9.6	7	43.9	29.5
26	178	32.3	4.5	2	4.6	23.5	SS	-1.3	168	8.6	-44.1	-0.6	6	43.6	55.1	0.4	SS	-3.9	161	51.0	-9.7	8	13.4	29.4
27	178	36.8	4.6	2	28.1	23.5	SS	-1.3	167	24.5	-42.6	-0.8	7	38.7	54.0	0.5	SS	-3.9	161	41.3	-9.9	8	42.8	29.2
28	178	41.4	4.6	2	51.6	23.4	SS	-1.2	166	41.9	-40.8	-0.9	8	32.7	52.9	0.6	SS	-3.9	161	31.5	-10.0	9	12.0	28.9
29	178	45.9	4.5	3	15.0	23.4	SS	-1.1	166	1.1	-38.6	-1.1	9	25.6	51.4	0.8	SS	-3.9	161	21.5	-10.2	9	40.9	28.7
30	178	50.5	4.5	3	38.4	23.3	SS	-1.1	165	22.5	-36.0	-1.3	10	17.0	49.7	0.8	SS	-3.9	161	11.3	-10.3	10	9.6	28.5
Mar 31	178	55.0	4.5	4	1.7	23.2	SS	-1.0	164	46.5	-33.1	-1.5	11	6.7	47.7	1.0	SS	-3.9	161	1.0	-10.5	10	38.1	28.3
Apr 1	178	59.5	4.5	4	24.9	23.1	SS	-0.9	164	13.4	-29.9	-1.6	11	54.4	45.7	1.0	SS	-3.9	160	50.5	-10.7	11	6.4	28.0
2	179	4.0	4.4	4	48.0	23.1	SS	-0.8	163	43.5	-26.3	-1.8	12	40.1	43.4	1.1	SS	-3.9	160	39.8	-10.9	11	34.4	27.7
3	179	8.4	4.4	5	11.1	22.9	SS	-0.7	163	17.2	-22.3	-2.0	13	23.5	40.9	1.3	SS	-3.9	160	28.9	-11.1	12	2.1	27.4
4	179	12.8	4.4	5	34.0	22.9	SS	-0.6	162	54.9	-18.1	-2.1	14	4.4	38.3	1.3	SS	-3.9	160	17.8	-11.3	12	29.5	27.1
5	179	17.2	4.3	5	56.9	22.8	SS	-0.5	162	36.8	-13.5	-2.3	14	42.7	35.5	1.4	SS	-3.9	160	6.5	-11.5	12	56.6	26.8
6	179	21.5	4.3	6	19.7	22.6	SS	-0.4	162	23.3	-8.7	-2.4	15	18.2	32.7	1.4	SS	-3.9	159	54.9	-11.7	13	23.4	26.5
7	179	25.7	4.2	6	42.3	22.6	SS	-0.2	162	14.6	-3.7	-2.5	15	50.9	29.8	1.4	SS	-3.9	159	43.2	-12.0	13	49.9	26.2
8	179	29.9	4.1	7	4.9	22.4	SS	-0.1	162	10.9	1.6	-2.6	16	20.7	26.8	1.5	SS	-3.9	159	31.2	-12.2	14	16.1	25.8
9	179	34.1	4.1	7	27.3	22.3	SS	0.1	162	12.5	7.1	-2.7	16	47.5	23.7	1.5	SS	-3.9	159	19.0	-12.5	14	41.9	25.4
10	179	38.2	4.0	7	49.6	22.2	SS	0.2	162	19.5	12.7	-2.8	17	11.2	20.6	1.5	SS	-3.9	159	6.6	-12.7	15	7.3	25.1
11	179	42.2	3.9	8	11.8	22.0	SS	0.4	162	32.2	18.5	-2.9	17	31.8	17.4	1.6	SS	-3.9	158	53.9	-12.9	15	32.4	24.7
12	179	46.1	3.9	8	33.8	21.9	SS	0.6	162	50.7	24.3	-2.9	17	49.2	14.2	1.6	SS	-3.9	158	40.9	-13.2	15	57.1	24.3
13	179	50.0	3.8	8	55.7	21.7	SS	0.8	163	15.1	30.3	-3.0	18	3.4	11.0	1.6	SS	-3.9	158	27.7	-13.5	16	21.4	23.9
14	179	53.7	3.7	9	17.4	21.6	SS	1.0	163	45.3	36.3	-3.0	18	14.4	7.7	1.7	SS	-3.9	158	14.2	-13.7	16	45.3	23.4
15	179	57.4	3.6	9	39.0	21.5	SS	1.2	164	21.6	42.2	-3.0	18	22.1	4.5	1.6	SS	-3.9	158	0.5	-14.0	17	8.7	23.1
16	180	1.0	3.5	10	0.5	21.2	SS	1.4	165	3.8	48.1	-3.0	18	26.6	1.2	1.7	SS	-3.9	157	46.5	-14.3	17	31.8	22.5
17	180	4.5	3.4	10	21.7	21.1	SS	1.6	165	52.0	53.9	-2.9	18	27.8	-2.0	1.6	SS	-3.9	157	32.3	-14.5	17	54.3	22.2
18	180	8.0	3.3	10	42.8	20.9	SS	1.9	166	45.9	59.5	-2.8	18	25.8	-5.3	1.6	SS	-3.9	157	17.8	-14.8	18	16.5	21.6
19	180	11.3	3.2	11	3.7	20.7	SS	2.1	167	45.4	64.9	-2.7	18	20.5	-8.3	1.5	SS	-3.9	157	3.0	-15.1	18	38.1	21.2
20	180	14.5	3.1	11	24.4	20.6	SS	2.3	168	50.3	70.0	-2.5	18	12.2	-11.4	1.5	SS	-3.9	156	47.9	-15.3	18	59.3	20.6
21	180	17.6	3.0	11	45.0	20.3	SS	2.5	170	0.3	74.7	-2.3	18	0.8	-14.4	1.5	SS	-3.9	156	32.6	-15.6	19	19.9	20.2
22	180	20.6	2.9	12	5.3	20.2	SS	2.7	171	14.9	78.9	-2.1	17	46.4	-17.1	1.4	SS	-3.9	156	17.0	-15.8	19	40.1	19.6
23	180	23.6	2.8	12	25.5	19.9	SS	2.9	172	33.9	82.7	-1.9	17	29.3	-19.6	1.2	SS	-3.9	156	1.2	-16.1	19	59.7	19.2
24	180	26.4	2.7	12	45.4	19.7	SS	3.1	173	56.5	85.9	-1.6	17	9.7	-22.0	1.2	SS	-3.9	155	45.1	-16.4	20	18.9	18.5
25	180	29.1	2.6	13	5.1	19.5	SS	3.3	175	22.4	88.5	-1.3	16	47.7	-24.1	1.0	SS	-3.9	155	28.7	-16.6	20	37.4	18.0
26	180	31.7	2.5	13	24.6	19.3	SS	3.4	176	50.9	90.4	-1.0	16	23.6	-25.8	0.9	SS	-3.9	155	12.1	-16.9	20	55.4	17.5
27	180	34.1	2.3	13	43.9	19.1	SS	3.3	178	21.3	91.7	-0.6	15	57.8	-27.2	0.7	SS	-3.9	154	55.3	-17.1	21	12.9	16.9
28	180	36.5	2.2	14	3.0	18.8	SS	3.2	179	53.0	92.3	-0.3	15	30.6	-28.2	0.5	SS	-3.9	154	38.2	-17.3	21	29.8	16.3
29	180	38.7	2.1	14	21.8	18.6	SS	3.1	181	25.4	92.3	0.0	15	2.4	-28.9	0.4	SS	-3.9	154	20.8	-17.6	21	46.1	15.7
Apr 30	180	40.7	1.9	14	40.4	18.3	SS	3.0	182	57.7	91.6	0.3	14	33.5	-29.0	0.0	SS	-3.9	154	3.3	-17.8	22	1.8	15.1
May 1	180	42.7	1.8	14	58.7	18.1	SS	2.9	184	29.3	90.3	0.6	14	4.5	-28.9	0.0	SS	-3.9	153	45.4	-18.0	22	16.9	14.5
2	180	44.5	1.7	15	16.8	17.9	SS	2.8	185	59.6	88.5	0.9	13	35.6	-28.3	-0.3	SS	-3.9	153	27.4	-18.2	22	31.4	13.9
3	180	46.2	1.5	15	34.7	17.6	SS	2.7	187	28.1	86.2	1.2	13	7.3	-27.4	-0.5	SS	-3.9	153	9.2	-18.5	22	45.3	13.3
4	180	47.7	1.4	15	52.3	17.3	SR	2.6	188	54.3	83.4	1.4	12	39.9	-26.2	-0.6	SS	-3.9	152	50.7	-18.7	22	58.6	12.6
5	180	49.1	1.2	16	9.6	17.1	SR	2.5																

