

2007

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
Jan 1	179	12.2	-7.1	-23	3.0	4.9	-1.0	183	6.1	-46.0	0.2	-24	44.5	0.7	-0.7	SS -3.9	161	56.8	-20.8	-22	14.9	13.2
2	179	5.1	-7.0	-22	58.1	5.3	-1.0	182	20.2	-46.3	0.2	-24	43.8	2.1	-0.7	SS -3.9	161	36.0	-20.5	-22	1.7	13.9
3	178	58.2	-6.9	-22	52.8	5.8	-1.1	181	33.9	-46.5	0.1	-24	41.7	3.5	-0.7	SS -3.9	161	15.5	-20.2	-21	47.8	14.5
4	178	51.3	-6.8	-22	47.0	6.3	-1.1	180	47.4	-46.8	0.1	-24	38.2	5.0	-0.8	SS -3.9	160	55.3	-19.9	-21	33.3	15.1
5	178	44.5	-6.7	-22	40.7	6.7	-1.2	180	0.6	-47.0	0.1	-24	33.2	6.4	-0.7	SS -3.9	160	35.3	-19.6	-21	18.2	15.8
6	178	37.8	-6.6	-22	34.0	7.2	-1.2	179	13.6	-47.2	0.1	-24	26.8	8.0	-0.8	SS -3.9	160	15.7	-19.3	-21	2.4	16.4
7	178	31.2	-6.5	-22	26.8	7.6	-1.2	178	26.4	-47.4	0.1	-24	18.8	9.4	-0.7	SS -3.9	159	56.4	-19.0	-20	46.0	17.0
8	178	24.7	-6.3	-22	19.2	8.0	-1.2	177	39.1	-47.5	0.1	-24	9.4	10.9	-0.8	SS -3.9	159	37.3	-18.7	-20	29.0	17.6
9	178	18.4	-6.2	-22	11.2	8.5	-1.2	176	51.6	-47.6	0.0	-23	58.5	12.4	-0.8	SS -3.9	159	18.6	-18.4	-20	11.4	18.1
10	178	12.2	-6.1	-22	2.7	8.9	-1.2	176	4.0	-47.6	0.0	-23	46.1	14.0	-0.8	SS -3.9	159	0.2	-18.1	-19	53.3	18.8
11	178	6.1	-5.9	-21	53.8	9.3	-1.2	175	16.4	-47.6	0.0	-23	32.1	15.5	-0.8	SS -3.9	158	42.1	-17.8	-19	34.5	19.3
12	178	0.1	-5.8	-21	44.5	9.8	-1.2	174	28.7	-47.6	0.0	-23	16.6	17.0	-0.8	SS -3.9	158	24.4	-17.4	-19	15.2	19.9
13	177	54.3	-5.7	-21	34.7	10.1	-1.2	173	41.1	-47.5	0.0	-22	59.6	18.6	-0.8	SS -3.9	158	7.0	-17.1	-18	55.3	20.4
14	177	48.7	-5.5	-21	24.6	10.6	-1.2	172	53.6	-47.4	-0.1	-22	41.0	20.2	-0.8	SS -3.9	157	49.8	-16.8	-18	34.9	20.9
15	177	43.2	-5.3	-21	14.0	11.0	-1.1	172	6.2	-47.3	-0.1	-22	20.8	21.7	-0.8	SS -3.9	157	33.1	-16.5	-18	14.0	21.5
16	177	37.8	-5.2	-21	3.0	11.4	-1.1	171	18.9	-47.0	-0.1	-21	59.1	23.2	-0.8	SS -3.9	157	16.6	-16.1	-17	52.5	21.9
17	177	32.7	-5.0	-20	51.6	11.8	-1.1	170	31.9	-46.7	-0.1	-21	35.9	24.8	-0.8	SS -3.9	157	0.5	-15.8	-17	30.6	22.5
18	177	27.7	-4.8	-20	39.8	12.2	SS -1.1	169	45.1	-46.4	-0.2	-21	11.1	26.4	-0.8	SS -3.9	156	44.7	-15.5	-17	8.1	22.9
19	177	22.9	-4.6	-20	27.6	12.6	SS -1.1	168	58.8	-45.9	-0.2	-20	44.7	27.9	-0.8	SS -3.9	156	29.2	-15.1	-16	45.2	23.4
20	177	18.2	-4.5	-20	15.0	13.0	SS -1.1	168	12.8	-45.4	-0.3	-20	16.8	29.4	-0.7	SS -3.9	156	14.1	-14.8	-16	21.8	23.8
21	177	13.8	-4.3	-20	2.0	13.3	SS -1.1	167	27.5	-44.7	-0.3	-19	47.4	30.8	-0.7	SS -3.9	155	59.3	-14.5	-15	58.0	24.2
22	177	9.5	-4.1	-19	48.7	13.7	SS -1.1	166	42.7	-44.0	-0.4	-19	16.6	32.4	-0.8	SS -3.9	155	44.8	-14.2	-15	33.8	24.7
23	177	5.4	-3.9	-19	35.0	14.1	SS -1.1	165	58.8	-43.1	-0.4	-18	44.2	33.7	-0.7	SS -3.9	155	30.6	-13.8	-15	9.1	25.1
24	177	1.6	-3.7	-19	20.9	14.4	SS -1.0	165	15.7	-42.0	-0.5	-18	10.5	35.1	-0.7	SS -3.9	155	16.8	-13.5	-14	44.0	25.5
25	176	57.9	-3.5	-19	6.5	14.8	SS -1.0	164	33.7	-40.8	-0.6	-17	35.4	36.3	-0.6	SS -3.9	155	3.2	-13.2	-14	18.5	25.9
26	176	54.4	-3.3	-18	51.7	15.1	SS -1.0	163	52.8	-39.4	-0.7	-16	59.1	37.6	-0.6	SS -3.9	154	50.0	-12.9	-13	52.6	26.2
27	176	51.2	-3.1	-18	36.6	15.4	SS -1.0	163	13.4	-37.7	-0.8	-16	21.5	38.7	-0.5	SS -3.9	154	37.1	-12.6	-13	26.4	26.6
28	176	48.1	-2.8	-18	21.2	15.8	SS -1.0	162	35.7	-35.8	-1.0	-15	42.8	39.6	-0.4	SS -3.9	154	24.5	-12.3	-12	59.8	27.0
29	176	45.3	-2.6	-18	5.4	16.1	SS -1.0	161	59.9	-33.6	-1.1	-15	3.2	40.5	-0.5	SS -3.9	154	12.1	-12.0	-12	32.8	27.3
30	176	42.6	-2.4	-17	49.3	16.4	SS -1.0	161	26.2	-31.1	-1.3	-14	22.7	41.2	-0.4	SS -3.9	154	0.1	-11.8	-12	5.5	27.6
Jan 31	176	40.2	-2.2	-17	32.9	16.8	SS -1.0	160	55.1	-28.2	-1.5	-13	41.5	41.6	-0.2	SS -3.9	153	48.3	-11.5	-11	38.0	27.9
Feb 1	176	38.0	-2.0	-17	16.1	17.0	SS -0.9	160	27.0	-24.8	-1.7	-12	59.9	41.9	-0.1	SS -3.9	153	36.9	-11.2	-11	10.1	28.2
2	176	35.9	-1.8	-16	59.1	17.3	SS -0.9	160	2.2	-21.0	-1.9	-12	18.0	42.0	0.0	SS -3.9	153	25.6	-11.0	-10	41.9	28.5
3	176	34.1	-1.6	-16	41.8	17.6	SS -0.9	159	41.2	-16.6	-2.2	-11	36.0	41.6	0.2	SS -3.9	153	14.7	-10.7	-10	13.4	28.7
4	176	32.5	-1.4	-16	24.2	17.9	SS -0.8	159	24.5	-11.8	-2.4	-10	54.4	41.0	0.3	SS -3.9	153	4.0	-10.5	-9	44.7	29.0
5	176	31.1	-1.2	-16	6.3	18.2	SS -0.8	159	12.8	-6.3	-2.7	-10	13.4	40.0	0.5	SS -3.9	152	53.5	-10.2	-9	15.7	29.2
6	176	29.9	-1.0	-15	48.1	18.5	SS -0.7	159	6.5	-0.2	-3.1	-9	33.4	38.7	0.6	SS -3.9	152	43.3	-10.0	-8	46.5	29.4
7	176	28.9	-0.8	-15	29.6	18.7	SS -0.6	159	6.4	6.6	-3.4	-8	54.7	37.0	0.8	SS -3.9	152	33.2	-9.8	-8	17.1	29.7
8	176	28.1	-0.6	-15	10.9	19.0	SS -0.5	159	12.9	13.9	-3.7	-8	17.7	34.8	1.1	SS -3.9	152	23.4	-9.6	-7	47.4	29.9
9	176	27.4	-0.4	-14	51.9	19.2	SS -0.4	159	26.9	21.9	-4.0	-7	42.9	32.1	1.4	SS -3.9	152	13.8	-9.4	-7	17.5	30.0
10	176	27.0	-0.2	-14	32.7	19.5	SS -0.2	159	48.8	30.4	-4.3	-7	10.8	29.1	1.5	SS -3.9	152	4.4	-9.2	-6	47.5	30.2
11	176	26.8	-0.1	-14	13.2	19.7	SS 0.0	160	19.2	39.4	-4.5	-6	41.7	25.6	1.8	SS -3.9	151	55.2	-9.1	-6	17.3	30.4
12	176	26.7	0.1	-13	53.5	20.0	SS 0.2	160	58.7	48.8	-4.7	-6	16.1	21.7	1.9	SS -3.9	151	46.1	-8.9	-5	46.9	30.6
13	176	26.8	0.3	-13	33.5	20.1	SS 0.5	161	47.4	58.3	-4.8	-5	54.4	17.5	2.1	SS -3.9	151	37.3	-8.7	-5	16.3	30.7
14	176	27.2	0.5	-13	13.4	20.4	SS 0.8	162	45.8	68.0	-4.8	-5	36.9	13.0	2.3	SS -3.9	151	28.5	-8.6	-4	45.6	30.8
15	176	27.7	0.7	-12	53.0	20.6	SS 1.1	163	53.7	77.4	-4.7	-5	23.9	8.2	2.4	SS -3.9	151	19.9	-8.5	-4	14.8	30.9
16	176	28.3	0.9	-12	32.4	20.8	SS 1.3	165	11.1	86.5	-4.5	-5	15.7	3.4	2.4	SS -4.0	151	11.5	-8.3	-3	43.9	31.0
17	176	29.2	1.0	-12	11.6	21.0	SS 1.6	166	37.6	94.9	-4.2	-5	12.3	-1.5	2.4	SS -4.0	151	3.1	-8.2	-3	12.9	31.1
18	176	30.2	1.2	-11	50.6	21.2	SS 1.9	168	12.5	102.5	-3.8	-5	13.8	-6.2	2.3	SS -4.0	150	54.9	-8.1	-2	41.8	31.2
19	176	31.5	1.4	-11	29.4	21.4	2.2	169	55.0	109.0	-3.2	-5	20.0	-10.7	2.3	SS -4.0	150	46.8	-8.0	-2	10.6	31.3
20	176	32.8	1.6	-11	8.0	21.5	2.5	171	44.0	114.2	-2.6	-5	30.7	-14.8	2.1	SS -4.0	150	38.8	-7.9	-1	39.3	31.2
21	176	34.4	1.7	-10	46.5	21.7	2.8	173	38.1	117.9	-1.9	-5	45.5	-18.5	1.9	SS -4.0	150	30.9	-7.8	-1	8.1	31.4
22	176	36.1	1.9	-10	24.8	21.9	2.7	175	36.0	120.1	-1.1	-6	4.0	-21.6	1.6	SS -4.0	150	23.1	-7.8	-0	36.7	31.3
23	176	38.0	2.0	-10	2.9	22.0	2.6	177	36.2	120.8	-0.3	-6	25.6	-24.1	1.3	SS -4.0	150	15.3	-7.7	-0	5.4	31.4
24	176	40.0	2.2	-9	40.9	22.2	2.5	179	37.0	120.0	0.4	-6	49.7	-25.8	0.9	SS -4.0	150	7.6	-7.7	0	26.0	31.4
25	176	42.2	2.3	-9	18.7	22.3	2.4	181	37.0	117.8	1.1	-7	15.5	-27.0	0.6	SS -4.0	149	59.9	-7.6	0	57.4	31.3
26	176	44.6	2.5	-8	56.4	22.4	2.3	183	34.7	114.3	1.7	-7	42.5	-27.6	0.3	SS -4.0	149	52.2	-7.6	1	28.7	31.4
27	176	47.1	2.6	-8	34.0	22.5	sr 2.1	185	29.0	109.8	2.3	-8	10.1	-27.4	-0.1	SS -4.0	149	44.6	-7.6	2	0.1	31.3
Feb 28	176	49.7	2.8	-8	11.5	22.7	sr 2.0	187	18.8	104.4	2.7	-8	37.5	-26.9	-0.3	SS -4.0	149	37.0	-7.6	2	31.4	31.2
Mar 1	176	52.5	2.9	-7	48.8	22.8	sr 1.9	189	3.2	98.4	3.0	-9	4.4	-25.9	-0.5	SS -4.0	149	29.5	-7.6	3	2.6	31.2
2	176	55.4	3.0	-7	26.0	22.9	sr 1.8	190	41.5	91.9	3.2	-9	30.3	-24.5	-0.7	SS -4.0	149	21.9	-7.6	3	33.8	31.1
3	176	58.4	3.2	-7	3.1																	

