

2011

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	12.3	-7.1	-23	2.7	4.9	sr	0.2	201	7.6	39.8	3.9	-20	13.0	-7.7	0.6	sr	-4.5	228	13.2	0.9	-15	16.5	-13.5
2	179	5.2	-7.0	-22	57.8	5.4	sr	0.1	201	47.4	32.0	3.9	-20	20.7	-8.9	0.6	sr	-4.5	228	14.1	0.3	-15	30.0	-13.5
3	178	58.2	-6.9	-22	52.4	5.8	sr	0.0	202	19.3	24.9	3.5	-20	29.6	-9.8	0.5	sr	-4.5	228	14.4	-0.3	-15	43.5	-13.5
4	178	51.2	-6.8	-22	46.6	6.3	sr	-0.1	202	44.2	18.5	3.2	-20	39.4	-10.5	0.3	sr	-4.5	228	14.0	-0.9	-15	57.0	-13.3
5	178	44.4	-6.7	-22	40.3	6.7	sr	-0.1	203	2.7	12.7	2.9	-20	49.9	-11.0	0.3	sr	-4.5	228	13.1	-1.5	-16	10.3	-13.4
6	178	37.6	-6.6	-22	33.6	7.2	sr	-0.2	203	15.3	7.5	2.6	-21	0.9	-11.2	0.1	sr	-4.5	228	11.6	-2.0	-16	23.7	-13.2
7	178	31.0	-6.5	-22	26.4	7.6	sr	-0.2	203	22.8	2.8	2.3	-21	12.1	-11.4	0.1	sr	-4.5	228	9.6	-2.6	-16	36.9	-13.0
8	178	24.5	-6.4	-22	18.8	8.1	sr	-0.2	203	25.6	-1.4	2.1	-21	23.5	-11.3	-0.1	sr	-4.4	228	7.0	-3.1	-16	49.9	-13.0
9	178	18.2	-6.2	-22	10.7	8.4	sr	-0.2	203	24.1	-5.3	1.9	-21	34.8	-11.1	-0.1	sr	-4.4	228	3.9	-3.6	-17	2.9	-12.6
10	178	11.9	-6.1	-22	2.3	9.0	sr	-0.2	203	18.9	-8.7	1.7	-21	45.9	-10.7	-0.2	sr	-4.4	228	0.3	-4.2	-17	15.7	-12.6
11	178	5.8	-5.9	-21	53.3	9.3	sr	-0.2	203	10.2	-11.8	1.5	-21	56.6	-10.3	-0.2	sr	-4.4	227	56.1	-4.7	-17	28.3	-12.4
12	177	59.9	-5.8	-21	44.0	9.8	sr	-0.2	202	58.4	-14.6	1.4	-22	6.9	-9.7	-0.3	sr	-4.4	227	51.4	-5.2	-17	40.7	-12.2
13	177	54.1	-5.6	-21	34.2	10.2	sr	-0.2	202	43.8	-17.1	1.3	-22	16.6	-9.1	-0.3	sr	-4.4	227	46.3	-5.6	-17	52.9	-12.0
14	177	48.5	-5.5	-21	24.0	10.6	sr	-0.3	202	26.7	-19.4	1.1	-22	25.7	-8.4	-0.4	sr	-4.4	227	40.6	-6.1	-18	4.9	-11.7
15	177	43.0	-5.3	-21	13.4	11.0	sr	-0.3	202	7.3	-21.5	1.0	-22	34.1	-7.5	-0.4	sr	-4.4	227	34.5	-6.6	-18	16.6	-11.5
16	177	37.7	-5.1	-21	2.4	11.4	sr	-0.3	201	45.9	-23.4	0.9	-22	41.6	-6.7	-0.4	sr	-4.4	227	27.9	-7.1	-18	28.1	-11.2
17	177	32.6	-4.9	-20	51.0	11.8	sr	-0.3	201	22.5	-25.1	0.9	-22	48.3	-5.7	-0.5	sr	-4.4	227	20.9	-7.5	-18	39.3	-10.9
18	177	27.7	-4.8	-20	39.2	12.2	sr	-0.2	200	57.4	-26.7	0.8	-22	54.0	-4.8	-0.5	sr	-4.4	227	13.3	-7.9	-18	50.2	-10.5
19	177	22.9	-4.6	-20	27.0	12.5	sr	-0.2	200	30.7	-28.1	0.7	-22	58.8	-3.8	-0.5	sr	-4.4	227	5.4	-8.4	-19	0.7	-10.3
20	177	18.3	-4.4	-20	14.5	13.0	sr	-0.3	200	2.6	-29.4	0.7	-23	2.6	-2.7	-0.5	sr	-4.4	226	57.0	-8.8	-19	11.0	-9.9
21	177	13.9	-4.2	-20	1.5	13.3	sr	-0.3	199	33.2	-30.6	0.6	-23	5.3	-1.6	-0.5	sr	-4.3	226	48.2	-9.2	-19	20.9	-9.6
22	177	9.7	-4.0	-19	48.2	13.7	sr	-0.3	199	2.5	-31.7	0.6	-23	6.9	-0.5	-0.6	sr	-4.3	226	39.0	-9.6	-19	30.5	-9.2
23	177	5.7	-3.8	-19	34.5	14.1	sr	-0.3	198	30.8	-32.8	0.5	-23	7.4	0.7	-0.6	sr	-4.3	226	29.4	-10.0	-19	39.7	-8.8
24	177	1.8	-3.6	-19	20.4	14.4	sr	-0.3	197	58.0	-33.7	0.5	-23	6.7	1.8	-0.5	sr	-4.3	226	19.4	-10.4	-19	48.5	-8.4
25	176	58.2	-3.4	-19	6.0	14.8	sr	-0.3	197	24.4	-34.5	0.4	-23	4.9	3.1	-0.7	sr	-4.3	226	9.0	-10.8	-19	56.9	-8.0
26	176	54.7	-3.3	-18	51.2	15.1	sr	-0.3	196	49.8	-35.3	0.4	-23	1.8	4.3	-0.6	sr	-4.3	225	58.2	-11.1	-20	4.9	-7.5
27	176	51.5	-3.1	-18	36.1	15.5	sr	-0.3	196	14.5	-36.0	0.4	-22	57.5	5.5	-0.6	sr	-4.3	225	47.1	-11.5	-20	12.4	-7.2
28	176	48.4	-2.9	-18	20.6	15.8	sr	-0.3	195	38.4	-36.7	0.3	-22	52.0	6.8	-0.7	sr	-4.3	225	35.7	-11.8	-20	19.6	-6.7
29	176	45.6	-2.7	-18	4.8	16.1	sr	-0.3	195	1.7	-37.3	0.3	-22	45.2	8.1	-0.7	sr	-4.3	225	23.9	-12.1	-20	26.3	-6.2
30	176	42.9	-2.5	-17	48.7	16.4	sr	-0.3	194	24.4	-37.9	0.3	-22	37.1	9.4	-0.6	sr	-4.3	225	11.8	-12.4	-20	32.5	-5.8
Jan 31	176	40.4	-2.3	-17	32.3	16.8	sr	-0.3	193	46.5	-38.4	0.3	-22	27.7	10.6	-0.6	sr	-4.3	224	59.4	-12.7	-20	38.3	-5.3
Feb 1	176	38.2	-2.1	-17	15.5	17.0	sr	-0.4	193	8.1	-38.9	0.2	-22	17.1	12.0	-0.7	sr	-4.3	224	46.7	-13.0	-20	43.6	-4.8
2	176	36.1	-1.9	-16	58.5	17.4	sr	-0.4	192	29.3	-39.3	0.2	-22	5.1	13.3	-0.7	sr	-4.3	224	33.7	-13.2	-20	48.4	-4.3
3	176	34.3	-1.7	-16	41.1	17.6	sr	-0.4	191	50.0	-39.7	0.2	-21	51.8	14.7	-0.7	sr	-4.3	224	20.5	-13.5	-20	52.7	-3.8
4	176	32.6	-1.4	-16	23.5	18.0	sr	-0.4	191	10.3	-40.1	0.2	-21	37.1	16.0	-0.7	sr	-4.3	224	7.0	-13.7	-20	56.5	-3.3
5	176	31.2	-1.2	-16	5.5	18.2	sr	-0.5	190	30.3	-40.4	0.2	-21	21.1	17.4	-0.7	sr	-4.2	223	53.3	-13.9	-20	59.8	-2.7
6	176	29.9	-1.0	-15	47.3	18.4	sr	-0.5	189	49.9	-40.7	0.2	-21	3.7	18.7	-0.7	sr	-4.2	223	39.4	-14.1	-21	2.5	-2.3
7	176	28.9	-0.8	-15	28.9	18.8	sr	-0.5	189	9.2	-41.0	0.1	-20	45.0	20.1	-0.7	sr	-4.2	223	25.3	-14.3	-21	4.8	-1.7
8	176	28.0	-0.6	-15	10.1	19.0	sr	-0.5	188	28.2	-41.3	0.1	-20	24.9	21.5	-0.7	sr	-4.2	223	11.0	-14.5	-21	6.5	-1.1
9	176	27.4	-0.4	-14	51.1	19.2	sr	-0.6	187	46.9	-41.5	0.1	-20	3.4	22.9	-0.7	sr	-4.2	222	56.5	-14.6	-21	7.6	-0.6
10	176	27.0	-0.2	-14	31.9	19.5	sr	-0.6	187	5.4	-41.8	0.1	-19	40.5	24.2	-0.7	sr	-4.2	222	41.9	-14.8	-21	8.2	-0.1
11	176	26.7	0.0	-14	12.4	19.7	sr	-0.7	186	23.6	-42.0	0.1	-19	16.3	25.7	-0.8	sr	-4.2	222	27.1	-14.9	-21	8.3	0.5
12	176	26.7	0.2	-13	52.7	20.0	sr	-0.7	185	41.6	-42.2	0.1	-18	50.6	27.0	-0.7	sr	-4.2	222	12.2	-15.0	-21	7.8	1.0
13	176	26.8	0.3	-13	32.7	20.1	sr	-0.8	184	59.4	-42.4	0.1	-18	23.6	28.4	-0.7	sr	-4.2	221	57.1	-15.2	-21	6.8	1.7
14	176	27.2	0.5	-13	12.6	20.4	sr	-0.8	184	17.0	-42.6	0.1	-17	55.2	29.9	-0.8	sr	-4.2	221	41.9	-15.3	-21	5.1	2.1
15	176	27.7	0.7	-12	52.2	20.6		-0.9	183	34.4	-42.8	0.1	-17	25.3	31.2	-0.6	sr	-4.2	221	26.7	-15.3	-21	3.0	2.8
16	176	28.4	0.9	-12	31.6	20.8		-0.9	182	51.5	-43.0	0.1	-16	54.1	32.6	-0.7	sr	-4.2	221	11.4	-15.4	-21	0.2	3.3
17	176	29.3	1.1	-12	10.8	21.0		-1.0	182	8.5	-43.2	0.1	-16	21.5	34.1	-0.8	sr	-4.2	220	56.0	-15.5	-20	56.9	3.9
18	176	30.4	1.3	-11	49.8	21.1		-1.1	181	25.3	-43.4	0.1	-15	47.4	35.4	-0.6	sr	-4.2	220	40.5	-15.5	-20	53.0	4.5
19	176	31.7	1.4	-11	28.7	21.4		-1.1	180	41.9	-43.6	0.1	-15	12.0	36.8	-0.7	sr	-4.2	220	25.0	-15.5	-20	48.5	5.1
20	176	33.1	1.6	-11	7.3	21.5		-1.2	179	58.3	-43.8	0.1	-14	35.2	38.2	-0.7	sr	-4.2	220	9.5	-15.6	-20	43.4	5.6
21	176	34.7	1.8	-10	45.8	21.7		-1.3	179	14.5	-44.0	0.1	-13	57.0	39.6	-0.7	sr	-4.2	219	53.9	-15.6	-20	37.8	6.2
22	176	36.4	1.9	-10	24.1	21.9		-1.4	178	30.6	-44.2	0.1	-13	17.4	41.0	-0.7	sr	-4.1	219	38.3	-15.6	-20	31.6	6.8
23	176	38.3	2.1	-10	2.2	22.0		-1.5	177	46.4	-44.3	0.1	-12	36.4	42.3	-0.6	sr	-4.1	219	22.8	-15.5	-20	24.8	7.3
24	176	40.4	2.2	-9	40.2	22.1		-1.5	177	2.1	-44.5	0.1	-11	54.1	43.6	-0.6	sr	-4.1	219	7.2	-15.5	-20	17.5	8.0
25	176	42.6	2.3	-9	18.1	22.3		-1.6	176	17.6	-44.6	0.1	-11	10.5	44.9	-0.6	sr	-4.1	218	51.7	-15.5	-20	9.5	8.5
26	176	44.9	2.5	-8	55.8	22.5		-1.6	175	32.9	-44.8	0.1	-10	25.6	46.3	-0.7	sr	-4.1	218	36.3	-15.4	-20	1.0	9.0
27	176	47.4	2.6	-8	33.3	22.5		-1.7	174	48.2	-44.9	0.1	-9	39.3	47.4	-0.5	sr	-4.1	218	20.9	-15.3	-19	52.0	9.7
Feb 28	176	50.0	2.7	-8	10.8	22.7		-1.6	174	3.3	-44.9	0.0	-8											

