

2005

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	8.8	-7.0	-23	0.7	5.1	sr -0.3	203	12.2	-13.2	1.4	-21	17.4	-14.2	-0.2	sr -3.9	202	32.2	-21.6	-22	15.4	-8.2
2	179	1.8	-7.0	-22	55.6	5.6	sr -0.3	202	59.0	-16.0	1.4	-21	31.6	-13.8	-0.2	sr -3.9	202	10.6	-21.7	-22	23.6	-7.6
3	178	54.8	-6.9	-22	50.0	6.0	sr -0.3	202	43.1	-18.5	1.3	-21	45.4	-13.3	-0.3	sr -3.9	201	48.8	-21.9	-22	31.2	-6.9
4	178	48.0	-6.8	-22	44.0	6.5	sr -0.3	202	24.6	-20.8	1.1	-21	58.7	-12.8	-0.3	sr -3.9	201	26.9	-22.0	-22	38.1	-6.2
5	178	41.2	-6.7	-22	37.5	6.9	sr -0.3	202	3.8	-22.8	1.0	-22	11.5	-12.1	-0.3	sr -3.9	201	4.9	-22.2	-22	44.3	-5.5
6	178	34.5	-6.6	-22	30.6	7.4	sr -0.3	201	41.0	-24.7	0.9	-22	23.6	-11.4	-0.3	sr -3.9	200	42.7	-22.3	-22	49.8	-4.8
7	178	27.9	-6.4	-22	23.2	7.8	sr -0.3	201	16.3	-26.4	0.9	-22	35.0	-10.6	-0.4	sr -3.9	200	20.4	-22.4	-22	54.6	-4.2
8	178	21.5	-6.3	-22	15.4	8.3	sr -0.3	200	49.9	-28.0	0.8	-22	45.6	-9.8	-0.4	sr -3.9	199	58.0	-22.5	-22	58.8	-3.4
9	178	15.2	-6.2	-22	7.1	8.6	sr -0.3	200	21.9	-29.4	0.7	-22	55.4	-8.8	-0.5	sr -3.9	199	35.6	-22.5	-23	2.2	-2.7
10	178	9.0	-6.0	-21	58.5	9.2	sr -0.3	199	52.5	-30.7	0.7	-23	4.2	-7.8	-0.5	sr -3.9	199	13.0	-22.6	-23	4.9	-2.0
11	178	2.9	-5.9	-21	49.3	9.5	sr -0.3	199	21.8	-31.9	0.6	-23	12.0	-6.9	-0.4	sr -3.9	198	50.4	-22.6	-23	6.9	-1.4
12	177	57.0	-5.7	-21	39.8	10.0	sr -0.3	198	49.9	-33.0	0.6	-23	18.9	-5.7	-0.6	sr -3.9	198	27.8	-22.6	-23	8.3	-0.6
13	177	51.3	-5.6	-21	29.8	10.4	sr -0.3	198	16.9	-34.0	0.5	-23	24.6	-4.7	-0.5	sr -3.9	198	5.2	-22.7	-23	8.9	0.1
14	177	45.7	-5.4	-21	19.4	10.7	sr -0.3	197	42.8	-35.0	0.5	-23	29.3	-3.5	-0.6	sr -3.9	197	42.5	-22.6	-23	8.8	0.9
15	177	40.3	-5.2	-21	8.7	11.2	sr -0.3	197	7.9	-35.8	0.4	-23	32.8	-2.4	-0.5	sr -3.9	197	19.9	-22.6	-23	7.9	1.5
16	177	35.1	-5.1	-20	57.5	11.6	sr -0.3	196	32.0	-36.6	0.4	-23	35.2	-1.2	-0.6	sr -3.9	196	57.2	-22.6	-23	6.4	2.2
17	177	30.0	-4.9	-20	45.9	12.0	sr -0.3	195	55.4	-37.4	0.4	-23	36.4	0.0	-0.6	sr -3.9	196	34.7	-22.5	-23	4.2	3.0
18	177	25.1	-4.7	-20	33.9	12.4	sr -0.4	195	18.0	-38.1	0.3	-23	36.4	1.3	-0.7	sr -3.9	196	12.1	-22.5	-23	1.2	3.6
19	177	20.4	-4.5	-20	21.5	12.8	sr -0.4	194	40.0	-38.7	0.3	-23	35.1	2.5	-0.6	sr -3.9	195	49.7	-22.4	-22	57.6	4.4
20	177	15.9	-4.3	-20	8.7	13.1	sr -0.4	194	1.3	-39.3	0.3	-23	32.6	3.7	-0.6	sr -3.9	195	27.3	-22.3	-22	53.2	5.1
21	177	11.6	-4.1	-19	55.6	13.5	sr -0.4	193	22.0	-39.8	0.3	-23	28.9	5.1	-0.7	sr -3.9	195	5.0	-22.2	-22	48.1	5.7
22	177	7.5	-3.9	-19	42.1	13.9	sr -0.4	192	42.2	-40.3	0.2	-23	23.8	6.4	-0.6	sr -3.9	194	42.8	-22.0	-22	42.4	6.5
23	177	3.5	-3.7	-19	28.2	14.2	sr -0.4	192	2.0	-40.7	0.2	-23	17.4	7.7	-0.7	sr -3.9	194	20.8	-21.9	-22	35.9	7.1
24	176	59.8	-3.5	-19	14.0	14.6	sr -0.5	191	21.2	-41.2	0.2	-23	9.7	9.0	-0.6	sr -3.9	193	58.9	-21.8	-22	28.8	7.9
25	176	56.2	-3.3	-18	59.4	14.9	sr -0.5	190	40.1	-41.5	0.2	-23	0.7	10.4	-0.7	sr -3.9	193	37.1	-21.6	-22	20.9	8.5
26	176	52.9	-3.1	-18	44.5	15.3	sr -0.5	189	58.5	-41.9	0.2	-22	50.3	11.7	-0.6	sr -3.9	193	15.5	-21.4	-22	12.4	9.2
27	176	49.8	-2.9	-18	29.2	15.6	sr -0.5	189	16.6	-42.2	0.2	-22	38.6	13.1	-0.7	sr -3.9	192	54.1	-21.2	-22	3.2	9.8
28	176	46.8	-2.7	-18	13.6	15.9	sr -0.6	188	34.4	-42.5	0.1	-22	25.5	14.6	-0.8	sr -3.9	192	32.9	-21.0	-21	53.4	10.6
29	176	44.1	-2.5	-17	57.7	16.3	sr -0.6	187	51.8	-42.8	0.1	-22	10.9	15.9	-0.7	sr -3.9	192	11.8	-20.8	-21	42.8	11.1
30	176	41.5	-2.3	-17	41.4	16.5	sr -0.6	187	9.0	-43.1	0.1	-21	55.0	17.3	-0.7	sr -3.9	191	51.0	-20.6	-21	31.7	11.9
Jan 31	176	39.2	-2.1	-17	24.9	16.9	sr -0.7	186	26.0	-43.3	0.1	-21	37.7	18.7	-0.7	sr -3.9	191	30.3	-20.4	-21	19.8	12.4
Feb 1	176	37.1	-1.9	-17	8.0	17.2	sr -0.7	185	42.7	-43.5	0.1	-21	19.0	20.1	-0.7	sr -3.9	191	9.9	-20.2	-21	7.4	13.1
2	176	35.1	-1.7	-16	50.8	17.5	sr -0.8	184	59.2	-43.7	0.1	-20	58.9	21.6	-0.8	sr -3.9	190	49.8	-19.9	-20	54.3	13.8
3	176	33.4	-1.5	-16	33.3	17.7	sr -0.8	184	15.5	-43.9	0.1	-20	37.3	23.0	-0.7	sr -3.9	190	29.8	-19.7	-20	40.5	14.3
4	176	31.8	-1.3	-16	15.6	18.1	sr -0.8	183	31.6	-44.1	0.1	-20	14.3	24.4	-0.7	sr -3.9	190	10.2	-19.4	-20	26.2	14.9
5	176	30.5	-1.1	-15	57.5	18.3	sr -0.9	182	47.5	-44.2	0.1	-19	49.9	25.9	-0.8	sr -3.9	189	50.7	-19.2	-20	11.3	15.6
6	176	29.3	-1.0	-15	39.2	18.6	sr -1.0	182	3.3	-44.3	0.1	-19	24.0	27.3	-0.7	sr -3.9	189	31.6	-18.9	-19	55.7	16.1
7	176	28.4	-0.8	-15	20.6	18.9	sr -1.0	181	19.0	-44.5	0.1	-18	56.7	28.8	-0.8	sr -3.9	189	12.7	-18.6	-19	39.6	16.7
8	176	27.6	-0.6	-15	1.7	19.1	sr -1.1	180	34.5	-44.6	0.1	-18	27.9	30.3	-0.8	sr -3.9	188	54.1	-18.3	-19	22.9	17.3
9	176	27.1	-0.4	-14	42.6	19.4	sr -1.2	179	49.9	-44.7	0.0	-17	57.6	31.6	-0.6	sr -3.9	188	35.7	-18.0	-19	5.6	17.6
10	176	26.7	-0.2	-14	23.2	19.6	sr -1.2	179	5.3	-44.8	0.0	-17	26.0	33.2	-0.8	sr -3.9	188	17.7	-17.8	-18	47.8	18.4
11	176	26.6	0.0	-14	3.6	19.8	sr -1.3	178	20.5	-44.8	0.0	-16	52.8	34.5	-0.6	sr -3.9	187	59.9	-17.5	-18	29.4	18.9
12	176	26.6	0.2	-13	43.8	20.1	sr -1.4	177	35.6	-44.9	0.0	-16	18.3	36.1	-0.8	sr -3.9	187	42.5	-17.2	-18	10.5	19.4
13	176	26.8	0.4	-13	23.7	20.2	sr -1.4	176	50.7	-45.0	0.0	-15	42.2	37.4	-0.7	sr -3.9	187	25.3	-16.9	-17	51.1	19.9
14	176	27.2	0.6	-13	3.5	20.5	sr -1.5	176	5.8	-45.0	0.0	-15	4.8	38.9	-0.8	sr -3.9	187	8.5	-16.6	-17	31.2	20.4
15	176	27.8	0.8	-12	43.0	20.7	sr -1.5	175	20.8	-45.0	0.0	-14	25.9	40.2	-0.6	sr -3.9	186	51.9	-16.3	-17	10.8	20.9
16	176	28.6	1.0	-12	22.3	20.9	sr -1.5	174	35.8	-45.0	0.0	-13	45.7	41.6	-0.7	sr -3.9	186	35.6	-16.0	-16	49.9	21.4
17	176	29.6	1.2	-12	1.4	21.1	sr -1.5	173	50.8	-44.9	0.0	-13	4.1	43.0	-0.7	sr -3.9	186	19.6	-15.7	-16	28.5	21.9
18	176	30.8	1.3	-11	40.3	21.2	sr -1.5	173	5.9	-44.8	0.0	-12	21.1	44.3	-0.6	sr -3.9	186	4.0	-15.4	-16	6.6	22.2
19	176	32.1	1.5	-11	19.1	21.5	sr -1.5	172	21.0	-44.7	-0.1	-11	36.8	45.6	-0.6	sr -3.9	185	48.6	-15.1	-15	44.4	22.8
20	176	33.6	1.7	-10	57.6	21.6	sr -1.5	171	36.3	-44.5	-0.1	-10	51.2	46.8	-0.6	sr -3.9	185	33.5	-14.8	-15	21.6	23.1
21	176	35.3	1.8	-10	36.0	21.7	sr -1.5	170	51.9	-44.2	-0.1	-10	4.4	48.0	-0.6	sr -3.9	185	18.7	-14.5	-14	58.5	23.6
22	176	37.1	2.0	-10	14.3	22.0	sr -1.4	170	7.7	-43.8	-0.2	-9	16.4	49.1	-0.5	sr -3.9	185	4.2	-14.2	-14	34.9	23.9
23	176	39.1	2.1	-9	52.3	22.0	sr -1.4	169	23.8	-43.3	-0.2	-8	27.3	50.1	-0.5	sr -3.9	184	50.0	-14.0	-14	11.0	24.4
24	176	41.2	2.3	-9	30.3	22.2	ss -1.4	168	40.5	-42.7	-0.3	-7	37.2	50.9	-0.4	sr -3.9	184	36.0	-13.7	-13	46.6	24.7
25	176	43.5	2.4	-9	8.1	22.4	ss -1.4	167	57.8	-41.9	-0.4	-6	46.3	51.8	-0.4	sr -3.9	184	22.3	-13.4	-13	21.9	25.1
26	176	45.9	2.6	-8	45.7	22.5	ss -1.3	167	15.9	-40.9	-0.5	-5	54.5	52.4	-0.3	sr -3.9	184	8.9	-13.1	-12	56.8	25.4
27	176	48.5	2.7	-8	23.2	22.6	ss -1.3	166	34.9	-39.8	-0.6	-5	2.1	52.8	-0.2	sr -3.9	183	55.8	-12.9	-12	31.4	25.8
Feb 28	176	51.2	2.8	-8	0.6	22.7	ss -1.3	165	55.2	-38.3	-0.7	-4	9.3	53.2	-0.2	sr -3.9	183	42.9	-12.6	-12	5.6	26.1
Mar 1	176	54.1	3.0	-7	37.9	22.8	ss -1.2	165	16.8	-36.6	-0.9	-3	16.1	53.2	0.0	sr -3.9	183	30.2	-12.4	-11	39.5	26.4
2	176	57.0	3.1	-7	15.1	23.0	ss -1.2	164	40.3	-34.5	-1.0	-2	22.9	53.1	0.0	sr -3.9	183	17.9	-12.2	-11	13.1	26.7
3																						