2007

Sun and Planets

Date	Mars					Jupiter					Saturn													
	vis	GHA		d	Dec	d	vis	GHA		d	Dec	d	vis	GHA		d	Dec	d						
		mag	o					'	o					'	o				'	o	'	o	'	
Jan 1	y	1.5	202	52.8	12.1	-23	14.3	-4.3	y	-1.8	213	42.8	46.1	-20	59.2	-2.0	y	0.8	313	5.8	61.8	14	30.3	1.1
2	y	1.5	203	4.9	12.0	-23	18.6	-4.0	y	-1.8	214	28.9	46.2	-21	1.2	-1.9	y	0.8	314	7.6	61.9	14	31.4	1.1
3	y	1.5	203	16.9	11.9	-23	22.6	-3.9	y	-1.8	215	15.1	46.2	-21	3.1	-1.9	y	0.7	315	9.5	62.0	14	32.5	1.2
4	y	1.5	203	28.8	11.8	-23	26.5	-3.6	y	-1.8	216	1.4	46.3	-21	5.0	-1.9	y	0.7	316	11.5	62.1	14	33.7	1.2
5	y	1.5	203	40.6	11.7	-23	30.1	-3.4	y	-1.8	216	47.7	46.4	-21	6.9	-1.8	y	0.7	317	13.5	62.2	14	34.9	1.2
6	y	1.5	203	52.3	11.6	-23	33.5	-3.1	y	-1.8	217	34.0	46.4	-21	8.7	-1.8	y	0.7	318	15.7	62.2	14	36.1	1.3
7	y	1.5	204	3.9	11.6	-23	36.6	-3.0	y	-1.8	218	20.4	46.5	-21	10.5	-1.8	y	0.7	319	17.9	62.3	14	37.4	1.3
8	y	1.5	204	15.5	11.5	-23	39.6	-2.6	y	-1.8	219	6.9	46.5	-21	12.3	-1.8	y	0.7	320	20.3	62.4	14	38.7	1.3
9	y	1.5	204	27.0	11.4	-23	42.2	-2.5	y	-1.8	219	53.5	46.6	-21	14.1	-1.7	y	0.7	321	22.7	62.5	14	40.0	1.3
10	y	1.5	204	38.4	11.3	-23	44.7	-2.2	y	-1.8	220	40.1	46.7	-21	15.8	-1.7	y	0.7	322	25.2	62.6	14	41.3	1.4
11	y	1.5	204	49.7	11.3	-23	46.9	-2.0	y	-1.8	221	26.7	46.7	-21	17.5	-1.7	y	0.7	323	27.7	62.6	14	42.7	1.3
12	y	1.5	205	0.9	11.2	-23	48.9	-1.7	y	-1.8	222	13.5	46.8	-21	19.2	-1.7	y	0.7	324	30.4	62.7	14	44.0	1.4
13	y	1.5	205	12.1	11.1	-23	50.6	-1.5	y	-1.8	223	0.3	46.9	-21	20.9	-1.6	y	0.7	325	33.1	62.8	14	45.4	1.5
14	y	1.5	205	23.3	11.1	-23	52.1	-1.2	y	-1.8	223	47.2	47.0	-21	22.5	-1.6	y	0.7	326	35.9	62.9	14	46.9	1.4
15	y	1.5	205	34.3	11.0	-23	53.3	-1.0	y	-1.8	224	34.1	47.0	-21	24.1	-1.6	y	0.7	327	38.8	62.9	14	48.3	1.5
16	y	1.4	205	45.3	10.9	-23	54.3	-0.7	y	-1.8	225	21.2	47.1	-21	25.7	-1.5	y	0.7	328	41.7	63.0	14	49.8	1.5
17	y	1.4	205	56.3	10.9	-23	55.0	-0.5	y	-1.8	226	8.3	47.2	-21	27.2	-1.6	y	0.7	329	44.7	63.1	14	51.3	1.5
18	y	1.4	206	7.1	10.8	-23	55.5	-0.3	y	-1.8	226	55.5	47.3	-21	28.8	-1.5	y	0.7	330	47.8	63.1	14	52.8	1.5
19	y	1.4	206	18.0	10.8	-23	55.8	0.0	y	-1.8	227	42.7	47.4	-21	30.3	-1.4	y	0.6	331	50.9	63.2	14	54.3	1.5
20	y	1.4	206	28.8	10.8	-23	55.8	0.2	y	-1.8	228	30.1	47.4	-21	31.7	-1.5	y	0.6	332	54.1	63.3	14	55.8	1.6
21	y	1.4	206	39.6	10.7	-23	55.6	0.5	y	-1.8	229	17.6	47.5	-21	33.2	-1.4	y	0.6	333	57.3	63.3	14	57.4	1.5
22	y	1.4	206	50.3	10.7	-23	55.1	0.7	y	-1.8	230	5.1	47.6	-21	34.6	-1.4	y	0.6	335	0.6	63.4	14	58.9	1.6
23	y	1.4	207	1.0	10.7	-23	54.4	1.0	y	-1.9	230	52.7	47.7	-21	36.0	-1.4	y	0.6	336	4.0	63.4	15	0.5	1.6
24	y	1.4	207	11.7	10.6	-23	53.4	1.3	y	-1.9	231	40.4	47.8	-21	37.4	-1.3	y	0.6	337	7.4	63.5	15	2.1	1.6
25	y	1.4	207	22.3	10.6	-23	52.1	1.4	y	-1.9	232	28.3	47.9	-21	38.7	-1.3	y	0.6	338	10.9	63.5	15	3.7	1.7
26	y	1.4	207	32.9	10.6	-23	50.7	1.8	y	-1.9	233	16.2	48.0	-21	40.0	-1.3	y	0.6	339	14.4	63.6	15	5.4	1.6
27	y	1.4	207	43.6	10.6	-23	48.9	1.9	y	-1.9	234	4.2	48.1	-21	41.3	-1.3	y	0.6	340	18.0	63.6	15	7.0	1.6
28	y	1.4	207	54.1	10.6	-23	47.0	2.3	y	-1.9	234	52.3	48.2	-21	42.6	-1.2	y	0.6	341	21.5	63.6	15	8.6	1.7
29	y	1.4	208	4.7	10.6	-23	44.7	2.5	y	-1.9	235	40.5	48.3	-21	43.8	-1.2	y	0.6	342	25.2	63.7	15	10.3	1.6
30	y	1.4	208	15.3	10.6	-23	42.2	2.7	y	-1.9	236	28.8	48.4	-21	45.0	-1.2	y	0.6	343	28.8	63.7	15	11.9	1.7
Jan 31	y	1.4	208	25.8	10.6	-23	39.5	3.0	y	-1.9	237	17.2	48.5	-21	46.2	-1.2	y	0.6	344	32.5	63.7	15	13.6	1.6
Feb 1	y	1.4	208	36.4	10.6	-23	36.5	3.2	y	-1.9	238	5.7	48.6	-21	47.4	-1.1	y	0.6	345	36.3	63.8	15	15.2	1.7
2	y	1.4	208	47.0	10.6	-23	33.3	3.4	y	-1.9	238	54.4	48.7	-21	48.5	-1.1	y	0.6	346	40.0	63.8	15	16.9	1.7
3	y	1.4	208	57.5	10.6	-23	29.9	3.8	y	-1.9	239	43.1	48.9	-21	49.6	-1.1	y	0.6	347	43.8	63.8	15	18.6	1.7
4	y	1.4	209	8.1	10.6	-23	26.1	3.9	y	-1.9	240	31.9	49.0	-21	50.7	-1.1	y	0.5	348	47.6	63.8	15	20.3	1.6
5	y	1.4	209	18.7	10.6	-23	22.2	4.2	y	-1.9	241	20.9	49.1	-21	51.8	-1.0	y	0.5	349	51.5	63.9	15	21.9	1.7
6	y	1.4	209	29.2	10.6	-23	18.0	4.5	y	-1.9	242	10.0	49.2	-21	52.8	-1.0	y	0.5	350	55.3	63.9	15	23.6	1.7
7	y	1.4	209	39.8	10.6	-23	13.5	4.7	y	-1.9	242	59.2	49.3	-21	53.8	-1.0	y	0.5	351	59.2	63.9	15	25.3	1.7
8	y	1.4	209	50.4	10.6	-23	8.8	5.0	y	-1.9	243	48.5	49.4	-21	54.8	-1.0	y	0.5	353	3.1	63.9	15	27.0	1.7
9	y	1.4	210	1.1	10.7	-23	3.8	5.2	y	-1.9	244	38.0	49.6	-21	55.8	-0.9	y	0.5	354	6.9	63.9	15	28.7	1.6
10	y	1.4	210	11.7	10.7	-22	58.6	5.4	y	-1.9	245	27.5	49.7	-21	56.7	-0.9	y	0.5	355	10.8	63.9	15	30.3	1.7
11	y	1.4	210	22.4	10.7	-22	53.2	5.7	y	-1.9	246	17.2	49.8	-21	57.6	-0.9	y	0.5	356	14.7	63.9	15	32.0	1.7
12	y	1.3	210	33.1	10.7	-22	47.5	5.9	y	-1.9	247	7.0	49.9	-21	58.5	-0.9	y	0.5	357	18.7	63.9	15	33.7	1.6
13	y	1.3	210	43.8	10.8	-22	41.6	6.2	y	-2.0	247	57.0	50.1	-21	59.4	-0.9	y	0.5	358	22.6	63.9	15	35.3	1.7
14	y	1.3	210	54.6	10.8	-22	35.4	6.4	y	-2.0	248	47.0	50.2	-22	0.3	-0.8	y	0.5	359	26.5	63.9	15	37.0	1.6
15	y	1.3	211	5.4	10.9	-22	29.0	6.6	y	-2.0	249	37.3	50.3	-22	1.1	-0.8	y	0.5	0	30.3	63.9	15	38.6	1.7
16	y	1.3	211	16.3	10.9	-22	22.4	6.9	y	-2.0	250	27.6	50.5	-22	1.9	-0.8	y	0.5	1	34.2	63.9	15	40.3	1.6
17	y	1.3	211	27.2	10.9	-22	15.5	7.1	y	-2.0	251	18.1	50.6	-22	2.7	-0.8	y	0.5	2	38.1	63.9	15	41.9	1.6
18	y	1.3	211	38.1	11.0	-22	8.4	7.4	y	-2.0	252	8.7	50.8	-22	3.5	-0.7	y	0.6	3	42.0	63.8	15	43.5	1.6
19	y	1.3	211	49.1	11.1	-22	1.0	7.6	y	-2.0	252	59.5	50.9	-22	4.2	-0.7	y	0.6	4	45.8	63.8	15	45.1	1.6
20	y	1.3	212	0.2	11.1	-21	53.4	7.8	y	-2.0	253	50.4	51.1	-22	4.9	-0.7	y	0.6	5	49.6	63.8	15	46.7	1.6
21	y	1.3	212	11.3	11.2	-21	45.6	8.0	y	-2.0	254	41.5	51.2	-22	5.6	-0.7	y	0.6	6	53.4	63.8	15	48.3	1.6
22	y	1.3	212	22.5	11.2	-21	37.6	8.3	y	-2.0	255	32.7	51.4	-22	6.3	-0.7	y	0.6	7	57.2	63.7	15	49.9	1.6
23	y	1.3	212	33.7	11.3	-21	29.3	8.5	y	-2.0	256	24.0	51.5	-22	7.0	-0.6	y	0.6	9	0.9	63.7	15	51.5	1.5
24	y	1.3	212	45.0	11.4	-21	20.8	8.7	y	-2.0	257	15.5	51.7	-22	7.6	-0.7	y	0.6	10	4.7	63.7	15	53.0	1.5
25	y	1.3	212	56.3	11.4	-21	12.1	8.9	y	-2.0	258	7.2	51.8	-22	8.3	-0.6	y	0.6	11	8.3	63.6	15	54.5	1.5
26	y	1.3	213	7.8	11.5	-21	3.2	9.2	y	-2.0	258	59.0	52.0	-22	8.9	-0.5	y	0.6	12	12.0	63.6	15	56.0	1.5
27	y	1.3	213	19.3	11.6	-20	54.0	9.3	y	-2.0	259	51.0	52.1	-22	9.4	-0.6	y	0.6	13	15.6	63.6	15	57.5	1.5
Feb 28	y	1.3	213	30.8	11.6	-20	44.7	9.6	y	-2.0	260	43.1	52.3	-22	10.0	-0.5	y	0.6	14	19.1	63.5	15	59.0	1.5
Mar 1	y	1.3	213	42.5	11.7	-20	35.1	9.8	y	-2.1	261	35.4	52.5	-22	10.5	-0.6	y	0.6	15	22.7	63.5	16	0.5	1.4
2																								

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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							
Mar 7	177	11.7	3.6	-5	30.7	23.4	sr	1.2	197	14.0	58.7	3.2	-11	14.6	-14.8	-1.1	ss	-4.0	148	43.6	-7.8	6	8.4	30.6
8	177	15.3	3.7	-5	7.3	23.4	sr	1.1	198	12.6	52.5	3.1	-11	29.4	-12.7	-1.0	ss	-4.0	148	35.8	-7.9	6	39.0	30.4
9	177	19.0	3.8	-4	43.9	23.4	sr	0.9	199	5.2	46.7	2.9	-11	42.1	-10.4	-1.1	ss	-4.0	148	27.9	-8.0	7	9.4	30.2
10	177	22.7	3.8	-4	20.5	23.5	sr	0.8	199	51.8	41.1	2.8	-11	52.5	-8.3	-1.0	ss	-4.0	148	19.9	-8.1	7	39.6	30.1
11	177	26.6	3.9	-3	57.0	23.6	sr	0.7	200	33.0	36.0	2.6	-12	0.8	-6.1	-1.1	ss	-4.0	148	11.8	-8.2	8	9.7	30.0
12	177	30.5	4.0	-3	33.4	23.6	sr	0.7	201	8.9	31.1	2.4	-12	6.9	-4.1	-1.0	ss	-4.0	148	3.7	-8.3	8	39.7	29.7
13	177	34.5	4.1	-3	9.8	23.6	sr	0.6	201	40.0	26.6	2.3	-12	11.0	-2.0	-1.0	ss	-4.0	147	55.4	-8.4	9	9.4	29.5
14	177	38.6	4.1	-2	46.2	23.7	sr	0.5	202	6.6	22.3	2.1	-12	13.0	-0.1	-1.0	ss	-4.0	147	47.0	-8.5	9	38.9	29.3
15	177	42.7	4.2	-2	22.5	23.7	sr	0.5	202	28.9	18.4	2.0	-12	13.1	2.0	-1.1	ss	-4.0	147	38.5	-8.7	10	8.2	29.1
16	177	46.9	4.2	-1	58.8	23.7	sr	0.4	202	47.4	14.8	1.8	-12	11.1	3.8	-0.9	ss	-4.0	147	29.8	-8.8	10	37.3	28.8
17	177	51.1	4.3	-1	35.1	23.8	sr	0.4	203	2.2	11.4	1.7	-12	7.3	5.6	-0.9	ss	-4.0	147	21.0	-9.0	11	6.1	28.6
18	177	55.4	4.3	-1	11.3	23.7	sr	0.4	203	13.6	8.3	1.6	-12	1.7	7.4	-0.9	ss	-4.0	147	12.1	-9.1	11	34.7	28.4
19	177	59.7	4.4	-0	47.6	23.8	sr	0.3	203	21.9	5.4	1.4	-11	54.3	9.2	-0.9	ss	-4.0	147	3.0	-9.3	12	3.1	28.0
20	178	4.1	4.4	-0	23.8	23.7	sr	0.3	203	27.4	2.7	1.3	-11	45.1	10.9	-0.9	ss	-4.0	146	53.7	-9.4	12	31.1	27.6
21	178	8.5	4.4	-0	0.1	23.7	sr	0.3	203	30.1	0.3	1.2	-11	34.2	12.5	-0.8	ss	-4.0	146	44.3	-9.6	12	58.9	27.4
22	178	13.0	4.5	0	23.6	23.7	sr	0.3	203	30.4	-2.1	1.2	-11	21.7	14.1	-0.8	ss	-4.0	146	34.7	-9.8	13	26.3	27.1
23	178	17.4	4.5	0	47.3	23.7	sr	0.2	203	28.3	-4.2	1.1	-11	7.6	15.7	-0.8	ss	-4.0	146	24.9	-10.0	13	53.4	26.9
24	178	21.9	4.5	1	11.0	23.6	sr	0.2	203	24.1	-6.2	1.0	-10	51.9	17.3	-0.8	ss	-4.0	146	14.9	-10.2	14	20.3	26.4
25	178	26.4	4.5	1	34.6	23.6	sr	0.2	203	17.9	-8.1	0.9	-10	34.6	18.7	-0.7	ss	-4.0	146	4.7	-10.4	14	46.7	26.2
26	178	31.0	4.5	1	58.2	23.5	sr	0.2	203	9.8	-9.8	0.9	-10	15.9	20.3	-0.8	ss	-4.0	145	54.3	-10.6	15	12.9	25.7
27	178	35.5	4.5	2	21.7	23.5	sr	0.1	202	60.0	-11.5	0.8	-9	55.6	21.6	-0.6	ss	-4.0	145	43.8	-10.8	15	38.6	25.4
28	178	40.1	4.5	2	45.2	23.5	sr	0.1	202	48.5	-13.1	0.8	-9	34.0	23.1	-0.8	ss	-4.0	145	33.0	-11.0	16	4.0	25.0
29	178	44.6	4.5	3	8.7	23.4	sr	0.1	202	35.4	-14.6	0.7	-9	10.9	24.4	-0.6	ss	-4.0	145	22.1	-11.2	16	29.0	24.6
30	178	49.1	4.5	3	32.1	23.3	sr	0.1	202	20.8	-16.0	0.7	-8	46.5	25.8	-0.7	ss	-4.0	145	10.9	-11.4	16	53.6	24.2
Mar 31	178	53.7	4.5	3	55.4	23.2	sr	0.1	202	4.9	-17.3	0.7	-8	20.7	27.1	-0.6	ss	-4.0	144	59.6	-11.6	17	17.8	23.8
Apr 1	178	58.2	4.5	4	18.6	23.2	sr	0.0	201	47.6	-18.6	0.6	-7	53.6	28.4	-0.7	ss	-4.0	144	48.0	-11.8	17	41.6	23.3
2	179	2.7	4.5	4	41.8	23.0	sr	0.0	201	29.0	-19.9	0.6	-7	25.2	29.7	-0.6	ss	-4.0	144	36.2	-12.0	18	4.9	22.9
3	179	7.1	4.4	5	4.8	23.0	sr	0.0	201	9.1	-21.1	0.6	-6	55.5	30.9	-0.6	ss	-4.0	144	24.2	-12.2	18	27.8	22.4
4	179	11.6	4.4	5	27.8	22.9	sr	0.0	200	48.0	-22.3	0.6	-6	24.6	32.2	-0.7	ss	-4.0	144	12.0	-12.4	18	50.2	22.0
5	179	15.9	4.3	5	50.7	22.8	sr	-0.1	200	25.7	-23.5	0.6	-5	52.4	33.3	-0.5	ss	-4.0	143	59.6	-12.6	19	12.2	21.5
6	179	20.3	4.3	6	13.5	22.7	sr	-0.1	200	2.3	-24.6	0.6	-5	19.1	34.6	-0.7	ss	-4.0	143	46.9	-12.8	19	33.7	21.0
7	179	24.6	4.2	6	36.2	22.5	sr	-0.1	199	37.7	-25.8	0.6	-4	44.5	35.7	-0.5	ss	-4.0	143	34.1	-13.1	19	54.7	20.5
8	179	28.8	4.2	6	58.7	22.5	sr	-0.2	199	11.9	-26.9	0.6	-4	8.8	36.8	-0.6	ss	-4.0	143	21.0	-13.3	20	15.2	20.0
9	179	33.0	4.1	7	21.2	22.3	sr	-0.2	198	45.0	-28.1	0.6	-3	32.0	37.9	-0.6	ss	-4.0	143	7.8	-13.5	20	35.2	19.5
10	179	37.1	4.0	7	43.5	22.2	sr	-0.2	198	16.9	-29.3	0.6	-2	54.1	39.0	-0.5	ss	-4.0	142	54.3	-13.7	20	54.7	19.0
11	179	41.1	4.0	8	5.7	22.1	sr	-0.3	197	47.7	-30.4	0.6	-2	15.1	40.1	-0.5	ss	-4.0	142	40.6	-13.9	21	13.7	18.4
12	179	45.1	3.9	8	27.8	21.9	sr	-0.3	197	17.2	-31.7	0.6	-1	35.0	41.1	-0.5	ss	-4.1	142	26.8	-14.1	21	32.1	17.9
13	179	49.0	3.8	8	49.7	21.8	sr	-0.4	196	45.6	-32.9	0.6	-0	53.9	42.1	-0.5	ss	-4.1	142	12.7	-14.2	21	50.0	17.3
14	179	52.8	3.7	9	11.5	21.6	sr	-0.4	196	12.7	-34.2	0.6	-0	11.8	43.1	-0.5	ss	-4.1	141	58.5	-14.4	22	7.3	16.8
15	179	56.5	3.6	9	33.1	21.5	sr	-0.5	195	38.5	-35.5	0.7	0	31.3	44.0	-0.4	ss	-4.1	141	44.1	-14.6	22	24.1	16.2
16	180	0.1	3.5	9	54.6	21.3	sr	-0.5	195	3.0	-36.8	0.7	1	15.3	45.0	-0.5	ss	-4.1	141	29.5	-14.8	22	40.3	15.6
17	180	3.7	3.4	10	15.9	21.2	sr	-0.6	194	26.2	-38.2	0.7	2	0.3	45.8	-0.4	ss	-4.1	141	14.7	-14.9	22	55.9	15.0
18	180	7.1	3.3	10	37.1	20.9	sr	-0.6	193	47.9	-39.7	0.7	2	46.1	46.6	-0.4	ss	-4.1	140	59.8	-15.1	23	10.9	14.4
19	180	10.5	3.2	10	58.0	20.8	sr	-0.7	193	8.2	-41.2	0.8	3	32.7	47.5	-0.4	ss	-4.1	140	44.8	-15.2	23	25.3	13.8
20	180	13.7	3.1	11	18.8	20.6	sr	-0.8	192	27.0	-42.8	0.8	4	20.2	48.1	-0.3	ss	-4.1	140	29.6	-15.3	23	39.1	13.2
21	180	16.9	3.0	11	39.4	20.4	sr	-0.9	191	44.3	-44.4	0.8	5	8.3	48.9	-0.4	ss	-4.1	140	14.3	-15.4	23	52.3	12.5
22	180	19.9	2.9	11	59.8	20.2	sr	-0.9	190	59.9	-46.1	0.8	5	57.2	49.5	-0.3	ss	-4.1	139	58.9	-15.5	24	4.8	12.0
23	180	22.8	2.8	12	20.0	20.0	sr	-1.0	190	13.8	-47.8	0.9	6	46.7	50.0	-0.3	ss	-4.1	139	43.4	-15.6	24	16.8	11.3
24	180	25.7	2.7	12	40.0	19.8	sr	-1.1	189	26.0	-49.6	0.9	7	36.7	50.5	-0.3	ss	-4.1	139	27.8	-15.6	24	28.1	10.7
25	180	28.4	2.6	12	59.8	19.6	sr	-1.2	188	36.5	-51.4	0.9	8	27.2	50.9	-0.2	ss	-4.1	139	12.2	-15.7	24	38.8	10.0
26	180	31.0	2.5	13	19.4	19.3	sr	-1.3	187	45.1	-53.2	0.9	9	18.1	51.1	-0.1	ss	-4.1	138	56.5	-15.7	24	48.8	9.4
27	180	33.5	2.4	13	38.7	19.1	sr	-1.4	186	51.9	-55.1	0.9	10	9.2	51.3	-0.1	ss	-4.1	138	40.7	-15.8	24	58.2	8.7
28	180	35.8	2.2	13	57.8	18.9	sr	-1.5	185	56.8	-57.0	0.9	11	0.5	51.3	0.0	ss	-4.1	138	25.0	-15.8	25	6.9	8.1
29	180	38.1	2.1	14	16.7	18.7	sr	-1.7	184	59.8	-58.8	0.9	11	51.8	51.2	0.0	ss	-4.1	138	9.2	-15.7	25	15.0	7.4
Apr 30	180	40.2	2.0	14	35.4	18.4	sr	-1.8	184	1.0	-60.7	0.9	12	43.0	51.0	0.1	ss	-4.1	137	53.5	-15.7	25	22.4	6.7
May 1	180	42.2	1.9	14	53.8	18.2	sr	-2.0	183	0.3	-62.4	0.9	13	34.0	50.5	0.3	ss	-4.1	137	37.8	-15.7	25	29.1	6.1
2	180	44.0	1.7	15	12.0	17.9	sr	-2.1	181	57.9	-64.1	0.8	14	24.5	49.8	0.4	ss	-4.1	137	22.1	-15.6	25	35.2	5.4
3	180	45.8	1.6	15	29.9	17.7	sr	-2.3	180	53.8	-65.7	0.8	15	14.3	49.1	0.3	ss	-4.1	137	6.5	-15.5	25	40.6	4.8
4	180	47.3	1.4	15	47.6	17.4	sr	-2.2	179	48.1	-67.1	0.7	16	3.4	48.0	0.6	ss	-4.1	136	51.0	-15.4	25		