2011

Sun and Planets

Date	Mars					Jupiter					Saturn				
	vis	GHA	d	Dec	d	vis	GHA	d	Dec	d	vis	GHA	d	Dec	d
Jan	1	y 1.2 170 15.5	9.1	-23 9.6	6.3	y -2.3 102 57.9	51.8	-2 32.0	3.4	y 1.2 264 1.4	56.6	-4 19.4	-0.7		
	2	y 1.2 170 24.6	9.1	-23 3.3	6.4	y -2.3 103 49.6	51.6	-2 28.6	3.5	y 1.2 264 58.1	56.7	-4 20.1	-0.7		
	3	y 1.2 170 33.7	9.2	-22 56.9	6.7	y -2.3 104 41.3	51.5	-2 25.1	3.6	y 1.2 265 54.8	56.8	-4 20.8	-0.7		
	4	y 1.2 170 42.9	9.2	-22 50.2	7.0	y -2.3 105 32.8	51.4	-2 21.5	3.6	y 1.2 266 51.6	56.9	-4 21.5	-0.6		
	5	y 1.2 170 52.1	9.3	-22 43.2	7.3	y -2.3 106 24.1	51.2	-2 17.9	3.6	y 1.2 267 48.5	57.0	-4 22.1	-0.6		
	6	y 1.2 171 1.4	9.3	-22 35.9	7.5	y -2.3 107 15.4	51.1	-2 14.3	3.8	y 1.2 268 45.5	57.1	-4 22.7	-0.5		
	7	1.2 171 10.7	9.4	-22 28.4	7.7	y -2.3 108 6.5	51.0	-2 10.5	3.7	y 1.2 269 42.5	57.2	-4 23.2	-0.6		
	8	1.2 171 20.1	9.4	-22 20.7	8.0	y -2.3 108 57.5	50.8	-2 6.8	3.8	y 1.2 270 39.7	57.3	-4 23.8	-0.4		
	9	1.2 171 29.5	9.5	-22 12.7	8.3	y -2.3 109 48.3	50.7	-2 3.0	3.9	y 1.2 271 37.0	57.4	-4 24.2	-0.4		
	10	1.2 171 39.0	9.6	-22 4.4	8.5	y -2.3 110 39.0	50.6	-1 59.1	3.9	y 1.2 272 34.4	57.5	-4 24.6	-0.4		
	11	1.2 171 48.6	9.6	-21 55.9	8.8	y -2.3 111 29.6	50.5	-1 55.2	4.0	y 1.2 273 31.9	57.6	-4 25.0	-0.4		
	12	1.2 171 58.2	9.7	-21 47.1	9.0	y -2.3 112 20.1	50.4	-1 51.2	4.0	y 1.2 274 29.4	57.7	-4 25.4	-0.3		
	13	1.2 172 7.9	9.8	-21 38.1	9.2	y -2.3 113 10.5	50.2	-1 47.2	4.1	y 1.2 275 27.1	57.8	-4 25.7	-0.2		
	14	1.2 172 17.7	9.9	-21 28.9	9.5	y -2.3 114 0.7	50.1	-1 43.1	4.1	y 1.2 276 24.9	57.9	-4 25.9	-0.2		
	15	1.2 172 27.6	9.9	-21 19.4	9.7	y -2.3 114 50.9	50.0	-1 39.0	4.2	y 1.2 277 22.7	58.0	-4 26.1	-0.2		
	16	1.2 172 37.5	10.0	-21 9.7	10.0	y -2.3 115 40.9	49.9	-1 34.8	4.2	y 1.2 278 20.7	58.1	-4 26.3	-0.1		
	17	1.1 172 47.5	10.1	-20 59.7	10.2	y -2.2 116 30.8	49.8	-1 30.6	4.2	y 1.2 279 18.8	58.2	-4 26.4	-0.1		
	18	1.1 172 57.6	10.2	-20 49.5	10.4	y -2.2 117 20.6	49.7	-1 26.4	4.3	y 1.1 280 16.9	58.3	-4 26.5	-0.1		
	19	1.1 173 7.8	10.3	-20 39.1	10.7	y -2.2 118 10.3	49.6	-1 22.1	4.4	y 1.1 281 15.2	58.4	-4 26.6	0.0		
	20	1.1 173 18.1	10.4	-20 28.4	10.9	y -2.2 118 59.8	49.5	-1 17.7	4.4	y 1.1 282 13.5	58.5	-4 26.6	0.0		
	21	1.1 173 28.4	10.4	-20 17.5	11.1	y -2.2 119 49.3	49.4	-1 13.3	4.4	y 1.1 283 12.0	58.6	-4 26.6	0.1		
	22	1.1 173 38.9	10.5	-20 6.4	11.3	y -2.2 120 38.7	49.3	-1 8.9	4.5	y 1.1 284 10.5	58.7	-4 26.5	0.1		
	23	1.1 173 49.4	10.6	-19 55.1	11.6	y -2.2 121 28.0	49.2	-1 4.4	4.5	y 1.1 285 9.2	58.8	-4 26.4	0.1		
	24	1.1 174 0.0	10.7	-19 43.5	11.8	y -2.2 122 17.1	49.1	-0 59.9	4.5	y 1.1 286 8.0	58.9	-4 26.3	0.2		
	25	1.1 174 10.8	10.8	-19 31.7	12.0	y -2.2 123 6.2	49.0	-0 55.4	4.6	y 1.1 287 6.8	59.0	-4 26.1	0.3		
	26	1.1 174 21.6	10.9	-19 19.7	12.2	y -2.2 123 55.2	48.9	-0 50.8	4.7	y 1.1 288 5.8	59.1	-4 25.8	0.2		
	27	1.1 174 32.5	11.0	-19 7.5	12.4	y -2.2 124 44.1	48.8	-0 46.1	4.6	y 1.1 289 4.8	59.2	-4 25.6	0.3		
	28	1.1 174 43.5	11.1	-18 55.1	12.6	y -2.2 125 32.9	48.7	-0 41.5	4.7	y 1.1 290 4.0	59.3	-4 25.3	0.4		
	29	1.1 174 54.6	11.2	-18 42.5	12.8	y -2.2 126 21.6	48.6	-0 36.8	4.8	y 1.1 291 3.2	59.4	-4 24.9	0.4		
	30	1.1 175 5.8	11.3	-18 29.7	13.1	y -2.2 127 10.2	48.5	-0 32.0	4.7	y 1.1 292 2.6	59.5	-4 24.5	0.4		
Jan 31	1.1 175 17.1	11.4	-18 16.6	13.2	y -2.2 127 58.7	48.4	-0 27.3	4.9	y 1.1 293 2.0	59.6	-4 24.1	0.5			
Feb	1	1.1 175 28.5	11.5	-18 3.4	13.4	y -2.2 128 47.1	48.3	-0 22.4	4.8	y 1.1 294 1.6	59.7	-4 23.6	0.5		
	2	1.1 175 40.0	11.6	-17 50.0	13.6	y -2.2 129 35.4	48.3	-0 17.6	4.9	y 1.1 295 1.2	59.8	-4 23.1	0.5		
	3	1.1 175 51.6	11.7	-17 36.4	13.8	y -2.2 130 23.7	48.2	-0 12.7	4.9	y 1.1 296 1.0	59.9	-4 22.6	0.6		
	4	1.1 176 3.3	11.8	-17 22.6	14.0	y -2.2 131 11.9	48.1	-0 7.8	4.9	y 1.1 297 0.9	60.0	-4 22.0	0.7		
	5	1.1 176 15.2	11.9	-17 8.6	14.1	y -2.2 131 60.0	48.0	-0 2.9	5.0	y 1.1 298 0.8	60.1	-4 21.3	0.6		
	6	1.1 176 27.1	12.0	-16 54.5	14.4	y -2.2 132 48.0	47.9	0 2.1	5.0	y 1.0 299 0.9	60.1	-4 20.7	0.7		
	7	1.1 176 39.1	12.1	-16 40.1	14.5	y -2.2 133 35.9	47.9	0 7.1	5.1	y 1.0 300 1.0	60.2	-4 20.0	0.8		
	8	1.1 176 51.3	12.2	-16 25.6	14.7	y -2.1 134 23.8	47.8	0 12.2	5.0	y 1.0 301 1.3	60.3	-4 19.2	0.8		
	9	1.1 177 3.5	12.4	-16 10.9	14.8	y -2.1 135 11.6	47.7	0 17.2	5.1	y 1.0 302 1.6	60.4	-4 18.4	0.8		
	10	1.1 177 15.9	12.5	-15 56.1	15.1	y -2.1 135 59.3	47.6	0 22.3	5.1	y 1.0 303 2.0	60.5	-4 17.6	0.8		
	11	1.1 177 28.4	12.6	-15 41.0	15.1	y -2.1 136 46.9	47.6	0 27.4	5.2	y 1.0 304 2.6	60.6	-4 16.8	0.9		
	12	1.1 177 40.9	12.7	-15 25.9	15.4	y -2.1 137 34.5	47.5	0 32.6	5.1	y 1.0 305 3.2	60.7	-4 15.9	0.9		
	13	1.1 177 53.6	12.8	-15 10.5	15.5	y -2.1 138 22.0	47.4	0 37.7	5.2	y 1.0 306 3.9	60.8	-4 15.0	1.0		
	14	1.1 178 6.4	12.9	-14 55.0	15.6	y -2.1 139 9.4	47.4	0 42.9	5.3	y 1.0 307 4.7	60.9	-4 14.0	1.0		
	15	1.1 178 19.3	13.0	-14 39.4	15.8	y -2.1 139 56.8	47.3	0 48.2	5.2	y 1.0 308 5.6	61.0	-4 13.0	1.0		
	16	1.1 178 32.3	13.1	-14 23.6	15.9	y -2.1 140 44.1	47.2	0 53.4	5.3	y 1.0 309 6.6	61.1	-4 12.0	1.1		
	17	1.1 178 45.4	13.2	-14 7.7	16.1	y -2.1 141 31.3	47.2	0 58.7	5.2	y 1.0 310 7.6	61.2	-4 10.9	1.1		
	18	1.1 178 58.6	13.3	-13 51.6	16.2	y -2.1 142 18.5	47.1	1 3.9	5.4	y 1.0 311 8.8	61.2	-4 9.8	1.1		
	19	1.1 179 11.9	13.4	-13 35.4	16.4	y -2.1 143 5.6	47.1	1 9.3	5.3	y 1.0 312 10.1	61.3	-4 8.7	1.2		
	20	1.1 179 25.3	13.5	-13 19.0	16.4	y -2.1 143 52.7	47.0	1 14.6	5.3	y 1.0 313 11.4	61.4	-4 7.5	1.2		
	21	1.1 179 38.8	13.6	-13 2.6	16.7	y -2.1 144 39.7	47.0	1 19.9	5.4	y 1.0 314 12.8	61.5	-4 6.3	1.2		
	22	1.1 179 52.4	13.7	-12 45.9	16.7	y -2.1 145 26.7	46.9	1 25.3	5.4	y 1.0 315 14.3	61.6	-4 5.1	1.2		
	23	1.1 180 6.2	13.8	-12 29.2	16.9	y -2.1 146 13.6	46.8	1 30.7	5.4	y 0.9 316 15.9	61.7	-4 3.9	1.3		
	24	1.1 180 20.0	13.9	-12 12.3	16.9	y -2.1 147 0.4	46.8	1 36.1	5.4	y 0.9 317 17.6	61.7	-4 2.6	1.3		
	25	1.1 180 33.9	14.0	-11 55.4	17.1	y -2.1 147 47.2	46.7	1 41.5	5.4	y 0.9 318 19.3	61.8	-4 1.3	1.4		
	26	1.1 180 47.9	14.1	-11 38.3	17.2	y -2.1 148 33.9	46.7	1 46.9	5.5	y 0.9 319 21.1	61.9	-3 59.9	1.4		
	27	1.1 181 1.9	14.2	-11 21.1	17.3	y -2.1 149 20.6	46.6	1 52.4	5.5	y 0.9 320 23.0	62.0	-3 58.5	1.4		
	Feb 28	1.1 181 16.1	14.3	-11 3.8	17.4	y -2.1 150 7.3	46.6	1 57.9	5.5	y 0.9 321 25.0	62.1	-3 57.1	1.4		
	Mar 1	1.1 181 30.4	14.4	-10 46.4	17.6	y -2.1 150 53.9	46.5	2 3.4	5.5	y 0.9 322 27.1	62.1	-3 55.7	1.4		
	Mar	2	1.1 181 44.7	14.5	-10 28.8	17.6	y -2.1 151 40.4	46.5	2 8.9	5.5	y 0.9 323 29.2	62.2	-3 54.3	1.5	
3		1.1 181 59.2	14.5	-10 11.2	17.7	y -2.1 152 26.9	46.5	2 14.4	5.5	y 0.9 324 31.4	62.3	-3 52.8	1.5		
4		1.1 182 13.7	14.6	-9 53.5	17.8	y -2.1 153 13.3	46.4	2 19.9	5.5	y 0.9 325 33.7	62.3	-3 51.3	1.5		
5		1.1 182 28.4	14.7	-9 35.7	17.8	y -2.1 153 59.8	46.4	2 25.4	5.6	y 0.9 326 36.0	62.4	-3 49.8	1.6		
Mar 6	1.1 182 43.1	14.8	-9 17.9	18.0	y -2.1 154 46.1	46.3	2 31.0	5.5	y 0.9 327 38.4	62.5	-3 48.2	1.6			

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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	11.8	3.5	-5	29.8	23.3	ss	-1.4	168	51.3	-43.0	-0.3	-2	50.6	54.7	-0.3	sr	-4.1	216	20.9	-14.4	-18	19.5	13.9
8	177	15.3	3.6	-5	6.5	23.4	ss	-1.4	168	8.3	-42.1	-0.4	-1	55.9	54.9	-0.1	sr	-4.1	216	6.5	-14.3	-18	5.6	14.5
9	177	19.0	3.7	-4	43.1	23.5	ss	-1.3	167	26.1	-41.0	-0.6	-1	1.0	55.1	-0.1	sr	-4.1	215	52.2	-14.1	-17	51.1	15.0
10	177	22.7	3.8	-4	19.6	23.5	ss	-1.3	166	45.1	-39.7	-0.7	-0	5.9	55.0	0.0	sr	-4.1	215	38.1	-14.0	-17	36.1	15.5
11	177	26.5	3.9	-3	56.1	23.6	ss	-1.3	166	5.4	-38.0	-0.8	0	49.1	54.7	0.2	sr	-4.1	215	24.2	-13.8	-17	20.6	16.0
12	177	30.4	4.0	-3	32.5	23.6	ss	-1.2	165	27.4	-36.0	-1.0	1	43.8	54.2	0.3	sr	-4.1	215	10.4	-13.6	-17	4.6	16.4
13	177	34.4	4.1	-3	8.9	23.6	ss	-1.2	164	51.5	-33.6	-1.2	2	38.0	53.3	0.4	sr	-4.1	214	56.8	-13.4	-16	48.2	17.0
14	177	38.5	4.1	-2	45.3	23.7	ss	-1.1	164	17.8	-30.9	-1.4	3	31.3	52.3	0.5	sr	-4.1	214	43.3	-13.3	-16	31.2	17.4
15	177	42.7	4.2	-2	21.6	23.7	ss	-1.0	163	47.0	-27.7	-1.6	4	23.6	50.9	0.7	sr	-4.0	214	30.1	-13.1	-16	13.8	17.9
16	177	46.9	4.3	-1	57.9	23.7	ss	-1.0	163	19.2	-24.2	-1.8	5	14.5	49.3	0.8	sr	-4.0	214	17.0	-12.9	-15	55.9	18.3
17	177	51.1	4.3	-1	34.2	23.7	ss	-0.9	162	55.1	-20.2	-2.0	6	3.8	47.4	0.9	sr	-4.0	214	4.1	-12.7	-15	37.6	18.8
18	177	55.5	4.4	-1	10.5	23.7	ss	-0.8	162	34.8	-15.8	-2.2	6	51.2	45.1	1.1	sr	-4.0	213	51.4	-12.5	-15	18.8	19.2
19	177	59.8	4.4	-0	46.8	23.7	ss	-0.7	162	19.0	-11.1	-2.4	7	36.3	42.7	1.2	sr	-4.0	213	38.9	-12.3	-14	59.6	19.6
20	178	4.2	4.5	-0	23.1	23.7	ss	-0.6	162	8.0	-5.9	-2.6	8	19.0	40.0	1.4	sr	-4.0	213	26.6	-12.1	-14	40.0	20.1
21	178	8.7	4.5	0	0.6	23.7	ss	-0.4	162	2.0	-0.4	-2.7	8	59.0	37.1	1.5	sr	-4.0	213	14.5	-11.9	-14	19.9	20.4
22	178	13.2	4.5	0	24.3	23.7	ss	-0.3	162	1.6	5.4	-2.9	9	36.1	34.0	1.6	sr	-4.0	213	2.6	-11.8	-13	59.5	20.9
23	178	17.7	4.5	0	48.0	23.7	ss	-0.1	162	7.0	11.5	-3.0	10	10.1	30.7	1.6	sr	-4.0	212	50.8	-11.6	-13	38.6	21.2
24	178	22.2	4.5	1	11.7	23.6	ss	0.0	162	18.5	17.8	-3.2	10	40.8	27.1	1.8	sr	-4.0	212	39.2	-11.4	-13	17.4	21.6
25	178	26.7	4.5	1	35.3	23.6	ss	0.2	162	36.3	24.4	-3.3	11	7.9	23.6	1.8	sr	-4.0	212	27.9	-11.2	-12	55.8	22.0
26	178	31.2	4.5	1	58.9	23.5	ss	0.4	163	0.7	31.0	-3.3	11	31.5	19.7	2.0	sr	-4.0	212	16.7	-11.0	-12	33.8	22.4
27	178	35.8	4.5	2	22.4	23.5	ss	0.6	163	31.7	37.7	-3.4	11	51.2	15.9	1.9	sr	-4.0	212	5.6	-10.8	-12	11.4	22.6
28	178	40.3	4.5	2	45.9	23.5	ss	0.9	164	9.4	44.5	-3.4	12	7.1	11.9	2.0	sr	-4.0	211	54.8	-10.7	-11	48.8	23.1
29	178	44.8	4.5	3	9.4	23.4	ss	1.1	164	53.9	51.2	-3.3	12	19.0	7.9	2.0	sr	-4.0	211	44.2	-10.5	-11	25.7	23.3
30	178	49.3	4.5	3	32.8	23.3	ss	1.3	165	45.1	57.7	-3.3	12	26.9	3.8	2.0	sr	-4.0	211	33.7	-10.3	-11	2.4	23.7
Mar 31	178	53.8	4.5	3	56.1	23.2	ss	1.6	166	42.8	64.1	-3.2	12	30.7	-0.3	2.1	sr	-4.0	211	23.4	-10.1	-10	38.7	23.9
Apr 1	178	58.3	4.4	4	19.3	23.2	ss	1.8	167	46.9	70.1	-3.0	12	30.4	-4.3	2.0	sr	-4.0	211	13.3	-10.0	-10	14.8	24.3
2	179	2.7	4.4	4	42.5	23.1	ss	2.0	168	57.0	75.7	-2.8	12	26.1	-8.2	2.0	sr	-4.0	211	3.3	-9.8	-9	50.5	24.5
3	179	7.2	4.4	5	5.6	23.0	ss	2.3	170	12.6	80.8	-2.6	12	17.9	-12.1	1.9	sr	-4.0	210	53.5	-9.6	-9	26.0	24.6
4	179	11.5	4.3	5	28.6	22.9	ss	2.5	171	33.5	85.4	-2.3	12	5.8	-15.7	1.8	sr	-4.0	210	43.9	-9.5	-9	1.2	25.1
5	179	15.9	4.3	5	51.5	22.8	ss	2.7	172	58.8	89.3	-2.0	11	50.1	-19.0	1.6	sr	-4.0	210	34.4	-9.3	-8	36.1	25.3
6	179	20.2	4.2	6	14.3	22.7	ss	2.9	174	28.1	92.5	-1.6	11	31.1	-22.1	1.6	sr	-4.0	210	25.1	-9.2	-8	10.8	25.6
7	179	24.4	4.2	6	37.0	22.5	ss	3.2	176	0.5	94.9	-1.2	11	9.0	-24.8	1.3	sr	-4.0	210	15.9	-9.1	-7	45.2	25.8
8	179	28.6	4.1	6	59.5	22.5	ss	3.2	177	35.4	96.5	-0.8	10	44.2	-27.1	1.2	sr	-4.0	210	6.8	-8.9	-7	19.4	26.0
9	179	32.8	4.1	7	22.0	22.3	ss	3.1	179	11.9	97.3	-0.4	10	17.1	-28.9	0.9	sr	-4.0	209	57.9	-8.8	-6	53.4	26.1
10	179	36.9	4.0	7	44.3	22.2	ss	3.0	180	49.3	97.4	0.0	9	48.2	-30.2	0.7	sr	-4.0	209	49.1	-8.7	-6	27.3	26.4
11	179	40.9	4.0	8	6.5	22.1	ss	2.9	182	26.6	96.6	0.4	9	18.0	-31.1	0.5	sr	-4.0	209	40.4	-8.6	-6	0.9	26.6
12	179	44.8	3.9	8	28.6	21.9	ss	2.8	184	3.3	95.2	0.7	8	46.9	-31.4	0.1	sr	-4.0	209	31.9	-8.5	-5	34.3	26.8
13	179	48.7	3.8	8	50.5	21.8	ss	2.7	185	38.4	93.1	1.1	8	15.5	-31.3	0.0	sr	-4.0	209	23.4	-8.4	-5	7.5	26.9
14	179	52.6	3.7	9	12.3	21.6	ss	2.6	187	11.5	90.4	1.3	7	44.2	-30.7	-0.3	sr	-3.9	209	15.1	-8.3	-4	40.6	27.0
15	179	56.3	3.7	9	33.9	21.4	sr	2.5	188	41.9	87.2	1.6	7	13.5	-29.7	-0.5	sr	-3.9	209	6.8	-8.2	-4	13.6	27.2
16	179	60.0	3.6	9	55.3	21.3	sr	2.4	190	9.1	83.6	1.8	6	43.8	-28.4	-0.6	sr	-3.9	208	58.6	-8.1	-3	46.4	27.3
17	180	3.5	3.5	10	16.6	21.1	sr	2.3	191	32.7	79.7	2.0	6	15.4	-26.6	-0.9	sr	-3.9	208	50.5	-8.1	-3	19.1	27.5
18	180	7.0	3.4	10	37.7	21.0	sr	2.2	192	52.4	75.5	2.1	5	48.8	-24.6	-1.0	sr	-3.9	208	42.4	-8.0	-2	51.6	27.5
19	180	10.4	3.3	10	58.7	20.7	sr	2.1	194	8.0	71.2	2.2	5	24.2	-22.4	-1.1	sr	-3.9	208	34.4	-8.0	-2	24.1	27.7
20	180	13.7	3.2	11	19.4	20.6	sr	2.0	195	19.2	66.8	2.2	5	1.8	-20.1	-1.1	sr	-3.9	208	26.5	-7.9	-1	56.4	27.7
21	180	16.9	3.1	11	40.0	20.4	sr	1.9	196	26.0	62.3	2.2	4	41.7	-17.6	-1.3	sr	-3.9	208	18.6	-7.9	-1	28.7	27.8
22	180	19.9	3.0	12	0.4	20.2	sr	1.8	197	28.3	57.9	2.2	4	24.1	-15.0	-1.3	sr	-3.9	208	10.7	-7.9	-1	0.9	27.9
23	180	22.9	2.8	12	20.6	20.0	sr	1.7	198	26.2	53.4	2.2	4	9.1	-12.5	-1.3	sr	-3.9	208	2.8	-7.9	-0	33.0	27.9
24	180	25.7	2.7	12	40.6	19.7	sr	1.6	199	19.6	49.1	2.2	3	56.6	-9.8	-1.3	sr	-3.9	207	54.9	-7.9	-0	5.1	27.9
25	180	28.4	2.6	13	0.3	19.6	sr	1.5	200	8.7	44.9	2.1	3	46.8	-7.2	-1.3	sr	-3.9	207	47.1	-7.9	0	22.8	28.0
26	180	31.0	2.5	13	19.9	19.4	sr	1.4	200	53.6	40.8	2.1	3	39.6	-4.6	-1.3	sr	-3.9	207	39.2	-7.9	0	50.8	28.0
27	180	33.5	2.3	13	39.3	19.1	sr	1.3	201	34.4	36.8	2.0	3	35.0	-2.1	-1.3	sr	-3.9	207	31.3	-7.9	1	18.8	28.0
28	180	35.8	2.2	13	58.4	18.9	sr	1.2	202	11.2	33.0	1.9	3	32.9	0.3	-1.2	sr	-3.9	207	23.4	-7.9	1	46.8	28.0
29	180	38.0	2.1	14	17.3	18.6	sr	1.1	202	44.2	29.3	1.8	3	33.2	2.8	-1.3	sr	-3.9	207	15.5	-8.0	2	14.8	28.0
Apr 30	180	40.1	1.9	14	35.9	18.5	sr	1.0	203	13.6	25.8	1.8	3	36.0	5.0	-1.1	sr	-3.9	207	7.5	-8.0	2	42.8	28.0
May 1	180	42.0	1.8	14	54.4	18.1	sr	0.9	203	39.3	22.4	1.7	3	41.0	7.3	-1.2	sr	-3.9	206	59.5	-8.1	3	10.8	27.9
2	180	43.8	1.7	15	12.5	18.0	sr	0.9	204	1.8	19.2	1.6	3	48.3	9.4	-1.0	sr	-3.9	206	51.4	-8.2	3	38.7	27.9
3	180	45.5	1.5	15	30.5	17.6	sr	0.8	204	20.9	16.0	1.6	3	57.7	11.5	-1.1	sr	-3.9	206	43.2	-8.2	4	6.6	27.8
4	180	47.0	1.4	15	48.1	17.4	sr	0.7	204	36.9	13.0	1.5	4	9.2	13.4	-								