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Date	Mars					Jupiter					Saturn						
	vis	GHA	d		Dec	vis	GHA	d		Dec	vis	GHA	d		Dec		
	mag	o	'	"	o	'	"	'	"	o	'	"	'	"	o	'	"
Mar 7	y -0.5	41 9.1	62.2	23 44.5	-1.5	-2.0	181 29.1	45.6	-8 11.4	5.5	y 0.7	341 21.1	63.2	1 21.8	1.9		
8	y -0.4	42 11.3	61.4	23 43.0	-1.7	-2.0	182 14.7	45.6	-8 5.9	5.4	y 0.7	342 24.3	63.2	1 23.7	1.9		
9	y -0.4	43 12.7	60.6	23 41.3	-1.8	-2.0	183 0.3	45.6	-8 0.5	5.5	y 0.7	343 27.5	63.2	1 25.6	1.9		
10	y -0.4	44 13.3	59.8	23 39.5	-2.1	-2.0	183 45.9	45.6	-7 55.0	5.4	y 0.7	344 30.8	63.3	1 27.5	1.9		
11	y -0.4	45 13.1	59.0	23 37.4	-2.2	-2.0	184 31.6	45.7	-7 49.6	5.5	y 0.7	345 34.0	63.3	1 29.4	1.9		
12	y -0.3	46 12.2	58.3	23 35.2	-2.3	y -2.0	185 17.2	45.7	-7 44.1	5.4	y 0.7	346 37.3	63.3	1 31.3	2.0		
13	y -0.3	47 10.4	57.5	23 32.9	-2.6	y -2.0	186 2.9	45.7	-7 38.7	5.5	y 0.7	347 40.7	63.4	1 33.3	1.9		
14	y -0.3	48 7.9	56.7	23 30.3	-2.6	y -2.0	186 48.6	45.7	-7 33.2	5.4	y 0.7	348 44.0	63.4	1 35.2	1.9		
15	y -0.3	49 4.7	56.0	23 27.7	-2.8	y -2.0	187 34.4	45.7	-7 27.8	5.5	y 0.7	349 47.4	63.4	1 37.1	1.9		
16	y -0.2	50 0.7	55.3	23 24.9	-3.0	y -2.0	188 20.1	45.8	-7 22.3	5.4	y 0.7	350 50.8	63.4	1 39.0	2.0		
17	y -0.2	50 56.0	54.6	23 21.9	-3.1	y -2.0	189 5.9	45.8	-7 16.9	5.5	y 0.7	351 54.2	63.4	1 41.0	1.9		
18	y -0.2	51 50.5	53.8	23 18.8	-3.3	y -2.0	189 51.7	45.8	-7 11.4	5.4	y 0.7	352 57.6	63.4	1 42.9	1.9		
19	y -0.2	52 44.4	53.2	23 15.5	-3.4	y -2.0	190 37.5	45.8	-7 6.0	5.4	y 0.7	354 1.0	63.4	1 44.8	2.0		
20	y -0.1	53 37.5	52.5	23 12.1	-3.5	y -2.0	191 23.3	45.9	-7 0.6	5.4	y 0.7	355 4.5	63.5	1 46.8	1.9		
21	y -0.1	54 30.0	51.8	23 8.6	-3.7	y -2.0	192 9.2	45.9	-6 55.2	5.5	y 0.7	356 7.9	63.5	1 48.7	1.9		
22	y -0.1	55 21.8	51.2	23 4.9	-3.8	y -2.0	192 55.1	45.9	-6 49.7	5.4	y 0.7	357 11.4	63.5	1 50.6	1.9		
23	y -0.1	56 13.0	50.5	23 1.1	-3.9	y -2.0	193 41.0	46.0	-6 44.3	5.4	y 0.7	358 14.9	63.5	1 52.5	1.9		
24	y 0.0	57 3.5	49.9	22 57.2	-4.0	y -2.0	194 27.0	46.0	-6 38.9	5.4	y 0.7	359 18.3	63.5	1 54.4	1.9		
25	y 0.0	57 53.4	49.3	22 53.2	-4.2	y -2.0	195 13.0	46.0	-6 33.5	5.3	y 0.7	0 21.8	63.4	1 56.3	1.9		
26	y 0.0	58 42.7	48.7	22 49.0	-4.3	y -2.0	195 59.0	46.1	-6 28.2	5.4	y 0.7	1 25.2	63.4	1 58.2	1.9		
27	y 0.1	59 31.4	48.1	22 44.7	-4.4	y -2.0	196 45.0	46.1	-6 22.8	5.4	y 0.7	2 28.7	63.4	2 0.1	1.9		
28	y 0.1	60 19.5	47.6	22 40.3	-4.6	y -2.0	197 31.1	46.1	-6 17.4	5.3	y 0.7	3 32.1	63.4	2 2.0	1.8		
29	y 0.1	61 7.0	47.0	22 35.7	-4.6	y -2.0	198 17.3	46.2	-6 12.1	5.3	y 0.7	4 35.5	63.4	2 3.8	1.9		
30	y 0.1	61 54.0	46.5	22 31.1	-4.8	y -2.0	199 3.4	46.2	-6 6.8	5.4	y 0.7	5 38.9	63.4	2 5.7	1.8		
Mar 31	y 0.1	62 40.5	45.9	22 26.3	-4.9	y -2.0	199 49.7	46.2	-6 1.4	5.3	y 0.7	6 42.3	63.4	2 7.5	1.8		
Apr 1	y 0.2	63 26.5	45.4	22 21.4	-5.0	y -2.0	200 35.9	46.3	-5 56.1	5.3	y 0.7	7 45.7	63.3	2 9.3	1.9		
2	y 0.2	64 11.9	44.9	22 16.4	-5.1	y -2.0	201 22.2	46.3	-5 50.8	5.3	y 0.7	8 49.0	63.3	2 11.2	1.7		
3	y 0.2	64 56.8	44.4	22 11.3	-5.3	y -2.1	202 8.5	46.4	-5 45.5	5.2	y 0.7	9 52.4	63.3	2 12.9	1.8		
4	y 0.2	65 41.3	44.0	22 6.0	-5.3	y -2.1	202 54.9	46.4	-5 40.3	5.3	y 0.7	10 55.7	63.3	2 14.7	1.8		
5	y 0.3	66 25.2	43.5	22 0.7	-5.5	y -2.1	203 41.3	46.4	-5 35.0	5.2	y 0.7	11 58.9	63.2	2 16.5	1.7		
6	y 0.3	67 8.7	43.0	21 55.2	-5.6	y -2.1	204 27.7	46.5	-5 29.8	5.3	y 0.7	13 2.2	63.2	2 18.2	1.7		
7	y 0.3	67 51.8	42.6	21 49.6	-5.7	y -2.1	205 14.2	46.5	-5 24.5	5.2	y 0.8	14 5.4	63.2	2 19.9	1.7		
8	y 0.3	68 34.4	42.2	21 43.9	-5.8	y -2.1	206 0.8	46.6	-5 19.3	5.2	y 0.8	15 8.6	63.1	2 21.6	1.7		
9	y 0.3	69 16.6	41.7	21 38.1	-5.9	y -2.1	206 47.3	46.6	-5 14.1	5.1	y 0.8	16 11.7	63.1	2 23.3	1.7		
10	y 0.4	69 58.3	41.3	21 32.2	-6.1	y -2.1	207 34.0	46.7	-5 9.0	5.2	y 0.8	17 14.8	63.1	2 25.0	1.6		
11	y 0.4	70 39.6	40.9	21 26.1	-6.1	y -2.1	208 20.7	46.7	-5 3.8	5.1	y 0.8	18 17.9	63.0	2 26.6	1.6		
12	y 0.4	71 20.6	40.5	21 20.0	-6.3	y -2.1	209 7.4	46.8	-4 58.7	5.1	y 0.8	19 20.9	63.0	2 28.2	1.6		
13	y 0.4	72 1.1	40.2	21 13.7	-6.4	y -2.1	209 54.2	46.8	-4 53.6	5.1	y 0.8	20 23.9	62.9	2 29.8	1.6		
14	y 0.4	72 41.3	39.8	21 7.3	-6.5	y -2.1	210 41.1	46.9	-4 48.5	5.1	y 0.8	21 26.8	62.9	2 31.4	1.5		
15	y 0.5	73 21.0	39.4	21 0.8	-6.6	y -2.1	211 28.0	47.0	-4 43.4	5.1	y 0.8	22 29.7	62.8	2 32.9	1.5		
16	y 0.5	74 0.5	39.1	20 54.2	-6.7	y -2.1	212 14.9	47.0	-4 38.3	5.0	y 0.8	23 32.5	62.8	2 34.4	1.5		
17	y 0.5	74 39.5	38.7	20 47.5	-6.8	y -2.1	213 1.9	47.1	-4 33.3	5.0	y 0.8	24 35.3	62.7	2 35.9	1.4		
18	y 0.5	75 18.2	38.4	20 40.7	-6.9	y -2.1	213 49.0	47.1	-4 28.3	5.0	y 0.8	25 38.0	62.7	2 37.3	1.4		
19	y 0.5	75 56.6	38.0	20 33.8	-7.1	y -2.1	214 36.1	47.2	-4 23.3	4.9	y 0.8	26 40.7	62.6	2 38.7	1.4		
20	y 0.5	76 34.6	37.7	20 26.7	-7.1	y -2.1	215 23.3	47.3	-4 18.4	5.0	y 0.8	27 43.3	62.5	2 40.1	1.4		
21	y 0.6	77 12.4	37.4	20 19.6	-7.3	y -2.1	216 10.6	47.3	-4 13.4	4.9	y 0.8	28 45.9	62.5	2 41.5	1.3		
22	y 0.6	77 49.8	37.1	20 12.3	-7.4	y -2.1	216 57.9	47.4	-4 8.5	4.8	y 0.8	29 48.4	62.4	2 42.8	1.3		
23	y 0.6	78 26.9	36.8	20 4.9	-7.5	y -2.1	217 45.3	47.4	-4 3.7	4.9	y 0.9	30 50.8	62.4	2 44.1	1.2		
24	y 0.6	79 3.8	36.6	19 57.4	-7.6	y -2.1	218 32.7	47.5	-3 58.8	4.8	y 0.9	31 53.1	62.3	2 45.3	1.3		
25	y 0.6	79 40.3	36.3	19 49.8	-7.7	y -2.1	219 20.2	47.6	-3 54.0	4.8	y 0.9	32 55.4	62.2	2 46.6	1.2		
26	y 0.7	80 16.6	36.0	19 42.1	-7.8	y -2.1	220 7.8	47.7	-3 49.2	4.8	y 0.9	33 57.7	62.2	2 47.8	1.1		
27	y 0.7	80 52.7	35.8	19 34.3	-7.9	y -2.1	220 55.5	47.7	-3 44.4	4.7	y 0.9	34 59.8	62.1	2 48.9	1.2		
28	y 0.7	81 28.4	35.5	19 26.4	-8.0	y -2.1	221 43.2	47.8	-3 39.7	4.7	y 0.9	36 1.9	62.0	2 50.1	1.0		
29	y 0.7	82 4.0	35.3	19 18.4	-8.2	y -2.1	222 31.0	47.9	-3 35.0	4.7	y 0.9	37 3.9	61.9	2 51.1	1.1		
Apr 30	y 0.7	82 39.3	35.1	19 10.2	-8.2	y -2.1	223 18.8	47.9	-3 30.3	4.6	y 0.9	38 5.9	61.9	2 52.2	1.0		
May 1	y 0.7	83 14.3	34.8	19 2.0	-8.4	y -2.1	224 6.8	48.0	-3 25.7	4.6	y 0.9	39 7.7	61.8	2 53.2	1.0		
2	y 0.7	83 49.1	34.6	18 53.6	-8.4	y -2.1	224 54.8	48.1	-3 21.1	4.6	y 0.9	40 9.5	61.7	2 54.2	0.9		
3	y 0.8	84 23.7	34.4	18 45.2	-8.6	y -2.1	225 42.8	48.2	-3 16.5	4.5	y 0.9	41 11.3	61.6	2 55.1	1.0		
4	y 0.8	84 58.1	34.2	18 36.6	-8.7	y -2.1	226 31.0	48.2	-3 12.0	4.5	y 0.9	42 12.9	61.6	2 56.1	0.8		
5	y 0.8	85 32.3	34.0	18 27.9	-8.7	y -2.1	227 19.2	48.3	-3 7.5	4.5	y 0.9	43 14.5	61.5	2 56.9	0.9		
6	y 0.8	86 6.3	33.8	18 19.2	-8.9	y -2.2	228 7.6	48.4	-3 3.0	4.5	y 0.9	44 15.9	61.4	2 57.8	0.8		
7	y 0.8	86 40.1	33.6	18 10.3	-9.0	y -2.2	228 55.9	48.5	-2 58.5	4.4	y 0.9	45 17.4	61.3	2 58.6	0.7		
8	y 0.8	87 13.6	33.4	18 1.3	-9.1	y -2.2	229 44.4	48.6	-2 54.1	4.3	y 0.9	46 18.7	61.2	2 59.3	0.7		
9	y 0.8	87 47.0	33.2	17 52.2	-9.2	y -2.2	230 33.0	48.6	-2 49.8	4.3	y 1.0	47 19.9	61.2	3 0.0	0.7		
May 10	y 0.9	88 20.2	33.0	17 43.0	-9.3	y -2.2	231 21.6	48.7	-2 45.5	4.3	y 1.0	48 21.1	61.1	3 0.7	0.6		

2010

Sun and Planets

Date	SUN				Mercury						Venus													
	GHA	d	Dec	d	vis	GHA	d	dd	Dec	d	dd	vis	GHA	d	Dec	d								
	o	'	o	'	mag	o	'	'	o	'	'	mag	o	'	o	'								
May 11	180	54.4	0.4	17	47.8	15.4	sr	1.9	197	23.6	57.1	2.1	10	16.5	-11.5	-1.2	ss	-3.9	150	36.6	-19.7	24	13.0	8.0
12	180	54.8	0.2	18	3.2	15.0	sr	1.8	198	20.7	53.0	2.1	10	5.0	-9.0	-1.3	ss	-4.0	150	16.8	-19.8	24	21.0	7.2
13	180	55.0	0.1	18	18.2	14.8	sr	1.7	199	13.7	48.9	2.0	9	56.0	-6.5	-1.3	ss	-4.0	149	57.0	-19.9	24	28.2	6.6
14	180	55.1	-0.1	18	33.0	14.4	sr	1.6	200	2.6	44.9	2.0	9	49.5	-4.1	-1.2	ss	-4.0	149	37.0	-20.0	24	34.8	5.9
15	180	55.0	-0.2	18	47.4	14.1	sr	1.5	200	47.5	40.9	2.0	9	45.4	-1.6	-1.3	ss	-4.0	149	17.0	-20.1	24	40.7	5.1
16	180	54.8	-0.3	19	1.5	13.8	sr	1.4	201	28.4	37.0	1.9	9	43.8	0.7	-1.2	ss	-4.0	148	57.0	-20.1	24	45.8	4.5
17	180	54.5	-0.5	19	15.3	13.5	sr	1.3	202	5.5	33.2	1.9	9	44.5	3.1	-1.2	ss	-4.0	148	36.8	-20.1	24	50.3	3.7
18	180	54.0	-0.6	19	28.8	13.1	sr	1.2	202	38.7	29.5	1.9	9	47.6	5.3	-1.1	ss	-4.0	148	16.7	-20.2	24	54.0	3.0
19	180	53.4	-0.7	19	41.9	12.8	sr	1.1	203	8.2	25.9	1.8	9	52.9	7.4	-1.1	ss	-4.0	147	56.5	-20.1	24	57.0	2.4
20	180	52.6	-0.9	19	54.7	12.5	sr	1.1	203	34.1	22.4	1.8	10	0.3	9.5	-1.0	ss	-4.0	147	36.4	-20.1	24	59.4	1.6
21	180	51.8	-1.0	20	7.2	12.1	sr	1.0	203	56.5	19.0	1.7	10	9.8	11.4	-1.0	ss	-4.0	147	16.3	-20.1	25	1.0	0.9
22	180	50.7	-1.1	20	19.3	11.7	sr	0.9	204	15.5	15.6	1.7	10	21.2	13.4	-1.0	ss	-4.0	146	56.2	-20.0	25	1.9	0.1
23	180	49.6	-1.3	20	31.0	11.4	sr	0.8	204	31.1	12.3	1.6	10	34.6	15.1	-0.9	ss	-4.0	146	36.2	-20.0	25	2.0	-0.5
24	180	48.4	-1.4	20	42.4	11.1	sr	0.7	204	43.4	9.1	1.6	10	49.7	16.8	-0.8	ss	-4.0	146	16.2	-19.9	25	1.5	-1.2
25	180	47.0	-1.5	20	53.5	10.7	sr	0.6	204	52.5	6.0	1.6	11	6.5	18.5	-0.9	ss	-4.0	145	56.4	-19.8	25	0.3	-2.0
26	180	45.5	-1.6	21	4.2	10.3	sr	0.6	204	58.5	2.9	1.6	11	25.0	19.9	-0.7	ss	-4.0	145	36.6	-19.6	24	58.3	-2.7
27	180	43.9	-1.7	21	14.5	9.9	sr	0.5	205	1.3	-0.2	1.5	11	44.9	21.3	-0.7	ss	-4.0	145	17.0	-19.5	24	55.6	-3.3
28	180	42.1	-1.9	21	24.4	9.6	sr	0.4	205	1.1	-3.2	1.5	12	6.2	22.7	-0.7	ss	-4.0	144	57.5	-19.3	24	52.3	-4.1
29	180	40.3	-2.0	21	34.0	9.3	sr	0.4	204	57.9	-6.2	1.5	12	28.9	23.9	-0.6	ss	-4.0	144	38.1	-19.2	24	48.2	-4.8
30	180	38.3	-2.1	21	43.3	8.8	sr	0.3	204	51.7	-9.2	1.5	12	52.8	25.0	-0.5	ss	-4.0	144	18.9	-19.0	24	43.4	-5.4
May 31	180	36.2	-2.2	21	52.1	8.5	sr	0.2	204	42.5	-12.2	1.5	13	17.8	26.1	-0.5	ss	-4.0	143	59.9	-18.8	24	38.0	-6.2
Jun 1	180	34.1	-2.3	22	0.6	8.0	sr	0.2	204	30.3	-15.2	1.5	13	43.9	27.0	-0.4	ss	-4.0	143	41.1	-18.6	24	31.8	-6.8
2	180	31.8	-2.4	22	8.6	7.7	sr	0.1	204	15.1	-18.2	1.5	14	10.9	27.9	-0.4	ss	-4.0	143	22.5	-18.4	24	25.0	-7.6
3	180	29.4	-2.5	22	16.3	7.3	sr	0.0	203	57.0	-21.2	1.5	14	38.8	28.6	-0.4	ss	-4.0	143	4.1	-18.1	24	17.4	-8.1
4	180	26.9	-2.6	22	23.6	6.9	sr	0.0	203	35.8	-24.2	1.5	15	7.4	29.2	-0.3	ss	-4.0	142	46.0	-17.9	24	9.3	-8.9
5	180	24.3	-2.7	22	30.5	6.6	sr	-0.1	203	11.6	-27.3	1.5	15	36.6	29.8	-0.3	ss	-4.0	142	28.1	-17.6	24	0.4	-9.5
6	180	21.7	-2.7	22	37.1	6.1	sr	-0.2	202	44.4	-30.4	1.6	16	6.4	30.2	-0.2	ss	-4.0	142	10.5	-17.4	23	50.9	-10.2
7	180	18.9	-2.8	22	43.2	5.7	sr	-0.2	202	14.0	-33.5	1.6	16	36.6	30.6	-0.2	ss	-4.0	141	53.1	-17.1	23	40.7	-10.8
8	180	16.1	-2.9	22	48.9	5.3	sr	-0.3	201	40.5	-36.7	1.6	17	7.2	30.7	0.0	ss	-4.0	141	36.1	-16.8	23	29.9	-11.5
9	180	13.2	-3.0	22	54.2	4.9	sr	-0.4	201	3.7	-40.0	1.6	17	37.9	30.9	-0.1	ss	-4.0	141	19.3	-16.5	23	18.4	-12.1
10	180	10.2	-3.0	22	59.1	4.6	sr	-0.5	200	23.8	-43.2	1.6	18	8.8	30.7	0.1	ss	-4.0	141	2.8	-16.2	23	6.3	-12.7
11	180	7.2	-3.1	23	3.7	4.1	sr	-0.5	199	40.5	-46.6	1.7	18	39.5	30.6	0.1	ss	-4.0	140	46.7	-15.8	22	53.6	-13.3
12	180	4.1	-3.1	23	7.8	3.7	sr	-0.6	198	54.0	-49.9	1.7	19	10.1	30.2	0.2	ss	-4.0	140	30.8	-15.5	22	40.3	-13.9
13	180	1.0	-3.2	23	11.5	3.2	sr	-0.7	198	4.1	-53.3	1.7	19	40.3	29.7	0.3	ss	-4.0	140	15.3	-15.2	22	26.4	-14.5
14	179	57.8	-3.2	23	14.7	2.9	sr	-0.8	197	10.8	-56.6	1.7	20	10.0	29.0	0.3	ss	-4.0	140	0.2	-14.8	22	11.9	-15.1
15	179	54.6	-3.2	23	17.6	2.5	sr	-0.9	196	14.2	-60.0	1.7	20	39.0	28.2	0.4	ss	-4.0	139	45.4	-14.4	21	56.8	-15.7
16	179	51.4	-3.2	23	20.1	2.1	sr	-1.0	195	14.2	-63.3	1.6	21	7.2	27.1	0.5	ss	-4.0	139	31.0	-14.1	21	41.1	-16.2
17	179	48.2	-3.3	23	22.2	1.6	sr	-1.1	194	10.9	-66.5	1.6	21	34.3	25.8	0.6	ss	-4.0	139	16.9	-13.7	21	24.9	-16.7
18	179	44.9	-3.3	23	23.8	1.2	sr	-1.2	193	4.4	-69.6	1.5	22	0.1	24.4	0.7	ss	-4.0	139	3.2	-13.3	21	8.2	-17.4
19	179	41.6	-3.3	23	25.0	0.8	sr	-1.2	191	54.9	-72.5	1.5	22	24.5	22.8	0.8	ss	-4.0	138	49.9	-12.9	20	50.8	-17.8
20	179	38.4	-3.3	23	25.8	0.4	sr	-1.3	190	42.4	-75.2	1.4	22	47.3	20.9	1.0	ss	-4.0	138	37.0	-12.5	20	33.0	-18.3
21	179	35.1	-3.3	23	26.2	0.0	sr	-1.5	189	27.2	-77.7	1.2	23	8.2	18.9	1.0	ss	-4.0	138	24.5	-12.1	20	14.7	-18.9
22	179	31.8	-3.2	23	26.2	-0.4	sr	-1.6	188	9.5	-79.9	1.1	23	27.1	16.6	1.1	ss	-4.0	138	12.3	-11.7	19	55.8	-19.4
23	179	28.6	-3.2	23	25.8	-0.8		-1.7	186	49.6	-81.7	0.9	23	43.7	14.3	1.2	ss	-4.0	138	0.6	-11.3	19	36.4	-19.6
24	179	25.4	-3.2	23	25.0	-1.3		-1.8	185	27.9	-83.2	0.7	23	58.0	11.7	1.3	ss	-4.0	137	49.3	-10.9	19	16.6	-20.3
25	179	22.2	-3.2	23	23.7	-1.6		-1.9	184	4.7	-84.3	0.5	24	9.7	9.1	1.3	ss	-4.0	137	38.3	-10.5	18	56.3	-20.8
26	179	19.0	-3.1	23	22.1	-2.1		-2.0	182	40.4	-85.0	0.3	24	18.8	6.4	1.3	ss	-4.0	137	27.8	-10.1	18	35.5	-21.2
27	179	15.9	-3.1	23	20.0	-2.5		-2.1	181	15.4	-85.0	0.1	24	25.2	3.6	1.4	ss	-4.0	137	17.7	-9.7	18	14.3	-21.6
28	179	12.8	-3.0	23	17.5	-2.8		-2.2	179	50.2	-85.0	-0.1	24	28.8	0.7	1.5	ss	-4.0	137	8.0	-9.3	17	52.7	-22.1
29	179	9.8	-3.0	23	14.7	-3.3		-2.2	178	25.1	-84.5	-0.3	24	29.5	-2.0	1.3	ss	-4.0	136	58.7	-8.9	17	30.6	-22.5
Jun 30	179	6.8	-2.9	23	11.4	-3.7		-2.1	177	0.6	-83.5	-0.5	24	27.5	-4.9	1.5	ss	-4.0	136	49.8	-8.5	17	8.1	-22.9
Jul 1	179	3.8	-2.9	23	7.7	-4.1		-1.9	175	37.1	-82.2	-0.7	24	22.6	-7.5	1.3	ss	-4.1	136	41.3	-8.1	16	45.2	-23.2
2	179	0.9	-2.8	23	3.6	-4.6		-1.8	174	14.9	-80.6	-0.8	24	15.1	-10.2	1.3	ss	-4.1	136	33.2	-7.7	16	22.0	-23.7
3	178	58.1	-2.7	22	59.0	-4.9		-1.7	172	54.4	-78.6	-1.0	24	4.9	-12.8	1.3	ss	-4.1	136	25.5	-7.3	15	58.3	-24.0
4	178	55.4	-2.7	22	54.1	-5.3		-1.5	171	35.7	-76.5	-1.1	23	52.1	-15.1	1.1	ss	-4.1	136	18.2	-6.9	15	34.3	-24.4
5	178	52.7	-2.6	22	48.8	-5.7	ss	-1.4	170	19.2	-74.2	-1.2	23	37.0	-17.5	1.2	ss	-4.1	136	11.3	-6.5	15	9.9	-24.7
6	178	50.1	-2.5	22	43.1	-6.1	ss	-1.3	169	5.1	-71.7	-1.3	23	19.5	-19.6	1.0	ss	-4.1	136	4.7	-6.1	14	45.2	-25.0
7	178	47.6	-2.4	22	37.0	-6.5	ss	-1.2	167	53.4	-69.0	-1.3	22	59.9	-21.6	1.0	ss	-4.1	135	58.6	-5.7	14	20.2	-25.4
8	178	45.2	-2.3	22	30.5	-6.9	ss	-1.1	166	44.4	-66.3	-1.4	22	38.										