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Date	Mars					Jupiter					Saturn					
	vis	GHA	d	Dec	d'	vis	GHA	d	Dec	d'	vis	GHA	d	Dec	d'	
Mar	7	y 1.3	214 53.9	12.2	-19 33.1	11.0	y -2.1	266 52.7	53.5	-22 13.4	-0.4	y 0.7	21 42.7	63.1	16 8.8	1.3
	8	y 1.2	215 6.1	12.3	-19 22.1	11.3	y -2.1	267 46.1	53.6	-22 13.8	-0.4	y 0.7	22 45.9	63.1	16 10.1	1.2
	9	y 1.2	215 18.3	12.3	-19 10.8	11.4	y -2.1	268 39.8	53.8	-22 14.2	-0.4	y 0.7	23 49.0	63.0	16 11.3	1.3
	10	y 1.2	215 30.7	12.4	-18 59.4	11.6	y -2.1	269 33.6	54.0	-22 14.6	-0.4	y 0.7	24 52.0	63.0	16 12.6	1.2
	11	y 1.2	215 43.1	12.5	-18 47.8	11.9	y -2.1	270 27.6	54.2	-22 15.0	-0.3	y 0.7	25 54.9	62.9	16 13.8	1.2
	12	y 1.2	215 55.6	12.6	-18 35.9	12.0	y -2.1	271 21.7	54.3	-22 15.3	-0.4	y 0.7	26 57.8	62.8	16 15.0	1.2
	13	y 1.2	216 8.2	12.7	-18 23.9	12.2	y -2.1	272 16.1	54.5	-22 15.7	-0.3	y 0.7	28 0.6	62.7	16 16.2	1.2
	14	y 1.2	216 20.9	12.8	-18 11.7	12.4	y -2.1	273 10.6	54.7	-22 16.0	-0.3	y 0.7	29 3.4	62.7	16 17.4	1.1
	15	y 1.2	216 33.6	12.8	-17 59.3	12.5	y -2.1	274 5.3	54.9	-22 16.3	-0.2	y 0.7	30 6.1	62.6	16 18.5	1.1
	16	y 1.2	216 46.5	12.9	-17 46.8	12.8	y -2.2	275 0.2	55.1	-22 16.5	-0.3	y 0.7	31 8.7	62.5	16 19.6	1.1
	17	y 1.2	216 59.4	13.0	-17 34.0	12.9	y -2.2	275 55.3	55.3	-22 16.8	-0.3	y 0.7	32 11.2	62.4	16 20.7	1.0
	18	y 1.2	217 12.4	13.1	-17 21.1	13.1	y -2.2	276 50.6	55.5	-22 17.1	-0.2	y 0.7	33 13.6	62.4	16 21.7	1.0
	19	y 1.2	217 25.6	13.2	-17 8.0	13.2	y -2.2	277 46.0	55.7	-22 17.3	-0.2	y 0.7	34 16.0	62.3	16 22.7	1.0
	20	y 1.2	217 38.8	13.3	-16 54.8	13.5	y -2.2	278 41.7	55.9	-22 17.5	-0.2	y 0.7	35 18.3	62.2	16 23.7	1.0
	21	y 1.2	217 52.1	13.4	-16 41.3	13.6	y -2.2	279 37.5	56.0	-22 17.7	-0.2	y 0.7	36 20.5	62.1	16 24.7	0.9
	22	y 1.2	218 5.5	13.5	-16 27.7	13.7	y -2.2	280 33.6	56.2	-22 17.9	-0.2	y 0.8	37 22.6	62.0	16 25.6	0.9
23	y 1.2	218 19.0	13.6	-16 14.0	13.9	y -2.2	281 29.8	56.4	-22 18.1	-0.1	y 0.8	38 24.6	61.9	16 26.5	0.8	
24	y 1.2	218 32.6	13.7	-16 0.1	14.1	y -2.2	282 26.3	56.6	-22 18.2	-0.2	y 0.8	39 26.5	61.8	16 27.3	0.9	
25	y 1.2	218 46.3	13.8	-15 46.0	14.2	y -2.2	283 22.9	56.8	-22 18.4	-0.1	y 0.8	40 28.4	61.7	16 28.2	0.8	
26	y 1.2	219 0.1	13.9	-15 31.8	14.4	y -2.2	284 19.7	57.0	-22 18.5	-0.1	y 0.8	41 30.1	61.7	16 29.0	0.7	
27	y 1.2	219 13.9	14.0	-15 17.4	14.5	y -2.2	285 16.7	57.2	-22 18.6	-0.1	y 0.8	42 31.8	61.6	16 29.7	0.8	
28	y 1.2	219 27.9	14.1	-15 2.9	14.6	y -2.2	286 13.9	57.4	-22 18.7	-0.1	y 0.8	43 33.3	61.5	16 30.5	0.7	
29	y 1.2	219 42.0	14.2	-14 48.3	14.8	y -2.2	287 11.4	57.6	-22 18.8	-0.1	y 0.8	44 34.8	61.4	16 31.2	0.6	
30	y 1.1	219 56.1	14.2	-14 33.5	15.0	y -2.3	288 9.0	57.8	-22 18.9	-0.1	y 0.8	45 36.2	61.3	16 31.8	0.7	
Mar 31	y 1.1	220 10.4	14.3	-14 18.5	15.0	y -2.3	289 6.8	58.0	-22 19.0	0.0	y 0.8	46 37.5	61.2	16 32.5	0.6	
Apr	1	y 1.1	220 24.7	14.4	-14 3.5	15.2	y -2.3	290 4.8	58.2	-22 19.0	0.0	y 0.8	47 38.6	61.1	16 33.1	0.6
	2	y 1.1	220 39.1	14.5	-13 48.3	15.4	y -2.3	291 3.0	58.4	-22 19.0	-0.1	y 0.8	48 39.7	61.0	16 33.7	0.5
	3	y 1.1	220 53.6	14.6	-13 32.9	15.4	y -2.3	292 1.5	58.6	-22 19.1	0.0	y 0.8	49 40.7	60.9	16 34.2	0.5
	4	y 1.1	221 8.2	14.7	-13 17.5	15.6	y -2.3	293 0.1	58.8	-22 19.1	0.0	y 0.8	50 41.6	60.8	16 34.7	0.5
	5	y 1.1	221 22.9	14.8	-13 1.9	15.7	y -2.3	293 58.9	59.0	-22 19.1	0.1	y 0.8	51 42.4	60.7	16 35.2	0.4
	6	y 1.1	221 37.6	14.8	-12 46.2	15.8	y -2.3	294 57.9	59.2	-22 19.0	0.0	y 0.9	52 43.0	60.6	16 35.6	0.4
	7	y 1.1	221 52.5	14.9	-12 30.4	16.0	y -2.3	295 57.2	59.4	-22 19.0	0.0	y 0.9	53 43.6	60.5	16 36.0	0.4
	8	y 1.1	222 7.4	15.0	-12 14.4	16.0	y -2.3	296 56.6	59.6	-22 19.0	0.1	y 0.9	54 44.1	60.4	16 36.4	0.3
	9	y 1.1	222 22.4	15.1	-11 58.4	16.2	y -2.3	297 56.2	59.8	-22 18.9	0.1	y 0.9	55 44.4	60.3	16 36.7	0.3
	10	y 1.1	222 37.5	15.2	-11 42.2	16.3	y -2.3	298 56.0	60.0	-22 18.8	0.1	y 0.9	56 44.7	60.2	16 37.0	0.3
	11	y 1.1	222 52.7	15.3	-11 25.9	16.3	y -2.3	299 56.1	60.2	-22 18.7	0.1	y 0.9	57 44.9	60.1	16 37.3	0.2
	12	y 1.1	223 8.0	15.3	-11 9.6	16.5	y -2.3	300 56.3	60.4	-22 18.6	0.1	y 0.9	58 44.9	59.9	16 37.5	0.2
	13	y 1.1	223 23.3	15.4	-10 53.1	16.5	y -2.4	301 56.8	60.6	-22 18.5	0.1	y 0.9	59 44.9	59.8	16 37.7	0.2
	14	y 1.1	223 38.7	15.5	-10 36.6	16.7	y -2.4	302 57.4	60.8	-22 18.4	0.1	y 0.9	60 44.7	59.7	16 37.9	0.1
	15	y 1.1	223 54.2	15.6	-10 19.9	16.7	y -2.4	303 58.3	61.0	-22 18.3	0.2	y 0.9	61 44.5	59.6	16 38.0	0.1
16	y 1.1	224 9.8	15.7	-10 3.2	16.9	y -2.4	304 59.3	61.2	-22 18.1	0.2	y 0.9	62 44.1	59.5	16 38.1	0.1	
17	y 1.1	224 25.4	15.7	-9 46.3	16.9	y -2.4	306 0.5	61.4	-22 17.9	0.1	y 0.9	63 43.6	59.4	16 38.2	0.0	
18	y 1.1	224 41.2	15.8	-9 29.4	17.0	y -2.4	307 2.0	61.6	-22 17.8	0.2	y 0.9	64 43.0	59.3	16 38.2	0.0	
19	y 1.1	224 57.0	15.9	-9 12.4	17.0	y -2.4	308 3.6	61.8	-22 17.6	0.3	y 0.9	65 42.3	59.2	16 38.2	0.0	
20	y 1.0	225 12.8	16.0	-8 55.4	17.2	y -2.4	309 5.5	62.0	-22 17.3	0.2	y 0.9	66 41.5	59.1	16 38.2	-0.1	
21	y 1.0	225 28.8	16.0	-8 38.2	17.2	y -2.4	310 7.5	62.2	-22 17.1	0.2	y 0.9	67 40.6	59.0	16 38.1	-0.1	
22	y 1.0	225 44.8	16.1	-8 21.0	17.2	y -2.4	311 9.7	62.4	-22 16.9	0.2	y 0.9	68 39.6	58.9	16 38.0	-0.1	
23	y 1.0	226 0.9	16.2	-8 3.8	17.4	y -2.4	312 12.1	62.6	-22 16.7	0.3	y 1.0	69 38.5	58.8	16 37.9	-0.2	
24	y 1.0	226 17.1	16.2	-7 46.4	17.4	y -2.4	313 14.7	62.8	-22 16.4	0.3	y 1.0	70 37.3	58.7	16 37.7	-0.2	
25	y 1.0	226 33.3	16.3	-7 29.0	17.4	y -2.4	314 17.5	63.0	-22 16.1	0.3	y 1.0	71 35.9	58.6	16 37.5	-0.3	
26	y 1.0	226 49.6	16.4	-7 11.6	17.5	y -2.4	315 20.5	63.2	-22 15.8	0.3	y 1.0	72 34.5	58.5	16 37.2	-0.2	
27	y 1.0	227 6.0	16.4	-6 54.1	17.6	y -2.4	316 23.6	63.3	-22 15.5	0.3	y 1.0	73 32.9	58.3	16 37.0	-0.3	
28	y 1.0	227 22.4	16.5	-6 36.5	17.6	y -2.5	317 27.0	63.5	-22 15.2	0.3	y 1.0	74 31.3	58.2	16 36.7	-0.4	
29	y 1.0	227 38.9	16.6	-6 18.9	17.6	y -2.5	318 30.5	63.7	-22 14.9	0.3	y 1.0	75 29.5	58.1	16 36.3	-0.4	
Apr 30	y 1.0	227 55.5	16.6	-6 1.3	17.7	y -2.5	319 34.2	63.9	-22 14.6	0.4	y 1.0	76 27.7	58.0	16 35.9	-0.4	
May	1	y 1.0	228 12.1	16.7	-5 43.6	17.7	y -2.5	320 38.0	64.0	-22 14.2	0.3	y 1.0	77 25.7	57.9	16 35.5	-0.4
	2	y 1.0	228 28.7	16.7	-5 25.9	17.8	y -2.5	321 42.0	64.2	-22 13.9	0.4	y 1.0	78 23.6	57.8	16 35.1	-0.5
	3	y 1.0	228 45.5	16.8	-5 8.1	17.8	y -2.5	322 46.2	64.4	-22 13.5	0.4	y 1.0	79 21.4	57.7	16 34.6	-0.5
	4	y 1.0	229 2.2	16.8	-4 50.3	17.8	y -2.5	323 50.6	64.5	-22 13.1	0.4	y 1.0	80 19.2	57.6	16 34.1	-0.5
	5	y 1.0	229 19.0	16.9	-4 32.5	17.9	y -2.5	324 55.1	64.7	-22 12.7	0.4	y 1.0	81 16.8	57.5	16 33.6	-0.6
	6	y 1.0	229 35.9	16.9	-4 14.6	17.9	y -2.5	325 59.7	64.8	-22 12.3	0.5	y 1.0	82 14.3	57.4	16 33.0	-0.6
	7	y 1.0	229 52.8	17.0	-3 56.7	17.9	y -2.5	327 4.6	65.0	-22 11.8	0.4	y 1.0	83 11.7	57.3	16 32.4	-0.6
	8	y 1.0	230 9.8	17.0	-3 38.8	17.9	y -2.5	328 9.5	65.1	-22 11.4	0.5	y 1.0	84 9.0	57.2	16 31.8	-0.7
	9	y 1.0	230 26.8	17.0	-3 20.9	18.0	y -2.5	329 14.7	65.3	-22 10.9	0.4	y 1.0	85 6.2	57.1	16 31.1	-0.7
	May 10	y 1.0	230 43.8	17.1	-3 2.9	17.9	y -2.5	330 19.9	65.4	-22 10.5	0.5	y 1.0	86 3.3	57.0	16 30.4	-0.7