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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'									
Mar 7	1.1	182	57.9	14.9	-8	59.9	18.1	y	-2.1	155	32.5	46.3	2	36.5	5.6	y	0.9	328	40.9	62.5	-3	46.6	1.6	
	1.1	183	12.7	15.0	-8	41.8	18.1	y	-2.1	156	18.8	46.3	2	42.1	5.6	y	0.9	329	43.4	62.6	-3	45.0	1.6	
8	1.1	183	27.7	15.0	-8	23.7	18.2	y	-2.1	157	5.0	46.2	2	47.7	5.6	y	0.9	330	46.0	62.7	-3	43.4	1.6	
9	1.1	183	42.7	15.1	-8	5.5	18.2	y	-2.1	157	51.2	46.2	2	53.3	5.6	y	0.9	331	48.7	62.7	-3	41.8	1.7	
10	1.1	183	57.9	15.2	-7	47.3	18.3	y	-2.1	158	37.4	46.2	2	58.9	5.6	y	0.8	332	51.4	62.8	-3	40.1	1.6	
11	1.1	184	13.0	15.3	-7	29.0	18.4	y	-2.1	159	23.6	46.1	3	4.5	5.6	y	0.8	333	54.1	62.8	-3	38.5	1.7	
12	1.1	184	28.3	15.3	-7	10.6	18.5	y	-2.1	160	9.7	46.1	3	10.1	5.6	y	0.8	334	57.0	62.9	-3	36.8	1.7	
13	1.1	184	43.7	15.4	-6	52.1	18.5	y	-2.1	160	55.8	46.1	3	15.7	5.6	y	0.8	335	59.8	62.9	-3	35.1	1.7	
14	1.1	184	59.1	15.5	-6	33.6	18.5	y	-2.1	161	41.9	46.0	3	21.3	5.6	y	0.8	337	2.7	63.0	-3	33.4	1.8	
15	1.1	185	14.6	15.6	-6	15.1	18.6	y	-2.1	162	27.9	46.0	3	26.9	5.6	y	0.8	338	5.7	63.0	-3	31.6	1.7	
16	y	1.1	185	30.1	15.6	-5	56.5	18.6	y	-2.1	163	13.9	46.0	3	32.5	5.7	y	0.8	339	8.7	63.0	-3	29.9	1.8
17	y	1.2	185	45.7	15.7	-5	37.9	18.7	y	-2.1	163	59.9	46.0	3	38.2	5.6	y	0.8	340	11.7	63.1	-3	28.1	1.7
18	y	1.2	186	1.4	15.7	-5	19.2	18.7	y	-2.1	164	45.8	45.9	3	43.8	5.6	y	0.8	341	14.8	63.1	-3	26.4	1.8
19	y	1.2	186	17.2	15.8	-5	0.5	18.8	y	-2.1	165	31.8	45.9	3	49.4	5.7	y	0.8	342	18.0	63.2	-3	24.6	1.8
20	y	1.2	186	33.0	15.9	-4	41.7	18.8	y	-2.1	166	17.7	45.9	3	55.1	5.6	y	0.8	343	21.1	63.2	-3	22.8	1.8
21	y	1.2	186	48.8	15.9	-4	22.9	18.8	y	-2.1	167	3.6	45.9	4	0.7	5.6	y	0.8	344	24.3	63.2	-3	21.0	1.8
22	y	1.2	187	4.7	16.0	-4	4.1	18.9	y	-2.1	167	49.4	45.8	4	6.3	5.7	y	0.8	345	27.5	63.3	-3	19.2	1.8
23	y	1.2	187	20.7	16.0	-3	45.2	18.8	y	-2.1	168	35.3	45.8	4	12.0	5.6	y	0.8	346	30.8	63.3	-3	17.4	1.8
24	y	1.2	187	36.7	16.1	-3	26.4	18.9	y	-2.1	169	21.1	45.8	4	17.6	5.6	y	0.8	347	34.1	63.3	-3	15.6	1.9
25	y	1.2	187	52.8	16.1	-3	7.5	18.9	y	-2.1	170	6.9	45.8	4	23.2	5.7	y	0.8	348	37.4	63.3	-3	13.7	1.8
26	y	1.2	188	8.9	16.1	-2	48.6	18.9	y	-2.1	170	52.7	45.8	4	28.9	5.6	y	0.8	349	40.7	63.4	-3	11.9	1.8
27	y	1.2	188	25.0	16.2	-2	29.7	19.0	y	-2.1	171	38.5	45.8	4	34.5	5.6	y	0.8	350	44.1	63.4	-3	10.1	1.9
28	y	1.2	188	41.2	16.2	-2	10.7	18.9	-2.1	172	24.2	45.7	4	40.1	5.7	y	0.7	351	47.5	63.4	-3	8.2	1.8	
29	y	1.2	188	57.4	16.3	-1	51.8	18.9	-2.1	173	10.0	45.7	4	45.8	5.6	y	0.7	352	50.8	63.4	-3	6.4	1.8	
30	y	1.2	189	13.7	16.3	-1	32.9	19.0	-2.1	173	55.7	45.7	4	51.4	5.6	y	0.7	353	54.3	63.4	-3	4.6	1.9	
Mar 31	y	1.2	189	30.0	16.3	-1	13.9	18.9	-2.1	174	41.4	45.7	4	57.0	5.6	y	0.7	354	57.7	63.4	-3	2.7	1.8	
Apr 1	y	1.2	189	46.3	16.4	-0	55.0	18.9	-2.1	175	27.1	45.7	5	2.6	5.6	y	0.7	356	1.1	63.4	-3	0.9	1.8	
2	y	1.2	190	2.7	16.4	-0	36.1	18.9	-2.1	176	12.8	45.7	5	8.2	5.6	y	0.7	357	4.5	63.4	-2	59.1	1.8	
3	y	1.2	190	19.1	16.4	-0	17.2	18.9	-2.1	176	58.5	45.7	5	13.8	5.6	y	0.7	358	8.0	63.4	-2	57.3	1.9	
4	y	1.2	190	35.5	16.5	0	1.7	18.9	-2.1	177	44.2	45.7	5	19.4	5.6	y	0.7	359	11.4	63.4	-2	55.4	1.8	
5	y	1.2	190	52.0	16.5	0	20.6	18.9	-2.1	178	29.9	45.7	5	25.0	5.6	y	0.7	0	14.9	63.4	-2	53.6	1.8	
6	y	1.2	191	8.4	16.5	0	39.5	18.8	-2.1	179	15.6	45.7	5	30.6	5.5	y	0.7	1	18.3	63.4	-2	51.8	1.8	
7	y	1.2	191	25.0	16.5	0	58.3	18.8	-2.1	180	1.2	45.7	5	36.1	5.6	y	0.7	2	21.7	63.4	-2	50.0	1.8	
8	y	1.2	191	41.5	16.5	1	17.1	18.8	-2.1	180	46.9	45.7	5	41.7	5.5	y	0.7	3	25.1	63.4	-2	48.2	1.8	
9	y	1.2	191	58.0	16.6	1	35.9	18.8	-2.1	181	32.6	45.7	5	47.2	5.6	y	0.7	4	28.6	63.4	-2	46.4	1.7	
10	y	1.2	192	14.6	16.6	1	54.7	18.7	-2.1	182	18.2	45.7	5	52.8	5.5	y	0.8	5	32.0	63.4	-2	44.7	1.8	
11	y	1.2	192	31.2	16.6	2	13.4	18.7	-2.1	183	3.9	45.7	5	58.3	5.5	y	0.8	6	35.3	63.4	-2	42.9	1.7	
12	y	1.2	192	47.8	16.6	2	32.1	18.6	-2.1	183	49.6	45.7	6	3.8	5.5	y	0.8	7	38.7	63.4	-2	41.2	1.8	
13	y	1.2	193	4.4	16.6	2	50.7	18.6	-2.1	184	35.3	45.7	6	9.3	5.5	y	0.8	8	42.1	63.3	-2	39.4	1.7	
14	y	1.2	193	21.0	16.6	3	9.3	18.5	-2.1	185	20.9	45.7	6	14.8	5.5	y	0.8	9	45.4	63.3	-2	37.7	1.7	
15	y	1.2	193	37.7	16.6	3	27.8	18.5	-2.1	186	6.6	45.7	6	20.3	5.4	y	0.8	10	48.7	63.3	-2	36.0	1.7	
16	y	1.2	193	54.3	16.6	3	46.3	18.5	-2.1	186	52.3	45.7	6	25.7	5.5	y	0.8	11	52.0	63.3	-2	34.3	1.6	
17	y	1.2	194	10.9	16.6	4	4.8	18.4	y	-2.1	187	38.0	45.7	6	31.2	5.4	y	0.8	12	55.2	63.2	-2	32.7	1.7
18	y	1.2	194	27.6	16.6	4	23.2	18.3	y	-2.1	188	23.7	45.7	6	36.6	5.5	y	0.8	13	58.5	63.2	-2	31.0	1.6
19	y	1.2	194	44.2	16.6	4	41.5	18.3	y	-2.1	189	9.5	45.7	6	42.1	5.4	y	0.8	15	1.6	63.2	-2	29.4	1.6
20	y	1.2	195	0.9	16.6	4	59.8	18.2	y	-2.1	189	55.2	45.7	6	47.5	5.3	y	0.8	16	4.8	63.1	-2	27.8	1.6
21	y	1.2	195	17.5	16.6	5	18.0	18.1	y	-2.1	190	40.9	45.7	6	52.8	5.4	y	0.8	17	7.9	63.1	-2	26.2	1.6
22	y	1.2	195	34.1	16.6	5	36.1	18.1	y	-2.1	191	26.7	45.8	6	58.2	5.4	y	0.8	18	11.0	63.0	-2	24.6	1.6
23	y	1.2	195	50.8	16.6	5	54.2	18.0	y	-2.1	192	12.4	45.8	7	3.6	5.3	y	0.8	19	14.1	63.0	-2	23.0	1.5
24	y	1.2	196	7.4	16.6	6	12.2	17.9	y	-2.1	192	58.2	45.8	7	8.9	5.3	y	0.8	20	17.1	63.0	-2	21.5	1.5
25	y	1.2	196	24.0	16.6	6	30.1	17.8	y	-2.1	193	44.0	45.8	7	14.2	5.3	y	0.8	21	20.0	62.9	-2	20.0	1.5
26	y	1.2	196	40.6	16.6	6	47.9	17.8	y	-2.1	194	29.8	45.8	7	19.5	5.3	y	0.8	22	22.9	62.9	-2	18.5	1.4
27	y	1.2	196	57.1	16.6	7	5.7	17.7	y	-2.1	195	15.6	45.8	7	24.8	5.3	y	0.9	23	25.8	62.8	-2	17.1	1.5
28	y	1.2	197	13.7	16.5	7	23.4	17.6	y	-2.1	196	1.4	45.9	7	30.1	5.2	y	0.9	24	28.6	62.8	-2	15.6	1.4
29	y	1.3	197	30.2	16.5	7	41.0	17.5	y	-2.1	196	47.3	45.9	7	35.3	5.2	y	0.9	25	31.4	62.7	-2	14.2	1.3
Apr 30	y	1.3	197	46.8	16.5	7	58.5	17.4	y	-2.1	197	33.2	45.9	7	40.5	5.3	y	0.9	26	34.1	62.7	-2	12.9	1.4
May 1	y	1.3	198	3.3	16.5	8	15.9	17.3	y	-2.1	198	19.1	45.9	7	45.8	5.1	y	0.9	27	36.8	62.6	-2	11.5	1.3
2	y	1.3	198	19.7	16.5	8	33.2	17.2	y	-2.1	199	5.0	45.9	7	50.9	5.2	y	0.9	28	39.4	62.5	-2	10.2	1.3
3	y	1.3	198	36.2	16.4	8	50.4	17.1	y	-2.1	199	50.9	46.0	7	56.1	5.1	y	0.9	29	41.9	62.5	-2	8.9	1.2
4	y	1.3	198	52.6	16.4	9	7.5	17.1	y	-2.1	200	36.9	46.0	8	1.2	5.1	y	0.9	30	44.4	62.4	-2	7.7	1.3
5	y	1.3	199	9.0	16.4	9	24.																	