2005

Sun and Planets

Date	Mars					Jupiter					Saturn													
	GHA		d	Dec		GHA		d	Dec		GHA		d	Dec										
	vis	mag		o	o	'	'		o	'	o	'		o	'	o	'							
Jan 1	y	1.6	218	20.6	15.7	-20	51.5	-8.2	y	-2.0	264	18.8	53.8	-5	35.5	-2.0	y	0.5	343	52.9	64.1	21	7.9	1.0
2	y	1.6	218	36.4	15.6	-20	59.7	-8.0	y	-2.0	265	12.6	54.0	-5	37.5	-1.8	y	0.5	344	57.0	64.1	21	8.9	0.9
3	y	1.6	218	52.0	15.5	-21	7.7	-7.8	y	-2.0	266	6.6	54.1	-5	39.3	-1.8	y	0.5	346	1.1	64.2	21	9.8	1.0
4	y	1.6	219	7.5	15.4	-21	15.5	-7.6	y	-2.0	267	0.7	54.3	-5	41.1	-1.8	y	0.5	347	5.3	64.2	21	10.8	0.9
5	y	1.6	219	23.0	15.3	-21	23.1	-7.5	y	-2.0	267	55.0	54.4	-5	42.9	-1.6	y	0.5	348	9.5	64.2	21	11.7	1.0
6	y	1.5	219	38.3	15.2	-21	30.6	-7.2	y	-2.0	268	49.4	54.6	-5	44.5	-1.7	y	0.5	349	13.7	64.3	21	12.7	1.0
7	y	1.5	219	53.5	15.1	-21	37.8	-7.1	y	-2.0	269	44.0	54.7	-5	46.2	-1.5	y	0.5	350	18.0	64.3	21	13.7	0.9
8	y	1.5	220	8.6	15.0	-21	44.9	-6.9	y	-2.0	270	38.7	54.9	-5	47.7	-1.5	y	0.5	351	22.3	64.3	21	14.6	1.0
9	y	1.5	220	23.6	14.9	-21	51.8	-6.7	y	-2.0	271	33.6	55.0	-5	49.2	-1.4	y	0.5	352	26.6	64.3	21	15.6	1.0
10	y	1.5	220	38.5	14.8	-21	58.5	-6.5	y	-2.0	272	28.6	55.2	-5	50.6	-1.3	y	0.5	353	30.9	64.3	21	16.6	0.9
11	y	1.5	220	53.3	14.7	-22	5.0	-6.3	y	-2.0	273	23.8	55.4	-5	51.9	-1.3	y	0.5	354	35.2	64.3	21	17.5	1.0
12	y	1.5	221	8.0	14.6	-22	11.3	-6.2	y	-2.0	274	19.2	55.5	-5	53.2	-1.2	y	0.5	355	39.5	64.3	21	18.5	1.0
13	y	1.5	221	22.6	14.5	-22	17.5	-5.9	y	-2.1	275	14.7	55.7	-5	54.4	-1.2	y	0.5	356	43.9	64.4	21	19.5	0.9
14	y	1.5	221	37.1	14.4	-22	23.4	-5.7	y	-2.1	276	10.3	55.8	-5	55.6	-1.0	y	0.4	357	48.2	64.4	21	20.4	1.0
15	y	1.5	221	51.5	14.3	-22	29.1	-5.6	y	-2.1	277	6.2	56.0	-5	56.6	-1.0	y	0.5	358	52.6	64.3	21	21.4	1.0
16	y	1.5	222	5.9	14.3	-22	34.7	-5.3	y	-2.1	278	2.2	56.2	-5	57.6	-1.0	y	0.5	359	56.9	64.3	21	22.4	0.9
17	y	1.5	222	20.1	14.2	-22	40.0	-5.1	y	-2.1	278	58.4	56.3	-5	58.6	-0.8	y	0.5	1	1.3	64.3	21	23.3	1.0
18	y	1.5	222	34.3	14.1	-22	45.1	-5.0	y	-2.1	279	54.7	56.5	-5	59.4	-0.8	y	0.5	2	5.6	64.3	21	24.3	0.9
19	y	1.5	222	48.4	14.0	-22	50.1	-4.7	y	-2.1	280	51.2	56.7	-6	0.2	-0.8	y	0.5	3	9.9	64.3	21	25.2	0.9
20	y	1.5	223	2.4	13.9	-22	54.8	-4.5	y	-2.1	281	47.9	56.8	-6	1.0	-0.6	y	0.5	4	14.3	64.3	21	26.1	1.0
21	y	1.5	223	16.3	13.8	-22	59.3	-4.3	y	-2.1	282	44.7	57.0	-6	1.6	-0.6	y	0.5	5	18.5	64.3	21	27.1	0.9
22	y	1.5	223	30.1	13.8	-23	3.6	-4.1	y	-2.1	283	41.7	57.2	-6	2.2	-0.5	y	0.5	6	22.8	64.2	21	28.0	0.9
23	y	1.5	223	43.9	13.7	-23	7.7	-3.9	y	-2.1	284	38.9	57.4	-6	2.7	-0.5	y	0.5	7	27.1	64.2	21	28.9	0.9
24	y	1.4	223	57.6	13.6	-23	11.6	-3.7	y	-2.1	285	36.3	57.5	-6	3.2	-0.4	y	0.5	8	31.3	64.2	21	29.8	0.9
25	y	1.4	224	11.2	13.5	-23	15.3	-3.5	y	-2.1	286	33.8	57.7	-6	3.6	-0.3	y	0.5	9	35.5	64.2	21	30.7	0.9
26	y	1.4	224	24.8	13.5	-23	18.8	-3.3	y	-2.1	287	31.5	57.9	-6	3.9	-0.2	y	0.5	10	39.6	64.1	21	31.6	0.9
27	y	1.4	224	38.2	13.4	-23	22.1	-3.0	y	-2.1	288	29.4	58.1	-6	4.1	-0.2	y	0.5	11	43.7	64.1	21	32.5	0.9
28	y	1.4	224	51.6	13.3	-23	25.1	-2.9	y	-2.2	289	27.4	58.2	-6	4.3	0.0	y	0.5	12	47.8	64.0	21	33.4	0.9
29	y	1.4	225	5.0	13.3	-23	28.0	-2.6	y	-2.2	290	25.7	58.4	-6	4.3	-0.1	y	0.5	13	51.9	64.0	21	34.3	0.9
30	y	1.4	225	18.2	13.2	-23	30.6	-2.4	y	-2.2	291	24.1	58.6	-6	4.4	0.1	y	0.5	14	55.9	64.0	21	35.2	0.8
Jan 31	y	1.4	225	31.5	13.2	-23	33.0	-2.2	y	-2.2	292	22.7	58.8	-6	4.3	0.1	y	0.5	15	59.8	63.9	21	36.0	0.8
Feb 1	y	1.4	225	44.6	13.1	-23	35.2	-1.9	y	-2.2	293	21.4	58.9	-6	4.2	0.2	y	0.6	17	3.8	63.9	21	36.8	0.9
2	y	1.4	225	57.7	13.0	-23	37.1	-1.8	y	-2.2	294	20.4	59.1	-6	4.0	0.3	y	0.6	18	7.6	63.8	21	37.7	0.8
3	y	1.4	226	10.7	13.0	-23	38.9	-1.5	y	-2.2	295	19.5	59.3	-6	3.7	0.3	y	0.6	19	11.4	63.7	21	38.5	0.8
4	y	1.4	226	23.7	12.9	-23	40.4	-1.3	y	-2.2	296	18.8	59.5	-6	3.4	0.4	y	0.6	20	15.2	63.7	21	39.3	0.8
5	y	1.4	226	36.7	12.9	-23	41.7	-1.1	y	-2.2	297	18.2	59.6	-6	3.0	0.5	y	0.6	21	18.8	63.6	21	40.1	0.8
6	y	1.4	226	49.6	12.9	-23	42.8	-0.9	y	-2.2	298	17.9	59.8	-6	2.5	0.5	y	0.6	22	22.5	63.6	21	40.9	0.8
7	y	1.4	227	2.4	12.8	-23	43.7	-0.6	y	-2.2	299	17.7	60.0	-6	2.0	0.7	y	0.6	23	26.0	63.5	21	41.7	0.7
8	y	1.3	227	15.3	12.8	-23	44.3	-0.5	y	-2.2	300	17.7	60.2	-6	1.3	0.7	y	0.6	24	29.5	63.4	21	42.4	0.8
9	y	1.3	227	28.0	12.8	-23	44.8	-0.2	y	-2.2	301	17.9	60.4	-6	0.6	0.7	y	0.6	25	33.0	63.4	21	43.2	0.7
10	y	1.3	227	40.8	12.7	-23	45.0	0.1	y	-2.2	302	18.2	60.5	-5	59.9	0.9	y	0.6	26	36.3	63.3	21	43.9	0.7
11	y	1.3	227	53.5	12.7	-23	44.9	0.2	y	-2.3	303	18.8	60.7	-5	59.0	0.9	y	0.6	27	39.6	63.2	21	44.6	0.8
12	y	1.3	228	6.2	12.7	-23	44.7	0.5	y	-2.3	304	19.5	60.9	-5	58.1	1.0	y	0.6	28	42.8	63.1	21	45.4	0.7
13	y	1.3	228	18.9	12.7	-23	44.2	0.7	y	-2.3	305	20.4	61.1	-5	57.1	1.0	y	0.6	29	45.9	63.0	21	46.1	0.6
14	y	1.3	228	31.6	12.7	-23	43.5	0.9	y	-2.3	306	21.4	61.2	-5	56.1	1.1	y	0.6	30	48.9	63.0	21	46.7	0.7
15	y	1.3	228	44.3	12.6	-23	42.6	1.2	y	-2.3	307	22.7	61.4	-5	55.0	1.2	y	0.6	31	51.9	62.9	21	47.4	0.7
16	y	1.3	228	56.9	12.6	-23	41.4	1.3	y	-2.3	308	24.1	61.6	-5	53.8	1.2	y	0.7	32	54.8	62.8	21	48.1	0.6
17	y	1.3	229	9.5	12.6	-23	40.1	1.6	y	-2.3	309	25.7	61.7	-5	52.6	1.4	y	0.7	33	57.6	62.7	21	48.7	0.6
18	y	1.3	229	22.1	12.6	-23	38.5	1.9	y	-2.3	310	27.4	61.9	-5	51.2	1.3	y	0.7	35	0.2	62.6	21	49.3	0.6
19	y	1.3	229	34.7	12.6	-23	36.6	2.0	y	-2.3	311	29.3	62.1	-5	49.9	1.5	y	0.7	36	2.8	62.5	21	49.9	0.6
20	y	1.3	229	47.3	12.6	-23	34.6	2.3	y	-2.3	312	31.4	62.2	-5	48.4	1.5	y	0.7	37	5.4	62.4	21	50.5	0.6
21	y	1.3	229	59.9	12.6	-23	32.3	2.5	y	-2.3	313	33.6	62.4	-5	46.9	1.6	y	0.7	38	7.8	62.3	21	51.1	0.6
22	y	1.2	230	12.5	12.6	-23	29.8	2.7	y	-2.3	314	36.0	62.6	-5	45.3	1.6	y	0.7	39	10.1	62.2	21	51.7	0.5
23	y	1.2	230	25.2	12.6	-23	27.1	2.9	y	-2.3	315	38.6	62.7	-5	43.7	1.7	y	0.7	40	12.3	62.1	21	52.2	0.5
24	y	1.2	230	37.8	12.6	-23	24.2	3.2	y	-2.3	316	41.3	62.9	-5	42.0	1.8	y	0.7	41	14.4	62.0	21	52.7	0.6
25	y	1.2	230	50.4	12.6	-23	21.0	3.4	y	-2.3	317	44.2	63.0	-5	40.2	1.8	y	0.7	42	16.5	61.9	21	53.3	0.5
26	y	1.2	231	3.0	12.6	-23	17.6	3.6	y	-2.3	318	47.2	63.2	-5	38.4	1.8	y	0.7	43	18.4	61.8	21	53.8	0.4
27	y	1.2	231	15.6	12.7	-23	14.0	3.8	y	-2.3	319	50.4	63.3	-5	36.6	2.0	y	0.7	44	20.2	61.7	21	54.2	0.5
Feb 28	y	1.2	231	28.3	12.7	-23	10.2	4.0	y	-2.4	320	53.8	63.5	-5	34.6	2.0	y	0.7	45	21.9	61.6	21	54.7	0.5
Mar 1	y	1.2	231	41.0	12.7	-23	6.2	4.3	y	-2.4	321	57.2	63.6	-5	32.6	2.0	y	0.7	46	23.5	61.5	21	55.2	0.4
2	y	1.2	231	53.7	12.7	-23	1.9	4.5	y	-2.4	323	0.9	63.8	-5	30.6	2.1</								

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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	'					
Mar 7	177	13.5	3.6	-5	19.4	23.3	SS -0.9	162	15.5	-18.4	-2.0	1	55.8	48.2	0.8	-3.9	182	19.3	-11.1	-8	56.7	28.0
	8	177	17.1	3.7	-4	56.1	23.5	SS -0.8	161	57.1	-13.9	-2.3	2	44.0	46.3	0.9	-3.9	182	8.2	-10.9	-8	28.7
9	177	20.8	3.8	-4	32.6	23.5	SS -0.7	161	43.2	-8.9	-2.5	3	30.3	44.2	1.1	-3.9	181	57.3	-10.7	-8	0.4	28.4
10	177	24.6	3.9	-4	9.1	23.5	SS -0.6	161	34.2	-3.5	-2.7	4	14.5	41.6	1.3	-3.9	181	46.6	-10.5	-7	32.0	28.7
11	177	28.4	3.9	-3	45.6	23.6	SS -0.5	161	30.7	2.3	-2.9	4	56.1	38.8	1.4	-3.9	181	36.0	-10.4	-7	3.3	28.9
12	177	32.4	4.0	-3	22.0	23.6	SS -0.4	161	33.0	8.5	-3.1	5	34.9	35.6	1.6	-3.9	181	25.6	-10.2	-6	34.4	29.0
13	177	36.4	4.1	-2	58.4	23.7	SS -0.2	161	41.5	15.1	-3.3	6	10.5	32.4	1.6	-3.9	181	15.4	-10.1	-6	5.4	29.2
14	177	40.5	4.2	-2	34.7	23.7	SS 0.0	161	56.6	21.9	-3.4	6	42.9	28.7	1.8	-3.9	181	5.4	-9.9	-5	36.2	29.4
15	177	44.7	4.2	-2	11.0	23.7	SS 0.2	162	18.5	29.0	-3.5	7	11.6	24.9	1.9	-3.9	180	55.4	-9.8	-5	6.8	29.5
16	177	48.9	4.3	-1	47.3	23.7	SS 0.4	162	47.5	36.2	-3.6	7	36.5	20.9	2.0	-3.9	180	45.6	-9.7	-4	37.3	29.6
17	177	53.2	4.3	-1	23.6	23.8	SS 0.6	163	23.6	43.5	-3.7	7	57.4	16.7	2.1	-3.9	180	36.0	-9.6	-4	7.7	29.7
18	177	57.5	4.4	-0	59.8	23.7	SS 0.9	164	7.1	50.8	-3.6	8	14.1	12.4	2.2	-3.9	180	26.4	-9.5	-3	38.0	29.8
19	178	1.9	4.4	-0	36.1	23.7	SS 1.1	164	57.9	58.0	-3.6	8	26.5	8.0	2.2	-3.9	180	16.9	-9.4	-3	8.2	30.0
20	178	6.3	4.5	-0	12.4	23.7	SS 1.4	165	55.9	65.0	-3.5	8	34.5	3.5	2.3	-3.9	180	7.6	-9.3	-2	38.2	30.0
21	178	10.8	4.5	0	11.3	23.7	SS 1.6	167	0.9	71.6	-3.3	8	38.0	-1.0	2.3	-3.9	179	58.3	-9.2	-2	8.2	30.0
22	178	15.3	4.5	0	35.0	23.7	SS 1.9	168	12.5	77.9	-3.1	8	37.0	-5.4	2.2	-3.9	179	49.0	-9.2	-1	38.2	30.1
23	178	19.8	4.5	0	58.7	23.6	SS 2.2	169	30.4	83.6	-2.9	8	31.6	-9.6	2.1	-3.9	179	39.9	-9.1	-1	8.1	30.2
24	178	24.3	4.6	1	22.3	23.6	SS 2.4	170	54.0	88.7	-2.5	8	22.0	-13.7	2.0	-3.9	179	30.8	-9.1	-0	37.9	30.2
25	178	28.9	4.6	1	45.9	23.6	2.7	172	22.7	93.0	-2.2	8	8.3	-17.6	1.9	-3.9	179	21.7	-9.1	-0	7.7	30.2
26	178	33.4	4.6	2	9.5	23.5	2.9	173	55.7	96.5	-1.8	7	50.7	-21.1	1.7	-3.9	179	12.6	-9.0	0	22.5	30.2
27	178	38.0	4.6	2	33.0	23.4	3.1	175	32.2	99.2	-1.3	7	29.6	-24.1	1.5	-3.9	179	3.6	-9.0	0	52.7	30.2
28	178	42.6	4.6	2	56.4	23.4	3.0	177	11.4	100.9	-0.9	7	5.5	-26.8	1.4	-3.9	178	54.5	-9.0	1	22.9	30.1
29	178	47.1	4.5	3	19.8	23.4	2.9	178	52.2	101.7	-0.4	6	38.7	-28.8	1.0	-3.9	178	45.5	-9.1	1	53.0	30.2
30	178	51.7	4.5	3	43.2	23.3	2.8	180	33.9	101.5	0.1	6	9.9	-30.5	0.9	-3.9	178	36.4	-9.1	2	23.2	30.1
Mar 31	178	56.2	4.5	4	6.5	23.2	2.7	182	15.5	100.6	0.5	5	39.4	-31.5	0.5	-3.9	178	27.4	-9.1	2	53.3	30.1
Apr 1	179	0.7	4.5	4	29.7	23.1	2.6	183	56.0	98.8	0.9	5	7.9	-31.9	0.2	-3.9	178	18.2	-9.2	3	23.4	30.0
2	179	5.1	4.4	4	52.8	23.0	2.5	185	34.8	96.3	1.3	4	36.0	-31.9	0.0	-3.9	178	9.0	-9.2	3	53.4	29.9
3	179	9.5	4.4	5	15.8	23.0	SR 2.4	187	11.1	93.1	1.6	4	4.1	-31.2	-0.3	-3.9	177	59.8	-9.3	4	23.3	29.8
4	179	13.9	4.3	5	38.8	22.8	SR 2.3	188	44.2	89.5	1.8	3	32.9	-30.3	-0.4	-3.9	177	50.5	-9.4	4	53.1	29.7
5	179	18.3	4.3	6	1.6	22.8	SR 2.2	190	13.6	85.4	2.0	3	2.6	-28.9	-0.7	-3.9	177	41.1	-9.5	5	22.8	29.6
6	179	22.6	4.2	6	24.4	22.6	SR 2.1	191	39.0	81.0	2.2	2	33.7	-27.1	-0.9	-3.9	177	31.6	-9.6	5	52.4	29.5
7	179	26.8	4.2	6	47.0	22.6	SR 2.0	193	0.0	76.4	2.3	2	6.6	-25.2	-1.0	-3.9	177	22.0	-9.7	6	21.9	29.3
8	179	31.0	4.1	7	9.6	22.4	SR 1.9	194	16.4	71.6	2.4	1	41.4	-22.9	-1.1	-3.9	177	12.3	-9.8	6	51.2	29.2
9	179	35.1	4.1	7	32.0	22.2	SR 1.8	195	28.0	66.8	2.4	1	18.5	-20.5	-1.2	-3.9	177	2.5	-9.9	7	20.4	29.1
10	179	39.2	4.0	7	54.2	22.2	SR 1.7	196	34.9	62.0	2.4	0	58.0	-18.0	-1.3	-3.9	176	52.6	-10.1	7	49.5	28.8
11	179	43.1	3.9	8	16.4	22.0	SR 1.6	197	36.9	57.2	2.4	0	40.0	-15.4	-1.3	-3.9	176	42.5	-10.2	8	18.3	28.7
12	179	47.1	3.8	8	38.4	21.8	SR 1.5	198	34.1	52.6	2.3	0	24.6	-12.8	-1.3	-3.9	176	32.3	-10.4	8	47.0	28.4
13	179	50.9	3.8	9	0.2	21.8	SR 1.4	199	26.7	48.0	2.3	0	11.8	-10.2	-1.3	-3.9	176	21.9	-10.5	9	15.4	28.3
14	179	54.7	3.7	9	22.0	21.5	SR 1.3	200	14.7	43.6	2.2	0	1.6	-7.6	-1.3	-3.9	176	11.4	-10.7	9	43.7	28.0
15	179	58.4	3.6	9	43.5	21.4	SR 1.2	200	58.3	39.4	2.1	-0	6.0	-5.1	-1.3	-3.9	176	0.7	-10.9	10	11.7	27.8
16	180	2.0	3.5	10	4.9	21.2	SR 1.1	201	37.7	35.3	2.0	-0	11.1	-2.5	-1.3	-3.9	175	49.8	-11.1	10	39.5	27.5
17	180	5.5	3.4	10	26.1	21.1	SR 1.0	202	13.1	31.5	1.9	-0	13.6	-0.1	-1.2	-3.9	175	38.7	-11.3	11	7.0	27.3
18	180	8.9	3.3	10	47.2	20.8	SR 1.0	202	44.6	27.8	1.9	-0	13.7	2.3	-1.2	-3.9	175	27.4	-11.5	11	34.3	27.0
19	180	12.3	3.2	11	8.0	20.7	SR 0.9	203	12.3	24.2	1.8	-0	11.4	4.6	-1.2	-3.9	175	16.0	-11.7	12	1.3	26.7
20	180	15.5	3.1	11	28.7	20.5	SR 0.8	203	36.6	20.9	1.7	-0	6.8	6.8	-1.1	-3.9	175	4.3	-11.9	12	28.0	26.4
21	180	18.6	3.0	11	49.2	20.3	SR 0.8	203	57.5	17.7	1.6	0	0.0	9.0	-1.1	-3.9	174	52.4	-12.1	12	54.4	26.1
22	180	21.7	2.9	12	9.5	20.1	SR 0.7	204	15.1	14.6	1.5	0	9.0	11.0	-1.0	-3.9	174	40.2	-12.4	13	20.5	25.8
23	180	24.6	2.8	12	29.6	19.9	SR 0.6	204	29.8	11.7	1.5	0	20.0	13.0	-1.0	-3.9	174	27.9	-12.6	13	46.3	25.4
24	180	27.4	2.7	12	49.5	19.6	SR 0.6	204	41.5	9.0	1.4	0	33.0	14.9	-1.0	-3.9	174	15.3	-12.8	14	11.7	25.1
25	180	30.1	2.6	13	9.1	19.5	SR 0.5	204	50.5	6.3	1.3	0	47.9	16.8	-1.0	-3.9	174	2.4	-13.1	14	36.8	24.7
26	180	32.7	2.4	13	28.6	19.2	SR 0.5	204	56.8	3.8	1.3	1	4.7	18.5	-0.8	-3.9	173	49.3	-13.4	15	1.5	24.3
27	180	35.1	2.3	13	47.8	19.0	SR 0.4	205	0.6	1.3	1.2	1	23.2	20.2	-0.9	-3.9	173	36.0	-13.6	15	25.8	24.0
28	180	37.4	2.2	14	6.8	18.8	SR 0.4	205	2.0	-1.0	1.2	1	43.4	21.8	-0.8	-3.9	173	22.4	-13.9	15	49.8	23.6
29	180	39.6	2.0	14	25.6	18.6	SR 0.4	205	0.9	-3.3	1.1	2	5.2	23.4	-0.8	SS -3.9	173	8.5	-14.2	16	13.4	23.1
Apr 30	180	41.6	1.9	14	44.2	18.3	SR 0.3	204	57.7	-5.5	1.1	2	28.6	24.8	-0.7	SS -3.9	172	54.3	-14.4	16	36.5	22.8
May 1	180	43.5	1.8	15	2.5	18.0	SR 0.3	204	52.2	-7.6	1.1	2	53.4	26.3	-0.7	SS -3.9	172	39.9	-14.7	16	59.3	22.3
2	180	45.3	1.6	15	20.5	17.9	SR 0.2	204	44.6	-9.7	1.1	3	19.7	27.6	-0.7	SS -3.9	172	25.2	-15.0	17	21.6	21.8
3	180	47.0	1.5	15	38.4	17.5	SR 0.2	204	34.8	-11.8	1.0	3	47.3	29.0	-0.7	SS -3.9	172	10.2	-15.3	17	43.4	21.4
4	180	48.4	1.3	15	55.9	17.3	SR 0.2	204	23.0	-13.8	1.0	4	16.3	30.2	-0.6	SS -3.9	171	54.9	-15.5	18	4.8	20.9
5	180	49.8	1.2	16	13.2	17.0	SR 0.1	204	9.2	-15.8	1.0	4	46.5	31.3	-0.6</							

