

2009

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	'							
Jan 1	179	8.6	-7.1	-23	0.5	5.1	SS	-0.7	158	47.5	-18.4	-2.3	-21	48.1	24.4	-0.3	SS	-4.3	130	48.3	-2.8	-13	49.1	26.3
2	179	1.5	-7.0	-22	55.4	5.6	SS	-0.7	158	29.1	-13.8	-2.3	-21	23.7	24.9	-0.3	SS	-4.3	130	45.5	-2.3	-13	22.8	26.6
3	178	54.5	-6.9	-22	49.8	6.1	SS	-0.6	158	15.3	-8.5	-2.6	-20	58.8	25.4	-0.2	SS	-4.3	130	43.3	-1.7	-12	56.2	26.8
4	178	47.7	-6.8	-22	43.7	6.5	SS	-0.6	158	6.9	-2.5	-3.0	-20	33.4	25.6	-0.1	SS	-4.4	130	41.6	-1.2	-12	29.4	27.1
5	178	40.9	-6.7	-22	37.2	6.9	SS	-0.5	158	4.4	4.3	-3.4	-20	7.8	25.5	0.0	SS	-4.4	130	40.3	-0.7	-12	2.3	27.3
6	178	34.2	-6.5	-22	30.3	7.4	SS	-0.5	158	8.7	11.9	-3.8	-19	42.3	25.1	0.2	SS	-4.4	130	39.6	-0.2	-11	35.0	27.5
7	178	27.7	-6.4	-22	22.9	7.8	SS	-0.4	158	20.6	20.2	-4.2	-19	17.2	24.5	0.3	SS	-4.4	130	39.5	0.4	-11	7.5	27.6
8	178	21.3	-6.3	-22	15.1	8.3	SS	-0.2	158	40.8	29.5	-4.6	-18	52.7	23.3	0.6	SS	-4.4	130	39.8	0.9	-10	39.9	27.9
9	178	15.0	-6.1	-22	6.8	8.7	SS	-0.1	159	10.3	39.5	-5.0	-18	29.4	22.0	0.7	SS	-4.4	130	40.7	1.4	-10	12.0	28.0
10	178	8.9	-6.0	-21	58.1	9.1	SS	0.1	159	49.8	50.3	-5.4	-18	7.4	20.2	0.9	SS	-4.4	130	42.1	2.0	-9	44.0	28.1
11	178	2.9	-5.8	-21	49.0	9.6	SS	0.3	160	40.2	61.7	-5.7	-17	47.2	18.1	1.0	SS	-4.4	130	44.1	2.5	-9	15.9	28.3
12	177	57.0	-5.7	-21	39.4	9.9	SS	0.6	161	41.9	73.5	-5.9	-17	29.1	15.5	1.3	SS	-4.4	130	46.6	3.0	-8	47.6	28.4
13	177	51.3	-5.5	-21	29.5	10.4	SS	0.8	162	55.4	85.5	-6.0	-17	13.6	12.9	1.3	SS	-4.4	130	49.7	3.6	-8	19.2	28.5
14	177	45.8	-5.4	-21	19.1	10.8	SS	1.1	164	20.9	97.2	-5.9	-17	0.7	9.9	1.5	SS	-4.4	130	53.3	4.1	-7	50.7	28.6
15	177	40.4	-5.2	-21	8.3	11.2	SS	1.4	165	58.2	108.4	-5.6	-16	50.8	6.8	1.6	SS	-4.4	130	57.4	4.7	-7	22.1	28.7
16	177	35.2	-5.1	-20	57.1	11.6	SS	1.6	167	46.5	118.4	-5.0	-16	44.0	3.8	1.5	SS	-4.4	131	2.1	5.3	-6	53.4	28.8
17	177	30.2	-4.9	-20	45.5	12.0	SS	1.9	169	44.9	127.0	-4.3	-16	40.2	0.7	1.5	SS	-4.4	131	7.4	5.8	-6	24.6	28.8
18	177	25.3	-4.7	-20	33.5	12.4	2.1	171	51.9	133.6	-3.3	-16	39.5	-2.0	1.4	SS	-4.5	131	13.2	6.4	-5	55.8	28.8	
19	177	20.6	-4.5	-20	21.1	12.8	2.4	174	5.6	138.1	-2.2	-16	41.5	-4.5	1.3	SS	-4.5	131	19.6	7.0	-5	27.0	28.9	
20	177	16.0	-4.3	-20	8.3	13.1	2.5	176	23.6	140.1	-1.0	-16	46.0	-6.6	1.0	SS	-4.5	131	26.5	7.5	-4	58.1	28.9	
21	177	11.7	-4.2	-19	55.2	13.5	2.3	178	43.8	139.8	0.2	-16	52.6	-8.5	0.9	SS	-4.5	131	34.0	8.1	-4	29.2	28.8	
22	177	7.5	-4.0	-19	41.7	13.9	2.2	181	3.6	137.1	1.3	-17	1.1	-9.9	0.7	SS	-4.5	131	42.2	8.7	-4	0.4	28.9	
23	177	3.6	-3.8	-19	27.8	14.3	2.0	183	20.7	132.4	2.4	-17	11.0	-11.0	0.5	SS	-4.5	131	50.9	9.3	-3	31.5	28.8	
24	176	59.8	-3.6	-19	13.5	14.6	sr	1.9	185	33.1	126.0	3.2	-17	22.0	-11.7	0.3	SS	-4.5	132	0.2	10.0	-3	2.7	28.8
25	176	56.2	-3.4	-18	58.9	14.9	sr	1.7	187	39.2	118.3	3.8	-17	33.7	-12.2	0.3	SS	-4.5	132	10.2	10.6	-2	33.9	28.7
26	176	52.8	-3.2	-18	44.0	15.3	sr	1.6	189	37.5	109.7	4.3	-17	45.9	-12.4	0.1	SS	-4.5	132	20.8	11.2	-2	5.2	28.7
27	176	49.6	-3.0	-18	28.7	15.7	sr	1.4	191	27.2	100.6	4.6	-17	58.3	-12.4	0.0	SS	-4.5	132	32.0	11.9	-1	36.5	28.5
28	176	46.6	-2.8	-18	13.0	15.9	sr	1.3	193	7.8	91.2	4.7	-18	10.7	-12.2	-0.1	SS	-4.5	132	43.9	12.6	-1	8.0	28.5
29	176	43.9	-2.6	-17	57.1	16.3	sr	1.1	194	39.0	81.9	4.7	-18	22.9	-11.9	-0.2	SS	-4.5	132	56.5	13.3	-0	39.5	28.3
30	176	41.3	-2.4	-17	40.8	16.6	sr	1.0	196	0.9	72.8	4.5	-18	34.8	-11.4	-0.2	SS	-4.5	133	9.8	14.0	-0	11.2	28.2
Jan 31	176	38.9	-2.2	-17	24.2	16.9	sr	0.8	197	13.6	64.1	4.4	-18	46.2	-10.9	-0.3	SS	-4.5	133	23.8	14.7	0	17.0	28.0
Feb 1	176	36.8	-1.9	-17	7.3	17.2	sr	0.7	198	17.7	55.8	4.1	-18	57.1	-10.2	-0.3	SS	-4.6	133	38.5	15.5	0	45.0	27.9
2	176	34.8	-1.7	-16	50.1	17.5	sr	0.6	199	13.5	48.1	3.9	-19	7.3	-9.4	-0.4	SS	-4.6	133	54.0	16.3	1	12.9	27.6
3	176	33.1	-1.5	-16	32.6	17.8	sr	0.5	200	1.6	40.9	3.9	-19	16.7	-8.6	-0.4	SS	-4.6	134	10.3	17.1	1	40.5	27.5
4	176	31.6	-1.3	-16	14.8	18.0	sr	0.4	200	42.5	34.3	3.3	-19	25.3	-7.8	-0.4	SS	-4.6	134	27.4	17.9	2	8.0	27.2
5	176	30.2	-1.1	-15	56.8	18.3	sr	0.3	201	16.8	28.2	3.1	-19	33.1	-6.8	-0.5	SS	-4.6	134	45.4	18.8	2	35.2	27.0
6	176	29.1	-0.9	-15	38.5	18.6	sr	0.2	201	44.9	22.6	2.8	-19	39.9	-5.8	-0.5	SS	-4.6	135	4.2	19.7	3	2.2	26.8
7	176	28.2	-0.7	-15	19.9	18.9	sr	0.2	202	7.5	17.5	2.6	-19	45.7	-4.8	-0.5	SS	-4.6	135	23.9	20.6	3	29.0	26.4
8	176	27.5	-0.5	-15	1.0	19.1	sr	0.2	202	25.0	12.8	2.3	-19	50.5	-3.7	-0.5	SS	-4.6	135	44.5	21.6	3	55.4	26.2
9	176	27.0	-0.3	-14	41.9	19.4	sr	0.1	202	37.7	8.5	2.1	-19	54.2	-2.6	-0.5	SS	-4.6	136	6.1	22.6	4	21.6	25.8
10	176	26.7	-0.1	-14	22.5	19.5	sr	0.1	202	46.3	4.6	1.9	-19	56.8	-1.5	-0.5	SS	-4.6	136	28.6	23.6	4	47.4	25.5
11	176	26.6	0.1	-14	3.0	19.9	sr	0.1	202	50.9	1.1	1.8	-19	58.3	-0.4	-0.5	SS	-4.6	136	52.2	24.7	5	12.9	25.1
12	176	26.6	0.3	-13	43.1	20.0	sr	0.1	202	52.0	-2.1	1.6	-19	58.7	0.9	-0.7	SS	-4.6	137	16.9	25.8	5	38.0	24.8
13	176	26.9	0.4	-13	23.1	20.3	sr	0.0	202	49.9	-5.0	1.5	-19	57.8	2.1	-0.6	SS	-4.6	137	42.7	26.9	6	2.8	24.3
14	176	27.3	0.6	-13	2.8	20.5	sr	0.0	202	44.9	-7.7	1.3	-19	55.7	3.2	-0.5	SS	-4.6	138	9.6	28.1	6	27.1	23.9
15	176	28.0	0.8	-12	42.3	20.7	sr	0.0	202	37.2	-10.1	1.2	-19	52.5	4.5	-0.7	SS	-4.6	138	37.6	29.3	6	51.0	23.5
16	176	28.8	1.0	-12	21.6	20.9	sr	0.0	202	27.0	-12.4	1.1	-19	48.0	5.8	-0.7	SS	-4.6	139	6.9	30.6	7	14.5	23.0
17	176	29.7	1.1	-12	0.7	21.1	sr	0.0	202	14.6	-14.4	1.0	-19	42.2	7.0	-0.6	SS	-4.6	139	37.5	31.9	7	37.5	22.6
18	176	30.9	1.3	-11	39.6	21.2	sr	0.0	202	0.3	-16.2	0.9	-19	35.2	8.2	-0.6	SS	-4.6	140	9.4	33.2	8	0.1	22.0
19	176	32.2	1.5	-11	18.4	21.5	sr	0.0	201	44.0	-17.9	0.8	-19	27.0	9.6	-0.7	SS	-4.6	140	42.6	34.6	8	22.1	21.4
20	176	33.7	1.6	-10	56.9	21.6	sr	0.0	201	26.1	-19.5	0.8	-19	17.4	10.8	-0.6	SS	-4.6	141	17.2	36.1	8	43.5	20.9
21	176	35.3	1.8	-10	35.3	21.8	sr	0.0	201	6.6	-20.9	0.7	-19	6.6	12.0	-0.6	SS	-4.6	141	53.3	37.6	9	4.4	20.2
22	176	37.1	2.0	-10	13.5	21.9	sr	0.0	200	45.7	-22.2	0.7	-18	54.6	13.4	-0.7	SS	-4.6	142	31.0	39.2	9	24.6	19.6
23	176	39.0	2.1	-9	51.6	22.1	sr	-0.1	200	23.5	-23.4	0.6	-18	41.2	14.6	-0.6	SS	-4.6	143	10.1	40.8	9	44.2	19.0
24	176	41.2	2.3	-9	29.5	22.3	sr	-0.1	200	0.1	-24.5	0.5	-18	26.6	15.9	-0.6	SS	-4.6	143	51.0	42.5	10	3.2	18.2
25	176	43.4	2.4	-9	7.2	22.4	sr	-0.1	199	35.6	-25.5	0.5	-18	10.7	17.2	-0.7	SS	-4.6	144	33.5	44.3	10	21.4	17.4
26	176	45.8	2.5	-8	44.8	22.5	sr	-0.1	199	10.1	-26.5	0.5	-17	53.5	18.5	-0.7	SS	-4.6	145	17.7	46.1	10	38.8	16.7
27	176	48.3	2.7	-8	22.3	22.6	sr	-0.1	198	43.6	-27.3	0.4	-17	35.0	19.8	-0.7	SS	-4.6	146	3.8	47.9	10	55.5	15.8
Feb 28	176	51.0	2.8	-7	59.7	22.7	sr	-0.1	198	16.3	-28.2	0.4	-17											

2009

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	'	mag	o	'	o	'	mag	o	'	o	'	
Jan 1	y	1.3	186	55.4	9.7	-24	5.6	0.9	y	-1.9	159	37.9	44.7	-20	46.6	2.8
2	y	1.3	187	5.1	9.6	-24	4.7	1.1	y	-1.9	160	22.5	44.6	-20	43.8	2.8
3	y	1.3	187	14.7	9.6	-24	3.6	1.3	y	-1.9	161	7.1	44.6	-20	41.0	2.9
4	y	1.3	187	24.3	9.6	-24	2.3	1.6	y	-1.9	161	51.8	44.6	-20	38.1	2.8
5	y	1.3	187	33.9	9.5	-24	0.7	1.9	y	-1.9	162	36.4	44.6	-20	35.3	2.9
6	y	1.3	187	43.4	9.5	-23	58.8	2.1	y	-1.9	163	20.9	44.6	-20	32.4	2.9
7	y	1.3	187	52.9	9.5	-23	56.7	2.4	y	-1.9	164	5.5	44.5	-20	29.5	2.9
8	y	1.3	188	2.4	9.5	-23	54.3	2.7	y	-1.9	164	50.0	44.5	-20	26.6	3.0
9	y	1.3	188	11.9	9.5	-23	51.6	2.9	y	-1.9	165	34.5	44.5	-20	23.6	3.0
10	y	1.3	188	21.4	9.5	-23	48.7	3.2	y	-1.9	166	19.1	44.5	-20	20.6	3.0
11	y	1.3	188	30.9	9.5	-23	45.5	3.4	y	-1.9	167	3.6	44.5	-20	17.6	3.0
12	y	1.3	188	40.4	9.5	-23	42.1	3.8	y	-1.9	167	48.0	44.5	-20	14.6	3.1
13	y	1.3	188	49.9	9.5	-23	38.3	3.9	y	-1.9	168	32.5	44.5	-20	11.5	3.0
14	y	1.3	188	59.4	9.5	-23	34.4	4.3	y	-1.9	169	17.0	44.5	-20	8.5	3.1
15	y	1.3	189	8.9	9.5	-23	30.1	4.5	y	-1.9	170	1.5	44.5	-20	5.4	3.2
16	y	1.3	189	18.4	9.5	-23	25.6	4.7	y	-1.9	170	45.9	44.5	-20	2.2	3.1
17	y	1.3	189	27.9	9.5	-23	20.9	5.0	y	-1.9	171	30.4	44.5	-19	59.1	3.2
18	y	1.3	189	37.4	9.6	-23	15.9	5.3	y	-1.9	172	14.9	44.5	-19	55.9	3.1
19	y	1.3	189	47.0	9.6	-23	10.6	5.6	y	-1.9	172	59.3	44.5	-19	52.8	3.2
20	y	1.3	189	56.6	9.6	-23	5.0	5.8	y	-1.9	173	43.8	44.5	-19	49.6	3.3
21	y	1.3	190	6.2	9.6	-22	59.2	6.0	y	-1.9	174	28.2	44.5	-19	46.3	3.2
22	y	1.3	190	15.9	9.7	-22	53.2	6.3	y	-1.9	175	12.7	44.5	-19	43.1	3.3
23	y	1.3	190	25.6	9.7	-22	46.9	6.6	y	-1.9	175	57.1	44.5	-19	39.8	3.3
24	y	1.3	190	35.3	9.8	-22	40.3	6.8	y	-1.9	176	41.6	44.5	-19	36.5	3.3
25	y	1.3	190	45.0	9.8	-22	33.5	7.0	y	-1.9	177	26.1	44.5	-19	33.2	3.3
26	y	1.3	190	54.9	9.9	-22	26.5	7.4	y	-1.9	178	10.6	44.5	-19	29.9	3.3
27	y	1.3	191	4.7	9.9	-22	19.1	7.5	y	-1.9	178	55.1	44.5	-19	26.6	3.4
28	y	1.3	191	14.6	10.0	-22	11.6	7.8	y	-1.9	179	39.6	44.5	-19	23.2	3.4
29	y	1.3	191	24.6	10.0	-22	3.8	8.1	y	-1.9	180	24.1	44.5	-19	19.8	3.4
30	y	1.3	191	34.6	10.1	-21	55.7	8.3	y	-1.9	181	8.6	44.6	-19	16.4	3.4
Jan 31	y	1.3	191	44.7	10.2	-21	47.4	8.5	y	-1.9	181	53.2	44.6	-19	13.0	3.4
Feb 1	y	1.3	191	54.9	10.2	-21	38.9	8.8	y	-1.9	182	37.8	44.6	-19	9.6	3.4
2	y	1.3	192	5.1	10.3	-21	30.1	9.0	y	-1.9	183	22.4	44.6	-19	6.2	3.5
3	y	1.3	192	15.4	10.4	-21	21.1	9.2	y	-1.9	184	7.0	44.6	-19	2.7	3.4
4	y	1.3	192	25.8	10.4	-21	11.9	9.5	y	-1.9	184	51.6	44.7	-18	59.3	3.5
5	y	1.3	192	36.3	10.5	-21	2.4	9.7	y	-1.9	185	36.3	44.7	-18	55.8	3.5
6	y	1.3	192	46.8	10.6	-20	52.7	9.9	y	-1.9	186	21.0	44.7	-18	52.3	3.5
7	y	1.3	192	57.4	10.7	-20	42.8	10.2	y	-1.9	187	5.7	44.7	-18	48.8	3.6
8	y	1.3	193	8.1	10.8	-20	32.6	10.4	y	-1.9	187	50.4	44.8	-18	45.2	3.5
9	y	1.3	193	18.8	10.8	-20	22.2	10.6	y	-1.9	188	35.2	44.8	-18	41.7	3.5
10	y	1.3	193	29.7	10.9	-20	11.6	10.8	y	-1.9	189	20.0	44.8	-18	38.2	3.6
11	y	1.3	193	40.6	11.0	-20	0.8	11.0	y	-1.9	190	4.8	44.9	-18	34.6	3.5
12	y	1.3	193	51.6	11.1	-19	49.8	11.3	y	-1.9	190	49.7	44.9	-18	31.1	3.6
13	y	1.3	194	2.7	11.2	-19	38.5	11.5	y	-1.9	191	34.6	44.9	-18	27.5	3.6
14	y	1.3	194	13.9	11.3	-19	27.0	11.6	y	-1.9	192	19.5	45.0	-18	23.9	3.6
15	y	1.3	194	25.2	11.4	-19	15.4	11.9	y	-1.9	193	4.5	45.0	-18	20.3	3.6
16	y	1.3	194	36.5	11.5	-19	3.5	12.1	y	-1.9	193	49.5	45.0	-18	16.7	3.6
17	y	1.3	194	48.0	11.5	-18	51.4	12.3	y	-2.0	194	34.6	45.1	-18	13.1	3.6
18	y	1.3	194	59.5	11.6	-18	39.1	12.5	y	-2.0	195	19.6	45.1	-18	9.5	3.7
19	y	1.3	195	11.2	11.7	-18	26.6	12.7	y	-2.0	196	4.8	45.2	-18	5.8	3.6
20	y	1.3	195	22.9	11.8	-18	13.9	12.9	y	-2.0	196	49.9	45.2	-18	2.2	3.6
21	y	1.3	195	34.7	11.9	-18	1.0	13.1	y	-2.0	197	35.1	45.3	-17	58.6	3.7
22	y	1.2	195	46.6	12.0	-17	47.9	13.2	y	-2.0	198	20.4	45.3	-17	54.9	3.6
23	y	1.2	195	58.7	12.1	-17	34.7	13.5	y	-2.0	199	5.7	45.3	-17	51.3	3.7
24	y	1.2	196	10.8	12.2	-17	21.2	13.6	y	-2.0	199	51.0	45.4	-17	47.6	3.6
25	y	1.2	196	23.0	12.3	-17	7.6	13.8	y	-2.0	200	36.4	45.4	-17	44.0	3.7
26	y	1.2	196	35.3	12.4	-16	53.8	14.0	y	-2.0	201	21.9	45.5	-17	40.3	3.7
27	y	1.2	196	47.8	12.5	-16	39.8	14.1	y	-2.0	202	7.4	45.6	-17	36.6	3.6
Feb 28	y	1.2	197	0.3	12.6	-16	25.7	14.4	y	-2.0	202	52.9	45.6	-17	33.0	3.7
Mar 1	y	1.2	197	12.9	12.7	-16	11.3	14.5	y	-2.0	203	38.6	45.7	-17	29.3	3.6
2	y	1.2	197	25.6	12.8	-15	56.8	14.6	y	-2.0	204	24.2	45.7	-17	25.7	3.7
3	y	1.2	197	38.4	12.9	-15	42.2	14.8	y	-2.0	205	9.9	45.8	-17	22.0	3.7
4	y	1.2	197	51.4	13.0	-15	27.4	15.0	y	-2.0	205	55.7	45.8	-17	18.3	3.6
5	y	1.2	198	4.4	13.1	-15	12.4	15.1	y	-2.0	206	41.6	45.9	-17	14.7	3.7
Mar 6	y	1.2	198	17.5	13.2	-14	57.3	15.3	y	-2.0	207	27.5	46.0	-17	11.0	3.6