2007

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	43.6	15.5	SS	-1.5	171	41.9	-70.0	-0.2	21	6.9	35.5	1.1	SS	-4.2	135	5.9	-14.3	26	0.1	-0.6
12	180	54.8	0.3	17	59.1	15.1	SS	-1.4	170	32.0	-69.2	-0.4	21	42.4	33.0	1.3	SS	-4.2	134	51.6	-14.0	25	59.5	-1.2
13	180	55.1	0.1	18	14.2	14.8	SS	-1.3	169	22.8	-68.0	-0.6	22	15.4	30.6	1.2	SS	-4.2	134	37.6	-13.8	25	58.3	-1.8
14	180	55.2	0.0	18	29.0	14.6	SS	-1.2	168	14.8	-66.6	-0.7	22	46.0	28.0	1.3	SS	-4.2	134	23.8	-13.5	25	56.5	-2.5
15	180	55.2	-0.2	18	43.6	14.2	SS	-1.1	167	8.2	-64.9	-0.9	23	14.0	25.4	1.3	SS	-4.2	134	10.3	-13.2	25	54.0	-3.2
16	180	55.1	-0.3	18	57.8	13.8	SS	-1.0	166	3.3	-62.9	-1.0	23	39.4	22.8	1.3	SS	-4.2	133	57.1	-12.9	25	50.8	-3.7
17	180	54.8	-0.4	19	11.6	13.6	SS	-0.9	165	0.3	-60.7	-1.1	24	2.2	20.2	1.3	SS	-4.2	133	44.2	-12.6	25	47.1	-4.4
18	180	54.3	-0.6	19	25.2	13.2	SS	-0.8	163	59.7	-58.2	-1.2	24	22.4	17.7	1.3	SS	-4.2	133	31.7	-12.2	25	42.7	-5.0
19	180	53.7	-0.7	19	38.4	12.9	SS	-0.7	163	1.4	-55.5	-1.3	24	40.1	15.2	1.3	SS	-4.2	133	19.5	-11.8	25	37.7	-5.6
20	180	53.0	-0.9	19	51.3	12.6	SS	-0.6	162	5.9	-52.7	-1.4	24	55.3	12.8	1.2	SS	-4.2	133	7.6	-11.4	25	32.1	-6.3
21	180	52.1	-1.0	20	3.9	12.2	SS	-0.6	161	13.2	-49.7	-1.5	25	8.1	10.5	1.2	SS	-4.2	132	56.2	-11.0	25	25.8	-6.8
22	180	51.2	-1.1	20	16.1	11.8	SS	-0.5	160	23.5	-46.5	-1.6	25	18.6	8.2	1.2	SS	-4.2	132	45.2	-10.6	25	19.0	-7.4
23	180	50.0	-1.2	20	27.9	11.5	SS	-0.4	159	37.0	-43.2	-1.7	25	26.8	6.1	1.0	SS	-4.2	132	34.6	-10.1	25	11.6	-8.0
24	180	48.8	-1.4	20	39.4	11.2	SS	-0.3	158	53.9	-39.7	-1.7	25	32.9	4.0	1.1	SS	-4.2	132	24.4	-9.7	25	3.6	-8.6
25	180	47.5	-1.5	20	50.6	10.8	SS	-0.2	158	14.2	-36.2	-1.8	25	36.9	2.0	1.0	SS	-4.2	132	14.8	-9.2	24	55.0	-9.1
26	180	46.0	-1.6	21	1.4	10.4	SS	-0.1	157	38.0	-32.5	-1.8	25	38.9	0.2	0.9	SS	-4.2	132	5.6	-8.7	24	45.9	-9.7
27	180	44.4	-1.7	21	11.8	10.1	SS	0.0	157	5.5	-28.7	-1.9	25	39.1	-1.6	0.9	SS	-4.2	131	56.9	-8.2	24	36.2	-10.2
28	180	42.7	-1.8	21	21.9	9.7	SS	0.1	156	36.8	-24.8	-1.9	25	37.5	-3.3	0.8	SS	-4.2	131	48.7	-7.6	24	26.0	-10.6
29	180	40.8	-1.9	21	31.6	9.3	SS	0.2	156	12.0	-20.9	-2.0	25	34.2	-4.8	0.8	SS	-4.2	131	41.1	-7.1	24	15.2	-11.2
30	180	38.9	-2.0	21	40.9	8.9	SS	0.2	155	51.1	-16.8	-2.0	25	29.4	-6.2	0.7	SS	-4.2	131	34.0	-6.5	24	4.0	-11.6
May 31	180	36.9	-2.1	21	49.8	8.6	SS	0.3	155	34.3	-12.7	-2.1	25	23.2	-7.5	0.6	SS	-4.3	131	27.5	-5.9	23	52.2	-12.3
Jun 1	180	34.7	-2.3	21	58.4	8.2	SS	0.4	155	21.6	-8.4	-2.1	25	15.7	-8.9	0.7	SS	-4.3	131	21.6	-5.3	23	39.9	-12.7
2	180	32.5	-2.4	22	6.6	7.8	SS	0.5	155	13.2	-4.1	-2.2	25	6.8	-9.9	0.5	SS	-4.3	131	16.3	-4.7	23	27.2	-13.2
3	180	30.1	-2.4	22	14.4	7.4	SS	0.6	155	9.1	0.3	-2.2	24	56.9	-11.0	0.6	SS	-4.3	131	11.6	-4.1	23	14.0	-13.7
4	180	27.7	-2.5	22	21.8	7.0	SS	0.7	155	9.3	4.8	-2.2	24	45.9	-12.0	0.5	SS	-4.3	131	7.5	-3.4	23	0.3	-14.1
5	180	25.1	-2.6	22	28.8	6.6	SS	0.8	155	14.1	9.4	-2.3	24	33.9	-12.8	0.4	SS	-4.3	131	4.0	-2.8	22	46.2	-14.6
6	180	22.5	-2.7	22	35.4	6.3	SS	0.9	155	23.5	14.0	-2.3	24	21.1	-13.5	0.3	SS	-4.3	131	1.3	-2.1	22	31.6	-15.0
7	180	19.8	-2.8	22	41.7	5.8	SS	1.0	155	37.5	18.8	-2.4	24	7.6	-14.3	0.4	SS	-4.3	130	59.1	-1.4	22	16.6	-15.3
8	180	17.0	-2.9	22	47.5	5.4	SS	1.1	155	56.2	23.6	-2.4	23	53.3	-14.8	0.3	SS	-4.3	130	57.7	-0.8	22	1.3	-15.8
9	180	14.2	-2.9	22	52.9	5.1	SS	1.2	156	19.8	28.4	-2.4	23	38.5	-15.3	0.3	SS	-4.3	130	56.9	0.0	21	45.5	-16.2
10	180	11.2	-3.0	22	58.0	4.6	SS	1.4	156	48.2	33.4	-2.5	23	23.2	-15.7	0.2	SS	-4.3	130	56.9	0.7	21	29.3	-16.5
11	180	8.2	-3.1	23	2.6	4.2	SS	1.5	157	21.6	38.3	-2.5	23	7.5	-16.0	0.2	SS	-4.3	130	57.6	1.4	21	12.8	-16.9
12	180	5.2	-3.1	23	6.8	3.8	SS	1.6	157	60.0	43.4	-2.5	22	51.5	-16.3	0.2	SS	-4.3	130	59.0	2.2	20	55.9	-17.2
13	180	2.1	-3.2	23	10.6	3.4	SS	1.7	158	43.3	48.4	-2.5	22	35.2	-16.4	0.0	SS	-4.3	131	1.1	2.9	20	38.7	-17.5
14	179	58.9	-3.2	23	14.0	3.0	SS	1.8	159	31.7	53.3	-2.5	22	18.8	-16.4	0.0	SS	-4.3	131	4.1	3.7	20	21.2	-17.9
15	179	55.7	-3.2	23	17.0	2.6	SS	2.0	160	25.0	58.3	-2.5	22	2.4	-16.4	0.0	SS	-4.3	131	7.7	4.5	20	3.3	-18.1
16	179	52.5	-3.3	23	19.6	2.2	SS	2.1	161	23.3	63.1	-2.4	21	46.0	-16.3	-0.1	SS	-4.3	131	12.2	5.3	19	45.2	-18.5
17	179	49.2	-3.3	23	21.8	1.7	SS	2.2	162	26.4	67.9	-2.4	21	29.7	-16.1	-0.1	SS	-4.4	131	17.5	6.1	19	26.7	-18.7
18	179	46.0	-3.3	23	23.5	1.4	SS	2.3	163	34.3	72.4	-2.3	21	13.6	-15.8	-0.2	SS	-4.4	131	23.7	7.0	19	8.0	-18.9
19	179	42.7	-3.3	23	24.9	0.9	SS	2.4	164	46.7	76.8	-2.2	20	57.8	-15.3	-0.3	SS	-4.4	131	30.7	7.9	18	49.1	-19.2
20	179	39.4	-3.3	23	25.8	0.5	SS	2.6	166	3.5	80.8	-2.0	20	42.5	-14.9	-0.2	SS	-4.4	131	38.5	8.7	18	29.9	-19.4
21	179	36.1	-3.3	23	26.3	0.1	SS	2.7	167	24.4	84.6	-1.9	20	27.6	-14.3	-0.3	SS	-4.4	131	47.3	9.7	18	10.5	-19.5
22	179	32.8	-3.3	23	26.4	-0.3	SS	2.8	168	48.9	87.9	-1.7	20	13.3	-13.6	-0.4	SS	-4.4	131	56.9	10.6	17	51.0	-19.8
23	179	29.6	-3.2	23	26.1	-0.7	SS	2.9	170	16.8	90.8	-1.5	19	59.7	-12.9	-0.3	SS	-4.4	132	7.5	11.5	17	31.2	-19.9
24	179	26.3	-3.2	23	25.4	-1.1	SS	3.0	171	47.7	93.2	-1.2	19	46.8	-12.0	-0.5	SS	-4.4	132	19.1	12.5	17	11.3	-20.1
25	179	23.1	-3.2	23	24.3	-1.6		3.2	173	20.9	95.1	-0.9	19	34.8	-11.1	-0.5	SS	-4.4	132	31.6	13.5	16	51.2	-20.2
26	179	19.9	-3.1	23	22.7	-2.0		3.3	174	56.0	96.4	-0.6	19	23.7	-10.1	-0.5	SS	-4.4	132	45.1	14.5	16	31.0	-20.3
27	179	16.8	-3.1	23	20.7	-2.3		3.4	176	32.4	97.1	-0.3	19	13.6	-9.0	-0.6	SS	-4.4	132	59.6	15.6	16	10.7	-20.4
28	179	13.7	-3.1	23	18.4	-2.8		3.5	178	9.5	97.2	0.0	19	4.6	-7.8	-0.6	SS	-4.4	133	15.2	16.6	15	50.3	-20.5
29	179	10.6	-3.0	23	15.6	-3.2		3.6	179	46.7	96.6	0.3	18	56.8	-6.5	-0.6	SS	-4.4	133	31.8	17.7	15	29.8	-20.5
Jun 30	179	7.6	-2.9	23	12.4	-3.6		3.8	181	23.3	95.4	0.6	18	50.3	-5.3	-0.6	SS	-4.4	133	49.6	18.8	15	9.3	-20.6
Jul 1	179	4.7	-2.9	23	8.8	-4.0		3.6	182	58.7	93.6	0.9	18	45.0	-3.9	-0.7	SS	-4.4	134	8.4	20.0	14	48.7	-20.6
2	179	1.8	-2.8	23	4.8	-4.4		3.4	184	32.3	91.2	1.2	18	41.1	-2.6	-0.7	SS	-4.4	134	28.4	21.2	14	28.1	-20.6
3	178	59.0	-2.8	23	0.4	-4.7		3.3	186	3.6	88.3	1.5	18	38.5	-1.2	-0.7	SS	-4.4	134	49.6	22.4	14	7.5	-20.6
4	178	56.2	-2.7	22	55.7	-5.2	SR	3.1	187	31.9	84.9	1.7	18	37.3	0.1	-0.7	SS	-4.5	135	11.9	23.6	13	46.9	-20.5
5	178	53.5	-2.6	22	50.5	-5.6	SR	2.9	188	56.8	81.0	1.9	18	37.4	1.5	-0.7	SS	-4.5	135	35.5	24.9	13	26.4	-20.5
6	178	50.9	-2.5	22	44.9	-6.0	SR	2.8	190	17.8	76.8	2.1	18	38.9	2.8	-0.7	SS	-4.5	136	0.4	26.2	13	5.9	-20.4
7	178	48.4	-2.4	22	38.9	-6.4	SR	2.6	191	34.6	72.2	2.3	18	41.7	4.1	-0.6	SS	-4.5	136	26.6	27.5	12	45.5	-20.3
8	178	46.0	-2.3	22	32.5	-6.8	SR	2.4	192	46.8	67.3	2												

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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	1.0	231	0.9	17.1	-2	45.0	18.0	y	-2.5	331	25.3	65.5	-22	10.0	0.5
12	y	0.9	231	18.0	17.2	-2	27.0	17.9	y	-2.5	332	30.9	65.7	-22	9.5	0.5
13	y	0.9	231	35.2	17.2	-2	9.1	18.0	y	-2.5	333	36.6	65.8	-22	9.0	0.5
14	y	0.9	231	52.4	17.2	-1	51.1	18.0	y	-2.5	334	42.4	65.9	-22	8.5	0.6
15	y	0.9	232	9.7	17.3	-1	33.1	17.9	y	-2.5	335	48.3	66.1	-22	7.9	0.5
16	y	0.9	232	27.0	17.3	-1	15.2	18.0	y	-2.5	336	54.4	66.2	-22	7.4	0.6
17	y	0.9	232	44.3	17.4	-0	57.2	17.9	y	-2.5	338	0.5	66.3	-22	6.8	0.6
18	y	0.9	233	1.6	17.4	-0	39.3	18.0	y	-2.6	339	6.8	66.4	-22	6.2	0.5
19	y	0.9	233	19.0	17.4	-0	21.3	17.9	y	-2.6	340	13.2	66.5	-22	5.7	0.6
20	y	0.9	233	36.4	17.5	-0	3.4	17.9	y	-2.6	341	19.7	66.6	-22	5.1	0.6
21	y	0.9	233	53.9	17.5	0	14.5	17.8	y	-2.6	342	26.2	66.7	-22	4.5	0.6
22	y	0.9	234	11.4	17.5	0	32.3	17.9	y	-2.6	343	32.9	66.7	-22	3.9	0.7
23	y	0.9	234	28.9	17.5	0	50.2	17.8	y	-2.6	344	39.6	66.8	-22	3.2	0.6
24	y	0.9	234	46.5	17.6	1	8.0	17.8	y	-2.6	345	46.5	66.9	-22	2.6	0.6
25	y	0.9	235	4.0	17.6	1	25.8	17.7	y	-2.6	346	53.3	67.0	-22	2.0	0.7
26	y	0.9	235	21.6	17.6	1	43.5	17.7	y	-2.6	348	0.3	67.0	-22	1.3	0.7
27	y	0.9	235	39.3	17.6	2	1.2	17.7	y	-2.6	349	7.3	67.1	-22	0.6	0.6
28	y	0.9	235	56.9	17.7	2	18.9	17.6	y	-2.6	350	14.4	67.1	-22	0.0	0.7
29	y	0.9	236	14.5	17.7	2	36.5	17.6	y	-2.6	351	21.5	67.2	-21	59.3	0.7
30	y	0.9	236	32.2	17.7	2	54.1	17.6	y	-2.6	352	28.7	67.2	-21	58.6	0.7
May 31	y	0.9	236	49.9	17.7	3	11.7	17.5	y	-2.6	353	35.9	67.2	-21	57.9	0.7
Jun 1	y	0.9	237	7.6	17.7	3	29.2	17.4	y	-2.6	354	43.2	67.3	-21	57.2	0.7
2	y	0.8	237	25.3	17.7	3	46.6	17.4	y	-2.6	355	50.5	67.3	-21	56.5	0.7
3	y	0.8	237	43.1	17.7	4	4.0	17.3	y	-2.6	356	57.8	67.3	-21	55.8	0.8
4	y	0.8	238	0.8	17.7	4	21.3	17.3	y	-2.6	358	5.1	67.3	-21	55.0	0.7
5	y	0.8	238	18.6	17.8	4	38.6	17.2	y	-2.6	359	12.4	67.3	-21	54.3	0.7
6	y	0.8	238	36.3	17.8	4	55.8	17.1	y	-2.6	0	19.7	67.3	-21	53.6	0.8
7	y	0.8	238	54.1	17.8	5	12.9	17.1	y	-2.6	1	27.1	67.3	-21	52.8	0.7
8	y	0.8	239	11.9	17.8	5	30.0	17.0	y	-2.6	2	34.4	67.3	-21	52.1	0.7
9	y	0.8	239	29.6	17.8	5	47.0	16.9	y	-2.6	3	41.8	67.3	-21	51.4	0.8
10	y	0.8	239	47.4	17.8	6	3.9	16.9	y	-2.6	4	49.1	67.3	-21	50.6	0.7
11	y	0.8	240	5.2	17.8	6	20.8	16.7	y	-2.6	5	56.4	67.3	-21	49.9	0.8
12	y	0.8	240	23.0	17.8	6	37.5	16.7	y	-2.6	7	3.6	67.2	-21	49.1	0.7
13	y	0.8	240	40.8	17.8	6	54.2	16.6	y	-2.6	8	10.9	67.2	-21	48.4	0.8
14	y	0.8	240	58.6	17.8	7	10.8	16.5	y	-2.6	9	18.1	67.1	-21	47.6	0.7
15	y	0.8	241	16.4	17.8	7	27.3	16.4	y	-2.6	10	25.2	67.1	-21	46.9	0.8
16	y	0.8	241	34.3	17.8	7	43.7	16.4	y	-2.6	11	32.3	67.0	-21	46.1	0.7
17	y	0.8	241	52.1	17.8	8	0.1	16.2	y	-2.6	12	39.3	67.0	-21	45.4	0.8
18	y	0.8	242	9.9	17.8	8	16.3	16.1	y	-2.6	13	46.3	66.9	-21	44.6	0.7
19	y	0.8	242	27.8	17.8	8	32.4	16.1	y	-2.6	14	53.2	66.8	-21	43.9	0.7
20	y	0.8	242	45.6	17.9	8	48.5	15.9	y	-2.6	16	0.1	66.8	-21	43.2	0.8
21	y	0.8	243	3.5	17.9	9	4.4	15.8	y	-2.6	17	6.8	66.7	-21	42.4	0.7
22	y	0.8	243	21.3	17.9	9	20.2	15.7	y	-2.6	18	13.5	66.6	-21	41.7	0.7
23	y	0.7	243	39.2	17.9	9	35.9	15.6	y	-2.6	19	20.1	66.5	-21	41.0	0.7
24	y	0.7	243	57.1	17.9	9	51.5	15.5	y	-2.6	20	26.6	66.4	-21	40.3	0.7
25	y	0.7	244	14.9	17.9	10	7.0	15.4	y	-2.6	21	33.0	66.3	-21	39.6	0.7
26	y	0.7	244	32.8	17.9	10	22.4	15.2	y	-2.6	22	39.3	66.2	-21	38.9	0.7
27	y	0.7	244	50.7	17.9	10	37.6	15.2	y	-2.6	23	45.5	66.1	-21	38.2	0.7
28	y	0.7	245	8.5	17.9	10	52.8	15.0	y	-2.6	24	51.6	66.0	-21	37.5	0.6
29	y	0.7	245	26.4	17.9	11	7.8	14.9	y	-2.6	25	57.5	65.8	-21	36.9	0.7
Jun 30	y	0.7	245	44.3	17.9	11	22.7	14.8	y	-2.5	27	3.4	65.7	-21	36.2	0.6
Jul 1	y	0.7	246	2.1	17.9	11	37.5	14.6	y	-2.5	28	9.1	65.6	-21	35.6	0.6
2	y	0.7	246	20.0	17.9	11	52.1	14.5	y	-2.5	29	14.7	65.5	-21	35.0	0.6
3	y	0.7	246	37.9	17.9	12	6.6	14.4	y	-2.5	30	20.1	65.3	-21	34.4	0.6
4	y	0.7	246	55.7	17.9	12	21.0	14.3	y	-2.5	31	25.5	65.2	-21	33.8	0.6
5	y	0.7	247	13.6	17.9	12	35.3	14.1	y	-2.5	32	30.7	65.0	-21	33.2	0.6
6	y	0.7	247	31.5	17.9	12	49.4	14.0	y	-2.5	33	35.7	64.9	-21	32.6	0.5
7	y	0.7	247	49.4	17.9	13	3.4	13.9	y	-2.5	34	40.6	64.8	-21	32.1	0.6
8	y	0.7	248	7.3	17.9	13	17.3	13.7	y	-2.5	35	45.4	64.6	-21	31.5	0.5
9	y	0.7	248	25.2	17.9	13	31.0	13.6	y	-2.5	36	50.0	64.4	-21	31.0	0.5
10	y	0.7	248	43.1	17.9	13	44.6	13.4	y	-2.5	37	54.4	64.3	-21	30.5	0.4
11	y	0.7	249	1.0	17.9	13	58.0	13.3	y	-2.5	38	58.7	64.1	-21	30.1	0.5
12	y	0.6	249	18.9	17.9	14	11.3	13.1	y	-2.5	40	2.8	64.0	-21	29.6	0.4
13	y	0.6	249	36.8	17.9	14	24.4	13.0	y	-2.5	41	6.8	63.8	-21	29.2	0.4
Jul 14	y	0.6	249	54.8	18.0	14	37.4	12.9	y	-2.5	42	10.6	63.6	-21	28.8	0.4