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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	1.1 232 57.5	12.9	-22 37.3	5.6	y	-2.4 328 21.1	64.4	-5 19.5	2.3	y	0.8 52 30.9	60.8	21 57.5	0.3
	y	1.1 233 10.3	12.9	-22 31.7	5.8	y	-2.4 329 25.6	64.6	-5 17.2	2.4	y	0.8 53 31.7	60.7	21 57.8	0.4
8	y	1.1 233 23.3	13.0	-22 25.9	6.0	y	-2.4 330 30.1	64.7	-5 14.8	2.5	y	0.8 54 32.5	60.6	21 58.2	0.3
9	y	1.1 233 36.2	13.0	-22 19.9	6.2	y	-2.4 331 34.8	64.8	-5 12.3	2.5	y	0.8 55 33.1	60.5	21 58.5	0.3
10	y	1.1 233 49.2	13.0	-22 13.7	6.4	y	-2.4 332 39.6	64.9	-5 9.8	2.5	y	0.8 56 33.6	60.4	21 58.8	0.2
11	y	1.1 234 2.3	13.1	-22 7.3	6.6	y	-2.4 333 44.5	65.0	-5 7.3	2.6	y	0.8 57 34.0	60.3	21 59.0	0.3
12	y	1.1 234 15.4	13.2	-22 0.7	6.8	y	-2.4 334 49.6	65.1	-5 4.7	2.6	y	0.8 58 34.2	60.1	21 59.3	0.2
13	y	1.1 234 28.5	13.2	-21 53.9	7.0	y	-2.4 335 54.7	65.2	-5 2.1	2.7	y	0.8 59 34.4	60.0	21 59.5	0.2
14	y	1.1 234 41.7	13.3	-21 46.9	7.3	y	-2.4 336 59.9	65.3	-4 59.4	2.7	y	0.8 60 34.4	59.9	21 59.7	0.2
15	y	1.1 234 55.0	13.3	-21 39.6	7.4	y	-2.4 338 5.3	65.4	-4 56.7	2.7	y	0.8 61 34.3	59.8	21 59.9	0.2
16	y	1.1 235 8.3	13.4	-21 32.2	7.6	y	-2.4 339 10.7	65.5	-4 54.0	2.8	y	0.8 62 34.1	59.7	22 0.1	0.2
17	y	1.0 235 21.7	13.4	-21 24.6	7.9	y	-2.4 340 16.2	65.6	-4 51.2	2.7	y	0.8 63 33.8	59.6	22 0.3	0.1
18	y	1.0 235 35.1	13.5	-21 16.7	8.0	y	-2.4 341 21.8	65.7	-4 48.5	2.9	y	0.9 64 33.3	59.4	22 0.4	0.1
19	y	1.0 235 48.6	13.6	-21 8.7	8.2	y	-2.4 342 27.5	65.7	-4 45.6	2.8	y	0.9 65 32.7	59.3	22 0.5	0.2
20	y	1.0 236 2.2	13.6	-21 0.5	8.4	y	-2.4 343 33.2	65.8	-4 42.8	2.9	y	0.9 66 32.1	59.2	22 0.7	0.1
21	y	1.0 236 15.8	13.7	-20 52.1	8.6	y	-2.4 344 39.0	65.9	-4 39.9	2.8	y	0.9 67 31.3	59.1	22 0.8	0.0
22	y	1.0 236 29.5	13.8	-20 43.5	8.8	y	-2.5 345 44.9	65.9	-4 37.1	2.9	y	0.9 68 30.3	59.0	22 0.8	0.1
23	y	1.0 236 43.3	13.8	-20 34.7	9.0	y	-2.5 346 50.8	66.0	-4 34.2	3.0	y	0.9 69 29.3	58.8	22 0.9	0.0
24	y	1.0 236 57.1	13.9	-20 25.7	9.2	y	-2.5 347 56.8	66.0	-4 31.2	2.9	y	0.9 70 28.1	58.7	22 0.9	0.1
25	y	1.0 237 11.0	14.0	-20 16.5	9.4	y	-2.5 349 2.8	66.1	-4 28.3	3.0	y	0.9 71 26.9	58.6	22 1.0	0.0
26	y	1.0 237 25.0	14.0	-20 7.1	9.5	y	-2.5 350 8.9	66.1	-4 25.3	2.9	y	0.9 72 25.5	58.5	22 1.0	0.0
27	y	1.0 237 39.1	14.1	-19 57.6	9.7	y	-2.5 351 15.1	66.2	-4 22.4	3.0	y	0.9 73 24.0	58.4	22 1.0	0.0
28	y	1.0 237 53.2	14.2	-19 47.9	9.9	y	-2.5 352 21.2	66.2	-4 19.4	3.0	y	0.9 74 22.3	58.3	22 1.0	-0.1
29	y	0.9 238 7.4	14.3	-19 38.0	10.1	y	-2.5 353 27.4	66.2	-4 16.4	3.0	y	0.9 75 20.6	58.1	22 0.9	0.0
30	y	0.9 238 21.6	14.3	-19 27.9	10.3	y	-2.5 354 33.6	66.2	-4 13.4	2.9	y	0.9 76 18.7	58.0	22 0.9	-0.1
Mar 31	y	0.9 238 36.0	14.4	-19 17.6	10.4	y	-2.5 355 39.9	66.3	-4 10.5	3.0	y	0.9 77 16.8	57.9	22 0.8	-0.1
Apr 1	y	0.9 238 50.4	14.5	-19 7.2	10.6	y	-2.5 356 46.1	66.3	-4 7.5	3.0	y	0.9 78 14.7	57.8	22 0.7	-0.1
2	y	0.9 239 4.9	14.6	-18 56.6	10.8	y	-2.5 357 52.4	66.3	-4 4.5	3.0	y	0.9 79 12.5	57.7	22 0.6	-0.1
3	y	0.9 239 19.5	14.7	-18 45.8	10.9	y	-2.5 358 58.7	66.3	-4 1.5	3.0	y	0.9 80 10.1	57.6	22 0.5	-0.2
4	y	0.9 239 34.1	14.7	-18 34.9	11.1	y	-2.5 0 5.0	66.3	-3 58.5	3.0	y	0.9 81 7.7	57.4	22 0.3	-0.1
5	y	0.9 239 48.9	14.8	-18 23.8	11.2	y	-2.5 1 11.2	66.3	-3 55.5	2.9	y	0.9 82 5.1	57.3	22 0.2	-0.2
6	y	0.9 240 3.7	14.9	-18 12.6	11.5	y	-2.5 2 17.5	66.3	-3 52.6	3.0	y	1.0 83 2.5	57.2	22 0.0	-0.2
7	y	0.9 240 18.6	15.0	-18 1.1	11.5	y	-2.5 3 23.8	66.2	-3 49.6	2.9	y	1.0 83 59.7	57.1	21 59.8	-0.2
8	y	0.8 240 33.6	15.1	-17 49.6	11.8	y	-2.5 4 30.0	66.2	-3 46.7	3.0	y	1.0 84 56.8	57.0	21 59.6	-0.2
9	y	0.8 240 48.7	15.2	-17 37.8	11.8	y	-2.5 5 36.2	66.2	-3 43.7	2.9	y	1.0 85 53.8	56.9	21 59.4	-0.3
10	y	0.8 241 3.9	15.3	-17 26.0	12.0	y	-2.5 6 42.4	66.1	-3 40.8	2.9	y	1.0 86 50.7	56.8	21 59.1	-0.2
11	y	0.8 241 19.2	15.4	-17 14.0	12.2	y	-2.5 7 48.6	66.1	-3 37.9	2.8	y	1.0 87 47.4	56.7	21 58.9	-0.3
12	y	0.8 241 34.6	15.5	-17 1.8	12.3	y	-2.5 8 54.7	66.1	-3 35.1	2.9	y	1.0 88 44.1	56.5	21 58.6	-0.3
13	y	0.8 241 50.0	15.5	-16 49.5	12.5	y	-2.5 10 0.7	66.0	-3 32.2	2.8	y	1.0 89 40.6	56.4	21 58.3	-0.3
14	y	0.8 242 5.6	15.6	-16 37.0	12.6	y	-2.5 11 6.7	66.0	-3 29.4	2.8	y	1.0 90 37.0	56.3	21 58.0	-0.3
15	y	0.8 242 21.2	15.7	-16 24.4	12.7	y	-2.5 12 12.7	65.9	-3 26.6	2.8	y	1.0 91 33.4	56.2	21 57.7	-0.4
16	y	0.8 242 36.9	15.8	-16 11.7	12.8	y	-2.5 13 18.6	65.8	-3 23.8	2.7	y	1.0 92 29.6	56.1	21 57.3	-0.3
17	y	0.8 242 52.8	15.9	-15 58.9	13.0	y	-2.4 14 24.4	65.8	-3 21.1	2.7	y	1.0 93 25.7	56.0	21 57.0	-0.4
18	y	0.8 243 8.7	16.0	-15 45.9	13.1	y	-2.4 15 30.2	65.7	-3 18.4	2.6	y	1.0 94 21.7	55.9	21 56.6	-0.4
19	y	0.7 243 24.7	16.1	-15 32.8	13.3	y	-2.4 16 35.9	65.6	-3 15.8	2.6	y	1.0 95 17.6	55.8	21 56.2	-0.4
20	y	0.7 243 40.8	16.2	-15 19.5	13.3	y	-2.4 17 41.5	65.5	-3 13.2	2.6	y	1.0 96 13.4	55.7	21 55.8	-0.4
21	y	0.7 243 56.9	16.3	-15 6.2	13.5	y	-2.4 18 47.1	65.5	-3 10.6	2.6	y	1.0 97 9.1	55.6	21 55.4	-0.4
22	y	0.7 244 13.2	16.4	-14 52.7	13.6	y	-2.4 19 52.5	65.4	-3 8.0	2.5	y	1.0 98 4.7	55.5	21 55.0	-0.5
23	y	0.7 244 29.6	16.4	-14 39.1	13.7	y	-2.4 20 57.9	65.3	-3 5.5	2.4	y	1.0 99 0.2	55.4	21 54.5	-0.5
24	y	0.7 244 46.0	16.5	-14 25.4	13.8	y	-2.4 22 3.2	65.2	-3 3.1	2.4	y	1.0 99 55.6	55.3	21 54.0	-0.5
25	y	0.7 245 2.5	16.6	-14 11.6	14.0	y	-2.4 23 8.3	65.1	-3 0.7	2.4	y	1.0 100 50.9	55.2	21 53.5	-0.5
26	y	0.7 245 19.1	16.7	-13 57.6	14.0	y	-2.4 24 13.4	65.0	-2 58.3	2.3	y	1.0 101 46.1	55.1	21 53.0	-0.5
27	y	0.7 245 35.8	16.8	-13 43.6	14.2	y	-2.4 25 18.4	64.9	-2 56.0	2.3	y	1.0 102 41.3	55.0	21 52.5	-0.5
28	y	0.7 245 52.6	16.9	-13 29.4	14.2	y	-2.4 26 23.3	64.8	-2 53.7	2.2	y	1.0 103 36.3	54.9	21 52.0	-0.6
29	y	0.6 246 9.4	17.0	-13 15.2	14.4	y	-2.4 27 28.0	64.7	-2 51.5	2.1	y	1.0 104 31.2	54.8	21 51.4	-0.5
Apr 30	y	0.6 246 26.4	17.0	-13 0.8	14.4	y	-2.4 28 32.7	64.5	-2 49.4	2.2	y	1.0 105 26.0	54.7	21 50.9	-0.6
May 1	y	0.6 246 43.4	17.1	-12 46.4	14.6	y	-2.4 29 37.2	64.4	-2 47.2	2.0	y	1.0 106 20.7	54.6	21 50.3	-0.6
2	y	0.6 247 0.6	17.2	-12 31.8	14.6	y	-2.4 30 41.7	64.3	-2 45.2	2.0	y	1.0 107 15.4	54.6	21 49.7	-0.6
3	y	0.6 247 17.8	17.3	-12 17.2	14.7	y	-2.4 31 45.9	64.2	-2 43.2	1.9	y	1.0 108 9.9	54.5	21 49.1	-0.7
4	y	0.6 247 35.1	17.4	-12 2.5	14.8	y	-2.4 32 50.1	64.0	-2 41.3	1.9	y	1.0 109 4.4	54.4	21 48.4	-0.6
5	y	0.6 247 52.5	17.5	-11 47.7	14.9	y	-2.4 33 54.2	63.9	-2 39.4	1.8	y	1.0 109 58.8	54.3	21 47.8	-0.7
6	y	0.6 248 10.0	17.6	-11 32.8	15.0	y	-2.4 34 58.1	63.8	-2 37.6	1.8	y	1.0 110 53.1	54.2	21 47.1	-0.7
7	y	0.6 248 27.5	17.7	-11 17.8	15.0	y	-2.4 36 1.8	63.6	-2 35.8	1.7	y	1.0 111 47.3	54.1	21 46.4	-0.7
8	y	0.6 248 45.2	17.7	-11 2.8	15.1	y	-2.4 37 5.5	63.5	-2 34.1	1.6	y	1.0 112 41.4	54.0	21 45.7	-0.7
May 9	y	0.5 249 2.9	17.8	-10 47.7	15.2	y	-2.4 38 9.0	63.4	-2 32.5	1.6	y	1.0 113 35.4	53.9	21 45.0	-0.7
May 10	y	0.5 249 2.9	17.8	-10 47.7	15.2	y	-2.4 38 9.0	63.4	-2 32.5	1.6	y	1.0 113 35.4	53.9	21 45.0	-0.7