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Sun and Planets

Date	Mars					Jupiter					Saturn													
	vis	GHA		d	Dec	vis	GHA		d	Dec	vis	GHA		d	Dec									
	mag	o	'	'	o	mag	o	'	'	o	mag	o	'	'	o									
May 11	y	0.9	88	53.2	32.8	17	33.7	-9.4	y	-2.2	232	10.4	48.8	-2	41.2	4.3	y	1.0	49	22.1	61.0	3	1.3	0.6
12	y	0.9	89	26.1	32.7	17	24.3	-9.5	y	-2.2	232	59.2	48.9	-2	36.9	4.2	y	1.0	50	23.1	60.9	3	1.9	0.6
13	y	0.9	89	58.7	32.5	17	14.8	-9.7	y	-2.2	233	48.1	49.0	-2	32.7	4.2	y	1.0	51	24.0	60.8	3	2.5	0.5
14	y	0.9	90	31.2	32.3	17	5.1	-9.7	y	-2.2	234	37.1	49.1	-2	28.5	4.1	y	1.0	52	24.8	60.7	3	3.0	0.5
15	y	0.9	91	3.6	32.2	16	55.4	-9.8	y	-2.2	235	26.2	49.2	-2	24.4	4.1	y	1.0	53	25.5	60.6	3	3.5	0.4
16	y	0.9	91	35.7	32.0	16	45.6	-10.0	y	-2.2	236	15.4	49.3	-2	20.3	4.0	y	1.0	54	26.2	60.5	3	3.9	0.4
17	y	1.0	92	7.8	31.9	16	35.6	-10.0	y	-2.2	237	4.7	49.4	-2	16.3	4.0	y	1.0	55	26.7	60.4	3	4.3	0.4
18	y	1.0	92	39.6	31.7	16	25.6	-10.2	y	-2.2	237	54.0	49.5	-2	12.3	4.0	y	1.0	56	27.2	60.4	3	4.7	0.3
19	y	1.0	93	11.4	31.6	16	15.4	-10.2	y	-2.2	238	43.5	49.6	-2	8.3	3.9	y	1.0	57	27.5	60.3	3	5.0	0.2
20	y	1.0	93	42.9	31.4	16	5.2	-10.4	y	-2.2	239	33.1	49.7	-2	4.4	3.9	y	1.0	58	27.8	60.2	3	5.2	0.3
21	y	1.0	94	14.4	31.3	15	54.8	-10.4	y	-2.2	240	22.7	49.8	-2	0.5	3.8	y	1.0	59	28.0	60.1	3	5.5	0.2
22	y	1.0	94	45.7	31.2	15	44.4	-10.6	y	-2.2	241	12.5	49.9	-1	56.7	3.8	y	1.0	60	28.1	60.0	3	5.7	0.1
23	y	1.0	95	16.9	31.1	15	33.8	-10.6	y	-2.2	242	2.4	50.0	-1	52.9	3.7	y	1.0	61	28.0	59.9	3	5.8	0.1
24	y	1.0	95	48.0	30.9	15	23.2	-10.8	y	-2.2	242	52.4	50.1	-1	49.2	3.7	y	1.0	62	28.0	59.8	3	5.9	0.1
25	y	1.0	96	18.9	30.8	15	12.4	-10.8	y	-2.2	243	42.5	50.2	-1	45.5	3.6	y	1.0	63	27.8	59.7	3	6.0	0.0
26	y	1.1	96	49.7	30.7	15	1.6	-11.0	y	-2.2	244	32.7	50.3	-1	41.9	3.6	y	1.1	64	27.5	59.6	3	6.0	0.0
27	y	1.1	97	20.5	30.6	14	50.6	-11.0	y	-2.3	245	23.0	50.4	-1	38.3	3.5	y	1.1	65	27.1	59.5	3	6.0	-0.1
28	y	1.1	97	51.1	30.5	14	39.6	-11.1	y	-2.3	246	13.4	50.5	-1	34.8	3.5	y	1.1	66	26.6	59.4	3	5.9	-0.1
29	y	1.1	98	21.6	30.4	14	28.5	-11.3	y	-2.3	247	3.9	50.6	-1	31.3	3.4	y	1.1	67	26.1	59.3	3	5.8	-0.1
30	y	1.1	98	52.0	30.3	14	17.2	-11.3	y	-2.3	247	54.5	50.7	-1	27.9	3.4	y	1.1	68	25.4	59.2	3	5.7	-0.2
May 31	y	1.1	99	22.2	30.2	14	5.9	-11.4	y	-2.3	248	45.3	50.9	-1	24.5	3.3	y	1.1	69	24.6	59.2	3	5.5	-0.3
Jun 1	y	1.1	99	52.4	30.1	13	54.5	-11.5	y	-2.3	249	36.2	51.0	-1	21.2	3.3	y	1.1	70	23.8	59.1	3	5.2	-0.2
2	y	1.1	100	22.5	30.0	13	43.0	-11.6	y	-2.3	250	27.1	51.1	-1	17.9	3.2	y	1.1	71	22.9	59.0	3	5.0	-0.3
3	y	1.1	100	52.5	29.9	13	31.4	-11.7	y	-2.3	251	18.2	51.2	-1	14.7	3.2	y	1.1	72	21.8	58.9	3	4.7	-0.4
4	y	1.1	101	22.4	29.8	13	19.7	-11.8	y	-2.3	252	9.5	51.3	-1	11.5	3.1	y	1.1	73	20.7	58.8	3	4.3	-0.4
5	y	1.2	101	52.3	29.7	13	7.9	-11.8	y	-2.3	253	0.8	51.5	-1	8.4	3.1	y	1.1	74	19.5	58.7	3	3.9	-0.4
6	y	1.2	102	22.0	29.6	12	56.1	-12.0	y	-2.3	253	52.3	51.6	-1	5.3	3.0	y	1.1	75	18.2	58.6	3	3.5	-0.5
7	y	1.2	102	51.6	29.5	12	44.1	-12.1	y	-2.3	254	43.9	51.7	-1	2.3	2.9	y	1.1	76	16.8	58.5	3	3.0	-0.5
8	y	1.2	103	21.1	29.5	12	32.0	-12.1	y	-2.3	255	35.6	51.8	-0	59.4	2.9	y	1.1	77	15.3	58.4	3	2.5	-0.5
9	y	1.2	103	50.6	29.4	12	19.9	-12.2	y	-2.3	256	27.4	52.0	-0	56.5	2.9	y	1.1	78	13.7	58.3	3	2.0	-0.6
10	y	1.2	104	20.0	29.3	12	7.7	-12.4	y	-2.3	257	19.4	52.1	-0	53.6	2.7	y	1.1	79	12.0	58.2	3	1.4	-0.7
11	y	1.2	104	49.2	29.2	11	55.3	-12.4	y	-2.3	258	11.5	52.2	-0	50.9	2.7	y	1.1	80	10.2	58.1	3	0.7	-0.7
12	y	1.2	105	18.4	29.1	11	42.9	-12.5	y	-2.4	259	3.7	52.4	-0	48.2	2.7	y	1.1	81	8.4	58.0	3	0.0	-0.7
13	y	1.2	105	47.6	29.0	11	30.4	-12.5	y	-2.4	259	56.1	52.5	-0	45.5	2.6	y	1.1	82	6.4	57.9	2	59.3	-0.7
14	y	1.2	106	16.6	29.0	11	17.9	-12.7	y	-2.4	260	48.6	52.6	-0	42.9	2.5	y	1.1	83	4.3	57.9	2	58.6	-0.8
15	y	1.2	106	45.5	28.9	11	5.2	-12.7	y	-2.4	261	41.2	52.8	-0	40.4	2.5	y	1.2	84	2.2	57.8	2	57.8	-0.9
16	y	1.3	107	14.4	28.8	10	52.5	-12.9	y	-2.4	262	34.0	52.9	-0	37.9	2.4	y	1.2	84	60.0	57.7	2	56.9	-0.8
17	y	1.3	107	43.2	28.7	10	39.6	-12.9	y	-2.4	263	27.0	53.1	-0	35.5	2.3	y	1.2	85	57.6	57.6	2	56.1	-0.9
18	y	1.3	108	12.0	28.7	10	26.7	-13.0	y	-2.4	264	20.0	53.2	-0	33.2	2.3	y	1.2	86	55.2	57.5	2	55.2	-1.0
19	y	1.3	108	40.6	28.6	10	13.7	-13.0	y	-2.4	265	13.2	53.4	-0	30.9	2.2	y	1.2	87	52.7	57.4	2	54.2	-1.0
20	y	1.3	109	9.2	28.5	10	0.7	-13.2	y	-2.4	266	6.6	53.5	-0	28.7	2.1	y	1.2	88	50.1	57.3	2	53.2	-1.0
21	y	1.3	109	37.7	28.5	9	47.5	-13.2	y	-2.4	267	0.1	53.7	-0	26.6	2.1	y	1.2	89	47.4	57.2	2	52.2	-1.1
22	y	1.3	110	6.2	28.4	9	34.3	-13.3	y	-2.4	267	53.8	53.8	-0	24.5	2.0	y	1.2	90	44.6	57.1	2	51.1	-1.1
23	y	1.3	110	34.6	28.3	9	21.0	-13.3	y	-2.4	268	47.6	53.9	-0	22.5	2.0	y	1.2	91	41.8	57.0	2	50.0	-1.1
24	y	1.3	111	2.9	28.3	9	7.7	-13.5	y	-2.4	269	41.5	54.1	-0	20.5	1.8	y	1.2	92	38.8	57.0	2	48.9	-1.2
25	y	1.3	111	31.2	28.2	8	54.2	-13.5	y	-2.4	270	35.6	54.3	-0	18.7	1.8	y	1.2	93	35.8	56.9	2	47.7	-1.2
26	y	1.3	111	59.4	28.1	8	40.7	-13.6	y	-2.4	271	29.9	54.4	-0	16.9	1.8	y	1.2	94	32.6	56.8	2	46.5	-1.2
27	y	1.3	112	27.5	28.1	8	27.1	-13.6	y	-2.5	272	24.3	54.6	-0	15.1	1.7	y	1.2	95	29.4	56.7	2	45.3	-1.3
28	y	1.3	112	55.6	28.0	8	13.5	-13.7	y	-2.5	273	18.8	54.7	-0	13.4	1.6	y	1.2	96	26.1	56.6	2	44.0	-1.3
29	y	1.3	113	23.6	27.9	7	59.8	-13.8	y	-2.5	274	13.5	54.9	-0	11.8	1.5	y	1.2	97	22.7	56.5	2	42.7	-1.4
Jun 30	y	1.3	113	51.5	27.9	7	46.0	-13.9	y	-2.5	275	8.4	55.0	-0	10.3	1.4	y	1.2	98	19.3	56.5	2	41.3	-1.4
Jul 1	y	1.4	114	19.4	27.8	7	32.1	-13.9	y	-2.5	276	3.5	55.2	-0	8.9	1.4	y	1.2	99	15.7	56.4	2	39.9	-1.4
2	y	1.4	114	47.2	27.8	7	18.2	-13.9	y	-2.5	276	58.7	55.4	-0	7.5	1.4	y	1.2	100	12.1	56.3	2	38.5	-1.4
3	y	1.4	115	15.0	27.7	7	4.3	-14.1	y	-2.5	277	54.0	55.5	-0	6.1	1.2	y	1.2	101	8.4	56.2	2	37.1	-1.5
4	y	1.4	115	42.7	27.6	6	50.2	-14.1	y	-2.5	278	49.5	55.7	-0	4.9	1.2	y	1.2	102	4.6	56.1	2	35.6	-1.6
5	y	1.4	116	10.3	27.6	6	36.1	-14.2	y	-2.5	279	45.2	55.9	-0	3.7	1.1	y	1.2	103	0.7	56.0	2	34.0	-1.5
6	y	1.4	116	37.9	27.5	6	21.9	-14.2	y	-2.5	280	41.1	56.0	-0	2.6	1.0	y	1.2	103	56.8	56.0	2	32.5	-1.6
7	y	1.4	117	5.4	27.4	6	7.7	-14.3	y	-2.5	281	37.1	56.2	-0	1.6	0.9	y	1.2	104	52.7	55.9	2	30.9	-1.6
8	y	1.4	117	32.8	27.4	5	53.4	-14.3	y	-2.5	282	33.3	56.4	-0	0.7	0.9	y	1.2	105	48.6	55.8	2	29.3	-1.7
9	y	1.4	118	0.2	27.3	5	39.1	-14.4	y	-2.5	283	29.7	56.5	0	0.2	0.8	y	1.2	106	44.4	55.7	2	27.6	-1.7
10	y	1.4	118	27.5	27.2	5	24.7	-14.5	y	-2.5	284	26.2	56.7	0	1.0	0.7	y	1.2	107	40.2	55.7	2	25.9</	