2011

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
May 11	180	53.9	0.4	17	44.1	15.4	sr	0.4	205	10.8	-5.4	1.2	6	20.3	25.0	-0.7
12	180	54.3	0.3	17	59.5	15.2	sr	0.3	205	5.4	-7.8	1.2	6	45.3	26.4	-0.7
13	180	54.6	0.2	18	14.7	14.8	sr	0.3	204	57.7	-10.1	1.2	7	11.7	27.7	-0.7
14	180	54.8	0.0	18	29.5	14.5	sr	0.2	204	47.5	-12.4	1.2	7	39.4	28.8	-0.6
15	180	54.8	-0.1	18	44.0	14.1	sr	0.2	204	35.1	-14.8	1.2	8	8.2	30.0	-0.6
16	180	54.6	-0.3	18	58.1	13.9	sr	0.1	204	20.3	-17.1	1.2	8	38.2	31.1	-0.5
17	180	54.4	-0.4	19	12.0	13.5	sr	0.1	204	3.2	-19.4	1.2	9	9.3	32.1	-0.5
18	180	54.0	-0.5	19	25.5	13.2	sr	0.0	203	43.8	-21.8	1.2	9	41.4	33.0	-0.4
19	180	53.4	-0.7	19	38.7	12.9	sr	-0.1	203	22.0	-24.1	1.2	10	14.4	33.9	-0.4
20	180	52.7	-0.8	19	51.6	12.5	sr	-0.1	202	57.9	-26.5	1.2	10	48.3	34.7	-0.4
21	180	51.9	-1.0	20	4.1	12.2	sr	-0.2	202	31.3	-29.0	1.2	11	23.0	35.3	-0.3
22	180	51.0	-1.1	20	16.3	11.9	sr	-0.2	202	2.4	-31.5	1.2	11	58.3	36.0	-0.4
23	180	49.9	-1.2	20	28.2	11.5	sr	-0.3	201	30.9	-34.0	1.3	12	34.3	36.6	-0.3
24	180	48.6	-1.4	20	39.7	11.1	sr	-0.4	200	56.9	-36.6	1.3	13	10.9	37.0	-0.2
25	180	47.3	-1.5	20	50.8	10.8	sr	-0.4	200	20.3	-39.2	1.3	13	47.9	37.4	-0.2
26	180	45.8	-1.6	21	1.6	10.4	sr	-0.5	199	41.1	-41.9	1.4	14	25.3	37.7	-0.2
27	180	44.2	-1.7	21	12.0	10.1	sr	-0.6	198	59.2	-44.7	1.4	15	3.0	37.8	0.0
28	180	42.4	-1.9	21	22.1	9.6	sr	-0.6	198	14.5	-47.5	1.4	15	40.8	37.9	-0.1
29	180	40.6	-2.0	21	31.7	9.3	sr	-0.7	197	26.9	-50.4	1.4	16	18.7	37.7	0.1
30	180	38.6	-2.1	21	41.0	9.0	sr	-0.8	196	36.5	-53.3	1.5	16	56.4	37.6	0.0
May 31	180	36.5	-2.2	21	50.0	8.5	sr	-0.9	195	43.2	-56.3	1.5	17	34.0	37.2	0.2
Jun 1	180	34.3	-2.3	21	58.5	8.2	sr	-1.0	194	46.9	-59.3	1.5	18	11.2	36.7	0.3
2	180	32.0	-2.4	22	6.7	7.8	sr	-1.1	193	47.6	-62.2	1.5	18	47.9	36.0	0.3
3	180	29.6	-2.5	22	14.5	7.4	sr	-1.2	192	45.4	-65.2	1.5	19	23.9	35.2	0.4
4	180	27.1	-2.6	22	21.9	7.0	sr	-1.3	191	40.2	-68.0	1.4	19	59.1	34.0	0.6
5	180	24.5	-2.7	22	28.9	6.6	sr	-1.4	190	32.2	-70.8	1.4	20	33.1	32.9	0.5
6	180	21.9	-2.7	22	35.5	6.2	sr	-1.5	189	21.4	-73.5	1.3	21	6.0	31.4	0.8
7	180	19.1	-2.8	22	41.7	5.8	sr	-1.6	188	7.9	-75.9	1.2	21	37.4	29.7	0.9
8	180	16.3	-2.9	22	47.5	5.4	sr	-1.7	186	52.0	-78.2	1.1	22	7.1	27.9	0.9
9	180	13.5	-2.9	22	52.9	5.0	sr	-1.8	185	33.8	-80.2	1.0	22	35.0	25.8	1.1
10	180	10.5	-3.0	22	57.9	4.7	sr	-1.9	184	13.6	-81.9	0.8	23	0.8	23.6	1.1
11	180	7.6	-3.0	23	2.6	4.2	sr	-2.1	182	51.7	-83.2	0.7	23	24.4	21.2	1.2
12	180	4.5	-3.1	23	6.8	3.7	sr	-2.2	181	28.5	-84.2	0.5	23	45.6	18.7	1.3
13	180	1.5	-3.1	23	10.5	3.4	sr	-2.3	180	4.3	-84.8	0.3	24	4.3	16.0	1.4
14	179	58.4	-3.1	23	13.9	3.0	sr	-2.2	178	39.5	-85.0	0.1	24	20.3	13.3	1.4
15	179	55.2	-3.2	23	16.9	2.6	sr	-2.0	177	14.5	-84.8	-0.1	24	33.6	10.5	1.4
16	179	52.0	-3.2	23	19.5	2.1	sr	-1.9	175	49.7	-84.2	-0.3	24	44.1	7.6	1.4
17	179	48.8	-3.2	23	21.6	1.8	sr	-1.8	174	25.5	-83.2	-0.5	24	51.7	4.9	1.4
18	179	45.6	-3.2	23	23.4	1.3	sr	-1.6	173	2.2	-81.9	-0.7	24	56.6	2.1	1.4
19	179	42.4	-3.2	23	24.7	0.9	ss	-1.5	171	40.3	-80.3	-0.8	24	58.7	-0.7	1.4
20	179	39.1	-3.3	23	25.6	0.5	ss	-1.4	170	20.0	-78.4	-1.0	24	58.0	-3.3	1.3
21	179	35.9	-3.3	23	26.1	0.1	ss	-1.3	169	1.6	-76.3	-1.1	24	54.7	-5.9	1.3
22	179	32.6	-3.2	23	26.2	-0.3	ss	-1.2	167	45.3	-73.9	-1.2	24	48.8	-8.3	1.2
23	179	29.4	-3.2	23	25.9	-0.7	ss	-1.1	166	31.4	-71.4	-1.3	24	40.5	-10.7	1.2
24	179	26.1	-3.2	23	25.2	-1.2	ss	-1.0	165	20.0	-68.7	-1.3	24	29.8	-12.9	1.1
25	179	22.9	-3.2	23	24.0	-1.5	ss	-0.9	164	11.3	-65.9	-1.4	24	16.9	-14.9	1.0
26	179	19.7	-3.2	23	22.5	-2.0	ss	-0.8	163	5.3	-63.1	-1.4	24	2.0	-16.9	1.0
27	179	16.5	-3.1	23	20.5	-2.4	ss	-0.8	162	2.3	-60.1	-1.5	23	45.1	-18.6	0.8
28	179	13.4	-3.1	23	18.1	-2.8	ss	-0.7	161	2.2	-57.1	-1.5	23	26.5	-20.4	0.9
29	179	10.3	-3.0	23	15.3	-3.2	ss	-0.6	160	5.0	-54.1	-1.5	23	6.1	-21.9	0.8
Jun 30	179	7.3	-3.0	23	12.1	-3.6	ss	-0.5	159	10.9	-51.1	-1.5	22	44.2	-23.3	0.7
Jul 1	179	4.3	-2.9	23	8.5	-4.0	ss	-0.5	158	19.8	-48.1	-1.5	22	20.9	-24.6	0.7
2	179	1.3	-2.9	23	4.5	-4.4	ss	-0.4	157	31.7	-45.1	-1.5	21	56.3	-25.8	0.6
3	178	58.5	-2.8	23	0.1	-4.9	ss	-0.3	156	46.6	-42.0	-1.5	21	30.5	-26.8	0.5
4	178	55.7	-2.7	22	55.2	-5.2	ss	-0.3	156	4.5	-39.0	-1.5	21	3.7	-27.8	0.5
5	178	53.0	-2.6	22	50.0	-5.6	ss	-0.2	155	25.5	-36.1	-1.5	20	35.9	-28.6	0.4
6	178	50.4	-2.5	22	44.4	-6.0	ss	-0.2	154	49.5	-33.1	-1.5	20	7.3	-29.4	0.4
7	178	47.8	-2.4	22	38.4	-6.4	ss	-0.1	154	16.4	-30.1	-1.5	19	37.9	-29.9	0.3
8	178	45.4	-2.3	22	32.0	-6.8	ss	-0.1	153	46.3	-27.2	-1.5	19	8.0	-30.6	0.3
9	178	43.1	-2.2	22	25.2	-7.2	ss	0.0	153	19.1	-24.2	-1.5	18	37.4	-30.9	0.2
10	178	40.9	-2.1	22	18.0	-7.5	ss	0.0	152	54.9	-21.3	-1.5	18	6.5	-31.3	0.2
11	178	38.7	-2.0	22	10.5	-7.9	ss	0.1	152	33.6	-18.4	-1.5	17	35.2	-31.6	0.2
12	178	36.7	-1.9	22	2.6	-8.4	ss	0.1	152	15.2	-15.4	-1.5	17	3.6	-31.7	0.1
13	178	34.9	-1.8	21	54.2	-8.7	ss	0.2	151	59.8	-12.5	-1.5	16	31.9	-31.8	0.0
Jul 14	178	33.1	-1.6	21	45.5	-9.0	ss	0.2	151	47.3	-9.5	-1.5	16	0.1	-31.8	0.0

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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	mag	o	'	'	o	mag	o	'	'	o									
May 11	y	1.3	200	30.7	16.2	10	48.0	16.3	y	-2.1	205	13.4	46.2	8	31.6	4.9	y	0.9	36	58.0	62.0	-2	0.8	1.1
12	y	1.3	200	46.9	16.2	11	4.3	16.3	y	-2.1	205	59.5	46.2	8	36.5	5.0	y	0.9	37	60.0	61.9	-1	59.7	1.0
13	y	1.3	201	3.1	16.2	11	20.6	16.1	y	-2.1	206	45.8	46.3	8	41.5	4.9	y	0.9	39	1.9	61.9	-1	58.7	0.9
14	y	1.3	201	19.3	16.2	11	36.7	15.9	y	-2.1	207	32.0	46.3	8	46.4	4.9	y	1.0	40	3.8	61.8	-1	57.8	1.0
15	y	1.3	201	35.5	16.1	11	52.6	15.9	y	-2.1	208	18.3	46.3	8	51.3	4.8	y	1.0	41	5.6	61.7	-1	56.8	0.9
16	y	1.3	201	51.6	16.1	12	8.5	15.7	y	-2.1	209	4.7	46.4	8	56.1	4.8	y	1.0	42	7.3	61.6	-1	55.9	0.8
17	y	1.3	202	7.7	16.0	12	24.2	15.6	y	-2.1	209	51.0	46.4	9	0.9	4.8	y	1.0	43	9.0	61.6	-1	55.1	0.8
18	y	1.3	202	23.7	16.0	12	39.8	15.4	y	-2.1	210	37.4	46.5	9	5.7	4.8	y	1.0	44	10.5	61.5	-1	54.3	0.8
19	y	1.3	202	39.7	16.0	12	55.2	15.4	y	-2.1	211	23.9	46.5	9	10.5	4.8	y	1.0	45	12.0	61.4	-1	53.5	0.8
20	y	1.3	202	55.7	15.9	13	10.6	15.1	y	-2.1	212	10.4	46.5	9	15.3	4.7	y	1.0	46	13.4	61.3	-1	52.7	0.7
21	y	1.3	203	11.6	15.9	13	25.7	15.1	y	-2.1	212	56.9	46.6	9	20.0	4.7	y	1.0	47	14.8	61.3	-1	52.0	0.6
22	y	1.3	203	27.5	15.8	13	40.8	14.9	y	-2.1	213	43.5	46.6	9	24.7	4.6	y	1.0	48	16.0	61.2	-1	51.4	0.7
23	y	1.3	203	43.3	15.8	13	55.7	14.7	y	-2.1	214	30.1	46.7	9	29.3	4.7	y	1.0	49	17.2	61.1	-1	50.7	0.6
24	y	1.3	203	59.1	15.7	14	10.4	14.6	y	-2.1	215	16.8	46.7	9	34.0	4.6	y	1.0	50	18.3	61.0	-1	50.1	0.5
25	y	1.3	204	14.8	15.7	14	25.0	14.4	y	-2.1	216	3.5	46.8	9	38.6	4.5	y	1.0	51	19.3	60.9	-1	49.6	0.6
26	y	1.3	204	30.5	15.7	14	39.4	14.3	y	-2.1	216	50.3	46.8	9	43.1	4.6	y	1.0	52	20.2	60.8	-1	49.0	0.4
27	y	1.3	204	46.2	15.6	14	53.7	14.2	y	-2.1	217	37.1	46.9	9	47.7	4.5	y	1.0	53	21.0	60.8	-1	48.6	0.5
28	y	1.3	205	1.8	15.6	15	7.9	14.0	y	-2.1	218	24.0	46.9	9	52.2	4.4	y	1.0	54	21.8	60.7	-1	48.1	0.4
29	y	1.3	205	17.4	15.5	15	21.9	13.8	y	-2.1	219	10.9	47.0	9	56.6	4.5	y	1.0	55	22.5	60.6	-1	47.7	0.4
30	y	1.3	205	32.9	15.5	15	35.7	13.7	y	-2.1	219	57.9	47.0	10	1.1	4.4	y	1.1	56	23.0	60.5	-1	47.3	0.3
May 31	y	1.3	205	48.4	15.4	15	49.4	13.5	y	-2.1	220	45.0	47.1	10	5.5	4.3	y	1.1	57	23.5	60.4	-1	47.0	0.3
Jun 1	y	1.3	206	3.8	15.4	16	2.9	13.3	y	-2.1	221	32.1	47.2	10	9.8	4.4	y	1.1	58	23.9	60.3	-1	46.7	0.2
2	y	1.3	206	19.2	15.4	16	16.2	13.2	y	-2.1	222	19.2	47.2	10	14.2	4.2	y	1.1	59	24.2	60.2	-1	46.5	0.2
3	y	1.3	206	34.6	15.3	16	29.4	13.0	y	-2.1	223	6.4	47.3	10	18.4	4.3	y	1.1	60	24.4	60.1	-1	46.3	0.2
4	y	1.3	206	49.9	15.3	16	42.4	12.8	y	-2.1	223	53.7	47.3	10	22.7	4.2	y	1.1	61	24.5	60.0	-1	46.1	0.1
5	y	1.3	207	5.2	15.2	16	55.2	12.6	y	-2.1	224	41.1	47.4	10	26.9	4.2	y	1.1	62	24.6	59.9	-1	46.0	0.1
6	y	1.3	207	20.4	15.2	17	7.8	12.5	y	-2.1	225	28.5	47.5	10	31.1	4.2	y	1.1	63	24.5	59.8	-1	45.9	0.0
7	y	1.3	207	35.6	15.2	17	20.3	12.3	y	-2.1	226	16.0	47.6	10	35.3	4.1	y	1.1	64	24.4	59.8	-1	45.9	0.0
8	y	1.3	207	50.8	15.1	17	32.6	12.2	y	-2.1	227	3.5	47.6	10	39.4	4.1	y	1.1	65	24.1	59.7	-1	45.9	0.0
9	y	1.3	208	5.9	15.1	17	44.8	11.9	y	-2.2	227	51.2	47.7	10	43.5	4.0	y	1.1	66	23.8	59.6	-1	45.9	-0.1
10	y	1.3	208	20.9	15.0	17	56.7	11.8	y	-2.2	228	38.8	47.8	10	47.5	4.0	y	1.1	67	23.4	59.5	-1	46.0	-0.1
11	y	1.4	208	36.0	15.0	18	8.5	11.6	y	-2.2	229	26.6	47.8	10	51.5	4.0	y	1.1	68	22.8	59.4	-1	46.1	-0.2
12	y	1.4	208	51.0	15.0	18	20.1	11.4	y	-2.2	230	14.5	47.9	10	55.5	3.9	y	1.1	69	22.2	59.3	-1	46.3	-0.2
13	y	1.4	209	6.0	14.9	18	31.5	11.2	y	-2.2	231	2.4	48.0	10	59.4	3.9	y	1.1	70	21.5	59.2	-1	46.5	-0.2
14	y	1.4	209	20.9	14.9	18	42.7	11.0	y	-2.2	231	50.4	48.1	11	3.3	3.8	y	1.1	71	20.7	59.1	-1	46.7	-0.3
15	y	1.4	209	35.8	14.8	18	53.7	10.8	y	-2.2	232	38.4	48.1	11	7.1	3.8	y	1.1	72	19.8	59.0	-1	47.0	-0.3
16	y	1.4	209	50.6	14.8	19	4.5	10.7	y	-2.2	233	26.6	48.2	11	10.9	3.8	y	1.1	73	18.9	58.9	-1	47.3	-0.4
17	y	1.4	210	5.4	14.8	19	15.2	10.5	y	-2.2	234	14.8	48.3	11	14.7	3.7	y	1.1	74	17.8	58.8	-1	47.7	-0.4
18	y	1.4	210	20.2	14.7	19	25.7	10.2	y	-2.2	235	3.1	48.4	11	18.4	3.7	y	1.2	75	16.6	58.7	-1	48.1	-0.4
19	y	1.4	210	34.9	14.7	19	35.9	10.1	y	-2.2	235	51.5	48.5	11	22.1	3.7	y	1.2	76	15.4	58.7	-1	48.5	-0.5
20	y	1.4	210	49.6	14.7	19	46.0	9.9	y	-2.2	236	40.0	48.6	11	25.8	3.6	y	1.2	77	14.0	58.6	-1	49.0	-0.5
21	y	1.4	211	4.3	14.6	19	55.9	9.7	y	-2.2	237	28.5	48.7	11	29.4	3.5	y	1.2	78	12.6	58.5	-1	49.5	-0.5
22	y	1.4	211	19.0	14.6	20	5.6	9.4	y	-2.2	238	17.2	48.7	11	32.9	3.5	y	1.2	79	11.1	58.4	-1	50.0	-0.6
23	y	1.4	211	33.6	14.6	20	15.0	9.3	y	-2.2	239	5.9	48.8	11	36.4	3.5	y	1.2	80	9.4	58.3	-1	50.6	-0.7
24	y	1.4	211	48.2	14.6	20	24.3	9.1	y	-2.2	239	54.8	48.9	11	39.9	3.5	y	1.2	81	7.7	58.2	-1	51.3	-0.6
25	y	1.4	212	2.7	14.5	20	33.4	8.9	y	-2.2	240	43.7	49.0	11	43.4	3.3	y	1.2	82	5.9	58.1	-1	51.9	-0.7
26	y	1.4	212	17.3	14.5	20	42.3	8.7	y	-2.2	241	32.7	49.1	11	46.7	3.4	y	1.2	83	4.0	58.0	-1	52.6	-0.8
27	y	1.4	212	31.8	14.5	20	51.0	8.4	y	-2.2	242	21.9	49.2	11	50.1	3.3	y	1.2	84	2.0	57.9	-1	53.4	-0.8
28	y	1.4	212	46.3	14.5	20	59.4	8.3	y	-2.2	243	11.1	49.3	11	53.4	3.2	y	1.2	84	59.9	57.8	-1	54.2	-0.8
29	y	1.4	213	0.7	14.4	21	7.7	8.1	y	-2.2	244	0.4	49.4	11	56.6	3.2	y	1.2	85	57.8	57.7	-1	55.0	-0.9
Jun 30	y	1.4	213	15.2	14.4	21	15.8	7.8	y	-2.2	244	49.8	49.5	11	59.8	3.2	y	1.2	86	55.5	57.6	-1	55.9	-0.9
Jul 1	y	1.4	213	29.6	14.4	21	23.6	7.7	y	-2.3	245	39.3	49.6	12	3.0	3.1	y	1.2	87	53.2	57.6	-1	56.8	-0.9
2	y	1.4	213	44.0	14.4	21	31.3	7.5	y	-2.3	246	29.0	49.7	12	6.1	3.1	y	1.2	88	50.7	57.5	-1	57.7	-1.0
3	y	1.4	213	58.4	14.4	21	38.8	7.2	y	-2.3	247	18.7	49.9	12	9.2	3.0	y	1.2	89	48.2	57.4	-1	58.7	-1.0
4	y	1.4	214	12.8	14.4	21	46.0	7.0	y	-2.3	248	8.6	50.0	12	12.2	3.0	y	1.2	90	45.6	57.3	-1	59.7	-1.0
5	y	1.4	214	27.2	14.4	21	53.0	6.8	y	-2.3	248	58.5	50.1	12	15.2	2.9	y	1.2	91	42.9	57.2	-2	0.7	-1.1
6	y	1.4	214	41.6	14.4	21	59.8	6.7	y	-2.3	249	48.6	50.2	12	18.1	2.9	y	1.2	92	40.1	57.1	-2	1.8	-1.1
7	y	1.4	214	56.0	14.4	22	6.5	6.4	y	-2.3	250	38.8	50.3	12	21.0	2.9	y	1.2	93	37.2	57.0	-2	2.9	-1.2
8	y	1.4	215	10.4	14.4	22	12.9	6.2	y	-2.3	251	29.1	50.4	12	23.9	2.7	y	1.2	94	34.2	56.9	-2	4.1	-1.2
9	y	1.4	215	24.8	14.4	22	19.1	5.9	y	-2.3	252	19.5	50.5	12	26.6	2.8	y	1.2	95	31.2	56.9	-2	5.3	-1.2
10	y	1.4	215	39.2	14.4	22	25.0	5.8	y	-2.3	253	10.1												