2005

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	54.9	0.3	17	51.1	15.3	sr	-0.2	202	4.0	-28.0	1.0	8	10.4	37.2	-0.4
12	180	55.2	0.2	18	6.4	15.0	sr	-0.2	201	36.0	-30.1	1.1	8	47.6	38.1	-0.4
13	180	55.4	0.1	18	21.4	14.7	sr	-0.3	201	5.8	-32.3	1.1	9	25.7	38.7	-0.3
14	180	55.5	-0.1	18	36.1	14.3	sr	-0.3	200	33.5	-34.5	1.1	10	4.4	39.4	-0.4
15	180	55.4	-0.2	18	50.4	14.1	sr	-0.4	199	59.0	-36.8	1.1	10	43.8	40.0	-0.3
16	180	55.2	-0.3	19	4.5	13.7	sr	-0.5	199	22.2	-39.1	1.2	11	23.8	40.4	-0.2
17	180	54.9	-0.5	19	18.2	13.4	sr	-0.5	198	43.0	-41.5	1.2	12	4.2	40.9	-0.3
18	180	54.4	-0.6	19	31.6	13.0	sr	-0.6	198	1.5	-44.0	1.2	12	45.1	41.1	-0.1
19	180	53.8	-0.7	19	44.6	12.7	sr	-0.7	197	17.5	-46.5	1.3	13	26.2	41.4	-0.1
20	180	53.1	-0.9	19	57.3	12.4	sr	-0.7	196	30.9	-49.1	1.3	14	7.6	41.5	-0.1
21	180	52.2	-1.0	20	9.7	12.1	sr	-0.8	195	41.8	-51.8	1.3	14	49.1	41.5	0.0
22	180	51.2	-1.1	20	21.8	11.6	sr	-0.9	194	50.0	-54.5	1.3	15	30.6	41.4	0.1
23	180	50.0	-1.3	20	33.4	11.4	sr	-1.0	193	55.6	-57.2	1.4	16	12.0	41.1	0.1
24	180	48.8	-1.4	20	44.8	10.9	sr	-1.1	192	58.3	-60.0	1.4	16	53.1	40.7	0.2
25	180	47.4	-1.5	20	55.7	10.7	sr	-1.2	191	58.4	-62.7	1.4	17	33.8	40.1	0.3
26	180	45.9	-1.6	21	6.4	10.2	sr	-1.3	190	55.7	-65.4	1.4	18	13.9	39.3	0.4
27	180	44.2	-1.8	21	16.6	9.9	sr	-1.4	189	50.3	-68.1	1.3	18	53.2	38.4	0.5
28	180	42.4	-1.9	21	26.5	9.5	sr	-1.5	188	42.2	-70.7	1.3	19	31.6	37.2	0.6
29	180	40.6	-2.0	21	36.0	9.2		-1.6	187	31.5	-73.1	1.2	20	8.8	35.9	0.6
30	180	38.6	-2.1	21	45.2	8.7		-1.8	186	18.4	-75.4	1.1	20	44.7	34.4	0.8
May 31	180	36.5	-2.2	21	53.9	8.4		-1.9	185	3.0	-77.5	1.0	21	19.1	32.6	0.9
Jun 1	180	34.2	-2.3	22	2.3	8.0		-2.0	183	45.5	-79.3	0.9	21	51.7	30.6	1.0
2	180	31.9	-2.4	22	10.3	7.6		-2.2	182	26.2	-80.8	0.8	22	22.3	28.5	1.0
3	180	29.5	-2.5	22	17.9	7.3		-2.3	181	5.4	-82.0	0.6	22	50.8	26.2	1.1
4	180	27.0	-2.6	22	25.2	6.8		-2.2	179	43.4	-82.8	0.4	23	17.0	23.8	1.2
5	180	24.4	-2.7	22	32.0	6.5		-2.1	178	20.6	-83.3	0.2	23	40.8	21.2	1.3
6	180	21.7	-2.8	22	38.5	6.0		-2.0	176	57.3	-83.4	0.0	24	2.0	18.4	1.4
7	180	18.9	-2.8	22	44.5	5.6		-1.9	175	33.9	-83.1	-0.1	24	20.4	15.8	1.3
8	180	16.1	-2.9	22	50.1	5.3		-1.7	174	10.8	-82.5	-0.3	24	36.2	12.9	1.5
9	180	13.1	-3.0	22	55.4	4.8		-1.6	172	48.3	-81.4	-0.5	24	49.1	10.1	1.4
10	180	10.2	-3.0	23	0.2	4.5	ss	-1.5	171	26.9	-80.1	-0.7	24	59.2	7.4	1.4
11	180	7.1	-3.1	23	4.7	4.0	ss	-1.4	170	6.8	-78.4	-0.8	25	6.6	4.6	1.4
12	180	4.1	-3.1	23	8.7	3.6	ss	-1.3	168	48.4	-76.5	-1.0	25	11.2	2.0	1.3
13	180	0.9	-3.2	23	12.3	3.2	ss	-1.2	167	31.9	-74.3	-1.1	25	13.2	-0.6	1.3
14	179	57.8	-3.2	23	15.5	2.8	ss	-1.1	166	17.6	-71.9	-1.2	25	12.6	-3.1	1.3
15	179	54.6	-3.2	23	18.3	2.4	ss	-1.0	165	5.6	-69.4	-1.3	25	9.5	-5.5	1.2
16	179	51.4	-3.2	23	20.7	2.0	ss	-0.9	163	56.3	-66.7	-1.4	25	4.0	-7.8	1.2
17	179	48.2	-3.2	23	22.7	1.5	ss	-0.8	162	49.6	-63.8	-1.4	24	56.2	-9.9	1.0
18	179	44.9	-3.2	23	24.2	1.2	ss	-0.7	161	45.7	-60.9	-1.5	24	46.3	-11.9	1.0
19	179	41.7	-3.2	23	25.4	0.7	ss	-0.6	160	44.8	-57.9	-1.5	24	34.4	-13.8	1.0
20	179	38.5	-3.2	23	26.1	0.3	ss	-0.6	159	46.9	-54.9	-1.5	24	20.6	-15.5	0.8
21	179	35.2	-3.2	23	26.4	-0.1	ss	-0.5	158	52.1	-51.8	-1.5	24	5.1	-17.2	0.8
22	179	32.0	-3.2	23	26.3	-0.5	ss	-0.4	158	0.3	-48.6	-1.6	23	47.9	-18.7	0.8
23	179	28.7	-3.2	23	25.8	-0.9	ss	-0.4	157	11.7	-45.5	-1.6	23	29.2	-20.0	0.6
24	179	25.5	-3.2	23	24.9	-1.3	ss	-0.3	156	26.2	-42.3	-1.6	23	9.2	-21.3	0.6
25	179	22.3	-3.2	23	23.6	-1.7	ss	-0.2	155	43.9	-39.1	-1.6	22	47.9	-22.4	0.6
26	179	19.2	-3.1	23	21.9	-2.2	ss	-0.2	155	4.8	-35.9	-1.6	22	25.5	-23.5	0.5
27	179	16.1	-3.1	23	19.7	-2.6	ss	-0.1	154	28.9	-32.7	-1.6	22	2.0	-24.4	0.5
28	179	13.0	-3.0	23	17.1	-2.9	ss	-0.1	153	56.1	-29.6	-1.6	21	37.6	-25.2	0.4
29	179	9.9	-3.0	23	14.2	-3.4	ss	0.0	153	26.6	-26.4	-1.6	21	12.4	-25.9	0.4
Jun 30	179	6.9	-3.0	23	10.8	-3.8	ss	0.1	153	0.2	-23.2	-1.6	20	46.5	-26.5	0.3
Jul 1	179	4.0	-2.9	23	7.0	-4.2	ss	0.1	152	37.0	-19.9	-1.6	20	20.0	-27.0	0.3
2	179	1.1	-2.8	23	2.8	-4.6	ss	0.2	152	17.1	-16.7	-1.6	19	53.0	-27.4	0.2
3	178	58.3	-2.8	22	58.2	-4.9	ss	0.2	152	0.4	-13.5	-1.6	19	25.6	-27.8	0.2
4	178	55.5	-2.7	22	53.3	-5.4	ss	0.3	151	46.9	-10.2	-1.6	18	57.8	-27.9	0.0
5	178	52.8	-2.6	22	47.9	-5.8	ss	0.3	151	36.7	-6.9	-1.7	18	29.9	-28.0	0.1
6	178	50.2	-2.5	22	42.1	-6.2	ss	0.4	151	29.8	-3.5	-1.7	18	1.9	-28.1	0.1
7	178	47.7	-2.4	22	35.9	-6.6	ss	0.4	151	26.3	-0.1	-1.7	17	33.8	-27.9	-0.1
8	178	45.3	-2.3	22	29.3	-6.9	ss	0.5	151	26.1	3.3	-1.7	17	5.9	-27.8	0.0
9	178	43.0	-2.2	22	22.4	-7.4	ss	0.5	151	29.4	6.8	-1.8	16	38.1	-27.5	-0.1
10	178	40.8	-2.1	22	15.0	-7.7	ss	0.6	151	36.2	10.4	-1.8	16	10.6	-27.1	-0.2
11	178	38.7	-2.0	22	7.3	-8.1	ss	0.6	151	46.6	14.0	-1.8	15	43.5	-26.6	-0.3
12	178	36.7	-1.9	21	59.2	-8.5	ss	0.7	152	0.7	17.8	-1.9	15	16.9	-26.1	-0.3
13	178	34.8	-1.7	21	50.7	-8.9	ss	0.8	152	18.5	21.6	-1.9	14	50.8	-25.3	-0.4
Jul 14	178	33.1	-1.6	21	41.8	-9.2	ss	0.8	152	40.1	25.5	-2.0	14	25.5	-24.5	-0.4

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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'
May 11	y	0.5 249 20.8	17.9	-10 32.5	15.2	y	-2.3 39 12.3	63.2	-2 30.9	1.5	y	1.1 114 29.3	53.9	21 44.3	-0.7
12	y	0.5 249 38.7	18.0	-10 17.3	15.3	y	-2.3 40 15.5	63.1	-2 29.4	1.4	y	1.1 115 23.2	53.8	21 43.6	-0.8
13	y	0.5 249 56.7	18.1	-10 2.0	15.4	y	-2.3 41 18.6	62.9	-2 28.0	1.4	y	1.1 116 17.0	53.7	21 42.8	-0.8
14	y	0.5 250 14.8	18.2	-9 46.6	15.4	y	-2.3 42 21.5	62.8	-2 26.6	1.3	y	1.1 117 10.7	53.6	21 42.0	-0.8
15	y	0.5 250 33.0	18.3	-9 31.2	15.5	y	-2.3 43 24.3	62.6	-2 25.3	1.3	y	1.1 118 4.3	53.5	21 41.2	-0.8
16	y	0.5 250 51.3	18.4	-9 15.7	15.5	y	-2.3 44 26.9	62.5	-2 24.0	1.1	y	1.1 118 57.9	53.5	21 40.4	-0.8
17	y	0.5 251 9.6	18.4	-9 0.2	15.5	y	-2.3 45 29.3	62.3	-2 22.9	1.1	y	1.1 119 51.3	53.4	21 39.6	-0.8
18	y	0.5 251 28.1	18.5	-8 44.7	15.7	y	-2.3 46 31.6	62.1	-2 21.8	1.1	y	1.1 120 44.7	53.3	21 38.8	-0.9
19	y	0.4 251 46.6	18.6	-8 29.0	15.6	y	-2.3 47 33.8	62.0	-2 20.7	0.9	y	1.1 121 38.1	53.3	21 37.9	-0.8
20	y	0.4 252 5.2	18.7	-8 13.4	15.7	y	-2.3 48 35.8	61.8	-2 19.8	0.9	y	1.1 122 31.3	53.2	21 37.1	-0.9
21	y	0.4 252 23.9	18.8	-7 57.7	15.8	y	-2.3 49 37.6	61.7	-2 18.9	0.8	y	1.1 123 24.5	53.1	21 36.2	-0.9
22	y	0.4 252 42.7	18.8	-7 41.9	15.7	y	-2.3 50 39.3	61.5	-2 18.1	0.8	y	1.1 124 17.6	53.0	21 35.3	-0.9
23	y	0.4 253 1.5	18.9	-7 26.2	15.8	y	-2.3 51 40.8	61.3	-2 17.3	0.7	y	1.1 125 10.7	53.0	21 34.4	-0.9
24	y	0.4 253 20.4	19.0	-7 10.4	15.9	y	-2.3 52 42.1	61.2	-2 16.6	0.6	y	1.1 126 3.7	52.9	21 33.5	-1.0
25	y	0.4 253 39.4	19.1	-6 54.5	15.8	y	-2.3 53 43.3	61.0	-2 16.0	0.5	y	1.1 126 56.6	52.8	21 32.5	-0.9
26	y	0.4 253 58.5	19.1	-6 38.7	15.9	y	-2.3 54 44.3	60.9	-2 15.5	0.5	y	1.1 127 49.4	52.8	21 31.6	-1.0
27	y	0.4 254 17.6	19.2	-6 22.8	16.0	y	-2.3 55 45.2	60.7	-2 15.0	0.4	y	1.1 128 42.2	52.7	21 30.6	-1.0
28	y	0.3 254 36.8	19.3	-6 6.8	15.9	y	-2.2 56 45.9	60.5	-2 14.6	0.3	y	1.1 129 34.9	52.7	21 29.6	-1.0
29	y	0.3 254 56.1	19.4	-5 50.9	15.9	y	-2.2 57 46.4	60.4	-2 14.3	0.2	y	1.1 130 27.6	52.6	21 28.6	-1.0
30	y	0.3 255 15.5	19.5	-5 35.0	16.0	y	-2.2 58 46.8	60.2	-2 14.1	0.2	y	1.1 131 20.2	52.5	21 27.6	-1.0
May 31	y	0.3 255 35.0	19.5	-5 19.0	16.0	y	-2.2 59 47.0	60.0	-2 13.9	0.1	y	1.1 132 12.7	52.5	21 26.6	-1.1
Jun 1	y	0.3 255 54.5	19.6	-5 3.0	15.9	y	-2.2 60 47.1	59.9	-2 13.8	0.0	y	1.1 133 5.2	52.4	21 25.5	-1.0
2	y	0.3 256 14.1	19.7	-4 47.1	16.0	y	-2.2 61 46.9	59.7	-2 13.8	0.0	y	1.1 133 57.7	52.4	21 24.5	-1.1
3	y	0.3 256 33.8	19.8	-4 31.1	16.0	y	-2.2 62 46.6	59.5	-2 13.8	-0.1	y	1.1 134 50.0	52.3	21 23.4	-1.1
4	y	0.3 256 53.6	19.8	-4 15.1	15.9	y	-2.2 63 46.2	59.4	-2 13.9	-0.2	y	1.1 135 42.3	52.3	21 22.3	-1.1
5	y	0.3 257 13.4	19.9	-3 59.2	16.0	y	-2.2 64 45.6	59.2	-2 14.1	-0.2	y	1.1 136 34.6	52.2	21 21.2	-1.1
6	y	0.2 257 33.4	20.0	-3 43.2	16.0	y	-2.2 65 44.8	59.0	-2 14.3	-0.3	y	1.1 137 26.8	52.2	21 20.1	-1.1
7	y	0.2 257 53.4	20.1	-3 27.2	15.9	y	-2.2 66 43.8	58.9	-2 14.6	-0.4	y	1.1 138 19.0	52.1	21 19.0	-1.1
8	y	0.2 258 13.5	20.2	-3 11.3	15.9	y	-2.2 67 42.7	58.7	-2 15.0	-0.5	y	1.1 139 11.1	52.1	21 17.9	-1.2
9	y	0.2 258 33.7	20.3	-2 55.4	15.9	y	-2.2 68 41.4	58.5	-2 15.5	-0.6	y	1.1 140 3.1	52.0	21 16.7	-1.1
10	y	0.2 258 53.9	20.3	-2 39.5	15.9	y	-2.2 69 39.9	58.4	-2 16.1	-0.6	y	1.1 140 55.1	52.0	21 15.6	-1.2
11	y	0.2 259 14.3	20.4	-2 23.6	15.8	y	-2.2 70 38.3	58.2	-2 16.7	-0.6	y	1.1 141 47.1	51.9	21 14.4	-1.2
12	y	0.2 259 34.7	20.5	-2 7.8	15.9	y	-2.1 71 36.5	58.1	-2 17.3	-0.8	y	1.1 142 39.0	51.9	21 13.2	-1.2
13	y	0.2 259 55.2	20.6	-1 51.9	15.7	y	-2.1 72 34.6	57.9	-2 18.1	-0.8	y	1.1 143 30.9	51.8	21 12.0	-1.2
14	y	0.2 260 15.8	20.7	-1 36.2	15.8	y	-2.1 73 32.5	57.7	-2 18.9	-0.9	y	1.0 144 22.7	51.8	21 10.8	-1.3
15	y	0.1 260 36.4	20.8	-1 20.4	15.7	y	-2.1 74 30.2	57.6	-2 19.8	-0.9	y	1.0 145 14.5	51.8	21 9.5	-1.2
16	y	0.1 260 57.2	20.8	-1 4.7	15.7	y	-2.1 75 27.8	57.4	-2 20.7	-1.1	y	1.0 146 6.3	51.7	21 8.3	-1.3
17	y	0.1 261 18.0	20.9	-0 49.0	15.7	y	-2.1 76 25.2	57.2	-2 21.8	-1.1	y	1.0 146 58.0	51.7	21 7.0	-1.2
18	y	0.1 261 39.0	21.0	-0 33.3	15.6	y	-2.1 77 22.4	57.1	-2 22.9	-1.1	y	1.0 147 49.7	51.6	21 5.8	-1.3
19	y	0.1 261 60.0	21.1	-0 17.7	15.5	y	-2.1 78 19.5	56.9	-2 24.0	-1.2	y	1.0 148 41.3	51.6	21 4.5	-1.3
20	y	0.1 262 21.0	21.2	0 2.2	15.5	y	-2.1 79 16.4	56.8	-2 25.2	-1.3	y	1.0 149 32.9	51.6	21 3.2	-1.3
21	y	0.1 262 42.2	21.2	0 13.3	15.5	y	-2.1 80 13.2	56.6	-2 26.5	-1.4	y	1.0 150 24.5	51.5	21 1.9	-1.3
22	y	0.1 263 3.4	21.3	0 28.8	15.4	y	-2.1 81 9.8	56.5	-2 27.9	-1.4	y	1.0 151 16.0	51.5	21 0.6	-1.3
23	y	0.1 263 24.7	21.4	0 44.2	15.4	y	-2.1 82 6.3	56.3	-2 29.3	-1.5	y	1.0 152 7.5	51.5	20 59.3	-1.4
24	y	0.0 263 46.1	21.5	0 59.6	15.3	y	-2.1 83 2.6	56.2	-2 30.8	-1.6	y	1.0 152 59.0	51.4	20 57.9	-1.3
25	y	0.0 264 7.6	21.6	1 14.9	15.2	y	-2.1 83 58.7	56.0	-2 32.4	-1.6	y	1.0 153 50.4	51.4	20 56.6	-1.4
26	y	0.0 264 29.2	21.7	1 30.1	15.2	y	-2.1 84 54.7	55.9	-2 34.0	-1.6	y	1.0 154 41.8	51.4	20 55.2	-1.4
27	y	0.0 264 50.9	21.8	1 45.3	15.1	y	-2.1 85 50.6	55.7	-2 35.6	-1.8	y	1.0 155 33.2	51.4	20 53.8	-1.3
28	y	0.0 265 12.6	21.8	2 0.4	15.1	y	-2.0 86 46.3	55.6	-2 37.4	-1.8	y	1.0 156 24.6	51.3	20 52.5	-1.4
29	y	0.0 265 34.5	21.9	2 15.5	15.0	y	-2.0 87 41.8	55.4	-2 39.2	-1.8	y	1.0 157 15.9	51.3	20 51.1	-1.4
Jun 30	y	0.0 265 56.4	22.0	2 30.5	14.8	y	-2.0 88 37.2	55.3	-2 41.0	-2.0	y	1.0 158 7.2	51.3	20 49.7	-1.5
Jul 1	y	-0.1 266 18.4	22.1	2 45.3	14.9	y	-2.0 89 32.5	55.1	-2 43.0	-1.9	y	1.0 158 58.5	51.3	20 48.2	-1.4
2	y	-0.1 266 40.6	22.2	3 0.2	14.7	y	-2.0 90 27.6	55.0	-2 44.9	-2.1	y	1.0 159 49.8	51.2	20 46.8	-1.4
3	y	-0.1 267 2.8	22.3	3 14.9	14.7	y	-2.0 91 22.6	54.8	-2 47.0	-2.1	y	1.0 160 41.0	51.2	20 45.4	-1.5
4	y	-0.1 267 25.2	22.4	3 29.6	14.5	y	-2.0 92 17.4	54.7	-2 49.1	-2.2	y	1.0 161 32.2	51.2	20 43.9	-1.4
5	y	-0.1 267 47.6	22.6	3 44.1	14.5	y	-2.0 93 12.1	54.5	-2 51.3	-2.2	y	1.0 162 23.4	51.2	20 42.5	-1.5
6	y	-0.1 268 10.2	22.7	3 58.6	14.4	y	-2.0 94 6.6	54.4	-2 53.5	-2.2	y	1.0 163 14.6	51.2	20 41.0	-1.5
7	y	-0.1 268 32.8	22.8	4 13.0	14.3	y	-2.0 95 1.0	54.3	-2 55.7	-2.4	y	1.0 164 5.8	51.1	20 39.5	-1.4
8	y	-0.1 268 55.6	22.9	4 27.3	14.2	y	-2.0 95 55.3	54.1	-2 58.1	-2.4	y	1.0 164 56.9	51.1	20 38.1	-1.5
9	y	-0.2 269 18.5	23.0	4 41.5	14.1	y	-2.0 96 49.4	54.0	-3 0.5	-2.4	y	1.0 165 48.1	51.1	20 36.6	-1.5
10	y	-0.2 269 41.6	23.1	5 55.6	14.0	y	-2.0 97 43.4	53.9	-3 2.9	-2.5	y	1.0 166 39.2	51.1	20 35.1	-1.6
11	y	-0.2 270 4.7	23.3	5 9.6	13.9	y	-2.0 98 37.3	53.7	-3 5.4	-2.6	y	1.0 167 30.3	51.1	20 33.5	-1.5
12	y	-0.2 270 28.0	23.4	5 23.5	13.8	y	-2.0 99 31.0	53.6	-3 8.0	-2.6	y	1.0 168 21.4	51.1	20 32.0	-1.5
13	y	-0.2 270 51.4	23.5	5 37.3	13.6	y	-2.0 100 24.6	53.5	-3 10.6	-2.6	y	1.0 169 12.5	51.1	20 30.5	-1.5
Jul 14	y	-0.2 271 14.9	23.7	5 50.9	13.6	y	-1.9 101 18.0	53.3	-3 13.2	-2.7	y	1.0 170 3.6	51.1	20 29.0	-1.6