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Sun and Planets

Date	SUN				Mercury						Venus					
	GHA O	d	Dec O	d	vis mag	GHA O	d	dd	Dec O	d	dd	vis mag	GHA O	d	Dec O	d
Jul 15	178 31.1	-1.5	21 34.3	-9.5	SS -0.5	159 59.3	-46.6	-1.4	19 22.3	-32.9	0.5	SS -4.1	135 23.1	-2.8	10 49.3	-27.5
Jul 16	178 29.6	-1.4	21 24.8	-9.9	SS -0.5	159 12.7	-43.8	-1.4	18 49.4	-33.7	0.4	SS -4.1	135 20.3	-2.4	10 21.8	-27.7
Jul 17	178 28.2	-1.3	21 14.9	-10.3	SS -0.4	158 28.9	-41.1	-1.4	18 15.7	-34.4	0.4	SS -4.1	135 17.9	-2.1	9 54.1	-27.9
Jul 18	178 26.9	-1.1	21 4.6	-10.6	SS -0.4	157 47.7	-38.5	-1.3	17 41.3	-35.1	0.3	SS -4.1	135 15.8	-1.7	9 26.2	-28.1
Jul 19	178 25.8	-1.0	20 54.0	-10.9	SS -0.3	157 9.3	-35.8	-1.3	17 6.2	-35.7	0.3	SS -4.1	135 14.1	-1.4	8 58.1	-28.2
Jul 20	178 24.8	-0.8	20 43.1	-11.3	SS -0.3	156 33.4	-33.3	-1.3	16 30.5	-36.2	0.3	SS -4.1	135 12.7	-1.0	8 29.9	-28.5
Jul 21	178 24.0	-0.7	20 31.8	-11.7	SS -0.2	156 0.2	-30.7	-1.3	15 54.3	-36.5	0.1	SS -4.1	135 11.7	-0.7	8 1.4	-28.6
Jul 22	178 23.3	-0.5	20 20.1	-12.0	SS -0.2	155 29.5	-28.2	-1.3	15 17.8	-36.8	0.1	SS -4.1	135 11.0	-0.4	7 32.8	-28.7
Jul 23	178 22.8	-0.4	20 8.1	-12.3	SS -0.1	155 1.3	-25.7	-1.2	14 41.0	-37.1	0.2	SS -4.1	135 10.6	0.0	7 4.1	-28.9
Jul 24	178 22.4	-0.3	19 55.8	-12.6	SS -0.1	154 35.6	-23.3	-1.2	14 3.9	-37.2	0.0	SS -4.2	135 10.6	0.3	6 35.2	-29.0
Jul 25	178 22.1	-0.1	19 43.2	-13.0	SS 0.0	154 12.3	-20.8	-1.2	13 26.7	-37.2	0.0	SS -4.2	135 10.9	0.6	6 6.2	-29.1
Jul 26	178 22.0	0.0	19 30.2	-13.3	SS 0.0	153 51.5	-18.4	-1.2	12 49.5	-37.3	0.0	SS -4.2	135 11.5	0.9	5 37.1	-29.2
Jul 27	178 22.0	0.2	19 16.9	-13.6	SS 0.0	153 33.1	-16.0	-1.2	12 12.2	-37.2	0.0	SS -4.2	135 12.5	1.3	5 7.9	-29.3
Jul 28	178 22.2	0.3	19 3.3	-14.0	SS 0.1	153 17.1	-13.6	-1.2	11 35.0	-37.0	-0.1	SS -4.2	135 13.7	1.6	4 38.6	-29.3
Jul 29	178 22.6	0.5	18 49.3	-14.2	SS 0.1	153 3.4	-11.2	-1.2	10 58.0	-36.9	0.0	SS -4.2	135 15.3	1.9	4 9.3	-29.5
Jul 30	178 23.1	0.6	18 35.1	-14.6	SS 0.1	152 52.2	-8.8	-1.2	10 21.1	-36.5	-0.2	SS -4.2	135 17.2	2.2	3 39.8	-29.5
Jul 31	178 23.7	0.8	18 20.5	-14.8	SS 0.2	152 43.4	-6.4	-1.2	9 44.6	-36.2	-0.1	SS -4.2	135 19.3	2.5	3 10.3	-29.5
Aug 1	178 24.5	0.9	18 5.7	-15.2	SS 0.2	152 37.0	-3.9	-1.2	9 8.4	-35.8	-0.2	SS -4.2	135 21.8	2.8	2 40.8	-29.6
Aug 2	178 25.5	1.1	17 50.5	-15.4	SS 0.2	152 33.1	-1.5	-1.2	8 32.6	-35.3	-0.3	SS -4.2	135 24.6	3.1	2 11.2	-29.6
Aug 3	178 26.6	1.2	17 35.1	-15.7	SS 0.3	152 31.6	1.1	-1.3	7 57.3	-34.7	-0.3	SS -4.2	135 27.7	3.4	1 41.6	-29.7
Aug 4	178 27.8	1.4	17 19.4	-16.1	SS 0.3	152 32.7	3.7	-1.3	7 22.6	-34.0	-0.4	SS -4.2	135 31.0	3.6	1 11.9	-29.6
Aug 5	178 29.2	1.5	17 3.3	-16.2	SS 0.3	152 36.3	6.3	-1.3	6 48.6	-33.3	-0.4	SS -4.2	135 34.7	3.9	0 42.3	-29.6
Aug 6	178 30.7	1.7	16 47.1	-16.6	SS 0.4	152 42.6	9.0	-1.4	6 15.3	-32.5	-0.4	SS -4.2	135 38.6	4.2	0 12.7	-29.7
Aug 7	178 32.4	1.8	16 30.5	-16.8	SS 0.4	152 51.6	11.8	-1.4	5 42.8	-31.6	-0.4	SS -4.2	135 42.8	4.5	-0 17.0	-29.6
Aug 8	178 34.2	2.0	16 13.7	-17.1	SS 0.4	153 3.5	14.7	-1.5	5 11.2	-30.6	-0.5	SS -4.2	135 47.3	4.8	-0 46.6	-29.6
Aug 9	178 36.1	2.1	15 56.6	-17.4	SS 0.5	153 18.2	17.7	-1.5	4 40.6	-29.4	-0.6	SS -4.3	135 52.1	5.1	-1 16.2	-29.5
Aug 10	178 38.2	2.3	15 39.2	-17.6	SS 0.5	153 35.9	20.9	-1.6	4 11.2	-28.3	-0.6	SS -4.3	135 57.2	5.4	-1 45.7	-29.5
Aug 11	178 40.5	2.4	15 21.6	-17.8	SS 0.6	153 56.8	24.1	-1.6	3 42.9	-26.9	-0.7	SS -4.3	136 2.6	5.7	-2 15.2	-29.4
Aug 12	178 42.9	2.5	15 3.8	-18.1	SS 0.6	154 20.9	27.5	-1.7	3 16.0	-25.4	-0.8	SS -4.3	136 8.2	5.9	-2 44.6	-29.4
Aug 13	178 45.4	2.7	14 45.7	-18.3	SS 0.6	154 48.5	31.1	-1.8	2 50.6	-23.9	-0.8	SS -4.3	136 14.2	6.2	-3 14.0	-29.2
Aug 14	178 48.1	2.8	14 27.4	-18.6	SS 0.7	155 19.6	34.8	-1.9	2 26.7	-22.2	-0.9	SS -4.3	136 20.4	6.5	-3 43.2	-29.2
Aug 15	178 50.9	3.0	14 8.8	-18.7	SS 0.8	155 54.4	38.7	-1.9	2 4.5	-20.3	-0.9	SS -4.3	136 26.9	6.8	-4 12.4	-29.0
Aug 16	178 53.9	3.1	13 50.1	-19.0	SS 0.8	156 33.2	42.8	-2.0	1 44.2	-18.2	-1.1	SS -4.3	136 33.8	7.2	-4 41.4	-29.0
Aug 17	178 57.0	3.2	13 31.1	-19.2	SS 0.9	157 16.0	47.0	-2.1	1 26.0	-16.1	-1.1	SS -4.3	136 41.0	7.5	-5 10.4	-28.8
Aug 18	179 0.2	3.4	13 11.9	-19.4	SS 1.0	158 3.0	51.5	-2.2	1 9.9	-13.8	-1.1	SS -4.3	136 48.4	7.8	-5 39.2	-28.7
Aug 19	179 3.5	3.5	12 52.5	-19.6	SS 1.1	158 54.5	56.0	-2.3	0 56.1	-11.2	-1.3	SS -4.3	136 56.2	8.1	-6 7.9	-28.5
Aug 20	179 7.0	3.6	12 32.9	-19.8	SS 1.2	159 50.5	60.8	-2.4	0 44.9	-8.6	-1.3	SS -4.3	137 4.4	8.5	-6 36.4	-28.3
Aug 21	179 10.6	3.7	12 13.1	-20.0	SS 1.3	160 51.3	65.6	-2.4	0 36.3	-5.7	-1.5	SS -4.3	137 12.8	8.8	-7 4.7	-28.2
Aug 22	179 14.3	3.8	11 53.1	-20.2	SS 1.4	161 56.9	70.6	-2.5	0 30.6	-2.6	-1.6	SS -4.3	137 21.7	9.2	-7 32.9	-28.0
Aug 23	179 18.2	4.0	11 32.9	-20.4	SS 1.5	163 7.5	75.5	-2.5	0 28.0	0.5	-1.6	SS -4.4	137 30.8	9.5	-8 0.9	-27.8
Aug 24	179 22.1	4.1	11 12.5	-20.5	SS 1.6	164 23.0	80.5	-2.5	0 28.5	3.9	-1.7	SS -4.4	137 40.4	9.9	-8 28.7	-27.7
Aug 25	179 26.2	4.2	10 52.0	-20.7	SS 1.8	165 43.5	85.4	-2.4	0 32.4	7.3	-1.7	SS -4.4	137 50.3	10.3	-8 56.4	-27.4
Aug 26	179 30.4	4.3	10 31.3	-20.9	SS 1.9	167 8.9	90.1	-2.3	0 39.7	10.7	-1.7	SS -4.4	138 0.6	10.7	-9 23.8	-27.1
Aug 27	179 34.6	4.4	10 10.4	-21.0	SS 2.0	168 39.0	94.5	-2.2	0 50.4	14.3	-1.8	SS -4.4	138 11.3	11.1	-9 50.9	-27.0
Aug 28	179 39.0	4.4	9 49.4	-21.2	SS 2.1	170 13.4	98.5	-2.0	1 4.7	17.7	-1.7	SS -4.4	138 22.4	11.5	-10 17.9	-26.7
Aug 29	179 43.4	4.5	9 28.2	-21.4	SS 2.2	171 51.9	101.9	-1.7	1 22.4	21.0	-1.7	SS -4.4	138 34.0	12.0	-10 44.6	-26.4
Aug 30	179 48.0	4.6	9 6.8	-21.5	SS 2.3	173 33.8	104.8	-1.4	1 43.4	24.2	-1.6	SS -4.4	138 46.0	12.4	-11 11.0	-26.2
Aug 31	179 52.6	4.7	8 45.3	-21.6	SS 2.4	175 18.6	106.8	-1.0	2 7.6	26.9	-1.3	SS -4.4	138 58.4	12.9	-11 37.2	-25.9
Sep 1	179 57.3	4.8	8 23.7	-21.8	SS 2.5	177 5.4	108.0	-0.6	2 34.5	29.5	-1.3	SS -4.4	139 11.3	13.4	-12 3.1	-25.7
Sep 2	180 2.0	4.8	8 1.9	-21.9	SS 2.6	178 53.4	108.2	-0.1	3 4.0	31.4	-0.9	SS -4.4	139 24.7	13.9	-12 28.8	-25.3
Sep 3	180 6.9	4.9	7 40.0	-22.0	SS 3.6	180 41.6	107.3	0.4	3 35.4	32.9	-0.8	SS -4.4	139 38.7	14.5	-12 54.1	-25.0
Sep 4	180 11.7	4.9	7 18.0	-22.2	SS 3.4	182 28.8	105.3	1.0	4 8.3	33.8	-0.4	SS -4.5	139 53.1	15.0	-13 19.1	-24.7
Sep 5	180 16.7	5.0	6 55.8	-22.3	SS 3.1	184 14.1	102.2	1.5	4 42.1	34.0	-0.1	SS -4.5	140 8.1	15.6	-13 43.8	-24.4
Sep 6	180 21.7	5.1	6 33.5	-22.3	SS 2.9	185 56.3	98.0	2.1	5 16.1	33.6	0.2	SS -4.5	140 23.7	16.2	-14 8.2	-24.1
Sep 7	180 26.7	5.1	6 11.2	-22.5	SS 2.6	187 34.4	92.9	2.6	5 49.7	32.6	0.5	SS -4.5	140 39.9	16.8	-14 32.3	-23.6
Sep 8	180 31.9	5.1	5 48.7	-22.6	SR 2.4	189 7.2	86.8	3.0	6 22.3	30.9	0.9	SS -4.5	140 56.7	17.5	-14 55.9	-23.3
Sep 9	180 37.0	5.2	5 26.1	-22.7	SR 2.1	190 34.0	79.9	3.4	6 53.2	28.8	1.1	SS -4.5	141 14.3	18.2	-15 19.2	-23.0
Sep 10	180 42.2	5.2	5 3.4	-22.7	SR 1.9	191 53.9	72.4	3.8	7 22.0	26.1	1.4	SS -4.5	141 32.5	18.9	-15 42.2	-22.5
Sep 11	180 47.4	5.3	4 40.7	-22.9	SR 1.6	193 6.3	64.4	4.0	7 48.1	23.0	1.6	SS -4.5	141 51.4	19.7	-16 4.7	-22.1
Sep 12	180 52.7	5.3	4 17.8	-22.9	SR 1.4	194 10.7	56.0	4.2	8 11.1	19.4	1.8	SS -4.5	142 11.1	20.5	-16 26.8	-21.7
Sep 13	180 58.0	5.3	3 54.9	-22.9	SR 1.1	195 6.7	47.5	4.3	8 30.5	15.7	1.8	SS -4.5	142 31.7	21.4	-16 48.5	-21.3
Sep 14	181 3.3	5.3	3 32.0	-23.1	SR 0.9	195 54.2	39.0	4.3	8 46.2	11.7	2.0	SS -4.5	142 53.1	22.3	-17 9.8	-20.8
Sep 15	181 8.6	5.3	3 8.9	-23.1	SR 0.6	196 33.2	30.6	4.2	8 57.9	7.5	2.1	SS -4.5	143 15.4	23.3	-17 30.6	-20.3
Sep 16	181 13.9	5.4	2 45.8	-23.1	SR 0.4	197 3.7	22.4	4.1	9 5.4	3.3	2.1	SS -4.5	143 38.7	24.3	-17 50.9	-19.8
Sep 17	181 19.3	5.4	2 22.7	-23.2	SR 0.1	197 26.1	14.5	3.9	9 8.7	-1.0	2.2	SS -4.5	144 3.0	25.3	-18 10.7	-19.4