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Sun and Planets

Date	SUN				Mercury						Venus					
	GHA O	d	Dec O	d	vis mag	GHA O	d	dd	Dec O	d	dd	vis mag	GHA O	d	Dec O	d
Jul 15	178 31.5	-1.5	21 36.5	-9.4	ss 0.3	151 37.8	-6.5	-1.5	15 28.3	-31.7	-0.1	sr -3.9	188 4.0	-20.7	23 7.0	-5.3
Jul 16	178 29.9	-1.4	21 27.1	-9.8	ss 0.3	151 31.2	-3.5	-1.5	14 56.6	-31.5	-0.1	sr -3.9	187 43.3	-20.6	23 1.7	-6.0
Jul 17	178 28.5	-1.3	21 17.3	-10.2	ss 0.3	151 27.7	-0.5	-1.5	14 25.1	-31.2	-0.1	sr -3.9	187 22.7	-20.5	22 55.7	-6.7
Jul 18	178 27.3	-1.1	21 7.1	-10.5	ss 0.4	151 27.3	2.6	-1.6	13 53.9	-30.9	-0.1	sr -3.9	187 2.2	-20.4	22 49.0	-7.3
Jul 19	178 26.2	-1.0	20 56.6	-10.9	ss 0.4	151 29.9	5.8	-1.6	13 23.0	-30.4	-0.3	sr -3.9	186 41.8	-20.2	22 41.7	-8.0
Jul 20	178 25.2	-0.9	20 45.7	-11.2	ss 0.5	151 35.7	9.0	-1.6	12 52.6	-29.8	-0.3	sr -3.9	186 21.5	-20.1	22 33.7	-8.7
Jul 21	178 24.3	-0.7	20 34.5	-11.5	ss 0.5	151 44.7	12.3	-1.6	12 22.8	-29.2	-0.3	sr -3.9	186 1.4	-20.0	22 25.0	-9.4
Jul 22	178 23.6	-0.6	20 23.0	-12.0	ss 0.6	151 57.1	15.7	-1.7	11 53.6	-28.5	-0.4	-3.9	185 41.5	-19.8	22 15.6	-10.0
Jul 23	178 23.0	-0.4	20 11.0	-12.2	ss 0.6	152 12.8	19.2	-1.7	11 25.1	-27.5	-0.5	-3.9	185 21.7	-19.6	22 5.6	-10.6
Jul 24	178 22.5	-0.3	19 58.8	-12.6	ss 0.7	152 31.9	22.7	-1.8	10 57.6	-26.6	-0.4	-3.9	185 2.1	-19.4	21 55.0	-11.3
Jul 25	178 22.2	-0.2	19 46.2	-12.9	ss 0.7	152 54.7	26.4	-1.8	10 31.0	-25.6	-0.5	-3.9	184 42.6	-19.2	21 43.7	-11.9
Jul 26	178 22.1	0.0	19 33.3	-13.2	ss 0.8	153 21.1	30.2	-1.9	10 5.4	-24.3	-0.6	-3.9	184 23.4	-19.0	21 31.8	-12.6
Jul 27	178 22.0	0.1	19 20.1	-13.6	ss 0.9	153 51.3	34.1	-2.0	9 41.1	-23.0	-0.6	-3.9	184 4.3	-18.8	21 19.2	-13.1
Jul 28	178 22.2	0.3	19 6.5	-13.9	ss 0.9	154 25.5	38.2	-2.0	9 18.1	-21.5	-0.8	-3.9	183 45.5	-18.6	21 6.1	-13.6
Jul 29	178 22.4	0.4	18 52.6	-14.1	ss 1.0	155 3.6	42.3	-2.1	8 56.6	-20.0	-0.8	-3.9	183 26.9	-18.4	20 52.3	-14.4
Jul 30	178 22.9	0.6	18 38.5	-14.5	ss 1.1	155 46.0	46.6	-2.1	8 36.6	-18.2	-0.9	-3.9	183 8.5	-18.2	20 37.9	-15.0
Jul 31	178 23.4	0.7	18 24.0	-14.8	ss 1.2	156 32.6	51.0	-2.2	8 18.4	-16.4	-0.9	-3.9	182 50.4	-17.9	20 22.9	-15.5
Aug 1	178 24.2	0.9	18 9.2	-15.1	ss 1.3	157 23.6	55.5	-2.3	8 2.0	-14.4	-1.0	-3.9	182 32.5	-17.7	20 7.4	-16.2
Aug 2	178 25.0	1.0	17 54.1	-15.4	ss 1.4	158 19.1	60.1	-2.3	7 47.6	-12.2	-1.1	-3.9	182 14.8	-17.4	19 51.2	-16.7
Aug 3	178 26.1	1.2	17 38.7	-15.6	ss 1.5	159 19.3	64.8	-2.3	7 35.4	-9.9	-1.2	-3.9	181 57.4	-17.1	19 34.5	-17.3
Aug 4	178 27.3	1.3	17 23.1	-16.0	ss 1.6	160 24.1	69.5	-2.4	7 25.5	-7.6	-1.1	-3.9	181 40.3	-16.9	19 17.2	-17.8
Aug 5	178 28.6	1.5	17 7.1	-16.2	ss 1.7	161 33.6	74.2	-2.3	7 17.9	-5.0	-1.3	-3.9	181 23.4	-16.6	18 59.4	-18.3
Aug 6	178 30.1	1.7	16 50.9	-16.5	ss 1.8	162 47.8	78.8	-2.3	7 12.9	-2.3	-1.4	-3.9	181 6.8	-16.4	18 41.1	-18.9
Aug 7	178 31.8	1.8	16 34.4	-16.7	ss 1.9	164 6.6	83.4	-2.3	7 10.6	0.4	-1.3	-3.9	180 50.4	-16.1	18 22.2	-19.4
Aug 8	178 33.6	2.0	16 17.7	-17.1	ss 2.0	165 30.0	87.7	-2.2	7 11.0	3.1	-1.4	-3.9	180 34.3	-15.8	18 2.8	-19.9
Aug 9	178 35.5	2.1	16 0.6	-17.2	ss 2.1	166 57.7	91.8	-2.0	7 14.1	6.0	-1.4	-3.9	180 18.5	-15.5	17 42.9	-20.4
Aug 10	178 37.7	2.3	15 43.4	-17.5	ss 2.2	168 29.5	95.5	-1.9	7 20.1	8.7	-1.4	-3.9	180 3.0	-15.3	17 22.5	-20.9
Aug 11	178 39.9	2.4	15 25.9	-17.8	ss 2.3	170 4.9	98.7	-1.6	7 28.8	11.6	-1.4	-3.9	179 47.7	-15.0	17 1.6	-21.4
Aug 12	178 42.3	2.5	15 8.1	-18.0	2.4	171 43.7	101.5	-1.4	7 40.4	14.1	-1.3	-3.9	179 32.7	-14.7	16 40.2	-21.8
Aug 13	178 44.9	2.7	14 50.1	-18.3	2.5	173 25.1	103.5	-1.0	7 54.5	16.6	-1.3	-3.9	179 18.0	-14.4	16 18.4	-22.3
Aug 14	178 47.6	2.8	14 31.8	-18.4	2.6	175 8.7	104.9	-0.7	8 11.1	18.9	-1.1	-3.9	179 3.6	-14.2	15 56.1	-22.7
Aug 15	178 50.4	3.0	14 13.4	-18.7	2.7	176 53.5	105.4	-0.3	8 30.0	20.9	-1.0	-3.9	178 49.4	-13.9	15 33.4	-23.2
Aug 16	178 53.3	3.1	13 54.7	-18.9	2.8	178 38.9	105.1	0.2	8 50.9	22.6	-0.9	-3.9	178 35.5	-13.7	15 10.2	-23.5
Aug 17	178 56.4	3.2	13 35.8	-19.2	2.9	180 24.0	103.9	0.6	9 13.5	23.9	-0.6	-3.9	178 21.8	-13.4	14 46.7	-24.0
Aug 18	178 59.6	3.3	13 16.6	-19.3	3.0	182 7.9	101.7	1.1	9 37.4	24.9	-0.5	-3.9	178 8.4	-13.1	14 22.7	-24.4
Aug 19	179 3.0	3.5	12 57.3	-19.6	3.1	183 49.6	98.6	1.5	10 2.3	25.4	-0.3	-3.9	177 55.3	-12.9	13 58.3	-24.7
Aug 20	179 6.4	3.6	12 37.7	-19.7	3.2	185 28.3	94.7	2.0	10 27.7	25.6	-0.1	-3.9	177 42.4	-12.7	13 33.6	-25.2
Aug 21	179 10.0	3.7	12 18.0	-20.0	sr 2.9	187 2.9	89.9	2.4	10 53.3	25.3	0.1	-3.9	177 29.7	-12.4	13 8.4	-25.4
Aug 22	179 13.7	3.8	11 58.0	-20.1	sr 2.7	188 32.9	84.4	2.8	11 18.6	24.6	0.4	-3.9	177 17.3	-12.2	12 43.0	-25.9
Aug 23	179 17.5	3.9	11 37.9	-20.4	sr 2.4	189 57.2	78.2	3.1	11 43.2	23.6	0.5	-3.9	177 5.1	-12.0	12 17.1	-26.1
Aug 24	179 21.4	4.0	11 17.5	-20.5	sr 2.2	191 15.4	71.4	3.4	12 6.8	22.2	0.7	-3.9	176 53.2	-11.7	11 51.0	-26.5
Aug 25	179 25.4	4.1	10 57.0	-20.7	sr 1.9	192 26.8	64.2	3.6	12 29.0	20.4	0.9	-3.9	176 41.4	-11.5	11 24.5	-26.8
Aug 26	179 29.5	4.2	10 36.3	-20.8	sr 1.7	193 31.0	56.6	3.8	12 49.4	18.4	1.0	-3.9	176 29.9	-11.3	10 57.7	-27.1
Aug 27	179 33.7	4.3	10 15.5	-21.0	sr 1.4	194 27.5	48.8	3.9	13 7.8	16.1	1.1	-3.9	176 18.6	-11.1	10 30.6	-27.4
Aug 28	179 38.0	4.4	9 54.5	-21.2	sr 1.2	195 16.3	40.9	4.0	13 23.9	13.5	1.3	-3.9	176 7.5	-10.9	10 3.2	-27.7
Aug 29	179 42.4	4.5	9 33.3	-21.3	sr 0.9	195 57.2	32.9	4.0	13 37.4	10.7	1.4	-3.9	175 56.6	-10.7	9 35.5	-27.9
Aug 30	179 46.9	4.6	9 12.0	-21.5	sr 0.7	196 30.1	25.0	3.9	13 48.1	7.8	1.5	-3.9	175 45.9	-10.5	9 7.6	-28.1
Aug 31	179 51.4	4.7	8 50.5	-21.6	sr 0.4	196 55.1	17.3	3.9	13 55.9	4.7	1.5	-3.9	175 35.3	-10.4	8 39.5	-28.4
Sep 1	179 56.1	4.7	8 28.9	-21.8	sr 0.2	197 12.3	9.8	3.7	14 0.6	1.5	1.6	-3.9	175 25.0	-10.2	8 11.1	-28.7
Sep 2	180 0.8	4.8	8 7.1	-21.9	sr 0.0	197 22.1	2.6	3.6	14 2.1	-1.9	1.7	-3.9	175 14.8	-10.0	7 42.4	-28.8
Sep 3	180 5.6	4.9	7 45.2	-22.0	sr -0.2	197 24.7	-4.2	3.4	14 0.2	-5.2	1.7	-3.9	175 4.8	-9.9	7 13.6	-29.1
Sep 4	180 10.5	4.9	7 23.2	-22.1	sr -0.3	197 20.5	-10.5	3.2	13 55.0	-8.7	1.8	-3.9	174 54.9	-9.7	6 44.5	-29.2
Sep 5	180 15.5	5.0	7 1.1	-22.2	sr -0.5	197 10.0	-16.4	2.9	13 46.3	-12.1	1.7	-3.9	174 45.1	-9.6	6 15.3	-29.4
Sep 6	180 20.5	5.1	6 38.9	-22.3	sr -0.6	196 53.6	-21.7	2.6	13 34.2	-15.4	1.7	-3.9	174 35.5	-9.5	5 45.9	-29.5
Sep 7	180 25.5	5.1	6 16.6	-22.5	sr -0.7	196 32.0	-26.4	2.4	13 18.8	-18.7	1.6	-3.9	174 26.0	-9.4	5 16.4	-29.6
Sep 8	180 30.7	5.2	5 54.1	-22.5	sr -0.8	196 5.6	-30.5	2.1	13 0.1	-21.9	1.6	-3.9	174 16.6	-9.3	4 46.6	-29.8
Sep 9	180 35.8	5.2	5 31.6	-22.6	sr -0.9	195 35.0	-34.1	1.8	12 38.2	-25.0	1.5	-3.9	174 7.3	-9.2	4 16.8	-30.0
Sep 10	180 41.1	5.3	5 9.0	-22.7	sr -0.9	195 0.9	-37.1	1.5	12 13.2	-27.8	1.4	-3.9	173 58.2	-9.1	3 46.8	-30.1
Sep 11	180 46.3	5.3	4 46.3	-22.8	sr -1.0	194 23.8	-39.6	1.2	11 45.4	-30.6	1.4	-3.9	173 49.0	-9.0	3 16.7	-30.2
Sep 12	180 51.6	5.3	4 23.5	-22.9	sr -1.1	193 44.2	-41.5	1.0	11 14.8	-33.0	1.2	-3.9	173 40.0	-9.0	2 46.5	-30.3
Sep 13	180 56.9	5.3	4 0.6	-22.9	sr -1.1	193 2.6	-43.0	0.7	10 41.8	-35.3	1.1	-3.9	173 31.0	-8.9	2 16.2	-30.4
Sep 14	181 2.3	5.4	3 37.7	-23.1	sr -1.2	192 19.6	-44.0	0.5	10 6.5	-37.3	1.0	ss -3.9	173 22.1	-8.9	1 45.8	-30.4
Sep 15	181 7.6	5.4	3 14.6	-23.0	sr -1.2	191 35.6	-44.7	0.3	9 29.2	-39.1	0.9	ss -3.9	173 13.2	-8.9	1 15.4	-30.5
Sep 16	181 13.0	5.4	2 51.6	-23.2	sr -1.2	190 50.9	-45.0	0.2	8 50.1	-40.8	0.9	ss -3.9	173 4.4	-8.8	0 44.9	-30.6
Sep 17	181 18.4	5.4	2 28.4	-23.1	sr -1.3	190 5.8	-45.1	0.0	8 9.3	-42.1	0.7	ss -3.9	172 55.6	-8.8	0 14.3	-30.5