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Sun and Planets

Date	SUN				Mercury						Venus													
	GHA		d	Dec	vis	GHA		d	dd	Dec	d	dd	GHA		Dec	d								
	o	'	o	o		o	'	o	o				o	'			o	'						
Jul 15	178	31.5	-1.5	21	32.6	-9.6	ss	0.9	153	5.6	29.6	-2.0	14	1.0	-23.6	-0.5	ss	-3.9	149	42.2	-12.1	16	16.4	-23.6
Jul 16	178	30.0	-1.4	21	23.0	-10.0	ss	1.0	153	35.2	33.7	-2.1	13	37.4	-22.5	-0.6	ss	-3.9	149	30.1	-11.8	15	52.8	-24.0
Jul 17	178	28.7	-1.2	21	13.0	-10.3	ss	1.0	154	8.9	37.9	-2.1	13	14.9	-21.4	-0.6	ss	-3.9	149	18.3	-11.5	15	28.8	-24.5
Jul 18	178	27.4	-1.1	21	2.7	-10.7	ss	1.1	154	46.8	42.3	-2.2	12	53.5	-20.1	-0.6	ss	-3.9	149	6.8	-11.2	15	4.3	-24.8
Jul 19	178	26.4	-0.9	20	52.0	-11.0	ss	1.2	155	29.1	46.7	-2.2	12	33.4	-18.6	-0.8	ss	-3.9	148	55.6	-10.9	14	39.5	-25.2
Jul 20	178	25.4	-0.8	20	41.0	-11.3	ss	1.3	156	15.7	51.2	-2.3	12	14.8	-17.1	-0.8	ss	-3.9	148	44.8	-10.5	14	14.3	-25.6
Jul 21	178	24.6	-0.7	20	29.7	-11.8	ss	1.4	157	6.9	55.8	-2.3	11	57.7	-15.5	-0.8	ss	-3.9	148	34.2	-10.2	13	48.7	-25.9
Jul 22	178	24.0	-0.5	20	17.9	-12.0	ss	1.5	158	2.7	60.4	-2.3	11	42.2	-13.7	-0.9	ss	-3.9	148	24.0	-9.9	13	22.8	-26.2
Jul 23	178	23.5	-0.4	20	5.9	-12.4	ss	1.6	159	3.1	65.1	-2.3	11	28.5	-11.7	-1.0	ss	-3.9	148	14.0	-9.7	12	56.6	-26.6
Jul 24	178	23.1	-0.2	19	53.5	-12.7	ss	1.7	160	8.2	69.7	-2.3	11	16.8	-9.8	-1.0	ss	-3.9	148	4.4	-9.4	12	30.0	-26.9
Jul 25	178	22.9	-0.1	19	40.8	-13.1	ss	1.8	161	18.0	74.4	-2.3	11	7.0	-7.6	-1.1	ss	-3.9	147	55.0	-9.1	12	3.1	-27.1
Jul 26	178	22.8	0.1	19	27.7	-13.3	ss	1.9	162	32.3	78.9	-2.3	10	59.4	-5.4	-1.1	ss	-3.9	147	45.9	-8.8	11	36.0	-27.5
Jul 27	178	22.9	0.2	19	14.4	-13.7	ss	2.0	163	51.2	83.2	-2.2	10	54.0	-3.1	-1.1	ss	-3.9	147	37.1	-8.6	11	8.5	-27.8
Jul 28	178	23.1	0.4	19	0.7	-14.0	ss	2.1	165	14.4	87.4	-2.1	10	50.9	-0.7	-1.2	ss	-3.9	147	28.5	-8.3	10	40.7	-28.0
Jul 29	178	23.4	0.5	18	46.7	-14.3	ss	2.2	166	41.8	91.2	-1.9	10	50.2	1.6	-1.1	ss	-3.9	147	20.1	-8.1	10	12.7	-28.3
Jul 30	178	23.9	0.6	18	32.4	-14.7	ss	2.3	168	13.0	94.7	-1.7	10	51.8	3.9	-1.2	ss	-3.9	147	12.1	-7.8	9	44.4	-28.5
Jul 31	178	24.6	0.8	18	17.7	-14.9	ss	2.4	169	47.7	97.7	-1.5	10	55.7	6.3	-1.2	ss	-3.9	147	4.2	-7.6	9	15.9	-28.7
Aug 1	178	25.4	0.9	18	2.8	-15.2	ss	2.5	171	25.5	100.2	-1.3	11	2.0	8.6	-1.2	ss	-3.9	146	56.6	-7.4	8	47.2	-29.0
Aug 2	178	26.3	1.1	17	47.6	-15.5	ss	2.6	173	5.7	102.1	-1.0	11	10.6	10.7	-1.0	ss	-3.9	146	49.2	-7.2	8	18.2	-29.2
Aug 3	178	27.4	1.2	17	32.1	-15.8	ss	2.7	174	47.9	103.4	-0.6	11	21.3	12.8	-1.1	ss	-3.9	146	42.0	-7.0	7	49.0	-29.4
Aug 4	178	28.7	1.4	17	16.3	-16.1	ss	2.8	176	31.2	103.8	-0.2	11	34.1	14.6	-0.9	ss	-4.0	146	35.0	-6.8	7	19.6	-29.5
Aug 5	178	30.0	1.5	17	0.2	-16.3	ss	2.9	178	15.1	103.5	0.2	11	48.7	16.2	-0.8	ss	-4.0	146	28.2	-6.6	6	50.1	-29.8
Aug 6	178	31.6	1.7	16	43.9	-16.6	ss	3.0	179	58.6	102.4	0.6	12	4.9	17.6	-0.7	ss	-4.0	146	21.6	-6.4	6	20.3	-29.9
Aug 7	178	33.3	1.8	16	27.3	-16.9	ss	3.1	181	41.1	100.5	1.0	12	22.5	18.7	-0.5	ss	-4.0	146	15.2	-6.2	5	50.4	-30.0
Aug 8	178	35.1	2.0	16	10.4	-17.1	ss	3.2	183	21.5	97.7	1.4	12	41.2	19.6	-0.4	ss	-4.0	146	9.0	-6.1	5	20.4	-30.2
Aug 9	178	37.1	2.1	15	53.3	-17.4	ss	3.2	184	59.2	94.1	1.8	13	0.8	20.1	-0.3	ss	-4.0	146	2.9	-5.9	4	50.2	-30.4
Aug 10	178	39.3	2.3	15	35.9	-17.7	sr	3.0	186	33.3	89.8	2.2	13	20.9	20.3	-0.1	ss	-4.0	145	57.0	-5.8	4	19.8	-30.4
Aug 11	178	41.6	2.4	15	18.2	-17.9	sr	2.8	188	3.1	84.8	2.5	13	41.2	20.3	0.0	ss	-4.0	145	51.2	-5.7	3	49.4	-30.5
Aug 12	178	44.0	2.6	15	0.3	-18.1	sr	2.5	189	27.8	79.1	2.8	14	1.5	20.0	0.1	ss	-4.0	145	45.5	-5.5	3	18.9	-30.7
Aug 13	178	46.6	2.7	14	42.2	-18.4	sr	2.3	190	46.9	73.0	3.1	14	21.5	19.3	0.4	ss	-4.0	145	40.0	-5.4	2	48.2	-30.7
Aug 14	178	49.3	2.9	14	23.8	-18.5	sr	2.1	191	59.9	66.3	3.3	14	40.8	18.5	0.4	ss	-4.0	145	34.6	-5.3	2	17.5	-30.8
Aug 15	178	52.2	3.0	14	5.3	-18.9	sr	1.9	193	6.2	59.3	3.5	14	59.3	17.3	0.6	ss	-4.0	145	29.3	-5.2	1	46.7	-30.8
Aug 16	178	55.2	3.1	13	46.4	-19.0	sr	1.6	194	5.6	52.1	3.6	15	16.6	15.9	0.7	ss	-4.0	145	24.1	-5.1	1	15.9	-30.9
Aug 17	178	58.3	3.3	13	27.4	-19.2	sr	1.4	194	57.6	44.6	3.7	15	32.5	14.4	0.8	ss	-4.0	145	19.0	-5.0	0	45.0	-30.9
Aug 18	179	1.6	3.4	13	8.2	-19.5	sr	1.2	195	42.3	37.1	3.8	15	46.9	12.4	1.0	ss	-4.0	145	13.9	-5.0	0	14.1	-30.9
Aug 19	179	4.9	3.5	12	48.7	-19.6	sr	0.9	196	19.3	29.5	3.8	15	59.3	10.5	1.0	ss	-4.0	145	9.0	-4.9	-0	16.8	-31.0
Aug 20	179	8.5	3.6	12	29.1	-19.8	sr	0.7	196	48.8	22.0	3.8	16	9.8	8.2	1.1	ss	-4.0	145	4.1	-4.8	-0	47.8	-31.0
Aug 21	179	12.1	3.8	12	9.3	-20.1	sr	0.5	197	10.8	14.5	3.7	16	18.0	5.9	1.2	ss	-4.0	144	59.2	-4.8	-1	18.8	-30.9
Aug 22	179	15.9	3.9	11	49.2	-20.2	sr	0.3	197	25.3	7.3	3.6	16	23.9	3.3	1.3	ss	-4.0	144	54.4	-4.8	-1	49.7	-31.0
Aug 23	179	19.7	4.0	11	29.0	-20.4	sr	0.1	197	32.6	0.3	3.5	16	27.2	0.6	1.4	ss	-4.0	144	49.7	-4.8	-2	20.7	-30.9
Aug 24	179	23.7	4.1	11	8.6	-20.6	sr	-0.1	197	32.9	-6.4	3.3	16	27.8	-2.2	1.4	ss	-4.0	144	44.9	-4.7	-2	51.6	-30.8
Aug 25	179	27.8	4.2	10	48.0	-20.7	sr	-0.2	197	26.5	-12.7	3.2	16	25.6	-5.2	1.5	ss	-4.0	144	40.2	-4.7	-3	22.4	-30.8
Aug 26	179	31.9	4.3	10	27.3	-21.0	sr	-0.4	197	13.8	-18.6	3.0	16	20.4	-8.1	1.4	ss	-4.0	144	35.4	-4.8	-3	53.2	-30.8
Aug 27	179	36.2	4.4	10	6.3	-21.0	sr	-0.5	196	55.2	-24.1	2.7	16	12.3	-11.2	1.5	ss	-4.0	144	30.7	-4.8	-4	24.0	-30.7
Aug 28	179	40.5	4.4	9	45.3	-21.3	sr	-0.6	196	31.1	-29.0	2.5	16	1.1	-14.3	1.6	ss	-4.0	144	25.9	-4.8	-4	54.7	-30.6
Aug 29	179	45.0	4.5	9	24.0	-21.4	sr	-0.7	196	2.1	-33.4	2.2	15	46.8	-17.3	1.5	ss	-4.0	144	21.1	-4.8	-5	25.3	-30.5
Aug 30	179	49.5	4.6	9	2.6	-21.5	sr	-0.8	195	28.7	-37.3	1.9	15	29.5	-20.3	1.5	ss	-4.0	144	16.2	-4.9	-5	55.8	-30.4
Aug 31	179	54.1	4.7	8	41.1	-21.7	sr	-0.9	194	51.4	-40.6	1.7	15	9.2	-23.3	1.5	ss	-4.0	144	11.4	-4.9	-6	26.2	-30.3
Sep 1	179	58.8	4.8	8	19.4	-21.8	sr	-1.0	194	10.8	-43.4	1.4	14	45.9	-26.1	1.4	ss	-4.0	144	6.4	-5.0	-6	56.5	-30.2
Sep 2	180	3.5	4.8	7	57.6	-22.0	sr	-1.1	193	27.4	-45.6	1.1	14	19.8	-28.7	1.3	ss	-4.0	144	1.4	-5.1	-7	26.7	-30.0
Sep 3	180	8.3	4.9	7	35.6	-22.0	sr	-1.1	192	41.8	-47.4	0.9	13	51.1	-31.3	1.3	ss	-4.0	143	56.3	-5.2	-7	56.7	-29.9
Sep 4	180	13.2	5.0	7	13.6	-22.2	sr	-1.2	191	54.4	-48.6	0.6	13	19.8	-33.6	1.1	ss	-4.0	143	51.2	-5.2	-8	26.6	-29.7
Sep 5	180	18.2	5.0	6	51.4	-22.3	sr	-1.2	191	5.8	-49.4	0.4	12	46.2	-35.7	1.1	ss	-4.0	143	46.0	-5.3	-8	56.3	-29.5
Sep 6	180	23.2	5.1	6	29.1	-22.4	sr	-1.3	190	16.3	-49.9	0.2	12	10.5	-37.7	1.0	ss	-4.0	143	40.6	-5.4	-9	25.8	-29.4
Sep 7	180	28.3	5.1	6	6.7	-22.5	sr	-1.3	189	26.5	-50.0	0.0	11	32.8	-39.4	0.8	ss	-4.0	143	35.2	-5.5	-9	55.2	-29.1
Sep 8	180	33.4	5.2	5	44.2	-22.6	sr	-1.4	188	36.5	-49.8	-0.1	10	53.4	-41.0	0.8	ss	-4.0	143	29.7	-5.7	-10	24.3	-29.0
Sep 9	180	38.6	5.2	5	21.6	-22.7	sr	-1.4	187	46.7	-49.3	-0.2	10	12.4	-42.3	0.6	ss	-4.1	143	24.0	-5.8	-10	53.3	-28.7
Sep 10	180	43.8	5.2	4	58.9	-22.8	sr	-1.4	186	57.4	-48.7	-0.3	9	30.1	-43.5	0.6	ss	-4.1	143	18.2	-5.9	-11	22.0	-28.5
Sep																								