2010

Sun and Planets

Date	Mars					Jupiter					Saturn				
	vis	GHA	d	Dec	d'	vis	GHA	d	Dec	d'	vis	GHA	d	Dec	d'
Jul 15	y	1.4 120 43.0	26.9	4 11.8	-14.7	y	-2.6 289 11.5	57.6	0 3.9	0.3	y	1.2 112 17.7	55.3	2 17.0	-1.8
16	y	1.4 121 9.9	26.8	3 57.1	-14.8	y	-2.6 290 9.1	57.8	0 4.2	0.3	y	1.2 113 13.0	55.2	2 15.2	-1.9
17	y	1.4 121 36.8	26.8	3 42.3	-14.8	y	-2.6 291 6.9	57.9	0 4.5	0.2	y	1.2 114 8.2	55.1	2 13.3	-1.9
18	y	1.4 122 3.6	26.7	3 27.5	-14.9	y	-2.6 292 4.8	58.1	0 4.7	0.1	y	1.2 115 3.3	55.1	2 11.4	-2.0
19	y	1.4 122 30.3	26.7	3 12.6	-14.9	y	-2.6 293 2.9	58.3	0 4.8	0.0	y	1.3 115 58.4	55.0	2 9.4	-2.0
20	y	1.4 122 56.9	26.6	2 57.7	-14.9	y	-2.6 294 1.2	58.5	0 4.8	0.0	y	1.3 116 53.4	54.9	2 7.4	-2.0
21	y	1.4 123 23.5	26.5	2 42.8	-15.0	y	-2.6 294 59.7	58.7	0 4.8	-0.2	y	1.3 117 48.3	54.9	2 5.4	-2.0
22	y	1.5 123 50.0	26.5	2 27.8	-15.0	y	-2.6 295 58.4	58.8	0 4.6	-0.2	y	1.3 118 43.2	54.8	2 3.4	-2.1
23	y	1.5 124 16.5	26.4	2 12.8	-15.1	y	-2.6 296 57.2	59.0	0 4.4	-0.2	y	1.3 119 37.9	54.7	2 1.3	-2.1
24	y	1.5 124 42.9	26.3	1 57.7	-15.1	y	-2.7 297 56.3	59.2	0 4.2	-0.4	y	1.3 120 32.7	54.7	1 59.2	-2.1
25	y	1.5 125 9.2	26.3	1 42.6	-15.1	y	-2.7 298 55.4	59.4	0 3.8	-0.4	y	1.3 121 27.3	54.6	1 57.1	-2.1
26	y	1.5 125 35.5	26.2	1 27.5	-15.2	y	-2.7 299 54.8	59.6	0 3.4	-0.5	y	1.3 122 21.9	54.5	1 55.0	-2.2
27	y	1.5 126 1.6	26.1	1 12.3	-15.2	y	-2.7 300 54.4	59.7	0 2.9	-0.6	y	1.3 123 16.5	54.5	1 52.8	-2.2
28	y	1.5 126 27.7	26.0	0 57.1	-15.2	y	-2.7 301 54.1	59.9	0 2.3	-0.7	y	1.3 124 10.9	54.4	1 50.6	-2.2
29	y	1.5 126 53.8	26.0	0 41.9	-15.3	y	-2.7 302 54.1	60.1	0 1.6	-0.7	y	1.3 125 5.4	54.4	1 48.4	-2.3
30	y	1.5 127 19.8	25.9	0 26.6	-15.3	y	-2.7 303 54.2	60.3	0 0.9	-0.8	y	1.3 125 59.7	54.3	1 46.1	-2.2
Jul 31	y	1.5 127 45.7	25.8	0 11.3	-15.3	y	-2.7 304 54.4	60.5	0 0.1	-0.9	y	1.3 126 54.0	54.2	1 43.9	-2.3
Aug 1	y	1.5 128 11.5	25.7	-0 4.0	-15.3	y	-2.7 305 54.9	60.6	-0 0.8	-1.0	y	1.3 127 48.2	54.2	1 41.6	-2.3
2	y	1.5 128 37.2	25.7	-0 19.3	-15.4	y	-2.7 306 55.6	60.8	-0 1.8	-1.0	y	1.3 128 42.4	54.1	1 39.3	-2.3
3	y	1.5 129 2.9	25.6	-0 34.7	-15.4	y	-2.7 307 56.4	61.0	-0 2.8	-1.1	y	1.3 129 36.5	54.1	1 37.0	-2.4
4	y	1.5 129 28.5	25.5	-0 50.1	-15.4	y	-2.7 308 57.4	61.2	-0 3.9	-1.2	y	1.3 130 30.6	54.0	1 34.6	-2.4
5	y	1.5 129 54.0	25.4	-1 5.5	-15.4	y	-2.7 309 58.6	61.4	-0 5.1	-1.3	y	1.3 131 24.6	53.9	1 32.2	-2.4
6	y	1.5 130 19.4	25.3	-1 20.9	-15.5	y	-2.7 310 59.9	61.5	-0 6.4	-1.3	y	1.3 132 18.5	53.9	1 29.8	-2.4
7	y	1.5 130 44.7	25.3	-1 36.4	-15.5	y	-2.7 312 1.4	61.7	-0 7.7	-1.5	y	1.3 133 12.4	53.8	1 27.4	-2.4
8	y	1.5 131 10.0	25.2	-1 51.9	-15.4	y	-2.8 313 3.2	61.9	-0 9.2	-1.4	y	1.3 134 6.2	53.8	1 25.0	-2.5
9	y	1.5 131 35.2	25.1	-2 7.3	-15.5	y	-2.8 314 5.0	62.1	-0 10.6	-1.6	y	1.3 135 0.0	53.7	1 22.5	-2.5
10	y	1.5 132 0.2	25.0	-2 22.8	-15.5	y	-2.8 315 7.1	62.2	-0 12.2	-1.6	y	1.3 135 53.8	53.7	1 20.0	-2.5
11	y	1.5 132 25.2	24.9	-2 38.3	-15.6	y	-2.8 316 9.3	62.4	-0 13.8	-1.7	y	1.3 136 47.4	53.6	1 17.5	-2.5
12	y	1.5 132 50.1	24.8	-2 53.9	-15.5	y	-2.8 317 11.7	62.6	-0 15.5	-1.8	y	1.3 137 41.1	53.6	1 15.0	-2.5
13	y	1.5 133 15.0	24.7	-3 9.4	-15.5	y	-2.8 318 14.3	62.7	-0 17.3	-1.9	y	1.3 138 34.7	53.5	1 12.5	-2.6
14	y	1.5 133 39.7	24.6	-3 24.9	-15.6	y	-2.8 319 17.0	62.9	-0 19.2	-1.9	y	1.3 139 28.2	53.5	1 9.9	-2.5
15	y	1.5 134 4.3	24.5	-3 40.5	-15.5	y	-2.8 320 19.9	63.1	-0 21.1	-1.9	y	1.3 140 21.7	53.4	1 7.4	-2.6
16	y	1.5 134 28.9	24.5	-3 56.0	-15.5	y	-2.8 321 23.0	63.2	-0 23.0	-2.1	y	1.3 141 15.1	53.4	1 4.8	-2.6
17	y	1.5 134 53.3	24.4	-4 11.5	-15.6	y	-2.8 322 26.2	63.4	-0 25.1	-2.1	y	1.3 142 8.5	53.4	1 2.2	-2.6
18	y	1.5 135 17.7	24.3	-4 27.1	-15.5	y	-2.8 323 29.6	63.5	-0 27.2	-2.1	y	1.3 143 1.9	53.3	0 59.6	-2.7
19	y	1.5 135 42.0	24.2	-4 42.6	-15.6	y	-2.8 324 33.1	63.7	-0 29.3	-2.3	y	1.3 143 55.2	53.3	0 56.9	-2.6
20	y	1.5 136 6.1	24.1	-4 58.2	-15.5	y	-2.8 325 36.8	63.8	-0 31.6	-2.2	y	1.3 144 48.4	53.2	0 54.3	-2.7
21	y	1.5 136 30.2	24.0	-5 13.7	-15.5	y	-2.8 326 40.6	64.0	-0 33.8	-2.4	y	1.3 145 41.7	53.2	0 51.6	-2.6
22	y	1.5 136 54.2	23.9	-5 29.2	-15.5	y	-2.8 327 44.6	64.1	-0 36.2	-2.4	y	1.3 146 34.9	53.1	0 49.0	-2.7
23	y	1.5 137 18.1	23.8	-5 44.7	-15.5	y	-2.8 328 48.7	64.3	-0 38.6	-2.4	y	1.3 147 28.0	53.1	0 46.3	-2.7
24	y	1.5 137 41.9	23.7	-6 0.2	-15.5	y	-2.9 329 53.0	64.4	-0 41.0	-2.5	y	1.2 148 21.1	53.1	0 43.6	-2.8
25	y	1.5 138 5.5	23.6	-6 15.7	-15.4	y	-2.9 330 57.3	64.5	-0 43.5	-2.6	y	1.2 149 14.2	53.0	0 40.8	-2.7
26	y	1.5 138 29.1	23.5	-6 31.1	-15.5	y	-2.9 332 1.9	64.7	-0 46.1	-2.6	y	1.2 150 7.2	53.0	0 38.1	-2.7
27	y	1.5 138 52.6	23.4	-6 46.6	-15.4	y	-2.9 333 6.5	64.8	-0 48.7	-2.7	y	1.2 151 0.2	53.0	0 35.4	-2.8
28	y	1.5 139 16.0	23.3	-7 2.0	-15.4	y	-2.9 334 11.3	64.9	-0 51.4	-2.7	y	1.2 151 53.2	52.9	0 32.6	-2.7
29	y	1.5 139 39.2	23.1	-7 17.4	-15.4	y	-2.9 335 16.2	65.0	-0 54.1	-2.7	y	1.2 152 46.1	52.9	0 29.9	-2.8
30	y	1.5 140 2.4	23.0	-7 32.8	-15.4	y	-2.9 336 21.2	65.1	-0 56.8	-2.8	y	1.2 153 39.0	52.9	0 27.1	-2.8
Aug 31	y	1.5 140 25.4	22.9	-7 48.2	-15.3	y	-2.9 337 26.4	65.3	-0 59.6	-2.9	y	1.2 154 31.9	52.8	0 24.3	-2.8
Sep 1	y	1.5 140 48.3	22.8	-8 3.5	-15.3	y	-2.9 338 31.6	65.4	-1 2.5	-2.9	y	1.2 155 24.7	52.8	0 21.5	-2.8
2	y	1.5 141 11.1	22.7	-8 18.8	-15.3	y	-2.9 339 37.0	65.5	-1 5.4	-2.9	y	1.2 156 17.5	52.8	0 18.7	-2.8
3	y	1.5 141 33.8	22.6	-8 34.1	-15.2	y	-2.9 340 42.5	65.6	-1 8.3	-2.9	y	1.2 157 10.3	52.7	0 15.9	-2.9
4	y	1.5 141 56.4	22.4	-8 49.3	-15.2	y	-2.9 341 48.0	65.7	-1 11.2	-3.0	y	1.2 158 3.0	52.7	0 13.0	-2.8
5	y	1.5 142 18.8	22.3	-9 4.5	-15.2	y	-2.9 342 53.7	65.8	-1 14.2	-3.0	y	1.2 158 55.7	52.7	0 10.2	-2.8
6	y	1.5 142 41.1	22.2	-9 19.7	-15.2	y	-2.9 343 59.4	65.8	-1 17.2	-3.1	y	1.2 159 48.4	52.7	0 7.4	-2.9
7	y	1.5 143 3.3	22.1	-9 34.9	-15.0	y	-2.9 345 5.3	65.9	-1 20.3	-3.1	y	1.2 160 41.1	52.6	0 4.5	-2.8
8	y	1.5 143 25.4	21.9	-9 49.9	-15.1	y	-2.9 346 11.2	66.0	-1 23.4	-3.1	y	1.2 161 33.7	52.6	0 1.7	-2.9
9	y	1.5 143 47.4	21.8	-10 5.0	-15.0	y	-2.9 347 17.2	66.1	-1 26.5	-3.1	y	1.2 162 26.3	52.6	-0 1.2	-2.9
10	y	1.5 144 9.2	21.7	-10 20.0	-15.0	y	-2.9 348 23.3	66.1	-1 29.6	-3.2	y	1.2 163 18.9	52.6	-0 4.1	-2.8
11	y	1.5 144 30.9	21.6	-10 35.0	-14.9	y	-2.9 349 29.4	66.2	-1 32.8	-3.1	y	1.2 164 11.5	52.5	-0 6.9	-2.9
12	y	1.5 144 52.4	21.4	-10 49.9	-14.8	y	-2.9 350 35.6	66.2	-1 35.9	-3.2	y	1.2 165 4.0	52.5	-0 9.8	-2.9
13	y	1.5 145 13.9	21.3	-11 4.7	-14.8	y	-2.9 351 41.8	66.3	-1 39.1	-3.2	y	1.2 165 56.5	52.5	-0 12.7	-2.9
14	y	1.5 145 35.2	21.2	-11 19.5	-14.8	y	-2.9 352 48.1	66.3	-1 42.3	-3.2	y	1.2 166 49.0	52.5	-0 15.6	-2.9
15	y	1.5 145 56.3	21.0	-11 34.3	-14.6	y	-2.9 353 54.5	66.4	-1 45.5	-3.2	y	1.2 167 41.5	52.5	-0 18.5	-2.9
16	y	1.5 146 17.4	20.9	-11 48.9	-14.6	y	-2.9 355 0.8	66.4	-1 48.7	-3.2	y	1.2 168 34.0	52.5	-0 21.4	-2.9
Sep 17	y	1.5 146 38.3	20.8	-12 3.5	-14.6	y	-2.9 356 7.2	66.4	-1 51.9	-3.3	y	1.2 169 26.4	52.4	-0 24.3	-2.9