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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	13.3	3.6	-5	18.5	23.4	sr -0.3	194	44.5	-32.8	0.3	-14	21.3	29.9	-0.6	ss -4.5	153	23.6	64.6	12	35.0	7.5
8	177	16.9	3.7	-4	55.1	23.4	sr -0.3	194	11.7	-33.4	0.3	-13	51.4	31.2	-0.6	ss -4.5	154	28.1	66.8	12	42.5	6.2
9	177	20.6	3.8	-4	31.7	23.5	sr -0.3	193	38.4	-33.9	0.3	-13	20.2	32.4	-0.6	ss -4.5	155	34.9	69.0	12	48.7	4.9
10	177	24.4	3.9	-4	8.2	23.5	sr -0.4	193	4.5	-34.5	0.3	-12	47.8	33.7	-0.6	ss -4.5	156	43.9	71.2	12	53.6	3.6
11	177	28.4	4.0	-3	44.7	23.6	sr -0.4	192	30.0	-35.1	0.3	-12	14.1	34.9	-0.6	ss -4.5	157	55.1	73.4	12	57.2	2.2
12	177	32.3	4.1	-3	21.1	23.6	sr -0.4	191	54.9	-35.6	0.3	-11	39.2	36.2	-0.7	ss -4.5	159	8.4	75.5	12	59.4	0.7
13	177	36.4	4.1	-2	57.5	23.6	sr -0.5	191	19.3	-36.2	0.3	-11	3.0	37.3	-0.5	ss -4.4	160	23.9	77.6	13	0.1	-0.7
14	177	40.5	4.2	-2	33.9	23.7	sr -0.5	190	43.1	-36.8	0.3	-10	25.7	38.6	-0.7	ss -4.4	161	41.5	79.6	12	59.4	-2.2
15	177	44.7	4.2	-2	10.2	23.7	sr -0.6	190	6.3	-37.4	0.3	-9	47.1	39.8	-0.6	ss -4.4	163	1.1	81.5	12	57.2	-3.7
16	177	49.0	4.3	-1	46.5	23.7	sr -0.6	189	28.8	-38.1	0.3	-9	7.3	41.0	-0.6	ss -4.4	164	22.6	83.3	12	53.5	-5.2
17	177	53.2	4.3	-1	22.8	23.7	sr -0.7	188	50.8	-38.7	0.3	-8	26.3	42.2	-0.6	ss -4.3	165	45.9	85.0	12	48.3	-6.7
18	177	57.6	4.4	-0	59.1	23.8	sr -0.7	188	12.1	-39.4	0.3	-7	44.1	43.4	-0.6	ss -4.3	167	10.8	86.5	12	41.6	-8.2
19	178	2.0	4.4	-0	35.3	23.7	sr -0.8	187	32.7	-40.1	0.3	-7	0.7	44.5	-0.6	ss -4.3	168	37.3	87.9	12	33.4	-9.7
20	178	6.4	4.4	-0	11.6	23.7	sr -0.9	186	52.6	-40.8	0.4	-6	16.2	45.7	-0.6	ss -4.2	170	5.2	89.1	12	23.7	-11.2
21	178	10.8	4.5	0	12.1	23.7	sr -1.0	186	11.8	-41.6	0.4	-5	30.5	46.8	-0.6	-4.2	171	34.3	90.1	12	12.5	-12.6
22	178	15.3	4.5	0	35.8	23.7	-1.0	185	30.2	-42.4	0.4	-4	43.7	47.9	-0.6	-4.2	173	4.5	91.0	11	59.9	-13.9
23	178	19.8	4.5	0	59.5	23.7	-1.1	184	47.8	-43.2	0.4	-3	55.8	49.0	-0.6	-4.1	174	35.4	91.6	11	46.0	-15.2
24	178	24.3	4.5	1	23.2	23.6	-1.2	184	4.6	-44.0	0.4	-3	6.8	50.0	-0.5	-4.1	176	7.0	92.0	11	30.8	-16.5
25	178	28.8	4.5	1	46.8	23.6	-1.3	183	20.6	-44.9	0.4	-2	16.8	50.9	-0.4	-4.1	177	39.0	92.2	11	14.3	-17.6
26	178	33.3	4.5	2	10.4	23.5	-1.4	182	35.7	-45.8	0.4	-1	25.9	52.0	-0.5	-4.1	179	11.2	92.2	10	56.7	-18.6
27	178	37.8	4.5	2	33.9	23.5	-1.5	181	49.9	-46.7	0.5	-0	33.9	52.8	-0.4	-4.0	180	43.4	91.9	10	38.1	-19.6
28	178	42.3	4.5	2	57.4	23.4	-1.6	181	3.2	-47.6	0.5	0	18.9	53.6	-0.4	-4.0	182	15.3	91.4	10	18.5	-20.3
29	178	46.8	4.5	3	20.8	23.3	-1.8	180	15.6	-48.5	0.5	1	12.5	54.3	-0.3	-4.0	183	46.7	90.7	9	58.2	-21.0
30	178	51.3	4.5	3	44.1	23.3	-1.9	179	27.1	-49.4	0.4	2	6.8	55.1	-0.4	-4.0	185	17.4	89.8	9	37.2	-21.6
Mar 31	178	55.8	4.5	4	7.4	23.2	-2.0	178	37.7	-50.3	0.4	3	1.9	55.5	-0.2	sr -4.1	186	47.3	88.8	9	15.6	-22.0
Apr 1	179	0.3	4.4	4	30.6	23.2	-2.0	177	47.5	-51.1	0.4	3	57.4	56.0	-0.2	sr -4.1	188	16.0	87.5	8	53.6	-22.3
2	179	4.7	4.4	4	53.8	23.0	-2.0	176	56.4	-51.8	0.4	4	53.4	56.3	-0.2	sr -4.1	189	43.5	86.0	8	31.3	-22.4
3	179	9.2	4.4	5	16.8	22.9	-1.9	176	4.6	-52.4	0.3	5	49.7	56.4	-0.1	sr -4.1	191	9.5	84.4	8	8.9	-22.4
4	179	13.6	4.4	5	39.7	22.9	-1.8	175	12.2	-53.0	0.3	6	46.1	56.4	0.0	sr -4.2	192	33.9	82.7	7	46.5	-22.3
5	179	17.9	4.3	6	2.6	22.7	-1.8	174	19.2	-53.3	0.2	7	42.5	56.2	0.1	sr -4.2	193	56.6	80.8	7	24.2	-22.1
6	179	22.2	4.3	6	25.3	22.6	-1.7	173	25.9	-53.5	0.1	8	38.7	55.8	0.2	sr -4.2	195	17.4	78.8	7	2.1	-21.8
7	179	26.5	4.2	6	47.9	22.5	-1.6	172	32.3	-53.5	0.0	9	34.5	55.2	0.3	sr -4.3	196	36.2	76.7	6	40.3	-21.3
8	179	30.7	4.2	7	10.4	22.4	ss -1.5	171	38.8	-53.3	-0.1	10	29.7	54.3	0.5	sr -4.3	197	53.0	74.6	6	19.0	-20.7
9	179	34.9	4.1	7	32.8	22.3	ss -1.5	170	45.5	-52.8	-0.2	11	24.0	53.4	0.5	sr -4.3	199	7.6	72.4	5	58.3	-20.1
10	179	39.0	4.0	7	55.1	22.1	ss -1.4	169	52.7	-52.0	-0.4	12	17.4	52.1	0.6	sr -4.3	200	20.0	70.1	5	38.2	-19.3
11	179	43.0	4.0	8	17.2	22.0	ss -1.3	169	0.7	-50.9	-0.5	13	9.5	50.6	0.8	sr -4.4	201	30.1	67.9	5	18.9	-18.5
12	179	46.9	3.9	8	39.2	21.8	ss -1.3	168	9.8	-49.5	-0.7	14	0.1	49.0	0.8	sr -4.4	202	38.0	65.6	5	0.4	-17.7
13	179	50.8	3.8	9	1.0	21.7	ss -1.2	167	20.2	-47.8	-0.9	14	49.1	47.1	0.9	sr -4.4	203	43.6	63.3	4	42.7	-16.8
14	179	54.6	3.7	9	22.7	21.5	ss -1.1	166	32.4	-45.8	-1.0	15	36.2	45.0	1.0	sr -4.4	204	46.8	61.0	4	25.9	-15.6
15	179	58.3	3.6	9	44.2	21.4	ss -1.0	165	46.7	-43.4	-1.2	16	21.2	42.9	1.1	sr -4.4	205	47.9	58.8	4	10.1	-14.8
16	180	1.9	3.5	10	5.6	21.2	ss -0.9	165	3.3	-40.7	-1.3	17	4.1	40.6	1.1	sr -4.4	206	46.6	56.6	3	55.3	-13.8
17	180	5.4	3.4	10	26.8	21.1	ss -0.8	164	22.6	-37.7	-1.5	17	44.7	38.2	1.2	sr -4.5	207	43.2	54.4	3	41.5	-12.8
18	180	8.9	3.3	10	47.9	20.8	ss -0.7	163	44.8	-34.5	-1.6	18	22.9	35.7	1.3	sr -4.5	208	37.6	52.2	3	28.7	-11.8
19	180	12.2	3.2	11	8.7	20.7	ss -0.6	163	10.3	-31.0	-1.8	18	58.6	33.2	1.3	sr -4.5	209	29.8	50.2	3	16.9	-10.6
20	180	15.4	3.1	11	29.4	20.5	ss -0.5	162	39.3	-27.2	-1.9	19	31.8	30.6	1.3	sr -4.5	210	20.0	48.1	3	6.3	-9.7
21	180	18.5	3.0	11	49.9	20.3	ss -0.4	162	12.1	-23.3	-2.0	20	2.4	27.9	1.4	sr -4.5	211	8.1	46.2	2	56.6	-8.6
22	180	21.5	2.9	12	10.2	20.1	ss -0.3	161	48.9	-19.1	-2.1	20	30.3	25.4	1.2	sr -4.5	211	54.3	44.3	2	48.0	-7.5
23	180	24.3	2.8	12	30.3	19.9	ss -0.2	161	29.8	-14.7	-2.2	20	55.7	22.7	1.4	sr -4.5	212	38.6	42.4	2	40.5	-6.5
24	180	27.1	2.6	12	50.2	19.7	ss 0.0	161	15.1	-10.1	-2.3	21	18.4	20.2	1.3	sr -4.5	213	21.0	40.6	2	34.0	-5.5
25	180	29.7	2.5	13	9.9	19.5	ss 0.1	161	5.0	-5.4	-2.4	21	38.6	17.6	1.3	sr -4.5	214	1.6	38.9	2	28.5	-4.5
26	180	32.3	2.4	13	29.4	19.2	ss 0.2	160	59.7	-0.5	-2.4	21	56.2	15.0	1.3	sr -4.5	214	40.5	37.3	2	24.0	-3.5
27	180	34.6	2.3	13	48.6	19.0	ss 0.4	160	59.2	4.6	-2.5	22	11.2	12.4	1.3	sr -4.5	215	17.8	35.7	2	20.5	-2.6
28	180	36.9	2.1	14	7.6	18.8	ss 0.5	161	3.8	9.7	-2.6	22	23.6	10.0	1.2	sr -4.5	215	53.5	34.1	2	17.9	-1.6
29	180	39.1	2.0	14	26.4	18.5	ss 0.7	161	13.5	15.0	-2.6	22	33.6	7.5	1.3	sr -4.5	216	27.6	32.7	2	16.3	-0.7
Apr 30	180	41.1	1.9	14	44.9	18.3	ss 0.9	161	28.6	20.4	-2.7	22	41.1	5.0	1.3	sr -4.5	217	0.2	31.2	2	15.6	0.2
May 1	180	43.0	1.8	15	3.2	18.1	ss 1.0	161	48.9	25.8	-2.7	22	46.1	2.6	1.2	sr -4.5	217	31.5	29.9	2	15.8	1.1
2	180	44.7	1.6	15	21.3	17.8	ss 1.2	162	14.8	31.3	-2.7	22	48.7	0.2	1.2	sr -4.5	218	1.4	28.6	2	16.9	1.9
3	180	46.4	1.5	15	39.1	17.5	ss 1.4	162	46.1	36.8	-2.8	22	48.9	-2.1	1.2	sr -4.5	218	29.9	27.3	2	18.8	2.7
4	180	47.9	1.4	15	56.6	17.3	ss 1.5	163	22.9	42.3	-2.7	22	46.8	-4.5	1.2	sr -4.5	218	57.2	26.1	2	21.5	3.6
5	180	49.2	1.2	16	13.9	17.0	ss 1.7	164	5.2	47.7	-2.7	22	42.3	-6.7	1.1	sr -4.5	219	23.3	24.9	2	25.1	4.3
6	180	50.4	1.1	16	30.9	16.7	ss 1.9	164	52.9	53.1	-2.7	22	35.6	-9.0	1.2	sr -4.5	219	48.3	23.8	2	29.4	5.1
7	180	51.5	1.0	16	47.6	16.4	ss 2.0	165	46.0	58.3	-2.6	22	26.6	-11.1								