2005

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	-0.2 271 38.6	23.8	6	4.5 13.5	y	-1.9 102 11.4	53.2	-3	15.9 -2.8	y	1.0 170 54.6	51.1	20	27.4 -1.5
Jul 16	y	-0.3 272 2.4	23.9	6	18.0 13.3	y	-1.9 103 4.6	53.1	-3	18.7 -2.8	y	1.0 171 45.7	51.1	20	25.9 -1.6
Jul 17	y	-0.3 272 26.3	24.1	6	31.3 13.3	y	-1.9 103 57.6	53.0	-3	21.5 -2.9	y	1.0 172 36.8	51.1	20	24.3 -1.6
Jul 18	y	-0.3 272 50.4	24.2	6	44.6 13.1	y	-1.9 104 50.6	52.8	-3	24.4 -2.9	y	1.0 173 27.8	51.1	20	22.7 -1.5
Jul 19	y	-0.3 273 14.6	24.3	6	57.7 13.0	y	-1.9 105 43.4	52.7	-3	27.3 -2.9	y	1.0 174 18.9	51.0	20	21.2 -1.6
Jul 20	y	-0.3 273 38.9	24.5	7	10.7 12.9	y	-1.9 106 36.1	52.6	-3	30.2 -3.1	y	1.0 175 9.9	51.0	20	19.6 -1.6
Jul 21	y	-0.4 274 3.4	24.6	7	23.6 12.8	y	-1.9 107 28.7	52.5	-3	33.3 -3.0	y	0.9 176 1.0	51.0	20	18.0 -1.6
Jul 22	y	-0.3 274 28.1	24.8	7	36.4 12.7	y	-1.9 108 21.2	52.4	-3	36.3 -3.1	y	0.9 176 52.0	51.0	20	16.4 -1.6
Jul 23	y	-0.3 274 52.9	25.0	7	49.1 12.5	y	-1.9 109 13.5	52.2	-3	39.4 -3.1	y	0.9 177 43.1	51.1	20	14.8 -1.6
Jul 24	y	-0.4 275 17.8	25.1	8	1.6 12.4	y	-1.9 110 5.8	52.1	-3	42.5 -3.2	y	0.9 178 34.1	51.1	20	13.2 -1.6
Jul 25	y	-0.4 275 43.0	25.3	8	14.0 12.3	y	-1.9 110 57.9	52.0	-3	45.7 -3.3	y	0.9 179 25.2	51.1	20	11.6 -1.6
Jul 26	y	-0.4 276 8.3	25.5	8	26.3 12.1	y	-1.9 111 49.9	51.9	-3	49.0 -3.2	y	1.0 180 16.3	51.1	20	10.0 -1.6
Jul 27	y	-0.4 276 33.7	25.7	8	38.4 12.1	y	-1.9 112 41.8	51.8	-3	52.2 -3.4	y	1.0 181 7.3	51.1	20	8.4 -1.7
Jul 28	y	-0.4 276 59.4	25.9	8	50.5 11.9	y	-1.9 113 33.6	51.7	-3	55.6 -3.3	y	1.0 181 58.4	51.1	20	6.7 -1.6
Jul 29	y	-0.4 277 25.2	26.0	9	2.4 11.7	y	-1.9 114 25.2	51.6	-3	58.9 -3.4	y	1.0 182 49.5	51.1	20	5.1 -1.6
Jul 30	y	-0.5 277 51.3	26.2	9	14.1 11.6	y	-1.9 115 16.8	51.5	-4	2.3 -3.5	y	1.0 183 40.6	51.1	20	3.5 -1.7
Jul 31	y	-0.5 278 17.5	26.5	9	25.7 11.5	y	-1.9 116 8.3	51.3	-4	5.8 -3.5	y	1.0 184 31.6	51.1	20	1.8 -1.6
Aug 1	y	-0.5 278 44.0	26.7	9	37.2 11.3	y	-1.9 116 59.6	51.2	-4	9.3 -3.5	y	1.0 185 22.7	51.1	20	0.2 -1.7
Aug 2	y	-0.5 279 10.7	26.9	9	48.5 11.2	y	-1.8 117 50.8	51.1	-4	12.8 -3.5	y	1.0 186 13.9	51.1	19	58.5 -1.6
Aug 3	y	-0.5 279 37.6	27.1	9	59.7 11.1	y	-1.8 118 42.0	51.0	-4	16.3 -3.6	y	1.0 187 5.0	51.1	19	56.9 -1.7
Aug 4	y	-0.5 280 4.7	27.4	10	10.8 10.9	y	-1.8 119 33.0	50.9	-4	19.9 -3.7	y	1.0 187 56.1	51.2	19	55.2 -1.6
Aug 5	y	-0.5 280 32.1	27.6	10	21.7 10.7	y	-1.8 120 24.0	50.8	-4	23.6 -3.7	y	1.0 188 47.3	51.2	19	53.6 -1.7
Aug 6	y	-0.6 280 59.7	27.9	10	32.4 10.6	y	-1.8 121 14.8	50.7	-4	27.3 -3.7	y	1.0 189 38.5	51.2	19	51.9 -1.6
Aug 7	y	-0.6 281 27.5	28.1	10	43.0 10.5	y	-1.8 122 5.5	50.6	-4	31.0 -3.7	y	1.0 190 29.6	51.2	19	50.3 -1.7
Aug 8	y	-0.6 281 55.7	28.4	10	53.5 10.3	y	-1.8 122 56.2	50.5	-4	34.7 -3.8	y	1.0 191 20.9	51.2	19	48.6 -1.7
Aug 9	y	-0.6 282 24.0	28.7	11	3.8 10.2	y	-1.8 123 46.7	50.4	-4	38.5 -3.8	y	1.0 192 12.1	51.2	19	46.9 -1.6
Aug 10	y	-0.6 282 52.7	28.9	11	14.0 10.0	y	-1.8 124 37.2	50.4	-4	42.3 -3.9	y	1.0 193 3.3	51.3	19	45.3 -1.7
Aug 11	y	-0.6 283 21.6	29.2	11	24.0 9.8	y	-1.8 125 27.5	50.3	-4	46.2 -3.9	y	1.0 193 54.6	51.3	19	43.6 -1.7
Aug 12	y	-0.7 283 50.9	29.5	11	33.8 9.7	y	-1.8 126 17.8	50.2	-4	50.1 -3.9	y	1.0 194 45.9	51.3	19	41.9 -1.6
Aug 13	y	-0.7 284 20.4	29.8	11	43.5 9.6	y	-1.8 127 7.9	50.1	-4	54.0 -3.9	y	1.0 195 37.2	51.3	19	40.3 -1.7
Aug 14	y	-0.7 284 50.2	30.1	11	53.1 9.4	y	-1.8 127 58.0	50.0	-4	57.9 -4.0	y	1.0 196 28.6	51.4	19	38.6 -1.7
Aug 15	y	-0.7 285 20.3	30.4	12	2.5 9.2	y	-1.8 128 48.0	49.9	-5	1.9 -4.0	y	1.0 197 19.9	51.4	19	36.9 -1.6
Aug 16	y	-0.7 285 50.8	30.8	12	11.7 9.1	y	-1.8 129 37.9	49.8	-5	5.9 -4.1	y	1.0 198 11.3	51.4	19	35.3 -1.7
Aug 17	y	-0.7 286 21.5	31.1	12	20.8 9.0	y	-1.8 130 27.8	49.7	-5	10.0 -4.0	y	1.0 199 2.7	51.4	19	33.6 -1.6
Aug 18	y	-0.8 286 52.6	31.4	12	29.8 8.8	y	-1.8 131 17.5	49.7	-5	14.0 -4.1	y	1.0 199 54.2	51.5	19	32.0 -1.7
Aug 19	y	-0.8 287 24.0	31.8	12	38.6 8.6	y	-1.8 132 7.2	49.6	-5	18.1 -4.1	y	1.0 200 45.7	51.5	19	30.3 -1.7
Aug 20	y	-0.8 287 55.8	32.1	12	47.2 8.5	y	-1.8 132 56.7	49.5	-5	22.2 -4.2	y	1.0 201 37.2	51.5	19	28.6 -1.6
Aug 21	y	-0.8 288 28.0	32.5	12	55.7 8.3	y	-1.8 133 46.2	49.4	-5	26.4 -4.2	y	1.0 202 28.7	51.6	19	27.0 -1.7
Aug 22	y	-0.8 289 0.5	32.9	13	4.0 8.2	y	-1.8 134 35.7	49.3	-5	30.6 -4.2	y	1.0 203 20.3	51.6	19	25.3 -1.6
Aug 23	y	-0.8 289 33.4	33.3	13	12.2 8.1	y	-1.8 135 25.0	49.3	-5	34.8 -4.2	y	1.0 204 11.9	51.6	19	23.7 -1.7
Aug 24	y	-0.9 290 6.6	33.7	13	20.3 7.8	y	-1.8 136 14.3	49.2	-5	39.0 -4.2	y	1.0 205 3.6	51.7	19	22.0 -1.6
Aug 25	y	-0.9 290 40.3	34.1	13	28.1 7.7	y	-1.8 137 3.5	49.1	-5	43.2 -4.3	y	1.0 205 55.3	51.7	19	20.4 -1.7
Aug 26	y	-0.9 291 14.5	34.5	13	35.8 7.6	y	-1.7 137 52.6	49.0	-5	47.5 -4.3	y	1.0 206 47.0	51.8	19	18.7 -1.6
Aug 27	y	-0.9 291 49.0	35.0	13	43.4 7.4	y	-1.7 138 41.6	49.0	-5	51.8 -4.3	y	1.0 207 38.7	51.8	19	17.1 -1.6
Aug 28	y	-0.9 292 24.0	35.5	13	50.8 7.2	y	-1.7 139 30.6	48.9	-5	56.1 -4.4	y	1.0 208 30.5	51.8	19	15.5 -1.7
Aug 29	y	-1.0 292 59.5	35.9	13	58.0 7.1	y	-1.7 140 19.5	48.8	-6	0.5 -4.3	y	1.0 209 22.4	51.9	19	13.8 -1.6
Aug 30	y	-1.0 293 35.4	36.4	14	5.1 6.9	y	-1.7 141 8.3	48.8	-6	4.8 -4.4	y	1.0 210 14.2	51.9	19	12.2 -1.6
Aug 31	y	-1.0 294 11.8	36.9	14	12.0 6.7	y	-1.7 141 57.1	48.7	-6	9.2 -4.4	y	1.0 211 6.2	52.0	19	10.6 -1.6
Sep 1	y	-1.0 294 48.7	37.4	14	18.7 6.6	y	-1.7 142 45.8	48.6	-6	13.6 -4.4	y	1.1 211 58.1	52.0	19	9.0 -1.6
Sep 2	y	-1.0 295 26.1	38.0	14	25.3 6.4	y	-1.7 143 34.4	48.6	-6	18.0 -4.5	y	1.1 212 50.1	52.1	19	7.4 -1.6
Sep 3	y	-1.1 296 4.1	38.5	14	31.7 6.3	y	-1.7 144 22.9	48.5	-6	22.5 -4.5	y	1.1 213 42.2	52.1	19	5.8 -1.6
Sep 4	y	-1.1 296 42.6	39.1	14	38.0 6.1	y	-1.7 145 11.4	48.4	-6	27.0 -4.4	y	1.1 214 34.3	52.2	19	4.2 -1.6
Sep 5	y	-1.1 297 21.7	39.6	14	44.1 5.9	y	-1.7 145 59.9	48.4	-6	31.4 -4.5	y	1.1 215 26.5	52.2	19	2.6 -1.6
Sep 6	y	-1.1 298 1.3	40.2	14	50.0 5.8	y	-1.7 146 48.2	48.3	-6	35.9 -4.5	y	1.1 216 18.7	52.3	19	1.0 -1.5
Sep 7	y	-1.1 298 41.5	40.8	14	55.8 5.6	y	-1.7 147 36.6	48.2	-6	40.4 -4.6	y	1.1 217 10.9	52.3	18	59.5 -1.6
Sep 8	y	-1.2 299 22.3	41.4	15	1.4 5.5	y	-1.7 148 24.8	48.2	-6	45.0 -4.5	y	1.1 218 3.2	52.4	18	57.9 -1.6
Sep 9	y	-1.2 300 3.7	42.0	15	6.9 5.3	y	-1.7 149 13.0	48.1	-6	49.5 -4.6	y	1.1 218 55.6	52.4	18	56.3 -1.5
Sep 10	y	-1.2 300 45.8	42.7	15	12.2 5.2	y	-1.7 150 1.1	48.1	-6	54.1 -4.5	y	1.1 219 48.0	52.5	18	54.8 -1.5
Sep 11	y	-1.2 301 28.4	43.3	15	17.4 5.0	y	-1.7 150 49.2	48.0	-6	58.6 -4.6	y	1.1 220 40.5	52.5	18	53.3 -1.5
Sep 12	y	-1.2 302 11.7	44.0	15	22.4 4.8	y	-1.7 151 37.2	48.0	-7	3.2 -4.6	y	1.1 221 33.0	52.6	18	51.8 -1.6
Sep 13	y	-1.3 302 55.7	44.6	15	27.2 4.7	y	-1.7 152 25.2	47.9	-7	7.8 -4.6	y	1.1 222 25.6	52.6	18	50.2 -1.5
Sep 14	y	-1.3 303 40.3	45.3	15	31.9 4.5	y	-1.7 153 13.1	47.9	-7	12.4 -4.6	y	1.1 223 18.2	52.7	18	48.7 -1.4
Sep 15	y	-1.3 304 25.7	46.0	15	36.4 4.4	y	-1.7 154 1.0	47.8	-7	17.0 -4.7	y	1.1 224 10.9	52.8	18	47.3 -1.5
Sep 16	y	-1.3 305 11.7	46.7	15	40.8 4.2	y	-1.7 154 48.8	47.8	-7	21.7 -4.6	y	1.1 225 3.7	52.8	18	45.8 -1.5
Sep 17	y	-1.4 305 58.5	47.5	15	45.0 4.1	y	-1.7 155 36.6	47.7	-7	26.3 -4.7	y	1.1 225 56.5	52.9	18	44.3 -1.4

2005

Sun and Planets

Date	SUN					Mercury						Venus										
	GHA o	d	Dec o	d		vis	GHA o	d	dd	Dec o	d	dd	vis	GHA o	d	Dec o	d					
Sep 18	181	26.4	5.4	1	54.9	-23.2	-1.7	180	54.7	-40.5	-0.6	3	22.5	-47.5	0.0	SS -4.1	142	27.0	-7.1	-15	2.7	-26.2
19	181	31.7	5.4	1	31.7	-23.3	-1.6	180	14.2	-39.4	-0.5	2	35.0	-47.6	0.1	SS -4.1	142	20.0	-7.3	-15	28.9	-26.0
20	181	37.1	5.3	1	8.4	-23.3	-1.5	179	34.8	-38.4	-0.5	1	47.4	-47.5	0.0	SS -4.1	142	12.7	-7.4	-15	54.9	-25.5
21	181	42.4	5.3	0	45.1	-23.3	-1.4	178	56.4	-37.3	-0.5	0	59.9	-47.4	-0.1	SS -4.1	142	5.3	-7.6	-16	20.4	-25.3
22	181	47.8	5.3	0	21.8	-23.4	-1.4	178	19.1	-36.4	-0.5	0	12.5	-47.3	-0.1	SS -4.1	141	57.7	-7.8	-16	45.7	-24.8
23	181	53.0	5.3	-0	1.6	-23.3	-1.3	177	42.7	-35.4	-0.5	-0	34.8	-46.9	-0.2	SS -4.1	141	49.9	-8.0	-17	10.5	-24.5
24	181	58.3	5.2	-0	24.9	-23.4	-1.2	177	7.3	-34.5	-0.4	-1	21.7	-46.7	-0.1	SS -4.1	141	41.9	-8.2	-17	35.0	-24.1
25	182	3.5	5.2	-0	48.3	-23.4	-1.1	176	32.7	-33.7	-0.4	-2	8.4	-46.4	-0.2	SS -4.1	141	33.7	-8.3	-17	59.1	-23.8
26	182	8.7	5.1	-1	11.7	-23.3	-1.0	175	59.0	-32.9	-0.4	-2	54.8	-46.0	-0.2	SS -4.1	141	25.4	-8.5	-18	22.9	-23.3
27	182	13.8	5.1	-1	35.0	-23.4	-1.0	175	26.1	-32.2	-0.4	-3	40.8	-45.6	-0.2	SS -4.1	141	16.9	-8.7	-18	46.2	-22.9
28	182	18.8	5.0	-1	58.4	-23.4	-0.9	174	53.9	-31.5	-0.3	-4	26.4	-45.1	-0.3	SS -4.1	141	8.2	-8.9	-19	9.1	-22.4
29	182	23.9	4.9	-2	21.8	-23.3	SS -0.8	174	22.5	-30.8	-0.3	-5	11.5	-44.7	-0.2	SS -4.2	140	59.3	-9.1	-19	31.5	-22.1
Sep 30	182	28.8	4.9	-2	45.1	-23.3	SS -0.8	173	51.6	-30.2	-0.3	-5	56.2	-44.2	-0.3	SS -4.2	140	50.2	-9.3	-19	53.6	-21.5
Oct 1	182	33.7	4.8	-3	8.4	-23.3	SS -0.7	173	21.4	-29.7	-0.3	-6	40.4	-43.6	-0.3	SS -4.2	140	40.9	-9.4	-20	15.1	-21.2
2	182	38.5	4.7	-3	31.7	-23.2	SS -0.7	172	51.8	-29.1	-0.3	-7	24.0	-43.1	-0.3	SS -4.2	140	31.5	-9.6	-20	36.3	-20.6
3	182	43.2	4.6	-3	54.9	-23.2	SS -0.6	172	22.7	-28.6	-0.2	-8	7.1	-42.5	-0.3	SS -4.2	140	21.9	-9.8	-20	56.9	-20.2
4	182	47.8	4.6	-4	18.1	-23.1	SS -0.6	171	54.0	-28.2	-0.2	-8	49.6	-41.9	-0.3	SS -4.2	140	12.1	-9.9	-21	17.1	-19.7
5	182	52.4	4.5	-4	41.2	-23.1	SS -0.5	171	25.8	-27.8	-0.2	-9	31.5	-41.3	-0.3	SS -4.2	140	2.2	-10.1	-21	36.8	-19.2
6	182	56.8	4.4	-5	4.3	-23.0	SS -0.5	170	58.0	-27.4	-0.2	-10	12.8	-40.6	-0.3	SS -4.2	139	52.1	-10.2	-21	56.0	-18.7
7	183	1.2	4.3	-5	27.3	-22.9	SS -0.5	170	30.7	-27.0	-0.2	-10	53.4	-40.0	-0.3	SS -4.2	139	41.8	-10.4	-22	14.7	-18.1
8	183	5.5	4.2	-5	50.2	-22.9	SS -0.4	170	3.6	-26.7	-0.2	-11	33.4	-39.2	-0.4	SS -4.2	139	31.5	-10.5	-22	32.8	-17.7
9	183	9.7	4.1	-6	13.1	-22.8	SS -0.4	169	36.9	-26.4	-0.2	-12	12.6	-38.6	-0.3	SS -4.2	139	21.0	-10.6	-22	50.5	-17.1
10	183	13.7	3.9	-6	35.9	-22.7	SS -0.4	169	10.5	-26.1	-0.1	-12	51.2	-37.9	-0.4	SS -4.2	139	10.3	-10.7	-23	7.6	-16.5
11	183	17.7	3.8	-6	58.6	-22.6	SS -0.4	168	44.4	-25.8	-0.1	-13	29.1	-37.0	-0.4	SS -4.2	138	59.6	-10.8	-23	24.1	-16.0
12	183	21.5	3.7	-7	21.2	-22.5	SS -0.3	168	18.6	-25.5	-0.1	-14	6.1	-36.4	-0.3	SS -4.2	138	48.8	-10.9	-23	40.1	-15.4
13	183	25.2	3.6	-7	43.7	-22.3	SS -0.3	167	53.1	-25.3	-0.1	-14	42.5	-35.5	-0.5	SS -4.2	138	37.9	-11.0	-23	55.5	-14.9
14	183	28.8	3.5	-8	6.0	-22.3	SS -0.3	167	27.8	-25.0	-0.1	-15	18.0	-34.7	-0.4	SS -4.3	138	26.9	-11.0	-24	10.4	-14.3
15	183	32.2	3.3	-8	28.3	-22.2	SS -0.3	167	2.8	-24.7	-0.1	-15	52.7	-33.9	-0.4	SS -4.3	138	15.9	-11.1	-24	24.7	-13.7
16	183	35.6	3.2	-8	50.5	-22.0	SS -0.3	166	38.0	-24.5	-0.1	-16	26.6	-33.0	-0.4	SS -4.3	138	4.8	-11.1	-24	38.4	-13.1
17	183	38.7	3.0	-9	12.5	-21.9	SS -0.2	166	13.6	-24.2	-0.1	-16	59.6	-32.2	-0.4	SS -4.3	137	53.7	-11.1	-24	51.5	-12.6
18	183	41.8	2.9	-9	34.4	-21.7	SS -0.2	165	49.4	-23.9	-0.2	-17	31.8	-31.2	-0.5	SS -4.3	137	42.6	-11.1	-25	4.1	-11.9
19	183	44.6	2.7	-9	56.1	-21.6	SS -0.2	165	25.5	-23.5	-0.2	-18	3.0	-30.3	-0.5	SS -4.3	137	31.5	-11.1	-25	16.0	-11.3
20	183	47.4	2.6	-10	17.7	-21.5	SS -0.2	165	2.0	-23.1	-0.2	-18	33.3	-29.4	-0.5	SS -4.3	137	20.4	-11.0	-25	27.3	-10.7
21	183	49.9	2.4	-10	39.2	-21.3	SS -0.2	164	38.9	-22.7	-0.2	-19	2.7	-28.3	-0.5	SS -4.3	137	9.4	-11.0	-25	38.0	-10.1
22	183	52.3	2.2	-11	0.5	-21.1	SS -0.2	164	16.2	-22.2	-0.2	-19	31.0	-27.4	-0.4	SS -4.3	136	58.4	-10.9	-25	48.1	-9.5
23	183	54.5	2.0	-11	21.6	-21.0	SS -0.2	163	54.0	-21.6	-0.3	-19	58.4	-26.3	-0.6	SS -4.3	136	47.5	-10.8	-25	57.6	-8.9
24	183	56.6	1.9	-11	42.6	-20.8	SS -0.2	163	32.4	-21.0	-0.3	-20	24.7	-25.3	-0.5	SS -4.3	136	36.7	-10.7	-26	6.5	-8.3
25	183	58.4	1.7	-12	3.4	-20.6	SS -0.2	163	11.4	-20.2	-0.4	-20	50.0	-24.1	-0.6	SS -4.3	136	26.0	-10.6	-26	14.8	-7.6
26	184	0.1	1.5	-12	24.0	-20.4	SS -0.2	162	51.2	-19.4	-0.4	-21	14.1	-23.0	-0.5	SS -4.3	136	15.4	-10.4	-26	22.4	-7.0
27	184	1.6	1.3	-12	44.4	-20.2	SS -0.2	162	31.8	-18.4	-0.5	-21	37.1	-21.8	-0.6	SS -4.4	136	5.0	-10.2	-26	29.4	-6.4
28	184	2.9	1.1	-13	4.6	-20.1	SS -0.2	162	13.5	-17.2	-0.6	-21	58.9	-20.5	-0.7	SS -4.4	135	54.7	-10.0	-26	35.8	-5.7
29	184	4.0	0.9	-13	24.7	-19.8	SS -0.2	161	56.2	-15.9	-0.7	-22	19.4	-19.4	-0.6	SS -4.4	135	44.7	-9.8	-26	41.5	-5.2
30	184	4.9	0.7	-13	44.5	-19.6	SS -0.2	161	40.4	-14.3	-0.8	-22	38.8	-18.0	-0.7	SS -4.4	135	34.9	-9.5	-26	46.7	-4.4
Oct 31	184	5.7	0.5	-14	4.1	-19.3	SS -0.2	161	26.0	-12.6	-0.9	-22	56.8	-16.6	-0.7	SS -4.4	135	25.4	-9.3	-26	51.1	-3.9
Nov 1	184	6.2	0.3	-14	23.4	-19.2	SS -0.2	161	13.4	-10.5	-1.0	-23	13.4	-15.3	-0.7	SS -4.4	135	16.1	-9.0	-26	55.0	-3.3
2	184	6.5	0.1	-14	42.6	-18.9	SS -0.2	161	2.9	-8.2	-1.2	-23	28.7	-13.7	-0.8	SS -4.4	135	7.1	-8.6	-26	58.3	-2.6
3	184	6.6	-0.1	-15	1.5	-18.6	SS -0.2	160	54.7	-5.5	-1.3	-23	42.4	-12.3	-0.7	SS -4.4	134	58.5	-8.3	-27	0.9	-2.0
4	184	6.5	-0.3	-15	20.1	-18.4	SS -0.2	160	49.1	-2.5	-1.5	-23	54.7	-10.7	-0.8	SS -4.4	134	50.2	-7.9	-27	2.9	-1.4
5	184	6.2	-0.5	-15	38.5	-18.2	SS -0.2	160	46.6	1.0	-1.7	-24	5.4	-9.0	-0.8	SS -4.4	134	42.4	-7.5	-27	4.3	-0.8
6	184	5.7	-0.7	-15	56.7	-17.9	SS -0.1	160	47.7	5.0	-2.0	-24	14.4	-7.3	-0.8	SS -4.4	134	34.9	-7.0	-27	5.1	-0.2
7	184	5.0	-0.9	-16	14.6	-17.6	SS -0.1	160	52.7	9.5	-2.3	-24	21.7	-5.4	-1.0	SS -4.4	134	27.9	-6.5	-27	5.3	0.4
8	184	4.1	-1.1	-16	32.2	-17.3	SS -0.1	161	2.2	14.6	-2.6	-24	27.1	-3.6	-0.9	SS -4.5	134	21.4	-6.0	-27	4.9	1.1
9	184	3.0	-1.3	-16	49.5	-17.0	SS 0.0	161	16.8	20.4	-2.9	-24	30.7	-1.5	-1.0	SS -4.5	134	15.4	-5.4	-27	3.8	1.6
10	184	1.7	-1.5	-17	6.5	-16.8	SS 0.0	161	37.2	26.8	-3.2	-24	32.2	0.6	-1.0	SS -4.5	134	9.9	-4.9	-27	2.2	2.1
11	184	0.2	-1.7	-17	23.3	-16.4	SS 0.1	162	4.0	34.0	-3.6	-24	31.6	2.9	-1.1	SS -4.5	134	5.1	-4.2	-27	0.1	2.8
12	183	58.5	-1.9	-17	39.7	-16.1	SS 0.2	162	38.0	42.0	-4.0	-24	28.7	5.3	-1.2	SS -4.5	134	0.8	-3.6	-26	57.3	3.3
13	183	56.5	-2.1	-17	55.8	-15.9	SS 0.3	163	20.0	50.7	-4.4	-24	23.4	7.9	-1.3	SS -4.5	133	57.2	-2.9	-26	54.0	3.9
14	183	54.4	-2.4	-18	11.7	-15.5	SS 0.5	164	10.7	60.2	-4.7	-24	15.5	10.6	-1.3	SS -4.5	133	54.3	-2.2	-26	50.1	4.4
15	183	52.0	-2.6	-18	27.2	-15.2	SS 0.6	165	10.9	70.2	-5.0	-24	4.9	13.4	-1.4	SS -4.5	133	52.1	-1.4	-26	45.7	4.9
16	183	49.5	-2.8	-18	42.4	-14.8	SS 0.9	166	21.1	80.8	-5.3	-23	51.5	16.6	-1.6	SS -4.5	133	50.7	-0.7	-26	40.8	5.5
17	183	46.7	-3.0	-18	57.2	-14.5	SS 1.1	167	41.9	91.6	-5.4	-23	34.9	19.6	-1.5	SS -4.5	133	50.0	0.2	-26	35.3	6.0
18	183	43.7	-3.2	-19	11.7	-14.2	SS 1.3	169	13.6	102.4	-5.4											