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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 31.8	-1.6	21 37.0	-9.4	sr 1.2	198 44.4	28.5	2.9	19 43.4	11.1	-0.3	ss -4.5	140 47.2	39.6	10 7.8	-18.6
Jul 16	178 30.2	-1.4	21 27.6	-9.8	sr 1.1	199 12.9	22.7	2.9	19 54.5	11.4	-0.2	ss -4.5	141 26.8	41.3	9 49.2	-18.4
Jul 17	178 28.7	-1.3	21 17.8	-10.1	sr 0.9	199 35.6	16.9	2.9	20 5.9	11.6	-0.1	ss -4.5	142 8.2	43.1	9 30.8	-17.9
Jul 18	178 27.4	-1.2	21 7.7	-10.6	sr 0.7	199 52.5	11.1	2.9	20 17.5	11.6	0.0	ss -4.5	142 51.3	44.9	9 12.9	-17.6
Jul 19	178 26.3	-1.0	20 57.1	-10.8	sr 0.6	200 3.6	5.4	2.9	20 29.1	11.4	0.1	ss -4.5	143 36.2	46.8	8 55.3	-17.2
Jul 20	178 25.2	-0.9	20 46.3	-11.2	sr 0.4	200 9.0	-0.3	2.9	20 40.5	11.1	0.2	ss -4.5	144 23.0	48.7	8 38.1	-16.7
Jul 21	178 24.3	-0.7	20 35.1	-11.6	sr 0.3	200 8.7	-6.0	2.8	20 51.6	10.6	0.3	ss -4.5	145 11.7	50.7	8 21.4	-16.2
Jul 22	178 23.6	-0.6	20 23.5	-11.9	sr 0.2	200 2.7	-11.6	2.8	21 2.2	9.8	0.4	ss -4.5	146 2.4	52.7	8 5.2	-15.7
Jul 23	178 23.0	-0.4	20 11.6	-12.2	sr 0.0	199 51.1	-17.1	2.7	21 12.0	9.1	0.3	ss -4.5	146 55.1	54.8	7 49.5	-15.1
Jul 24	178 22.6	-0.3	19 59.4	-12.6	sr -0.1	199 34.1	-22.4	2.7	21 21.1	7.9	0.6	ss -4.4	147 49.9	56.9	7 34.4	-14.6
Jul 25	178 22.3	-0.1	19 46.8	-12.9	sr -0.2	199 11.6	-27.7	2.6	21 29.0	6.7	0.6	ss -4.4	148 46.8	59.0	7 19.8	-13.9
Jul 26	178 22.1	0.0	19 33.9	-13.2	sr -0.4	198 44.0	-32.8	2.5	21 35.7	5.2	0.8	ss -4.4	149 45.8	61.2	7 5.9	-13.3
Jul 27	178 22.1	0.2	19 20.7	-13.5	sr -0.5	198 11.2	-37.6	2.4	21 40.9	3.6	0.8	ss -4.4	150 47.0	63.4	6 52.6	-12.5
Jul 28	178 22.3	0.3	19 7.2	-13.9	sr -0.6	197 33.6	-42.3	2.3	21 44.5	1.7	0.9	ss -4.4	151 50.4	65.6	6 40.1	-11.9
Jul 29	178 22.6	0.5	18 53.3	-14.2	sr -0.7	196 51.3	-46.7	2.2	21 46.2	-0.3	1.0	ss -4.4	152 56.1	67.9	6 28.2	-11.0
Jul 30	178 23.0	0.6	18 39.1	-14.4	sr -0.8	196 4.6	-50.7	2.0	21 45.9	-2.5	1.1	ss -4.4	154 3.9	70.1	6 17.2	-10.3
Jul 31	178 23.6	0.8	18 24.7	-14.8	sr -0.9	195 13.9	-54.4	1.9	21 43.4	-4.8	1.2	ss -4.4	155 14.0	72.3	6 6.9	-9.4
Aug 1	178 24.4	0.9	18 9.9	-15.0	sr -1.0	194 19.5	-57.8	1.7	21 38.6	-7.2	1.2	ss -4.3	156 26.4	74.5	5 57.5	-8.6
Aug 2	178 25.3	1.1	17 54.9	-15.4	sr -1.0	193 21.7	-60.7	1.5	21 31.4	-9.8	1.3	ss -4.3	157 40.9	76.7	5 48.9	-7.6
Aug 3	178 26.4	1.2	17 39.5	-15.6	sr -1.1	192 21.0	-63.1	1.2	21 21.6	-12.4	1.3	ss -4.3	158 57.6	78.9	5 41.3	-6.6
Aug 4	178 27.6	1.4	17 23.9	-16.0	sr -1.2	191 17.9	-65.1	1.0	21 9.2	-15.1	1.4	ss -4.3	160 16.5	80.9	5 34.5	-5.8
Aug 5	178 29.0	1.5	17 7.9	-16.2	sr -1.3	190 12.7	-66.6	0.8	20 54.1	-17.7	1.3	ss -4.3	161 37.4	82.9	5 28.7	-4.8
Aug 6	178 30.5	1.6	16 51.7	-16.5	sr -1.4	189 6.1	-67.7	0.5	20 36.4	-20.4	1.4	ss -4.2	163 0.4	84.9	5 23.9	-3.9
Aug 7	178 32.1	1.8	16 35.2	-16.7	sr -1.4	187 58.4	-68.3	0.3	20 16.0	-23.0	1.3	ss -4.2	164 25.2	86.7	5 20.0	-2.9
Aug 8	178 33.9	1.9	16 18.5	-17.0	sr -1.5	186 50.1	-68.4	0.1	19 53.0	-25.4	1.2	ss -4.2	165 51.9	88.4	5 17.1	-1.9
Aug 9	178 35.8	2.1	16 1.5	-17.3	-1.6	185 41.7	-68.2	-0.1	19 27.6	-27.7	1.1	ss -4.1	167 20.2	89.9	5 15.2	-0.9
Aug 10	178 37.9	2.2	15 44.2	-17.5	-1.6	184 33.5	-67.6	-0.3	18 59.9	-30.1	1.2	ss -4.1	168 50.2	91.4	5 14.3	0.1
Aug 11	178 40.1	2.4	15 26.7	-17.8	-1.7	183 26.0	-66.6	-0.5	18 29.8	-32.1	1.0	ss -4.1	170 21.5	92.6	5 14.4	1.1
Aug 12	178 42.5	2.5	15 8.9	-18.0	-1.8	182 19.3	-65.4	-0.6	17 57.7	-34.0	1.0	-4.1	171 54.2	93.7	5 15.5	2.0
Aug 13	178 45.0	2.6	14 50.9	-18.3	-1.8	181 13.9	-64.0	-0.7	17 23.7	-35.8	0.9	-4.0	173 27.9	94.6	5 17.5	3.0
Aug 14	178 47.6	2.8	14 32.6	-18.5	-1.9	180 9.9	-62.4	-0.8	16 47.9	-37.4	0.8	-4.0	175 2.5	95.3	5 20.5	3.9
Aug 15	178 50.4	2.9	14 14.1	-18.7	-1.9	179 7.6	-60.6	-0.9	16 10.5	-38.8	0.7	-4.0	176 37.8	95.8	5 24.4	4.8
Aug 16	178 53.3	3.0	13 55.4	-18.9	-1.9	178 7.0	-58.7	-0.9	15 31.7	-40.2	0.7	-4.0	178 13.5	96.0	5 29.2	5.7
Aug 17	178 56.3	3.2	13 36.5	-19.1	-1.8	177 8.2	-56.8	-1.0	14 51.5	-41.2	0.5	-4.0	179 49.6	96.1	5 34.9	6.4
Aug 18	178 59.5	3.3	13 17.4	-19.4	-1.7	176 11.4	-54.8	-1.0	14 10.3	-42.3	0.5	-4.0	181 25.7	95.9	5 41.3	7.2
Aug 19	179 2.8	3.4	12 58.0	-19.6	-1.6	175 16.6	-52.8	-1.0	13 28.0	-43.1	0.4	-4.0	183 1.6	95.5	5 48.5	7.8
Aug 20	179 6.3	3.6	12 38.4	-19.7	-1.5	174 23.8	-50.8	-1.0	12 44.9	-43.9	0.4	-4.0	184 37.0	94.9	5 56.3	8.5
Aug 21	179 9.8	3.7	12 18.7	-20.0	-1.4	173 33.0	-48.8	-1.0	12 1.0	-44.4	0.3	-4.0	186 11.9	94.0	6 4.8	9.0
Aug 22	179 13.5	3.8	11 58.7	-20.1	-1.3	172 44.1	-46.9	-1.0	11 16.6	-45.0	0.3	sr -4.0	187 45.9	93.0	6 13.8	9.5
Aug 23	179 17.3	3.9	11 38.6	-20.3	-1.2	171 57.2	-45.0	-1.0	10 31.6	-45.4	0.2	sr -4.1	189 18.9	91.7	6 23.3	9.9
Aug 24	179 21.2	4.0	11 18.3	-20.5	ss -1.1	171 12.2	-43.1	-0.9	9 46.2	-45.7	0.2	sr -4.1	190 50.6	90.3	6 33.2	10.3
Aug 25	179 25.3	4.1	10 57.8	-20.7	ss -1.0	170 29.1	-41.3	-0.9	9 0.5	-46.0	0.1	sr -4.1	192 20.9	88.7	6 43.5	10.6
Aug 26	179 29.4	4.2	10 37.1	-20.8	ss -0.9	169 47.7	-39.6	-0.9	8 14.5	-46.1	0.1	sr -4.2	193 49.5	86.9	6 54.1	10.7
Aug 27	179 33.6	4.3	10 16.3	-21.0	ss -0.9	169 8.2	-37.9	-0.8	7 28.4	-46.2	0.0	sr -4.2	195 16.4	85.0	7 4.8	10.9
Aug 28	179 38.0	4.4	9 55.3	-21.2	ss -0.8	168 30.2	-36.3	-0.8	6 42.2	-46.2	0.0	sr -4.2	196 41.4	82.9	7 15.7	11.0
Aug 29	179 42.4	4.5	9 34.1	-21.3	ss -0.7	167 54.0	-34.7	-0.8	5 56.0	-46.2	0.0	sr -4.2	198 4.3	80.8	7 26.7	11.0
Aug 30	179 46.9	4.6	9 12.8	-21.4	ss -0.7	167 19.2	-33.2	-0.8	5 9.8	-46.1	-0.1	sr -4.3	199 25.1	78.5	7 37.7	10.9
Aug 31	179 51.5	4.7	8 51.4	-21.6	ss -0.6	166 46.0	-31.8	-0.7	4 23.7	-46.0	-0.1	sr -4.3	200 43.6	76.2	7 48.6	10.9
Sep 1	179 56.2	4.8	8 29.8	-21.7	ss -0.5	166 14.2	-30.4	-0.7	3 37.7	-45.8	-0.1	sr -4.3	201 59.8	73.9	7 59.5	10.6
Sep 2	180 1.0	4.8	8 8.1	-21.9	ss -0.5	165 43.8	-29.1	-0.7	2 51.9	-45.6	-0.1	sr -4.3	203 13.7	71.5	8 10.1	10.5
Sep 3	180 5.8	4.9	7 46.2	-22.0	ss -0.5	165 14.7	-27.8	-0.6	2 6.3	-45.4	-0.1	sr -4.4	204 25.2	69.0	8 20.6	10.1
Sep 4	180 10.7	4.9	7 24.2	-22.1	ss -0.4	164 46.9	-26.6	-0.6	1 20.9	-45.0	-0.2	sr -4.4	205 34.2	66.6	8 30.7	9.9
Sep 5	180 15.6	5.0	7 2.1	-22.3	ss -0.4	164 20.3	-25.4	-0.6	0 35.9	-44.7	-0.2	sr -4.4	206 40.8	64.2	8 40.6	9.6
Sep 6	180 20.6	5.1	6 39.8	-22.3	ss -0.3	163 54.9	-24.3	-0.6	-0 8.8	-44.4	-0.1	sr -4.4	207 44.9	61.7	8 50.2	9.2
Sep 7	180 25.7	5.1	6 17.5	-22.5	ss -0.3	163 30.6	-23.1	-0.6	-0 53.2	-43.9	-0.3	sr -4.4	208 46.7	59.3	8 59.4	8.7
Sep 8	180 30.8	5.1	5 55.0	-22.5	ss -0.3	163 7.5	-22.1	-0.5	-1 37.1	-43.5	-0.2	sr -4.5	209 46.0	57.0	9 8.1	8.4
Sep 9	180 35.9	5.2	5 32.5	-22.7	ss -0.2	162 45.4	-21.0	-0.5	-2 20.6	-43.1	-0.2	sr -4.5	210 43.0	54.7	9 16.5	7.9
Sep 10	180 41.1	5.2	5 9.8	-22.7	ss -0.2	162 24.4	-20.0	-0.5	-3 3.7	-42.6	-0.3	sr -4.5	211 37.7	52.4	9 24.4	7.5
Sep 11	180 46.3	5.3	4 47.1	-22.8	ss -0.2	162 4.4	-19.0	-0.5	-3 46.3	-42.0	-0.3	sr -4.5	212 30.0	50.2	9 31.9	6.9
Sep 12	180 51.6	5.3	4 24.3	-22.9	ss -0.2	161 45.4	-18.0	-0.5	-4 28.3	-41.5	-0.3	sr -4.5	213 20.2	48.0	9 38.8	6.5
Sep 13	180 56.9	5.3	4 1.4	-22.9	ss -0.1	161 27.4	-17.0	-0.5	-5 9.8	-40.9	-0.3	sr -4.5	214 8.2	45.9	9 45.3	5.9
Sep 14	181 2.2	5.3	3 38.5	-23.1	ss -0.1	161 10.4	-16.0	-0.5	-5 50.7	-40.3	-0.3	sr -4.5	214 54.1	43.8	9 51.2	5.4
Sep 15	181 7.5	5.3	3 15.4	-23.1	ss -0.1	160 54.4	-15.0	-0.5	-6 31.0	-39.6	-0.4	sr -4.5	215 37.9	41.8	9 56.6	4.8
Sep 16	181 12.8	5.3	2 52.3	-23.1	ss -0.1	160 39.3	-14.0	-0.5	-7 10.6	-39.0	-0.3	sr -4.5	216 19.7	39.9	10 1.4	4.3
Sep 17	181 18.2	5.4	2 29.2	-23.2	ss -0.1	160 25.3	-13.0	-0.5	-7 49.6	-38.3	-0.4	sr -4.5	216 59.5	38.0	10 5.7	3.8