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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'
Mar	7	y 1.2 198 30.8	13.3	-14 42.0	15.4	y -2.0 208 13.4	46.0	-17 7.4	3.7	y 0.6 354 30.2	63.5	6 37.4	2.0		
	8	y 1.2 198 44.1	13.4	-14 26.6	15.5	y -2.0 208 59.5	46.1	-17 3.7	3.6	y 0.6 355 33.8	63.5	6 39.4	1.9		
	9	y 1.2 198 57.5	13.5	-14 11.1	15.7	y -2.0 209 45.6	46.2	-17 0.1	3.7	y 0.6 356 37.3	63.5	6 41.3	1.9		
	10	y 1.2 199 11.0	13.6	-13 55.4	15.9	y -2.0 210 31.7	46.2	-16 56.4	3.6	y 0.6 357 40.9	63.5	6 43.2	1.9		
	11	y 1.2 199 24.7	13.7	-13 39.5	15.9	y -2.0 211 18.0	46.3	-16 52.8	3.6	y 0.6 358 44.4	63.5	6 45.1	2.0		
	12	y 1.2 199 38.4	13.8	-13 23.6	16.1	y -2.0 212 4.3	46.4	-16 49.2	3.7	y 0.6 359 47.9	63.5	6 47.1	1.9		
	13	y 1.2 199 52.2	13.9	-13 7.5	16.3	y -2.0 212 50.6	46.4	-16 45.5	3.6	y 0.6 0 51.5	63.5	6 49.0	1.9		
	14	y 1.2 200 6.1	14.0	-12 51.2	16.3	y -2.0 213 37.1	46.5	-16 41.9	3.6	y 0.6 1 55.0	63.5	6 50.9	1.8		
	15	y 1.2 200 20.1	14.1	-12 34.9	16.5	y -2.0 214 23.6	46.6	-16 38.3	3.6	y 0.6 2 58.5	63.5	6 52.7	1.9		
	16	y 1.2 200 34.2	14.2	-12 18.4	16.6	y -2.0 215 10.2	46.7	-16 34.7	3.6	y 0.6 4 2.0	63.5	6 54.6	1.9		
	17	y 1.2 200 48.4	14.3	-12 1.8	16.7	y -2.0 215 56.8	46.7	-16 31.1	3.6	y 0.7 5 5.5	63.5	6 56.5	1.8		
	18	y 1.2 201 2.6	14.4	-11 45.1	16.8	y -2.0 216 43.5	46.8	-16 27.5	3.5	y 0.7 6 9.0	63.5	6 58.3	1.9		
	19	y 1.2 201 17.0	14.4	-11 28.3	16.9	y -2.0 217 30.3	46.9	-16 24.0	3.6	y 0.7 7 12.4	63.4	7 0.2	1.8		
	20	y 1.2 201 31.4	14.5	-11 11.4	17.1	y -2.0 218 17.2	47.0	-16 20.4	3.5	y 0.7 8 15.9	63.4	7 2.0	1.8		
	21	y 1.2 201 45.9	14.6	-10 54.3	17.1	y -2.0 219 4.2	47.0	-16 16.9	3.6	y 0.7 9 19.3	63.4	7 3.8	1.8		
	22	y 1.2 202 0.6	14.7	-10 37.2	17.2	y -2.0 219 51.2	47.1	-16 13.3	3.5	y 0.7 10 22.6	63.4	7 5.6	1.7		
23	y 1.2 202 15.3	14.8	-10 20.0	17.4	y -2.0 220 38.4	47.2	-16 9.8	3.5	y 0.7 11 26.0	63.3	7 7.3	1.8			
24	y 1.2 202 30.0	14.9	-10 2.6	17.4	y -2.0 221 25.6	47.3	-16 6.3	3.5	y 0.7 12 29.3	63.3	7 9.1	1.7			
25	y 1.2 202 44.9	14.9	-9 45.2	17.5	y -2.0 222 12.9	47.4	-16 2.8	3.5	y 0.7 13 32.6	63.3	7 10.8	1.7			
26	y 1.2 202 59.8	15.0	-9 27.7	17.6	y -2.1 223 0.3	47.5	-15 59.3	3.4	y 0.7 14 35.9	63.2	7 12.5	1.7			
27	y 1.2 203 14.9	15.1	-9 10.1	17.7	y -2.1 223 47.8	47.6	-15 55.9	3.5	y 0.7 15 39.1	63.2	7 14.2	1.7			
28	y 1.2 203 30.0	15.2	-8 52.4	17.7	y -2.1 224 35.3	47.7	-15 52.4	3.4	y 0.7 16 42.2	63.1	7 15.9	1.6			
29	y 1.2 203 45.1	15.3	-8 34.7	17.8	y -2.1 225 23.0	47.7	-15 49.0	3.4	y 0.7 17 45.4	63.1	7 17.5	1.6			
30	y 1.2 204 0.4	15.3	-8 16.9	17.9	y -2.1 226 10.7	47.8	-15 45.6	3.4	y 0.7 18 48.5	63.0	7 19.1	1.6			
Mar 31	y 1.2 204 15.7	15.4	-7 59.0	18.0	y -2.1 226 58.6	47.9	-15 42.2	3.3	y 0.7 19 51.5	63.0	7 20.7	1.6			
Apr	1	y 1.2 204 31.1	15.5	-7 41.0	18.0	y -2.1 227 46.5	48.0	-15 38.9	3.4	y 0.7 20 54.5	62.9	7 22.3	1.5		
	2	y 1.2 204 46.6	15.5	-7 23.0	18.1	y -2.1 228 34.5	48.1	-15 35.5	3.3	y 0.7 21 57.4	62.9	7 23.8	1.5		
	3	y 1.2 205 2.1	15.6	-7 4.9	18.1	y -2.1 229 22.7	48.2	-15 32.2	3.3	y 0.8 23 0.3	62.8	7 25.3	1.5		
	4	y 1.2 205 17.7	15.7	-6 46.8	18.2	y -2.1 230 10.9	48.3	-15 28.9	3.3	y 0.8 24 3.1	62.8	7 26.8	1.5		
	5	y 1.2 205 33.4	15.7	-6 28.6	18.3	y -2.1 230 59.2	48.4	-15 25.6	3.2	y 0.8 25 5.9	62.7	7 28.3	1.4		
	6	y 1.2 205 49.2	15.8	-6 10.3	18.3	y -2.1 231 47.7	48.5	-15 22.4	3.2	y 0.8 26 8.6	62.7	7 29.7	1.4		
	7	y 1.2 206 5.0	15.9	-5 52.0	18.3	y -2.1 232 36.2	48.6	-15 19.2	3.2	y 0.8 27 11.2	62.6	7 31.1	1.3		
	8	y 1.2 206 20.8	15.9	-5 33.7	18.4	y -2.1 233 24.8	48.7	-15 16.0	3.2	y 0.8 28 13.8	62.5	7 32.4	1.4		
	9	y 1.2 206 36.8	16.0	-5 15.3	18.4	y -2.1 234 13.6	48.9	-15 12.8	3.2	y 0.8 29 16.4	62.5	7 33.8	1.3		
	10	y 1.2 206 52.8	16.0	-4 56.9	18.4	y -2.1 235 2.5	49.0	-15 9.6	3.1	y 0.8 30 18.8	62.4	7 35.1	1.2		
	11	y 1.2 207 8.8	16.1	-4 38.5	18.5	y -2.1 235 51.4	49.1	-15 6.5	3.1	y 0.8 31 21.2	62.3	7 36.3	1.3		
	12	y 1.2 207 24.9	16.1	-4 20.0	18.5	y -2.1 236 40.5	49.2	-15 3.4	3.0	y 0.8 32 23.5	62.3	7 37.6	1.2		
	13	y 1.2 207 41.0	16.2	-4 1.5	18.6	y -2.1 237 29.7	49.3	-15 0.4	3.1	y 0.8 33 25.8	62.2	7 38.8	1.1		
	14	y 1.2 207 57.2	16.2	-3 42.9	18.5	y -2.1 238 19.0	49.4	-14 57.3	3.0	y 0.8 34 28.0	62.1	7 39.9	1.2		
	15	y 1.2 208 13.4	16.3	-3 24.4	18.6	y -2.1 239 8.4	49.5	-14 54.3	2.9	y 0.8 35 30.1	62.0	7 41.1	1.1		
16	y 1.2 208 29.7	16.3	-3 5.8	18.6	y -2.2 239 57.9	49.6	-14 51.4	3.0	y 0.8 36 32.1	62.0	7 42.2	1.0			
17	y 1.2 208 46.0	16.4	-2 47.2	18.6	y -2.2 240 47.5	49.8	-14 48.4	2.9	y 0.8 37 34.1	61.9	7 43.2	1.0			
18	y 1.2 209 2.4	16.4	-2 28.6	18.7	y -2.2 241 37.3	49.9	-14 45.5	2.8	y 0.9 38 36.0	61.8	7 44.2	1.0			
19	y 1.2 209 18.7	16.4	-2 9.9	18.6	y -2.2 242 27.1	50.0	-14 42.7	2.9	y 0.9 39 37.8	61.7	7 45.2	1.0			
20	y 1.2 209 35.2	16.5	-1 51.3	18.6	y -2.2 243 17.1	50.1	-14 39.8	2.8	y 0.9 40 39.5	61.6	7 46.2	0.9			
21	y 1.2 209 51.6	16.5	-1 32.7	18.6	y -2.2 244 7.2	50.2	-14 37.0	2.7	y 0.9 41 41.1	61.6	7 47.1	0.9			
22	y 1.2 210 8.1	16.5	-1 14.1	18.7	y -2.2 244 57.5	50.4	-14 34.3	2.8	y 0.9 42 42.7	61.5	7 48.0	0.8			
23	y 1.2 210 24.7	16.6	-0 55.4	18.6	y -2.2 245 47.9	50.5	-14 31.5	2.7	y 0.9 43 44.2	61.4	7 48.8	0.8			
24	y 1.2 210 41.2	16.6	-0 36.8	18.6	y -2.2 246 38.3	50.6	-14 28.8	2.6	y 0.9 44 45.6	61.3	7 49.6	0.8			
25	y 1.2 210 57.8	16.6	-0 18.2	18.6	y -2.2 247 29.0	50.8	-14 26.2	2.6	y 0.9 45 46.9	61.2	7 50.4	0.7			
26	y 1.2 211 14.4	16.6	0 0.4	18.6	y -2.2 248 19.7	50.9	-14 23.6	2.6	y 0.9 46 48.1	61.1	7 51.1	0.7			
27	y 1.2 211 31.1	16.7	0 19.0	18.5	y -2.2 249 10.6	51.0	-14 21.0	2.5	y 0.9 47 49.2	61.0	7 51.8	0.6			
28	y 1.2 211 47.7	16.7	0 37.5	18.6	y -2.2 250 1.6	51.2	-14 18.5	2.5	y 0.9 48 50.3	61.0	7 52.4	0.6			
29	y 1.2 212 4.4	16.7	0 56.1	18.5	y -2.2 250 52.8	51.3	-14 16.0	2.4	y 0.9 49 51.2	60.9	7 53.0	0.6			
Apr 30	y 1.2 212 21.1	16.7	1 14.6	18.5	y -2.2 251 44.1	51.4	-14 13.6	2.4	y 0.9 50 52.1	60.8	7 53.6	0.5			
May	1	y 1.2 212 37.9	16.8	1 33.1	18.4	y -2.2 252 35.5	51.6	-14 11.2	2.4	y 0.9 51 52.9	60.7	7 54.1	0.5		
	2	y 1.2 212 54.6	16.8	1 51.5	18.4	y -2.2 253 27.0	51.7	-14 8.8	2.3	y 0.9 52 53.5	60.6	7 54.6	0.4		
	3	y 1.2 213 11.4	16.8	2 9.9	18.4	y -2.3 254 18.8	51.8	-14 6.5	2.3	y 0.9 53 54.1	60.5	7 55.0	0.4		
	4	y 1.2 213 28.2	16.8	2 28.3	18.4	y -2.3 255 10.6	52.0	-14 4.2	2.2	y 1.0 54 54.6	60.4	7 55.4	0.3		
	5	y 1.2 213 45.0	16.8	2 46.7	18.3	y -2.3 256 2.6	52.1	-14 2.0	2.1	y 1.0 55 55.0	60.3	7 55.7	0.4		
	6	y 1.2 214 1.8	16.8	3 5.0	18.2	y -2.3 256 54.7	52.3	-13 59.9	2.2	y 1.0 56 55.4	60.2	7 56.1	0.2		
	7	y 1.2 214 18.6	16.8	3 23.2	18.2	y -2.3 257 47.0	52.4	-13 57.7	2.0	y 1.0 57 55.6	60.1	7 56.3	0.3		
	8	y 1.2 214 35.4	16.8	3 41.4	18.1	y -2.3 258 39.4	52.6	-13 55.7	2.1	y 1.0 58 55.7	60.0	7 56.6	0.2		
	9	y 1.2 214 52.3	16.8	3 59.5	18.1	y -2.3 259 32.0	52.7	-13 53.6	1.9	y 1.0 59 55.7	59.9	7 56.8	0.1		
	May 10	y 1.2 215 9.1	16.8	4 17.6	18.1	y -2.3 260 24.7	52.9	-13 51.7	2.0	y 1.0 60 55.7	59.8	7 56.9	0.1		

2009

Sun and Planets

Date	SUN					Mercury						Venus												
	GHA		d	Dec		vis	GHA		d	dd	Dec		vis	GHA		d	Dec							
	o	'	'	o	'		o	'	'	o	'	'		o	'	'	o	'	'					
May 11	180	54.5	0.4	17	51.6	15.3	ss	2.7	170	8.0	76.5	-2.0	21	30.1	-18.8	0.8	sr	-4.5	221	37.0	18.8	3	2.0	8.6
12	180	54.9	0.2	18	6.9	15.0	ss	2.9	171	24.5	80.2	-1.8	21	11.3	-20.3	0.8	sr	-4.5	221	55.8	18.0	3	10.6	9.1
13	180	55.1	0.1	18	21.9	14.6	ss	3.1	172	44.7	83.3	-1.6	20	51.0	-21.7	0.7	sr	-4.5	222	13.8	17.1	3	19.7	9.8
14	180	55.2	-0.1	18	36.5	14.4		3.2	174	8.0	86.0	-1.3	20	29.3	-22.9	0.6	sr	-4.5	222	30.9	16.3	3	29.5	10.3
15	180	55.1	-0.2	18	50.9	14.0		3.4	175	34.0	88.1	-1.1	20	6.4	-23.8	0.5	sr	-4.5	222	47.2	15.5	3	39.8	10.8
16	180	54.9	-0.3	19	4.9	13.7		3.6	177	2.2	89.7	-0.8	19	42.6	-24.4	0.3	sr	-4.5	223	2.7	14.8	3	50.6	11.4
17	180	54.6	-0.5	19	18.6	13.4		3.5	178	31.8	90.6	-0.5	19	18.2	-24.8	0.2	sr	-4.5	223	17.4	14.0	4	2.0	11.9
18	180	54.1	-0.6	19	32.0	13.0		3.4	180	2.5	91.0	-0.2	18	53.4	-24.9	0.1	sr	-4.5	223	31.5	13.3	4	13.9	12.4
19	180	53.5	-0.8	19	45.0	12.8		3.3	181	33.4	90.7	0.1	18	28.5	-24.7	-0.1	sr	-4.4	223	44.8	12.7	4	26.3	12.8
20	180	52.7	-0.9	19	57.8	12.3		3.2	183	4.1	89.9	0.4	18	3.8	-24.2	-0.3	sr	-4.4	223	57.5	12.0	4	39.1	13.2
21	180	51.8	-1.1	20	10.1	12.1		3.1	184	34.0	88.5	0.7	17	39.6	-23.4	-0.4	sr	-4.4	224	9.5	11.4	4	52.3	13.7
22	180	50.7	-1.2	20	22.2	11.6		3.0	186	2.5	86.7	0.9	17	16.2	-22.3	-0.5	sr	-4.4	224	20.8	10.8	5	6.0	14.0
23	180	49.5	-1.3	20	33.8	11.4		2.9	187	29.2	84.4	1.2	16	53.9	-21.1	-0.6	sr	-4.4	224	31.6	10.2	5	20.0	14.4
24	180	48.2	-1.5	20	45.2	10.9	sr	2.8	188	53.6	81.6	1.4	16	32.8	-19.5	-0.8	sr	-4.4	224	41.8	9.6	5	34.4	14.8
25	180	46.7	-1.6	20	56.1	10.6	sr	2.7	190	15.2	78.6	1.5	16	13.3	-17.8	-0.9	sr	-4.4	224	51.4	9.1	5	49.2	15.1
26	180	45.2	-1.7	21	6.7	10.3	sr	2.6	191	33.8	75.2	1.7	15	55.5	-15.9	-1.0	sr	-4.4	225	0.5	8.5	6	4.3	15.4
27	180	43.5	-1.8	21	17.0	9.9	sr	2.4	192	49.0	71.6	1.8	15	39.6	-13.9	-1.0	sr	-4.4	225	9.0	8.0	6	19.7	15.7
28	180	41.7	-1.9	21	26.9	9.5	sr	2.3	194	0.6	67.8	1.9	15	25.7	-11.8	-1.0	sr	-4.4	225	17.0	7.5	6	35.4	16.0
29	180	39.7	-2.0	21	36.4	9.1	sr	2.2	195	8.4	63.9	2.0	15	13.9	-9.6	-1.1	sr	-4.4	225	24.6	7.0	6	51.4	16.3
30	180	37.7	-2.1	21	45.5	8.7	sr	2.1	196	12.3	59.8	2.0	15	4.3	-7.4	-1.1	sr	-4.4	225	31.6	6.6	7	7.7	16.4
May 31	180	35.6	-2.2	21	54.2	8.4	sr	2.0	197	12.1	55.7	2.1	14	56.9	-5.2	-1.1	sr	-4.4	225	38.2	6.1	7	24.1	16.7
Jun 1	180	33.4	-2.3	22	2.6	8.0	sr	1.9	198	7.7	51.5	2.1	14	51.7	-3.0	-1.1	sr	-4.3	225	44.2	5.6	7	40.8	17.0
2	180	31.1	-2.4	22	10.6	7.6	sr	1.8	198	59.2	47.3	2.1	14	48.7	-0.8	-1.1	sr	-4.3	225	49.9	5.2	7	57.8	17.1
3	180	28.7	-2.5	22	18.2	7.2	sr	1.7	199	46.5	43.1	2.1	14	47.9	1.4	-1.1	sr	-4.3	225	55.0	4.7	8	14.9	17.2
4	180	26.2	-2.6	22	25.4	6.8	sr	1.6	200	29.6	38.9	2.1	14	49.3	3.4	-1.0	sr	-4.3	225	59.7	4.3	8	32.1	17.5
5	180	23.6	-2.7	22	32.2	6.4	sr	1.5	201	8.5	34.8	2.1	14	52.7	5.5	-1.0	sr	-4.3	226	4.0	3.8	8	49.6	17.5
6	180	20.9	-2.7	22	38.6	6.0	sr	1.3	201	43.2	30.7	2.1	14	58.2	7.3	-0.9	sr	-4.3	226	7.9	3.4	9	7.1	17.7
7	180	18.2	-2.8	22	44.6	5.7	sr	1.2	202	13.9	26.6	2.0	15	5.5	9.2	-1.0	sr	-4.3	226	11.3	3.0	9	24.8	17.8
8	180	15.4	-2.9	22	50.3	5.2	sr	1.1	202	40.5	22.6	2.0	15	14.7	11.0	-0.9	sr	-4.3	226	14.2	2.6	9	42.6	17.9
9	180	12.5	-2.9	22	55.5	4.8	sr	1.0	203	3.0	18.6	2.0	15	25.7	12.5	-0.8	sr	-4.3	226	16.8	2.1	10	0.5	18.0
10	180	9.6	-3.0	23	0.3	4.4	sr	0.9	203	21.6	14.7	2.0	15	38.2	14.1	-0.8	sr	-4.3	226	18.9	1.7	10	18.5	18.1
11	180	6.6	-3.0	23	4.7	4.0	sr	0.8	203	36.3	10.8	1.9	15	52.3	15.5	-0.7	sr	-4.3	226	20.7	1.3	10	36.6	18.1
12	180	3.5	-3.1	23	8.7	3.6	sr	0.7	203	47.1	6.9	1.9	16	7.8	16.9	-0.7	sr	-4.3	226	22.0	0.9	10	54.7	18.1
13	180	0.4	-3.1	23	12.3	3.2	sr	0.6	203	54.0	3.1	1.9	16	24.7	18.0	-0.5	sr	-4.3	226	22.9	0.5	11	12.8	18.1
14	179	57.3	-3.2	23	15.5	2.8	sr	0.5	203	57.1	-0.7	1.9	16	42.7	19.1	-0.5	sr	-4.3	226	23.4	0.1	11	30.9	18.1
15	179	54.1	-3.2	23	18.3	2.4	sr	0.4	203	56.3	-4.5	1.9	17	1.8	20.0	-0.5	sr	-4.2	226	23.5	-0.3	11	49.0	18.1
16	179	50.9	-3.2	23	20.7	1.9	sr	0.3	203	51.8	-8.3	1.9	17	21.8	20.9	-0.5	sr	-4.2	226	23.3	-0.7	12	7.1	18.1
17	179	47.7	-3.3	23	22.6	1.6	sr	0.3	203	43.5	-12.1	1.9	17	42.7	21.7	-0.4	sr	-4.2	226	22.6	-1.1	12	25.2	18.1
18	179	44.4	-3.3	23	24.2	1.1	sr	0.2	203	31.4	-15.9	1.9	18	4.4	22.2	-0.3	sr	-4.2	226	21.5	-1.4	12	43.3	17.9
19	179	41.1	-3.3	23	25.3	0.7	sr	0.1	203	15.6	-19.7	1.9	18	26.6	22.6	-0.2	sr	-4.2	226	20.1	-1.8	13	1.2	17.9
20	179	37.8	-3.3	23	26.0	0.3	sr	0.0	202	55.9	-23.5	1.9	18	49.2	23.0	-0.2	sr	-4.2	226	18.3	-2.2	13	19.1	17.8
21	179	34.5	-3.3	23	26.3	-0.1	sr	-0.1	202	32.4	-27.3	1.9	19	12.2	23.2	-0.1	sr	-4.2	226	16.1	-2.6	13	36.9	17.7
22	179	31.3	-3.3	23	26.2	-0.5	sr	-0.2	202	5.1	-31.1	1.9	19	35.4	23.2	0.0	sr	-4.2	226	13.5	-3.0	13	54.6	17.6
23	179	28.0	-3.3	23	25.7	-0.9	sr	-0.3	201	34.0	-35.0	1.9	19	58.6	23.1	0.0	sr	-4.2	226	10.5	-3.3	14	12.2	17.5
24	179	24.7	-3.2	23	24.8	-1.4	sr	-0.3	200	59.0	-38.9	1.9	20	21.7	22.8	0.2	sr	-4.2	226	7.2	-3.7	14	29.7	17.3
25	179	21.5	-3.2	23	23.4	-1.7	sr	-0.4	200	20.1	-42.7	1.9	20	44.5	22.3	0.3	sr	-4.2	226	3.5	-4.1	14	47.0	17.1
26	179	18.3	-3.2	23	21.7	-2.2	sr	-0.5	199	37.4	-46.6	1.9	21	6.8	21.8	0.3	sr	-4.2	225	59.4	-4.4	15	4.1	17.0
27	179	15.1	-3.1	23	19.5	-2.6	sr	-0.6	198	50.8	-50.4	1.9	21	28.6	20.9	0.4	sr	-4.2	225	55.0	-4.8	15	21.1	16.8
28	179	12.0	-3.1	23	16.9	-3.0	sr	-0.7	198	0.4	-54.2	1.9	21	49.5	20.0	0.5	sr	-4.2	225	50.2	-5.2	15	37.9	16.5
29	179	8.9	-3.0	23	13.9	-3.4	sr	-0.8	197	6.2	-57.9	1.8	22	9.5	18.7	0.7	sr	-4.2	225	45.0	-5.5	15	54.4	16.4
Jun 30	179	5.9	-2.9	23	10.5	-3.8	sr	-0.9	196	8.3	-61.4	1.8	22	28.2	17.4	0.7	sr	-4.2	225	39.5	-5.9	16	10.8	16.1
Jul 1	179	3.0	-2.9	23	6.7	-4.2	sr	-1.0	195	6.9	-64.9	1.7	22	45.6	15.8	0.8	sr	-4.1	225	33.6	-6.2	16	26.9	15.9
2	179	0.1	-2.8	23	2.5	-4.6	sr	-1.1	194	2.0	-68.1	1.6	23	1.4	14.0	0.9	sr	-4.1	225	27.4	-6.6	16	42.8	15.6
3	178	57.3	-2.7	22	57.9	-5.0	sr	-1.1	192	53.9	-71.1	1.5	23	15.4	12.0	1.0	sr	-4.1	225	20.8	-7.0	16	58.4	15.4
4	178	54.6	-2.6	22	52.9	-5.4	sr	-1.2	191	42.8	-73.8	1.4	23	27.4	9.9	1.1	sr	-4.1	225	13.8	-7.3	17	13.8	15.1
5	178	52.0	-2.6	22	47.5	-5.8	sr	-1.3	190	28.9	-76.2	1.2	23	37.3	7.5	1.2	sr	-4.1	225	6.5	-7.7	17	28.9	14.8
6	178	49.4	-2.5	22	41.7	-6.2	sr	-1.4	189	12.7	-78.3	1.0	23	44.8	5.1	1.2	sr	-4.1	224	58.8	-8.0	17	43.7	14.5
7	178	47.0	-2.4	22	35.5	-6.6	sr	-1.5	187	54.4	-79.9	0.8	23	49.9	2.5	1.3	sr	-4.1	224	50.7	-8.4	17	58.2	14.2
8	178	44.6	-2.3	22	28.9	-6.9	sr	-1.6	186	34.5	-81.1	0.6	23	52.4	-0.2	1.3	sr</							