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Sun and Planets

Date	Mars					Jupiter					Saturn					
	vis	GHA		d	Dec	vis	GHA		d	Dec	vis	GHA		d	Dec	
	mag	o		'	o	mag	o		'	o	mag	o		'	o	
Jul 15	y	1.4	216	51.3	14.5	22	51.8	4.7	y	-2.3	257	24.7	51.3	12	42.3	2.5
16	y	1.4	217	5.7	14.5	22	56.5	4.5	y	-2.3	258	16.0	51.4	12	44.8	2.3
17	y	1.4	217	20.2	14.5	23	1.0	4.3	y	-2.3	259	7.4	51.6	12	47.1	2.4
18	y	1.4	217	34.7	14.5	23	5.3	4.1	y	-2.3	259	59.0	51.7	12	49.5	2.3
19	y	1.4	217	49.2	14.5	23	9.4	3.8	y	-2.4	260	50.7	51.8	12	51.8	2.2
20	y	1.4	218	3.7	14.6	23	13.2	3.7	y	-2.4	261	42.5	52.0	12	54.0	2.2
21	y	1.4	218	18.3	14.6	23	16.9	3.4	y	-2.4	262	34.5	52.1	12	56.2	2.1
22	y	1.4	218	32.9	14.6	23	20.3	3.2	y	-2.4	263	26.6	52.3	12	58.3	2.1
23	y	1.4	218	47.5	14.6	23	23.5	3.1	y	-2.4	264	18.9	52.4	13	0.4	2.0
24	y	1.4	219	2.1	14.7	23	26.6	2.8	y	-2.4	265	11.3	52.5	13	2.4	2.0
25	y	1.4	219	16.8	14.7	23	29.4	2.6	y	-2.4	266	3.8	52.7	13	4.4	1.9
26	y	1.4	219	31.5	14.8	23	32.0	2.4	y	-2.4	266	56.5	52.8	13	6.3	1.8
27	y	1.4	219	46.3	14.8	23	34.4	2.2	y	-2.4	267	49.4	53.0	13	8.1	1.9
28	y	1.4	220	1.1	14.9	23	36.6	1.9	y	-2.4	268	42.4	53.2	13	10.0	1.7
29	y	1.4	220	16.0	14.9	23	38.5	1.8	y	-2.4	269	35.5	53.3	13	11.7	1.7
30	y	1.4	220	30.9	15.0	23	40.3	1.6	y	-2.4	270	28.8	53.5	13	13.4	1.6
Jul 31	y	1.4	220	45.8	15.0	23	41.9	1.3	y	-2.4	271	22.3	53.6	13	15.0	1.6
Aug 1	y	1.4	221	0.8	15.1	23	43.2	1.2	y	-2.4	272	15.9	53.8	13	16.6	1.5
2	y	1.4	221	15.9	15.1	23	44.4	0.9	y	-2.4	273	9.7	54.0	13	18.1	1.5
3	y	1.4	221	31.1	15.2	23	45.3	0.8	y	-2.5	274	3.7	54.1	13	19.6	1.4
4	y	1.4	221	46.3	15.3	23	46.1	0.5	y	-2.5	274	57.8	54.3	13	21.0	1.4
5	y	1.4	222	1.6	15.3	23	46.6	0.3	y	-2.5	275	52.1	54.5	13	22.4	1.3
6	y	1.4	222	16.9	15.4	23	46.9	0.2	y	-2.5	276	46.6	54.6	13	23.7	1.2
7	y	1.4	222	32.3	15.5	23	47.1	-0.1	y	-2.5	277	41.2	54.8	13	24.9	1.2
8	y	1.4	222	47.8	15.6	23	47.0	-0.3	y	-2.5	278	36.0	55.0	13	26.1	1.1
9	y	1.4	223	3.4	15.6	23	46.7	-0.4	y	-2.5	279	31.0	55.1	13	27.2	1.1
10	y	1.4	223	19.1	15.7	23	46.3	-0.7	y	-2.5	280	26.1	55.3	13	28.3	1.0
11	y	1.4	223	34.8	15.8	23	45.6	-0.8	y	-2.5	281	21.4	55.5	13	29.3	0.9
12	y	1.4	223	50.6	15.9	23	44.8	-1.0	y	-2.5	282	16.9	55.7	13	30.2	0.9
13	y	1.4	224	6.5	16.0	23	43.8	-1.3	y	-2.5	283	12.6	55.9	13	31.1	0.9
14	y	1.4	224	22.5	16.1	23	42.5	-1.4	y	-2.5	284	8.5	56.0	13	32.0	0.7
15	y	1.4	224	38.6	16.2	23	41.1	-1.6	y	-2.5	285	4.5	56.2	13	32.7	0.7
16	y	1.4	224	54.7	16.3	23	39.5	-1.8	y	-2.5	286	0.7	56.4	13	33.4	0.7
17	y	1.4	225	11.0	16.3	23	37.7	-2.0	y	-2.6	286	57.1	56.6	13	34.1	0.6
18	y	1.4	225	27.3	16.4	23	35.7	-2.1	y	-2.6	287	53.7	56.8	13	34.7	0.5
19	y	1.4	225	43.8	16.5	23	33.6	-2.4	y	-2.6	288	50.5	57.0	13	35.2	0.5
20	y	1.4	226	0.3	16.6	23	31.2	-2.5	y	-2.6	289	47.4	57.1	13	35.7	0.4
21	y	1.4	226	17.0	16.7	23	28.7	-2.7	y	-2.6	290	44.6	57.3	13	36.1	0.3
22	y	1.4	226	33.7	16.8	23	26.0	-2.9	y	-2.6	291	41.9	57.5	13	36.4	0.3
23	y	1.4	226	50.5	17.0	23	23.1	-3.1	y	-2.6	292	39.4	57.7	13	36.7	0.2
24	y	1.4	227	7.5	17.1	23	20.0	-3.2	y	-2.6	293	37.2	57.9	13	36.9	0.2
25	y	1.4	227	24.6	17.2	23	16.8	-3.4	y	-2.6	294	35.1	58.1	13	37.1	0.1
26	y	1.4	227	41.7	17.3	23	13.4	-3.6	y	-2.6	295	33.2	58.3	13	37.2	0.1
27	y	1.4	227	59.0	17.4	23	9.8	-3.8	y	-2.6	296	31.5	58.5	13	37.3	-0.1
28	y	1.4	228	16.5	17.5	23	6.0	-3.9	y	-2.6	297	30.0	58.7	13	37.2	0.0
29	y	1.4	228	34.0	17.7	23	2.1	-4.1	y	-2.6	298	28.7	58.9	13	37.2	-0.2
30	y	1.4	228	51.6	17.8	22	58.0	-4.2	y	-2.6	299	27.6	59.1	13	37.0	-0.2
Aug 31	y	1.4	229	9.4	17.9	22	53.8	-4.4	y	-2.7	300	26.7	59.3	13	36.8	-0.3
Sep 1	y	1.4	229	27.3	18.0	22	49.4	-4.6	y	-2.7	301	26.0	59.5	13	36.5	-0.3
2	y	1.4	229	45.4	18.2	22	44.8	-4.7	y	-2.7	302	25.5	59.7	13	36.2	-0.4
3	y	1.4	230	3.5	18.3	22	40.1	-4.9	y	-2.7	303	25.1	59.9	13	35.8	-0.4
4	y	1.4	230	21.8	18.4	22	35.2	-5.0	y	-2.7	304	25.0	60.1	13	35.4	-0.6
5	y	1.4	230	40.3	18.6	22	30.2	-5.2	y	-2.7	305	25.1	60.3	13	34.8	-0.5
6	y	1.4	230	58.8	18.7	22	25.0	-5.3	y	-2.7	306	25.4	60.5	13	34.3	-0.7
7	y	1.4	231	17.5	18.8	22	19.7	-5.5	y	-2.7	307	25.8	60.7	13	33.6	-0.7
8	y	1.4	231	36.3	19.0	22	14.2	-5.6	y	-2.7	308	26.5	60.9	13	32.9	-0.7
9	y	1.4	231	55.3	19.1	22	8.6	-5.7	y	-2.7	309	27.3	61.0	13	32.2	-0.8
10	y	1.4	232	14.4	19.2	22	2.9	-5.9	y	-2.7	310	28.4	61.2	13	31.4	-0.9
11	y	1.4	232	33.7	19.4	21	57.0	-6.1	y	-2.7	311	29.6	61.4	13	30.5	-0.9
12	y	1.4	232	53.0	19.5	21	50.9	-6.1	y	-2.7	312	31.1	61.6	13	29.6	-1.0
13	y	1.4	233	12.6	19.7	21	44.8	-6.3	y	-2.7	313	32.7	61.8	13	28.6	-1.1
14	y	1.4	233	32.2	19.8	21	38.5	-6.5	y	-2.7	314	34.5	62.0	13	27.5	-1.1
15	y	1.4	233	52.0	19.9	21	32.0	-6.5	y	-2.8	315	36.5	62.2	13	26.4	-1.1
16	y	1.4	234	12.0	20.1	21	25.5	-6.7	y	-2.8	316	38.7	62.4	13	25.3	-1.3
Sep 17	y	1.4	234	32.1	20.2	21	18.8	-6.8	y	-2.8	317	41.1	62.6	13	24.0	-1.3