2005

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	-1.4	306	45.9	48.2	15	49.1	3.9	y	-1.7	156	24.3	47.7	-7	31.0	-4.6	y	1.1	226	49.4	53.0	18	42.9	-1.5
	y	-1.4	307	34.1	49.0	15	53.0	3.8	y	-1.7	157	12.0	47.6	-7	35.6	-4.7	y	1.1	227	42.4	53.0	18	41.4	-1.4
	y	-1.4	308	23.1	49.8	15	56.8	3.6	y	-1.7	157	59.6	47.6	-7	40.3	-4.7	y	1.1	228	35.4	53.1	18	40.0	-1.4
	y	-1.4	309	12.9	50.5	16	0.4	3.5	y	-1.7	158	47.2	47.5	-7	45.0	-4.6	y	1.1	229	28.5	53.1	18	38.6	-1.4
22	y	-1.5	310	3.4	51.4	16	3.9	3.3	y	-1.7	159	34.7	47.5	-7	49.6	-4.7	y	1.1	230	21.6	53.2	18	37.2	-1.4
23	y	-1.5	310	54.8	52.2	16	7.2	3.1	y	-1.7	160	22.2	47.5	-7	54.3	-4.7	y	1.1	231	14.8	53.3	18	35.8	-1.3
24	y	-1.5	311	46.9	53.0	16	10.3	3.0	y	-1.7	161	9.7	47.4	-7	59.0	-4.7	y	1.1	232	8.1	53.4	18	34.5	-1.4
25	y	-1.5	312	39.9	53.9	16	13.3	2.8	y	-1.7	161	57.1	47.4	-8	3.7	-4.7	y	1.1	233	1.5	53.4	18	33.1	-1.3
26	y	-1.6	313	33.8	54.7	16	16.1	2.6	y	-1.7	162	44.4	47.3	-8	8.4	-4.7	y	1.1	233	54.9	53.5	18	31.8	-1.4
27	y	-1.6	314	28.5	55.6	16	18.7	2.5	y	-1.7	163	31.8	47.3	-8	13.1	-4.8	y	1.1	234	48.4	53.6	18	30.4	-1.3
28	y	-1.6	315	24.2	56.5	16	21.2	2.4	y	-1.7	164	19.1	47.3	-8	17.9	-4.7	y	1.1	235	42.0	53.6	18	29.1	-1.2
29	y	-1.6	316	20.7	57.4	16	23.6	2.1	y	-1.7	165	6.3	47.2	-8	22.6	-4.7	y	1.1	236	35.6	53.7	18	27.9	-1.3
Sep 30	y	-1.7	317	18.1	58.3	16	25.7	2.0	y	-1.7	165	53.6	47.2	-8	27.3	-4.7	y	1.1	237	29.3	53.8	18	26.6	-1.3
Oct 1	y	-1.7	318	16.4	59.2	16	27.7	1.9	y	-1.7	166	40.7	47.2	-8	32.0	-4.8	y	1.1	238	23.1	53.9	18	25.3	-1.2
2	y	-1.7	319	15.6	60.1	16	29.6	1.6	y	-1.7	167	27.9	47.1	-8	36.8	-4.7	y	1.1	239	17.0	54.0	18	24.1	-1.2
3	y	-1.7	320	15.7	61.1	16	31.2	1.5	y	-1.7	168	15.0	47.1	-8	41.5	-4.7	y	1.1	240	10.9	54.0	18	22.9	-1.2
4	y	-1.7	321	16.8	62.0	16	32.7	1.4	y	-1.7	169	2.1	47.1	-8	46.2	-4.7	y	1.1	241	5.0	54.1	18	21.7	-1.2
5	y	-1.8	322	18.8	62.9	16	34.1	1.2	y	-1.7	169	49.2	47.0	-8	50.9	-4.8	y	1.1	241	59.1	54.2	18	20.5	-1.1
6	y	-1.8	323	21.7	63.9	16	35.3	1.0	y	-1.7	170	36.2	47.0	-8	55.7	-4.7	y	1.1	242	53.3	54.3	18	19.4	-1.2
7	y	-1.8	324	25.6	64.8	16	36.3	0.9	y	-1.7	171	23.2	47.0	-9	0.4	-4.7	y	1.1	243	47.6	54.4	18	18.2	-1.1
8	y	-1.8	325	30.4	65.7	16	37.2	0.7	y	-1.7	172	10.2	47.0	-9	5.1	-4.7	y	1.1	244	42.0	54.4	18	17.1	-1.1
9	y	-1.9	326	36.1	66.6	16	37.9	0.5	y	-1.7	172	57.2	46.9	-9	9.8	-4.8	y	1.0	245	36.4	54.5	18	16.0	-1.1
10	y	-1.9	327	42.7	67.5	16	38.4	0.4	y	-1.7	173	44.1	46.9	-9	14.6	-4.7	y	1.0	246	30.9	54.6	18	14.9	-1.0
11	y	-1.9	328	50.2	68.4	16	38.8	0.2	y	-1.7	174	31.0	46.9	-9	19.3	-4.7	y	1.0	247	25.6	54.7	18	13.9	-1.0
12	y	-1.9	329	58.6	69.3	16	39.0	0.0	y	-1.7	175	17.9	46.9	-9	24.0	-4.7	y	1.0	248	20.3	54.8	18	12.9	-1.1
13	y	-2.0	331	7.8	70.1	16	39.0	-0.1	y	-1.7	176	4.8	46.9	-9	28.7	-4.7	y	1.0	249	15.1	54.9	18	11.8	-0.9
14	y	-2.0	332	18.0	71.0	16	38.9	-0.2	y	-1.7	176	51.6	46.8	-9	33.4	-4.7	y	1.0	250	10.0	55.0	18	10.9	-1.0
15	y	-2.0	333	29.0	71.8	16	38.7	-0.4	y	-1.7	177	38.5	46.8	-9	38.1	-4.7	y	1.0	251	5.0	55.1	18	9.9	-0.9
16	y	-2.0	334	40.8	72.6	16	38.3	-0.6	y	-1.7	178	25.3	46.8	-9	42.8	-4.7	y	1.0	252	0.0	55.2	18	9.0	-0.9
17	y	-2.0	335	53.4	73.4	16	37.7	-0.8	y	-1.7	179	12.1	46.8	-9	47.5	-4.6	y	1.0	252	55.2	55.3	18	8.1	-0.9
18	y	-2.1	337	6.9	74.2	16	36.9	-0.9	y	-1.7	179	58.9	46.8	-9	52.1	-4.7	y	1.0	253	50.5	55.4	18	7.2	-0.9
19	y	-2.1	338	21.1	74.9	16	36.0	-1.0	y	-1.7	180	45.6	46.8	-9	56.8	-4.7	y	1.0	254	45.8	55.4	18	6.3	-0.8
20	y	-2.1	339	36.0	75.7	16	35.0	-1.2	y	-1.7	181	32.4	46.7	-10	1.5	-4.6	y	1.0	255	41.3	55.5	18	5.5	-0.9
21	y	-2.1	340	51.7	76.4	16	33.8	-1.4	y	-1.7	182	19.1	46.7	-10	6.1	-4.6	y	1.0	256	36.8	55.6	18	4.6	-0.8
22	y	-2.1	342	8.0	77.0	16	32.4	-1.5	y	-1.7	183	5.9	46.7	-10	10.7	-4.7	y	1.0	257	32.5	55.7	18	3.8	-0.7
23	y	-2.2	343	25.1	77.6	16	30.9	-1.6	y	-1.7	183	52.6	46.7	-10	15.4	-4.6	y	1.0	258	28.2	55.8	18	3.1	-0.8
24	y	-2.2	344	42.7	78.2	16	29.3	-1.8	y	-1.7	184	39.3	46.7	-10	20.0	-4.6	y	1.0	259	24.0	55.9	18	2.3	-0.7
25	y	-2.2	346	0.9	78.8	16	27.5	-1.9	y	-1.7	185	26.0	46.7	-10	24.6	-4.6	y	1.0	260	20.0	56.0	18	1.6	-0.7
26	y	-2.2	347	19.7	79.3	16	25.6	-2.1	y	-1.7	186	12.7	46.7	-10	29.2	-4.6	y	1.0	261	16.0	56.1	18	0.9	-0.6
27	y	-2.2	348	38.9	79.7	16	23.5	-2.1	y	-1.7	186	59.4	46.7	-10	33.8	-4.6	y	1.0	262	12.2	56.2	18	0.3	-0.6
28	y	-2.2	349	58.6	80.1	16	21.4	-2.3	y	-1.7	187	46.1	46.7	-10	38.4	-4.6	y	1.0	263	8.4	56.3	17	59.7	-0.6
29	y	-2.2	351	18.8	80.5	16	19.1	-2.4	y	-1.7	188	32.8	46.7	-10	43.0	-4.5	y	1.0	264	4.8	56.5	17	59.1	-0.6
30	y	-2.3	352	39.2	80.8	16	16.7	-2.5	y	-1.7	189	19.5	46.7	-10	47.5	-4.5	y	1.0	265	1.2	56.6	17	58.5	-0.6
Oct 31	y	-2.3	354	0.0	81.0	16	14.2	-2.6	y	-1.7	190	6.2	46.7	-10	52.0	-4.6	y	1.0	265	57.8	56.7	17	57.9	-0.5
Nov 1	y	-2.3	355	21.1	81.2	16	11.6	-2.6	y	-1.7	190	52.9	46.7	-10	56.6	-4.5	y	1.0	266	54.4	56.8	17	57.4	-0.5
2	y	-2.3	356	42.3	81.4	16	9.0	-2.7	y	-1.7	191	39.6	46.7	-11	1.1	-4.5	y	1.0	267	51.2	56.9	17	56.9	-0.4
3	y	-2.3	358	3.7	81.5	16	6.3	-2.8	y	-1.7	192	26.3	46.7	-11	5.6	-4.5	y	1.0	268	48.1	57.0	17	56.5	-0.5
4	y	-2.3	359	25.1	81.5	16	3.5	-2.8	y	-1.7	193	13.0	46.7	-11	10.1	-4.4	y	1.0	269	45.1	57.1	17	56.0	-0.4
5	y	-2.3	0	46.6	81.4	16	0.7	-2.9	y	-1.7	193	59.7	46.7	-11	14.5	-4.5	y	1.0	270	42.2	57.2	17	55.6	-0.3
6	y	-2.3	2	8.0	81.4	15	57.8	-2.8	y	-1.7	194	46.4	46.7	-11	19.0	-4.4	y	1.0	271	39.4	57.3	17	55.3	-0.4
7	y	-2.3	3	29.4	81.2	15	55.0	-2.9	y	-1.7	195	33.2	46.7	-11	23.4	-4.4	y	1.0	272	36.7	57.4	17	54.9	-0.3
8	y	-2.3	4	50.6	81.0	15	52.1	-2.9	y	-1.7	196	19.9	46.8	-11	27.8	-4.4	y	1.0	273	34.1	57.5	17	54.6	-0.3
9	y	-2.3	6	11.7	80.8	15	49.2	-2.8	y	-1.7	197	6.7	46.8	-11	32.2	-4.4	y	1.0	274	31.6	57.6	17	54.3	-0.2
10	y	-2.3	7	32.5	80.5	15	46.4	-2.9	y	-1.7	197	53.4	46.8	-11	36.6	-4.3	y	0.9	275	29.3	57.8	17	54.1	-0.2
11	y	-2.3	8	53.0	80.2	15	43.5	-2.8	y	-1.7	198	40.2	46.8	-11	40.9	-4.3	y	0.9	276	27.0	57.9	17	53.9	-0.2
12	y	-2.2	10	13.1	79.8	15	40.7	-2.7	y	-1.7	199	27.0	46.8	-11	45.2	-4.4	y	0.9	277	24.9	58.0	17	53.7	-0.2
13	y	-2.2	11	32.9	79.4	15	38.0	-2.7	y	-1.7	200	13.8	46.8	-11	49.6	-4.2	y	0.9	278	22.9	58.1	17	53.5	-0.1
14	y	-2.2	12	52.3	78.9	15	35.3	-2.6	y	-1.7	201	0.7	46.9	-11	53.8	-4.3	y	0.9	279	21.0	58.2	17	53.4	-0.1
15	y	-2.1	14	11.2	78.4	15</																		