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Sun and Planets

Date	SUN					Mercury						Venus													
	GHA O	d	Dec O	d		vis mag	GHA O	d	dd	Dec O	d	dd	vis mag	GHA O	d	Dec O	d								
Sep 18	181	24.7	5.4	1	59.5	-23.2	sr	-0.1	197	40.7	7.2	3.7	9	7.7	-5.2	2.1	ss	-4.5	144	28.3	26.4	-18	30.1	-18.8	
19	181	30.0	5.4	1	36.3	-23.3	sr	-0.2	197	47.8	0.3	3.4	9	2.5	-9.4	2.1	ss	-4.6	144	54.7	27.6	-18	48.9	-18.2	
20	181	35.4	5.3	1	13.0	-23.3	sr	-0.4	197	48.1	-6.0	3.1	8	53.1	-13.4	2.0	ss	-4.6	145	22.3	28.8	-19	7.1	-17.7	
21	181	40.7	5.3	0	49.7	-23.3	sr	-0.5	197	42.1	-11.7	2.8	8	39.7	-17.2	1.9	ss	-4.6	145	51.1	30.1	-19	24.8	-17.2	
22	181	46.1	5.3	0	26.4	-23.3	sr	-0.6	197	30.5	-16.7	2.5	8	22.5	-20.9	1.8	ss	-4.6	146	21.2	31.4	-19	42.0	-16.5	
23	181	51.4	5.3	0	3.1	-23.4	sr	-0.7	197	13.7	-21.1	2.2	8	1.6	-24.3	1.7	ss	-4.6	146	52.5	32.8	-19	58.5	-15.8	
24	181	56.6	5.2	-0	20.3	-23.3	sr	-0.8	196	52.6	-25.0	1.9	7	37.3	-27.4	1.6	ss	-4.6	147	25.3	34.2	-20	14.3	-15.3	
25	182	1.9	5.2	-0	43.6	-23.4	sr	-0.9	196	27.6	-28.2	1.6	7	9.9	-30.3	1.4	ss	-4.6	147	59.5	35.7	-20	29.6	-14.5	
26	182	7.1	5.2	-1	7.0	-23.4	sr	-0.9	195	59.5	-30.8	1.3	6	39.6	-32.8	1.3	ss	-4.6	148	35.3	37.3	-20	44.1	-13.9	
27	182	12.3	5.1	-1	30.4	-23.3	sr	-1.0	195	28.6	-33.0	1.1	6	6.8	-35.2	1.2	ss	-4.6	149	12.6	38.9	-20	58.0	-13.1	
28	182	17.4	5.0	-1	53.7	-23.3	sr	-1.0	194	55.6	-34.7	0.9	5	31.6	-37.3	1.1	ss	-4.6	149	51.5	40.6	-21	11.1	-12.4	
29	182	22.4	5.0	-2	17.0	-23.4	sr	-1.1	194	20.9	-36.0	0.7	4	54.3	-39.0	0.8	ss	-4.6	150	32.1	42.4	-21	23.5	-11.6	
Sep 30	182	27.4	4.9	-2	40.4	-23.3	sr	-1.1	193	44.9	-37.0	0.5	4	15.3	-40.5	0.8	ss	-4.6	151	14.5	44.2	-21	35.1	-10.7	
Oct 1	182	32.3	4.8	-3	3.7	-23.2	sr	-1.1	193	7.9	-37.6	0.3	3	34.8	-41.8	0.7	ss	-4.6	151	58.7	46.1	-21	45.8	-9.9	
2	182	37.1	4.8	-3	26.9	-23.3	sr	-1.2	192	30.3	-38.0	0.2	2	53.0	-42.9	0.6	ss	-4.6	152	44.8	48.0	-21	55.7	-9.1	
3	182	41.9	4.7	-3	50.2	-23.1	sr	-1.2	191	52.2	-38.2	0.1	2	10.1	-43.7	0.4	ss	-4.6	153	32.8	50.0	-22	4.8	-8.1	
4	182	46.5	4.6	-4	13.3	-23.2	sr	-1.2	191	14.0	-38.3	0.0	1	26.4	-44.4	0.4	ss	-4.6	154	22.8	52.1	-22	12.9	-7.1	
5	182	51.1	4.5	-4	36.5	-23.1	sr	-1.2	190	35.7	-38.2	-0.1	0	42.0	-44.9	0.3	ss	-4.5	155	14.8	54.2	-22	20.0	-6.2	
6	182	55.6	4.4	-4	59.6	-23.0		-1.2	189	57.5	-38.0	-0.1	-0	2.9	-45.3	0.2	ss	-4.5	156	9.0	56.3	-22	26.2	-5.0	
7	183	0.0	4.3	-5	22.6	-22.9		-1.3	189	19.5	-37.7	-0.1	-0	48.2	-45.5	0.1	ss	-4.5	157	5.3	58.5	-22	31.2	-4.1	
8	183	4.3	4.2	-5	45.5	-22.9		-1.3	188	41.8	-37.4	-0.2	-1	33.7	-45.7	0.1	ss	-4.5	158	3.8	60.7	-22	35.3	-2.9	
9	183	8.5	4.1	-6	8.4	-22.8		-1.3	188	4.5	-37.0	-0.2	-2	19.4	-45.6	-0.1	ss	-4.5	159	4.5	63.0	-22	38.2	-1.7	
10	183	12.6	4.0	-6	31.2	-22.7		-1.3	187	27.5	-36.6	-0.2	-3	5.0	-45.6	0.0	ss	-4.5	160	7.5	65.2	-22	39.9	-0.5	
11	183	16.5	3.8	-6	53.9	-22.6		-1.4	186	50.9	-36.2	-0.2	-3	50.6	-45.3	-0.2	ss	-4.5	161	12.7	67.5	-22	40.4	0.8	
12	183	20.4	3.7	-7	16.5	-22.5		-1.4	186	14.7	-35.8	-0.2	-4	35.9	-45.2	0.0	ss	-4.5	162	20.2	69.8	-22	39.6	2.0	
13	183	24.1	3.6	-7	39.0	-22.4		-1.4	185	39.0	-35.4	-0.2	-5	21.1	-44.8	-0.2	ss	-4.4	163	30.0	72.1	-22	37.6	3.4	
14	183	27.7	3.5	-8	1.4	-22.3		-1.4	185	3.6	-35.0	-0.2	-6	5.9	-44.5	-0.1	ss	-4.4	164	42.1	74.3	-22	34.2	4.7	
15	183	31.1	3.3	-8	23.7	-22.2		-1.4	184	28.6	-34.6	-0.2	-6	50.4	-44.0	-0.3	ss	-4.4	165	56.4	76.4	-22	29.5	6.1	
16	183	34.5	3.2	-8	45.9	-22.1		-1.5	183	54.0	-34.3	-0.2	-7	34.4	-43.5	-0.3	ss	-4.4	167	12.8	78.5	-22	23.4	7.5	
17	183	37.7	3.1	-9	8.0	-21.9		-1.4	183	19.7	-34.0	-0.2	-8	17.9	-43.1	-0.2	ss	-4.4	168	31.3	80.5	-22	15.9	9.0	
18	183	40.7	2.9	-9	29.9	-21.7		0.0	182	45.7	-33.7	-0.1	-9	1.0	-42.5	-0.3	ss	-4.3	169	51.9	82.4	-22	6.9	10.4	
19	183	43.6	2.8	-9	51.6	-21.7		-1.4	182	11.9	-33.5	-0.1	-9	43.5	-41.9	-0.3	ss	-4.3	171	14.3	84.2	-21	56.5	11.8	
20	183	46.4	2.6	-10	13.3	-21.5		-1.3	181	38.5	-33.3	-0.1	-10	25.4	-41.3	-0.3	ss	-4.3	172	38.5	85.8	-21	44.7	13.3	
21	183	49.0	2.4	-10	34.8	-21.3		-1.2	181	5.2	-33.1	-0.1	-11	6.7	-40.7	-0.3	ss	-4.2	174	4.2	87.2	-21	31.4	14.6	
22	183	51.4	2.3	-10	56.1	-21.1		-1.1	180	32.1	-32.9	-0.1	-11	47.4	-39.9	-0.4	ss	-4.2	175	31.5	88.5	-21	16.8	16.0	
23	183	53.7	2.1	-11	17.2	-21.0		-1.1	179	59.2	-32.8	-0.1	-12	27.3	-39.3	-0.3		-4.2	176	60.0	89.5	-21	0.8	17.3	
24	183	55.8	1.9	-11	38.2	-20.9		-1.0	179	26.3	-32.8	0.0	-13	6.6	-38.6	-0.4		-4.1	178	29.5	90.4	-20	43.5	18.5	
25	183	57.7	1.7	-11	59.1	-20.6		-1.0	178	53.6	-32.7	0.0	-13	45.2	-37.8	-0.4		-4.1	179	59.9	91.0	-20	25.0	19.7	
26	183	59.5	1.6	-12	19.7	-20.4		-0.9	178	20.9	-32.7	0.0	-14	23.0	-37.0	-0.4		-4.1	181	30.9	91.4	-20	5.3	20.7	
27	184	1.0	1.4	-12	40.1	-20.3		-0.9	177	48.2	-32.7	0.0	-15	0.0	-36.3	-0.4		-4.1	183	2.3	91.5	-19	44.6	21.7	
28	184	2.4	1.2	-13	0.4	-20.1		-0.8	177	15.5	-32.7	0.0	-15	36.3	-35.4	-0.4		-4.0	184	33.8	91.5	-19	22.9	22.6	
29	184	3.6	1.0	-13	20.5	-19.8		-0.8	176	42.7	-32.8	0.0	-16	11.7	-34.7	-0.4		-4.0	186	5.3	91.1	-19	0.3	23.3	
30	184	4.6	0.8	-13	40.3	-19.6	ss	-0.7	176	9.9	-32.9	0.0	-16	46.4	-33.7	-0.5		-4.0	187	36.4	90.6	-18	37.0	23.8	
Oct 31	184	5.4	0.6	-13	59.9	-19.4	ss	-0.7	175	37.1	-33.0	0.0	-17	20.1	-32.9	-0.4		-4.0	189	7.0	89.8	-18	13.2	24.3	
Nov 1	184	6.0	0.4	-14	19.3	-19.2	ss	-0.7	175	4.1	-33.1	0.1	-17	53.0	-32.0	-0.5		-4.1	190	36.8	88.8	-17	48.9	24.7	
2	184	6.3	0.2	-14	38.5	-19.0	ss	-0.6	174	31.0	-33.2	0.1	-18	25.0	-31.1	-0.5		sr	-4.1	192	5.6	87.6	-17	24.2	24.8
3	184	6.5	0.0	-14	57.5	-18.7	ss	-0.6	173	57.8	-33.4	0.1	-18	56.1	-30.1	-0.5		sr	-4.1	193	33.2	86.3	-16	59.4	24.6
4	184	6.5	-0.2	-15	16.2	-18.4	ss	-0.6	173	24.4	-33.5	0.1	-19	26.2	-29.2	-0.5		sr	-4.2	194	59.5	84.7	-16	34.6	24.6
5	184	6.2	-0.4	-15	34.6	-18.2	ss	-0.5	172	50.9	-33.7	0.1	-19	55.4	-28.3	-0.5		sr	-4.2	196	24.2	83.0	-16	9.8	24.5
6	184	5.8	-0.7	-15	52.8	-17.9	ss	-0.5	172	17.2	-33.8	0.1	-20	23.7	-27.2	-0.5		sr	-4.2	197	47.2	81.2	-15	45.3	24.1
7	184	5.1	-0.9	-16	10.7	-17.7	ss	-0.5	171	43.4	-34.0	0.1	-20	50.9	-26.2	-0.5		sr	-4.3	199	8.5	79.3	-15	21.2	23.7
8	184	4.3	-1.1	-16	28.4	-17.4	ss	-0.5	171	9.4	-34.1	0.1	-21	17.1	-25.1	-0.5		sr	-4.3	200	27.8	77.3	-14	57.5	23.0
9	184	3.2	-1.3	-16	45.8	-17.1	ss	-0.5	170	35.3	-34.2	0.1	-21	42.2	-24.1	-0.5		sr	-4.3	201	45.1	75.2	-14	34.5	22.3
10	184	1.9	-1.5	-17	2.9	-16.8	ss	-0.5	170	1.1	-34.3	0.0	-22	6.3	-23.0	-0.5		sr	-4.4	203	0.2	73.0	-14	12.2	21.6
11	184	0.4	-1.7	-17	19.7	-16.5	ss	-0.4	169	26.8	-34.4	0.0	-22	29.3	-21.9	-0.5		sr	-4.4	204	13.3	70.8	-13	50.6	20.6
12	183	58.7	-1.9	-17	36.2	-16.2	ss	-0.4	168	52.4	-34.4	0.0	-22	51.2	-20.8	-0.5		sr	-4.4	205	24.1	68.6	-13	30.0	19.8
13	183	56.8	-2.1	-17	52.4	-15.9	ss	-0.4	168	18.0	-34.4	0.0	-23	12.0	-19.6	-0.6		sr	-4.5	206	32.7	66.3	-13	10.2	18.7
14	183	54.7	-2.3	-18	8.3	-15.5	ss	-0.4	167	43.6	-34.3	0.0	-23	31.6	-18.4	-0.6		sr	-4.5	207	39.0	64.0	-12	51.5	17.6
15	183	52.4	-2.5	-18	23.8	-15.3	ss	-0.4	167	9.2	-34.2	-0.1	-23	50.0	-17.2	-0.6		sr	-4.5	208	43.0	61.7			