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Date	SUN					Mercury					Venus													
	GHA		d	Dec		vis	GHA		d	dd	Dec	d	dd	GHA		d	Dec		d					
	o	'	'	o	'		mag	o	'	'				o	'	'	o	'		o	'			
Sep 18	181	23.7	5.4	2	5.3	-23.2	sr	-1.3	189	20.7	-44.9	-0.1	7	27.2	-43.4	0.6	ss	-3.9	172	46.7	-8.8	-0	16.2	-30.6
19	181	29.1	5.4	1	42.1	-23.3		-1.4	188	35.8	-44.6	-0.2	6	43.8	-44.3	0.4	ss	-3.9	172	37.9	-8.9	-0	46.8	-30.6
20	181	34.5	5.3	1	18.8	-23.3		-1.4	187	51.3	-44.0	-0.3	5	59.5	-45.2	0.4	ss	-3.9	172	29.0	-8.9	-1	17.4	-30.6
21	181	39.8	5.3	0	55.5	-23.3		-1.4	187	7.2	-43.4	-0.3	5	14.3	-45.8	0.3	ss	-3.9	172	20.2	-8.9	-1	48.0	-30.6
22	181	45.1	5.3	0	32.2	-23.4		-1.4	186	23.8	-42.7	-0.4	4	28.5	-46.4	0.3	ss	-3.9	172	11.2	-9.0	-2	18.6	-30.6
23	181	50.4	5.3	0	8.8	-23.3		-1.5	185	41.2	-41.9	-0.4	3	42.1	-46.7	0.2	ss	-3.9	172	2.3	-9.0	-2	49.2	-30.5
24	181	55.6	5.2	-0	14.5	-23.4		-1.5	184	59.3	-41.1	-0.4	2	55.4	-47.0	0.2	ss	-3.9	171	53.3	-9.1	-3	19.7	-30.4
25	182	0.9	5.2	-0	37.9	-23.4		-1.5	184	18.2	-40.2	-0.4	2	8.4	-47.2	0.1	ss	-3.9	171	44.2	-9.2	-3	50.1	-30.4
26	182	6.0	5.1	-1	1.3	-23.4		-1.6	183	38.0	-39.4	-0.4	1	21.2	-47.2	0.0	ss	-3.9	171	35.0	-9.3	-4	20.5	-30.3
27	182	11.2	5.1	-1	24.7	-23.3		-1.6	182	58.6	-38.5	-0.4	0	34.0	-47.2	0.0	ss	-3.9	171	25.8	-9.4	-4	50.8	-30.2
28	182	16.2	5.0	-1	48.0	-23.4		-1.6	182	20.1	-37.7	-0.4	-0	13.2	-47.1	-0.1	ss	-3.9	171	16.4	-9.5	-5	21.0	-30.2
29	182	21.3	5.0	-2	11.4	-23.3		-1.6	181	42.4	-36.9	-0.4	-1	0.3	-46.9	-0.1	ss	-3.9	171	6.9	-9.6	-5	51.2	-30.0
Sep 30	182	26.2	4.9	-2	34.7	-23.3		-1.5	181	5.5	-36.1	-0.4	-1	47.2	-46.7	-0.1	ss	-3.9	170	57.4	-9.7	-6	21.2	-29.8
Oct 1	182	31.2	4.8	-2	58.0	-23.3		-1.5	180	29.4	-35.4	-0.4	-2	33.9	-46.4	-0.2	ss	-3.9	170	47.7	-9.8	-6	51.0	-29.7
2	182	36.0	4.8	-3	21.3	-23.2		-1.4	179	54.0	-34.7	-0.4	-3	20.3	-46.1	-0.2	ss	-3.9	170	37.8	-10.0	-7	20.7	-29.6
3	182	40.8	4.7	-3	44.5	-23.2		-1.3	179	19.3	-34.0	-0.3	-4	6.4	-45.6	-0.3	ss	-3.9	170	27.8	-10.1	-7	50.3	-29.4
4	182	45.5	4.6	-4	7.7	-23.1		-1.2	178	45.3	-33.4	-0.3	-4	52.0	-45.3	-0.1	ss	-3.9	170	17.7	-10.3	-8	19.7	-29.2
5	182	50.1	4.5	-4	30.8	-23.1		-1.1	178	11.9	-32.8	-0.3	-5	37.3	-44.7	-0.3	ss	-3.9	170	7.3	-10.5	-8	48.9	-29.0
6	182	54.6	4.4	-4	53.9	-23.1		-1.1	177	39.1	-32.3	-0.3	-6	22.0	-44.3	-0.2	ss	-3.9	169	56.9	-10.7	-9	17.9	-28.9
7	182	59.1	4.3	-5	17.0	-22.9		-1.0	177	6.9	-31.8	-0.2	-7	6.3	-43.8	-0.3	ss	-3.9	169	46.2	-10.9	-9	46.8	-28.8
8	183	3.4	4.2	-5	39.9	-22.9		-0.9	176	35.1	-31.3	-0.2	-7	50.1	-43.2	-0.3	ss	-3.9	169	35.3	-11.1	-10	15.3	-28.4
9	183	7.7	4.1	-6	2.8	-22.8		-0.9	176	3.7	-30.9	-0.2	-8	33.3	-42.6	-0.3	ss	-3.9	169	24.3	-11.3	-10	43.7	-28.1
10	183	11.8	4.0	-6	25.6	-22.7	ss	-0.8	175	32.8	-30.5	-0.2	-9	15.9	-42.0	-0.3	ss	-3.9	169	13.0	-11.5	-11	11.8	-27.9
11	183	15.8	3.9	-6	48.3	-22.6	ss	-0.8	175	2.3	-30.2	-0.2	-9	57.9	-41.4	-0.3	ss	-3.9	169	1.5	-11.7	-11	39.7	-27.6
12	183	19.7	3.8	-7	10.9	-22.5	ss	-0.7	174	32.1	-29.9	-0.1	-10	39.3	-40.7	-0.3	ss	-3.9	168	49.7	-12.0	-12	7.3	-27.3
13	183	23.5	3.7	-7	33.4	-22.5	ss	-0.7	174	2.2	-29.6	-0.1	-11	20.0	-40.0	-0.4	ss	-3.9	168	37.8	-12.2	-12	34.6	-27.0
14	183	27.2	3.5	-7	55.9	-22.3	ss	-0.6	173	32.5	-29.4	-0.1	-12	0.0	-39.4	-0.3	ss	-3.9	168	25.6	-12.5	-13	1.6	-26.7
15	183	30.7	3.4	-8	18.2	-22.2	ss	-0.6	173	3.1	-29.2	-0.1	-12	39.4	-38.6	-0.4	ss	-3.9	168	13.1	-12.7	-13	28.3	-26.4
16	183	34.1	3.2	-8	40.4	-22.1	ss	-0.5	172	33.9	-29.0	-0.1	-13	18.0	-38.0	-0.3	ss	-3.9	168	0.4	-13.0	-13	54.7	-26.0
17	183	37.3	3.1	-9	2.5	-21.9	ss	-0.5	172	4.8	-28.9	-0.1	-13	56.0	-37.1	-0.5	ss	-3.9	167	47.4	-13.3	-14	20.7	-25.7
18	183	40.4	2.9	-9	24.4	-21.8	ss	-0.5	171	36.0	-28.7	-0.1	-14	33.1	-36.4	-0.4	ss	-3.9	167	34.1	-13.6	-14	46.4	-25.3
19	183	43.4	2.8	-9	46.2	-21.7	ss	-0.5	171	7.2	-28.6	-0.1	-15	9.5	-35.6	-0.4	ss	-3.9	167	20.5	-13.8	-15	11.7	-25.0
20	183	46.1	2.6	-10	7.9	-21.5	ss	-0.4	170	38.6	-28.5	-0.1	-15	45.1	-34.7	-0.5	ss	-3.9	167	6.7	-14.1	-15	36.7	-24.5
21	183	48.8	2.4	-10	29.4	-21.4	ss	-0.4	170	10.0	-28.4	0.0	-16	19.8	-34.0	-0.3	ss	-3.9	166	52.6	-14.4	-16	1.2	-24.2
22	183	51.2	2.3	-10	50.8	-21.2	ss	-0.4	169	41.6	-28.3	0.0	-16	53.8	-33.1	-0.4	ss	-3.9	166	38.1	-14.7	-16	25.4	-23.7
23	183	53.5	2.1	-11	12.0	-21.1	ss	-0.4	169	13.3	-28.3	0.0	-17	26.9	-32.2	-0.5	ss	-3.9	166	23.4	-15.0	-16	49.1	-23.3
24	183	55.6	1.9	-11	33.1	-20.8	ss	-0.3	168	45.0	-28.2	0.0	-17	59.1	-31.3	-0.4	ss	-3.9	166	8.4	-15.3	-17	12.4	-22.9
25	183	57.5	1.7	-11	53.9	-20.7	ss	-0.3	168	16.8	-28.1	-0.1	-18	30.4	-30.3	-0.5	ss	-3.9	165	53.0	-15.6	-17	35.3	-22.4
26	183	59.3	1.6	-12	14.6	-20.5	ss	-0.3	167	48.8	-28.0	-0.1	-19	0.7	-29.5	-0.4	ss	-3.9	165	37.4	-16.0	-17	57.7	-22.0
27	184	0.8	1.4	-12	35.1	-20.4	ss	-0.3	167	20.8	-27.8	-0.1	-19	30.2	-28.4	-0.5	ss	-3.9	165	21.4	-16.3	-18	19.7	-21.4
28	184	2.2	1.2	-12	55.5	-20.1	ss	-0.3	166	53.0	-27.6	-0.1	-19	58.6	-27.5	-0.4	ss	-3.9	165	5.2	-16.6	-18	41.1	-21.0
29	184	3.4	1.0	-13	15.6	-19.9	ss	-0.3	166	25.4	-27.4	-0.1	-20	26.1	-26.5	-0.5	ss	-3.9	164	48.6	-16.9	-19	2.1	-20.4
30	184	4.4	0.8	-13	35.5	-19.6	ss	-0.3	165	57.9	-27.2	-0.1	-20	52.6	-25.4	-0.5	ss	-3.9	164	31.7	-17.2	-19	22.5	-20.0
Oct 31	184	5.2	0.6	-13	55.1	-19.5	ss	-0.3	165	30.8	-26.9	-0.2	-21	18.0	-24.3	-0.6	ss	-3.9	164	14.5	-17.5	-19	42.5	-19.4
Nov 1	184	5.8	0.4	-14	14.6	-19.2	ss	-0.3	165	3.9	-26.5	-0.2	-21	42.3	-23.2	-0.5	ss	-3.9	163	57.0	-17.8	-20	1.9	-18.8
2	184	6.3	0.2	-14	33.8	-19.0	ss	-0.3	164	37.5	-26.0	-0.2	-22	5.5	-22.2	-0.5	ss	-3.9	163	39.2	-18.1	-20	20.7	-18.3
3	184	6.5	0.0	-14	52.8	-18.8	ss	-0.3	164	11.5	-25.4	-0.3	-22	27.7	-20.9	-0.7	ss	-3.9	163	21.1	-18.4	-20	39.0	-17.6
4	184	6.5	-0.2	-15	11.6	-18.5	ss	-0.3	163	46.0	-24.8	-0.3	-22	48.6	-19.8	-0.5	ss	-3.9	163	2.7	-18.7	-20	56.8	-17.1
5	184	6.4	-0.4	-15	30.1	-18.2	ss	-0.3	163	21.3	-24.0	-0.4	-23	8.4	-18.5	-0.7	ss	-3.9	162	44.0	-19.0	-21	13.9	-16.6
6	184	6.0	-0.6	-15	48.3	-18.0	ss	-0.3	162	57.3	-23.0	-0.5	-23	26.9	-17.3	-0.6	ss	-3.9	162	25.0	-19.3	-21	30.5	-15.9
7	184	5.5	-0.8	-16	6.3	-17.7	ss	-0.3	162	34.3	-21.9	-0.6	-23	44.2	-16.1	-0.6	ss	-3.9	162	5.8	-19.5	-21	46.4	-15.4
8	184	4.7	-1.0	-16	24.0	-17.5	ss	-0.3	162	12.4	-20.6	-0.7	-24	0.3	-14.7	-0.7	ss	-3.9	161	46.2	-19.8	-22	1.8	-14.7
9	184	3.7	-1.2	-16	41.5	-17.1	ss	-0.3	161	51.8	-19.0	-0.8	-24	15.0	-13.3	-0.7	ss	-3.9	161	26.4	-20.1	-22	16.5	-14.1
10	184	2.5	-1.4	-16	58.6	-16.9	ss	-0.3	161	32.8	-17.2	-0.9	-24	28.3	-12.0	-0.6	ss	-3.9	161	6.3	-20.3	-22	30.6	-13.4
11	184	1.1	-1.6	-17	15.5	-16.6	ss	-0.3	161	15.5	-15.2	-1.0	-24	40.3	-10.6	-0.7	ss	-3.9	160	46.0	-20.6	-22	44.0	-12.8
12	183	59.5	-1.8	-17	32.1	-16.3	ss	-0.3	161	0.4	-12.8	-1.2	-24	50.9	-9.1	-0.8	ss	-3.9	160	25.4	-20.8	-22	56.8	-12.1
13	183	57.7	-2.0	-17	48.4	-15.9	ss	-0.3	160	47.6	-10.0	-1.4	-25	0.0	-7.6	-0.8	ss	-3.9	160	4.6	-21.0	-23	8.9	-11.4
14	183	55.6	-2.3	-18	4.3	-15.7	ss	-0.3	160	37.6	-6.8	-1.6	-25	7.6	-6.0	-0.8	ss	-3.9	159	43.6	-21.3	-23	20.3	-10.8
15	183	53.4	-2.5	-18	20.0	-15.3	ss	-0.2	160	30.9	-3.1	-1.8	-25	1										

2011

Sun and Planets

Date	Mars					Jupiter					Saturn					
	vis	GHA		d	Dec	vis	GHA		d	Dec	vis	GHA		d	Dec	
	mag	o		'	o	mag	o		'	o	mag	o		'	o	
Sep 18	y	1.4	234	52.3	20.4	21	12.0	-7.0	y	-2.8	318	43.6	62.7	13	22.7	-1.3
19	y	1.4	235	12.7	20.5	21	5.0	-7.0	y	-2.8	319	46.4	62.9	13	21.4	-1.4
20	y	1.3	235	33.2	20.7	20	58.0	-7.2	y	-2.8	320	49.3	63.1	13	20.0	-1.4
21	y	1.3	235	53.9	20.8	20	50.8	-7.3	y	-2.8	321	52.4	63.3	13	18.6	-1.5
22	y	1.3	236	14.7	21.0	20	43.5	-7.4	y	-2.8	322	55.7	63.5	13	17.1	-1.6
23	y	1.3	236	35.7	21.1	20	36.1	-7.5	y	-2.8	323	59.2	63.6	13	15.5	-1.6
24	y	1.3	236	56.8	21.3	20	28.6	-7.6	y	-2.8	325	2.8	63.8	13	13.9	-1.7
25	y	1.3	237	18.1	21.4	20	21.0	-7.7	y	-2.8	326	6.6	64.0	13	12.2	-1.7
26	y	1.3	237	39.5	21.6	20	13.3	-7.8	y	-2.8	327	10.6	64.1	13	10.5	-1.8
27	y	1.3	238	1.1	21.8	20	5.5	-7.9	y	-2.8	328	14.7	64.3	13	8.7	-1.8
28	y	1.3	238	22.9	21.9	19	57.6	-8.0	y	-2.8	329	19.0	64.5	13	6.9	-1.8
29	y	1.3	238	44.8	22.1	19	49.6	-8.1	y	-2.8	330	23.5	64.6	13	5.1	-1.9
Sep 30	y	1.3	239	6.9	22.2	19	41.5	-8.2	y	-2.8	331	28.1	64.8	13	3.2	-2.0
Oct 1	y	1.3	239	29.1	22.4	19	33.3	-8.3	y	-2.8	332	32.8	64.9	13	1.2	-2.0
2	y	1.3	239	51.5	22.6	19	25.0	-8.4	y	-2.9	333	37.7	65.0	12	59.2	-2.1
3	y	1.3	240	14.1	22.7	19	16.6	-8.4	y	-2.9	334	42.8	65.2	12	57.1	-2.0
4	y	1.3	240	36.8	22.9	19	8.2	-8.5	y	-2.9	335	47.9	65.3	12	55.1	-2.2
5	y	1.3	240	59.7	23.1	18	59.7	-8.7	y	-2.9	336	53.3	65.4	12	52.9	-2.1
6	y	1.3	241	22.8	23.2	18	51.0	-8.6	y	-2.9	337	58.7	65.6	12	50.8	-2.3
7	y	1.3	241	46.0	23.4	18	42.4	-8.8	y	-2.9	339	4.3	65.7	12	48.5	-2.2
8	y	1.3	242	9.4	23.6	18	33.6	-8.8	y	-2.9	340	10.0	65.8	12	46.3	-2.3
9	y	1.3	242	33.0	23.7	18	24.8	-8.9	y	-2.9	341	15.8	65.9	12	44.0	-2.3
10	y	1.3	242	56.7	23.9	18	15.9	-9.0	y	-2.9	342	21.7	66.0	12	41.7	-2.4
11	y	1.3	243	20.6	24.1	18	6.9	-9.0	y	-2.9	343	27.7	66.1	12	39.3	-2.3
12	y	1.2	243	44.7	24.2	17	57.9	-9.1	y	-2.9	344	33.9	66.2	12	37.0	-2.4
13	y	1.2	244	8.9	24.4	17	48.8	-9.2	y	-2.9	345	40.1	66.3	12	34.6	-2.5
14	y	1.2	244	33.3	24.6	17	39.6	-9.2	y	-2.9	346	46.4	66.4	12	32.1	-2.5
15	y	1.2	244	57.8	24.7	17	30.4	-9.3	y	-2.9	347	52.8	66.5	12	29.6	-2.4
16	y	1.2	245	22.6	24.9	17	21.1	-9.3	y	-2.9	348	59.3	66.6	12	27.2	-2.6
17	y	1.2	245	47.5	25.1	17	11.8	-9.3	y	-2.9	350	5.8	66.6	12	24.6	-2.5
18	y	1.2	246	12.5	25.2	17	2.5	-9.4	y	-2.9	351	12.5	66.7	12	22.1	-2.5
19	y	1.2	246	37.8	25.4	16	53.1	-9.5	y	-2.9	352	19.2	66.8	12	19.6	-2.6
20	y	1.2	247	3.2	25.6	16	43.6	-9.5	y	-2.9	353	25.9	66.8	12	17.0	-2.6
21	y	1.2	247	28.8	25.8	16	34.1	-9.5	y	-2.9	354	32.7	66.9	12	14.4	-2.6
22	y	1.2	247	54.5	25.9	16	24.6	-9.6	y	-2.9	355	39.6	66.9	12	11.8	-2.6
23	y	1.2	248	20.5	26.1	16	15.0	-9.6	y	-2.9	356	46.5	66.9	12	9.2	-2.6
24	y	1.2	248	46.6	26.3	16	5.4	-9.6	y	-2.9	357	53.4	67.0	12	6.6	-2.7
25	y	1.2	249	12.9	26.5	15	55.8	-9.6	y	-2.9	359	0.4	67.0	12	3.9	-2.6
26	y	1.1	249	39.4	26.7	15	46.2	-9.7	y	-2.9	0	7.4	67.0	12	1.3	-2.6
27	y	1.1	250	6.0	26.9	15	36.5	-9.7	y	-2.9	1	14.4	67.0	11	58.7	-2.7
28	y	1.1	250	32.9	27.0	15	26.8	-9.7	y	-2.9	2	21.4	67.0	11	56.0	-2.6
29	y	1.1	250	59.9	27.2	15	17.1	-9.7	y	-2.9	3	28.4	67.0	11	53.4	-2.7
30	y	1.1	251	27.1	27.4	15	7.4	-9.7	y	-2.9	4	35.5	67.0	11	50.7	-2.6
Oct 31	y	1.1	251	54.6	27.6	14	57.7	-9.8	y	-2.9	5	42.5	67.0	11	48.1	-2.6
Nov 1	y	1.1	252	22.2	27.8	14	47.9	-9.7	y	-2.9	6	49.5	67.0	11	45.5	-2.6
2	y	1.1	252	50.0	28.0	14	38.2	-9.8	y	-2.9	7	56.5	67.0	11	42.9	-2.6
3	y	1.1	253	17.9	28.2	14	28.4	-9.7	y	-2.9	9	3.4	66.9	11	40.3	-2.6
4	y	1.1	253	46.1	28.4	14	18.7	-9.7	y	-2.9	10	10.3	66.9	11	37.7	-2.6
5	y	1.1	254	14.5	28.6	14	9.0	-9.8	y	-2.9	11	17.2	66.8	11	35.1	-2.5
6	y	1.1	254	43.1	28.8	13	59.2	-9.7	y	-2.9	12	24.0	66.8	11	32.6	-2.6
7	y	1.0	255	11.8	29.0	13	49.5	-9.7	y	-2.9	13	30.8	66.7	11	30.0	-2.5
8	y	1.0	255	40.8	29.2	13	39.8	-9.8	y	-2.9	14	37.6	66.7	11	27.5	-2.5
9	y	1.0	256	10.0	29.4	13	30.0	-9.7	y	-2.9	15	44.2	66.6	11	25.0	-2.4
10	y	1.0	256	39.3	29.6	13	20.3	-9.6	y	-2.9	16	50.8	66.5	11	22.6	-2.5
11	y	1.0	257	8.9	29.8	13	10.7	-9.7	y	-2.9	17	57.3	66.4	11	20.1	-2.4
12	y	1.0	257	38.6	30.0	13	1.0	-9.6	y	-2.9	19	3.8	66.4	11	17.7	-2.3
13	y	1.0	258	8.6	30.2	12	51.4	-9.7	y	-2.9	20	10.1	66.3	11	15.4	-2.4
14	y	1.0	258	38.8	30.4	12	41.7	-9.5	y	-2.9	21	16.4	66.2	11	13.0	-2.3
15	y	1.0	259	9.1	30.6	12	32.2	-9.6	y	-2.9	22	22.6	66.1	11	10.7	-2.2
16	y	0.9	259	39.7	30.8	12	22.6	-9.5	y	-2.9	23	28.7	66.0	11	8.5	-2.3
17	y	0.9	260	10.5	31.0	12	13.1	-9.5	y	-2.9	24	34.7	65.9	11	6.2	-2.1
18	y	0.9	260	41.5	31.2	12	3.6	-9.4	y	-2.9	25	40.5	65.8	11	4.1	-2.2
19	y	0.9	261	12.8	31.5	11	54.2	-9.4	y	-2.9	26	46.3	65.6	11	1.9	-2.1
20	y	0.9	261	44.2	31.7	11	44.8	-9.3	y	-2.9	27	51.9	65.5	10	59.8	-2.0
Nov 21	y	0.9	262	15.9	31.9	11	35.5	-9.3	y	-2.9	28	57.5	65.4	10	57.8	-2.0