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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 1.2 215 25.9 16.8	4 35.7 18.0	y -2.3 261 17.6 53.0	-13 49.7 1.9	y 1.0 61 55.5 59.7	7 57.0 0.1								
	12	y 1.2 215 42.7 16.8	4 53.7 17.9	y -2.3 262 10.6 53.2	-13 47.8 1.8	y 1.0 62 55.2 59.6	7 57.1 0.0								
	13	y 1.2 215 59.6 16.8	5 11.6 17.8	y -2.3 263 3.8 53.3	-13 46.0 1.7	y 1.0 63 54.9 59.5	7 57.1 0.0								
	14	y 1.2 216 16.4 16.8	5 29.4 17.8	y -2.3 263 57.1 53.5	-13 44.3 1.8	y 1.0 64 54.4 59.5	7 57.1 0.0								
	15	y 1.2 216 33.2 16.8	5 47.2 17.7	y -2.3 264 50.6 53.6	-13 42.5 1.6	y 1.0 65 53.9 59.4	7 57.1 -0.1								
	16	y 1.2 216 50.0 16.8	6 4.9 17.7	y -2.3 265 44.2 53.8	-13 40.9 1.6	y 1.0 66 53.2 59.3	7 57.0 -0.2								
	17	y 1.2 217 6.8 16.8	6 22.6 17.5	y -2.3 266 38.0 54.0	-13 39.3 1.6	y 1.0 67 52.5 59.2	7 56.8 -0.1								
	18	y 1.2 217 23.6 16.8	6 40.1 17.5	y -2.4 267 32.0 54.1	-13 37.7 1.5	y 1.0 68 51.7 59.1	7 56.7 -0.3								
	19	y 1.2 217 40.3 16.8	6 57.6 17.4	y -2.4 268 26.1 54.3	-13 36.2 1.4	y 1.0 69 50.7 59.0	7 56.4 -0.2								
	20	y 1.2 217 57.1 16.7	7 15.0 17.3	y -2.4 269 20.4 54.5	-13 34.8 1.4	y 1.0 70 49.7 58.9	7 56.2 -0.3								
	21	y 1.2 218 13.8 16.7	7 32.3 17.3	y -2.4 270 14.8 54.6	-13 33.4 1.3	y 1.0 71 48.6 58.8	7 55.9 -0.4								
	22	y 1.2 218 30.6 16.7	7 49.6 17.1	y -2.4 271 9.5 54.8	-13 32.1 1.3	y 1.1 72 47.4 58.7	7 55.5 -0.3								
	23	y 1.2 218 47.3 16.7	8 6.7 17.0	y -2.4 272 4.3 55.0	-13 30.8 1.2	y 1.1 73 46.1 58.6	7 55.2 -0.5								
	24	y 1.2 219 4.0 16.7	8 23.7 17.0	y -2.4 272 59.2 55.1	-13 29.6 1.2	y 1.1 74 44.6 58.5	7 54.7 -0.4								
	25	y 1.2 219 20.6 16.7	8 40.7 16.8	y -2.4 273 54.3 55.3	-13 28.4 1.0	y 1.1 75 43.1 58.4	7 54.3 -0.5								
	26	y 1.2 219 37.3 16.6	8 57.5 16.8	y -2.4 274 49.6 55.5	-13 27.4 1.1	y 1.1 76 41.5 58.3	7 53.8 -0.6								
	27	y 1.2 219 53.9 16.6	9 14.3 16.6	y -2.4 275 45.1 55.6	-13 26.3 0.9	y 1.1 77 39.8 58.2	7 53.2 -0.6								
	28	y 1.2 220 10.6 16.6	9 30.9 16.5	y -2.4 276 40.7 55.8	-13 25.4 0.9	y 1.1 78 38.0 58.1	7 52.6 -0.6								
	29	y 1.2 220 27.2 16.6	9 47.4 16.5	y -2.4 277 36.5 56.0	-13 24.5 0.9	y 1.1 79 36.1 58.0	7 52.0 -0.6								
	30	y 1.2 220 43.7 16.6	10 3.9 16.3	y -2.4 278 32.5 56.2	-13 23.6 0.7	y 1.1 80 34.1 57.9	7 51.4 -0.7								
May 31	y 1.2 221 0.3 16.5	10 20.2 16.2	y -2.4 279 28.7 56.3	-13 22.9 0.8	y 1.1 81 32.0 57.8	7 50.7 -0.8									
Jun	1	y 1.2 221 16.8 16.5	10 36.4 16.1	y -2.5 280 25.1 56.5	-13 22.1 0.6	y 1.1 82 29.9 57.7	7 49.9 -0.8								
	2	y 1.2 221 33.4 16.5	10 52.5 15.9	y -2.5 281 21.6 56.7	-13 21.5 0.6	y 1.1 83 27.6 57.6	7 49.1 -0.8								
	3	y 1.2 221 49.9 16.5	11 8.4 15.9	y -2.5 282 18.3 56.9	-13 20.9 0.5	y 1.1 84 25.2 57.5	7 48.3 -0.8								
	4	y 1.2 222 6.3 16.4	11 24.3 15.7	y -2.5 283 15.2 57.1	-13 20.4 0.5	y 1.1 85 22.8 57.4	7 47.5 -0.9								
	5	y 1.2 222 22.8 16.4	11 40.0 15.6	y -2.5 284 12.2 57.2	-13 19.9 0.4	y 1.1 86 20.2 57.4	7 46.6 -1.0								
	6	y 1.2 222 39.2 16.4	11 55.6 15.4	y -2.5 285 9.5 57.4	-13 19.5 0.3	y 1.1 87 17.6 57.3	7 45.6 -0.9								
	7	y 1.2 222 55.5 16.3	12 11.0 15.4	y -2.5 286 6.9 57.6	-13 19.2 0.3	y 1.1 88 14.8 57.2	7 44.7 -1.0								
	8	y 1.2 223 11.9 16.3	12 26.4 15.2	y -2.5 287 4.5 57.8	-13 18.9 0.2	y 1.1 89 12.0 57.1	7 43.7 -1.1								
	9	y 1.2 223 28.2 16.3	12 41.6 15.0	y -2.5 288 2.3 58.0	-13 18.7 0.1	y 1.1 90 9.1 57.0	7 42.6 -1.1								
	10	y 1.2 223 44.5 16.3	12 56.6 14.9	y -2.5 289 0.2 58.1	-13 18.6 0.1	y 1.1 91 6.1 56.9	7 41.5 -1.1								
	11	y 1.2 224 0.7 16.2	13 11.5 14.8	y -2.5 289 58.4 58.3	-13 18.5 0.0	y 1.1 92 3.0 56.8	7 40.4 -1.1								
	12	y 1.2 224 17.0 16.2	13 26.3 14.7	y -2.5 290 56.7 58.5	-13 18.5 -0.1	y 1.1 92 59.8 56.7	7 39.3 -1.2								
	13	y 1.2 224 33.1 16.2	13 41.0 14.5	y -2.5 291 55.2 58.7	-13 18.6 -0.1	y 1.1 93 56.5 56.6	7 38.1 -1.2								
	14	y 1.2 224 49.3 16.1	13 55.5 14.4	y -2.6 292 53.9 58.9	-13 18.7 -0.2	y 1.2 94 53.2 56.6	7 36.9 -1.3								
	15	y 1.1 225 5.4 16.1	14 9.9 14.2	y -2.6 293 52.8 59.1	-13 18.9 -0.3	y 1.2 95 49.8 56.5	7 35.6 -1.3								
	16	y 1.1 225 21.5 16.1	14 24.1 14.0	y -2.6 294 51.9 59.3	-13 19.2 -0.3	y 1.2 96 46.2 56.4	7 34.3 -1.3								
	17	y 1.1 225 37.6 16.0	14 38.1 13.9	y -2.6 295 51.2 59.4	-13 19.5 -0.4	y 1.2 97 42.6 56.3	7 33.0 -1.4								
	18	y 1.1 225 53.6 16.0	14 52.0 13.8	y -2.6 296 50.6 59.6	-13 19.9 -0.4	y 1.2 98 38.9 56.2	7 31.6 -1.4								
	19	y 1.1 226 9.6 16.0	15 5.8 13.6	y -2.6 297 50.3 59.8	-13 20.3 -0.6	y 1.2 99 35.1 56.1	7 30.2 -1.4								
	20	y 1.1 226 25.5 15.9	15 19.4 13.4	y -2.6 298 50.1 60.0	-13 20.9 -0.6	y 1.2 100 31.3 56.0	7 28.8 -1.5								
	21	y 1.1 226 41.5 15.9	15 32.8 13.3	y -2.6 299 50.1 60.2	-13 21.5 -0.6	y 1.2 101 27.3 56.0	7 27.3 -1.5								
	22	y 1.1 226 57.3 15.9	15 46.1 13.2	y -2.6 300 50.3 60.4	-13 22.1 -0.7	y 1.2 102 23.3 55.9	7 25.8 -1.5								
	23	y 1.1 227 13.2 15.8	15 59.3 12.9	y -2.6 301 50.7 60.6	-13 22.8 -0.8	y 1.2 103 19.2 55.8	7 24.3 -1.6								
	24	y 1.1 227 29.1 15.8	16 12.2 12.8	y -2.6 302 51.2 60.8	-13 23.6 -0.9	y 1.2 104 15.0 55.7	7 22.7 -1.6								
	25	y 1.1 227 44.9 15.8	16 25.0 12.6	y -2.6 303 52.0 60.9	-13 24.5 -0.9	y 1.2 105 10.7 55.6	7 21.1 -1.6								
	26	y 1.1 228 0.7 15.8	16 37.6 12.5	y -2.6 304 52.9 61.1	-13 25.4 -1.0	y 1.2 106 6.3 55.6	7 19.5 -1.7								
	27	y 1.1 228 16.4 15.7	16 50.1 12.3	y -2.6 305 54.0 61.3	-13 26.4 -1.0	y 1.2 107 1.9 55.5	7 17.8 -1.7								
	28	y 1.1 228 32.2 15.7	17 2.4 12.1	y -2.7 306 55.3 61.5	-13 27.4 -1.1	y 1.2 107 57.4 55.4	7 16.1 -1.7								
	29	y 1.1 228 47.9 15.7	17 14.5 11.9	y -2.7 307 56.8 61.7	-13 28.5 -1.2	y 1.2 108 52.8 55.3	7 14.4 -1.8								
	Jun 30	y 1.1 229 3.6 15.7	17 26.4 11.8	y -2.7 308 58.5 61.8	-13 29.7 -1.2	y 1.2 109 48.2 55.3	7 12.6 -1.8								
Jul	1	y 1.1 229 19.2 15.6	17 38.2 11.5	y -2.7 310 0.3 62.0	-13 30.9 -1.3	y 1.2 110 43.4 55.2	7 10.8 -1.8								
	2	y 1.1 229 34.9 15.6	17 49.7 11.5	y -2.7 311 2.3 62.2	-13 32.2 -1.4	y 1.2 111 38.6 55.1	7 9.0 -1.8								
	3	y 1.1 229 50.5 15.6	18 1.2 11.2	y -2.7 312 4.5 62.4	-13 33.6 -1.4	y 1.2 112 33.7 55.0	7 7.2 -1.9								
	4	y 1.1 230 6.1 15.6	18 12.4 11.0	y -2.7 313 6.9 62.5	-13 35.0 -1.5	y 1.2 113 28.8 55.0	7 5.3 -1.9								
	5	y 1.1 230 21.7 15.6	18 23.4 10.9	y -2.7 314 9.4 62.7	-13 36.5 -1.5	y 1.2 114 23.8 54.9	7 3.4 -1.9								
	6	y 1.1 230 37.3 15.5	18 34.3 10.7	y -2.7 315 12.1 62.9	-13 38.0 -1.6	y 1.2 115 18.7 54.8	7 1.5 -2.0								
	7	y 1.1 230 52.8 15.5	18 45.0 10.5	y -2.7 316 15.0 63.0	-13 39.6 -1.6	y 1.2 116 13.5 54.8	6 59.5 -2.0								
	8	y 1.1 231 8.3 15.5	18 55.5 10.3	y -2.7 317 18.1 63.2	-13 41.2 -1.7	y 1.2 117 8.3 54.7	6 57.5 -2.0								
	9	y 1.1 231 23.8 15.5	19 5.8 10.1	y -2.7 318 21.3 63.4	-13 42.9 -1.7	y 1.2 118 3.0 54.6	6 55.5 -2.0								
	10	y 1.1 231 39.3 15.5	19 15.9 9.9	y -2.7 319 24.6 63.5	-13 44.6 -1.8	y 1.2 118 57.6 54.6	6 53.5 -2.1								
	11	y 1.1 231 54.8 15.5	19 25.8 9.8	y -2.7 320 28.2 63.7	-13 46.4 -1.9	y 1.2 119 52.2 54.5	6 51.4 -2.1								
	12	y 1.1 232 10.3 15.5	19 35.6 9.6	y -2.7 321 31.9 63.8	-13 48.3 -1.9	y 1.2 120 46.7 54.4	6 49.3 -2.1								
	13	y 1.1 232 25.7 15.4	19 45.2 9.3	y -2.7 322 35.7 64.0	-13 50.2 -1.9	y 1.2 121 41.1 54.4	6 47.2 -2.1								
	Jul 14	y 1.1 232 41.2 15.4	19 54.5 9.2	y -2.8 323 39.7 64.2	-13 52.1 -2.0	y 1.2 122 35.5 54.3	6 45.1 -2.2								