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Sun and Planets

Date	SUN					Mercury						Venus											
	GHA o	d	'	Dec o	d	'	vis	GHA o	d	'	dd	Dec o	d	'	dd	vis	GHA o	d	'	Dec o	d	'	
Nov 22	183	29.7	-4.0	-20	6.3	-12.7		2.2	177	1.0	136.1	-3.0	-21	25.6	33.7	-1.0	SS -4.6	133	59.7	4.8	-26	0.6	8.4
23	183	25.7	-4.2	-20	19.0	-12.4		2.4	179	17.0	139.7	-1.8	-20	51.9	35.2	-0.8	SS -4.6	134	4.4	5.8	-25	52.2	8.8
24	183	21.5	-4.4	-20	31.4	-12.0		2.6	181	36.7	140.6	-0.5	-20	16.7	35.6	-0.2	SS -4.6	134	10.2	6.9	-25	43.4	9.1
25	183	17.0	-4.6	-20	43.4	-11.6		2.6	183	57.3	138.8	0.9	-19	41.1	35.1	0.3	SS -4.6	134	17.1	8.0	-25	34.3	9.6
26	183	12.4	-4.8	-20	55.0	-11.2		2.3	186	16.1	134.4	2.2	-19	6.0	33.5	0.8	SS -4.6	134	25.1	9.1	-25	24.7	10.0
27	183	7.6	-5.0	-21	6.2	-10.8		2.1	188	30.6	127.7	3.4	-18	32.5	30.8	1.3	SS -4.6	134	34.2	10.3	-25	14.7	10.4
28	183	2.7	-5.2	-21	17.0	-10.4	sr	1.9	190	38.2	119.0	4.3	-18	1.7	27.5	1.6	SS -4.6	134	44.5	11.6	-25	4.3	10.7
29	182	57.5	-5.3	-21	27.4	-10.0	sr	1.6	192	37.2	109.0	5.0	-17	34.2	23.3	2.1	SS -4.6	134	56.1	12.8	-24	53.6	11.0
Nov 30	182	52.2	-5.5	-21	37.4	-9.6	sr	1.4	194	26.2	98.1	5.4	-17	10.9	18.9	2.2	SS -4.6	135	8.9	14.2	-24	42.6	11.4
Dec 1	182	46.7	-5.7	-21	47.0	-9.2	sr	1.1	196	4.3	86.9	5.6	-16	52.0	14.2	2.4	SS -4.6	135	23.1	15.5	-24	31.2	11.7
2	182	41.0	-5.8	-21	56.2	-8.8	sr	0.9	197	31.2	75.7	5.6	-16	37.8	9.5	2.4	SS -4.6	135	38.6	16.9	-24	19.5	11.9
3	182	35.1	-6.0	-22	5.0	-8.3	sr	0.7	198	46.8	64.8	5.4	-16	28.3	5.0	2.3	SS -4.6	135	55.5	18.4	-24	7.6	12.2
4	182	29.2	-6.1	-22	13.3	-7.9	sr	0.4	199	51.6	54.5	5.1	-16	23.3	0.8	2.1	SS -4.7	136	14.0	20.0	-23	55.4	12.5
5	182	23.0	-6.3	-22	21.2	-7.5	sr	0.2	200	46.1	44.9	4.8	-16	22.5	-3.0	1.9	SS -4.7	136	33.9	21.5	-23	42.9	12.7
6	182	16.8	-6.4	-22	28.7	-7.0	sr	0.0	201	31.0	36.1	4.4	-16	25.5	-6.5	1.8	SS -4.7	136	55.5	23.2	-23	30.2	12.9
7	182	10.4	-6.5	-22	35.7	-6.6	sr	-0.1	202	7.1	28.1	4.0	-16	32.0	-9.4	1.5	SS -4.7	137	18.6	24.9	-23	17.3	13.0
8	182	3.9	-6.6	-22	42.3	-6.1	sr	-0.2	202	35.2	20.8	3.6	-16	41.4	-12.1	1.4	SS -4.7	137	43.5	26.6	-23	4.3	13.3
9	181	57.3	-6.7	-22	48.4	-5.7	sr	-0.3	202	56.0	14.3	3.3	-16	53.5	-14.2	1.0	SS -4.7	138	10.2	28.5	-22	51.0	13.4
10	181	50.6	-6.8	-22	54.1	-5.2	sr	-0.3	203	10.4	8.5	2.9	-17	7.7	-16.0	0.9	SS -4.7	138	38.6	30.3	-22	37.6	13.5
11	181	43.7	-6.9	-22	59.3	-4.8	sr	-0.4	203	18.9	3.3	2.6	-17	23.7	-17.5	0.8	SS -4.7	139	9.0	32.3	-22	24.1	13.6
12	181	36.8	-7.0	-23	4.1	-4.3	sr	-0.4	203	22.2	-1.3	2.3	-17	41.2	-18.6	0.5	SS -4.7	139	41.3	34.3	-22	10.5	13.7
13	181	29.8	-7.1	-23	8.4	-3.9	sr	-0.4	203	20.9	-5.4	2.1	-17	59.8	-19.4	0.4	SS -4.7	140	15.5	36.3	-21	56.8	13.7
14	181	22.8	-7.2	-23	12.3	-3.4	sr	-0.4	203	15.5	-9.1	1.8	-18	19.2	-20.1	0.3	SS -4.7	140	51.9	38.5	-21	43.1	13.8
15	181	15.6	-7.2	-23	15.7	-2.9	sr	-0.5	203	6.4	-12.4	1.6	-18	39.3	-20.5	0.2	SS -4.7	141	30.3	40.6	-21	29.3	13.8
16	181	8.4	-7.3	-23	18.6	-2.5	sr	-0.5	202	54.0	-15.3	1.5	-18	59.8	-20.7	0.1	SS -4.7	142	11.0	42.9	-21	15.5	13.8
17	181	1.1	-7.3	-23	21.1	-2.0	sr	-0.5	202	38.7	-18.0	1.3	-19	20.5	-20.6	-0.1	SS -4.7	142	53.8	45.2	-21	1.7	13.8
18	180	53.8	-7.4	-23	23.1	-1.5	sr	-0.5	202	20.7	-20.3	1.2	-19	41.1	-20.6	0.0	SS -4.7	143	39.0	47.5	-20	47.9	13.7
19	180	46.4	-7.4	-23	24.6	-1.1	sr	-0.5	202	0.3	-22.5	1.1	-20	1.7	-20.3	-0.2	SS -4.7	144	26.5	49.9	-20	34.2	13.7
20	180	39.0	-7.4	-23	25.7	-0.6	sr	-0.5	201	37.9	-24.4	1.0	-20	22.0	-19.9	-0.2	SS -4.7	145	16.4	52.3	-20	20.5	13.5
21	180	31.6	-7.4	-23	26.3	-0.1	sr	-0.5	201	13.4	-26.2	0.9	-20	41.9	-19.4	-0.3	SS -4.6	146	8.7	54.8	-20	7.0	13.5
22	180	24.1	-7.5	-23	26.4	0.3	sr	-0.5	200	47.3	-27.8	0.8	-21	1.3	-18.8	-0.3	SS -4.6	147	3.6	57.4	-19	53.5	13.3
23	180	16.7	-7.5	-23	26.1	0.8	sr	-0.5	200	19.5	-29.3	0.7	-21	20.1	-18.1	-0.3	SS -4.6	148	0.9	59.9	-19	40.2	13.2
24	180	9.2	-7.5	-23	25.3	1.3	sr	-0.5	199	50.2	-30.6	0.7	-21	38.2	-17.5	-0.3	SS -4.6	149	0.9	62.5	-19	27.0	13.0
25	180	1.8	-7.4	-23	24.0	1.7	sr	-0.5	199	19.6	-31.9	0.6	-21	55.7	-16.5	-0.5	SS -4.6	150	3.4	65.1	-19	14.0	12.8
26	179	54.3	-7.4	-23	22.3	2.3	sr	-0.5	198	47.7	-33.0	0.6	-22	12.2	-15.8	-0.4	SS -4.6	151	8.5	67.7	-19	1.2	12.6
27	179	46.9	-7.4	-23	20.0	2.7	sr	-0.5	198	14.7	-34.1	0.5	-22	28.0	-14.8	-0.5	SS -4.6	152	16.2	70.3	-18	48.6	12.4
28	179	39.5	-7.4	-23	17.3	3.1	sr	-0.5	197	40.6	-35.1	0.5	-22	42.8	-13.8	-0.5	SS -4.5	153	26.6	72.9	-18	36.2	12.1
29	179	32.2	-7.3	-23	14.2	3.6	sr	-0.5	197	5.4	-36.0	0.5	-22	56.6	-12.9	-0.4	SS -4.5	154	39.5	75.5	-18	24.1	11.9
30	179	24.9	-7.2	-23	10.6	4.1	sr	-0.5	196	29.4	-36.9	0.4	-23	9.5	-11.7	-0.6	SS -4.5	155	55.0	78.1	-18	12.2	11.6
Dec 31	179	17.6	-7.2	-23	6.5	4.6	sr	-0.5	195	52.5	-37.7	0.4	-23	21.2	-10.7	-0.5	SS -4.5	157	13.1	80.5	-18	0.6	11.3
Jan 1	179	10.4	-7.2	-23	1.9	5.1	sr	-0.5	195	14.8	-37.7	0.4	-23	31.9	-9.7	-0.5	SS -4.4	158	33.6	80.5	-17	49.3	11.0

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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	o	'	o	o	'			
Nov 22	y	-1.9	23	7.7	74.0	15	17.4	-1.7	y	-1.7	207	16.2	47.1	-12	27.4	-4.1	y	0.9	287	9.8	59.1	17	53.5	0.1
23	y	-1.9	24	21.7	73.3	15	15.7	-1.5	y	-1.7	208	3.2	47.1	-12	31.5	-4.0	y	0.9	288	8.9	59.2	17	53.6	0.2
24	y	-1.9	25	35.0	72.6	15	14.2	-1.4	y	-1.7	208	50.3	47.1	-12	35.5	-4.1	y	0.9	289	8.1	59.3	17	53.8	0.2
25	y	-1.8	26	47.6	71.8	15	12.8	-1.2	y	-1.7	209	37.5	47.2	-12	39.6	-4.0	y	0.9	290	7.4	59.5	17	54.0	0.3
26	y	-1.8	27	59.4	71.0	15	11.6	-1.0	y	-1.7	210	24.6	47.2	-12	43.6	-4.0	y	0.9	291	6.9	59.6	17	54.3	0.3
27	y	-1.8	29	10.4	70.2	15	10.6	-0.8	y	-1.7	211	11.8	47.2	-12	47.6	-3.9	y	0.9	292	6.4	59.7	17	54.6	0.3
28	y	-1.7	30	20.7	69.4	15	9.8	-0.6	y	-1.7	211	59.1	47.3	-12	51.5	-4.0	y	0.9	293	6.1	59.8	17	54.9	0.3
29	y	-1.7	31	30.1	68.6	15	9.2	-0.5	y	-1.7	212	46.3	47.3	-12	55.5	-3.9	y	0.8	294	5.9	59.9	17	55.2	0.4
Nov 30	y	-1.7	32	38.7	67.8	15	8.7	-0.2	y	-1.7	213	33.7	47.4	-12	59.4	-3.8	y	0.8	295	5.8	60.0	17	55.6	0.4
Dec 1	y	-1.6	33	46.5	67.0	15	8.5	-0.1	y	-1.7	214	21.0	47.4	-13	3.2	-3.9	y	0.8	296	5.8	60.1	17	56.0	0.4
2	y	-1.6	34	53.4	66.1	15	8.4	0.2	y	-1.7	215	8.4	47.4	-13	7.1	-3.8	y	0.8	297	6.0	60.2	17	56.4	0.5
3	y	-1.6	35	59.6	65.3	15	8.6	0.4	y	-1.7	215	55.9	47.5	-13	10.9	-3.8	y	0.8	298	6.2	60.4	17	56.9	0.5
4	y	-1.5	37	4.8	64.4	15	9.0	0.5	y	-1.7	216	43.3	47.5	-13	14.7	-3.8	y	0.8	299	6.6	60.5	17	57.4	0.5
5	y	-1.5	38	9.3	63.6	15	9.5	0.8	y	-1.7	217	30.9	47.6	-13	18.5	-3.7	y	0.8	300	7.0	60.6	17	57.9	0.5
6	y	-1.5	39	12.9	62.8	15	10.3	1.0	y	-1.7	218	18.5	47.7	-13	22.2	-3.7	y	0.8	301	7.6	60.7	17	58.4	0.6
7	y	-1.4	40	15.7	61.9	15	11.3	1.2	y	-1.7	219	6.1	47.7	-13	25.9	-3.6	y	0.8	302	8.3	60.8	17	59.0	0.6
8	y	-1.4	41	17.6	61.1	15	12.5	1.4	y	-1.7	219	53.8	47.8	-13	29.5	-3.7	y	0.8	303	9.1	60.9	17	59.6	0.7
9	y	-1.4	42	18.7	60.3	15	13.9	1.7	y	-1.7	220	41.6	47.8	-13	33.2	-3.6	y	0.8	304	10.0	61.0	18	0.3	0.6
10	y	-1.3	43	19.0	59.5	15	15.6	1.8	y	-1.7	221	29.4	47.9	-13	36.8	-3.5	y	0.8	305	11.0	61.1	18	0.9	0.7
11	y	-1.3	44	18.5	58.7	15	17.4	2.0	y	-1.7	222	17.3	47.9	-13	40.3	-3.6	y	0.8	306	12.1	61.2	18	1.6	0.8
12	y	-1.3	45	17.2	57.9	15	19.4	2.2	y	-1.7	223	5.2	48.0	-13	43.9	-3.5	y	0.8	307	13.3	61.3	18	2.4	0.7
13	y	-1.2	46	15.1	57.1	15	21.6	2.5	y	-1.7	223	53.3	48.1	-13	47.4	-3.4	y	0.8	308	14.7	61.4	18	3.1	0.8
14	y	-1.2	47	12.3	56.4	15	24.1	2.6	y	-1.8	224	41.3	48.1	-13	50.8	-3.5	y	0.8	309	16.1	61.5	18	3.9	0.8
15	y	-1.2	48	8.7	55.6	15	26.7	2.8	y	-1.8	225	29.4	48.2	-13	54.3	-3.4	y	0.7	310	17.6	61.6	18	4.7	0.8
16	y	-1.1	49	4.3	54.9	15	29.5	3.0	y	-1.8	226	17.6	48.3	-13	57.7	-3.4	y	0.7	311	19.2	61.7	18	5.5	0.9
17	y	-1.1	49	59.2	54.2	15	32.5	3.2	y	-1.8	227	5.9	48.3	-14	1.1	-3.3	y	0.7	312	21.0	61.8	18	6.4	0.9
18	y	-1.1	50	53.3	53.4	15	35.7	3.3	y	-1.8	227	54.2	48.4	-14	4.4	-3.3	y	0.7	313	22.8	61.9	18	7.3	0.9
19	y	-1.0	51	46.8	52.7	15	39.0	3.6	y	-1.8	228	42.6	48.5	-14	7.7	-3.3	y	0.7	314	24.7	62.0	18	8.2	0.9
20	y	-1.0	52	39.5	52.1	15	42.6	3.7	y	-1.8	229	31.1	48.6	-14	11.0	-3.2	y	0.7	315	26.7	62.1	18	9.1	1.0
21	y	-1.0	53	31.6	51.4	15	46.3	3.8	y	-1.8	230	19.7	48.6	-14	14.2	-3.2	y	0.7	316	28.9	62.2	18	10.1	0.9
22	y	-0.9	54	23.0	50.7	15	50.1	4.1	y	-1.8	231	8.3	48.7	-14	17.4	-3.1	y	0.7	317	31.1	62.3	18	11.0	1.0
23	y	-0.9	55	13.7	50.0	15	54.2	4.2	y	-1.8	231	57.0	48.8	-14	20.5	-3.2	y	0.7	318	33.4	62.4	18	12.0	1.1
24	y	-0.9	56	3.7	49.4	15	58.4	4.3	y	-1.8	232	45.8	48.9	-14	23.7	-3.0	y	0.7	319	35.8	62.5	18	13.1	1.0
25	y	-0.8	56	53.1	48.8	16	2.7	4.5	y	-1.8	233	34.7	49.0	-14	26.7	-3.1	y	0.7	320	38.2	62.6	18	14.1	1.1
26	y	-0.8	57	41.9	48.1	16	7.2	4.7	y	-1.8	234	23.6	49.0	-14	29.8	-3.0	y	0.7	321	40.8	62.7	18	15.2	1.1
27	y	-0.8	58	30.0	47.5	16	11.9	4.8	y	-1.8	235	12.7	49.1	-14	32.8	-3.0	y	0.7	322	43.5	62.7	18	16.3	1.1
28	y	-0.7	59	17.6	46.9	16	16.7	4.9	y	-1.8	236	1.8	49.2	-14	35.8	-2.9	y	0.7	323	46.2	62.8	18	17.4	1.1
29	y	-0.7	60	4.5	46.3	16	21.6	5.1	y	-1.8	236	51.0	49.3	-14	38.7	-2.9	y	0.7	324	49.0	62.9	18	18.5	1.2
30	y	-0.7	60	50.8	45.7	16	26.7	5.2	y	-1.8	237	40.3	49.4	-14	41.6	-2.8	y	0.6	325	51.9	63.0	18	19.7	1.1
Dec 31	y	-0.6	61	36.5	45.2	16	31.9	5.3	y	-1.8	238	29.7	49.5	-14	44.4	-2.8	y	0.6	326	54.9	63.0	18	20.8	1.2
Jan 1	y	-0.6	62	21.7	45.2	16	37.2	5.4	y	-1.8	239	19.2	49.5	-14	47.2	-2.8	y	0.6	327	57.9	63.0	18	22.0	1.3