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Sun and Planets

Date	Mars					Jupiter					Saturn				
	vis	GHA	d	Dec	d'	vis	GHA	d	Dec	d'	vis	GHA	d	Dec	d'
Sep 18	y	1.5 146 59.0	20.6	-12 18.1	-14.5	y	-2.9 357 13.7	66.5	-1 55.2	-3.2	y	1.2 170 18.9	52.4	-0 27.2	-2.9
19	y	1.5 147 19.7	20.5	-12 32.6	-14.4	y	-2.9 358 20.1	66.5	-1 58.4	-3.2	y	1.2 171 11.3	52.4	-0 30.1	-2.9
20	y	1.5 147 40.2	20.4	-12 47.0	-14.3	y	-2.9 359 26.6	66.5	-2 1.6	-3.2	y	1.2 172 3.7	52.4	-0 33.0	-2.9
21	y	1.5 148 0.5	20.2	-13 1.3	-14.3	y	-2.9 0 33.1	66.5	-2 4.8	-3.2	y	1.2 172 56.1	52.4	-0 35.9	-2.9
22	y	1.5 148 20.7	20.1	-13 15.6	-14.2	y	-2.9 1 39.5	66.5	-2 8.0	-3.3	y	1.2 173 48.5	52.4	-0 38.8	-2.9
23	y	1.5 148 40.8	19.9	-13 29.8	-14.1	y	-2.9 2 46.0	66.5	-2 11.3	-3.1	1.2 174 40.9	52.4	-0 41.7	-2.9	
24	y	1.5 149 0.7	19.8	-13 43.9	-14.0	y	-2.9 3 52.5	66.5	-2 14.4	-3.2	1.2 175 33.3	52.4	-0 44.6	-2.9	
25	y	1.5 149 20.5	19.6	-13 57.9	-14.0	y	-2.9 4 59.0	66.4	-2 17.6	-3.2	1.2 176 25.6	52.4	-0 47.5	-2.9	
26	y	1.5 149 40.2	19.5	-14 11.9	-13.8	y	-2.9 6 5.4	66.4	-2 20.8	-3.1	1.2 177 18.0	52.3	-0 50.4	-2.9	
27	y	1.5 149 59.6	19.3	-14 25.7	-13.8	y	-2.9 7 11.9	66.4	-2 23.9	-3.2	1.2 178 10.3	52.3	-0 53.3	-2.9	
28	y	1.5 150 19.0	19.2	-14 39.5	-13.7	y	-2.9 8 18.3	66.4	-2 27.1	-3.1	1.2 179 2.7	52.3	-0 56.2	-2.9	
29	y	1.5 150 38.2	19.0	-14 53.2	-13.6	y	-2.9 9 24.6	66.3	-2 30.2	-3.0	1.2 179 55.0	52.3	-0 59.1	-2.9	
Sep 30	y	1.5 150 57.2	18.9	-15 6.8	-13.5	y	-2.9 10 30.9	66.3	-2 33.2	-3.1	1.2 180 47.3	52.3	-1 2.0	-2.9	
Oct 1	y	1.5 151 16.1	18.7	-15 20.3	-13.4	y	-2.9 11 37.2	66.2	-2 36.3	-3.0	1.2 181 39.7	52.3	-1 4.9	-2.9	
2	y	1.5 151 34.8	18.6	-15 33.7	-13.2	y	-2.9 12 43.5	66.2	-2 39.3	-3.0	1.2 182 32.0	52.3	-1 7.8	-2.9	
3	y	1.5 151 53.3	18.4	-15 46.9	-13.2	y	-2.9 13 49.6	66.1	-2 42.3	-2.9	1.2 183 24.3	52.3	-1 10.7	-2.9	
4	y	1.5 152 11.7	18.2	-16 0.1	-13.1	y	-2.9 14 55.8	66.1	-2 45.2	-3.0	1.2 184 16.6	52.3	-1 13.6	-2.9	
5	y	1.5 152 30.0	18.1	-16 13.2	-13.0	y	-2.9 16 1.8	66.0	-2 48.2	-2.8	1.2 185 9.0	52.3	-1 16.5	-2.9	
6	y	1.5 152 48.1	17.9	-16 26.2	-12.8	y	-2.9 17 7.8	65.9	-2 51.0	-2.9	1.2 186 1.3	52.3	-1 19.4	-2.8	
7	y	1.5 153 6.0	17.8	-16 39.0	-12.8	y	-2.9 18 13.7	65.8	-2 53.9	-2.8	1.2 186 53.6	52.3	-1 22.2	-2.9	
8	y	1.5 153 23.8	17.6	-16 51.8	-12.6	y	-2.9 19 19.5	65.7	-2 56.7	-2.7	1.2 187 46.0	52.3	-1 25.1	-2.8	
9	y	1.5 153 41.4	17.4	-17 4.4	-12.5	y	-2.9 20 25.3	65.6	-2 59.4	-2.7	1.2 188 38.3	52.3	-1 27.9	-2.9	
10	y	1.5 153 58.8	17.3	-17 16.9	-12.3	y	-2.9 21 30.9	65.5	-3 2.1	-2.7	1.2 189 30.6	52.4	-1 30.8	-2.8	
11	y	1.5 154 16.1	17.1	-17 29.2	-12.3	y	-2.9 22 36.5	65.4	-3 4.8	-2.6	1.2 190 23.0	52.4	-1 33.6	-2.9	
12	y	1.5 154 33.2	17.0	-17 41.5	-12.1	y	-2.9 23 41.9	65.3	-3 7.4	-2.5	y 1.2 191 15.4	52.4	-1 36.5	-2.8	
13	y	1.5 154 50.1	16.8	-17 53.6	-12.0	y	-2.9 24 47.3	65.2	-3 9.9	-2.5	y 1.2 192 7.7	52.4	-1 39.3	-2.8	
14	y	1.5 155 6.9	16.6	-18 5.6	-11.8	y	-2.9 25 52.5	65.1	-3 12.4	-2.4	y 1.2 193 0.1	52.4	-1 42.1	-2.8	
15	y	1.5 155 23.6	16.5	-18 17.4	-11.7	y	-2.9 26 57.6	65.0	-3 14.8	-2.4	y 1.2 193 52.5	52.4	-1 44.9	-2.8	
16	y	1.5 155 40.0	16.3	-18 29.1	-11.6	y	-2.9 28 2.6	64.9	-3 17.2	-2.3	y 1.2 194 44.9	52.4	-1 47.7	-2.8	
17	y	1.5 155 56.3	16.1	-18 40.7	-11.4	y	-2.9 29 7.5	64.7	-3 19.5	-2.3	y 1.2 195 37.3	52.4	-1 50.5	-2.8	
18	y	1.5 156 12.5	16.0	-18 52.1	-11.3	y	-2.9 30 12.2	64.6	-3 21.8	-2.2	y 1.2 196 29.8	52.5	-1 53.3	-2.7	
19	y	1.5 156 28.5	15.8	-19 3.4	-11.1	y	-2.9 31 16.8	64.5	-3 24.0	-2.1	y 1.2 197 22.2	52.5	-1 56.0	-2.8	
20	y	1.5 156 44.3	15.7	-19 14.5	-10.9	y	-2.8 32 21.3	64.3	-3 26.1	-2.0	y 1.2 198 14.7	52.5	-1 58.8	-2.7	
21	y	1.5 156 60.0	15.5	-19 25.4	-10.9	y	-2.8 33 25.6	64.2	-3 28.1	-2.0	y 1.2 199 7.2	52.5	-2 1.5	-2.7	
22	y	1.5 157 15.4	15.3	-19 36.3	-10.6	y	-2.8 34 29.8	64.0	-3 30.1	-2.0	y 1.2 199 59.7	52.5	-2 4.2	-2.8	
23	y	1.5 157 30.8	15.2	-19 46.9	-10.5	y	-2.8 35 33.9	63.9	-3 32.1	-1.8	y 1.2 200 52.2	52.5	-2 7.0	-2.7	
24	y	1.5 157 45.9	15.0	-19 57.4	-10.3	y	-2.8 36 37.8	63.7	-3 33.9	-1.8	y 1.2 201 44.8	52.6	-2 9.7	-2.6	
25	y	1.4 158 1.0	14.8	-20 7.7	-10.2	y	-2.8 37 41.5	63.6	-3 35.7	-1.7	y 1.2 202 37.3	52.6	-2 12.3	-2.7	
26	y	1.4 158 15.8	14.7	-20 17.9	-10.0	y	-2.8 38 45.1	63.4	-3 37.4	-1.6	y 1.2 203 29.9	52.6	-2 15.0	-2.7	
27	y	1.4 158 30.5	14.5	-20 27.9	-9.8	y	-2.8 39 48.5	63.3	-3 39.0	-1.6	y 1.2 204 22.5	52.6	-2 17.7	-2.6	
28	y	1.4 158 45.0	14.3	-20 37.7	-9.6	y	-2.8 40 51.8	63.1	-3 40.6	-1.5	y 1.2 205 15.2	52.7	-2 20.3	-2.6	
29	y	1.4 158 59.3	14.2	-20 47.3	-9.5	y	-2.8 41 54.9	62.9	-3 42.1	-1.4	y 1.2 206 7.8	52.7	-2 22.9	-2.7	
30	y	1.4 159 13.5	14.0	-20 56.8	-9.2	y	-2.8 42 57.9	62.8	-3 43.5	-1.3	y 1.2 207 0.5	52.7	-2 25.6	-2.6	
Oct 31	y	1.4 159 27.5	13.9	-21 6.0	-9.1	y	-2.8 44 0.7	62.6	-3 44.8	-1.3	y 1.2 207 53.2	52.7	-2 28.2	-2.5	
Nov 1	y	1.4 159 41.4	13.7	-21 15.1	-8.9	y	-2.8 45 3.3	62.4	-3 46.1	-1.2	y 1.2 208 46.0	52.8	-2 30.7	-2.6	
2	y	1.4 159 55.1	13.5	-21 24.0	-8.7	y	-2.8 46 5.7	62.3	-3 47.3	-1.1	y 1.2 209 38.8	52.8	-2 33.3	-2.5	
3	y	1.4 160 8.7	13.4	-21 32.7	-8.6	y	-2.8 47 8.0	62.1	-3 48.4	-1.0	y 1.2 210 31.6	52.8	-2 35.8	-2.6	
4	y	1.4 160 22.0	13.2	-21 41.3	-8.3	y	-2.8 48 10.1	61.9	-3 49.4	-0.9	y 1.2 211 24.4	52.9	-2 38.4	-2.5	
5	y	1.4 160 35.3	13.1	-21 49.6	-8.1	y	-2.7 49 12.0	61.7	-3 50.3	-0.9	y 1.2 212 17.3	52.9	-2 40.9	-2.5	
6	y	1.4 160 48.3	12.9	-21 57.7	-7.9	y	-2.7 50 13.7	61.5	-3 51.2	-0.7	y 1.3 213 10.2	52.9	-2 43.4	-2.4	
7	y	1.4 161 1.3	12.8	-22 5.6	-7.7	y	-2.7 51 15.2	61.4	-3 51.9	-0.7	y 1.3 214 3.1	53.0	-2 45.8	-2.5	
8	y	1.4 161 14.0	12.6	-22 13.3	-7.6	y	-2.7 52 16.6	61.2	-3 52.6	-0.7	y 1.3 214 56.1	53.0	-2 48.3	-2.4	
9	y	1.4 161 26.6	12.5	-22 20.9	-7.3	y	-2.7 53 17.8	61.0	-3 53.3	-0.5	y 1.3 215 49.1	53.1	-2 50.7	-2.4	
10	y	1.4 161 39.1	12.3	-22 28.2	-7.1	y	-2.7 54 18.8	60.8	-3 53.8	-0.4	y 1.3 216 42.2	53.1	-2 53.1	-2.4	
11	y	1.4 161 51.4	12.2	-22 35.3	-6.8	y	-2.7 55 19.5	60.6	-3 54.2	-0.4	y 1.3 217 35.3	53.1	-2 55.5	-2.4	
12	y	1.4 162 3.6	12.0	-22 42.1	-6.7	y	-2.7 56 20.2	60.4	-3 54.6	-0.3	y 1.3 218 28.4	53.2	-2 57.9	-2.3	
13	y	1.4 162 15.7	11.9	-22 48.8	-6.4	y	-2.7 57 20.6	60.2	-3 54.9	-0.1	y 1.3 219 21.6	53.2	-3 0.2	-2.3	
14	y	1.4 162 27.6	11.8	-22 55.2	-6.2	y	-2.7 58 20.8	60.0	-3 55.0	-0.2	y 1.3 220 14.8	53.3	-3 2.5	-2.3	
15	y	1.4 162 39.3	11.6	-23 1.4	-6.0	y	-2.7 59 20.9	59.9	-3 55.2	0.0	y 1.3 221 8.1	53.3	-3 4.8	-2.3	
16	y	1.4 162 51.0	11.5	-23 7.4	-5.8	y	-2.7 60 20.7	59.7	-3 55.2	0.1	y 1.3 222 1.4	53.4	-3 7.1	-2.2	
17	y	1.4 163 2.5	11.4	-23 13.2	-5.5	y	-2.7 61 20.4	59.5	-3 55.1	0.1	y 1.3 222 54.8	53.4	-3 9.3	-2.2	
18	y	1.4 163 13.9	11.3	-23 18.7	-5.3	y	-2.7 62 19.8	59.3	-3 55.0	0.2	y 1.3 223 48.2	53.5	-3 11.5	-2.2	
19	y	1.4 163 25.1	11.1	-23 24.0	-5.1	y	-2.6 63 19.1	59.1	-3 54.8	0.3	y 1.3 224 41.7	53.5	-3 13.7	-2.2	
20	y	1.4 163 36.2	11.0	-23 29.1	-4.8	y	-2.6 64 18.2	58.9	-3 54.5	0.4	y 1.3 225 35.2	53.6	-3 15.9	-2.2	
Nov 21	y	1.4 163 47.2	10.9	-23 33.9	-4.6	y	-2.6 65 17.1	58.7	-3 54.1	0.5	y 1.3 226 28.7	53.6	-3 18.1	-2.1	