2007

Sun and Planets

Date	Mars					Jupiter					Saturn													
	vis	GHA	d		Dec	vis	GHA	d		Dec	vis	GHA	d		Dec									
	mag	o	'	"	o	'	"	'	"	o	'	"	'	"	o	'	"							
Jul 15	y	0.6	250	12.7	18.0	14	50.3	12.6	y	-2.5	43	14.2	63.4	-21	28.4	0.4	y	1.1	145	52.4	52.4	14	45.4	-2.3
16	y	0.6	250	30.7	18.0	15	2.9	12.6	y	-2.5	44	17.7	63.3	-21	28.0	0.3	y	1.1	146	44.8	52.4	14	43.1	-2.3
17	y	0.6	250	48.7	18.0	15	15.5	12.3	y	-2.5	45	20.9	63.1	-21	27.7	0.4	y	1.1	147	37.1	52.3	14	40.8	-2.3
18	y	0.6	251	6.8	18.1	15	27.8	12.3	y	-2.5	46	24.0	62.9	-21	27.3	0.3	y	1.1	148	29.5	52.3	14	38.5	-2.4
19	y	0.6	251	24.8	18.1	15	40.1	12.0	y	-2.5	47	26.9	62.7	-21	27.0	0.3	y	1.1	149	21.8	52.3	14	36.1	-2.3
20	y	0.6	251	42.9	18.1	15	52.1	11.9	y	-2.4	48	29.7	62.6	-21	26.7	0.2	y	1.1	150	14.0	52.2	14	33.8	-2.4
21	y	0.6	252	1.0	18.1	16	4.0	11.8	y	-2.4	49	32.2	62.4	-21	26.5	0.2	y	1.1	151	6.3	52.2	14	31.4	-2.3
22	y	0.6	252	19.2	18.2	16	15.8	11.6	y	-2.4	50	34.6	62.2	-21	26.3	0.2	y	1.1	151	58.5	52.2	14	29.1	-2.4
23	y	0.6	252	37.3	18.2	16	27.4	11.4	y	-2.4	51	36.8	62.0	-21	26.1	0.2	y	1.1	152	50.6	52.1	14	26.7	-2.4
24	y	0.6	252	55.5	18.2	16	38.8	11.2	y	-2.4	52	38.8	61.8	-21	25.9	0.2	y	1.1	153	42.8	52.1	14	24.3	-2.4
25	y	0.6	253	13.7	18.3	16	50.0	11.1	y	-2.4	53	40.6	61.6	-21	25.7	0.1	y	1.1	154	34.9	52.1	14	21.9	-2.4
26	y	0.6	253	32.0	18.3	17	1.1	11.0	y	-2.4	54	42.2	61.4	-21	25.6	0.1	y	1.1	155	27.0	52.1	14	19.5	-2.5
27	y	0.6	253	50.3	18.3	17	12.1	10.7	y	-2.4	55	43.6	61.2	-21	25.5	0.1	y	1.1	156	19.1	52.0	14	17.0	-2.4
28	y	0.6	254	8.6	18.4	17	22.8	10.7	y	-2.4	56	44.8	61.0	-21	25.4	0.0	y	1.1	157	11.1	52.0	14	14.6	-2.5
29	y	0.5	254	27.0	18.4	17	33.5	10.4	y	-2.4	57	45.9	60.8	-21	25.4	0.1	y	1.1	158	3.1	52.0	14	12.1	-2.4
30	y	0.5	254	45.4	18.5	17	43.9	10.3	y	-2.4	58	46.7	60.7	-21	25.3	0.0	y	1.1	158	55.1	52.0	14	9.7	-2.5
Jul 31	y	0.5	255	3.9	18.5	17	54.2	10.1	y	-2.4	59	47.4	60.5	-21	25.3	-0.1	y	1.1	159	47.1	52.0	14	7.2	-2.5
Aug 1	y	0.5	255	22.4	18.6	18	4.3	9.9	y	-2.4	60	47.8	60.3	-21	25.4	0.0	y	1.1	160	39.1	51.9	14	4.7	-2.4
2	y	0.5	255	40.9	18.6	18	14.2	9.8	y	-2.4	61	48.1	60.1	-21	25.4	-0.1	y	1.1	161	31.0	51.9	14	2.3	-2.5
3	y	0.5	255	59.5	18.7	18	24.0	9.6	y	-2.4	62	48.2	59.9	-21	25.5	-0.1	y	1.1	162	22.9	51.9	13	59.8	-2.5
4	y	0.5	256	18.2	18.7	18	33.6	9.4	y	-2.4	63	48.0	59.7	-21	25.6	-0.1	y	1.1	163	14.8	51.9	13	57.3	-2.6
5	y	0.5	256	36.9	18.8	18	43.0	9.3	y	-2.4	64	47.7	59.5	-21	25.7	-0.2	y	1.1	164	6.7	51.9	13	54.7	-2.5
6	y	0.5	256	55.7	18.8	18	52.3	9.1	y	-2.3	65	47.2	59.3	-21	25.9	-0.2	y	1.1	164	58.6	51.9	13	52.2	-2.5
7	y	0.5	257	14.5	18.9	19	1.4	8.9	y	-2.3	66	46.5	59.1	-21	26.1	-0.2	y	1.1	165	50.4	51.8	13	49.7	-2.5
8	y	0.5	257	33.4	19.0	19	10.3	8.7	y	-2.3	67	45.6	58.9	-21	26.3	-0.2	y	1.1	166	42.3	51.8	13	47.2	-2.6
9	y	0.5	257	52.4	19.1	19	19.0	8.6	y	-2.3	68	44.5	58.7	-21	26.5	-0.3	y	1.1	167	34.1	51.8	13	44.6	-2.5
10	y	0.5	258	11.5	19.1	19	27.6	8.4	y	-2.3	69	43.2	58.5	-21	26.8	-0.3	y	1.0	168	25.9	51.8	13	42.1	-2.6
11	y	0.5	258	30.6	19.2	19	36.0	8.3	y	-2.3	70	41.7	58.3	-21	27.1	-0.3	y	1.0	169	17.7	51.8	13	39.5	-2.5
12	y	0.4	258	49.8	19.3	19	44.3	8.0	y	-2.3	71	40.0	58.1	-21	27.4	-0.3	y	1.0	170	9.5	51.8	13	37.0	-2.6
13	y	0.4	259	9.2	19.4	19	52.3	7.9	y	-2.3	72	38.1	57.9	-21	27.7	-0.4	y	1.0	171	1.3	51.8	13	34.4	-2.6
14	y	0.4	259	28.6	19.5	20	0.2	7.7	y	-2.3	73	36.0	57.7	-21	28.1	-0.4	y	1.0	171	53.1	51.8	13	31.8	-2.5
15	y	0.4	259	48.1	19.6	20	7.9	7.6	y	-2.3	74	33.7	57.5	-21	28.5	-0.4	y	1.0	172	44.9	51.8	13	29.3	-2.6
16	y	0.4	260	7.7	19.7	20	15.5	7.4	y	-2.3	75	31.2	57.3	-21	28.9	-0.5	y	1.0	173	36.6	51.8	13	26.7	-2.6
17	y	0.4	260	27.4	19.8	20	22.9	7.2	y	-2.3	76	28.5	57.1	-21	29.4	-0.5	y	1.0	174	28.4	51.8	13	24.1	-2.6
18	y	0.4	260	47.3	20.0	20	30.1	7.0	y	-2.3	77	25.7	56.9	-21	29.9	-0.5	y	1.0	175	20.2	51.8	13	21.5	-2.6
19	y	0.4	261	7.2	20.1	20	37.1	6.9	y	-2.3	78	22.6	56.7	-21	30.4	-0.5	y	1.0	176	11.9	51.8	13	18.9	-2.6
20	y	0.4	261	27.3	20.2	20	44.0	6.7	y	-2.3	79	19.4	56.6	-21	30.9	-0.5	y	1.0	177	3.7	51.8	13	16.3	-2.6
21	y	0.4	261	47.5	20.3	20	50.7	6.6	y	-2.2	80	15.9	56.4	-21	31.4	-0.6	y	1.0	177	55.4	51.8	13	13.7	-2.5
22	y	0.4	262	7.8	20.4	20	57.3	6.4	y	-2.2	81	12.3	56.2	-21	32.0	-0.6	y	1.0	178	47.2	51.8	13	11.2	-2.6
23	y	0.4	262	28.2	20.6	21	3.7	6.2	y	-2.2	82	8.5	56.0	-21	32.6	-0.6	y	1.0	179	39.0	51.8	13	8.6	-2.6
24	y	0.4	262	48.8	20.7	21	9.9	6.0	y	-2.2	83	4.4	55.8	-21	33.2	-0.7	y	1.0	180	30.7	51.8	13	6.0	-2.6
25	y	0.3	263	9.5	20.9	21	15.9	5.9	y	-2.2	84	0.2	55.6	-21	33.9	-0.6	y	1.0	181	22.5	51.8	13	3.4	-2.6
26	y	0.3	263	30.4	21.0	21	21.8	5.8	y	-2.2	84	55.9	55.4	-21	34.5	-0.7	y	1.0	182	14.3	51.8	13	0.8	-2.6
27	y	0.3	263	51.4	21.1	21	27.6	5.5	y	-2.2	85	51.3	55.3	-21	35.2	-0.7	y	1.0	183	6.1	51.8	12	58.2	-2.6
28	y	0.3	264	12.5	21.3	21	33.1	5.5	y	-2.2	86	46.5	55.1	-21	35.9	-0.8	y	1.0	183	57.9	51.8	12	55.6	-2.6
29	y	0.3	264	33.8	21.5	21	38.6	5.2	y	-2.2	87	41.6	54.9	-21	36.7	-0.7	y	1.0	184	49.7	51.8	12	53.0	-2.6
30	y	0.3	264	55.3	21.6	21	43.8	5.1	y	-2.2	88	36.5	54.7	-21	37.4	-0.8	y	1.0	185	41.5	51.8	12	50.4	-2.6
Aug 31	y	0.3	265	16.9	21.8	21	48.9	5.0	y	-2.2	89	31.2	54.5	-21	38.2	-0.8	y	1.0	186	33.3	51.8	12	47.8	-2.6
Sep 1	y	0.3	265	38.7	22.0	21	53.9	4.8	y	-2.2	90	25.7	54.4	-21	39.0	-0.8	y	1.0	187	25.1	51.8	12	45.2	-2.6
2	y	0.3	266	0.6	22.1	21	58.7	4.7	y	-2.2	91	20.1	54.2	-21	39.8	-0.8	y	1.0	188	17.0	51.8	12	42.6	-2.6
3	y	0.3	266	22.8	22.3	22	3.4	4.5	y	-2.2	92	14.3	54.0	-21	40.6	-0.9	y	1.0	189	8.8	51.9	12	40.0	-2.6
4	y	0.3	266	45.1	22.5	22	7.9	4.3	y	-2.2	93	8.3	53.8	-21	41.5	-0.9	y	1.1	190	0.7	51.9	12	37.4	-2.5
5	y	0.2	267	7.6	22.7	22	12.2	4.2	y	-2.1	94	2.1	53.7	-21	42.4	-0.9	y	1.1	190	52.5	51.9	12	34.9	-2.6
6	y	0.2	267	30.3	22.9	22	16.4	4.1	y	-2.1	94	55.7	53.5	-21	43.3	-0.9	y	1.1	191	44.4	51.9	12	32.3	-2.6
7	y	0.2	267	53.2	23.1	22	20.5	3.9	y	-2.1	95	49.2	53.3	-21	44.2	-0.9	y	1.1	192	36.3	51.9	12	29.7	-2.5
8	y	0.2	268	16.3	23.4	22	24.4	3.8	y	-2.1	96	42.5	53.1	-21	45.1	-0.9	y	1.1	193	28.3	51.9	12	27.2	-2.6
9	y	0.2	268	39.7	23.6	22	28.2	3.7	y	-2.1	97	35.7	53.0	-21	46.0	-1.0	y	1.1	194	20.2	52.0	12	24.6	-2.6
10	y	0.2	269	3.3	23.8	22	31.9	3.5	y	-2.1	98	28.6	52.8	-21	47.0	-1.0	y	1.1	195	12.2	52.0	12	22.0	-2.5
11	y	0.2	269	27.1	24.1	22	35.4	3.4	y	-2.1	99	21.5	52.6	-21	48.0	-1.0	y	1.1	196	4.2	52.0	12	19.5	-2.6
12	y	0.2	269	51.2	24.3	22	38.8	3.3	y	-2.1	100	14.1	52.5	-21	49.0	-1.0	y	1.1	196	56.2	52.0	12	16.9	-2.5
13	y	0.2	270																					

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Sun and Planets

Date	SUN					Mercury							Venus										
	GHA O	d	Dec O	d	d'	vis	GHA O	d	dd	Dec O	d	dd	vis	GHA O	d	Dec O	d						
Sep 18	181	23.5	5.4	2	6.0	-23.2	ss 0.0	160	12.3	-12.0	-0.5	-8	27.9	-37.5	-0.4	sr -4.5	217	37.5	36.2	10	9.5	3.2	
	19	181	28.9	5.3	1	42.8	-23.3	ss 0.0	160	0.4	-10.9	-0.5	-9	5.4	-36.7	-0.4	sr -4.6	218	13.7	34.4	10	12.7	2.6
	20	181	34.2	5.3	1	19.5	-23.3	ss 0.0	159	49.5	-9.7	-0.6	-9	42.1	-36.0	-0.4	sr -4.6	218	48.1	32.7	10	15.3	2.0
	21	181	39.5	5.3	0	56.2	-23.3	ss 0.0	159	39.8	-8.5	-0.6	-10	18.1	-35.0	-0.5	sr -4.6	219	20.9	31.1	10	17.3	1.4
	22	181	44.9	5.3	0	32.9	-23.3	ss 0.0	159	31.2	-7.3	-0.6	-10	53.1	-34.2	-0.4	sr -4.6	219	52.0	29.5	10	18.7	0.9
23	181	50.2	5.3	0	9.6	-23.4	ss 0.0	159	23.9	-5.9	-0.7	-11	27.3	-33.2	-0.5	sr -4.6	220	21.5	28.0	10	19.6	0.2	
24	181	55.5	5.3	-0	13.8	-23.3	ss 0.0	159	18.0	-4.5	-0.7	-12	0.5	-32.2	-0.5	sr -4.6	220	49.5	26.6	10	19.8	-0.3	
25	182	0.7	5.2	-0	37.1	-23.4	ss 0.0	159	13.5	-3.0	-0.8	-12	32.7	-31.2	-0.5	sr -4.6	221	16.1	25.2	10	19.5	-1.0	
26	182	5.9	5.2	-1	0.5	-23.3	ss 0.0	159	10.5	-1.3	-0.8	-13	3.9	-30.0	-0.6	sr -4.6	221	41.3	23.8	10	18.5	-1.5	
27	182	11.1	5.1	-1	23.8	-23.4	ss 0.1	159	9.2	0.5	-0.9	-13	33.9	-28.9	-0.6	sr -4.6	222	5.1	22.5	10	17.0	-2.1	
28	182	16.2	5.1	-1	47.2	-23.3	ss 0.1	159	9.6	2.4	-1.0	-14	2.8	-27.6	-0.6	sr -4.6	222	27.6	21.3	10	14.9	-2.8	
29	182	21.3	5.0	-2	10.5	-23.3	ss 0.1	159	12.0	4.5	-1.1	-14	30.4	-26.3	-0.6	sr -4.5	222	48.9	20.1	10	12.1	-3.3	
Sep 30	182	26.3	4.9	-2	33.8	-23.3	ss 0.1	159	16.6	6.9	-1.2	-14	56.7	-24.9	-0.7	sr -4.5	223	9.0	18.9	10	8.8	-3.9	
Oct 1	182	31.2	4.9	-2	57.1	-23.3	ss 0.1	159	23.5	9.4	-1.3	-15	21.6	-23.4	-0.8	sr -4.5	223	27.9	17.9	10	4.9	-4.6	
	2	182	36.1	4.8	-3	20.4	-23.3	ss 0.1	159	32.9	12.3	-1.4	-15	45.0	-21.7	-0.8	sr -4.5	223	45.8	16.8	10	0.3	-5.1
3	182	40.9	4.7	-3	43.7	-23.2	ss 0.1	159	45.2	15.4	-1.6	-16	6.7	-20.0	-0.9	sr -4.5	224	2.6	15.8	9	55.2	-5.7	
4	182	45.6	4.6	-4	6.9	-23.1	ss 0.2	160	0.5	18.8	-1.7	-16	26.7	-18.2	-0.9	sr -4.5	224	18.4	14.9	9	49.5	-6.2	
5	182	50.2	4.5	-4	30.0	-23.1	ss 0.2	160	19.3	22.5	-1.9	-16	44.9	-16.1	-1.0	sr -4.5	224	33.3	14.0	9	43.3	-6.9	
6	182	54.7	4.4	-4	53.1	-23.0	ss 0.2	160	41.9	26.7	-2.1	-17	1.0	-13.9	-1.1	sr -4.5	224	47.3	13.1	9	36.4	-7.4	
7	182	59.2	4.3	-5	16.1	-23.0	ss 0.3	161	8.5	31.2	-2.3	-17	14.9	-11.6	-1.2	sr -4.5	225	0.4	12.3	9	29.0	-8.0	
8	183	3.5	4.2	-5	39.1	-22.9	ss 0.3	161	39.8	36.2	-2.5	-17	26.5	-9.0	-1.3	sr -4.5	225	12.7	11.5	9	21.0	-8.5	
9	183	7.7	4.1	-6	2.0	-22.8	ss 0.4	162	15.9	41.6	-2.7	-17	35.5	-6.2	-1.4	sr -4.5	225	24.2	10.8	9	12.5	-9.0	
10	183	11.8	4.0	-6	24.8	-22.8	ss 0.5	162	57.6	47.5	-2.9	-17	41.7	-3.3	-1.5	sr -4.5	225	34.9	10.1	9	3.5	-9.7	
11	183	15.8	3.9	-6	47.6	-22.6	ss 0.6	163	45.0	53.8	-3.2	-17	45.0	0.1	-1.7	sr -4.5	225	45.0	9.4	8	53.8	-10.1	
12	183	19.7	3.8	-7	10.2	-22.6	ss 0.7	164	38.9	60.6	-3.4	-17	44.9	3.5	-1.7	sr -4.5	225	54.4	8.7	8	43.7	-10.7	
13	183	23.4	3.6	-7	32.8	-22.4	ss 0.9	165	39.5	67.8	-3.6	-17	41.4	7.4	-2.0	sr -4.5	226	3.1	8.1	8	33.0	-11.2	
14	183	27.1	3.5	-7	55.2	-22.4	ss 1.0	166	47.3	75.3	-3.8	-17	34.0	11.4	-2.0	sr -4.5	226	11.2	7.5	8	21.8	-11.7	
15	183	30.6	3.4	-8	17.6	-22.2	ss 1.2	168	2.6	83.0	-3.8	-17	22.6	15.7	-2.1	sr -4.5	226	18.8	7.0	8	10.1	-12.2	
16	183	33.9	3.2	-8	39.8	-22.1	ss 1.4	169	25.6	90.7	-3.9	-17	6.9	20.1	-2.2	sr -4.5	226	25.8	6.4	7	57.9	-12.7	
17	183	37.1	3.1	-9	1.9	-21.9	ss 1.5	170	56.3	98.3	-3.8	-16	46.8	24.7	-2.3	sr -4.5	226	32.2	5.9	7	45.2	-13.2	
18	183	40.2	2.9	-9	23.8	-21.9	ss 1.7	172	34.6	105.5	-3.6	-16	22.1	29.2	-2.3	sr -4.5	226	38.2	5.5	7	32.0	-13.6	
19	183	43.1	2.8	-9	45.7	-21.6	ss 1.9	174	20.1	111.9	-3.2	-15	52.9	33.5	-2.1	sr -4.4	226	43.6	5.0	7	18.4	-14.1	
20	183	45.9	2.6	-10	7.3	-21.6	ss 2.0	176	12.0	117.3	-2.7	-15	19.4	37.5	-2.0	sr -4.4	226	48.6	4.5	7	4.3	-14.6	
21	183	48.6	2.5	-10	28.9	-21.3	2.2	178	9.3	121.4	-2.0	-14	41.9	40.9	-1.7	sr -4.4	226	53.1	4.1	6	49.7	-15.1	
22	183	51.0	2.3	-10	50.2	-21.3	2.4	180	10.7	123.8	-1.2	-14	1.0	43.5	-1.3	sr -4.4	226	57.3	3.7	6	34.6	-15.5	
23	183	53.3	2.1	-11	11.5	-21.0	2.6	182	14.6	124.4	-0.3	-13	17.5	45.2	-0.9	sr -4.4	227	1.0	3.3	6	19.1	-15.9	
24	183	55.5	2.0	-11	32.5	-20.9	2.7	184	19.0	123.0	0.7	-12	32.3	45.6	-0.2	sr -4.4	227	4.3	2.9	6	3.2	-16.3	
25	183	57.4	1.8	-11	53.4	-20.7	2.7	186	22.0	119.6	1.7	-11	46.7	44.8	0.4	sr -4.4	227	7.2	2.6	5	46.9	-16.8	
26	183	59.2	1.6	-12	14.1	-20.5	2.4	188	21.6	114.3	2.6	-11	1.9	42.9	1.0	sr -4.4	227	9.8	2.2	5	30.1	-17.2	
27	184	0.9	1.4	-12	34.6	-20.3	2.2	190	15.9	107.4	3.5	-10	19.0	39.6	1.6	sr -4.4	227	12.0	1.9	5	12.9	-17.5	
28	184	2.3	1.2	-12	54.9	-20.1	sr 1.9	192	3.3	99.1	4.2	-9	39.4	35.6	2.0	sr -4.4	227	13.9	1.6	4	55.4	-18.0	
29	184	3.5	1.0	-13	15.0	-19.9	sr 1.6	193	42.3	89.8	4.7	-9	3.8	30.6	2.5	sr -4.4	227	15.5	1.2	4	37.4	-18.3	
30	184	4.6	0.8	-13	34.9	-19.7	sr 1.4	195	12.1	79.8	5.0	-8	33.2	25.0	2.8	sr -4.4	227	16.7	0.9	4	19.1	-18.7	
Oct 31	184	5.4	0.6	-13	54.6	-19.4	sr 1.1	196	31.9	69.6	5.1	-8	8.2	19.3	2.9	sr -4.4	227	17.7	0.6	4	0.4	-19.1	
Nov 1	184	6.1	0.4	-14	14.0	-19.3	sr 0.8	197	41.5	59.5	5.1	-7	48.9	13.4	3.0	sr -4.4	227	18.3	0.4	3	41.3	-19.3	
2	184	6.5	0.2	-14	33.3	-19.0	sr 0.5	198	41.0	49.6	4.9	-7	35.5	7.5	2.9	sr -4.4	227	18.7	0.1	3	22.0	-19.8	
3	184	6.7	0.0	-14	52.3	-18.8	sr 0.3	199	30.5	40.2	4.7	-7	28.0	2.0	2.8	sr -4.4	227	18.8	-0.2	3	2.2	-20.0	
4	184	6.8	-0.2	-15	11.1	-18.5	sr 0.1	200	10.7	31.5	4.4	-7	26.0	-3.2	2.6	sr -4.4	227	18.6	-0.4	2	42.2	-20.3	
5	184	6.6	-0.4	-15	29.6	-18.3	sr -0.1	200	42.2	23.4	4.0	-7	29.2	-8.0	2.4	sr -4.3	227	18.2	-0.7	2	21.9	-20.7	
6	184	6.2	-0.6	-15	47.9	-18.0	sr -0.3	201	5.6	16.1	3.6	-7	37.2	-12.4	2.2	sr -4.3	227	17.5	-0.9	2	1.2	-20.9	
7	184	5.6	-0.8	-16	5.9	-17.7	sr -0.4	201	21.7	9.6	3.3	-7	49.6	-16.2	1.9	sr -4.3	227	16.6	-1.1	1	40.3	-21.2	
8	184	4.8	-1.0	-16	23.6	-17.5	sr -0.5	201	31.3	3.8	2.9	-8	5.8	-19.6	1.7	sr -4.3	227	15.5	-1.4	1	19.1	-21.4	
9	184	3.8	-1.2	-16	41.1	-17.1	sr -0.6	201	35.1	-1.4	2.6	-8	25.4	-22.5	1.5	sr -4.3	227	14.1	-1.6	0	57.7	-21.7	
10	184	2.6	-1.4	-16	58.2	-16.9	sr -0.6	201	33.7	-5.9	2.3	-8	47.9	-25.0	1.3	sr -4.3	227	12.5	-1.8	0	36.0	-21.9	
11	184	1.1	-1.7	-17	15.1	-16.6	sr -0.6	201	27.9	-9.8	2.0	-9	12.9	-27.0	1.0	sr -4.3	227	10.6	-2.1	0	14.1	-22.1	
12	183	59.5	-1.9	-17	31.7	-16.3	sr -0.7	201	18.1	-13.2	1.7	-9	39.9	-28.8	0.9	sr -4.3	227	8.6	-2.3	-0	8.0	-22.4	
13	183	57.6	-2.1	-17	48.0	-16.0	sr -0.7	201	4.8	-16.2	1.5	-10	8.7	-30.2	0.7	sr -4.3	227	6.3	-2.5	-0	30.4	-22.5	
14	183	55.5	-2.3	-18	4.0	-15.7	sr -0.7	200	48.6	-18.8	1.3	-10	38.9	-31.2	0.5	sr -4.3	227	3.8	-2.7	-0	52.9	-22.7	
15	183	53.2	-2.5	-18	19.7	-15.3	sr -0.7	200	29.8	-21.1	1.1	-11	10.1	-32.1	0.4	sr -4.3	227	1.1	-2.9	-1	15.6	-22.9	
16	183	50.7	-2.7	-18	35.0	-15.1	sr -0.7	200	8.8	-23.0	1.0	-11	42.2	-32.7	0.3	sr -4.3	226	58.2	-3.1	-1	38.5	-23.0	
17	183	48.0	-2.9	-																			