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Sun and Planets

Date	SUN				Mercury						Venus					
	GHA	d	Dec	d	GHA		d	dd	Dec	d	dd	GHA		d	Dec	d
	o	'	o	'	vis	mag	o	'	o	'	o	'	vis	mag	o	'
Jul 15	178 31.0	-1.5	21 32.1	-9.6	-2.1	177 5.0	-78.0	-0.8	22 53.7	-18.9	1.3	sr -4.1	223 34.0	-11.1	19 41.7	11.2
	178 29.5	-1.4	21 22.5	-9.9	-1.9	175 47.1	-76.1	-0.9	22 34.8	-21.3	1.2	sr -4.1	223 23.0	-11.4	19 52.9	10.8
Jul 16	178 28.1	-1.2	21 12.6	-10.4	-1.8	174 30.9	-74.1	-1.0	22 13.5	-23.5	1.1	sr -4.1	223 11.6	-11.7	20 3.7	10.4
Jul 17	178 26.9	-1.1	21 2.2	-10.7	-1.7	173 16.8	-71.9	-1.1	21 50.0	-25.5	1.0	sr -4.1	222 59.9	-12.0	20 14.1	9.9
Jul 18	178 25.8	-1.0	20 51.5	-11.0	-1.5	172 5.0	-69.5	-1.2	21 24.5	-27.5	1.0	sr -4.1	222 47.9	-12.3	20 24.0	9.4
Jul 19	178 24.8	-0.8	20 40.5	-11.4	-1.4	170 55.5	-67.0	-1.2	20 57.0	-29.2	0.8	sr -4.1	222 35.6	-12.6	20 33.4	9.0
Jul 20	178 24.0	-0.7	20 29.1	-11.8	ss -1.3	169 48.5	-64.4	-1.3	20 27.8	-30.9	0.8	sr -4.1	222 23.0	-12.8	20 42.4	8.6
Jul 21	178 23.3	-0.6	20 17.3	-12.0	ss -1.2	168 44.1	-61.8	-1.3	19 56.9	-32.3	0.7	sr -4.1	222 10.2	-13.1	20 51.0	8.0
Jul 22	178 22.7	-0.4	20 5.3	-12.5	ss -1.1	167 42.3	-59.2	-1.3	19 24.6	-33.7	0.7	sr -4.1	221 57.1	-13.4	20 59.0	7.5
Jul 23	178 22.3	-0.3	19 52.8	-12.7	ss -1.0	166 43.1	-56.5	-1.3	18 50.9	-34.9	0.6	sr -4.0	221 43.7	-13.6	21 6.5	7.1
Jul 24	178 22.1	-0.1	19 40.1	-13.1	ss -0.9	165 46.6	-53.9	-1.3	18 16.0	-36.0	0.5	sr -4.0	221 30.1	-13.8	21 13.6	6.5
Jul 25	178 22.0	0.1	19 27.0	-13.4	ss -0.9	164 52.7	-51.3	-1.3	17 40.0	-37.0	0.5	sr -4.0	221 16.3	-14.1	21 20.1	6.1
Jul 26	178 22.0	0.2	19 13.6	-13.7	ss -0.8	164 1.4	-48.8	-1.3	17 3.0	-37.8	0.4	sr -4.0	221 2.2	-14.3	21 26.2	5.4
Jul 27	178 22.2	0.4	18 59.9	-14.0	ss -0.7	163 12.6	-46.2	-1.3	16 25.2	-38.5	0.4	sr -4.0	220 47.9	-14.5	21 31.6	5.0
Jul 28	178 22.6	0.5	18 45.9	-14.3	ss -0.6	162 26.4	-43.8	-1.2	15 46.7	-39.2	0.4	sr -4.0	220 33.4	-14.7	21 36.6	4.4
Jul 29	178 23.1	0.7	18 31.6	-14.6	ss -0.6	161 42.6	-41.4	-1.2	15 7.5	-39.7	0.3	sr -4.0	220 18.7	-14.9	21 41.0	3.9
Jul 30	178 23.8	0.8	18 17.0	-15.0	ss -0.5	161 1.2	-39.0	-1.2	14 27.8	-40.2	0.3	sr -4.0	220 3.9	-15.1	21 44.9	3.4
Jul 31	178 24.6	1.0	18 2.0	-15.2	ss -0.5	160 22.2	-36.7	-1.1	13 47.6	-40.6	0.2	sr -4.0	219 48.8	-15.2	21 48.3	2.7
Aug 1	178 25.6	1.1	17 46.8	-15.5	ss -0.4	159 45.4	-34.5	-1.1	13 7.0	-40.9	0.1	sr -4.0	219 33.5	-15.4	21 51.0	2.3
Aug 2	178 26.7	1.3	17 31.3	-15.8	ss -0.3	159 10.9	-32.3	-1.1	12 26.1	-41.1	0.1	sr -4.0	219 18.1	-15.6	21 53.3	1.6
Aug 3	178 28.0	1.4	17 15.5	-16.1	ss -0.3	158 38.6	-30.2	-1.1	11 45.0	-41.2	0.0	sr -4.0	219 2.6	-15.7	21 54.9	1.1
Aug 4	178 29.4	1.6	16 59.4	-16.3	ss -0.3	158 8.5	-28.1	-1.0	11 3.8	-41.3	0.0	sr -4.0	218 46.9	-15.8	21 56.0	0.5
Aug 5	178 31.0	1.7	16 43.1	-16.6	ss -0.2	157 40.4	-26.0	-1.0	10 22.5	-41.4	0.0	sr -4.0	218 31.1	-15.9	21 56.5	-0.1
Aug 6	178 32.8	1.9	16 26.5	-16.9	ss -0.2	157 14.3	-24.0	-1.0	9 41.1	-41.3	0.0	sr -4.0	218 15.1	-16.0	21 56.4	-0.7
Aug 7	178 34.7	2.0	16 9.6	-17.1	ss -0.1	156 50.3	-22.1	-1.0	8 59.8	-41.3	0.0	sr -4.0	217 59.1	-16.1	21 55.7	-1.2
Aug 8	178 36.7	2.2	15 52.5	-17.4	ss -0.1	156 28.2	-20.1	-1.0	8 18.5	-41.1	-0.1	sr -4.0	217 43.0	-16.2	21 54.5	-1.9
Aug 9	178 38.9	2.3	15 35.1	-17.7	ss -0.1	156 8.0	-18.2	-1.0	7 37.4	-40.8	-0.2	sr -4.0	217 26.7	-16.3	21 52.6	-2.4
Aug 10	178 41.2	2.5	15 17.4	-17.9	ss 0.0	155 49.8	-16.3	-0.9	6 56.6	-40.7	0.0	sr -4.0	217 10.5	-16.3	21 50.2	-3.0
Aug 11	178 43.6	2.6	14 59.5	-18.1	ss 0.0	155 33.5	-14.4	-0.9	6 15.9	-40.3	-0.2	sr -4.0	216 54.1	-16.4	21 47.2	-3.7
Aug 12	178 46.2	2.7	14 41.4	-18.4	ss 0.0	155 19.0	-12.6	-0.9	5 35.6	-39.9	-0.2	sr -4.0	216 37.7	-16.4	21 43.5	-4.2
Aug 13	178 49.0	2.9	14 23.0	-18.6	ss 0.1	155 6.5	-10.7	-0.9	4 55.7	-39.6	-0.2	sr -4.0	216 21.3	-16.5	21 39.3	-4.8
Aug 14	178 51.8	3.0	14 4.4	-18.8	ss 0.1	154 55.8	-8.8	-0.9	4 16.1	-39.1	-0.3	sr -4.0	216 4.8	-16.5	21 34.5	-5.4
Aug 15	178 54.8	3.1	13 45.6	-19.0	ss 0.1	154 47.0	-6.9	-1.0	3 37.0	-38.5	-0.3	sr -4.0	215 48.4	-16.5	21 29.1	-6.0
Aug 16	178 57.9	3.2	13 26.6	-19.3	ss 0.1	154 40.1	-5.0	-1.0	2 58.5	-37.9	-0.3	sr -4.0	215 31.9	-16.4	21 23.1	-6.6
Aug 17	179 1.1	3.4	13 7.3	-19.4	ss 0.2	154 35.1	-3.0	-1.0	2 20.6	-37.3	-0.3	sr -4.0	215 15.5	-16.4	21 16.5	-7.2
Aug 18	179 4.5	3.5	12 47.9	-19.7	ss 0.2	154 32.2	-1.0	-1.0	1 43.3	-36.7	-0.3	sr -4.0	214 59.0	-16.4	21 9.3	-7.8
Aug 19	179 8.0	3.6	12 28.2	-19.9	ss 0.2	154 31.2	1.1	-1.0	1 6.6	-35.8	-0.5	sr -4.0	214 42.6	-16.3	21 1.5	-8.4
Aug 20	179 11.6	3.7	12 8.3	-20.0	ss 0.2	154 32.3	3.3	-1.1	0 30.8	-35.0	-0.4	sr -4.0	214 26.3	-16.3	20 53.1	-9.0
Aug 21	179 15.3	3.8	11 48.3	-20.3	ss 0.2	154 35.6	5.5	-1.1	-0 4.2	-34.1	-0.5	sr -4.0	214 10.0	-16.2	20 44.1	-9.6
Aug 22	179 19.1	3.9	11 28.0	-20.4	ss 0.3	154 41.1	7.8	-1.2	-0 38.3	-33.0	-0.5	sr -4.0	213 53.9	-16.1	20 34.5	-10.1
Aug 23	179 23.1	4.1	11 7.6	-20.6	ss 0.3	154 48.9	10.2	-1.2	-1 11.3	-32.1	-0.5	sr -4.0	213 37.7	-16.0	20 24.4	-10.7
Aug 24	179 27.1	4.2	10 47.0	-20.8	ss 0.3	154 59.2	12.8	-1.3	-1 43.4	-30.8	-0.7	sr -4.0	213 21.7	-15.9	20 13.7	-11.3
Aug 25	179 31.3	4.3	10 26.2	-20.9	ss 0.3	155 11.9	15.4	-1.3	-2 14.2	-29.6	-0.6	sr -4.0	213 5.8	-15.8	20 2.4	-11.8
Aug 26	179 35.5	4.4	10 5.3	-21.1	ss 0.4	155 27.4	18.3	-1.4	-2 43.8	-28.3	-0.7	sr -4.0	212 50.0	-15.7	19 50.6	-12.4
Aug 27	179 39.9	4.5	9 44.2	-21.2	ss 0.4	155 45.6	21.2	-1.5	-3 12.1	-26.7	-0.8	sr -4.0	212 34.3	-15.6	19 38.2	-13.0
Aug 28	179 44.3	4.5	9 23.0	-21.4	ss 0.4	156 6.9	24.4	-1.6	-3 38.8	-25.2	-0.8	sr -4.0	212 18.7	-15.5	19 25.2	-13.5
Aug 29	179 48.9	4.6	9 1.6	-21.6	ss 0.5	156 31.3	27.8	-1.7	-4 4.0	-23.4	-0.9	sr -4.0	212 3.2	-15.3	19 11.7	-14.1
Aug 30	179 53.5	4.7	8 40.0	-21.6	ss 0.5	156 59.0	31.3	-1.8	-4 27.4	-21.6	-0.9	sr -4.0	211 47.9	-15.2	18 57.6	-14.6
Aug 31	179 58.2	4.8	8 18.4	-21.8	ss 0.6	157 30.4	35.1	-1.9	-4 49.0	-19.5	-1.1	sr -4.0	211 32.7	-15.0	18 43.0	-15.1
Sep 1	180 3.0	4.9	7 56.6	-22.0	ss 0.6	158 5.4	39.1	-2.0	-5 8.5	-17.3	-1.1	sr -4.0	211 17.7	-14.9	18 27.9	-15.7
Sep 2	180 7.9	4.9	7 34.6	-22.0	ss 0.7	158 44.5	43.3	-2.1	-5 25.8	-15.0	-1.2	sr -4.0	211 2.8	-14.7	18 12.2	-16.2
Sep 3	180 12.8	5.0	7 12.6	-22.2	ss 0.8	159 27.9	47.8	-2.2	-5 40.8	-12.3	-1.3	sr -4.0	210 48.1	-14.6	17 56.0	-16.7
Sep 4	180 17.8	5.1	6 50.4	-22.3	ss 0.8	160 15.7	52.5	-2.4	-5 53.1	-9.7	-1.3	sr -4.0	210 33.6	-14.4	17 39.3	-17.2
Sep 5	180 22.9	5.1	6 28.1	-22.3	ss 0.9	161 8.2	57.5	-2.5	-6 2.8	-6.6	-1.6	sr -4.0	210 19.2	-14.2	17 22.1	-17.7
Sep 6	180 28.0	5.2	6 5.8	-22.5	ss 1.1	162 5.7	62.7	-2.6	-6 9.4	-3.4	-1.6	sr -4.0	210 4.9	-14.1	17 4.4	-18.2
Sep 7	180 33.1	5.2	5 43.3	-22.6	ss 1.2	163 8.4	68.0	-2.7	-6 12.8	-0.1	-1.7	sr -4.0	209 50.9	-13.9	16 46.2	-18.6
Sep 8	180 38.3	5.2	5 20.7	-22.7	ss 1.3	164 16.4	73.5	-2.7	-6 12.9	3.6	-1.8	sr -4.0	209 37.0	-13.7	16 27.6	-19.2
Sep 9	180 43.6	5.3	4 58.0	-22.8	ss 1.4	165 29.9	79.0	-2.8	-6 9.3	7.3	-1.9	sr -4.0	209 23.3	-13.5	16 8.4	-19.6
Sep 10	180 48.8	5.3	4 35.2	-22.8	ss 1.6	166 48.9	84.6	-2.8	-6 2.0	11.3	-2.0	sr -4.0	209 9.8	-13.4	15 48.8	-20.0
Sep 11	180 54.1	5.3	4 12.4	-22.9	ss 1.7	168 13.5	90.0	-2.7	-5 50.7	15.3	-2.0	sr -4.0	208 56.4	-13.2	15 28.8	-20.5
Sep 12	180 59.4	5.3	3 49.5	-23.0	ss 1.8	169 43.4	95.1	-2.6	-5 35.4	19.4	-2.0	sr -4.0	208 43.2	-13.0	15 8.3	-21.0
Sep 13	181 4.7	5.3	3 26.5	-23.1	ss 2.0	171 18.5	99.9	-2.4	-5 16.0	23.4	-2.0	sr -4.0	208 30.2	-12.8	14 47.3	-21.3
Sep 14	181 10.1	5.3	3 3.4	-23.1	ss 2.1	172 58.4	104.1	-2.1	-4 52.6	27.2	-1.9	sr -4.0	208 17.4	-12.6	14 26.0	-21.8
Sep 15	181 15.4	5.3	2 40.3	-23.2	2.2	174 42.5	107.6	-1.7	-4 25.4	30.9	-1.8	sr -4.0	208 4.8	-12.5	14 4.2	-22.2
Sep 16	181 20.7	5.3	2 17.1	-23.2	2.4	176 30.1	110.1	-1.3	-3 54.5	34.2	-1.7	sr -4.0	207 52.3	-12.3	13 42.0	-22.5