2010

Sun and Planets

Date	SUN					Mercury						Venus												
	GHA o	d	Dec o	d		vis	mag	GHA o	d	dd	Dec o	d	dd	vis	mag	GHA o	d	Dec o	d					
Nov 22	183	30.4	-4.0	-20	3.4	-12.8	SS	-0.4	163	17.2	-30.6	-0.5	-25	23.7	-8.1	-0.7	Sr	-4.6	215	8.6	46.5	-11	2.3	8.3
23	183	26.5	-4.1	-20	16.2	-12.5	SS	-0.4	162	46.6	-29.4	-0.6	-25	31.8	-6.8	-0.6	Sr	-4.6	215	55.1	44.5	-10	54.0	7.3
24	183	22.3	-4.3	-20	28.7	-12.0	SS	-0.4	162	17.2	-28.1	-0.7	-25	38.6	-5.3	-0.8	Sr	-4.6	216	39.7	42.6	-10	46.7	6.1
25	183	18.0	-4.5	-20	40.7	-11.7	SS	-0.4	161	49.1	-26.5	-0.8	-25	43.9	-3.9	-0.7	Sr	-4.6	217	22.2	40.7	-10	40.6	5.0
26	183	13.4	-4.7	-20	52.4	-11.3	SS	-0.4	161	22.6	-24.6	-0.9	-25	47.8	-2.6	-0.6	Sr	-4.6	218	2.9	38.9	-10	35.6	4.0
27	183	8.7	-4.9	-21	3.7	-10.9	SS	-0.4	160	58.0	-22.4	-1.1	-25	50.4	-1.1	-0.8	Sr	-4.6	218	41.8	37.1	-10	31.6	2.9
28	183	3.8	-5.1	-21	14.6	-10.5	SS	-0.4	160	35.5	-19.9	-1.3	-25	51.5	0.4	-0.8	Sr	-4.7	219	18.9	35.4	-10	28.7	1.8
29	182	58.7	-5.3	-21	25.1	-10.1	SS	-0.4	160	15.7	-16.9	-1.5	-25	51.1	1.7	-0.6	Sr	-4.7	219	54.2	33.7	-10	26.9	0.9
Nov 30	182	53.4	-5.4	-21	35.2	-9.7	SS	-0.4	159	58.8	-13.4	-1.7	-25	49.4	3.1	-0.7	Sr	-4.7	220	27.9	32.1	-10	26.0	0.0
Dec 1	182	48.0	-5.6	-21	44.9	-9.2	SS	-0.4	159	45.4	-9.4	-2.0	-25	46.3	4.5	-0.7	Sr	-4.7	221	0.0	30.5	-10	26.0	-1.0
2	182	42.4	-5.8	-21	54.1	-8.9	SS	-0.4	159	36.0	-4.9	-2.3	-25	41.8	5.9	-0.7	Sr	-4.7	221	30.6	29.1	-10	27.0	-1.8
3	182	36.6	-5.9	-22	3.0	-8.4	SS	-0.3	159	31.1	0.3	-2.6	-25	35.9	7.2	-0.7	Sr	-4.7	221	59.6	27.6	-10	28.8	-2.7
4	182	30.6	-6.1	-22	11.4	-8.0	SS	-0.3	159	31.4	6.3	-3.0	-25	28.7	8.5	-0.6	Sr	-4.7	222	27.3	26.2	-10	31.5	-3.5
5	182	24.5	-6.2	-22	19.4	-7.5	SS	-0.3	159	37.7	13.0	-3.4	-25	20.2	9.7	-0.6	Sr	-4.7	222	53.5	24.9	-10	35.0	-4.3
6	182	18.3	-6.4	-22	26.9	-7.1	SS	-0.2	159	50.7	20.6	-3.8	-25	10.5	10.9	-0.6	Sr	-4.7	223	18.4	23.6	-10	39.3	-5.0
7	182	12.0	-6.5	-22	34.0	-6.7	SS	-0.1	160	11.3	29.1	-4.2	-24	59.6	12.1	-0.6	Sr	-4.7	223	42.0	22.4	-10	44.3	-5.7
8	182	5.5	-6.6	-22	40.7	-6.2	SS	0.0	160	40.4	38.5	-4.7	-24	47.5	13.0	-0.5	Sr	-4.7	224	4.4	21.2	-10	50.0	-6.4
9	181	58.9	-6.7	-22	46.9	-5.8	SS	0.1	161	18.9	48.7	-5.1	-24	34.5	14.1	-0.5	Sr	-4.6	224	25.6	20.0	-10	56.4	-7.0
10	181	52.1	-6.8	-22	52.7	-5.4	SS	0.3	162	7.6	59.9	-5.6	-24	20.4	15.0	-0.5	Sr	-4.6	224	45.6	18.9	-11	3.4	-7.6
11	181	45.3	-6.9	-22	58.1	-4.8	SS	0.5	163	7.5	71.7	-5.9	-24	5.4	15.8	-0.4	Sr	-4.6	225	4.5	17.8	-11	11.0	-8.1
12	181	38.4	-7.0	-23	2.9	-4.5	SS	0.8	164	19.2	84.0	-6.2	-23	49.6	16.6	-0.4	Sr	-4.6	225	22.3	16.8	-11	19.1	-8.8
13	181	31.4	-7.1	-23	7.4	-3.9	SS	1.1	165	43.2	96.5	-6.2	-23	33.0	17.4	-0.4	Sr	-4.6	225	39.1	15.8	-11	27.9	-9.2
14	181	24.3	-7.1	-23	11.3	-3.5	SS	1.3	167	19.8	108.8	-6.1	-23	15.6	17.9	-0.3	Sr	-4.6	225	54.8	14.8	-11	37.1	-9.6
15	181	17.2	-7.2	-23	14.8	-3.0	SS	1.6	169	8.5	120.3	-5.7	-22	57.7	18.5	-0.3	Sr	-4.6	226	9.6	13.8	-11	46.7	-10.2
16	181	10.0	-7.3	-23	17.8	-2.6	SS	1.9	171	8.8	130.4	-5.1	-22	39.2	18.8	-0.1	Sr	-4.6	226	23.4	12.9	-11	56.9	-10.5
17	181	2.7	-7.3	-23	20.4	-2.1	SS	2.1	173	19.2	138.6	-4.1	-22	20.4	19.0	-0.1	Sr	-4.6	226	36.3	12.0	-12	7.4	-10.9
18	180	55.4	-7.4	-23	22.5	-1.7	2.4	175	37.8	144.4	-2.9	-22	1.4	18.9	0.0	Sr	-4.6	226	48.3	11.1	-12	18.3	-11.3	
19	180	48.0	-7.4	-23	24.2	-1.1	2.7	178	2.3	147.5	-1.5	-21	42.5	18.4	0.3	Sr	-4.6	226	59.4	10.3	-12	29.6	-11.6	
20	180	40.7	-7.4	-23	25.3	-0.7	2.6	180	29.7	147.5	0.0	-21	24.1	17.4	0.5	Sr	-4.6	227	9.7	9.4	-12	41.2	-11.9	
21	180	33.3	-7.4	-23	26.0	-0.3	2.4	182	57.3	144.6	1.4	-21	6.7	16.2	0.6	Sr	-4.6	227	19.1	8.6	-12	53.1	-12.2	
22	180	25.8	-7.4	-23	26.3	0.3	2.2	185	21.9	139.1	2.8	-20	50.5	14.4	0.9	Sr	-4.6	227	27.7	7.8	-13	5.3	-12.5	
23	180	18.4	-7.4	-23	26.0	0.7	1.9	187	41.0	131.4	3.9	-20	36.1	12.3	1.1	Sr	-4.6	227	35.6	7.0	-13	17.8	-12.6	
24	180	10.9	-7.4	-23	25.3	1.2	Sr	1.7	189	52.5	122.1	4.7	-20	23.8	9.9	1.2	Sr	-4.6	227	42.6	6.3	-13	30.4	-12.6
25	180	3.5	-7.4	-23	24.1	1.6	Sr	1.5	191	54.5	111.6	5.2	-20	13.9	7.3	1.3	Sr	-4.6	227	48.9	5.6	-13	43.2	-13.1
26	179	56.1	-7.4	-23	22.5	2.1	Sr	1.3	193	46.1	100.5	5.5	-20	6.6	4.8	1.3	Sr	-4.5	227	54.4	4.8	-13	56.3	-13.1
27	179	48.7	-7.4	-23	20.4	2.6	Sr	1.1	195	26.6	89.3	5.6	-20	1.8	2.2	1.3	Sr	-4.5	227	59.3	4.1	-14	9.4	-13.3
28	179	41.3	-7.3	-23	17.8	3.1	Sr	0.9	196	55.8	78.2	5.5	-19	59.6	-0.3	1.3	Sr	-4.5	228	3.4	3.4	-14	22.7	-13.4
29	179	34.0	-7.3	-23	14.7	3.5	Sr	0.7	198	14.1	67.6	5.3	-19	59.9	-2.5	1.1	Sr	-4.5	228	6.9	2.8	-14	36.1	-13.4
30	179	26.7	-7.2	-23	11.2	4.0	Sr	0.5	199	21.7	57.6	5.0	-20	2.4	-4.4	0.9	Sr	-4.5	228	9.6	2.1	-14	49.5	-13.5
Dec 31	179	19.5	-7.2	-23	7.2	4.5	Sr	0.3	200	19.3	48.3	4.6	-20	6.8	-6.2	0.9	Sr	-4.5	228	11.8	1.5	-15	3.0	-13.5
Jan 1	179	12.3	-7.2	-23	2.7	5.0	Sr	0.2	201	7.6	48.3	4.6	-20	13.0	-8.0	0.9	Sr	-4.5	228	13.2	1.5	-15	16.5	-13.5

2010

Sun and Planets

Date	Mars					Jupiter					Saturn													
	GHA		d	Dec		GHA		d	Dec		GHA		d	Dec										
	vis	mag		o	'	o	'		o	'	o	'		o	'	o	'							
Nov 22	y	1.4	163	58.1	10.8	-23	38.5	-4.3	y	-2.6	66	15.8	58.5	-3	53.6	0.6	y	1.3	227	22.3	53.7	-3	20.2	-2.1
23	y	1.4	164	8.9	10.7	-23	42.8	-4.1	y	-2.6	67	14.3	58.3	-3	53.0	0.6	y	1.3	228	16.0	53.7	-3	22.3	-2.0
24	y	1.4	164	19.6	10.5	-23	46.9	-3.9	y	-2.6	68	12.7	58.1	-3	52.4	0.7	y	1.3	229	9.7	53.8	-3	24.3	-2.1
25	y	1.3	164	30.1	10.4	-23	50.8	-3.6	y	-2.6	69	10.8	58.0	-3	51.7	0.8	y	1.3	230	3.5	53.8	-3	26.4	-2.0
26	y	1.3	164	40.5	10.3	-23	54.4	-3.4	y	-2.6	70	8.8	57.8	-3	50.9	0.9	y	1.3	230	57.3	53.9	-3	28.4	-2.0
27	y	1.3	164	50.9	10.2	-23	57.8	-3.1	y	-2.6	71	6.5	57.6	-3	50.0	0.9	y	1.3	231	51.2	53.9	-3	30.4	-1.9
28	y	1.3	165	1.1	10.1	-24	0.9	-2.8	y	-2.6	72	4.1	57.4	-3	49.1	1.1	y	1.3	232	45.2	54.0	-3	32.3	-2.0
29	y	1.3	165	11.2	10.0	-24	3.7	-2.6	y	-2.6	73	1.5	57.2	-3	48.0	1.1	y	1.3	233	39.2	54.1	-3	34.3	-1.9
Nov 30	y	1.3	165	21.3	9.9	-24	6.3	-2.4	y	-2.6	73	58.7	57.0	-3	46.9	1.2	y	1.3	234	33.2	54.1	-3	36.2	-1.8
Dec 1	y	1.3	165	31.2	9.9	-24	8.7	-2.1	y	-2.6	74	55.8	56.8	-3	45.7	1.3	y	1.3	235	27.4	54.2	-3	38.0	-1.9
2	y	1.3	165	41.1	9.8	-24	10.8	-1.8	y	-2.6	75	52.6	56.7	-3	44.4	1.3	y	1.3	236	21.5	54.3	-3	39.9	-1.8
3	y	1.3	165	50.8	9.7	-24	12.6	-1.6	y	-2.5	76	49.2	56.5	-3	43.1	1.5	y	1.3	237	15.8	54.3	-3	41.7	-1.8
4	y	1.3	166	0.5	9.6	-24	14.2	-1.3	y	-2.5	77	45.7	56.3	-3	41.6	1.5	y	1.3	238	10.1	54.4	-3	43.5	-1.7
5	y	1.3	166	10.1	9.5	-24	15.5	-1.0	y	-2.5	78	42.0	56.1	-3	40.1	1.6	y	1.3	239	4.5	54.4	-3	45.2	-1.7
6	y	1.3	166	19.6	9.5	-24	16.5	-0.8	y	-2.5	79	38.1	55.9	-3	38.5	1.7	y	1.3	239	58.9	54.5	-3	46.9	-1.7
7	y	1.3	166	29.1	9.4	-24	17.3	-0.5	y	-2.5	80	34.0	55.7	-3	36.8	1.7	y	1.3	240	53.5	54.6	-3	48.6	-1.7
8	y	1.3	166	38.5	9.3	-24	17.8	-0.3	y	-2.5	81	29.8	55.6	-3	35.1	1.9	y	1.3	241	48.1	54.7	-3	50.3	-1.6
9	y	1.3	166	47.8	9.3	-24	18.1	0.0	y	-2.5	82	25.3	55.4	-3	33.2	1.9	y	1.3	242	42.7	54.7	-3	51.9	-1.6
10	y	1.3	166	57.1	9.2	-24	18.1	0.3	y	-2.5	83	20.7	55.2	-3	31.3	1.9	y	1.3	243	37.4	54.8	-3	53.5	-1.5
11	y	1.3	167	6.3	9.2	-24	17.8	0.5	y	-2.5	84	15.9	55.0	-3	29.4	2.1	y	1.3	244	32.2	54.9	-3	55.0	-1.5
12	y	1.3	167	15.5	9.1	-24	17.3	0.9	y	-2.5	85	11.0	54.9	-3	27.3	2.1	y	1.3	245	27.1	55.0	-3	56.5	-1.5
13	y	1.3	167	24.7	9.1	-24	16.4	1.0	y	-2.5	86	5.8	54.7	-3	25.2	2.2	y	1.3	246	22.1	55.0	-3	58.0	-1.5
14	y	1.3	167	33.8	9.1	-24	15.4	1.4	y	-2.5	87	0.5	54.5	-3	23.0	2.3	y	1.3	247	17.1	55.1	-3	59.5	-1.4
15	y	1.3	167	42.8	9.0	-24	14.0	1.6	y	-2.5	87	55.1	54.4	-3	20.7	2.3	y	1.3	248	12.2	55.2	-4	0.9	-1.4
16	y	1.3	167	51.9	9.0	-24	12.4	1.9	y	-2.5	88	49.4	54.2	-3	18.4	2.4	y	1.3	249	7.4	55.3	-4	2.3	-1.3
17	y	1.3	168	0.9	9.0	-24	10.5	2.2	y	-2.4	89	43.6	54.0	-3	16.0	2.5	y	1.2	250	2.6	55.3	-4	3.6	-1.3
18	y	1.3	168	9.9	9.0	-24	8.3	2.4	y	-2.4	90	37.7	53.9	-3	13.5	2.5	y	1.2	250	58.0	55.4	-4	4.9	-1.3
19	y	1.3	168	18.9	9.0	-24	5.9	2.8	y	-2.4	91	31.5	53.7	-3	11.0	2.6	y	1.2	251	53.4	55.5	-4	6.2	-1.2
20	y	1.3	168	27.8	8.9	-24	3.1	2.9	y	-2.4	92	25.2	53.5	-3	8.4	2.7	y	1.2	252	48.9	55.6	-4	7.4	-1.2
21	y	1.3	168	36.8	8.9	-24	0.2	3.3	y	-2.4	93	18.8	53.4	-3	5.7	2.8	y	1.2	253	44.5	55.7	-4	8.6	-1.2
22	y	1.2	168	45.7	8.9	-23	56.9	3.5	y	-2.4	94	12.2	53.2	-3	2.9	2.8	y	1.2	254	40.1	55.7	-4	9.8	-1.1
23	y	1.2	168	54.6	8.9	-23	53.4	3.8	y	-2.4	95	5.4	53.1	-3	0.1	2.8	y	1.2	255	35.9	55.8	-4	10.9	-1.1
24	y	1.2	169	3.6	8.9	-23	49.6	4.1	y	-2.4	95	58.5	52.9	-2	57.3	3.0	y	1.2	256	31.7	55.9	-4	12.0	-1.1
25	y	1.2	169	12.5	8.9	-23	45.5	4.3	y	-2.4	96	51.4	52.8	-2	54.3	3.0	y	1.2	257	27.6	56.0	-4	13.1	-1.0
26	y	1.2	169	21.5	9.0	-23	41.2	4.6	y	-2.4	97	44.2	52.6	-2	51.3	3.1	y	1.2	258	23.6	56.1	-4	14.1	-1.0
27	y	1.2	169	30.4	9.0	-23	36.6	4.9	y	-2.4	98	36.9	52.5	-2	48.2	3.1	y	1.2	259	19.7	56.2	-4	15.1	-0.9
28	y	1.2	169	39.4	9.0	-23	31.7	5.1	y	-2.4	99	29.4	52.3	-2	45.1	3.2	y	1.2	260	15.9	56.3	-4	16.0	-0.9
29	y	1.2	169	48.4	9.0	-23	26.6	5.4	y	-2.4	100	21.7	52.2	-2	41.9	3.2	y	1.2	261	12.1	56.3	-4	16.9	-0.9
30	y	1.2	169	57.4	9.0	-23	21.2	5.7	y	-2.4	101	13.9	52.1	-2	38.7	3.3	y	1.2	262	8.5	56.4	-4	17.8	-0.8
Dec 31	y	1.2	170	6.4	9.1	-23	15.5	5.9	y	-2.3	102	6.0	51.9	-2	35.4	3.4	y	1.2	263	4.9	56.5	-4	18.6	-0.8
Jan 1	y	1.2	170	15.5	9.1	-23	9.6	6.1	y	-2.3	102	57.9	51.9	-2	32.0	3.5	y	1.2	264	1.4	56.5	-4	19.4	-0.8