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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	'	''	'	''	o	'	''	'	''	o	'	''							
Sep 18	y	0.1	272	20.9	25.9	22	56.5	2.6	y	-2.1	105	26.6	51.5	-21	55.2	-1.1	y	1.1	202	8.8	52.2	12	1.9	-2.5
19	y	0.1	272	46.8	26.2	22	59.1	2.4	y	-2.1	106	18.1	51.4	-21	56.3	-1.1	y	1.1	203	1.0	52.2	11	59.4	-2.5
20	y	0.1	273	13.0	26.5	23	1.5	2.4	y	-2.1	107	9.5	51.2	-21	57.4	-1.1	y	1.1	203	53.2	52.3	11	56.9	-2.5
21	y	0.1	273	39.5	26.8	23	3.9	2.2	y	-2.1	108	0.7	51.1	-21	58.5	-1.1	y	1.1	204	45.5	52.3	11	54.4	-2.4
22	y	0.0	274	6.2	27.1	23	6.1	2.1	y	-2.0	108	51.8	50.9	-21	59.6	-1.1	y	1.1	205	37.7	52.3	11	52.0	-2.4
23	y	0.0	274	33.3	27.4	23	8.2	2.1	y	-2.0	109	42.7	50.8	-22	0.7	-1.1	y	1.1	206	30.1	52.4	11	49.6	-2.5
24	y	0.0	275	0.8	27.7	23	10.3	1.9	y	-2.0	110	33.5	50.6	-22	1.8	-1.2	y	1.1	207	22.4	52.4	11	47.1	-2.4
25	y	0.0	275	28.5	28.1	23	12.2	1.9	y	-2.0	111	24.2	50.5	-22	3.0	-1.1	y	1.1	208	14.8	52.4	11	44.7	-2.4
26	y	0.0	275	56.6	28.4	23	14.1	1.8	y	-2.0	112	14.7	50.4	-22	4.1	-1.2	y	1.1	209	7.3	52.5	11	42.3	-2.4
27	y	0.0	276	25.0	28.7	23	15.9	1.7	y	-2.0	113	5.0	50.2	-22	5.3	-1.1	y	1.1	209	59.7	52.5	11	39.9	-2.3
28	y	0.0	276	53.7	29.1	23	17.6	1.6	y	-2.0	113	55.3	50.1	-22	6.4	-1.2	y	1.1	210	52.2	52.5	11	37.6	-2.4
29	y	-0.1	277	22.8	29.4	23	19.2	1.5	y	-2.0	114	45.4	50.0	-22	7.6	-1.2	y	1.1	211	44.8	52.6	11	35.2	-2.3
Sep 30	y	-0.1	277	52.2	29.8	23	20.7	1.5	y	-2.0	115	35.3	49.8	-22	8.8	-1.1	y	1.1	212	37.4	52.6	11	32.9	-2.4
Oct 1	y	-0.1	278	22.0	30.2	23	22.2	1.4	y	-2.0	116	25.1	49.7	-22	9.9	-1.2	y	1.1	213	30.0	52.7	11	30.5	-2.3
2	y	-0.1	278	52.2	30.6	23	23.6	1.4	y	-2.0	117	14.8	49.6	-22	11.1	-1.2	y	1.1	214	22.7	52.7	11	28.2	-2.3
3	y	-0.1	279	22.8	31.0	23	25.0	1.3	y	-2.0	118	4.4	49.4	-22	12.3	-1.2	y	1.1	215	15.4	52.8	11	25.9	-2.3
4	y	-0.1	279	53.8	31.4	23	26.3	1.2	y	-2.0	118	53.8	49.3	-22	13.5	-1.2	y	1.1	216	8.1	52.8	11	23.6	-2.2
5	y	-0.1	280	25.2	31.8	23	27.5	1.2	y	-2.0	119	43.1	49.2	-22	14.7	-1.2	y	1.1	217	0.9	52.8	11	21.4	-2.3
6	y	-0.2	280	57.0	32.2	23	28.7	1.1	y	-2.0	120	32.3	49.0	-22	15.9	-1.1	y	1.1	217	53.8	52.9	11	19.1	-2.2
7	y	-0.2	281	29.3	32.7	23	29.8	1.1	y	-2.0	121	21.3	48.9	-22	17.0	-1.2	y	1.1	218	46.7	52.9	11	16.9	-2.2
8	y	-0.2	282	1.9	33.1	23	30.9	1.1	y	-2.0	122	10.2	48.8	-22	18.2	-1.2	y	1.1	219	39.6	53.0	11	14.7	-2.2
9	y	-0.2	282	35.1	33.6	23	32.0	1.0	y	-2.0	122	59.0	48.7	-22	19.4	-1.2	y	1.1	220	32.6	53.0	11	12.5	-2.2
10	y	-0.2	283	8.7	34.1	23	33.0	1.0	y	-2.0	123	47.7	48.6	-22	20.6	-1.2	y	1.1	221	25.6	53.1	11	10.3	-2.2
11	y	-0.2	283	42.8	34.6	23	34.0	1.0	y	-2.0	124	36.2	48.4	-22	21.8	-1.2	y	1.1	222	18.7	53.2	11	8.1	-2.1
12	y	-0.3	284	17.3	35.0	23	35.0	0.9	y	-2.0	125	24.7	48.3	-22	23.0	-1.2	y	1.1	223	11.9	53.2	11	6.0	-2.1
13	y	-0.3	284	52.4	35.6	23	35.9	1.0	y	-1.9	126	13.0	48.2	-22	24.2	-1.2	y	1.1	224	5.1	53.3	11	3.9	-2.1
14	y	-0.3	285	27.9	36.1	23	36.9	0.9	y	-1.9	127	1.2	48.1	-22	25.4	-1.1	y	1.1	224	58.4	53.3	11	1.8	-2.1
15	y	-0.3	286	4.0	36.6	23	37.8	1.0	y	-1.9	127	49.3	48.0	-22	26.5	-1.2	y	1.1	225	51.7	53.4	10	59.7	-2.0
16	y	-0.3	286	40.6	37.1	23	38.8	0.9	y	-1.9	128	37.3	47.9	-22	27.7	-1.2	y	1.1	226	45.1	53.4	10	57.7	-2.0
17	y	-0.3	287	17.7	37.7	23	39.7	1.0	y	-1.9	129	25.2	47.8	-22	28.9	-1.2	y	1.1	227	38.5	53.5	10	55.7	-2.0
18	y	-0.4	287	55.3	38.2	23	40.7	0.9	y	-1.9	130	12.9	47.7	-22	30.1	-1.1	y	1.1	228	32.0	53.6	10	53.7	-2.0
19	y	-0.4	288	33.6	38.8	23	41.6	1.0	y	-1.9	131	0.6	47.6	-22	31.2	-1.2	y	1.1	229	25.5	53.6	10	51.7	-2.0
20	y	-0.4	289	12.3	39.4	23	42.6	1.0	y	-1.9	131	48.1	47.5	-22	32.4	-1.1	y	1.1	230	19.2	53.7	10	49.7	-1.9
21	y	-0.4	289	51.7	39.9	23	43.6	1.0	y	-1.9	132	35.6	47.4	-22	33.5	-1.2	y	1.1	231	12.8	53.7	10	47.8	-1.9
22	y	-0.4	290	31.7	40.5	23	44.6	1.0	y	-1.9	133	23.0	47.3	-22	34.7	-1.1	y	1.1	232	6.6	53.8	10	45.9	-1.9
23	y	-0.4	291	12.2	41.2	23	45.6	1.1	y	-1.9	134	10.2	47.2	-22	35.8	-1.1	y	1.1	233	0.4	53.9	10	44.0	-1.8
24	y	-0.5	291	53.4	41.8	23	46.7	1.1	y	-1.9	134	57.4	47.1	-22	36.9	-1.1	y	1.1	233	54.3	53.9	10	42.2	-1.9
25	y	-0.5	292	35.1	42.4	23	47.8	1.1	y	-1.9	135	44.4	47.0	-22	38.0	-1.2	y	1.1	234	48.2	54.0	10	40.3	-1.8
26	y	-0.5	293	17.5	43.0	23	48.9	1.2	y	-1.9	136	31.4	46.9	-22	39.2	-1.1	y	1.1	235	42.2	54.1	10	38.5	-1.7
27	y	-0.5	294	0.6	43.7	23	50.1	1.3	y	-1.9	137	18.3	46.8	-22	40.3	-1.0	y	1.1	236	36.3	54.1	10	36.8	-1.8
28	y	-0.5	294	44.3	44.4	23	51.4	1.3	y	-1.9	138	5.1	46.7	-22	41.3	-1.1	y	1.1	237	30.4	54.2	10	35.0	-1.7
29	y	-0.6	295	28.7	45.1	23	52.7	1.3	y	-1.9	138	51.8	46.6	-22	42.4	-1.1	y	1.1	238	24.7	54.3	10	33.3	-1.7
30	y	-0.6	296	13.7	45.8	23	54.0	1.4	y	-1.9	139	38.4	46.5	-22	43.5	-1.1	y	1.1	239	18.9	54.4	10	31.6	-1.6
Oct 31	y	-0.6	296	59.5	46.5	23	55.4	1.5	y	-1.9	140	24.9	46.4	-22	44.6	-1.0	y	1.1	240	13.3	54.4	10	30.0	-1.7
Nov 1	y	-0.6	297	46.0	47.2	23	56.9	1.6	y	-1.9	141	11.3	46.4	-22	45.6	-1.0	y	1.1	241	7.7	54.5	10	28.3	-1.6
2	y	-0.6	298	33.2	48.0	23	58.5	1.6	y	-1.9	141	57.7	46.3	-22	46.6	-1.1	y	1.1	242	2.2	54.6	10	26.7	-1.5
3	y	-0.7	299	21.2	48.8	24	0.1	1.7	y	-1.9	142	44.0	46.2	-22	47.7	-1.0	y	1.1	242	56.8	54.7	10	25.2	-1.6
4	y	-0.7	300	10.0	49.5	24	1.8	1.8	y	-1.9	143	30.2	46.1	-22	48.7	-1.0	y	1.1	243	51.5	54.7	10	23.6	-1.5
5	y	-0.7	300	59.5	50.3	24	3.6	1.9	y	-1.9	144	16.3	46.0	-22	49.7	-0.9	y	1.1	244	46.2	54.8	10	22.1	-1.5
6	y	-0.7	301	49.9	51.1	24	5.5	2.0	y	-1.9	145	2.3	46.0	-22	50.6	-1.0	y	1.1	245	41.0	54.9	10	20.6	-1.4
7	y	-0.8	302	41.0	52.0	24	7.5	2.0	y	-1.9	145	48.3	45.9	-22	51.6	-1.0	y	1.1	246	35.9	55.0	10	19.2	-1.4
8	y	-0.8	303	33.0	52.8	24	9.5	2.2	y	-1.9	146	34.2	45.8	-22	52.6	-0.9	y	1.1	247	30.9	55.1	10	17.8	-1.4
9	y	-0.8	304	25.8	53.7	24	11.7	2.2	y	-1.9	147	20.0	45.7	-22	53.5	-0.9	y	1.1	248	26.0	55.1	10	16.4	-1.4
10	y	-0.8	305	19.4	54.5	24	13.9	2.4	y	-1.9	148	5.7	45.7	-22	54.4	-0.9	y	1.1	249	21.1	55.2	10	15.0	-1.3
11	y	-0.8	306	13.9	55.4	24	16.3	2.4	y	-1.9	148	51.4	45.6	-22	55.3	-0.9	y	1.1	250	16.3	55.3	10	13.7	-1.2
12	y	-0.9	307	9.3	56.3	24	18.7	2.6	y	-1.9	149	37.0	45.5	-22	56.2	-0.9	y	1.1	251	11.6	55.4	10	12.5	-1.3
13	y	-0.9	308	5.6	57.2	24	21.3	2.7	y	-1.8	150	22.5	45.5	-22	57.1	-0.9	y	1.1	252	7.0	55.5	10	11.2	-1.2
14	y	-0.9	309	2.8	58.1	24	24.0	2.7	y	-1.8	151	8.0	45.4	-22	58.0	-0.8	y	1.1	253	2.5	55.6	10	10.0	-1.2
15	y	-0.9	310	0.8	59.0	24	26.7	2.9	y	-1.8	151	53.4	45.3	-22	58.8	-0.8	y	1.1	253	58.1	55.7	10	8.8	-1.1
16	y	-1.0	310	59.8	59.9	24	29.6	2.9	y	-1.8	152	38.7	45.3	-22	59.6	-0.8	y	1.1	254	53.7	55.7	10	7.7	-