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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					
Nov 22	183	31.6	-3.9	-20	0.2	-12.9	SS 0.1	161	60.0	40.7	-4.3	-25	9.0	8.1	-1.0	SS -3.9	156	48.5	-22.5	-24	26.6	-5.0
23	183	27.6	-4.1	-20	13.1	-12.5	SS 0.2	162	40.6	50.0	-4.7	-25	0.9	10.2	-1.1	SS -3.9	156	26.0	-22.6	-24	31.6	-4.3
24	183	23.5	-4.3	-20	25.6	-12.2	SS 0.4	163	30.7	60.2	-5.1	-24	50.7	12.4	-1.1	SS -3.9	156	3.4	-22.7	-24	35.9	-3.5
25	183	19.1	-4.5	-20	37.8	-11.8	SS 0.6	164	30.9	71.1	-5.4	-24	38.3	14.6	-1.1	SS -3.9	155	40.7	-22.8	-24	39.4	-2.8
26	183	14.6	-4.7	-20	49.6	-11.3	SS 0.8	165	42.0	82.5	-5.7	-24	23.7	17.0	-1.2	SS -3.9	155	17.9	-22.8	-24	42.2	-2.0
27	183	9.9	-4.9	-21	0.9	-11.0	SS 1.1	167	4.4	94.1	-5.8	-24	6.7	19.3	-1.1	SS -3.9	154	55.1	-22.8	-24	44.2	-1.3
28	183	5.0	-5.1	-21	11.9	-10.6	SS 1.3	168	38.5	105.6	-5.7	-23	47.4	21.8	-1.3	SS -3.9	154	32.3	-22.8	-24	45.5	-0.6
29	182	59.9	-5.2	-21	22.5	-10.2	SS 1.6	170	24.1	116.5	-5.5	-23	25.6	24.0	-1.1	SS -3.9	154	9.5	-22.8	-24	46.1	0.2
Nov 30	182	54.6	-5.4	-21	32.7	-9.8	SS 1.8	172	20.6	126.3	-4.9	-23	1.6	26.2	-1.1	SS -3.9	153	46.7	-22.8	-24	45.9	1.0
Dec 1	182	49.2	-5.6	-21	42.5	-9.4	SS 2.0	174	26.9	134.5	-4.1	-22	35.4	28.0	-0.9	SS -3.9	153	23.9	-22.7	-24	44.9	1.7
2	182	43.7	-5.7	-21	51.9	-8.9	2.3	176	41.4	140.4	-3.0	-22	7.4	29.3	-0.7	SS -3.9	153	1.2	-22.7	-24	43.2	2.5
3	182	37.9	-5.9	-22	0.8	-8.5	2.5	179	1.8	143.8	-1.7	-21	38.1	29.9	-0.3	SS -3.9	152	38.5	-22.6	-24	40.7	3.2
4	182	32.1	-6.0	-22	9.3	-8.1	2.7	181	25.5	144.3	-0.2	-21	8.2	29.8	0.0	SS -3.9	152	15.9	-22.5	-24	37.5	4.0
5	182	26.0	-6.2	-22	17.4	-7.7	2.5	183	49.8	141.9	1.2	-20	38.4	28.9	0.4	SS -3.9	151	53.4	-22.4	-24	33.5	4.7
6	182	19.9	-6.3	-22	25.1	-7.2	2.2	186	11.7	136.8	2.5	-20	9.5	27.0	1.0	SS -3.9	151	31.1	-22.2	-24	28.8	5.4
7	182	13.6	-6.4	-22	32.3	-6.8	2.0	188	28.5	129.4	3.7	-19	42.5	24.4	1.3	SS -3.9	151	8.8	-22.1	-24	23.4	6.2
8	182	7.2	-6.5	-22	39.1	-6.3	sr 1.8	190	37.9	120.2	4.6	-19	18.1	21.2	1.6	SS -4.0	150	46.7	-21.9	-24	17.2	7.0
9	182	0.6	-6.7	-22	45.4	-5.9	sr 1.5	192	38.1	109.8	5.2	-18	56.9	17.5	1.8	SS -4.0	150	24.8	-21.7	-24	10.2	7.6
10	181	54.0	-6.8	-22	51.3	-5.4	sr 1.3	194	27.9	98.6	5.6	-18	39.4	13.6	1.9	SS -4.0	150	3.1	-21.6	-24	2.6	8.4
11	181	47.2	-6.9	-22	56.7	-5.0	sr 1.1	196	6.5	87.2	5.7	-18	25.8	9.6	2.0	SS -4.0	149	41.5	-21.3	-23	54.2	9.1
12	181	40.4	-7.0	-23	1.7	-4.6	sr 0.9	197	33.7	75.9	5.6	-18	16.2	5.6	2.0	SS -4.0	149	20.2	-21.1	-23	45.1	9.8
13	181	33.4	-7.0	-23	6.3	-4.0	sr 0.6	198	49.6	65.1	5.4	-18	10.6	2.0	1.8	SS -4.0	148	59.1	-20.9	-23	35.3	10.5
14	181	26.4	-7.1	-23	10.3	-3.7	sr 0.4	199	54.7	54.9	5.1	-18	8.6	-1.5	1.8	SS -4.0	148	38.2	-20.6	-23	24.8	11.2
15	181	19.3	-7.2	-23	14.0	-3.1	sr 0.2	200	49.6	45.4	4.7	-18	10.1	-4.5	1.5	SS -4.0	148	17.5	-20.4	-23	13.6	11.9
16	181	12.1	-7.3	-23	17.1	-2.7	sr 0.1	201	35.0	36.7	4.4	-18	14.6	-7.2	1.3	SS -4.0	147	57.1	-20.1	-23	1.7	12.6
17	181	4.8	-7.3	-23	19.8	-2.2	sr 0.0	202	11.7	28.7	4.0	-18	21.8	-9.5	1.1	SS -4.0	147	37.0	-19.8	-22	49.1	13.2
18	180	57.5	-7.4	-23	22.0	-1.8	sr -0.1	202	40.4	21.6	3.6	-18	31.3	-11.5	1.0	SS -4.0	147	17.2	-19.5	-22	35.9	13.9
19	180	50.1	-7.4	-23	23.8	-1.2	sr -0.2	203	2.0	15.1	3.2	-18	42.8	-13.1	0.8	SS -4.0	146	57.7	-19.2	-22	22.0	14.6
20	180	42.7	-7.4	-23	25.0	-0.9	sr -0.3	203	17.1	9.4	2.9	-18	55.9	-14.4	0.6	SS -4.0	146	38.4	-18.9	-22	7.4	15.1
21	180	35.3	-7.5	-23	25.9	-0.3	sr -0.3	203	26.5	4.2	2.6	-19	10.3	-15.3	0.5	SS -4.0	146	19.5	-18.6	-21	52.3	15.9
22	180	27.8	-7.5	-23	26.2	0.1	sr -0.3	203	30.7	-0.4	2.3	-19	25.6	-16.1	0.4	SS -4.0	146	0.8	-18.3	-21	36.4	16.4
23	180	20.3	-7.5	-23	26.1	0.6	sr -0.4	203	30.3	-4.6	2.1	-19	41.7	-16.6	0.2	SS -4.0	145	42.5	-18.0	-21	20.0	17.1
24	180	12.8	-7.5	-23	25.5	1.1	sr -0.4	203	25.7	-8.3	1.9	-19	58.3	-16.9	0.2	SS -4.0	145	24.6	-17.6	-21	2.9	17.7
25	180	5.3	-7.5	-23	24.4	1.6	sr -0.4	203	17.4	-11.6	1.7	-20	15.2	-16.9	0.0	SS -4.0	145	6.9	-17.3	-20	45.2	18.2
26	179	57.9	-7.4	-23	22.8	2.0	sr -0.4	203	5.8	-14.6	1.5	-20	32.1	-16.9	0.0	SS -4.0	144	49.6	-17.0	-20	27.0	18.8
27	179	50.4	-7.4	-23	20.8	2.4	sr -0.4	202	51.3	-17.3	1.3	-20	49.0	-16.7	-0.1	SS -4.0	144	32.7	-16.6	-20	8.2	19.4
28	179	43.0	-7.4	-23	18.4	3.0	sr -0.4	202	34.0	-19.7	1.2	-21	5.7	-16.3	-0.2	SS -4.0	144	16.1	-16.2	-19	48.8	20.0
29	179	35.6	-7.3	-23	15.4	3.4	sr -0.4	202	14.3	-21.9	1.1	-21	22.0	-15.9	-0.2	SS -4.0	143	59.8	-15.9	-19	28.8	20.4
30	179	28.3	-7.2	-23	12.0	3.9	sr -0.4	201	52.4	-23.9	1.0	-21	37.9	-15.4	-0.3	SS -4.0	143	43.9	-15.5	-19	8.4	21.0
Dec 31	179	21.1	-7.2	-23	8.1	4.3	sr -0.4	201	28.6	-25.7	0.9	-21	53.3	-14.6	-0.4	SS -4.0	143	28.4	-15.2	-18	47.4	21.6
Jan 1	179	13.9	-7.2	-23	3.8	4.7	sr -0.4	201	2.9	-25.7	0.9	-22	7.9	-13.8	-0.4	SS -4.0	143	13.3	-15.2	-18	25.8	22.2

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Sun and Planets

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	0.9	262	47.8	32.1	11	26.2	-9.2	y	-2.9	30	2.8	65.3	10	55.8	-2.0	y	1.3	216	50.3	53.0	-7	27.5	-2.2
23	y	0.9	263	19.9	32.4	11	17.0	-9.2	y	-2.8	31	8.1	65.1	10	53.8	-1.9	y	1.3	217	43.4	53.1	-7	29.7	-2.2
24	y	0.8	263	52.3	32.6	11	7.8	-9.1	y	-2.8	32	13.2	65.0	10	51.9	-1.8	y	1.3	218	36.5	53.1	-7	31.9	-2.2
25	y	0.8	264	24.9	32.9	10	58.7	-9.0	y	-2.8	33	18.2	64.8	10	50.1	-1.8	y	1.3	219	29.6	53.2	-7	34.1	-2.1
26	y	0.8	264	57.8	33.1	10	49.7	-9.0	y	-2.8	34	23.0	64.7	10	48.3	-1.8	y	1.3	220	22.7	53.2	-7	36.2	-2.2
27	y	0.8	265	30.9	33.4	10	40.7	-8.9	y	-2.8	35	27.7	64.5	10	46.5	-1.6	y	1.3	221	15.9	53.3	-7	38.4	-2.1
28	y	0.8	266	4.3	33.6	10	31.8	-8.8	y	-2.8	36	32.2	64.4	10	44.9	-1.6	y	1.3	222	9.2	53.3	-7	40.5	-2.1
29	y	0.8	266	37.9	33.9	10	23.0	-8.7	y	-2.8	37	36.6	64.2	10	43.3	-1.6	y	1.3	223	2.5	53.3	-7	42.6	-2.0
Nov 30	y	0.8	267	11.8	34.1	10	14.3	-8.7	y	-2.8	38	40.8	64.0	10	41.7	-1.5	y	1.3	223	55.8	53.4	-7	44.6	-2.1
Dec 1	y	0.8	267	45.9	34.4	10	5.6	-8.5	y	-2.8	39	44.9	63.9	10	40.2	-1.4	y	1.3	224	49.2	53.5	-7	46.7	-2.0
2	y	0.7	268	20.3	34.7	9	57.1	-8.5	y	-2.8	40	48.7	63.7	10	38.8	-1.4	y	1.3	225	42.7	53.5	-7	48.7	-2.0
3	y	0.7	268	55.0	34.9	9	48.6	-8.4	y	-2.8	41	52.5	63.5	10	37.4	-1.3	y	1.3	226	36.2	53.6	-7	50.7	-2.0
4	y	0.7	269	29.9	35.2	9	40.2	-8.3	y	-2.8	42	56.0	63.4	10	36.1	-1.2	y	1.3	227	29.8	53.6	-7	52.7	-1.9
5	y	0.7	270	5.1	35.5	9	31.9	-8.2	y	-2.8	43	59.4	63.2	10	34.9	-1.2	y	1.3	228	23.4	53.7	-7	54.6	-1.9
6	y	0.7	270	40.6	35.8	9	23.7	-8.1	y	-2.8	45	2.5	63.0	10	33.7	-1.1	y	1.3	229	17.0	53.7	-7	56.5	-1.9
7	y	0.7	271	16.4	36.1	9	15.6	-8.0	y	-2.8	46	5.5	62.8	10	32.6	-1.1	y	1.3	230	10.7	53.8	-7	58.4	-1.9
8	y	0.7	271	52.4	36.3	9	7.6	-7.9	y	-2.8	47	8.4	62.6	10	31.5	-0.9	y	1.3	231	4.5	53.8	-8	0.3	-1.8
9	y	0.6	272	28.8	36.6	8	59.7	-7.8	y	-2.8	48	11.0	62.5	10	30.6	-0.9	y	1.3	231	58.3	53.9	-8	2.1	-1.8
10	y	0.6	273	5.4	36.9	8	51.9	-7.6	y	-2.7	49	13.5	62.3	10	29.7	-0.9	y	1.3	232	52.2	53.9	-8	3.9	-1.8
11	y	0.6	273	42.3	37.2	8	44.3	-7.6	y	-2.7	50	15.7	62.1	10	28.8	-0.7	y	1.3	233	46.2	54.0	-8	5.7	-1.7
12	y	0.6	274	19.6	37.6	8	36.7	-7.4	y	-2.7	51	17.8	61.9	10	28.1	-0.7	y	1.3	234	40.2	54.1	-8	7.4	-1.8
13	y	0.6	274	57.1	37.9	8	29.3	-7.3	y	-2.7	52	19.7	61.7	10	27.4	-0.6	y	1.3	235	34.2	54.1	-8	9.2	-1.6
14	y	0.6	275	35.0	38.2	8	22.0	-7.1	y	-2.7	53	21.4	61.5	10	26.8	-0.6	y	1.3	236	28.4	54.2	-8	10.8	-1.7
15	y	0.5	276	13.2	38.5	8	14.9	-7.1	y	-2.7	54	22.9	61.3	10	26.2	-0.4	y	1.3	237	22.6	54.3	-8	12.5	-1.7
16	y	0.5	276	51.7	38.9	8	7.8	-6.9	y	-2.7	55	24.2	61.1	10	25.8	-0.4	y	1.3	238	16.8	54.3	-8	14.2	-1.6
17	y	0.5	277	30.6	39.2	8	0.9	-6.7	y	-2.7	56	25.4	60.9	10	25.4	-0.4	y	1.3	239	11.2	54.4	-8	15.8	-1.5
18	y	0.5	278	9.8	39.6	7	54.2	-6.6	y	-2.7	57	26.3	60.7	10	25.0	-0.2	y	1.3	240	5.6	54.5	-8	17.3	-1.6
19	y	0.5	278	49.4	39.9	7	47.6	-6.4	y	-2.7	58	27.0	60.5	10	24.8	-0.2	y	1.3	241	0.0	54.5	-8	18.9	-1.5
20	y	0.4	279	29.3	40.3	7	41.2	-6.3	y	-2.7	59	27.6	60.3	10	24.6	-0.1	y	1.3	241	54.6	54.6	-8	20.4	-1.5
21	y	0.4	280	9.6	40.7	7	34.9	-6.2	y	-2.7	60	27.9	60.1	10	24.5	-0.1	y	1.3	242	49.2	54.7	-8	21.9	-1.5
22	y	0.4	280	50.2	41.0	7	28.7	-5.9	y	-2.7	61	28.0	59.9	10	24.4	0.1	y	1.3	243	43.8	54.7	-8	23.4	-1.4
23	y	0.4	281	31.3	41.4	7	22.8	-5.8	y	-2.7	62	28.0	59.7	10	24.5	0.1	y	1.3	244	38.6	54.8	-8	24.8	-1.4
24	y	0.4	282	12.7	41.8	7	17.0	-5.7	y	-2.6	63	27.7	59.5	10	24.6	0.2	y	1.3	245	33.4	54.9	-8	26.2	-1.3
25	y	0.4	282	54.5	42.2	7	11.3	-5.4	y	-2.6	64	27.2	59.3	10	24.8	0.2	y	1.3	246	28.3	55.0	-8	27.5	-1.4
26	y	0.3	283	36.8	42.7	7	5.9	-5.3	y	-2.6	65	26.6	59.1	10	25.0	0.4	y	1.3	247	23.2	55.0	-8	28.9	-1.3
27	y	0.3	284	19.4	43.1	7	0.6	-5.0	y	-2.6	66	25.7	58.9	10	25.4	0.4	y	1.3	248	18.3	55.1	-8	30.2	-1.2
28	y	0.3	285	2.5	43.5	6	55.6	-4.9	y	-2.6	67	24.6	58.7	10	25.8	0.5	y	1.3	249	13.4	55.2	-8	31.4	-1.3
29	y	0.3	285	46.0	44.0	6	50.7	-4.7	y	-2.6	68	23.4	58.5	10	26.3	0.5	y	1.3	250	8.6	55.3	-8	32.7	-1.2
30	y	0.2	286	30.0	44.4	6	46.0	-4.5	y	-2.6	69	21.9	58.3	10	26.8	0.7	y	1.3	251	3.9	55.4	-8	33.9	-1.1
Dec 31	y	0.2	287	14.4	44.9	6	41.5	-4.3	y	-2.6	70	20.2	58.1	10	27.5	0.7	y	1.3	251	59.3	55.4	-8	35.0	-1.2
Jan 1	y	0.2	287	59.3	44.9	6	37.2	-4.1	y	-2.6	71	18.4	58.1	10	28.2	0.7	y	1.3	252	54.7	55.4	-8	36.2	-1.3