2009

Sun and Planets

Date	Mars					Jupiter					Saturn													
	GHA		d	Dec		GHA		d	Dec		GHA		d	Dec										
	vis	mag		o	'	o	'		o	'	o	'		o	'	o	'							
Jul 15	y	1.1	232	56.6	15.4	20	3.7	9.0	y	-2.8	324	43.8	64.3	-13	54.1	-2.1	y	1.2	123	29.8	54.2	6	42.9	-2.2
Jul 16	y	1.1	233	12.0	15.4	20	12.7	8.8	y	-2.8	325	48.1	64.4	-13	56.2	-2.1	y	1.2	124	24.0	54.2	6	40.7	-2.2
Jul 17	y	1.1	233	27.5	15.4	20	21.5	8.6	y	-2.8	326	52.6	64.6	-13	58.3	-2.1	y	1.2	125	18.2	54.1	6	38.5	-2.2
Jul 18	y	1.1	233	42.9	15.4	20	30.1	8.4	y	-2.8	327	57.2	64.7	-14	0.4	-2.2	y	1.2	126	12.4	54.1	6	36.3	-2.3
Jul 19	y	1.1	233	58.3	15.4	20	38.5	8.2	y	-2.8	329	1.9	64.9	-14	2.6	-2.2	y	1.2	127	6.4	54.0	6	34.0	-2.3
Jul 20	y	1.1	234	13.7	15.4	20	46.7	8.0	y	-2.8	330	6.8	65.0	-14	4.8	-2.3	y	1.2	128	0.4	53.9	6	31.7	-2.3
Jul 21	y	1.1	234	29.2	15.4	20	54.7	7.8	y	-2.8	331	11.7	65.1	-14	7.1	-2.3	y	1.2	128	54.4	53.9	6	29.4	-2.4
Jul 22	y	1.1	234	44.6	15.5	21	2.5	7.6	y	-2.8	332	16.9	65.2	-14	9.4	-2.3	y	1.2	129	48.3	53.8	6	27.0	-2.3
Jul 23	y	1.1	235	0.1	15.5	21	10.1	7.4	y	-2.8	333	22.1	65.4	-14	11.7	-2.4	y	1.2	130	42.1	53.8	6	24.7	-2.4
Jul 24	y	1.1	235	15.6	15.5	21	17.5	7.2	y	-2.8	334	27.5	65.5	-14	14.1	-2.4	y	1.2	131	35.9	53.7	6	22.3	-2.4
Jul 25	y	1.1	235	31.0	15.5	21	24.7	7.0	y	-2.8	335	33.0	65.6	-14	16.5	-2.4	y	1.2	132	29.6	53.7	6	19.9	-2.4
Jul 26	y	1.1	235	46.6	15.5	21	31.7	6.9	y	-2.8	336	38.6	65.7	-14	18.9	-2.5	y	1.2	133	23.3	53.6	6	17.5	-2.4
Jul 27	y	1.1	236	2.1	15.6	21	38.6	6.6	y	-2.8	337	44.3	65.8	-14	21.4	-2.5	y	1.2	134	16.9	53.6	6	15.1	-2.5
Jul 28	y	1.1	236	17.7	15.6	21	45.2	6.4	y	-2.8	338	50.1	65.9	-14	23.9	-2.5	y	1.2	135	10.5	53.5	6	12.6	-2.5
Jul 29	y	1.1	236	33.3	15.6	21	51.6	6.2	y	-2.8	339	56.0	66.0	-14	26.4	-2.5	y	1.2	136	4.0	53.5	6	10.1	-2.5
Jul 30	y	1.1	236	48.9	15.7	21	57.8	6.0	y	-2.8	341	1.9	66.1	-14	28.9	-2.6	y	1.2	136	57.5	53.4	6	7.6	-2.5
Jul 31	y	1.1	237	4.5	15.7	22	3.8	5.8	y	-2.8	342	8.0	66.2	-14	31.5	-2.5	y	1.2	137	50.9	53.4	6	5.1	-2.5
Aug 1	y	1.1	237	20.2	15.7	22	9.6	5.7	y	-2.8	343	14.2	66.2	-14	34.0	-2.6	y	1.2	138	44.3	53.3	6	2.6	-2.6
Aug 2	y	1.1	237	36.0	15.8	22	15.3	5.4	y	-2.8	344	20.4	66.3	-14	36.6	-2.7	y	1.2	139	37.7	53.3	6	0.0	-2.6
Aug 3	y	1.1	237	51.7	15.8	22	20.7	5.2	y	-2.8	345	26.7	66.4	-14	39.3	-2.6	y	1.2	140	31.0	53.3	5	57.4	-2.6
Aug 4	y	1.1	238	7.5	15.8	22	25.9	5.1	y	-2.8	346	33.1	66.4	-14	41.9	-2.6	y	1.2	141	24.2	53.2	5	54.8	-2.6
Aug 5	y	1.1	238	23.4	15.9	22	31.0	4.8	y	-2.8	347	39.6	66.5	-14	44.5	-2.7	y	1.2	142	17.4	53.2	5	52.2	-2.6
Aug 6	y	1.1	238	39.2	15.9	22	35.8	4.6	y	-2.8	348	46.1	66.6	-14	47.2	-2.6	y	1.2	143	10.6	53.1	5	49.6	-2.6
Aug 7	y	1.1	238	55.2	16.0	22	40.4	4.5	y	-2.9	349	52.6	66.6	-14	49.8	-2.7	y	1.2	144	3.7	53.1	5	47.0	-2.7
Aug 8	y	1.1	239	11.2	16.0	22	44.9	4.2	y	-2.9	350	59.2	66.6	-14	52.5	-2.7	y	1.2	144	56.8	53.0	5	44.3	-2.6
Aug 9	y	1.1	239	27.2	16.1	22	49.1	4.0	y	-2.9	352	5.9	66.7	-14	55.2	-2.6	y	1.2	145	49.8	53.0	5	41.7	-2.7
Aug 10	y	1.1	239	43.3	16.2	22	53.1	3.9	y	-2.9	353	12.6	66.7	-14	57.8	-2.7	y	1.2	146	42.8	53.0	5	39.0	-2.7
Aug 11	y	1.1	239	59.4	16.2	22	57.0	3.6	y	-2.9	354	19.3	66.7	-15	0.5	-2.7	y	1.2	147	35.8	52.9	5	36.3	-2.7
Aug 12	y	1.1	240	15.7	16.3	23	0.6	3.5	y	-2.9	355	26.0	66.8	-15	3.2	-2.7	y	1.2	148	28.8	52.9	5	33.6	-2.7
Aug 13	y	1.1	240	31.9	16.3	23	4.1	3.3	y	-2.9	356	32.8	66.8	-15	5.9	-2.6	y	1.2	149	21.7	52.9	5	30.9	-2.8
Aug 14	y	1.0	240	48.3	16.4	23	7.4	3.0	y	-2.9	357	39.6	66.8	-15	8.5	-2.7	y	1.2	150	14.5	52.8	5	28.1	-2.7
Aug 15	y	1.0	241	4.7	16.5	23	10.4	2.9	y	-2.9	358	46.4	66.8	-15	11.2	-2.6	y	1.2	151	7.3	52.8	5	25.4	-2.8
Aug 16	y	1.0	241	21.2	16.6	23	13.3	2.7	y	-2.9	359	53.2	66.8	-15	13.8	-2.7	y	1.2	152	0.1	52.8	5	22.6	-2.8
Aug 17	y	1.0	241	37.7	16.6	23	16.0	2.5	y	-2.9	0	60.0	66.8	-15	16.5	-2.6	y	1.2	152	52.9	52.7	5	19.8	-2.8
Aug 18	y	1.0	241	54.4	16.7	23	18.5	2.3	y	-2.9	2	6.8	66.8	-15	19.1	-2.6	y	1.2	153	45.6	52.7	5	17.0	-2.8
Aug 19	y	1.0	242	11.1	16.8	23	20.8	2.1	y	-2.9	3	13.5	66.8	-15	21.7	-2.6	y	1.2	154	38.3	52.7	5	14.2	-2.8
Aug 20	y	1.0	242	27.9	16.9	23	22.9	2.0	y	-2.9	4	20.3	66.7	-15	24.3	-2.6	y	1.2	155	31.0	52.6	5	11.4	-2.8
Aug 21	y	1.0	242	44.9	17.0	23	24.9	1.7	y	-2.9	5	27.0	66.7	-15	26.9	-2.6	y	1.2	156	23.6	52.6	5	8.6	-2.8
Aug 22	y	1.0	243	1.9	17.1	23	26.6	1.6	y	-2.9	6	33.8	66.7	-15	29.5	-2.5	y	1.2	157	16.2	52.6	5	5.8	-2.9
Aug 23	y	1.0	243	19.0	17.2	23	28.2	1.4	y	-2.9	7	40.4	66.6	-15	32.0	-2.5	y	1.2	158	8.8	52.6	5	2.9	-2.8
Aug 24	y	1.0	243	36.2	17.3	23	29.6	1.2	y	-2.9	8	47.1	66.6	-15	34.5	-2.5	y	1.2	159	1.4	52.5	5	0.1	-2.9
Aug 25	y	1.0	243	53.6	17.4	23	30.8	1.0	y	-2.8	9	53.6	66.5	-15	37.0	-2.5	y	1.2	159	53.9	52.5	4	57.2	-2.8
Aug 26	y	1.0	244	11.0	17.6	23	31.8	0.9	y	-2.8	11	0.2	66.5	-15	39.5	-2.4	y	1.2	160	46.4	52.5	4	54.4	-2.9
Aug 27	y	1.0	244	28.6	17.7	23	32.7	0.6	y	-2.8	12	6.6	66.4	-15	41.9	-2.4	y	1.2	161	38.9	52.5	4	51.5	-2.9
Aug 28	y	1.0	244	46.2	17.8	23	33.3	0.5	y	-2.8	13	13.0	66.3	-15	44.3	-2.4	y	1.2	162	31.4	52.5	4	48.6	-2.9
Aug 29	y	1.0	245	4.0	17.9	23	33.8	0.4	y	-2.8	14	19.4	66.3	-15	46.7	-2.3	y	1.2	163	23.9	52.4	4	45.7	-2.8
Aug 30	y	1.0	245	21.9	18.0	23	34.2	0.1	y	-2.8	15	25.6	66.2	-15	49.0	-2.3	y	1.2	164	16.3	52.4	4	42.9	-2.9
Aug 31	y	1.0	245	40.0	18.2	23	34.3	0.0	y	-2.8	16	31.8	66.1	-15	51.3	-2.3	y	1.2	165	8.7	52.4	4	40.0	-2.9
Sep 1	y	1.0	245	58.1	18.3	23	34.3	-0.2	y	-2.8	17	37.9	66.0	-15	53.6	-2.2	y	1.2	166	1.1	52.4	4	37.1	-3.0
Sep 2	y	1.0	246	16.4	18.4	23	34.1	-0.3	y	-2.8	18	43.9	65.9	-15	55.8	-2.2	y	1.2	166	53.5	52.4	4	34.1	-2.9
Sep 3	y	1.0	246	34.8	18.5	23	33.8	-0.5	y	-2.8	19	49.8	65.8	-15	58.0	-2.1	y	1.1	167	45.8	52.4	4	31.2	-2.9
Sep 4	y	1.0	246	53.3	18.7	23	33.3	-0.7	y	-2.8	20	55.6	65.7	-16	0.1	-2.1	y	1.1	168	38.2	52.3	4	28.3	-2.9
Sep 5	y	1.0	247	12.0	18.8	23	32.6	-0.8	y	-2.8	22	1.3	65.6	-16	2.2	-2.1	y	1.1	169	30.5	52.3	4	25.4	-2.9
Sep 6	y	1.0	247	30.8	19.0	23	31.8	-1.0	y	-2.8	23	6.9	65.5	-16	4.3	-2.0	y	1.1	170	22.9	52.3	4	22.5	-3.0
Sep 7	y	0.9	247	49.8	19.1	23	30.8	-1.1	y	-2.8	24	12.3	65.4	-16	6.3	-1.9	y	1.1	171	15.2	52.3	4	19.5	-2.9
Sep 8	y	0.9	248	8.9	19.2	23	29.7	-1.3	y	-2.8	25	17.7	65.2	-16	8.2	-2.0	y	1.1	172	7.5	52.3	4	16.6	-2.9
Sep 9	y	0.9	248	28.1	19.4	23	28.4	-1.5	y	-2.8	26	22.9	65.1	-16	10.2	-1.8	y	1.1	172	59.8	52.3	4	13.7	-2.9
Sep 10	y	0.9	248	47.5	19.5	23	26.9	-1.5	y	-2.8	27	28.1	65.0	-16	12.0	-1.9	y	1.1	173	52.1	52.3	4	10.8	-3.0
Sep 11	y	0.9	249	7.1	19.7	23	25.4	-1.8	y	-2.8	28	33.0	64.8	-16	13.9	-1.7	y	1.1	174	44.3	52.3	4	7.8	-2.9
Sep 12	y	0.9	249	26.8	19.9	23	23.6	-1.9	y	-2.8	29	37.9	64.7	-16	15.6	-1.8	y	1.1	175	36.6	52.3	4	4.9	-3.0
Sep																								

2009

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	26.1	5.3	1	53.9	-23.2	2.5	178	20.2	111.6	-0.8	-3	20.3	36.8	-1.3	sr	-4.0	207	40.0	-12.1	13	19.5	-23.0	
19	181	31.4	5.3	1	30.7	-23.3	2.6	180	11.8	112.0	-0.2	-2	43.5	38.9	-1.1	sr	-4.0	207	27.9	-11.9	12	56.5	-23.3	
20	181	36.7	5.3	1	7.4	-23.3	2.7	182	3.8	111.0	0.5	-2	4.6	40.2	-0.6	sr	-4.0	207	16.0	-11.8	12	33.2	-23.7	
21	181	42.0	5.3	0	44.1	-23.4	2.9	183	54.8	108.7	1.2	-1	24.4	40.7	-0.3	sr	-4.0	207	4.2	-11.6	12	9.5	-24.0	
22	181	47.3	5.3	0	20.7	-23.3	3.0	185	43.5	105.0	1.8	-0	43.7	40.3	0.2	sr	-4.0	206	52.7	-11.4	11	45.5	-24.4	
23	181	52.6	5.2	-0	2.6	-23.4	2.8	187	28.5	100.1	2.5	-0	3.4	39.0	0.7	sr	-4.0	206	41.2	-11.3	11	21.1	-24.7	
24	181	57.8	5.2	-0	26.0	-23.4	2.5	189	8.6	94.0	3.0	0	35.6	36.9	1.1	sr	-4.0	206	30.0	-11.1	10	56.4	-25.0	
25	182	3.0	5.2	-0	49.4	-23.3	sr	2.3	190	42.6	86.9	3.5	1	12.5	33.9	1.5	sr	-3.9	206	18.9	-11.0	10	31.4	-25.3
26	182	8.2	5.1	-1	12.7	-23.4	sr	2.0	192	9.5	79.0	4.0	1	46.4	30.4	1.8	sr	-3.9	206	7.9	-10.8	10	6.1	-25.7
27	182	13.3	5.1	-1	36.1	-23.3	sr	1.7	193	28.5	70.5	4.3	2	16.8	26.2	2.1	sr	-3.9	205	57.1	-10.7	9	40.4	-25.9
28	182	18.4	5.0	-1	59.4	-23.4	sr	1.4	194	39.0	61.6	4.4	2	43.0	21.6	2.3	sr	-3.9	205	46.5	-10.5	9	14.5	-26.1
29	182	23.4	5.0	-2	22.8	-23.3	sr	1.1	195	40.6	52.5	4.5	3	4.6	16.7	2.4	sr	-3.9	205	35.9	-10.4	8	48.4	-26.5
Sep 30	182	28.4	4.9	-2	46.1	-23.3	sr	0.8	196	33.1	43.5	4.5	3	21.3	11.7	2.5	sr	-3.9	205	25.5	-10.3	8	21.9	-26.7
Oct 1	182	33.3	4.8	-3	9.4	-23.2	sr	0.5	197	16.6	34.7	4.4	3	33.0	6.5	2.6	sr	-3.9	205	15.3	-10.2	7	55.2	-26.9
2	182	38.1	4.8	-3	32.6	-23.2	sr	0.3	197	51.2	26.2	4.2	3	39.5	1.4	2.6	sr	-3.9	205	5.1	-10.0	7	28.3	-27.2
3	182	42.9	4.7	-3	55.8	-23.2	sr	0.0	198	17.4	18.2	4.0	3	40.9	-3.5	2.5	sr	-3.9	204	55.1	-9.9	7	1.1	-27.4
4	182	47.6	4.6	-4	19.0	-23.1	sr	-0.2	198	35.6	10.8	3.7	3	37.4	-8.3	2.4	sr	-3.9	204	45.1	-9.8	6	33.7	-27.6
5	182	52.2	4.5	-4	42.1	-23.0	sr	-0.3	198	46.4	4.0	3.4	3	29.1	-12.7	2.2	sr	-3.9	204	35.3	-9.8	6	6.1	-27.7
6	182	56.7	4.4	-5	5.1	-23.0	sr	-0.5	198	50.4	-2.1	3.1	3	16.4	-17.0	2.2	sr	-3.9	204	25.5	-9.7	5	38.4	-28.0
7	183	1.1	4.3	-5	28.1	-22.9	sr	-0.6	198	48.3	-7.6	2.7	2	59.4	-20.9	2.0	sr	-3.9	204	15.9	-9.6	5	10.4	-28.2
8	183	5.4	4.2	-5	51.0	-22.9	sr	-0.7	198	40.7	-12.4	2.4	2	38.5	-24.3	1.7	sr	-3.9	204	6.2	-9.6	4	42.2	-28.3
9	183	9.6	4.1	-6	13.9	-22.8	sr	-0.8	198	28.4	-16.5	2.1	2	14.2	-27.6	1.6	sr	-3.9	203	56.7	-9.5	4	13.9	-28.4
10	183	13.6	4.0	-6	36.7	-22.6	sr	-0.8	198	11.9	-20.0	1.8	1	46.6	-30.3	1.3	sr	-3.9	203	47.2	-9.5	3	45.5	-28.6
11	183	17.6	3.8	-6	59.3	-22.6	sr	-0.9	197	51.9	-23.0	1.5	1	16.3	-32.8	1.3	sr	-3.9	203	37.7	-9.4	3	16.9	-28.7
12	183	21.4	3.7	-7	21.9	-22.5	sr	-0.9	197	28.8	-25.5	1.2	0	43.5	-34.9	1.1	sr	-3.9	203	28.3	-9.4	2	48.2	-28.8
13	183	25.1	3.6	-7	44.4	-22.4	sr	-0.9	197	3.3	-27.6	1.0	0	8.6	-36.7	0.9	sr	-3.9	203	18.9	-9.4	2	19.4	-29.0
14	183	28.7	3.4	-8	6.8	-22.3	sr	-1.0	196	35.7	-29.3	0.8	-0	28.1	-38.3	0.8	sr	-3.9	203	9.6	-9.4	1	50.4	-29.0
15	183	32.1	3.3	-8	29.1	-22.1	sr	-1.0	196	6.5	-30.6	0.7	-1	6.4	-39.5	0.6	sr	-3.9	203	0.2	-9.4	1	21.4	-29.1
16	183	35.4	3.1	-8	51.2	-22.1	sr	-1.0	195	35.9	-31.7	0.5	-1	45.9	-40.5	0.5	sr	-3.9	202	50.8	-9.4	0	52.3	-29.1
17	183	38.6	3.0	-9	13.3	-21.9	sr	-1.0	195	4.2	-32.5	0.4	-2	26.4	-41.3	0.4	sr	-3.9	202	41.5	-9.4	0	23.2	-29.2
18	183	41.5	2.8	-9	35.2	-21.7	sr	-1.0	194	31.7	-33.1	0.3	-3	7.7	-42.0	0.4	sr	-3.9	202	32.1	-9.4	-0	6.0	-29.3
19	183	44.4	2.7	-9	56.9	-21.6	sr	-1.0	193	58.6	-33.6	0.2	-3	49.7	-42.3	0.2	sr	-3.9	202	22.7	-9.4	-0	35.3	-29.2
20	183	47.1	2.5	-10	18.5	-21.5	sr	-1.1	193	25.1	-33.9	0.2	-4	32.0	-42.6	0.1	sr	-3.9	202	13.3	-9.5	-1	4.5	-29.3
21	183	49.6	2.4	-10	40.0	-21.3	sr	-1.1	192	51.2	-34.1	0.1	-5	14.6	-42.8	0.1	sr	-3.9	202	3.8	-9.5	-1	33.8	-29.3
22	183	51.9	2.2	-11	1.3	-21.1	sr	-1.1	192	17.0	-34.3	0.1	-5	57.4	-42.8	0.0	sr	-3.9	201	54.3	-9.6	-2	3.1	-29.3
23	183	54.1	2.0	-11	22.4	-21.0	sr	-1.1	191	42.7	-34.4	0.0	-6	40.2	-42.6	-0.1	sr	-3.9	201	44.7	-9.7	-2	32.4	-29.2
24	183	56.2	1.9	-11	43.4	-20.8	sr	-1.1	191	8.3	-34.4	0.0	-7	22.8	-42.5	-0.1	sr	-3.9	201	35.0	-9.7	-3	1.6	-29.2
25	183	58.0	1.7	-12	4.2	-20.6	sr	-1.1	190	33.9	-34.5	0.0	-8	5.3	-42.2	-0.2	sr	-3.9	201	25.3	-9.8	-3	30.8	-29.2
26	183	59.7	1.5	-12	24.8	-20.4	sr	-1.1	189	59.4	-34.5	0.0	-8	47.5	-41.9	-0.1	sr	-3.9	201	15.5	-9.9	-4	0.0	-29.1
27	184	1.2	1.3	-12	45.2	-20.2	sr	-1.2	189	24.9	-34.5	0.0	-9	29.4	-41.4	-0.3	sr	-3.9	201	5.6	-10.0	-4	29.1	-29.0
28	184	2.5	1.1	-13	5.4	-20.0	sr	-1.2	188	50.5	-34.5	0.0	-10	10.8	-41.0	-0.2	sr	-3.9	200	55.5	-10.1	-4	58.1	-28.9
29	184	3.6	0.9	-13	25.4	-19.8	sr	-1.2	188	16.0	-34.5	0.0	-10	51.8	-40.4	-0.3	sr	-3.9	200	45.4	-10.3	-5	27.0	-28.9
30	184	4.6	0.8	-13	45.2	-19.5	sr	-1.2	187	41.5	-34.5	0.0	-11	32.2	-39.9	-0.3	sr	-3.9	200	35.1	-10.4	-5	55.9	-28.7
Oct 31	184	5.3	0.6	-14	4.7	-19.4	sr	-1.2	187	7.0	-34.5	0.0	-12	12.1	-39.2	-0.4	sr	-3.9	200	24.7	-10.6	-6	24.6	-28.6
Nov 1	184	5.9	0.4	-14	24.1	-19.1	sr	-1.3	186	32.5	-34.6	0.0	-12	51.3	-38.6	-0.3	sr	-3.9	200	14.2	-10.7	-6	53.2	-28.5
2	184	6.3	0.2	-14	43.2	-18.8	sr	-1.3	185	58.0	-34.6	0.0	-13	29.9	-37.9	-0.4	sr	-3.9	200	3.5	-10.9	-7	21.7	-28.3
3	184	6.4	0.0	-15	2.0	-18.7	sr	-1.3	185	23.4	-34.7	0.0	-14	7.8	-37.2	-0.3	sr	-3.9	199	52.6	-11.0	-7	50.0	-28.2
4	184	6.4	-0.2	-15	20.7	-18.4	sr	-1.3	184	48.7	-34.8	0.1	-14	45.0	-36.4	-0.4	sr	-3.9	199	41.5	-11.2	-8	18.2	-28.0
5	184	6.2	-0.5	-15	39.1	-18.1	sr	-1.4	184	13.9	-34.9	0.1	-15	21.4	-35.6	-0.4	sr	-3.9	199	30.3	-11.4	-8	46.2	-27.7
6	184	5.7	-0.7	-15	57.2	-17.8	sr	-1.3	183	38.9	-35.1	0.1	-15	57.0	-34.8	-0.4	sr	-3.9	199	18.9	-11.6	-9	13.9	-27.6
7	184	5.0	-0.9	-16	15.0	-17.6	sr	-1.3	183	3.8	-35.3	0.1	-16	31.8	-34.0	-0.4	sr	-3.9	199	7.3	-11.8	-9	41.5	-27.4
8	184	4.2	-1.1	-16	32.6	-17.3	sr	-1.2	182	28.6	-35.5	0.1	-17	5.8	-33.1	-0.5	sr	-3.9	198	55.4	-12.1	-10	8.9	-27.2
9	184	3.1	-1.3	-16	49.9	-17.1	sr	-1.2	181	53.1	-35.7	0.1	-17	38.9	-32.3	-0.4	sr	-3.9	198	43.4	-12.3	-10	36.1	-26.9
10	184	1.7	-1.5	-17	7.0	-16.7	sr	-1.1	181	17.4	-35.9	0.1	-18	11.2	-31.3	-0.5	sr	-3.9	198	31.1	-12.5	-11	3.0	-26.7
11	184	0.2	-1.7	-17	23.7	-16.4	sr	-1.0	180	41.5	-36.2	0.1	-18	42.5	-30.4	-0.4	sr	-3.9	198	18.6	-12.8	-11	29.7	-26.4
12	183	58.5	-2.0	-17	40.1	-16.2	sr	-1.0	180	5.4	-36.4	0.1	-19	12.9	-29.4	-0.5	sr	-3.9	198	5.8	-13.0	-11	56.1	-26.1
13	183	56.5	-2.2	-17	56.3	-15.8	sr	-0.9	179	28.9	-36.7	0.1	-19	42.3	-28.5	-0.5	sr	-3.9	197	52.8	-13.3	-12	22.2	-25.8
14	183	54.3	-2.4	-18	12.1	-15.5	sr	-0.9	178	52.2	-37.0	0.1	-20	10.8	-27.5	-0.5	sr	-3.9	197	39.6	-13.5	-12	48.0	-25.5
15	183	51.9	-2.6	-18	27.6	-15.2	sr	-0.9	178	15.2	-37.3	0.1	-20	38.3	-26.5	-0.5	sr	-3.9	197	26.1	-13.8	-13	13.5	-25.2
16	183	49.3	-2.8	-1																				