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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	31.5	-3.9	-20	0.0	-12.9	sr	-0.8	197	28.5	-30.8	0.5	-15	1.1	-32.7	-0.2	sr	-4.3	226	36.2	-4.4	-3	58.6	-23.7
23	183	27.6	-4.1	-20	12.9	-12.5	sr	-0.8	196	57.7	-31.7	0.4	-15	33.8	-32.4	-0.1	sr	-4.2	226	31.8	-4.7	-4	22.3	-23.6
24	183	23.5	-4.3	-20	25.4	-12.2	sr	-0.8	196	26.0	-32.5	0.4	-16	6.2	-31.9	-0.3	sr	-4.2	226	27.2	-4.9	-4	46.1	-23.9
25	183	19.2	-4.5	-20	37.6	-11.8	sr	-0.8	195	53.5	-33.2	0.4	-16	38.1	-31.3	-0.3	sr	-4.2	226	22.3	-5.1	-5	10.0	-23.9
26	183	14.7	-4.7	-20	49.4	-11.4	sr	-0.8	195	20.3	-33.9	0.3	-17	9.4	-30.7	-0.3	sr	-4.2	226	17.1	-5.4	-5	33.9	-23.9
27	183	10.0	-4.9	-21	0.8	-11.0	sr	-0.8	194	46.4	-34.6	0.3	-17	40.1	-30.0	-0.3	sr	-4.2	226	11.8	-5.6	-5	57.8	-23.9
28	183	5.2	-5.0	-21	11.8	-10.6	sr	-0.8	194	11.8	-35.2	0.3	-18	10.1	-29.3	-0.3	sr	-4.2	226	6.2	-5.8	-6	21.7	-24.0
29	183	0.1	-5.2	-21	22.4	-10.2	sr	-0.8	193	36.6	-35.8	0.3	-18	39.4	-28.4	-0.5	sr	-4.2	226	0.3	-6.1	-6	45.7	-23.9
Nov 30	182	54.9	-5.4	-21	32.6	-9.8	sr	-0.8	193	0.8	-36.4	0.3	-19	7.8	-27.7	-0.3	sr	-4.2	225	54.2	-6.3	-7	9.6	-23.9
Dec 1	182	49.5	-5.6	-21	42.4	-9.4	sr	-0.8	192	24.4	-37.0	0.3	-19	35.5	-26.7	-0.5	sr	-4.2	225	47.9	-6.6	-7	33.5	-23.9
2	182	43.9	-5.7	-21	51.8	-8.9	sr	-0.8	191	47.4	-37.5	0.3	-20	2.2	-25.9	-0.4	sr	-4.2	225	41.3	-6.8	-7	57.4	-23.6
3	182	38.2	-5.9	-22	0.7	-8.6	sr	-0.8	191	9.9	-38.1	0.3	-20	28.1	-24.9	-0.5	sr	-4.2	225	34.4	-7.1	-8	21.2	-23.6
4	182	32.3	-6.0	-22	9.3	-8.1	sr	-0.8	190	31.8	-38.6	0.3	-20	53.0	-23.9	-0.5	sr	-4.2	225	27.3	-7.4	-8	45.0	-23.7
5	182	26.3	-6.2	-22	17.4	-7.6	sr	-0.9	189	53.2	-39.1	0.3	-21	16.9	-22.9	-0.5	sr	-4.2	225	20.0	-7.6	-9	8.7	-23.5
6	182	20.1	-6.3	-22	25.0	-7.3	sr	-0.9	189	14.1	-39.6	0.3	-21	39.8	-21.8	-0.5	sr	-4.2	225	12.3	-7.9	-9	32.2	-23.5
7	182	13.7	-6.5	-22	32.3	-6.8	sr	-0.9	188	34.5	-40.1	0.3	-22	1.6	-20.8	-0.5	sr	-4.2	225	4.4	-8.2	-9	55.7	-23.4
8	182	7.3	-6.6	-22	39.1	-6.3	sr	-0.9	187	54.4	-40.6	0.3	-22	22.4	-19.7	-0.6	sr	-4.2	224	56.3	-8.4	-10	19.1	-23.2
9	182	0.7	-6.7	-22	45.4	-5.9	sr	-1.0	187	13.7	-41.1	0.2	-22	42.1	-18.5	-0.6	sr	-4.2	224	47.8	-8.7	-10	42.3	-23.1
10	181	54.0	-6.8	-22	51.3	-5.5	sr	-1.0	186	32.6	-41.6	0.2	-23	0.6	-17.4	-0.5	sr	-4.2	224	39.1	-9.0	-11	5.4	-22.9
11	181	47.2	-6.9	-22	56.8	-5.0	sr	-1.0	185	51.0	-42.1	0.2	-23	18.0	-16.2	-0.6	sr	-4.2	224	30.1	-9.3	-11	28.3	-22.7
12	181	40.3	-7.0	-23	1.8	-4.6	sr	-1.0	185	8.9	-42.6	0.2	-23	34.2	-15.0	-0.6	sr	-4.2	224	20.8	-9.6	-11	51.0	-22.6
13	181	33.3	-7.1	-23	6.4	-4.0	sr	-1.1	184	26.3	-43.0	0.2	-23	49.2	-13.8	-0.6	sr	-4.2	224	11.3	-9.9	-12	13.6	-22.3
14	181	26.2	-7.2	-23	10.4	-3.7	sr	-1.1	183	43.3	-43.5	0.2	-24	3.0	-12.6	-0.6	sr	-4.2	224	1.4	-10.1	-12	35.9	-22.2
15	181	19.0	-7.2	-23	14.1	-3.1	sr	-1.1	182	59.9	-43.9	0.2	-24	15.6	-11.3	-0.6	sr	-4.1	223	51.3	-10.4	-12	58.1	-21.9
16	181	11.8	-7.3	-23	17.2	-2.7	sr	-1.2	182	16.0	-44.3	0.2	-24	26.9	-10.0	-0.7	sr	-4.1	223	40.8	-10.7	-13	20.0	-21.6
17	181	4.5	-7.3	-23	19.9	-2.3	sr	-1.2	181	31.7	-44.7	0.2	-24	36.9	-8.7	-0.7	sr	-4.1	223	30.1	-11.0	-13	41.6	-21.4
18	180	57.2	-7.4	-23	22.2	-1.7	sr	-1.2	180	47.0	-45.1	0.2	-24	45.6	-7.3	-0.7	sr	-4.1	223	19.1	-11.3	-14	3.0	-21.1
19	180	49.8	-7.4	-23	23.9	-1.3	sr	-1.2	180	2.0	-45.4	0.2	-24	52.9	-6.0	-0.7	sr	-4.1	223	7.8	-11.6	-14	24.1	-20.9
20	180	42.4	-7.4	-23	25.2	-0.8	sr	-1.1	179	16.5	-45.7	0.2	-24	58.9	-4.7	-0.7	sr	-4.1	222	56.1	-11.9	-14	45.0	-20.5
21	180	35.0	-7.4	-23	26.0	-0.4	sr	-1.1	178	30.8	-46.0	0.2	-25	3.6	-3.2	-0.8	sr	-4.1	222	44.2	-12.3	-15	5.5	-20.3
22	180	27.6	-7.4	-23	26.4	0.1	sr	-1.1	177	44.8	-46.3	0.1	-25	6.8	-1.8	-0.7	sr	-4.1	222	31.9	-12.6	-15	25.8	-19.9
23	180	20.1	-7.4	-23	26.3	0.6	sr	-1.1	176	58.4	-46.6	0.1	-25	8.6	-0.4	-0.7	sr	-4.1	222	19.4	-12.9	-15	45.7	-19.6
24	180	12.7	-7.4	-23	25.7	1.1	sr	-1.0	176	11.9	-46.8	0.1	-25	9.0	1.1	-0.8	sr	-4.1	222	6.5	-13.2	-16	5.3	-19.2
25	180	5.2	-7.4	-23	24.6	1.5	sr	-1.0	175	25.1	-47.0	0.1	-25	7.9	2.5	-0.7	sr	-4.1	221	53.3	-13.5	-16	24.5	-18.9
26	179	57.8	-7.4	-23	23.1	2.0	sr	-1.0	174	38.1	-47.1	0.1	-25	5.4	4.0	-0.8	sr	-4.1	221	39.8	-13.8	-16	43.4	-18.4
27	179	50.4	-7.4	-23	21.1	2.4	sr	-1.0	173	51.0	-47.2	0.0	-25	1.4	5.5	-0.8	sr	-4.1	221	26.0	-14.1	-17	1.8	-18.1
28	179	43.0	-7.3	-23	18.7	3.0	sr	-1.0	173	3.9	-47.2	0.0	-24	55.9	7.0	-0.8	sr	-4.1	221	11.8	-14.4	-17	19.9	-17.7
29	179	35.7	-7.3	-23	15.7	3.4	sr	-1.0	172	16.6	-47.2	0.0	-24	48.9	8.6	-0.8	sr	-4.1	220	57.4	-14.8	-17	37.6	-17.3
30	179	28.4	-7.2	-23	12.3	3.8	ss	-0.9	171	29.4	-47.1	0.0	-24	40.3	10.1	-0.7	sr	-4.1	220	42.6	-15.1	-17	54.9	-16.9
Dec 31	179	21.2	-7.2	-23	8.5	4.4	ss	-0.9	170	42.3	-47.0	-0.1	-24	30.2	11.6	-0.8	sr	-4.1	220	27.5	-15.4	-18	11.8	-16.4
Jan 1	179	14.0	-7.2	-23	4.1	5.0	ss	-0.9	169	55.3	-47.0	-0.1	-24	18.6	13.1	-0.8	sr	-4.1	220	12.2	-15.4	-18	28.2	-15.9

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Date	Mars					Jupiter					Saturn													
	GHA		d	Dec		GHA		d	Dec		GHA		d	Dec										
	vis	mag		o	'	o	'		o	'	o	'		o	'	o	'							
Nov 22	y	-1.1	317	13.2	65.5	24	48.8	3.6	y	-1.8	157	9.6	45.0	-23	4.2	-0.6	y	1.1	260	29.6	56.3	10	1.7	-0.9
23	y	-1.1	318	18.8	66.5	24	52.4	3.6	y	-1.8	157	54.5	44.9	-23	4.8	-0.7	y	1.1	261	25.9	56.4	10	0.8	-0.9
24	y	-1.1	319	25.2	67.4	24	56.0	3.7	y	-1.8	158	39.5	44.9	-23	5.5	-0.7	y	1.1	262	22.3	56.5	9	59.9	-0.8
25	y	-1.2	320	32.7	68.4	24	59.7	3.7	y	-1.8	159	24.3	44.8	-23	6.2	-0.6	y	1.1	263	18.8	56.6	9	59.1	-0.7
26	y	-1.2	321	41.1	69.3	25	3.4	3.9	y	-1.8	160	9.1	44.8	-23	6.8	-0.6	y	1.1	264	15.3	56.7	9	58.4	-0.7
27	y	-1.2	322	50.4	70.3	25	7.3	3.9	y	-1.8	160	53.9	44.7	-23	7.4	-0.6	y	1.1	265	12.0	56.8	9	57.7	-0.7
28	y	-1.2	324	0.7	71.2	25	11.2	3.9	y	-1.8	161	38.6	44.7	-23	8.0	-0.5	y	1.1	266	8.8	56.9	9	57.0	-0.7
29	y	-1.2	325	11.9	72.2	25	15.1	4.0	y	-1.8	162	23.3	44.6	-23	8.5	-0.6	y	1.1	267	5.7	57.0	9	56.3	-0.6
Nov 30	y	-1.3	326	24.1	73.1	25	19.1	4.0	y	-1.8	163	8.0	44.6	-23	9.1	-0.5	y	1.1	268	2.6	57.1	9	55.7	-0.5
Dec 1	y	-1.3	327	37.2	74.0	25	23.1	4.1	y	-1.8	163	52.6	44.6	-23	9.6	-0.5	y	1.0	268	59.7	57.2	9	55.2	-0.6
2	y	-1.3	328	51.2	74.9	25	27.2	4.1	y	-1.8	164	37.2	44.5	-23	10.1	-0.5	y	1.0	269	56.9	57.3	9	54.6	-0.4
3	y	-1.3	330	6.2	75.8	25	31.3	4.1	y	-1.8	165	21.7	44.5	-23	10.6	-0.4	y	1.0	270	54.1	57.4	9	54.2	-0.5
4	y	-1.4	331	22.0	76.7	25	35.4	4.1	y	-1.8	166	6.2	44.5	-23	11.0	-0.5	y	1.0	271	51.5	57.5	9	53.7	-0.4
5	y	-1.4	332	38.7	77.5	25	39.5	4.1	y	-1.8	166	50.7	44.4	-23	11.5	-0.4	y	1.0	272	49.0	57.6	9	53.3	-0.3
6	y	-1.4	333	56.2	78.3	25	43.6	4.1	y	-1.8	167	35.1	44.4	-23	11.9	-0.4	y	1.0	273	46.5	57.7	9	53.0	-0.4
7	y	-1.4	335	14.5	79.1	25	47.7	4.0	y	-1.8	168	19.5	44.4	-23	12.3	-0.3	y	1.0	274	44.2	57.8	9	52.6	-0.2
8	y	-1.4	336	33.7	79.9	25	51.7	4.1	y	-1.8	169	3.9	44.4	-23	12.6	-0.4	y	1.0	275	42.0	57.9	9	52.4	-0.3
9	y	-1.5	337	53.5	80.6	25	55.8	3.9	y	-1.8	169	48.3	44.3	-23	13.0	-0.3	y	1.0	276	39.9	58.0	9	52.1	-0.2
10	y	-1.5	339	14.1	81.3	25	59.7	3.9	y	-1.8	170	32.6	44.3	-23	13.3	-0.3	y	1.0	277	37.9	58.1	9	51.9	-0.1
11	y	-1.5	340	35.4	81.9	26	3.6	3.9	y	-1.8	171	16.9	44.3	-23	13.6	-0.3	y	1.0	278	35.9	58.2	9	51.8	-0.1
12	y	-1.5	341	57.3	82.5	26	7.5	3.7	y	-1.8	172	1.2	44.3	-23	13.9	-0.2	y	1.0	279	34.1	58.3	9	51.7	-0.1
13	y	-1.5	343	19.8	83.0	26	11.2	3.7	y	-1.8	172	45.5	44.2	-23	14.1	-0.2	y	1.0	280	32.4	58.4	9	51.6	0.0
14	y	-1.5	344	42.8	83.5	26	14.9	3.5	y	-1.8	173	29.7	44.2	-23	14.3	-0.2	y	1.0	281	30.8	58.5	9	51.6	0.0
15	y	-1.6	346	6.3	84.0	26	18.4	3.5	y	-1.8	174	14.0	44.2	-23	14.5	-0.2	y	1.0	282	29.3	58.6	9	51.6	0.1
16	y	-1.6	347	30.3	84.4	26	21.9	3.3	y	-1.8	174	58.2	44.2	-23	14.7	-0.2	y	1.0	283	28.0	58.7	9	51.7	0.1
17	y	-1.6	348	54.7	84.7	26	25.2	3.2	y	-1.8	175	42.4	44.2	-23	14.9	-0.1	y	1.0	284	26.7	58.8	9	51.8	0.1
18	y	-1.6	350	19.4	85.0	26	28.4	3.0	y	-1.8	176	26.6	44.2	-23	15.0	-0.1	y	1.0	285	25.5	58.9	9	51.9	0.2
19	y	-1.6	351	44.4	85.2	26	31.4	2.9	y	-1.8	177	10.8	44.2	-23	15.1	-0.1	y	1.0	286	24.4	59.0	9	52.1	0.2
20	y	-1.6	353	9.6	85.4	26	34.3	2.8	y	-1.8	177	55.0	44.2	-23	15.2	0.0	y	1.0	287	23.5	59.1	9	52.3	0.3
21	y	-1.6	354	35.0	85.5	26	37.1	2.6	y	-1.8	178	39.1	44.2	-23	15.2	0.0	y	1.0	288	22.6	59.2	9	52.6	0.3
22	y	-1.6	356	0.5	85.6	26	39.7	2.4	y	-1.8	179	23.3	44.2	-23	15.2	0.0	y	0.9	289	21.9	59.3	9	52.9	0.4
23	y	-1.6	357	26.0	85.6	26	42.1	2.2	y	-1.8	180	7.5	44.2	-23	15.2	0.0	y	0.9	290	21.2	59.4	9	53.3	0.3
24	y	-1.6	358	51.6	85.5	26	44.3	2.2	y	-1.8	180	51.6	44.2	-23	15.2	0.0	y	0.9	291	20.6	59.6	9	53.6	0.5
25	y	-1.6	0	17.1	85.4	26	46.5	1.9	y	-1.8	181	35.8	44.2	-23	15.2	0.1	y	0.9	292	20.2	59.7	9	54.1	0.5
26	y	-1.6	1	42.6	85.3	26	48.4	1.7	y	-1.8	182	20.0	44.2	-23	15.1	0.1	y	0.9	293	19.9	59.8	9	54.6	0.5
27	y	-1.6	3	7.9	85.1	26	50.1	1.6	y	-1.8	183	4.1	44.2	-23	15.0	0.1	y	0.9	294	19.6	59.9	9	55.1	0.5
28	y	-1.6	4	32.9	84.8	26	51.7	1.5	y	-1.8	183	48.3	44.2	-23	14.9	0.1	y	0.9	295	19.5	60.0	9	55.6	0.6
29	y	-1.6	5	57.7	84.5	26	53.2	1.2	y	-1.8	184	32.5	44.2	-23	14.8	0.2	y	0.9	296	19.5	60.1	9	56.2	0.7
30	y	-1.6	7	22.2	84.1	26	54.4	1.1	y	-1.8	185	16.6	44.2	-23	14.6	0.2	y	0.9	297	19.5	60.2	9	56.9	0.6
Dec 31	y	-1.5	8	46.4	83.7	26	55.5	1.0	y	-1.8	186	0.8	44.2	-23	14.4	0.2	y	0.9	298	19.7	60.3	9	57.5	0.8
Jan 1	y	-1.5	10	10.1	83.7	26	56.5	0.9	y	-1.8	186	45.0	44.2	-23	14.2	0.2	y	0.9	299	20.0	60.3	9	58.3	1.0