2009

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	'								
Sep 18	y	0.9	251	28.5	20.9	23	10.3	-2.7	y	-2.8	36	3.9	63.8	-16	25.2	-1.4	y	1.1	180	50.1	52.2	3	47.3	-3.0
19	y	0.9	251	49.5	21.1	23	7.6	-2.8	y	-2.7	37	7.7	63.6	-16	26.6	-1.3	y	1.1	181	42.3	52.2	3	44.3	-2.9
20	y	0.9	252	10.6	21.3	23	4.8	-3.0	y	-2.7	38	11.3	63.5	-16	27.9	-1.3	y	1.1	182	34.6	52.2	3	41.4	-2.9
21	y	0.9	252	31.9	21.5	23	1.8	-3.0	y	-2.7	39	14.8	63.3	-16	29.2	-1.2	y	1.1	183	26.8	52.2	3	38.5	-2.9
22	y	0.9	252	53.3	21.7	22	58.8	-3.2	y	-2.7	40	18.1	63.1	-16	30.4	-1.2	y	1.1	184	19.0	52.2	3	35.6	-3.0
23	y	0.8	253	15.0	21.9	22	55.6	-3.3	y	-2.7	41	21.2	62.9	-16	31.6	-1.1	y	1.1	185	11.3	52.3	3	32.6	-2.9
24	y	0.8	253	36.9	22.1	22	52.3	-3.4	y	-2.7	42	24.1	62.8	-16	32.7	-1.1	y	1.1	186	3.5	52.3	3	29.7	-2.9
25	y	0.8	253	59.0	22.3	22	48.9	-3.5	y	-2.7	43	26.9	62.6	-16	33.8	-0.9	y	1.1	186	55.8	52.3	3	26.8	-2.9
26	y	0.8	254	21.2	22.5	22	45.4	-3.6	y	-2.7	44	29.5	62.4	-16	34.7	-1.0	y	1.1	187	48.1	52.3	3	23.9	-2.9
27	y	0.8	254	43.7	22.7	22	41.8	-3.7	y	-2.7	45	31.9	62.2	-16	35.7	-0.8	y	1.1	188	40.3	52.3	3	21.0	-2.9
28	y	0.8	255	6.4	22.9	22	38.1	-3.8	y	-2.7	46	34.1	62.0	-16	36.5	-0.9	y	1.1	189	32.6	52.3	3	18.1	-2.9
29	y	0.8	255	29.3	23.1	22	34.3	-3.9	y	-2.7	47	36.1	61.8	-16	37.4	-0.7	y	1.1	190	24.9	52.3	3	15.2	-2.8
Sep 30	y	0.8	255	52.4	23.3	22	30.4	-4.0	y	-2.7	48	37.9	61.6	-16	38.1	-0.7	y	1.1	191	17.2	52.3	3	12.4	-2.9
Oct 1	y	0.8	256	15.8	23.5	22	26.4	-4.0	y	-2.7	49	39.6	61.5	-16	38.8	-0.6	y	1.1	192	9.5	52.3	3	9.5	-2.9
2	y	0.8	256	39.3	23.8	22	22.4	-4.2	y	-2.7	50	41.0	61.3	-16	39.4	-0.6	y	1.1	193	1.9	52.3	3	6.6	-2.8
3	y	0.8	257	3.1	24.0	22	18.2	-4.3	y	-2.7	51	42.3	61.1	-16	40.0	-0.5	y	1.2	193	54.2	52.4	3	3.8	-2.9
4	y	0.8	257	27.1	24.2	22	13.9	-4.3	y	-2.7	52	43.4	60.9	-16	40.5	-0.4	y	1.2	194	46.6	52.4	3	0.9	-2.8
5	y	0.8	257	51.3	24.4	22	9.6	-4.4	y	-2.6	53	44.3	60.7	-16	40.9	-0.4	y	1.2	195	39.0	52.4	2	58.1	-2.8
6	y	0.7	258	15.7	24.7	22	5.2	-4.5	y	-2.6	54	45.0	60.5	-16	41.3	-0.3	y	1.2	196	31.3	52.4	2	55.3	-2.8
7	y	0.7	258	40.4	24.9	22	0.7	-4.5	y	-2.6	55	45.5	60.3	-16	41.6	-0.3	y	1.2	197	23.8	52.4	2	52.5	-2.8
8	y	0.7	259	5.3	25.1	21	56.2	-4.7	y	-2.6	56	45.8	60.1	-16	41.9	-0.1	y	1.2	198	16.2	52.4	2	49.7	-2.8
9	y	0.7	259	30.4	25.4	21	51.5	-4.6	y	-2.6	57	45.9	59.9	-16	42.0	-0.2	y	1.2	199	8.6	52.5	2	46.9	-2.8
10	y	0.7	259	55.8	25.6	21	46.9	-4.8	y	-2.6	58	45.8	59.7	-16	42.2	0.0	y	1.2	200	1.1	52.5	2	44.1	-2.8
11	y	0.7	260	21.4	25.9	21	42.1	-4.8	y	-2.6	59	45.5	59.5	-16	42.2	0.0	y	1.2	200	53.6	52.5	2	41.3	-2.7
12	y	0.7	260	47.3	26.1	21	37.3	-4.8	y	-2.6	60	45.0	59.3	-16	42.2	0.0	y	1.2	201	46.1	52.5	2	38.6	-2.8
13	y	0.7	261	13.4	26.4	21	32.5	-4.9	y	-2.6	61	44.3	59.1	-16	42.2	0.1	y	1.2	202	38.6	52.6	2	35.8	-2.7
14	y	0.7	261	39.8	26.7	21	27.6	-5.0	y	-2.6	62	43.4	58.9	-16	42.1	0.2	y	1.2	203	31.2	52.6	2	33.1	-2.7
15	y	0.7	262	6.5	26.9	21	22.6	-4.9	y	-2.6	63	42.3	58.7	-16	41.9	0.3	y	1.2	204	23.7	52.6	2	30.4	-2.7
16	y	0.6	262	33.4	27.2	21	17.7	-5.0	y	-2.6	64	41.0	58.5	-16	41.6	0.3	y	1.2	205	16.4	52.6	2	27.7	-2.7
17	y	0.6	263	0.6	27.5	21	12.7	-5.1	y	-2.6	65	39.5	58.3	-16	41.3	0.3	y	1.2	206	9.0	52.7	2	25.0	-2.7
18	y	0.6	263	28.1	27.8	21	7.6	-5.1	y	-2.6	66	37.8	58.1	-16	41.0	0.5	y	1.2	207	1.7	52.7	2	22.3	-2.6
19	y	0.6	263	55.9	28.0	21	2.5	-5.1	y	-2.5	67	36.0	57.9	-16	40.5	0.5	y	1.2	207	54.4	52.7	2	19.7	-2.7
20	y	0.6	264	23.9	28.3	20	57.4	-5.1	y	-2.5	68	33.9	57.7	-16	40.0	0.5	y	1.2	208	47.1	52.6	2	17.0	-2.6
21	y	0.6	264	52.2	28.6	20	52.3	-5.1	y	-2.5	69	31.6	57.5	-16	39.5	0.6	y	1.2	209	39.8	52.6	2	14.4	-2.6
22	y	0.6	265	20.8	28.9	20	47.2	-5.1	y	-2.5	70	29.1	57.3	-16	38.9	0.7	y	1.2	210	32.6	52.6	2	11.8	-2.6
23	y	0.6	265	49.7	29.2	20	42.1	-5.2	y	-2.5	71	26.4	57.1	-16	38.2	0.8	y	1.2	211	25.4	52.9	2	9.2	-2.5
24	y	0.6	266	19.0	29.5	20	36.9	-5.1	y	-2.5	72	23.5	56.9	-16	37.4	0.8	y	1.2	212	18.3	52.9	2	6.7	-2.6
25	y	0.5	266	48.5	29.8	20	31.8	-5.2	y	-2.5	73	20.5	56.7	-16	36.6	0.8	y	1.2	213	11.2	52.9	2	4.1	-2.5
26	y	0.5	267	18.3	30.1	20	26.6	-5.1	y	-2.5	74	17.2	56.5	-16	35.8	1.0	y	1.2	214	4.1	53.0	2	1.6	-2.5
27	y	0.5	267	48.4	30.4	20	21.5	-5.2	y	-2.5	75	13.7	56.3	-16	34.8	0.9	y	1.2	214	57.1	53.0	1	59.1	-2.5
28	y	0.5	268	18.8	30.8	20	16.3	-5.1	y	-2.5	76	10.1	56.2	-16	33.9	1.1	y	1.2	215	50.1	53.1	1	56.6	-2.5
29	y	0.5	268	49.6	31.1	20	11.2	-5.1	y	-2.5	77	6.2	56.0	-16	32.8	1.1	y	1.2	216	43.2	53.1	1	54.1	-2.4
30	y	0.5	269	20.7	31.4	20	6.1	-5.1	y	-2.5	78	2.2	55.8	-16	31.7	1.1	y	1.2	217	36.3	53.1	1	51.7	-2.4
Oct 31	y	0.5	269	52.1	31.7	20	1.0	-5.1	y	-2.5	78	58.0	55.6	-16	30.6	1.3	y	1.2	218	29.4	53.2	1	49.3	-2.4
Nov 1	y	0.5	270	23.8	32.1	19	55.9	-5.0	y	-2.5	79	53.6	55.4	-16	29.3	1.2	y	1.2	219	22.6	53.2	1	46.9	-2.4
2	y	0.4	270	55.9	32.4	19	50.9	-5.1	y	-2.4	80	49.0	55.2	-16	28.1	1.4	y	1.2	220	15.8	53.3	1	44.5	-2.4
3	y	0.4	271	28.3	32.7	19	45.8	-4.9	y	-2.4	81	44.2	55.0	-16	26.7	1.4	y	1.2	221	9.1	53.3	1	42.1	-2.3
4	y	0.4	272	1.1	33.1	19	40.9	-5.0	y	-2.4	82	39.2	54.9	-16	25.3	1.4	y	1.2	222	2.4	53.4	1	39.8	-2.3
5	y	0.4	272	34.2	33.5	19	35.9	-4.8	y	-2.4	83	34.1	54.7	-16	23.9	1.5	y	1.2	222	55.8	53.4	1	37.5	-2.3
6	y	0.4	273	7.6	33.8	19	31.1	-4.9	y	-2.4	84	28.8	54.5	-16	22.4	1.6	y	1.2	223	49.2	53.5	1	35.2	-2.3
7	y	0.4	273	41.4	34.2	19	26.2	-4.7	y	-2.4	85	23.3	54.3	-16	20.8	1.6	y	1.2	224	42.7	53.5	1	32.9	-2.2
8	y	0.4	274	15.6	34.6	19	21.5	-4.8	y	-2.4	86	17.6	54.1	-16	19.2	1.7	y	1.2	225	36.2	53.6	1	30.7	-2.2
9	y	0.3	274	50.2	34.9	19	16.7	-4.6	y	-2.4	87	11.7	54.0	-16	17.5	1.7	y	1.2	226	29.8	53.6	1	28.5	-2.2
10	y	0.3	275	25.1	35.3	19	12.1	-4.6	y	-2.4	88	5.7	53.8	-16	15.8	1.8	y	1.2	227	23.4	53.7	1	26.3	-2.2
11	y	0.3	276	0.4	35.7	19	7.5	-4.5	y	-2.4	88	59.5	53.6	-16	14.0	1.9	y	1.2	228	17.1	53.7	1	24.1	-2.1
12	y	0.3	276	36.2	36.1	19	3.0	-4.4	y	-2.4	89	53.2	53.5	-16	12.1	1.9	y	1.2	229	10.8	53.8	1	22.0	-2.1
13	y	0.3	277	12.3	36.6	18	58.6	-4.3	y	-2.4	90	46.6	53.3	-16	10.2	1.9	y	1.2	230	4.6	53.6	1	19.9	-2.1
14	y	0.3	277	48.9	37.0	18	54.3	-4.2	y	-2.4	91	39.9	53.1	-16	8.3	2.1	y	1.2	230	58.4	53.9	1	17.8	-2.1
15	y	0.2	278	25.9	37.4	18	50.1	-4.2	y	-2.4	92	33.0	53.0	-16	6.2	2.0	y	1.2	231	52.3	54.0	1	15.7	-2.0
16	y	0.2	279	3.3	37.8	18	45.9	-4.0	y	-2.4	93	26.0	52.8	-16	4.2	2.2	y	1.2	232	46.3	54.0	1	13.7	-2.0
17	y	0.2	279	41.1	38.3	18	41.9	-3.9	y	-2.3	94	18.8	52.6</											

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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	29.3	-4.0	-20	6.7	-12.7	SS	-0.7	173	47.7	-39.4	0.1	-23	20.9	-18.7	-0.6	Sr	-3.9	195	43.8	-15.7	-16	2.3	-22.6
23	183	25.3	-4.2	-20	19.4	-12.3	SS	-0.6	173	8.3	-39.7	0.1	-23	39.6	-17.5	-0.6	Sr	-3.9	195	28.1	-16.0	-16	24.9	-22.1
24	183	21.1	-4.4	-20	31.7	-12.0	SS	-0.6	172	28.6	-39.9	0.1	-23	57.1	-16.3	-0.6	Sr	-3.9	195	12.0	-16.3	-16	47.0	-21.7
25	183	16.7	-4.6	-20	43.7	-11.6	SS	-0.6	171	48.7	-40.1	0.1	-24	13.4	-15.0	-0.7	Sr	-3.9	194	55.7	-16.6	-17	8.7	-21.2
26	183	12.1	-4.8	-20	55.3	-11.2	SS	-0.6	171	8.6	-40.3	0.1	-24	28.4	-13.8	-0.6	Sr	-3.9	194	39.0	-16.9	-17	29.9	-20.6
27	183	7.3	-5.0	-21	6.5	-10.8	SS	-0.6	170	28.3	-40.4	0.1	-24	42.2	-12.5	-0.6	Sr	-3.9	194	22.1	-17.2	-17	50.7	-20.3
28	183	2.3	-5.1	-21	17.3	-10.3	SS	-0.6	169	47.9	-40.5	0.0	-24	54.7	-11.2	-0.6	Sr	-3.9	194	4.9	-17.5	-18	11.0	-19.6
29	182	57.2	-5.3	-21	27.6	-10.0	SS	-0.6	169	7.4	-40.5	0.0	-25	5.9	-9.8	-0.7	Sr	-3.9	193	47.3	-17.8	-18	30.8	-19.3
Nov 30	182	51.9	-5.5	-21	37.6	-9.6	SS	-0.6	168	27.0	-40.4	0.0	-25	15.7	-8.5	-0.6	Sr	-3.9	193	29.5	-18.1	-18	50.1	-18.7
Dec 1	182	46.5	-5.6	-21	47.2	-9.2	SS	-0.6	167	46.5	-40.3	-0.1	-25	24.2	-7.2	-0.6	Sr	-3.9	193	11.4	-18.4	-19	8.8	-18.3
2	182	40.8	-5.8	-21	56.4	-8.7	SS	-0.5	167	6.2	-40.1	-0.1	-25	31.4	-5.7	-0.8	Sr	-3.9	192	53.0	-18.7	-19	27.1	-17.7
3	182	35.1	-5.9	-22	5.1	-8.3	SS	-0.5	166	26.1	-39.8	-0.2	-25	37.1	-4.3	-0.7	Sr	-3.9	192	34.2	-19.0	-19	44.8	-17.1
4	182	29.1	-6.1	-22	13.4	-7.9	SS	-0.5	165	46.3	-39.4	-0.2	-25	41.4	-2.9	-0.7	Sr	-3.9	192	15.2	-19.3	-20	1.9	-16.6
5	182	23.1	-6.2	-22	21.3	-7.4	SS	-0.5	165	6.9	-38.8	-0.3	-25	44.3	-1.5	-0.7	Sr	-3.9	191	55.9	-19.6	-20	18.5	-16.0
6	182	16.8	-6.4	-22	28.7	-7.0	SS	-0.5	164	28.0	-38.1	-0.3	-25	45.8	0.0	-0.8	Sr	-3.9	191	36.3	-19.9	-20	34.5	-15.4
7	182	10.5	-6.5	-22	35.7	-6.6	SS	-0.5	163	49.9	-37.3	-0.4	-25	45.8	1.4	-0.7	Sr	-3.9	191	16.5	-20.1	-20	49.9	-14.6
8	182	4.0	-6.6	-22	42.3	-6.1	SS	-0.6	163	12.6	-36.2	-0.5	-25	44.4	2.8	-0.7	Sr	-3.9	190	56.3	-20.4	-21	4.7	-14.2
9	181	57.4	-6.7	-22	48.4	-5.7	SS	-0.6	162	36.4	-35.0	-0.6	-25	41.6	4.4	-0.8	Sr	-3.9	190	35.9	-20.7	-21	18.9	-13.6
10	181	50.7	-6.8	-22	54.1	-5.2	SS	-0.6	162	1.4	-33.5	-0.7	-25	37.2	5.7	-0.7	Sr	-3.9	190	15.3	-20.9	-21	32.5	-13.0
11	181	43.8	-6.9	-22	59.3	-4.8	SS	-0.6	161	27.9	-31.7	-0.9	-25	31.5	7.2	-0.8	Sr	-3.9	189	54.3	-21.2	-21	45.5	-12.3
12	181	36.9	-7.0	-23	4.1	-4.3	SS	-0.6	160	56.2	-29.6	-1.0	-25	24.3	8.5	-0.6	Sr	-3.9	189	33.2	-21.4	-21	57.8	-11.7
13	181	29.9	-7.1	-23	8.4	-3.9	SS	-0.6	160	26.6	-27.2	-1.2	-25	15.8	9.9	-0.7	Sr	-3.9	189	11.8	-21.6	-22	9.5	-11.0
14	181	22.8	-7.2	-23	12.3	-3.4	SS	-0.6	159	59.4	-24.4	-1.4	-25	5.9	11.3	-0.7	Sr	-3.9	188	50.2	-21.8	-22	20.5	-10.3
15	181	15.6	-7.3	-23	15.7	-2.9	SS	-0.6	159	35.1	-21.1	-1.6	-24	54.6	12.4	-0.5	Sr	-3.9	188	28.4	-22.0	-22	30.8	-9.7
16	181	8.3	-7.3	-23	18.6	-2.4	SS	-0.5	159	14.0	-17.3	-1.9	-24	42.2	13.7	-0.7	Sr	-3.9	188	6.3	-22.2	-22	40.5	-8.9
17	181	1.0	-7.4	-23	21.0	-2.0	SS	-0.5	158	56.7	-13.0	-2.2	-24	28.5	14.7	-0.5	Sr	-3.9	187	44.1	-22.4	-22	49.4	-8.3
18	180	53.6	-7.4	-23	23.0	-1.6	SS	-0.5	158	43.8	-8.0	-2.5	-24	13.8	15.7	-0.5	Sr	-3.9	187	21.7	-22.5	-22	57.7	-7.6
19	180	46.2	-7.4	-23	24.6	-1.0	SS	-0.5	158	35.8	-2.3	-2.8	-23	58.1	16.5	-0.4	Sr	-3.9	186	59.2	-22.7	-23	5.3	-6.9
20	180	38.8	-7.5	-23	25.6	-0.6	SS	-0.4	158	33.4	4.1	-3.2	-23	41.6	17.2	-0.3	Sr	-3.9	186	36.5	-22.8	-23	12.2	-6.2
21	180	31.3	-7.5	-23	26.2	-0.1	SS	-0.4	158	37.5	11.3	-3.6	-23	24.4	17.7	-0.3	Sr	-3.9	186	13.7	-22.9	-23	18.4	-5.5
22	180	23.9	-7.5	-23	26.3	0.4	SS	-0.3	158	48.9	19.5	-4.1	-23	6.7	18.0	-0.1	Sr	-3.9	185	50.7	-23.0	-23	23.9	-4.7
23	180	16.4	-7.5	-23	25.9	0.8	SS	-0.2	159	8.3	28.5	-4.5	-22	48.7	18.2	-0.1	Sr	-3.9	185	27.7	-23.1	-23	28.6	-4.0
24	180	8.9	-7.4	-23	25.1	1.3	SS	-0.1	159	36.8	38.4	-5.0	-22	30.5	18.0	0.1	Sr	-3.9	185	4.5	-23.2	-23	32.6	-3.3
25	180	1.5	-7.4	-23	23.8	1.7	SS	0.1	160	15.2	49.2	-5.4	-22	12.5	17.6	0.2	Sr	-3.9	184	41.3	-23.3	-23	35.9	-2.6
26	179	54.0	-7.4	-23	22.1	2.3	SS	0.3	161	4.4	60.8	-5.8	-21	54.9	17.1	0.3	Sr	-3.9	184	18.0	-23.3	-23	38.5	-1.6
27	179	46.7	-7.4	-23	19.8	2.7	SS	0.5	162	5.2	73.0	-6.1	-21	37.8	16.2	0.5	Sr	-3.9	183	54.7	-23.3	-23	40.3	-1.1
28	179	39.3	-7.3	-23	17.1	3.2	SS	0.8	163	18.2	85.5	-6.3	-21	21.6	15.2	0.5	Sr	-3.9	183	31.4	-23.4	-23	41.4	-0.4
29	179	32.0	-7.3	-23	13.9	3.6	SS	1.0	164	43.7	98.0	-6.3	-21	6.4	14.0	0.6	Sr	-3.9	183	8.0	-23.4	-23	41.8	0.3
30	179	24.8	-7.2	-23	10.3	4.1	SS	1.2	166	21.8	110.1	-6.0	-20	52.4	12.7	0.7	Sr	-3.9	182	44.7	-23.3	-23	41.5	1.1
Dec 31	179	17.6	-7.1	-23	6.2	4.6	SS	1.5	168	11.9	121.3	-5.6	-20	39.7	11.3	0.7	Sr	-3.9	182	21.4	-23.3	-23	40.4	1.9
Jan 1	179	10.5	-7.1	-23	1.6	5.1	SS	1.7	170	13.1	121.3	-5.6	-20	28.4	9.9	0.7	Sr	-3.9	181	58.1	-23.3	-23	38.5	2.7

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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	'	o	'								
Nov 22	y	0.1	282	57.1	40.6	18	23.5	-3.3	y	-2.3	98	40.4	51.9	-15	50.6	2.4	y	1.2	238	11.4	54.4	1	2.2	-1.8
23	y	0.1	283	37.8	41.1	18	20.2	-3.2	y	-2.3	99	32.2	51.7	-15	48.2	2.5	y	1.2	239	5.8	54.5	1	0.4	-1.8
24	y	0.1	284	18.9	41.6	18	17.0	-3.0	y	-2.3	100	23.9	51.6	-15	45.7	2.6	y	1.2	240	0.3	54.5	0	58.6	-1.7
25	y	0.1	285	0.5	42.1	18	14.0	-2.9	y	-2.3	101	15.5	51.4	-15	43.1	2.5	y	1.2	240	54.8	54.6	0	56.9	-1.7
26	y	0.0	285	42.6	42.6	18	11.1	-2.7	y	-2.3	102	6.9	51.3	-15	40.6	2.7	y	1.2	241	49.4	54.7	0	55.2	-1.7
27	y	0.0	286	25.2	43.2	18	8.4	-2.6	y	-2.3	102	58.2	51.1	-15	37.9	2.7	y	1.2	242	44.1	54.8	0	53.5	-1.6
28	y	0.0	287	8.4	43.7	18	5.8	-2.4	y	-2.3	103	49.3	51.0	-15	35.2	2.7	y	1.2	243	38.9	54.8	0	51.9	-1.6
29	y	0.0	287	52.1	44.2	18	3.4	-2.2	y	-2.3	104	40.3	50.9	-15	32.5	2.8	y	1.2	244	33.7	54.9	0	50.3	-1.6
Nov 30	y	0.0	288	36.3	44.8	18	1.2	-2.0	y	-2.3	105	31.1	50.7	-15	29.7	2.9	y	1.2	245	28.6	55.0	0	48.7	-1.5
Dec 1	y	-0.1	289	21.1	45.3	17	59.2	-1.9	y	-2.3	106	21.9	50.6	-15	26.8	2.9	y	1.2	246	23.6	55.1	0	47.2	-1.5
2	y	-0.1	290	6.5	45.9	17	57.3	-1.7	y	-2.3	107	12.4	50.5	-15	23.9	2.9	y	1.2	247	18.7	55.1	0	45.7	-1.5
3	y	-0.1	290	52.4	46.5	17	55.6	-1.5	y	-2.2	108	2.9	50.3	-15	21.0	3.0	y	1.2	248	13.8	55.2	0	44.2	-1.4
4	y	-0.1	291	38.9	47.1	17	54.1	-1.3	y	-2.2	108	53.2	50.2	-15	18.0	3.0	y	1.2	249	9.0	55.3	0	42.8	-1.4
5	y	-0.1	292	26.0	47.7	17	52.8	-1.2	y	-2.2	109	43.4	50.1	-15	15.0	3.1	y	1.2	250	4.3	55.4	0	41.4	-1.4
6	y	-0.2	293	13.7	48.3	17	51.6	-0.9	y	-2.2	110	33.5	49.9	-15	11.9	3.1	y	1.2	250	59.7	55.4	0	40.0	-1.3
7	y	-0.2	294	2.0	49.0	17	50.7	-0.7	y	-2.2	111	23.4	49.8	-15	8.8	3.2	y	1.2	251	55.1	55.5	0	38.7	-1.3
8	y	-0.2	294	50.9	49.6	17	50.0	-0.5	y	-2.2	112	13.3	49.7	-15	5.6	3.2	y	1.2	252	50.6	55.6	0	37.4	-1.3
9	y	-0.2	295	40.5	50.3	17	49.5	-0.2	y	-2.2	113	3.0	49.6	-15	2.4	3.3	y	1.2	253	46.3	55.7	0	36.1	-1.2
10	y	-0.3	296	30.8	50.9	17	49.3	-0.1	y	-2.2	113	52.6	49.5	-14	59.1	3.3	y	1.2	254	42.0	55.8	0	34.9	-1.1
11	y	-0.3	297	21.7	51.6	17	49.2	0.2	y	-2.2	114	42.0	49.4	-14	55.8	3.3	y	1.2	255	37.7	55.9	0	33.8	-1.2
12	y	-0.3	298	13.3	52.3	17	49.4	0.5	y	-2.2	115	31.4	49.2	-14	52.5	3.4	y	1.2	256	33.6	56.0	0	32.6	-1.1
13	y	-0.3	299	5.6	53.0	17	49.9	0.6	y	-2.2	116	20.6	49.1	-14	49.1	3.5	y	1.2	257	29.5	56.0	0	31.5	-1.0
14	y	-0.3	299	58.6	53.7	17	50.5	0.9	y	-2.2	117	9.7	49.0	-14	45.6	3.5	y	1.2	258	25.6	56.1	0	30.5	-1.0
15	y	-0.4	300	52.3	54.4	17	51.4	1.2	y	-2.2	117	58.8	48.9	-14	42.1	3.5	y	1.2	259	21.7	56.2	0	29.5	-1.0
16	y	-0.4	301	46.8	55.2	17	52.6	1.4	y	-2.2	118	47.7	48.8	-14	38.6	3.6	y	1.2	260	17.9	56.3	0	28.5	-0.9
17	y	-0.4	302	42.0	55.9	17	54.0	1.6	y	-2.2	119	36.5	48.7	-14	35.0	3.6	y	1.2	261	14.2	56.4	0	27.6	-0.9
18	y	-0.4	303	37.9	56.7	17	55.6	1.9	y	-2.2	120	25.2	48.6	-14	31.4	3.7	y	1.2	262	10.6	56.5	0	26.7	-0.9
19	y	-0.5	304	34.6	57.5	17	57.5	2.2	y	-2.2	121	13.8	48.5	-14	27.7	3.7	y	1.2	263	7.1	56.6	0	25.8	-0.8
20	y	-0.5	305	32.0	58.2	17	59.7	2.4	y	-2.2	122	2.3	48.4	-14	24.0	3.7	y	1.2	264	3.7	56.7	0	25.0	-0.8
21	y	-0.5	306	30.3	59.0	18	2.1	2.6	y	-2.2	122	50.7	48.3	-14	20.3	3.8	y	1.2	265	0.3	56.8	0	24.2	-0.7
22	y	-0.5	307	29.3	59.8	18	4.7	3.0	y	-2.2	123	39.0	48.2	-14	16.5	3.8	y	1.2	265	57.1	56.9	0	23.5	-0.7
23	y	-0.6	308	29.1	60.6	18	7.7	3.1	y	-2.1	124	27.2	48.1	-14	12.7	3.9	y	1.2	266	53.9	56.9	0	22.8	-0.6
24	y	-0.6	309	29.7	61.4	18	10.8	3.5	y	-2.1	125	15.3	48.0	-14	8.8	3.9	y	1.1	267	50.9	57.0	0	22.2	-0.6
25	y	-0.6	310	31.1	62.2	18	14.3	3.6	y	-2.1	126	3.4	47.9	-14	4.9	3.9	y	1.1	268	47.9	57.1	0	21.6	-0.6
26	y	-0.6	311	33.4	63.0	18	17.9	4.0	y	-2.1	126	51.3	47.9	-14	1.0	4.0	y	1.1	269	45.1	57.2	0	21.0	-0.5
27	y	-0.7	312	36.4	63.9	18	21.9	4.1	y	-2.1	127	39.2	47.8	-13	57.0	4.0	y	1.1	270	42.3	57.3	0	20.5	-0.5
28	y	-0.7	313	40.3	64.7	18	26.0	4.4	y	-2.1	128	26.9	47.7	-13	53.0	4.1	y	1.1	271	39.6	57.4	0	20.0	-0.4
29	y	-0.7	314	44.9	65.5	18	30.4	4.7	y	-2.1	129	14.6	47.6	-13	48.9	4.1	y	1.1	272	37.1	57.5	0	19.6	-0.4
30	y	-0.7	315	50.4	66.3	18	35.1	4.9	y	-2.1	130	2.2	47.5	-13	44.8	4.1	y	1.1	273	34.6	57.6	0	19.2	-0.3
Dec 31	y	-0.7	316	56.8	67.2	18	40.0	5.1	y	-2.1	130	49.8	47.5	-13	40.7	4.2	y	1.1	274	32.2	57.7	0	18.9	-0.3
Jan 1	y	-0.8	318	3.9	67.2	18	45.1	5.3	y	-2.1	131	37.2	47.5	-13	36.5	4.3	y	1.1	275	29.9	57.7	0	18.6	-0.3